

include practically the whole of northern Italy, the city of Rome, Vatican City, the cities of Warsaw, Poland, and Helsingfors, Finland, and the cities of Memel and Kovno, Lithuania. Service is now given to practically the entire telephone network of western Europe.

During the year ship-to-shore radiotelephone service in addition to being available to the steamship "Leviathan" was extended to the "Majestic," "Olympic," "Homeric," and "Belgenland." This service is given through shore transmitting and receiving stations located at Ocean Gate and Forked River, N. J., respectively. Through connections with the land telephone system, this service is available not only to all points in this country but to most of the cities of Cuba, Canada, and Mexico. Similar telephone service to the continent of Europe is available to passengers on these vessels through stations at Rugby and Baldock, England.

Television was employed for the first time as part of a regular performance in a theater, the television images being transmitted by radio from a studio located about 1 mile from the theater.

The active images of the performers were reproduced upon a screen 6 by 7½ feet and were readily visible to those seated in the back rows of the balcony. The light impulses were transmitted on a wave length of 140 meters, and were accompanied by voice and sound effects. This increase in area of the projected image from the previous size of about 14 inches square to an area equivalent to about one-fourth that of the standard motion-picture screen was rendered possible by the introduction in the projection optical train of a light valve operating on the principle of altering the direction of polarization of a beam of polarized light by passing the beam from an electrostatic field. This light valve thus renders possible the use of more powerful rays of light than have heretofore been practicable in television projection.

A television picture which had traveled approximately 20,000 miles through space was received with a fair degree of accuracy, thereby establishing a distance record for television reception. The picture, a rectangular design in black on a white card, was transmitted by the short-wave station. W2XAF (31.48 meters) at Schenectady, N. Y., received in Sydney, Australia, by station VK2ME, rebroadcast by that section on 28.8 meters, and received back in Schenectady in about an eighth of a second.

The United States now leads the world in radio communication with circuits spanning every ocean and touching every continent on the globe.

During the year diversity in reception was improved upon. The method, as now used to a great extent and which is growing, is accomplished by the erection of three antennæ spaced approximately 1,000 feet apart. Observations over a long period have shown that the strength of the received signal varies considerably within a radius of 2,000 feet and while the radio impulse at one of three antennæ may be faint, the other two will be clear and strong. By connecting the three antennæ with a central receiver a signal of uniform strength representing the composite level of the three antennæ is obtained.

Experimental facsimile transmissions conducted during the year indicate the possibility that eventually a complete daily newspaper may be transmitted by this system of radio.

International broadcasting gained impetus during the year through the address of King George of England opening the London Naval Conference, the achievement of linking the World Power Conference in Berlin with the National Electric Light Association Convention in San Francisco by addresses broadcast from San Francisco, Berlin, London, and Orange, N. J., and the broadcast of the ceremonies connected with the exchange of ratifications of the London Naval Treaty.

In developing synchronization of two or more stations operating on the same frequency without causing interference to each other, broadcasting station WTIC in Hartford, Conn., and WEAJ in New York, N. Y., were granted authority to carry on this form of transmission. Station WBAJ in Baltimore, Md., and WJZ in New York, N. Y., were also authorized to synchronize.

At the close of 1930, nearly 200 stations were embraced in the broadcasting networks of the National and Columbia chains. The length of permanent program telephone circuits used for this purpose was about 34,500 miles.

1931. January 1: Premier Mussolini is heard in America for first time when he speaks at dedication of Rome's new short wave station.

January 11: Caesium photo-electric cells were introduced to clarify television images.

February 12: Pope Pius is heard in United States for first time over HVJ, new Papal short wave station.

March 31: 18 cm. Micro-Rays used in transmission between Dover and Calais.

April 26: W2XCR, New York, began operating as a television station.

June 3: English Derby, Epsom Downs, televised for the first time by John L. Baird.

June 15: Empire State Building selected as site for television station by RCA. Ultra-short waves to be featured.

July 21: W2XAB, experimental television station, opened by CBS in New York.

September 24: U. A. Sanabria, using a 10-foot screen, demonstrated television at Radio Electrical World's Fair in New York.

December 12: 15 nations participated in tribute to Marconi on thirtieth anniversary of first transatlantic signal.

December 25: Combined NBC Red and Blue networks broadcast direct from the stage of the Metropolitan Opera for first time.

1932. January: NBC broadcasts for the first time from a war zone when Floyd Gibbons broadcasts happenings in Manchuria.

February: Radio gives world-wide coverage to Olympic Games for first time.

May 23: Cuba links together 4 stations to form first network.

June: Republican and Democratic conventions covered by record radio networks.

December 1: Ribbon, or Velocity mike, is placed in use by NBC.

December 10: First radio program ever rebroadcast from Java is heard in U. S.

1933. March 4: Record amount of stations carry 7-hour broadcast of inauguration of President Roosevelt.

April 4: Dirigible Akron crash is covered by network mobile units demonstrating the value of units for special event coverage.

November 11: NBC studios in Rockefeller Center dedicated.

November 20: Broadcast stations successfully maintained two-way communication with U. S. Army stratosphere balloon with listeners able to tune in conversations.

1934. May 1: WLW, Cincinnati, begins operation on 500,000 power watts.

July 11: Federal Communications Commission organized to succeed Federal Radio Commission.

October 2: Mutual Broadcasting System begins operation with hook-up, consisting of WOR, WGN, WLW and WXYZ.

October 9: Supreme Court of United States upholds Dr. Lee de Forest as inventor of regenerative or "Feed-back" circuit.

1935. February 1: Television Committee of British Government suggested England establish television as a public service immediately.

March 11: Anning S. Prall appointed chairman of FCC.

April 25: Giant world-wide radio hook-up pays homage to Marconi on his 61st birthday.

May 7: RCA announces plans to spend \$1,000,000 for field television tests.

June 1: MBS begins interchange of programs with Canadian Broadcasting Company.

July 1: MBS joins Proprietary Drug Association.

August: NBC stages most extensive field broadcast hook-up in radio history at army maneuvers.

October 1: MBS opens first radio playhouse in New York.

October 1: WGN opens new \$500,000 studios.

October 2: Three major networks cover World Series for first time as a whole.

September 29: CKLW joins MBS.

December 7: NBC studios in Hollywood dedicated.

December 18: Federal Radio Education Committee, consisting of 40 members, is named by FCC to co-ordinate educational and cultural broadcasting.

December 27: Lenox Riley Lohr elected president of NBC.

1936. January 1: MBS gross billings for past year total \$1,000,000.

February 26: Hearst adds to radio holdings with purchase of four additional stations.

March 1: First television wire circuit, called a "see-line," links Berlin and Leipzig.

March 11: Prall reappointed FCC Chairman by President Roosevelt.

March 19: CBS purchases KNX, Hollywood, for \$1,300,000.

June 27: President Macfarlane announces MBS to go coast-to-coast, affiliating with Don Lee network on coast.

June 31: NBC announces combined Red and Blue network of 101 stations.

July 1: Colonial Network becomes affiliated with MBS.

August 28: Iowa network, Central Broadcasting System, and three stations become affiliated with MBS.

November 15: NBC celebrates tenth anniversary.

December 11: Abdication of King Edward heard over what is believed to have been the largest radio hook-up ever made.

December 29: MBS goes coast-to-coast.



**THE
EDUCATIONAL
AND
CULTURAL
SIDE**



Culture

The soul is plastic, and a person who every day looks upon a beautiful picture, reads a page from some good book, and hears a beautiful piece of music will soon become a transformed person—one born again.

—JOHN RUSKIN.

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

As of January 10th, 1938

<i>Call</i>	<i>Institution</i>	<i>Address</i>	<i>Director</i>
KFDY	S. Dak. State College	Brookings, S. D.	S. W. Jones
KFJM	Univ. of N. Dakota	Grand Forks, N. D.	D. R. Jenkins
KFKU	Univ. of Kansas	Lawrence, Kansas	Harold G. Ingham
KFUO	Concordia Theol. Semy.	St. Louis, Mo.	Herman H. Hohenstein
KOAC	Oregon State College	Corvallis, Oregon	Luke J. Roberts
KUSD	Univ. of S. Dakota	Vermillion, S. D.	B. B. Brackett
KWSC	State College of Wash.	Pullman, Wash.	Kenneth E. Ycend
WBAA	Purdue University	Lafayette, Ind.	Clarence E. Danmon
WCAL	St. Olaf College	Northfield, Minn.	M. C. Jensen
WCAT	S. Dakota School of Mines	Rapid City, S. D.	C. M. Rowe
WESG	Cornell University	Ithaca, N. Y.	Wilmer S. Phillip
WEW	St. Louis University	St. Louis, Mo.	Richard W. Cross, Jr.
WHA	Univ. of Wisconsin	Madison, Wis.	H. B. McCarty
WHAZ	Rensselaer Poly.	Troy, New York	W. J. Williams
WILL	Univ. of Illinois	Urbana, Ill.	Jos. F. Wright
WNAD	Oklahoma University	Norman, Okla.	T. H. Beaird
WOI	Iowa State College	Ames, Iowa	W. L. Griffith
WOSU	Ohio State University	Columbus, Ohio	R. C. Higgy
WRUF	Univ. of Florida	Gainesville, Fla.	Garland Powell
WSAJ	Grove City College	Grove City, Pa.	H. W. Harmon
WSUI	State Univ. of Iowa	Iowa City, Iowa	Carl Menzer
WTAW	Texas A. & M. College	College Station, Tex.	Eugene P. Humbert
WIXAL	World Wide Broadcasting Foundation	Boston, Mass.	Walter S. Lennom
	Cleveland College	Cleveland, Ohio	Gazella P. Shepherd (Mrs.)
	University of Kentucky	Lexington, Ky.	Elmer G. Sulzer
	Western State College	Kalamazoo, Mich.	W. G. Marburger

Trends of
RADIO and TELEVISION
and
NATIONAL POLICY

as outlined by

T. A. M. CRAVEN

Chief Engineer, Federal Communications Commission

The interesting information that follows is the governmental viewpoint from the subcommittee on Technology to the National Resources Committee of which Harold L. Ickes, Secretary of the Interior, is Chairman.

The development of broadcasting is very closely associated with the economic, political, and social history of the past 15 years. The system, methods of operation, and means of financing operations as they exist in the United States today should be considered as the almost inevitable result of the growth of an instrumentality for directly serving the public in a democracy where initiative and freedom of speech are fundamental.

EARLY RADIO

The transmission of intelligence without the aid of wires by means of so-called "wireless telegraphy" was an accomplished fact in 1900, and the human voice was transmitted by radio on various occasions subsequent to 1911. It was not until 1920, however, that regular programs were broadcast for the reception of the general public. By March 1, 1922, there were 60 broadcast stations licensed and in operation in the United States.

Because of inadequate legislation, the industry had fallen into a state of chaos before 1927 as the then existing law (Radio Act of 1912) did not give the Secretary of Commerce (who was charged with the enforcement of the Act) sufficient authority to designate the frequencies, locations, and power of broadcast stations. Licenses had to be issued to all applicants without regard to ability to render service or construct and operate satisfactory equipment. As a result of this situation, by 1923 there were 573 stations and the peak was reached early in 1927 when there were 732 stations in operation.

Coincident with the growth in the number of stations was the increasing number of receivers in the hands of the

general public. In February 1922 the Secretary of Commerce released the following statement: "The Department estimates that today over 600,000 persons possess wireless telephone receiving sets, whereas there were less than 50,000 such sets a year ago." It was estimated that by 1927 the number of receiving sets had grown to 6,500,000.

The invention making broadcasting possible and providing the foundation on which practically all forms of communication rest today was the three-element vacuum tube invented by Dr. Lee DeForest in 1906. It was intensively developed during the war for use in radio equipment for military communications and these tubes further perfected made possible the first broadcast transmitters and were used in part of the receivers.

TECHNICAL ADVANCES

Matching strides with the increase in the number of stations and receivers were improvements in transmitter design and increases in station power. The first transmitters were very crude affairs when compared with those in use at the present time. The power output was low, the frequency unstable, and the percentage of modulation below that now considered necessary to make the best

use of the power. In 1922 the majority of transmitters were of 100 watts power or less and few exceeded 500 watts power. Microphones and speech amplifier equipment were such that the transmitted signal was of relatively poor quality. As the need for better quality programs increased, broadcasters realized that the equipment in use did not transmit a signal which sounded natural when received and there was a continual improvement in the standards of equipment used. It was also found possible to increase the transmitter power without sacrificing the quality of the signals transmitted.

RECEIVERS

In step with the development in transmitters was the continued improvement in receivers. The first receivers were small affairs using either a crystal detector or an "audion tube" and reception was only obtained through the use of headphones. When tubes were used numerous batteries were required. Within a few years receiver engineers were able to place in the hands of the public instruments which employed several tubes and operated small loud speakers. These receivers gave poor quality of reproduction judged by today's standards; they required numerous unsightly and inconvenient batteries, were not selective and were frequently rather temperamental and difficult to operate. About 1924 "B eliminators," which replaced part of the receiver batteries and drew their power from the house lighting circuit, were introduced. With the advent of the first entirely alternating-current operated receiver in 1925, the industry was given a great impetus toward a wider market. Today the broadcast receiver is a standardized piece of equipment which is manufactured in specially equipped plants and assembled on a production line similar to those developed in the automobile industry. The present receiver is so simple to operate that a child can easily tune in programs. The quality of reproduction is such that with the best high fidelity receivers it is very difficult to discern the difference between the received program and the original rendition in the studio.

PROGRAMS

The early programs consisted of phonograph records; musical selections, both vocal and instrumental; news; broadcasts of sporting events; etc. Early programs were usually presented by performers who gave their service gratis for the thrill of it or the prestige of having performed on the radio. As public interest in and appreciation of good pro-

grams grew, stations acquired regular staff artists, announcers, and program directors, who were paid for their services. This permanent station personnel was then able to develop a technique distinct to broadcasting and to edit and present better programs.

The first broadcasting chain was formed in November 1926 for the purpose of distributing a high class of broadcast program service. The development of this chain presented a nationwide system of distribution for a single program, making it possible to obtain the services of better artists and musicians. Another chain was founded in 1929, supplying a second chain program service on a national basis, and in 1936 a third national chain was established. There have been several other chains of local or regional character established.

Programs, when broadcast by a modern transmitter and received and converted back into sound energy by a good receiver, are entirely satisfactory for the enjoyment by the general public of the best musical and dramatic events. Programs originating in foreign countries are received at specially equipped receiving stations and rebroadcast by domestic stations. In this way events of international interest can be brought to the listener's fireside.

FCC FUNCTIONS

The present phase of broadcasting may be considered as dating from the signing of the Radio Act of 1927 by President Coolidge on February 23, 1927. This act created the Federal Radio Commission with powers to classify radio stations and regulate radio communications in all forms. This body immediately began the difficult task of bringing order out of the chaos which existed in the hours, power, and frequencies in use by the broadcast stations at that time.

The Federal Radio Commission was succeeded in 1934 by the Federal Communications Commission, created by the Communications Act of 1934, which, so far as broadcasting is concerned, has practically the same powers as its predecessor. At present broadcast stations are classified according to class of service, whether local, regional, or national in coverage, appropriate amounts of power assigned to various stations according to class, and operation authorized on frequencies in keeping with the class of service and licensed power of each station.

BASIC DEVELOPMENTS

Recent developments in the receiver industry are more in the nature of im-

proving inventions which were applied to equipment which has been generally in use for several years. Probably the most outstanding basic developments which affect the receiver are the super-heterodyne circuit, the multigrid tube and automatic volume control. Effective automatic volume control was possible only after the adoption of the multigrid tube, but its subsequent development should be considered as a separate step in the perfection of the receiver as we know it today. The multigrid tube made possible the commercial development of more sensitive and selective receivers which extended the distance at which the public could obtain satisfactory broadcast reception from existing stations. A fourth important step in receiver development was the perfection of the alternating current operated tube which made it possible to operate the receiver with power taken from the house lighting circuits.

CURRENT TRENDS

Present trends in the design of broadcast receivers are toward an increased frequency range thus allowing the use of only one receiver to cover the major portion of the radio frequencies in use for communication, and variable selectivity or band width control which allows the user to render the tuning very sharp in locations where interference is severe or signals are weak, or, the tuning can be made broad for the reception of high fidelity (more natural) signals.

There has been an increasing interest recently in the development of receivers to operate from 32-volt farm lighting plants and from 6-volt storage batteries. These receivers can then be used in out-of-the-way farm locations where ordinary electrical power is not available. A wind-driven generator has been developed for charging the 6-volt storage batteries, thus providing for continuous satisfactory operation of the radio receiver at a reasonable cost.

An important recent phase of broadcast receiver development has been the introduction of automobile receivers. Some understanding of the magnitude of this branch of the industry may be gained from the following fact: That during the year 1935, approximately 1,000,000 automobile receivers were sold, these sales accounting for 18 per cent of the total retail volume of radio receiver sales for the year.

BROADCASTING TODAY

Broadcasting is today an integral part of the everyday life of most people in the United States. It brings to the fire-

side finer entertainment than has heretofore been available to the average individual. This entertainment includes comedy, drama, popular music, and concert music. The gaining interest in classical musical programs is evidenced by the hearty response to the Sunday evening classical hours. Sports have an important place on the program schedules of most stations, particularly during the baseball and football seasons.

An important function of broadcasting is, however, the conveying of direct information to the listener. This includes news broadcasts, weather reports, and storm warnings which are of major importance in certain sections, and market and livestock quotations which are an aid to those interested. Broadcasts by public health authorities have rendered notable assistance in preventing the spread of disease in times of crises such as that caused by the recent widespread floods in the eastern part of the United States. A notable service which may be classified as direct information is the discussion of current topics by prominent individuals in the fields of government, economics, and sociology which helps to acquaint the average individual with the numerous problems incident to modern civilization and assists him in arriving at better conclusions relative thereto. In this respect it has the effect of clarifying the thought of people on current topics and speeding their decisions in national problems. It is possible today to present to a nation within a few minutes through the medium of broadcasting information and discussions which would have been utterly impossible 15 years ago. This fact has a very striking effect upon the mobility of thought and opinion.

Broadcasting, with its direct personal appeal, its easy and ingratiating entrance into the home, is in short the most effective and can be the most formidable means of mass communication which man has yet had the privilege of using.

An accurate estimate of the effect of the growth of broadcasting on related industries is difficult as it has affected many industries. It has provided a new field for many already established electrical manufacturers and for the establishment of other manufacturing industries for the production of radio transmitters, receivers, tubes, and associated equipment. Broadcasting has produced a new group of retail organizations which employ salesmen and technicians for the purpose of selling and servicing receivers. There are, in addition, many independent technicians who gain a livelihood through the servicing of receivers.

Broadcasting has provided a new field of employment in the operation of the physical equipment and the preparation and presentation of programs for broadcast stations.

As the intensive growth of broadcasting has coincided with the growth of sound movies, it is difficult to evaluate separately its effects. Many of the musical activities which were previously confined to the concert hall have been transferred to the motion picture and radio studios. This has helped to make tremendously popular outstanding members of the musical world. It has raised the taste of the public in musical performers and in so doing adversely affected the small itinerant musical organizations which were known 15 to 20 years ago. In spite of this and the decrease in demand for musical individuals and organizations, since the advent of broadcasting and sound pictures, it is believed that there is an increased interest in the production and enjoyment of music by the amateur musician and music lover.

IMPROVEMENT TRENDS

One certain line of improvement will be directed toward the production of high-fidelity receivers at lower cost. Further steps will be made in adapting variable selectivity to receivers to provide for high-quality reception where signals are strong and interference not severe. This change in selectivity with the strength of the received signal strength will eventually be accomplished by automatic means within the receiver itself. There is at present in the laboratory stage a device which provides for semi-automatic tuning of the receiver. This device is not wholly automatic but when the receiver is tuned to the approximate frequency of a desired station the device accomplishes the fine tuning adjustments necessary for high-quality reception. The adoption of this device will aid materially in the production of remote control receivers. Eventually, it is expected that receivers may be designed which are wholly or partially "push button" operated, the selection of any desired station being accomplished by merely pressing the proper button.

Increasing attention has been given recently to development of receiving antennas which discriminate against electric interference and reduce the effects of atmospheric interference, thus enabling satisfactory reception of programs in locations where noise has heretofore made such reception impossible. Antennas of this type will receive an increasing amount of attention within the near future and it is probable that with-

in a short time most receivers will be sold complete with a properly designed antenna system.

As previously stated, broadcasting was made possible through the invention of the vacuum tube. Modern broadcast receivers make use of vacuum tubes which have been modified from the original design only through the addition of elements and their rearrangement. The recent development of a tube known as the "electron multiplier" may eventually supplant the present-day vacuum tube in broadcast receivers.

Taken as a whole, the present-day broadcast receiver is a very satisfactory instrument which has attained a fairly high degree of perfection. Major changes in its construction and mode of operation are not anticipated. Changes when made will be more of the order of refinements than radical improvements.

BROADCAST BANDS

The conventional broadcast band has heretofore occupied the portion of the radio spectrum between 550 and 1,500 kilocycles. Recent amendment of the rules and regulations of the Federal Communications Commission extended this band to include in addition those frequencies between 1,500 and 1,600 kilocycles. At present broadcast stations will only be assigned to three additional frequencies, namely 1,530, 1,550, and 1,570 kilocycles. These stations will be known as special broadcast stations; they will be limited to a power output of 1 kilowatt and licensed specifically for the purpose of conducting experiments or investigations which will lead to better quality of transmission, increased coverage through study of antenna design, and studies of public acceptance of high fidelity programs. Eventually, these frequencies may be made available for the use of conventional broadcast stations with certain requirements as to quality of transmissions and methods of operation.

Recent use of directional antennas for the purpose of limiting the amount of energy transmitted in any direction in order to protect other stations on the same or adjacent frequencies from undue interference or to enable a station to better serve a city or other populous area from a given location has produced gratifying results. The use of directional antennas on some of the frequencies will allow the placing of stations within areas where present broadcast service is inadequate without increasing interference to the reception of other stations operating on the same frequencies.

It is expected that among other improvements in transmission will be the use of greater power to provide a more favorable signal to noise ratio. The records of the Commission indicate that approximately 23 per cent of the area of the United States, in which 64 per cent of the total population resides, receives primary service from some broadcast station. This leaves approximately 36 per cent of the population dependent upon secondary service. Primary service is that service throughout a continuous area from a broadcast transmitter where an adequate signal is laid down and no interference is experienced from other broadcast stations and no objectionable fading is found. Secondary service is considered as that service rendered outside the primary service area by signals, which may, on occasion, be subject to severe fading, atmospheric interference, etc. Increases in power when coupled with properly designed antenna systems greatly extend the primary service areas and increase the percentage of the time in which satisfactory service is obtained in the secondary service areas.

RADIO WAVES

Recent studies of the propagation characteristics of radio waves indicate the desirability of using certain of the very high frequencies to secure limited local coverage for certain services. The transmission characteristics of the frequencies above approximately 40,000 kilocycles are such that satisfactory transmission is possible over a path which extends to the visible horizon. This is, of course, a function of the height of the transmitting and receiving antennas. This is a very desirable characteristic in frequencies for use in a service designed for local coverage only, as similar stations may be assigned to the same frequency at not too distant points without danger of interference. It has also been found that atmospheric interference (static) is much less severe on the very high frequencies. At present noises generated within the receiver at these frequencies are the important factors in limiting their usefulness. Receiver noises can, however, be reduced or eliminated through the development of new tubes and receiving equipment specially adapted for very high frequencies, whereas the reduction of atmospheric interference is a much more difficult problem. In addition there is the serious problem of man-made static such as industrial interference and interference caused by automobile ignition systems. It will be necessary to reduce this type of interference materially by improvements in the design of the auto-

mobile and other apparatus used as these frequencies come into greater service. There are some indications that the use of frequency modulation in the transmitter may overcome some of these difficulties. However, this will result in the need for specially designed receivers.

A phase of broadcasting which has widespread effect and is potentially an important factor in the creation and continuation of international good will is international broadcasting. Many of these stations broadcast musical programs, news bulletins, talks, etc., in languages other than the native language for the reception of foreign listeners on frequencies between 6,000 and 25,000 kilocycles. Needless to say, news digests, speeches, etc., which are colored to present a pleasing picture of the Government or other organization broadcasting, will have some effect upon the opinions of listeners in foreign countries.

An increasing amount of effort is being expended in perfecting the mechanism of rebroadcasting, and frequently European programs are presented to American listeners with little impairment of quality due to the long distance over which they have traveled. The reception of programs direct from foreign broadcast stations and the rebroadcasting by United States stations of similar programs are important factors in fostering international brotherhood and good will, and through the development of better receiving equipment, increases in transmitter power and the use of directional antennas, it will be possible to continually improve the quality of this reception.

BROADCASTING—VISUAL

There are two types of visual broadcast transmission which have great potentialities for service to the public; they are television and facsimile. Television has received a great deal of public attention, and the industrial research organizations, interested in the development of the electronic arts in this country, have spent tremendous sums of money in its study. This intensive research and development continues at the present time.

The transmission of television images through the medium of wire or radio circuits has been an accomplished fact for at least 10 years. The first pictures were crude, the reproduction imperfect when compared with the modern motion picture and it has been felt by the industries that no system of television would be commercially feasible or receive any measure of public acceptance which could not transmit pictures of sufficient

size to be readily usable in the home and of sufficient definition to compare favorably with the present motion picture. Research has centered around these two important factors.

The first systems made use of mechanical means of picking up and reproducing television pictures. What appeared to be a limitation to this means of pickup and reproduction was soon found and, while mechanical methods have not been abandoned, attention was turned to wholly electrical systems. Recent developments in the United States and abroad indicate that a fairly satisfactory picture, approximately 6 to 8 inches square, can now be transmitted by wholly electrical systems, making use of the very high frequencies previously mentioned as a transmission medium.

The system of pickup, transmission, reception, and reproduction required for television is necessarily complex. There are many different systems and many phases of the subject being studied by the various laboratories of the world. It is desirable that before any system of transmission be standardized for use in a country that the organization doing the standardizing, whether it be commercial or governmental, be satisfied that the system under consideration is the best available, that it is adaptable to continual improvement without rendering existing equipment obsolete and that all organizations wishing to transmit television signals will employ the standard system. Television will be a reality in the United States when it appears that a system has been evolved which meets these requirements and that there is a sufficient public interest and support to warrant the establishment of stations to broadcast television programs. One of the limitations which exists today in providing a Nationwide broadcasting service in the United States is the lack of available channels to accommodate television because each such station requires a very large portion of the radio spectrum; for example, 600 times that required by the ordinary aural broadcasting station.

There is also some doubt as to whether the low frequencies which are already being used by existing services other than television will be suitable for rendering adequate television service to rural areas even though it be television of low definition. In any event, if rural areas were to be given low definition television and urban areas high definition television, it is certain there would exist economic and other problems in the production of two types of receivers and a certain amount of discrimination.

Thus it appears necessary to concentrate television development or means which will enable the occupancy of smaller space in the ether, cheaper costs and methods enabling the standardization of transmission for both urban and rural areas.

The development of receivers for television has progressed to the point where it is stated by several manufacturers that, should a system of transmission and reception be standardized and public acceptance of television warrant quantity production of receivers, they could be marketed at a cost comparable with that of the home refrigerator. Such a receiver would include provision for the reception of the sound associated with the television program.

The transmission and reception of facsimile may be adapted to present-day radio receivers and there are available at the present time facsimile recorders which, when connected to the ordinary broadcast receiver and actuated by proper signals, will print a newspaper complete with pictures right in the home, though probably on a limited scale.

Who is there today who can predict with any degree of accuracy the effect on our home life and our business life of this new communication facility? It is possible today to sit in one's home and listen to voice and music from the far corners of the earth. In the future, this aural intelligence may be supplemented by another appeal to the senses; namely, the ability actually to see what is going on at some remote point, as well as to hear it. Recent tests in this country and abroad have demonstrated this possibility to be entirely feasible, and it is only a matter of refinement in development, reduction in costs, and providing and organizing adequate facilities to extend the available service from a few miles to many thousands of miles.

Color television is already a laboratory accomplishment. It, too, may become practical before long. Developments have already been started in three-dimensional sight and sound and, if we consider past progress in this field, is it too much to expect that a future generation of Americans will be able to sit at their firesides and see reproduced before them in actual colors and in three dimensions, both visually and acoustically, scenes which are being instantaneously transmitted from the interior of some forest, accompanied with all the fragrant odors of nature, and eventually the addition of a vicarious, tactual sensation?

RADIO PRODUCTION

for the

EDUCATIONAL BROADCAST

- - - some constructive and interesting thoughts from the KSTP Conference on Educational Broadcasting, St. Paul, Minn., 1937



"Sixteen years of experience in broadcasting has taught that radio's chief role as a teacher is to stimulate thinking; to inspire listeners to study and follow up what the unseen teacher can merely call to their attention."—ORRIN E. DUNLAP, JR., in *The New York Times*, September 12, 1937.

INTRODUCTION

Education is essentially an individual problem. It cannot be denied that radio has had a profound influence on the attitudes and standards of the entire nation and of the world at large, but the modern phenomenon of broadcasting has yet to be analyzed from the individual's standpoint. The radio audience is a mass audience measured in millions, each listener reacting as an individual, and not as one of a group. It therefore becomes apparent that educational broadcasting must be considered from both ends of the telescope.

What Is Educational Broadcasting?

According to John Dewey, education is life itself. Modern broadcasting is the reflection of our life and times, and it follows therefore that much that is on the air is educational in the larger sense. Education, however, specifically implies control, the control of that experience which is given the individual to prepare him for the adjustments he must make to society. True education on the air must consequently satisfy the demands that are inherent in all educational activity. It must not be a random method of trial and error. It must have purpose, coherence, unity. Perhaps no definition should be attempted, for all definitions are confining, and educational broadcasting recognizes only the limitations of space and intellect in its ultimate possibilities. It can be applied to an infinite field of experience. It can serve individuals in every walk of life at the farthest reaches of the world. An explorer in the antarctic, an aviator fly-

ing his course across the sea, the lonely ranger on some mountain top—all are listeners in the universal classroom.

Regimentation has no place in the field of radio education. We must develop the free mind, the questioning mind, untrammelled by dogmatic and stifling codes or edicts. We must carefully discriminate between true education and propaganda. We must remember, as Hendrik Willem Van Loon has said, that "there are no dull subjects in education. There are only dull teachers." We must also remember that there are dull pupils and that our efforts will never attain the popularity of a Jack Benny or a Charlie McCarthy, for education is not a "show." There are millions of minds, however, waiting to be awakened, stimulated, challenged, by broadcast education that is vital and direct in its appeal, in the hands of teachers who possess commanding personalities and the urge to adventure into new fields. Here then is our definition.

Educational broadcasting is the dissemination by means of radio transmission of knowledge, skills, and appreciations for the purpose of teaching the individual what life is, was, could be, and ought to be. And we should add that he who defines and runs away may live to define another day.

The Production Unit for an Educational Program

As radio broadcasting has grown, its personnel has become highly specialized. There was a day when the program was produced without rehearsal, script, or talent. The major criterion was audibility. The studio might be any vacant storeroom, its walls covered with burlap or monk's cloth. And a handful of listeners extending through a region up to fifty miles from the transmitter strained ears for the thrill of hearing sound, any sound, over the "wireless."

Broadcasting today is an art, and the effective program is the product of trained technicians and artists. A carefully organized staff is necessary to any program, regardless of its purpose. The modern broadcasting station has its production staff, announcers, sound effect engineers, control operators, script writers, casting directors, music directors, publicity experts, promotion department, entertainers, booking agency, traffic division, and many other divisions of personnel. The successful producing unit for an educational program must be similarly organized, although on a smaller scale.

Using the Educational Program

The educational program is of no benefit unless it is heard, and to assure an adequate audience for these broadcasts the establishment of listening groups is a valuable aid. European broadcasting has made great progress in this field. Thousands of listening groups follow various programs regularly, in private homes, in schools, colleges, universities, or public meeting places. The topic of the broadcast is discussed by members of the group at the conclusion of the program, and a leader directs a study program of outside reading correlated with the entire series.

Like listening groups for the adult, the classroom in the school is the logical unit for broadcast reception. However, the mistake is frequently made of permitting too many students to listen in a single group. Proper equipment for the school demands an individual

loudspeaker or radio receiver in each classroom to keep the group within a maximum of forty or fifty. If the single receiver is placed in an assembly hall before an audience of a thousand or more, no program has sufficient appeal to hold the attention of such a group. The intimacy and directness that are essential to an effective broadcast are lost because of the inevitable distractions present in large audiences. The assistance of the teacher in a follow-up discussion of the broadcast is lacking.

It is a requisite of all good educational broadcasting that the facts or opinions stated on the air lead to further thought on the listener's part. The radio program acts merely as an assistant teacher, to borrow a phrase from Ben Darrow. She in turn must assist the program by preparing her students in advance of the broadcast. If the program discusses great artists, the teacher has secured reproductions of the familiar Titians, Rembrandts, and Michelangelos for display in the class. They have learned something of the lives and times of the great masters. Their interest has been aroused, and they are ready for the radio presentation of the subject and for further discussion at the close of the program.

David Sarnoff of the Radio Corporation of America has said: "We have what seem to be two fundamental departments in education. The first is the training of the mind; the second, the feeding of the mind. Radio, in common with other forms of mass communication and entertainment, belongs to the second of these two educational fields. Radio programs can be created to inform the mind and elevate the spirit, but when one seeks to impose upon them the requirements that they also furnish mental training and discipline, one narrows their appeal and risks the dispersion of the invisible audience, thereby defeating the purpose for which the program was prepared."

This is the principle which has guided us in calling the Conference on Educational Broadcasting, and if we can contribute to the greater service of education in the feeding of the mind, we shall have made definite progress in realizing the ultimate possibilities of radio broadcasting.

Future Developments in Radio Education

During the past decade great advances have been made in the tech-

nical end of radio communication. We have all been familiar with the progress of radio broadcasting from a somewhat interesting toy to one of the greatest mediums of informal education. Other engineering advances have taken place that may have considerable bearing on the use of radio by the public. Most highly publicized probably, is television. The engineering of television transmission and reception has now progressed to a point where very satisfactory pictures can be reproduced in the home. While further improvement is needed and will undoubtedly be made, television at its present state of development could be used by the public with considerable satisfaction. To date, no television receivers have been made available to the general public.

A number of factors such as standardization of frequency bands, line and frame frequency, etc., determine the ultimate set design and must be universally agreed upon by the various manufacturers to prevent later obsolescence of equipment. This fact, together with the necessity for reduction in cost of both receiving and transmitting equipment, has convinced those responsible for its development that television is not ready for general use.

Facsimile, the transmission of single pictures by wire or radio, has progressed to an advanced stage and has been used to a very great extent over the past few years in the transmission of pictures for newspaper use with which we are all familiar. There is every indication that such transmission by radio for reception in the home will soon come into general use. The degree of definition possible in picture transmission is limited only by the cost of the transmitting and receiving apparatus, and even with moderately priced equipment, very satisfactory pictures can be transmitted.

The increased use of high frequency for radio transmission has opened up a new field of service for broadcasting. The so-called international broadcast on the medium-high frequencies has been in somewhat general use for several years and has undoubtedly contributed greatly both to international understanding and in giving radio service to many localities which were without normal broadcast service. The use of so-called ultra-high frequencies

for local broadcasting promises to make facilities available for much needed additional broadcasting. Since these frequencies, by their general nature, do not travel to any great distance, it is possible to duplicate such a service on the same frequencies in a great number of localities. The further use of the ultra-high frequencies will undoubtedly result in the wider use of radio broadcast for many special services such as educational broadcasting.

The past few years have witnessed a great increase in the use of so-called relay broadcasting, where a radio channel outside the broadcast band is used to carry a program from some relatively inaccessible, remote point to the studio for transmission over a regular broadcasting station. This service has made available to the radio audience a great number of broadcasts of public interest originating at points where either the total inaccessibility of wire services or the prohibitive cost of this service would have precluded the broadcasting of such a feature.

The improvement in technical standards of fidelity, both in transmission and in reception has undoubtedly made radio broadcasting a much more acceptable medium for the reproduction of good music. While the present receiving equipment used by the average listener still falls far short of satisfactory reproduction especially in the case of symphonic music, we have every reason to believe that further improvements will be forthcoming in receiving sets which will still further enhance the value of this medium for the proper enjoyment of good music that is not available to that audience by other means.

In general, these new developments will make possible the use of high frequency channels by school control systems over a small area, and also, with the advent of visual elements in radio transmission, it is entirely possible that the pages of text books, maps and charts, pictures of an opening session of congress, all will be practically achieved. The end result will be a further vitalization of the supplementary influences of education and the introduction of new and genuinely exciting teaching additions into the classroom. The world in reality, both through sound and sight, will be brought to the smallest school house in the backwoods.

RADIO MANUAL

for school and non-professional groups



Following are suggestions to school and non-professional groups for the production of radio programs, prepared by the Educational Radio Project of the Office of Education, United States Department of the Interior.

Information on other sources of scripts useful for school or camp groups may be obtained from the Educational Radio Project, Office of Education.

PURPOSE

Numerous requests from schools and other educational institutions have reached the Office of Education for radio scripts and suggestions for improving local educational radio programs. To help meet this demand the Office of Education in cooperation with the National Association of Broadcasters has prepared a series of six scripts entitled "Interviews with the Past". This manual is designed to suggest steps to be taken in putting these scripts on the air. The scripts have been prepared by the script division of the Educational Radio Project of the Office of Education, Department of the Interior.

THE SITUATION

Local station managers want educational programs. Schools and other educational institutions want to use radio. But station managers demand—and with reason—that educational programs have worthwhile material presented in a manner that will interest and hold listeners. Radio can be an important avenue of communication between school and community *when skillfully* used, and if skillfully used, can develop a cooperative relationship between schools and radio stations for the betterment of the community.

ORGANIZATION

As the first step in the organization of this plan for high school and college radio production, it is suggested that the local superintendent of schools call a meeting of those persons immediately concerned with and interested in this project, namely the high school princi-

pals, drama coaches, or any other person or persons who would be interested in the project and competent to carry it forward. This group should consider the plan and appoint a committee to contact the local station manager.

CONTACTING THE LOCAL STATION MANAGER

The importance of winning the cooperation of the local station manager cannot be overestimated for the success of this project will depend to a great extent upon the manner in which the approach is made. Do not under any circumstance assume a demanding attitude. Remember that time on the air is valuable. A station manager makes his plans far ahead. In all probability the station manager will be receptive to the plan and grant time on the air because—

- (a) It gives him a program service at no cost to his station.
- (b) It can be an audience builder for his station.
- (c) It will create valuable goodwill for his station in and around the community.
- (d) It will help him fulfill the "public interest-convenience and necessity" obligation which is part of his license agreement.

If and when the station manager grants the time (15 minutes per week) be sure to—

- (a) Arrange audition time so that acting and announcing talent may be auditioned on a microphone at the

studio in order that the Director can select those who are to take part in the actual broadcasts.

- (b) Ask the station manager whether it would be possible to have him arrange for an informally conducted tour of his studios so that everyone concerned with the broadcasts may become immediately acquainted with the environment in which he is about to work.
- (c) Arrange for rehearsal time preliminary to actual broadcast. For most broadcasts 2½ hours in the studio may be considered adequate.
- (d) Request the services of a technician for the complete rehearsal time as well as the broadcast time.
- (e) Tell the station manager that this rehearsal, preliminary to the broadcast, will require the use of microphones.
- (f) Request the services, if and when possible, of the station's production director or an announcer who has had some experience in directing radio programs.
- (g) Request the station manager to co-operate in stimulating and preparing public interest in these broadcasts. News releases should be prepared by the radio group and submitted to the station manager for his approval. Either the station manager or the students may make the contact with local newspapers. School publications should carry advance notice. Preparation of the audience before the broadcast is vital.

ORGANIZATION OF RADIO GROUP

After these preliminary arrangements have been made the radio group which is to do the actual broadcasting should be selected at least two weeks in advance of the first program and a faculty member placed in charge. If the local station cannot supply a director or experienced announcer, the duty and responsibility of directing the programs may be delegated to the teacher or to a student who has special aptitude in directing. The group itself may then be divided into those interested in—(a) Production. (b) Sound effects. (c) Music. (d) Acting. This should be done so that those students having special interests in these divisions of radio work may concentrate on them,

at the same time absorbing information and techniques applicable to radio in general.

REHEARSAL

- (a) At school. After the cast has been selected it is wise to call a reading rehearsal at the school for the purpose of familiarizing the cast with the contents of the script.
- (b) At the studio.
 1. Underlining: Each person should have his own copy of the script with his character name underlined in the margin each time that name appears in the margin. This is done to avoid losing the place during rehearsal or a broadcast. The importance of enlisting the help of the studio technician in the matter of microphone placement cannot be underestimated. *Remember, do not let anyone handle any equipment in the studio unless the control technician consents.*
 2. Pronunciation: If you are ever in doubt as to the proper pronunciation of a word, by all means refer to a good dictionary. If alternative pronunciations are given use the first one.
 3. Microphone placement: The technician or control man will best be able to suggest a microphone set up but the following general ideas should be kept in mind. For the purpose of this series it will be necessary to use only one or two microphones depending upon whether the studio is equipped with ribbon microphones or dynamic or condenser microphones. The ribbon microphone should be placed in the center of the studio with the actors placed on the live sides of the microphone all at a side position from the control room. By a quick glance into the control room the actors can see any time cue or position cue which the production director may wish to communicate to them. If the dynamic or condensers are available have one microphone placed in one corner of the studio and the other in the opposite corner.
 4. Orchestra: If an orchestra is used place the microphone in front of the orchestra in an ele-

vated position. Let us assume this to be a small sized orchestra. Place two violins and one viola in the first row. Behind them should be placed the woodwind instruments and the cello. Behind them are the trumpets and trombones and in the rear of the studio are the piano and bass viol each at opposite distances of each other. If any single instrument predominates it should be moved either away from the microphone or further to the dead side of the microphone. Likewise, if an instrument is too soft, shift it either closer to the microphone or closer to the live side of the microphone. *Keep in mind that the result to be achieved is a natural blending of tone.*

5. **Timing:** The entire program from the opening announcement up to and including the sign-off should be timed with a stop watch. After one or two mike rehearsals, appropriate cuts should be made if the program runs over approximately 30 seconds of the prescribed time. If the program does not run over approximately 30 seconds do not cut until after the dress rehearsal, because a smooth and polished performance is usually played at a faster tempo and the 30 seconds will have been picked up. During the dress rehearsal every half minute of time should be marked so that the director may know at any time while he is on the air whether his program is running behind, running under, or on time, as follows: (30) (1) (1:30) (2:00). The first figure noted on the director's script means that 30 seconds have elapsed, the second that one minute has elapsed, the third that one minute and thirty seconds have elapsed, etc. If after the dress rehearsal the program has still run over the prescribed time of 15 minutes, examine the script for possible cuts, making certain that important dialogue is retained and that the material to be cut leaves no gap in the story. If the program runs under the prescribed time of 15 minutes there exists the alter-

native of writing additional material or playing theme music at the close as cushion to fill the time. Remember that time is of the essence and that a program on a local station should be timed to 14 minutes and 45 seconds *exactly*. Network programs must conclude, "on the nose", after 14 minutes and 40 seconds.

6. **Signals:** When a program is on the air, the production director, observing his time notes can tell at any given moment whether his program needs to be slowed down, speeded up, or whether it is "on the nose". If the program is running too slowly, he communicates by means of a sign that he wishes the actors to pick up the tempo. This sign is made by a circular motion of the index finger.

To slow down the tempo he makes a "stretching out" gesture with his two hands as though stretching a rubber band.

To begin a scene, sound effect, or musical number, the production director points directly to the actor, sound man or orchestra conductor, as the case may be.

A sign to come closer to or move farther away from the mike is indicated by pointing to the person or persons involved and then moving them toward or from the mike.

A lifted hand, palm upward by the production director means that the voice, sound effect or music should be louder.

A lowered hand means softer.

Ask the station announcer to illustrate these signs to the group.

MUSIC

Clearing Music: Before any music, whether live or recorded can be played on the air, it is most imperative that the local station be notified at least one week in advance giving the title, author and publisher of each and every musical selection to be played or sung on the air. This is necessary so that the station manager can determine whether he has a license to use that selection. The playing of music that is not licensed would subject the station manager to expensive lawsuits and damages. Remember also that music must be "cleared" regardless of the quantity to be played or sung even if it is only one or two bars.

★ RADIO ★ GLOSSARY

Following is a list of radio terms used in the production of radio programs. Usage naturally differs in various parts of the country and studios. The following glossary of important terms are used generally in commercial studios and schools where radio technique is taught. List has been compiled by William S. Rainey, Production Manager, NBC, New York; C. L. Menser, Production Manager, NBC, Chicago; and Hunter Reynolds, Engineering Department, NBC, Chicago.



I. CONTINUITY

The radio programs you hear begin with an idea which is created by a—

SCRIPT WRITER

One who prepares the text or dialogue with the accompanying directions for sound effects, musical cues, and transitions for a radio production. He is sometimes called a—

CONTINUITY WRITER

Because in the period before dramatization became popular the chief activity of a radio writer was to keep the program continuously on the air with reading material to fill in the time between musical numbers.

CREDIT WRITER

One who writes the advertising material for a commercial program.

SCRIPT

Or "continuity" is the text of a program looking not unlike the pages of a play, since it lists the speakers or actors and the lines

they speak, as well as suggestions to the director and cast. Script applies usually to radio plays whereas—

CONTINUITY

Usually applies to text prepared to be read by an announcer only, such as introductions of musical numbers, introductions of speakers, commercial announcements, etc.

CREDIT

Also known as "plug". This is the material designed to acquaint the listener with an advertiser's product. It may be given by the announcer or by actors.

SHOW

The entire program which is to be broadcast.

SUSTAINING SHOW

A program on which time is not purchased by a commercial company. Since broadcasting companies must maintain service throughout the time span agreed upon, that time which is not sold must be filled with "sustaining" programs.

COMMERCIAL

A program paid for by an advertiser. This includes payment for time on the air as well as for the talent and script.

NETWORK SHOW

A program released simultaneously over two or more stations which are connected by telephone wire.

LOCAL

A program released only through a single station.

THEME

The same music, sound, or talk which opens and identifies a program from day to day or week to week.

TAG LINE

The final speech of a scene or play exploding the joke, or the climax speech resolving the scene or play to its conclusion.

GAG

A joke or comedy situation. A gag-show is a program made up of a succession of jokes or alleged jokes.

TIE-IN ANNOUNCEMENT

A commercial announcement given by the local station announcer immediately after a prearranged cue given on the network. For example, the network program may conclude one minute early, whereupon the local announcers in the stations carrying the network program will then consume the remaining minutes with a commercial announcement dealing with the product advertised on the network program and stating details such as where this product may be purchased locally.

TRANSITION

Or moving from one scene to another. This may be done by an announcement describing the new scene to follow, by music, by fading out of the microphone, or a short period of silence.

ACROSS THE BOARD

A program scheduled daily at the same time.

II. PRODUCTION

PRODUCTION DIRECTOR

This person is responsible for every detail of the program including the announcer, engineer, actors, musicians, and sound men. He builds and shapes the program by bringing all these factors into harmony. He may make corrections and any revision he deems desirable in the script whenever he feels such are necessary for an improved program. On his shoulders rests the complete responsibility for the quality of the program.

CAST

As a noun, the people who appear on the program not including musicians.

As a verb, the process of selecting those who are to take the speaking parts.

AUDITION

A studio test of talent or a show or both prior to a broadcast to determine whether that talent, show or both should be broadcast.

M C

Master of ceremonies.

JUVENILE

An actor whose voice carries an age quality of 17 to 24.

INGENUA

An actress whose voice carries an age quality of 16 to 24. She should have a sweet sympathetic youthful vocal quality.

LEAD

An actor or actress whose voice carries an age quality of 25 to 35. The voice should be clear, definite, heavier in quality than the juvenile or ingenue and should have a quality of authority.

CHARACTER

An actor or actress with an older voice, 35 to 60, who can do dialects or who has eccentricity of speech and characterization.

CHARACTER JUVENILE

(17 to 24) male voice in dialect or having peculiar vocal quality.

CHARACTER INGENU

(16 to 24) female voice in dialect or having peculiar vocal quality.

BIT

A small part in the cast which usually consists of a few short speeches.

PICK UP YOUR CUE

A command by the production director to an actor to begin speaking his lines immediately after the last word of the preceding speaker's last sentence.

CUE

A signal, either verbal or by sign.

AD LIB

Impromptu speaking

READ-Y

A quality of unnaturalness by an actor speaker giving the listener the feeling that he is reading rather than talking.

SNEAK IT IN

A command by the production director to the sound man or orchestra conductor to begin the sound effect or music very quietly and gradually increase the volume.

FLUFF OR BEARD

Any word or phrase accidentally mispronounced or in any way distorted resulting in an imperfect reading.

IN THE MUD

A lifeless delivery with very uninteresting quality resulting from a speaker's or actor's improper pitch and lack of nuance. Also the sound heard when the voice is spoken into a closed microphone and picked up faintly on a live microphone at a distance.

SCHMALZ IT

A command by the production director to the orchestra conductor to have the music played in a sentimental style.

ONE AND ONE

One verse and one chorus of a musical number.

CUT

A deletion of material whether spoken or musical in order to fit the prescribed time. It is also a term used by the production director in the form of a command to the engineer to close all microphones so that nothing more can go out on the air.

CLEAN IT UP

A command by the production director to the orchestra conductor to rehearse a musical number until it is perfectly rendered, or to a dramatic cast to remove all hesitations or defects in the delivery of lines.

PACE

Or speed of delivery. A variation of pace is used to express a variation of thought.

LIGHT AND SHADE

Variations from quietness to tenseness, softness to shouting, which keep a production from dull sameness.

ACCENT

Or change of emphasis in a sentence or group of sentences. This is necessary for shade of meaning, relief from monotony, and for quality of speech.

CLEARING MUSIC

Determining whether the station has a license to perform the musical number or numbers proposed to be played or sung on the air.

TIGHT

A program which in rehearsal times a few seconds over the allotted time and should either be cut or played rapidly, provided the material permits the rapid treatment.

DRESS

A program rehearsed for the last time exactly as it is to be broadcast.

STAND-BY

A command by the production man to the cast to be ready to go within a few seconds.

Also, a program whether dramatic, musical, or straight talk which is relied upon as an emer-

gency, when the allotted time for a program already on the air has not been filled by that program.

•

TAKE IT AWAY

Cue to begin a program given by a production director to engineer who relays it via direct telephone wire to an engineer at the program's point of origin.

•

DROOLING

Padding a program with talk in order to fill the allotted time.

•

DEAD SPOT

Also known as "white space" or period of silence when a program is supposed to be on the air.

•

CUSHION

When a program runs shorter on the air than it did during rehearsal, identifying theme melody is used as a "cushion" to fill in the extra time. Sometimes an extra paragraph of credit is used instead of theme.

•

ON THE NOSE

A program which, while on the air, appears to be on time to the second.

•

ON THE HEAD

A program which concluded on the exact second.

•

III. SOUND

SOUND MAN

One who creates, either by recorded effects or by manual effects the sounds required by the script.

•

PANCAKE TURNER

One who operates a sound effect machine for the purpose of playing recorded music on the air.

•

PLATTER

Musical records played on a sound effect machine.

•

ELECTRICAL TRANSCRIPTION

Sound transferred to a 16-inch disk, which revolves at a speed of $33\frac{1}{3}$ revolutions per minute, made for broadcast purposes and having high fidelity.

PHONOGRAPH RECORD

Sound transferred to a shellac composition disk of 10 or 12 inches diameter which does not have as high fidelity as an electrical transcription and is manufactured chiefly for home use. It revolves at a speed of 78 revolutions per minute.

•

IV. ENGINEERING

CONTROL ROOM

A small room usually enclosed in glass from which the engineer and production man control the program.

•

V. I.

Or "volume indicator"—a delicate instrument containing a needle which indicates the volume of sound, enabling the engineer to determine whether the "level" is too high or too low.

•

P. A.

Public Address system consisting of a microphone, amplifier, and loudspeaker. Certain types of microphone require a pre-amplifier in addition to an amplifier.

•

GAIN

The increase in volume of sound obtained in the amplifier.

•

RIDING GAIN

Controlling the amount of increase of volume of sound. The engineer does this with the aid of a volume indicator.

•

PEAKS

High points in the variation of sound which are the natural result of changes of pitch, accent, and explosions of certain consonants and vowel sounds causing the volume indicator to fluctuate in accordance with the volume of those respective sounds.

•

GIMME A COUPLE OF PEAKS

A request by the engineer via telephone line to an engineer at a remote point before the broadcast asking the remote engineer to speak into his microphone in order to determine whether the lines are clear. The phonetic yardstick used by the engineer in testing lines is "Woof" spoken explosively.

LEVEL—OR VOICE LEVEL

A test of a speaker's voice for tone and volume to determine proper distance from the microphone for best listening qualities.

BALANCE

Blending different kinds of sounds to achieve proper volume relationships such as musical background for a dramatic sequence. If the music is so loud that the dramatic dialogue is lost, a poor "balance" results. Also, the arrangements of musical groups to obtain a natural blending of tone.

MIKE

Short for microphone—an electrical device for translating sound vibrations into tiny electrical impulses which can be then transmitted over a wire or through space to a remote receiving station and there translated back into the original sound.

CARBON MIKE

Microphone which accomplishes the translation of sound into electrical impulses by the use of small carbon grains contained between two thin metal plates, called diaphragms, which are vibrated by the sound. It is no longer used for broadcast purposes in most studios because of its tendency to produce an annoying hiss.

CONDENSER MIKE

Microphone which accomplishes what the carbon mike does without the use of carbon granules by using the two diaphragms as the plates of what is known as an electrical condenser. The vibration of the plates caused by the sound correspondingly varies the electric current in the condenser and amplifier. This microphone is less sensitive than most other types and therefore requires a small amplifier within a few feet of the microphone itself and is usually built into the microphone casing or into the base of its mounting stand. There are many standard cases for this type of microphone and the various names sometimes given to it are usually descriptive of the case—the mike itself being fundamentally the same. A few examples are: camera mike, bullet mike, and desk condenser. These

mikes are still used in some studios although they are gradually being replaced by the "velocity" or "ribbon" mikes.

VELOCITY OR RIBBON MIKE

Derives its name "ribbon" from the fact that it translates the sound into electrical impulses by means of a suspended metal ribbon which vibrates in accordance with the sound between the poles of a permanent magnet. This mike is so directional in its response that sounds coming from the sides of the microphone are only faintly heard over the loudspeaker, if at all. Actors can perform "fades" very easily on a ribbon mike by merely shifting their position from in front of the mike to the side.

DYNAMIC MIKE

Microphone which obtains its name from the dynamic loudspeaker, the principle of which is just the reverse of the dynamic microphone. Whereas the dynamic speaker transmits the impulses in a moving coil of wire which is in a magnetic field, to a diaphragm which in turn translates these impulses into corresponding sound vibrations understandable by the human ear, the dynamic mike receives the sound vibration upon the diaphragm and translates these into electrical impulses in the moving coil. Although this microphone was being generally replaced by the velocity mike, it is now finding favor again in many studios in a new, improved form called the—

BALL MIKE

(or any other name by which it may be called, as, eight-ball, billiard, etc.) which is essentially a dynamic microphone about the size and shape of a billiard ball. This microphone is non-directional and sounds are therefore picked up with equal intensity from any angle, thus allowing a large cast to work around a single mike.

BRUSH MIKE

A very rugged type of microphone which looks like the frame of a metal hairbrush. Its small size and dependable ruggedness combined with high fidelity make it an excellent mike for portable and outdoor radio pickups or public address systems.

The Relationship of the Radio and Motion Picture Industries

By

W. B. LEWIS,

Vice President in Charge of Broadcasting of Columbia Broadcasting System

I played hookey one fine afternoon last September to go out to Forest Hills for the semi-finals of the National Tennis Championships. And I was back at my desk within the hour because I couldn't get in the stadium. Although Columbia had exclusive broadcasting rights to the event it didn't do me any good. As a matter of fact it hindered. I doubt if Budge or Von Cramm—had they been outside the gate at the time—would have been admitted. None of the disappointed late arrivals could get in. It was the first sell-out of a semi-finals in the history of the Forest Hills tournaments; the first full stadium since the Tilden-Lacoste finals years before. And radio broadcasting was offered by guardians of the gates as the explanation of the sell-out. Officials of the National Lawn Tennis Association later put the stamp of authority on this explanation when they told us that Husing's accounts of the matches had contributed most substantially to the record-breaking attendance that stormed Forest Hills late last summer. People rushed to see what they'd heard about.

1937 produced an all-time high in the broadcasting of football games. Atlantic Refining alone sponsored play-by-play accounts of 158 games during the course of the season. Kellogg, Socony, and a host of local sponsors added many more to the list of sponsored games. Every Saturday, in almost any city, listeners have had a chance to attend—free of charge—any or all of half a dozen games. Yet paid attendance at football games this season has been greater than it has been in any year since the days of The Big Wind of 1929. Yale—to cite an isolated example—turned away between 10,000 and 12,000 from its 78,000-capacity Bowl on the day of the Dartmouth game—the first Bowl sell-out in seven years. This, in spite of the fact that Yale Bowl games were all sponsored by Socony, with broadcasts concen-

trated on stations in the New York and New England areas. Perhaps it would be more accurate to say "because of the fact."

You and I know that all has not been sweetness and light in the relationship of the two industries insofar as it has concerned listener vs. spectator interest. I have never been able to understand this feeling—this conviction, on the part of some exhibitors, that radio keeps people away from the movies. There is only one thing that can keep able-bodied people away from the movies—or away from the radio—and that is a bad program. What, you may ask, would be the situation if all of us—movies and radio—were blessed with good programs? My answer to that would be that "there is a millennium devoutly to be desired."

Together, the radio and moving picture industries can do more to attain that end than either will ever do alone.

I purposely went into foreign fields for illustrations of how radio broadcasting arouses interest in and attracts crowds to public events. (If it didn't, we couldn't very well sell ourselves to an advertising medium, could we?) But I did it to soften any resentment that might be aroused by coming too abruptly into saying exactly the same thing about radio and the movie audience. There has been a greater use of Hollywood talent on radio programs during the past year than ever before in the history of broadcasting. And there has been greater activity on the part of box-office cashiers during this same twelve months than ever before in the history of moving pictures. Loews, Inc., as you know, has already paid out \$6 a share in dividends on its common stock this year, and another will be paid before the year ends.

Do you suppose that here might lie, in part, the explanation of MGM's consistent refusal to get excited about

how radio has cut into movies' box-office.

How many, I wonder, realize that if every seat in every moving picture house in every community in the United States were occupied at the same time, less than one-eighth of the American radio audience would be "at the movies." Whenever you hear an estimate as to the size of some specific radio audience, it is good to remember how big is the total of all radio owners before you decide that there aren't enough people left over to go to the movies. As long as people like variety in their entertainment—and they always will—and as long as people like to share excitement and pleasure together — (and they always will)—there will be no danger of radio—or *television*—supplanting motion pictures in the hearts of our citizens.

Although Radio was not originally created as an advertising medium, it was inevitable that it should have developed as it did. Offering facilities for reaching a nationwide audience with a vocal message, radio attracted advertisers as naturally as Hollywood attracts blondes. That they have found it a satisfactory medium may best be seen in the use they have made of it. Time sales on the Columbia Network in 1933 were just over \$10,000,000. The next year they jumped to nearly 15 million. In 1935, they were \$17,638,000. Last year, the total reached \$23,168,000. And this year it will exceed 28 million. Columbia's own advertisers represent nearly every major category in American industry. Tobacco? Luckies, Camels, Old Gold, Chesterfield, Philip Morris. Automobiles? Ford, Chrysler, Chevrolet, Pontiac, Hudson, Nash. Gas and oil? Texaco, Gulf, Atlantic. Food? General Foods, Campbell, Heinz, Continental and General Baking. Moving pictures? Nothing. Though you are selling entertainment, you continue to use newspapers, magazines, and outdoor as media for your advertising. Why? As advertising men you know that it is not because radio keeps your customers at home, but because radio and radio advertisers do your advertising for you in the one major medium best suited to your needs.

There are those who say that radio has contributed but slightly to the realm of popular entertainment; that radio has had to depend on the stage and screen for its creative brains and talent. I have heard it said that the steady increase in our activities on the West Coast is proof that advertising

agencies and broadcasters have failed to produce and direct successful programs; is proof that radio has failed to develop talent of its own. I can't agree. Radio first went to Hollywood to keep up with its own artists, for whom it has developed a large enough popular following to make them sure-fire timber for the movies. Each year finds more of them engaged in film work. Each year, as a consequence, finds more radio programs originating in Hollywood. If this is true, you may ask, why haven't some of these radio stars supplanted some of the really big names on the screen? For the same reason, I suppose, that none of the big screen names that have appeared on radio programs have supplanted the radio-developed stars themselves. Though each may benefit from working in the other's field, each has his own forte and each has built up his following primarily through that channel.

A friend of mine who lives in Westchester arrives at Grand Central each morning at about the same time as the incoming Century. And each morning he sees a group of people assembled to watch the arriving passengers—not to greet a friend or relative, but to get a close-up view of some celebrity. Over a period of time, he has noticed that this strange gathering has varied from a mere handful to a crowd that blocks all routine passage through the concourse.

And being of a statistical turn of mind, he has checked the size of the crowd against the people it comes to see. (Herbert Hoover, incidentally, still draws a small but loyal reception committee.)

This friend tells me that radio stars draw bigger crowds than some of the movie stars; that Eddie Cantor and Burns and Allen have had them hanging over the balcony railing to see them. "And why not?" Eddie Cantor is frank to admit that the success of his movies is the result of the nationwide following he attained through radio, and Burns and Allen's nonsense was entertaining millions before Shirley Temple was out of her cradle.

Both Radio and motion pictures are in the business of providing popular, large-scale entertainment. Beyond that, you cannot say that we are in competitive business. Because we *are* engaged in the same general work, and because we are *not* competing in the sale of our products, we are in an ideal position to work together for the betterment of the particular entertainment

each of us tries to produce. We have found, as you have found, that an interchange of talent is mutually beneficial. We want to continue to use Hollywood "big names," Hollywood stories, and Hollywood music. On our part, we are glad to see radio talent given its "chance at the movies." And we are particularly anxious that, through intelligent cooperation, we may improve the quality of the work that both industries are striving to do.

A few years ago—and how many of us have already forgotten it—serious music, symphonic and operatic, was scornfully dismissed as "highbrow," a word that is strangely synonymous with "untouchable" in the field of popular entertainment. For that reason, Hollywood — naturally enough — didn't attempt any films requiring that kind of music. Let me cite you a short list of names. Lily Pons, Grace Moore, Gladys Swarthout, Leopold Stokowski, Lawrence Tibbett, Nelson Eddy, Andre Kostelanetz.

None of these names would have had a Chinaman's chance of "breaking into the movies" a few years back. Yet all of them have been *invited* out there and given contracts. Radio, of course, explains it. Eight years ago, Columbia began to carry in full the Sunday afternoon concerts of the New York Philharmonic. "A nice gesture," people said, "but who will listen?" Truth to tell, there was no way of knowing the answer to that one—in advance. But today we know.

The Philharmonic concerts are still on Columbia, for the eighth consecutive year, and 30,000,000 people—at a conservative estimate—will have listened to one or more of them before the season is over. This is an audience that we have checked and watched grow over a period of years. Its growth gives us a graphic record of the growth in popularity of serious music. Ford, with his Sunday Evening Hour, and Chesterfield, with Andre Kostelanetz, have contributed materially in developing a large enough audience for serious music to warrant the attention of Hollywood producers.

And there, in my opinion, we touch upon the most important point in the relationship of the radio and moving picture industries. We in radio are in a much more advantageous position than you to test the appeal of new talent and new ideas in entertainment. We in Columbia devote a great deal of our time and money to this end. The Columbia Workshop is a case in point.

Last summer, Columbia offered over 98 stations, a series of eight Shakespearean plays in weekly one-hour adaptations. The plays were prepared for radio and directed in their production by Brewster Morgan of my department. Mr. Morgan attracted so much attention through the originality and quality of his work that we lost him—to MGM as an associate producer. I am working at this time on a new radio program that will feature a comedian in whom Hollywood has yet to see possibilities. Fifty-two weeks from today, that man will have a movie contract. Why? Because in those fifty-two weeks radio will have enlarged his audience from a few hundred to millions; will have created for him a popular demand large enough to remove all risks—as far as Hollywood is concerned—in signing him to the contract.

Which is as it should be. Hollywood can't afford to take chances on unknown talent or untried forms of entertainment. Radio can.

Hollywood must have some tangible evidence of what the public wants before it takes on the expense of a film production. Radio still has the facilities for experimentation. Time, network, and—most important of all—a large audience are available to us for the development of new ideas, new material, new players. Whatever survives our testing—whether it is writing, production, or talent — automatically becomes eligible for West Coast acceptance. Without the slightest exaggeration—or rancor—I think we may fairly paraphrase the slogan of the city of Trenton, N. J., to read: "What radio makes, Hollywood takes."

But we also are faced with conditions under which we cannot afford to take chances in what we offer to our audience. We have commercial sponsors, spending thousands of dollars weekly to attract large nation-wide audiences: men who cannot afford to experiment with the unknown and untried. How these sponsors have utilized Hollywood talent on their programs is too well known to mention here.

Why they have done so, I have just tried to explain. When it comes to airing a *big* program at *big* cost for a sponsor we are in the same position as picture producers. We *must* use established names. That is where cooperation is most needed in the relationship of radio and movies, insofar as it concerns both.



F O R E I G N



One couldn't carry on life comfortably without a little blindness to the fact that everything has been said better than we can put it ourselves.

—GEORGE ELIOT.

•
**Regulations; International
Broadcast Stations**

•
**International Broadcasting
Union**

•
**Department of Commerce
Activities**

•
World Markets Survey

~ INTERNATIONAL ~ BROADCAST STATIONS

*Digest of Regulations Governing Their Establishment and Operation,
Together with Available Groups of Frequencies.*



The term "international broadcast station" means a station licensed for the transmission of broadcast programs for international public reception. Frequencies for these stations are allocated from bands assigned (between 6,000 and 26,600 kilocycles) for broadcasting by Article 7, General Radio Regulations, annexed to the International Telecommunication Convention, Madrid, 1932.

A license for an international broadcast station will be issued only after a satisfactory showing has been made in regard to the following, among others:

1. That the applicant has a program of research and experimentation which indicates reasonable promise of substantial contribution to the development of the international broadcast service.

2. That the station will render an international broadcast service.

3. That the program production and experimentation will be conducted by qualified persons.

4. That the applicant is legally and financially qualified and possesses adequate technical facilities to carry forward the program.

5. That the public interest, convenience and necessity will be served through the operation of the proposed station.

(a) A licensee of an international broadcast station shall not make any charge directly or indirectly for the transmission of programs, but may transmit the programs of a regular broadcast station or network, including commercial programs, if the call letter designation when identifying the international broadcast station is given on its assigned frequency only and the statement is made over the international broadcast station that the program of a broadcast station or network (identify by call letters or name of network) is being broadcast. In case of the rebroadcast of the program of any broadcast station, Rule 177 applies.

(b) No licensee of any other broadcast station or network shall make any additional charge, directly or in-

directly for the simultaneous transmissions of programs by the international broadcast station, nor shall commercial accounts be solicited by a licensee of another broadcast station or network or by others acting in their behalf upon representation that the commercial program will also be transmitted by an international broadcast station.

(c) Station identification and program announcements shall be made with international significance suited for the foreign nation or nations for which the service is primarily intended or in which the reception is believed to be best on account of the frequency, season, hour of operation, etc.

(a) The following groups of frequencies are allocated for assignment to international broadcast stations on an experimental basis:

Group A	Group B	Group C	Group D
6020 kc	9510 kc	11,710 kc	15,110 kc
6040	9530	11,750	15,150
6060	9570	11,770	15,170
6080	9590	11,790	15,190
6100		11,810	15,210
6140		11,830	15,230
		11,850	
		11,870	
		11,890	
Group E	Group F	Group G	Group H
15,250 kc	17,760 kc	21,460 kc	25,625 kc
15,270	17,780	21,480	25,650
15,290	17,800	21,520	25,675
15,310		21,540	25,725
15,330			25,750
			25,800
			25,825
			25,850
			25,875

(a) No international broadcast station will be licensed for a power output rating less than 5 kilowatts.

(b) While conducting apparatus experiments and in case adequate signal is delivered in the foreign country being served, the operating power output may be less than 5 kilowatts.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

1. The number of hours operated on each frequency.

2. A list of programs transmitted of special international interest.

3. Outline of reports of reception and interference and conclusions with regard to propagation characteristics of the frequency assigned.

4. Research and experiments being carried on to improve transmission and to develop international broadcast and the frequency assigned.

5. All developments or major changes in equipment.

6. Any other pertinent developments.

(b) A separate license and call letter designation will be issued for each

frequency except that where frequencies in two or more groups are required to maintain a particular international broadcast service to certain foreign country or countries, one frequency from each of the groups required may be authorized by one license and one call letter designation. In such cases these frequencies shall be used consecutively during a day as required and they shall not be used simultaneously either on the same transmitter or different transmitters.

(c) Not more than one frequency in any group in subsection (a) of this rule will be assigned to a station.

(d) An applicant shall select the frequency which it is believed is best suited to the experiments to be conducted, for reception in the foreign country or countries for which the service is intended, and for a minimum of interference to other international broadcast stations.

(e) Applicants shall file a separate application for each frequency or frequencies requested in different groups as provided in subsection (b) of this rule.

FOR FOREIGN RADIO ACTIVITIES

READ

RADIO DAILY REGULARLY

~ INTERNATIONAL ~ BROADCASTING UNION

• HISTORY AND SCOPE •

*Most Successful of Post-War International Institutions, It Is Now
Making New, Systematic Study of Broadcasting Problems*

by A. R. Burrows, Secretary-General
51 Quai Wilson, Geneva, Switzerland

THE International Broadcasting Union (or the Union Internationale de Radio-diffusion) has been spoken of by one of Europe's leading statesmen as perhaps the most successful of the post-war international institutions in the finding of practical solutions to complex and delicate problems. The Union does not make this claim itself but much of the progress that has been made in broadcasting in Europe during the last 12½ years, under difficult and for some time adverse conditions can justly be attributed, either to the systematic studies made within the Union or to the friendly and corporate spirit which has grown in recent years amongst the European broadcasting organizations under the influence of the Union.

Through the Union also valuable links have been established between the European broadcasters and the principal broadcasting organizations in other Continents—notably with the National Association of Broadcasters (Washington), the great chains of the United States of America, the Asociacion de Broadcasters Argentinos (ADEBA) (Argentina), the Japanese broadcasting organization, the Canadian Broadcasting Commission, All India Radio, the Netherlands East Indies Broadcasting Services N.I.R.O.M. & P.M.O.H.I., the Chinese National Station, Nanking, the principal broadcasters (State and private) in the Commonwealth of Australia, the New Zealand Broadcasting Service, the South African Broadcasting Corporation, the Office Chérifien des P.T.T. in Morocco, and the Radio Corporation of Porto Rico.

Objects of the Union.

The International Broadcasting Union has for its objects:

The establishment of relations between the various European and non-European organizations operating broadcasting services.

The promotion of the interests of broadcasting in every domain.

The centralization of the study of all questions of general interest which have arisen, or may hereafter arise out of the development of broadcasting.

The realization of any scheme of a nature likely to promote such development.

The statutes of the Union state that with

the above objects in view the Union shall collaborate with any State Administration in charge of Telecommunications, with the Administration concerned in each country with the broadcasting services and organizations, and with the International Bureau of the Telecommunication Union.

The Statutes also allow for co-operation with any other official international organization concerned in the problems of broadcasting and with any other organization, society, company, group or person whose co-operation would facilitate the realization by the Union of the object which it pursues.

The Union, while having striven at all times to keep itself apart from national or international political questions has pursued

consistently from the first the policy of making broadcasting a medium for the development of a better understanding between nations. This work is mentioned appreciatively in a report of the Intellectual Cooperation Organization to the League Assembly of September 1937. The same report recommends to the Assembly close cooperation between the Intellectual Cooperation Organization and the International Broadcasting Union which it recognizes as being the most influential organization in the field of broadcasting.

The creation of an International Broadcasting Union was decided upon at London on March 18, 1925, following Swiss proposals for an international organization combining all interests likely to be associated with wireless telephony, and those of the old British Broadcasting Company for one consisting exclusively of actual broadcasters. The headquarters of the Union was established at Geneva on May 1, 1925 and an Observation Centre was opened at Brussels in 1927.

Constitution.

The Statutes and the Finances and general policy of the Union are the affairs of a General Assembly at which may be present representatives of all member organizations, Full Members and Associate Members. The Assembly also elects a Council.

The original Council consisted of representatives of the broadcasting organizations of nine countries: Austria, Belgium, Czechoslovakia, France, Germany, Great Britain, Holland, Norway and Switzerland.

To-day the Council has 27 members representing the 27 countries in the European zone which have members within the Union. The President of the Council is Mr. Dubois (Holland) Director of the Dutch Central Broadcasting Board (NOZEMA). To expedite the work of the Council there is a form of "Cabinet" known as the Bureau. This consists of the President of the Union; three Vice-Presidents; Vice Admiral Sir Charles Carpendale (Deputy Director General of the B.B.C. and President of the Union during its first ten years of existence; M. R. Jardillier (France) Ex-Minister of Posts and Telegraphs; His Excellency, Prof. G. C. Vallauri (Italy) and Prof. V. Ylöstalo (Finland).

The studies approved by the Council are examined by various Committees or groups of Experts—the Legal Committee (President: M. le Dr. Sourek, Czechoslovakia); the Programme Committee (President: C. A. Dymling, Sweden) and the Technical Committee (President: M. R. Braillard, Belgium).

Under the protocols of Prague and Lucerne the Governmental Departments within the European zone, which have an interest in the subjects under examination by the Union, may be present and take part in the discussions of the various organs of

the Union. Delegates of the European Telegraph Administrations, of the Berne Bureau of International Telecommunications Union and of the League of Nations Section of Communication and Transport are invariably present at the Union's meetings.

Meetings.

Since the foundation of the Union at London in March, 1925 there have been 21 meetings of the Assembly (Annual, General and Extraordinary) and 124 of the Council. These meetings have been held at Amsterdam, Barcelona, Berlin (2), Brussels, Budapest, Como, Geneva, Lausanne, London, Lucerne, Montreux, Paris (2), Prague, Rome, Semmering (Austria) and Warsaw.

In order that there may be the freest possible exchange of viewpoints the meetings of the Union, like those of other bodies of a similar character, are private in character. Communiqués are issued on decisions of public interest.

Twelve and a Half Years of International Broadcasting Progress.

(a) *Transmitting stations—and listeners.*

It is probably of interest to compare the European broadcasting situation when the Union was founded in March, 1925, with that of to-day.

Eight European countries were represented at the Informal Conference at London in 1925. According to the minutes of that meeting it was estimated that the broadcasting stations in Europe at that moment radiated a total energy of 80 kilowatts of which 43 kilowatts were radiated by the stations of Great Britain.

At the end of February, 1937, the radiated energy of the 408 stations, included within what is officially recognized as the European zone, was about 8096 kilowatts.

As to the number of listeners to the broadcast programs there is less difficulty in obtaining precise figures now than was the case in 1925.

At the latter date it is doubtful whether Europe's potential wireless audience exceeded 6½ millions (of which no less than 5,200,000 were in Great Britain). The Geneva Office of the Union produced in April, 1937, a statistical chart showing the potential wireless audience in the European zone at the end of 1936 to be no less than 100 millions, excluding Spain and Soviet Russia.

The members and associate members of the International Broadcasting Union had at the end of 1936 a possible total wireless audience of 230 million persons. The responsibilities of these organizations and of the International Broadcasting Union in respect to its decisions, and the lines of conduct which it recommends are therefore very considerable.

The Union as a whole, like its Council and its Committees works quietly. It is

sometimes criticised, even by its friends, for working too quietly.

The Union works quietly, not because it is engaged on tasks for which it fears the light of day, but because it is constantly exploring new territory, and experience throughout the realm of international research shows that objective study is best accomplished in an "atmosphere" as free as possible from publicity and polemics. For the Union's decisions insofar as they affect the listening public the fullest discussion and criticism is welcomed.

(b) Technical observations and research.

Some idea of what is happening behind the scenes may be gauged from the fact that since March, 1925, the Geneva Office has written about 40,000 letters and has sent out 6,900 circular communications, ranging from single-page programs of concerts available for radiation in any country member of the Union to long detailed reports showing the practice throughout the world in such specialized activities as "Broadcasting to Schools", the diffusion of information on agricultural and general questions of rural interest.

The Observation Post of the Union at Brussels, which has an expert staff on duty throughout the broadcasting hours of each night, has made since April, 1927, more than a million individual and precise measurements of the transmitting wavelengths of shortwave stations throughout the world, (which observations are recorded and distributed periodically amongst the stations concerned.) In addition, over 250 hours of observation have been made in respect to the behavior of the European stations modulation.

In the first days about 80 measurements were made each night with an average precision of from 3 to 5 parts on 10,000. These measurements have now risen to at least 600 each night but with an accuracy of from 2 to 3 parts in 10 millions. The measurements have all been recorded on charts circulated at regular intervals amongst the interested broadcasters and the technical Press.

The Brussels Office has also studied over 20,000 metres (12½ miles) of automatically recorded impressions made at Brussels and other parts of Europe (the B.B.C. research laboratories included) providing data for studies upon the propagation of signals from broadcasting stations. This enormous length of recordings represents about 25,000 hours of observations. About 16,000 interventions have been made by letter, telegram and telephone to point out irregularities in transmission likely to cause interference. A strikingly high proportion of these interventions have been effective. These activities are all directed to the constant development of the efficiency of the services given by the broadcasters to their listeners.

(c) Programs.

The International Broadcasting Union

has already been mentioned as having taken, since the first days of its existence, a positive attitude in the policy of giving to listeners the pick of the European and overseas programmes.

In 1925 the I.B.U. asked the European Telephonic Administrations to give consideration to the inclusion in the European telephonic network of a number of circuits capable of transmitting complex musical sounds as well as speech. This study was immediately put in hand by the "Comité Consultatif International des Communications Téléphoniques à grande distance" (C.C.I.F.) and within two or three years new improved telephonic circuits began to spread outwards from various capitals and to make contacts at the frontiers.

Whilst this improvement was taking place the Union instituted "National Nights" in which concerts were given and radiated in many parts of Europe dedicated to a specific country. To-day, by means of improved telephonic circuits and shortwave radiotelephonic circuits, concerts and other events of national importance are handled from country to country as part of a daily routine.

A detailed account of what has been accomplished by members of the International Broadcasting Union, individually and collectively, in the development of broadcasting as an instrument for the creation of better international relation was published in July 1937 in No. 4 of "Radiodiffusion".

At the moment the Union is setting out upon a new and systematic study of the problems associated with the broadcasting of the spoken word.

The International Broadcasting Union's Observation Post at Brussels is about to be transferred to a building specially designed and built for the purpose. Its equipment which is already amongst the most sensitive in the world will at the same time be completely modernized. The Director of the Brussels Observation Post is Raymond Braillard, President of the Technical Committee. The Assistant Director is Prof. E. Divoire, of Brussels University.

The Headquarters Office of the Union at Geneva, besides undertaking the organization of the Union's Conferences and the executive work arising from these Conferences, centralizes the international exchange of programs, and acts as a clearing house of information on practice and development in administrative artistic and legal aspects of broadcasting. Its Director (who is also Secretary-General of the Union) is A. R. Burrows (First Director of Programs of the British Broadcasting Company) and its Assistant Director M. Maurice Dovaz (Switzerland). The Geneva Office produces, beside routine studies required for the Council and Committee meetings, a Monthly Bulletin (for private circulation) and a six-monthly review (for public circulation) entitled "Radiodiffusion."

THE DEPARTMENT OF COMMERCE *and its* ACTIVITIES REGARDING RADIO

By
JOHN H. PAYNE
*Chief, Electrical Division
Washington, D. C.*



The Bureau of Foreign and Domestic Commerce has only one objective to guide its activities. It aims to serve industry in every way possible, principally along the line of business promotion. Because of the nature of this activity, it is frequently in a position to be able to supply information in regard to other phases of the radio industry, such as engineering, statistics, applications, etc., which may be asked either by students or laymen outside of industry.

Emphasis is placed on foreign business inasmuch as this is where the greatest service can be rendered. American companies, obviously, do not need assistance in their domestic business to the same extent that it can be of use in their foreign activities.

Radio assumes a leading position in the Electrical Division's activities, since it is the largest item or group of items classified as a unit, in our exports. Recently, it has represented 30 per cent of the total exports of all electrical commodities from the United States to the rest of the world.

The Bureau serves industry through three rather distinct organizations—first, its 25 District and 53 Cooperative Offices located throughout the United States, through which it has rather intimate contact with all American individuals or businesses wishing to avail themselves of its services; second, through 34 Foreign Offices located in the capitals of the more important countries of the world, making intimate foreign contacts on behalf of American industry; third, a highly specialized headquarters organization in Washington, providing experienced people in each phase of industry.

For an exporter, a District or Cooperative Office can perform such services as these: indicate where there is a market for American goods; explain how best to enter a market; specify the terms on which goods are ordinarily sold in a particular market; provide data as to the competition to

be encountered from foreign sources; furnish lists of buyers in the principal markets of the world; and render many other services.

The Foreign Offices form a vital element in the Bureau's service. They constantly provide data on all the significant economic, commercial, and financial developments of the various countries. They interpret the decrees, laws, and regulations that are promulgated with great frequency under modern conditions. They report on the general business situation in a specific foreign market—the competition between American goods and the products of other countries—the import duties and restrictions that may be imposed—sales methods and credit terms—and the foreign-exchange situation, when pertinent. They conduct surveys covering specific commodities in definite foreign markets, and provide a variety of other current special data.

While the Industrial Divisions render specialized services to specific industries, there are in the Bureau ten divisions devoting intensive study to various distinctive phases of economic effort. In response to inquiries from industry, they can supply information

not otherwise obtainable on some of the highly specialized aspects of the economic system.

The Economic Divisions include:

Commercial Intelligence — provides practical information in regard to thousands of foreign firms available for American representation.

Commercial Laws — covers the field of legislation and regulations affecting business in all foreign countries.

Finance — makes available information regarding foreign debts and budgets, collections, exchange, and other monetary data.

Foreign Tariffs—as the name indicates—provides full information on this subject for all countries.

Foreign Trade Statistics — gathers and analyzes all available figures on American exports and imports, and publishes them in convenient form.

Transportation—offers full information regarding shipping routes, schedules, rates, and other shipping facilities.

The Bureau maintains twelve Industrial Divisions, staffed by experts conversant with the details of a given industry. These divisions bring the Bureau into direct and vital touch with producers and dealers, making possible the establishment of mutually helpful relationships. For each industry, there is provided a highly specialized service, satisfying some of its peculiar and characteristic needs for statistical and other information. Necessary supervision, and material is disseminated to the many trades in the most efficient ways that can be devised. Most of the material is provided by representatives of the Departments of Commerce and State stationed in foreign countries; the information covers a wide field of industrial and trade ac-

tivities and is released to business in periodical and special bulletins.

The Electrical Division, one of the twelve similar industrial divisions, renders broad commercial services to the American electrical and radio industries. Its Radio Section serves the manufacturers of broadcasting and receiving equipment, as well as the broadcasting operators. An exchange of foreign and domestic short wave programs has been established in cooperation with the Radio Manufacturers Association, whereby a summary of the outstanding American short wave programs is made available to publishers throughout the world, and a similar summary of foreign programs is made available to the American press.

The Division concentrates on obtaining and offering data which the industry lacks the means of securing through its own endeavors. With respect to radio, a responsibility devolves on the Division to collect information regarding the widely varying conditions in other nations, in order to be qualified to inform American industry of world developments, prospective markets, needed adaptations, and other related matters.

Since short wave broadcasting is distinctly an international activity, its operations are well within the scope of the Electrical Division's activities. Surveys have been made to develop the effectiveness of American short wave broadcasting. Both its good qualities and its limitations as brought out in these surveys are passed on to the American short wave operators for their guidance.

Criticism from the radio or other electrical industries is solicited by the Division, in order that it may improve and make its services more useful to all interested in using them.



EXPORT MARKET SURVEY

The comprehensive survey of the foreign radio market, immediately following, was prepared with the assistance of the far-flung consular service of the U. S. Department of Commerce. Statistical information in each instance reflects the latest available data.

FOREIGN RADIO MARKETS

• An International Digest •

This official, authoritative survey of the World's radio markets is based upon latest reports compiled by the Electrical Division of the Bureau of Foreign and Domestic Commerce, United States Department of Commerce.



ALGERIA

General—The general economic situation of Algeria has been very unsatisfactory for several years past. The number of radio sets in use, however, has increased steadily and rapidly during the depression years, notwithstanding general price advances.

Sets in Use—As of July 31, 1937, there are officially registered 69,700 receiving sets. It is estimated that the total number of radios in Algeria is around 75,000. Population and purchasing power considered, Algeria offers a very good market for radio sets.

Sources of Supply—France is now the leading supplier of radio receivers to the Algerian market and it is estimated that around 70 percent of the sets in use here are of French origin. Holland occupies second place in the market, followed by the United States and Germany. Tubes of the better class come principally from Holland and the United States, but on a quantity basis France is the leading supplier. It should be pointed out, however, that the predominance of France in the supply of radio merchandise to this market is a purely artificial situation, brought about through quota limitations.

Tariffs and Restrictions—The quota system is controlled by a committee appointed by the American Chamber of Commerce at Paris, which committee allots to Algerian distributors quarterly a certain arbitrary percentage of the entire American radio quota for France. Intending importers must hold permits issued by the committee.

Broadcasting—Radio-Algeria, the only broadcasting station in Algeria, operates upon a wave length of 365 meters, with 12,500 watts antenna power. Some experimental short-wave (24.75 and 33.48 meters) broadcasting has been undertaken for the particular benefit of those Algerians residing in France and elsewhere in Europe.

Advertising—Efforts have been made at various times to improve the quality and appeal of Radio-Alger's emission by eliminating, or greatly curtailing, commercial broadcasting. However, the revenue derived from radio advertisers is badly needed and it has been decided to continue advertisements for the time being. Rates are 5 francs (\$0.166) per word, with substantial reductions made for volume advertising.

Regulations—Radio in Algeria is under the direct control of the Department of Post, Telephone and Telegraph.

Sets in Use—69,700.

Stations—1.

AUSTRIA

General—Although American participation in the market is distinctly limited because of artificial barriers, there is considerable interest in American equipment, which should result in a definite demand if and when the barriers are removed.

Sources of Supply—There are very few foreign sets on the market in Austria. The importation of radio sets is subject to special permits and these usually are granted only to manufacturers for laboratory study, or to settlers when part of household effects. Telefunken have a control of the sale of foreign radio apparatus on the basis of their patent rights. American sets are considered excellent and very inexpensive, but on account of the restrictions, importation is practically impossible.

Patents—Basic radio patent rights are controlled by the Telefunken interests of Germany, which also maintain manufacturing establishments in Austria.

Central Receivers—Two towns in Upper Austria, Gmunden and Vocklabruck possess a rebroadcasting system erected by a private firm, because for atmospheric reasons the hearing of the general program is very weak. Listeners pay the usual "listeners" fee of 2 schillings per month to the RAVAG and an additional small sum to the company in question and obtain good reception.

Short Wave—Short wave broadcasting in Vienna is on an experimental basis. There appears to be little interest in reception of foreign short-wave broadcasts. American short-wave broadcasts are received only on the more expensive high powered sets.

Advertising—No provisions are made for any sort of advertising.

Transcriptions—On an average, records are used for about 1½ hours daily. Generally light music is transcribed, principally German, English, French and Italian records are also used to a limited extent. When transcribing light music, English is more frequently used, occasionally French but seldom Italian. The possibility of supplying American transcriptions, with or without advertising, are not favorable at present. Ravag, however, would be interested in hearing from United States' firms in this matter.

Regulations—By a Federal law of Jan. 23, 1935, amending and revising the existing regulations, the production and trade, importation and possession of radio broadcasting transmitting and receiving apparatus, equipment and tubes requires, in addition to the usual import license, a special permit from the Telegraph Administration for

which an annual fee of ten schillings must be paid. This permit has to be obtained even before licensed imports will be cleared by the customs authorities. Radio owners are also subject to a listener's license fee, paid to RAVAG, which costs 2 schillings monthly for private

owners, 6 for public places such as cafes and theaters, and from 6 to 20 schillings for dealers and manufacturers, according to the size of the city and the number of persons employed. Sets in Use—645,000. Stations—9.

ARGENTINA



General—Despite the fact that most of the radio sets sold in Argentina are manufactured or assembled locally, there continues to be a very good outlet for the sale of American component parts, tubes, and other material. The Association of Argentine Broadcasters estimates that on May 30, 1937 there were 1,000,000 sets in use. Of these million sets, the Association estimates that 215,000 were imported, 542,000 were assembled in the country, and 243,000 were completely built in the country. The total value is placed at 75,000,000 pesos. According to these estimates there is a radio set for every 12.02 persons in Argentina, or 41.5 percent of the families.

American radio products appear to have adequate representation in this market; in fact, the volume of business is so large in tubes and parts that competition is particularly keen, and many dealers complain that little or no profit can be made in most items. In addition, there is the domestic industry which is quick to imitate and reproduce foreign receiving sets and parts at a much cheaper price, in order that same may be sold to a large share of the market which cannot afford the imported articles.

Sources of Supply—The Argentine radio manufacturing industry is firmly established and supplies most of the receiving sets, although a large share of the component parts and most of the tubes come from the United States. This varying proportion of American participation makes it difficult to fix the exact share of the total Argentine business obtained by United States exporters, although some idea may be obtained by a study of the Argentine import statistics general status of the local industry.

Probably 35 or 40 percent of all receiving sets sold per year are represented by American trade names (excluding a small volume of locally built sets which have preempted United States trade marks). Of this American percentage, only a relatively few sets are imported in the complete form. One well known American set, for instance, is produced in a Buenos Aires factory which makes all of its component parts locally with the exception of tubes, electrolytic condensers, resistors and volume control. Several other American lines are imported completely knocked down, with some parts obtained locally, while still other American sets come in partially assembled.

Approximately 10 to 15 percent of all sets sold is accounted for by the European manufacturers. Some of these are still imported in the complete form, but the trend is toward further domestic assembly. In fact, the Philips company is now reported to be making all of its sets for Argentina in a local factory.

Patents and Trademarks—There has been no recent outstanding litigation over patents concerning radio.

Tariffs—Argentina's import tariff on radio sets is based on weight and number of tubes, cabinets being included in the weight. According to the Argentine tariff, the duty is 42 percent (including surtaxes) on arbitrary fixed valuations of 6.82 paper pesos per kilo on sets of up to 4

tubes; 11.36 paper pesos per kilo on sets of 5 to 7 tubes; and 15.91 paper pesos per kilo on sets of 8 tubes or more. In addition there are other fixed port charges such as sluggage, statistical fees, etc., amounting at times to as much as 7 percent more. Changes are in prospect, and should be verified before using.

Television—There have been a few local experiments with television in the past, but there are no recent developments along this line.

Facsimile—There are direct circuits for facsimile transmission from Buenos Aires to New York, London and Berlin, although there is no internal service in Argentina.

Broadcasting—There are 57 Argentine broadcasting stations listed by the Post & Telegraph Department. Of this number, 38 long wave and 2 short wave stations are actively operating, 9 more are under construction, and the remaining 8 are projected. Of the stations actively broadcasting, the recently opened LRA station is operated by the Federal Government, 5 more are under the control of provincial governments, and the remaining 34 stations are privately operated. The control of broadcasting rests with the Direccion de Correos y Telegrafos (Post and Telegraph Department).

Chain broadcasting is now a regular feature in Argentina. On a recent special occasion there were 37 stations on the same program. The average chain broadcast, however, comprises a much smaller number, and generally links Buenos Aires, Rosario, Cordoba, Bahia, Blanca, Mendoza, Santa Fe, and sometimes Montevideo, Uruguay.

Advertising—Argentine stations' wide range of programs, practically all of which contain a certain amount of advertising.

Short Wave—Occasionally foreign short-wave programs from the United States, Europe, or South America are re-broadcast locally on long wave. This service is made available by the international communications companies which have facilities near Buenos Aires for receiving and relaying the program to the broadcasting station.

One drawback to the re-broadcasting of foreign programs is the fact that they are often not in Spanish, giving little or no incentive for the local stations to re-transmit them. Owing to the minor percentage of short-wave listeners, it is believed that certain American firms having a large volume of sales in Latin America could reach a fertile field by sponsoring programs in Spanish, and having them picked up and re-broadcast on long wave in each country.

Within the past few months it is reported that American short wave stations have had better reception in Argentina. The United States advance programs are printed daily in Buenos Aires papers. Stations in Germany, Italy, Russia, and Great Britain are also heard nightly in Buenos Aires. All of these European stations are said to employ high-gain directive antennae for transmission, in addition to which the German and Italian stations have regular broadcasts in Spanish. At present a scheme is under

way for the mutual exchange of programs between Argentina and Brazil, in which the two governments would cooperate.

Transcriptions—The market for American transcriptions is believed to be definitely restricted for two main reasons: the reluctance of most broadcasting stations to pay correspondingly for quality transcriptions, and the fact that these transcriptions are now being made to specification in Buenos Aires, and thus come closer to meeting local requirements, inasmuch as Argentine talent is used exclusively. The Buenos

Aires firm of "ACORT" not only makes transcriptions of all types and sizes, but also offers a recording and control service which checks programs for the benefit of advertisers, composers, and other interested parties.

Regulations—The Argentine basic regulations covering radio broadcasting are dated May 3, 1933, with a supplementary decree concerning amateurs dated Oct. 30, 1935. They embody no unusual points.

Sets in Use—1,000,000.
Stations—40.

A U S T R A L I A



General—With a population of slightly less than 7,000,000, Australia today has 940,068 licensed radio receiving sets, 100 regular broadcasting stations and close to 1,800 licensed amateur stations. Sets operated without licenses unquestionably bring the total to above 1,000,000. The demand for transmitting and receiving equipment is met largely by manufacturers in Australia, who have for several years enjoyed substantial tariff protection and who have been further assisted since May 22, 1936, by the complete prohibition on imports of "wireless receivers, parts thereof and accessories thereof" from non-British countries, except with the written consent of the Minister for Trade and Customs.

Sources of Supply—Where the United States was by far the outstanding supplier of radio goods to Australia from the early days of broadcasting, this position is being lost through the rapid development of the Australian industry and the discriminatory operation of Australian import restrictions. The Netherlands appears to be the principal foreign beneficiary of this administration. Philips is becoming firmly entrenched in this market where the concern was of little importance previously, through advantages granted to all non-American sources of radio equipment for the Australian market. All classes of radio equipment are now manufactured in Australia. Amalgamated Wireless (Asia) Ltd. having the dominant position. Several American brands of receiving sets are manufactured under license in Australia.

Patents—Amalgamated Wireless (Asia) Ltd. owns the perpetual right to use and exploit the Marconi patents in Australia and in addition holds the Australian rights for some of the most important American patents relating to radio apparatus. Virtually all worthwhile patents relating to radio receiving sets are controlled in Australia by a pool known as Australian Radio Technical Services & Patents, Ltd.

Television—There has not so far been any television broadcasts in Australia. The subject of television is being followed closely by Amalgamated Wireless and the Postmaster General's Department, but both organizations appear to hold the opinion that it will be some years yet before television becomes a practical matter in Australia.

Short Wave—Australia was the first British Dominion to establish a regular overseas broadcasting service to the world on Sept. 5, 1927. This service is operated by Amalgamated Wireless, and its purpose is to keep overseas countries informed of the resources and tourist attractions of the Commonwealth. These world-wide short-wave broadcasting services are operated from station VK2ME Sydney, VK3ME Melbourne, and VK6ME Perth. Short-wave reception is

very popular in Australia, and the short wave range required by purchasers, in sets at prices permitting its inclusion. Reception from all parts of the world is good, although the U. S. has been poorly received due to lack of beam transmission.

Broadcasting—The broadcasting set-up in Australia combines the features of both the English and American systems, in that there are some stations owned and operated by the Government, while there are others owned privately. The former are known as "National Stations" while the latter are called "Commercial Stations." At the end of June, 1937, there were 20 "National Stations" and 80 "Commercial Stations," which receive no part of the listener's license fee but depend solely on the broadcast of advertisements or sponsored programs for their revenue. As a rule, these stations are owned and operated independently but there are 15 commercial stations associated in what is known as the "Commonwealth Broadcasting System" which is operated by the Commonwealth Broadcasting Co. Pty. Ltd., State Shopping Block, Sydney. It is claimed that this system reaches two-thirds of all radio listeners in Australia; but the stations associated in this group do not always operate as a part of a network.

Advertising—Practically all of the stations, other than those of the National Broadcasting Service, broadcast advertising.

Transcriptions—Most of the broadcasting stations, particularly the "commercial stations," depend largely on transcriptions for their programs. American transcriptions are among the most popular, and many are sold.

Sets in Use—950,000.
Stations—98.



BAHAMAS

General—There is no broadcasting in the Bahamas, nor is the establishment of a local station seriously contemplated. Radio users depend principally on stations in the United States, especially those in Florida, about 200 miles distant.

According to the best estimates available, there are between 1,000 and 1,200 receiving sets in use in the Colony. There are 5 amateur transmitting licenses in force. While a fee of 5 shillings should be paid on each receiving set, it is understood that the owners of the majority of the sets in use have not paid this fee.

Demand for Radio Sets—Sets most in demand cover the ranges 550 to 1,500 kilocycles and 6 to 15 megacycles, and have from 6 to 8 tubes.

The principal demand is for radios selling locally at from \$55 to \$75, though there is a market for both cheaper and more expensive ones.

Sources of Supply—Practically all sets on sale in the Bahamas are imported from the United States. There is no local manufacture whatsoever and no importation from European countries. Customs duties on radio sets and component parts are 20 percent ad valorem, based on the c.i.f. coast in Nassau, except in the case of imports from other parts of the British Empire, in which case they would be half that figure.

Sets in Use—1,000-1,200.

Stations—None.



BELGIUM

General—On March 1, 1937, the total number of sets in use in Belgium was 882,548, and factors in the trade predict that at the rate of increase registered in 1936 the saturation point in sales will be reached in Belgium within 5 years, since it is estimated that there are only 1,500,000 potential users of radio receivers in the country. However this conjecture does not take into consideration the number of sets to be replaced during this period.

Patents—Since the beginning of 1932, importers of radio sets and radio parts in Belgium have been subjected to many difficulties and annoyances by some groups who charged importers with infringement on their patent rights for the exclusive manufacture and sale of certain radio equipment.

Tariff Restrictions—There are no restrictions on the importation, sale, or ownership of receiving sets or parts, except the duty on imports and the license required by all owners of receivers for which a fee of 60 francs per annum is assessed on tube sets and 20 francs per annum on crystal sets (exemption from this tax is made to disabled war veterans). Under the terms of the agreement concluded between the United States and Belgium in 1935, there was a reduction in the rate of duty on radio tubes from 2.87 to 1.45 francs or about 50 per cent, while the rate of duty on complete sets and the supplement tax per tube socket was reduced about 15 per cent. The import duty on complete sets at present is 17 francs per kilo on the chassis and cabinet, plus 8.50 francs per tube socket and 1.45 francs per tube.

Short Wave—Short-wave broadcasts are very popular in Belgium and such programs from France, Italy, England, Germany, Spain, Sweden, and even the United States are sought with eagerness, though the difference in time renders the short-wave broadcasts from the United States very inconvenient.

Programs—The official station (I.N.R.) will complete its building in 1938, in which will be installed a modernly equipped studio with facilities to assure more satisfactory transmissions, and with the steadily increasing revenue from the license tax on radio receivers, of which 60 per cent is contributed to I. N. R., it will be possible to offer better and more varied programs.

Advertising—The unofficial stations must depend solely on revenue-producing propaganda for their operating income, but the advertising campaigns have so far been of local character and the rates charged for this service are quite nominal.

Regulations—There has been no fundamental change in the regulations for the control of broadcasting or the ownership of receiving sets in Belgium since the promulgation of the Royal Decree on June 18, 1930, providing for the establishment of the Institut de Radio-Diffusion. Under this decree, it was the purpose of the

Government to create a monopoly on radio broadcasting, suppress all private stations, and provide for sufficient revenue through the license fee on receiving sets to cover the operating costs of I. N. R.

Sets in Use—882,548.

Stations—19.



BERMUDA

General—Market potentialities in Bermuda for radio receiving sets, as for other commodities, are definitely limited by the size and character of the Colony. The Islands are non-industrial, dependent largely for their livelihood on the tourist trade. There are but 30,000 inhabitants, excluding the visitors, three-fifths of the population being colored. The per capita wealth is modest, thus restricting the purchasing power. On the other hand, due to the very fact that there is no manufacturing of consequence, competition for locally fabricated radio sets is non-existent. The use of receiving sets is general throughout the Colony.

Sales—During the calendar year 1936, approximately 700 sets were sold by dealers in Bermuda. Since the total number of sets now in use is only slightly in excess of the number a year ago—the comparative figures are 2,980 and 2,813—it is obvious that most of the 700 sets sold were for replacement. Under these conditions the improvement of models becomes an important inducement to further sales.

It is important to reiterate that the market for American products can not be held unless manufacturers in the United States give special attention to making available improved models and above all, models especially designed for sea air and sub-tropical conditions like those existing in Bermuda and other humid areas. The Dutch have evolved an export set which is said to resist the damp and the rust producing climate.

Sources of Supply—While American radio receiving sets have been sold almost exclusively in Bermuda during the past few years, a small percentage of British sets have likewise found a market. Until recently the predilection for the American apparatus has been sufficiently large to offset the preferential tariff, but latterly a new British model has come into the market which provokes keen interest. However, the most serious competition is now coming from Dutch sets, which competition makes it incumbent upon American manufacturers to introduce a greatly improved model for 1938 if their place as principal supplier is to be retained. Sales of British and Dutch receivers have already considerably cut down imports of American machines during the first few months of 1937.

Patents—No patent disputes in the radio field have ever come to the American Consulate's attention.

Tariffs—British radio sets enjoy a considerable preferential in customs duties, the tariff being 10% for Empire appliances such as receivers, parts and tubes, while the tariff for similar American products is 25%. There are no exchange restrictions, import quotas, or other artificial handicaps to the radio trade.

Short Wave—Effort should be concentrated in the export market upon the development of the short wave installation. Not only is there room for improving the receivers in this connection but the American broadcasting stations could well utilize higher power and make their programmes of greater interest to the non-American public. It is felt that the 49 meter wave band might usefully be abandoned in favor of shorter wave lengths, even the 19 meter wave having been

observed to produce the sharpest results well through the night when broadcast from European stations.

Broadcasting—No broadcasting stations have been established in Bermuda.

Regulations—No regulations are in force governing the use of radio equipment save for legislation prescribing that it is subject to government control for military purposes. A fee of five shillings (approximately \$1.25) is levied once upon each receiving set put into use.

Sets in Use—2,980.

Stations—None.



BOLIVIA

General—It is estimated that approximately 20,000 sets are in use. There has been no appreciable increase for some years. The greater part of all radio sets sold in Bolivia are imported by rep-

resentatives in La Paz of American manufacturers. There are no wholesalers, although some retail dealers do some wholesale business. Sales of sets are not brisk.

Sources of Supply—The demand is largely for American sets, because of price and because European tubes are difficult to obtain. Almost every large American radio manufacturer is represented.

Patents—No interference with sales have been reported.

Tariffs and Restrictions—Radios, radio batteries, tubes and accessories may be imported into Bolivia upon payment of a duty of 20 per cent ad valorem, plus a surcharge of 20 per cent of the duty and a currency depreciation surcharge of 38 1/2% of the duty and surtax combined.

Advertising—Local stations carry advertising. Foreign advertisers are assessed a 40% surcharge.

Transcriptions—An occasional program transcription has been used when supplied without cost by a manufacturer in the United States, but little progress has been made because of the depreciation of the local currency.

Sets in Use—20,000

Stations—4.

B R A Z I L



General—No statistics, official or otherwise, are available covering the number of radio receivers in use in this country. However, trade estimates place the number at between 400,000 and 420,000, which, on the basis of the latter figure, are distributed geographically as follows: State of Sao Paulo, 189,000 sets, 45% of the total; Federal District and State of Rio de Janeiro, 168,000, 40 per cent; State of Rio Grande do Sul, 50,400, 12 per cent; rest of Brazil, 12,600, 3 per cent; total, 420,000.

It is estimated that between 90 and 95 per cent of all the radio receivers sold in this market are purchased on an installment basis, payments covering periods of from 6 to as much as 24 months. A peculiar angle to this situation is that the Brazilian, whether rich or in modest circumstances, prefers to buy on time, for the reason that he will be assured of some sort of service on his radio as long as payments are still due the dealer.

While the statistics show that the United States has managed to maintain its predominant position as a supplier during 1936, the increase noticeable in our receiver sales here over the previous year was less than that of Philips. An analysis of the figures reveals that U. S. shipments to this market during 1936 increased 20,036 kilos in volume, or 25 per cent, over the previous year, whereas imports from the Netherlands (exclusively Philips) increased 121,652 kilos, or 68 per cent, over the 1935 level. That German receivers are also gaining ground in the market is evident from the fact that the volume of shipments from this country increased approximately 72 per cent (27,332 kilos) over the same period.

Tariffs and Trade Restrictions—Radio sets and accessories and parts (excepting tubes) fall under Article No. 1583 of the Brazilian tariff, with duty payable according to the weight of the unit.

Short Wave—Short wave reception is very popular in Brazil. About 10 per cent of the sets in use are able to receive the United States and Europe regularly, although United States stations are largely under the disability of interference from European stations, with directed waves. American broadcasts, however, are not entirely satisfactory to Brazilians, because of language difficulties.

Chain Broadcasting—Considerable progress has been made in the field of network broadcasting in Brazil since the beginning of the present year and indications are that further developments of importance will be seen.

Advertising—The use of radio as a medium for advertising has increased considerably in recent years. This development may be attributed largely to the substantial upswing in receiver sales which has afforded wider listener coverage, as well as to the improved quality of programs available.

Radio advertising rates vary widely. A great majority of the stations now in operation in the country are usually in financial difficulties which fact has been responsible for widespread price cutting and has led the prospective advertiser to follow the practice of "shopping" for time.

Transcriptions—There has been a pronounced increase in the use of American made electrical transcriptions by some of the leading radio advertisers. Dance music with "dubbed in" Portuguese announcements have proven particularly popular and the use of transcriptions of this type is destined to expand.

Sets in Use—420,000.

Stations—65.

BRITISH INDIA

General—According to the Controller of Broadcasting, the number of licenses in force on April 30, 1937 was 43,334, and of those issued during the 12 months ended April 30, 1937, 21,557. Private estimates indicate at least 50,000 sets in operation. An official of the Wireless section of the Bombay General Post Office estimates 35,000 sets in operation in Bombay Presidency alone.

Demand for Sets—Imports into India of radio receiving sets and apparatus have been continually increasing during the past several years and a fairly good demand for ordinary receiving sets can be considered to exist. There are, however, various factors which mitigate against the increased use of radios. One of the chief factors at present is the poor quality of broadcasting here.

Sources of Supply—Competition has been decidedly keen. While it is believed that American sets continue to lead in popularity, Philips has aggressively pushed their sales in India. Bombay has continued to be the principal marketing center in India for radio broadcasting equipment. One of the outstanding features of the radio trade in Bombay is the increase in the number of makes of radio receiving sets on the market, a situation which some dealers view with alarm. There are now on sale here no less than 26 makes of American sets and about 9 British, 4 German, 1 Dutch, and several Japanese. While American sets clearly dominate the market, increases in American prices have caused local distributors some concern.

Patents—No difficulties regarding sales have arisen from patents.

Tariffs and Restrictions—Radio apparatus of all kinds, including tubes, is dutiable at 50 per cent ad valorem. A 10 per cent preference is given to manufacturers of the United Kingdom, but this has been of very little, if any, assistance to British exporters.

Central Receivers—As part of a program of rural uplift, the Government of Bombay inaugurated on April 1, 1937 a village broadcasting service consisting of special programs broadcast from Bombay to 18 American radio receiving sets installed in as many villages in the Thana and Kolaba districts. The receivers, operated by 6-volt batteries, are equipped with automatic time switches controlled by a hand-wound eight-day clock. Regular inspections are made by an engineer stationed at Thana. It is said that the service has been enthusiastically received by the villagers.

Short Wave—Interest in short waves is extensive. Programs are received from most of the important world-class stations, although American stations seldom come in well. The Government is giving special attention to short waves as a means of more readily covering India with Broadcasting service.

Broadcasting—The principal broadcasting stations in India are owned and operated by the Government India under the Posts and Telegraphs Department, the operating authority being known as "All-India Radio" (formerly the Indian State Broadcasting Service).

Advertising—There are no sponsored programs at present on the air in India. This form of advertising was tried out, but met with very little success, and has been practically discontinued

although facilities are still available. The only thing approaching a sponsored program is the phonograph record music consisting of records lent by certain phonograph agents. In this case the make of the record is announced both in the Delhi programs published in the newspapers and by the announcer during the programs.

Regulations—The law forbids the sale of a radio set unless the purchaser can produce a license which has been purchased from Government authorities.

Sets in Use—50,000.

Stations—8.



BULGARIA

General—According to the special bureau for registration of radio sets, the number of licenses outstanding is about 30,000. It is estimated that some 4,000 or 5,000 additional sets have not been registered, thus putting the actual number of sets in use at about 35,000.

Sources of Supply—There are more than 40 different makes of radios on the Sofia market. Of these, more than half are of American origin, while the rest are from Germany, Austria, Netherlands, Italy, France, Hungary, and the United Kingdom, and Bulgaria. The United States held the leading place with about 30 per cent of the total imports in 1935, but in 1936 the American imports of sets were only 12 per cent of the total. The loss of American leadership was due principally to a change in the customs tariff effected in 1936.

Patents—Situation not important.

Tariffs—Radio sets and parts thereof for entry into Bulgaria are dutiable under paragraph 505 (b) of the Customs tariff, which provides for a customs duty of 400 gold leva per 100 kilograms of legal net weight (equivalent to gross weight with a 12 per cent allowance for tare). The additional taxes are an octroi tax of 20 per cent of the customs duty and a 4 per cent stamp duty which is charged on all imports.

Regulation—Broadcasting is now a monopoly of the Government, under the management of the Administration of Posts, Telegraphs and Telephones under the Ministry of Railways, Posts, and Telegraphs.

Advertising—Although there is some income from radio advertising, the policy has been a moderate one, and radio advertising has not overburdened the regular broadcasting program. Most of the commercial advertisements are offered with music or some kind of entertainment, and only a small number are in the form of advertising copy. Only 10 minutes of the daily program are devoted to radio advertising (5 minutes at noon and 5 minutes in the evening) after the purely musical program is terminated.

Transcriptions—From 40 to 60 per cent of the musical program of the Bulgarian broadcasting service is recorded music without advertising, while the recorded program with advertising is included in the 10 minutes daily set aside for publicity.

Sets in Use—35,000.

Stations—4.

CANADA



General—With population extending over a distance of 3,000 air-line miles, the transmission of radio programs involves numerous outlets, heavy wire charges and timing difficulties due to the existence of five separate time zones in the country. Purchasing power is relatively high in Canada. The length of the winter season, coupled with the centering of much of social activities around the home, tends to promote demand for radio entertainment. Similarly, the great expanse of the country presents a good field for commercial radio communication.

Sets in Use—According to law, an annual license (fee \$2) must be obtained each fiscal year (April 1 to March 31) for radio receivers. During the fiscal year ended March 31, 1937, the number of radio receiver licenses sold was 1,038,500.

According to a survey by Radio Trade Builder, a trade journal, the number of receivers in use in homes in Canada at the end of 1936 was 1,672,000, an increase of 13½ per cent over the estimate of sets in use at the end of 1935.

Toronto is the primary radio center of Canada as the majority of radio manufacturers are located in Ontario; Montreal is second as a manufacturing and distributing center and Winnipeg and Vancouver serve regional markets as jobbing points. Secondary commercial centers include Halifax or Saint John, in the Maritimes, and Regina, Calgary or Edmonton in western areas. Smaller cities serve localized market areas.

Demand—During 1936 members of the Radio Manufacturers Association of Canada reported total sales to dealers as numbering 239,777 with a list value of \$22,347,329, of which A. C. receivers numbered 167,018 valued at \$17,384,591 and battery sets numbered 59,739 valued at \$4,182,933.

Following official statistics of radio sales since 1933 clearly reveal that a widespread market for receivers exists in Canada. It is estimated that the number of sets in use equals 69 per cent of the number of Canadian families.

Domestic Production—Twelve companies manufacture radio receivers in Canada and because of patent control and electrical inspection requirements these firms dominate the market.

Patents—For several years the more important Canadian radio patents have been under the control of a patent corporation known as Canadian Radio Patents, Limited. This corporation, which has its head office at 159 Bay Street, Toronto, Canada, originally took over for licensing purposes thousands of patents formerly held by individual concerns such as the Canadian General Electric Company, Limited, Northern Electric Company, Limited, Canadian Marconi Company and Standard Radio Manufacturing Corporation, Limited. It has since acquired patents and patent rights on its own account.

Canadian Radio Patents Limited hold that radio receiving sets manufactured by others, or imported into or sold in Canada embodying the following features: (a) Regeneration, feed back, or oscillation; (b) Tuned radio frequency; (c) Grid leak detection; (d) Neutralization of inter-electrode capacity; (e) Power amplification and power supply; or (f) Superheterodyne circuits; are infringements of the patents controlled by the corporation.

The privilege of the Canadian use of the patents controlled by Canadian Radio Patents, is given only to those firms which take out a license with the company and which manufac-

ture in Canada. Even though a firm's receivers may be licensed under United States patents owned by firms also represented in Canadian Radio Patents, Limited, a license under the Canadian company is also required.

Tube Patents—A second patent holding corporation entitled Thermionics Limited, also at 159 Bay Street, Toronto, has announced that it owns or controls numerous basic Canadian patents covering the manufacture and sale within Canada of radio tubes to be used only in the non-commercial reception of public radio telephone broadcasting.

Tariffs and Restrictions—Canadian tariff information is subject to change and should be verified in advance of doing business in Canada.

Electrical transcriptions imported into Canada are subject to special administrative orders relative to the acceptable valuation for duty purposes. Collectors are instructed to appraise electrical transcriptions containing advertising matter imported from the United States at a minimum value of \$7.50 per transcription, which is held to include the United States excise tax of 5 per cent. Transcriptions without advertising matter, usually furnished on a contract basis as a "library service" are valued for duty at a minimum of \$4.00 each.

Television—This development is definitely in the experimental stage in the Dominion and its early practical application is discounted.

Amateur Radio—Amateur radio communication in Canada is organized along similar lines to conditions in the United States. The hobby has attracted many residents and in the last fiscal year a total of 2,821 amateur experimental transmission licenses were issued by the government. A good part of the conversations are with amateurs in the United States and equipment, prices and bookups are often under discussion, thus promoting demand for American lines.

Short Wave Canadian broadcasting on the short wave bands is chiefly confined to commercial and police services aside from two stations (Toronto and Winnipeg). United States stations are picked up readily and at times when standard band reception from American outlets is unsatisfactory the programs often can be picked up from associated outlets using the short wave.

Broadcasting—Under the Canadian Radio Broadcasting Act, 1936, the Canadian Broadcasting Corporation on Nov. 2, 1936, took over governmental operation of the national broadcasting service and the control of all radio programs from the former Canadian Broadcasting Commission. Technical control of broadcasting stations reverted to the Department of Transport under the Radiotelegraph Act. The government-owned corporation is headed by a board of nine honorary governors and a general manager in charge of operations. The legislation charges the corporation to carry on national broadcasting in Canada and authorizes it to establish, maintain and operate stations, to acquire or make operating agreements with private stations, produce programs, and otherwise function as a governmental radio agency. The legislation envisages gradual extension of public ownership of radio in Canada and enlargement of coverage consistent with federal finances.

The principal difference between the Corporation and the Canadian Radio Broadcasting Commission which it replaced is that under the Com-

mission authority to act in matters of policy and administration were combined in one body whereas in the Canadian Broadcasting Corporation the board of governors will deal with questions of policy and administrative matters will be conducted separately. Broadcasting is considered a business controlled by a public service type of corporation (government-owned) rather than an activity under an administrative governmental organization. The Corporation reports to Parliament through the Minister of Transport. Operations are financed by license fees for receiving and broadcasting sets and by revenue from commercial radio business. Further, the Act provides that by order-in-council up to \$500,000 may be borrowed from the government for the extension or improvement of broadcasting facilities. In addition, working capital not to exceed \$100,000 may be advanced by order-in-council.

Although the nationalization of radio in Canada is in the transitional stage, government policy has consistently favored the operation of radio as a public utility and all private broadcasting licenses have been issued with the understanding that the State may take over the facilities and that no value attaches for good will. The Canadian Broadcasting Corporation took over the network established by the Radio Commission which now comprises eight basic stations, namely, CRCV, Vancouver; CRCW, Windsor; CRCT (CRCX), Toronto; CRCY, Toronto; CRCO, Ottawa; CRCM, Montreal, CRCK, Quebec City; and CRCS, Chicoutimi, Quebec. Coverage of the network has been extended through agreements with 20 or more private commercial stations which carry the network program throughout the country.

Licenses for broadcasting are issued by the Department of Transport after the application has been referred to the Corporation for recommendation. The new radio law also specifies that the Minister of Transport will receive recommendations from the Broadcasting Corporation in connection with new private state licenses, change of channel, location or power.

The Broadcasting Corporation has recently completed a detailed survey of the coverage afforded by existing stations and in accordance with the conclusion that additional high-powered outlets were required, two stations are now under construction, both to be 50 kilowatt units. One is to be located at Hornby, near Toronto, Ontario, and the other at Vercheres, near Montreal, Quebec. It is expected that two more key stations will be erected within the next few years, one in the Maritime area and the other in western Canada. Consideration is also being given to a proposal to erect a powerful short-wave transmitter to permit Canadian participation in direct overseas broadcasting.

Programs—Programs broadcast in Canada may be classified under four categories: First, material presented by the Broadcasting Corporation, which contains no advertising and may be compared with sustaining programs which United States stations offer; second, commercially-sponsored programs which contain direct or indirect advertising and are released on a paid-time basis; third, sustaining programs broadcast by privately owned stations; and fourth, exchange programs from sources outside of Canada, chiefly the United States and the United Kingdom. Commercial programs have much in common with the type of advertising programs employed in the United States except that the limitations of the Canadian market do not permit the elaborate continuities and high-priced talent which is possible with national coverage of a larger consumer market. Canadian programs on exchange with United States stations have become increasingly popular.

Advertising—Radio advertising from privately owned stations and outlets controlled by the Broadcasting Corporation is conducted in the usual manner under established regulations. The advertising content of any program is limited to 10 per cent of the program period and specific regulations cover permissible material in advertising continuities.

Transcriptions—The use of transcriptions is generally prohibited between 7:30 and 11:00 p.m.,

but at other hours they are extensively employed by broadcasting stations. The recording of incoming overseas broadcasts is frequently undertaken to permit more timely release of programs. Special recording apparatus of the Marconi-Stille type has been installed in the Broadcasting Corporation's station at Ottawa for recording important events for rebroadcasting at later dates. Special short-wave receiving apparatus is located at Ottawa.

Regulations—Statutory authority to suppress radio interference is contained in the Canadian Broadcasting Act. Detailed regulations for control of programs, station operation, news service and advertising were issued by the Canadian Broadcasting Corporation, effective Nov. 1, 1937. In addition the 1936 radio statute itself contains regulatory provisions regarding chain broadcasting hookups and political broadcasts. Technical requirements for station equipment are promulgated by the Department of Transport. Federal jurisdiction over radiocommunication was determined by a ruling of the Imperial Privy Council, Feb. 9, 1932.

Sets in Use—1,672,000.

Stations—83.



CHILE

Short Wave Reception in Chile of American short-wave programs is not at all satisfactory. Too much interference is encountered, primarily with German broadcasting stations, which appear to be more powerful than the American. It is estimated for 1937 that 60,000 sets were in use.

Advertising—Radio advertising is still in the initial stage in Chile and has yet to be placed on a sound commercial basis. Rates are definitely subject to bargaining and the practice of exchanging product for advertising time still continues. In the broadcasting of programs, the public complains of the repeated interruptions by the announcer for the purpose of advertising the products of the company or firm sponsoring the broadcast. Phonograph records still comprise most of almost every program.

Foreign Competition—Besides the American made radios, the Philips from Holland, and the Telefunken and Blaupunkt from Germany are now in the market. No great inroads in the local market have as yet been made by these products. However, with the differential of 70 to 75 per cent existing between exchange for Germany and to a lesser extent for other compensation countries, as compared with 35 pesos per dollar which the American product must pay, there is an excellent opportunity for the German as well as other machines of European manufacture to greatly undersell the American. The real essence of the market is the problem of foreign exchange.

Patents—Sufficient protection both for patents and trade marks is available under the Chilean law. The law is specific and providing that the manufacturer is careful to comply with it, there is little danger of infringement. That constant vigilance is necessary is witnessed by the ever present tendency to attempt to steal foreign trademark rights which may have lapsed.

Duties—Duties remain at the same rates as in 1935, or 5 gold pesos per legal kilogram. The official exchange rate for Chile has remained at 1½ pence throughout the year.

Television—Nothing has been done either in experiment or utilization of television or facsimile transmission.

Transcriptions—No electrical transcriptions are yet used for advertising purposes, although there is no restriction, other than the economic one, against their use.

Sets in Use—60,000.

Stations—56.

C H I N A



Including Hong Kong and Manchuria

(Editor's Note: This survey of the Chinese radio market was made prior to the outbreak of the Sino-Japanese hostilities.)

General--Ninety-one broadcasting stations are functioning in China, Hong Kong, and Manchuria, ranging from $7\frac{1}{2}$ watts to 100,000 watts in power. Of the total number of stations in this combined area over one-third (37) are located in the city of Shanghai, which is reputed to have more radio broadcasting stations within its limits than any other single city in the world. Five are foreign owned, the remainder being Chinese. Less than 10 of the 37 stations in Shanghai can be considered as being relatively well organized and equipped. XMHA, an American owned and operated station at Shanghai, is regarded as being the best operated.

Manchuria--The Manchuria Telephone and Telegraph Company, a joint Japan-Manchukuo corporation, controls all enterprises relating to radio broadcasting and television. It now operates four broadcasting stations at Dairen, Mukden, Hsinking and Harbin, the largest of which is a 100 kilowatt station in Hsinking. The installation of a duplex broadcasting system makes it possible to give programs simultaneously in the Japanese language as well as in the Chinese language, aiming to reach the 30 million Chinese inhabitants of the country. At Dairen a very modern new station has been built at Shotokuan.

Programs--Advertisers have been slow to avail themselves of the facilities of radio broadcasting and on the whole have been unwilling to pay the price of regularly sponsored programs employing studio artists. This station has the only library of electrical transcriptions in Shanghai.

Chinese private commercial broadcasting stations by government regulation are obliged to give 40% of their time to educational features.

The new Japanese owned station at Shanghai (formerly XQHA) is giving programs of foreign, Chinese and Japanese music with announcements in Chinese, English, Japanese and Russian. Programs are being re-broadcast from Japan.

Hong Kong ZZB at Hong Kong gives simultaneous programs in English and Chinese languages during the same hours over its two transmitters. Relays of London programs from Hong Kong are regularly featured throughout the week.

ADVERTISING PRACTICES

China--Radio advertising is accepted by private commercial broadcasting stations and some few governmentally operated stations over which recognized advertising agencies have some semblance of control in Shanghai, Canton, Tientsin, Tsingtao, Hankow and Peiping. All Chinese commercial broadcasting stations are limited by the Ministry of Communications to 100 watts with advertising restricted to 20 per cent of the daily broadcasting time. This prohibition is not enforceable against foreign owned stations situated in the foreign concessions at Shanghai. All privately owned stations rely entirely upon advertising for income. The value of radio advertising while generally recognized by foreign firms, is skeptically viewed by many large Chinese firms, though some progress has been made. Spot announcements are more favored by Chinese advertisers than sponsored programs.

The Central Broadcasting Station XGOA at Nanking, the most powerful in China, accepts no advertising. Chinese government operated stations in other areas at times have accepted a limited amount of radio advertising, but its use is very uncertain and it is impossible to secure any definite control over such programs. No chain broadcasting exists. The prohibition of short-wave transmitters by the government, and the lack of adequate telephone and telegraph facilities also precludes this type of broadcasting.

Hong Kong No programs are commercially sponsored. Revenue for Hong Kong Broadcasting Stations is derived from a proportion of the Government license fees plus government subsidy in the event of any deficit. No private commercial stations are allowed.

Manchuria--The Manchuria Telephone and Telegraph Company has initiated the use of advertisement over its system.

Short Wave XGOX broadcasting on 6820 kilocycles, 44.0 meters, 500 watts, maintained by the National Government at Nanking is the only short-wave station in China. Present equipment is capable of reaching the Philippine and South Seas Islands and Australia.

Manchuria China reception of American short-wave programs varies from fair to extremely bad. In Shanghai, the reception is erratic and distinctly poor, though in several interior points, especially Peiping in North China, and Chengtu in West China, reception is reported to be somewhat better. It is an established fact that if American short-wave programs are to satisfactorily reach China and the Far East that a suitable short-wave transmitting station must be erected on the Pacific Coast with a specially directed beam to this part of the world.

Transcriptions An American advertising concern at Shanghai a few years ago was instrumental in bringing out quite a few electrical transcriptions and endeavored to push this type of advertising, but within the last year has given up the attempt as the cost has been found prohibitive. Customs duties and restrictions have also been a handicap. Large American manufacturers have sent out their own electrical transcriptions of American programs. It is customary for the special representatives of these organizations in China to make their own contracts for time with local broadcasting stations. XMHA the best equipped American broadcasting station in Shanghai has the largest library of transcriptions, numbering between some 400 and 500.

Patents--There is no patent protection for foreigners in China. Chinese citizens have a limited amount of protection under a provisional patent law.

General--The paucity of American broadcasts in China and the Far East generally is a great deterrent to the sale of medium and high priced all-wave, as well as short-wave sets. Buyers of such sets are chiefly foreigners and Chinese intellectuals. If a short wave broadcasting station is put in on the Pacific Coast which will ensure American programs reaching China, XMHA, the principal American broadcasting station in Shanghai, has indicated its willingness to install American receiving equipment so that such programs can be rebroadcast and thus extend the

possibilities of reaching this field for American sponsors.

Sets in Use—About 300,000.

Stations—91.



COLOMBIA

General—According to the Ministry of Posts and Telegraphs, of the 52 authorized stations in Colombia, 22 operate on short-wave and 30 on middle-wave bands. With a few exceptions, Colombian stations are commercial. Programs consist largely of phonograph record music, some string music and an occasional recitation or vocal rendition interspersed with short advertising announcements. Advertising generally is local in character.

Import Restrictions—No restrictions of any kind are imposed on the importation, sale or ownership of receiving sets in the Republic and the only known tax on the possession of radios is levied and collected by the Municipality of Cali. This tax is 50 centavos monthly on receiving sets costing, at retail, less than 100 pesos and 1 peso monthly on sets costing more than 100 pesos.

Short Wave—While subject to seasonal variation many of the more powerful foreign short wave stations can be satisfactorily heard, whenever they are on the air, the year around.

Number of Sets—Reliable sources place the number of sets of all types in service on Dec. 31, 1936, at 46,000. This figure is based largely on imports in the last 3 years plus an allowance for sets brought in before that period. The bulk of sales continues to consist of socket power, table model, all-wave receiving sets containing 6 to 10 tubes and retailing at 80 to 170 pesos.

Foreign Market Competition—The Colombian market for radio sets is supplied entirely by foreign manufacturers. According to official Colombian trade figures for 1936, there were imported in that year a total of 19,330 receivers, of which 16,962 came from the United States, 1,592 from Holland, 475 from Great Britain, 290 from Germany, and 11 from all other countries.

Restrictions on Imports—Orders for all foreign goods require the approval of the Board of Exchange and Export Control. This approval takes the form of an import license which is granted freely and without delay on the part of the authorities.

Sets in use—46,000.

Estimated Stations—52.



COSTA RICA

General—There are no figures covering the number of receiving sets in use in Costa Rica but dealers now estimate that it must be in the neighborhood of 10,000. As radios are not manufactured in Costa Rica, the extent of the demand may be gaged from the annual imports. The demand is increasing constantly. The preference seems to be for sets above 5 tubes, as these more consistently are able to receive United States and European short and long wave stations. The preference is for table model sets having short and long waves. The demand is concentrated among 3 or 4 well-known American brands.

Sources of Supply—United States-made sets fill most of the demand. During the past year, a few sets from Holland (Philips) have been imported and sold, but so far they have not made serious inroads into the American market. American type tubes are readily obtainable, and most of the demand is filled by these, although some are imported from Germany.

Transcriptions—A large percentage of the local broadcasting consists of phonograph records, most of which are imported from the United States. The use of radio for advertising is too restricted and the rates charged too low, to permit the use of elaborate and expensive transcribed programs other than ordinary phonograph records.

Exchange Restrictions—Importers of radios have no difficulty whatever in obtaining all the exchange they need. There are no import quotas. The radio business in Costa Rica is now almost entirely in the hands of American exporters. Import duties on radios and accessories are about C. 1.08 per gross kilo. There are no other taxes.

Sets in use—10,000.

Stations—28.



CUBA

General—There are no accurate data on the number of radio sets in use in the country. Various estimates have been made ranging from 50,000 to as high as 250,000 sets. Assuming that about 85 percent of the total of complete sets imported during the last 10 years are still in operation, there are about 100,000 units. To this figure should be added about 10,000 sets representing those for which loud speakers were imported, plus a few thousand more to take into consideration sets using head phones and the 10,000 sets imported since the first of the year. This rough calculation would result in a grand total of sets in use at the present time, of about 125,000 units. The figures show that American manufacturers dominate the market, although some sales of Dutch Philips sets (10 times as many units sold last year as in 1935) and parts have been made.

Prices—The largest volume of sales—roughly 60 to 80 percent of apparatus—is made in the low-priced category, that is of small sets with about 5 to 8 tubes, long and short wave, table models. Practically all of the important manufacturers of radio apparatus in the United States are represented in this market. In consequence the competition is active and keen. About 6 or 7 brands handle perhaps 80 to 85 percent of the demand, although it is believed that more than 30 makes are being sold in this market.

Market—The Cuban radio market in 1936 ranked about seventh in importance among foreign markets for the products of American radio manufacturers, and imported over \$1,000,000 worth of radio sets, tubes, parts and accessories from the United States. Radio set distributors are inclined to view the outlook for increased sales of radio apparatus with considerable encouragement.

Stations—Considering economic importance of the Island, its size and geographical position of proximity to the United States, Cuba is served by too many broadcasting stations. These are highly concentrated in Habana and, with few exceptions, are not satisfactorily modulated. There is, therefore, a great deal of interference not only among Cuban stations but among Cuban and foreign stations, both long and short wave.

One of the best Cuban stations is constructing a modern establishment in the outskirts of Habana, using a 300 foot vertical radiator with all equipment of American manufacture. The

new station has 25,000 watts power and will be the largest in Cuba. It is planned to set up the studio in Habana modelled after the most up-to-date in use in the United States. The building and antenna are almost completed and the station equipment is being set up. The new station should do much to raise the general level of radio broadcasting on the Island.

Sets in use—about 125,000.

Stations—68, as of June, 1937.



CZECHOSLOVAKIA

General—At the end of February, 1937, a total of 960,992 receiving sets were in use, of which 6,233 were exempt of the monthly license fee.

Patents—The Patent Pool, operated by the "Radio-techna" covers the German Telefunken (Siemens-Halske) patents, the Dutch "Philips" patents (including American patents managed by Philips) and, since the fall of 1934 also the "Tungsram" (Hungarian) patents. There is only one theoretic outsider to the Pool, the British "Marconi", which is, however, understood to have a gentleman's agreement with the Pool.

Short Wave—American short wave programs are not received extensively in Czechoslovakia because of the very inopportune receiving time, caused by the time difference.

Television—Czechoslovakia, as a small country (15,150,000 inhabitants) is waiting for the larger nations to conclude the experimental work before tackling the problem directly. However, an experimental transmitting station was scheduled to be put in operation by the end of 1937.

Import Restrictions—Imports of radio sets and parts are subject to both military and import permits, a fee of 5 percent of the invoice value being charged for the latter. Radio receiving sets (and radio tubes) fall under tariff sub-item No. 540 poznamka (note) "radio telephony and radio telegraphy and similar apparatus; electric loud-speakers" which provides for a duty rate of 4.500 crowns (\$157.50) per 100 kilograms.

Sets in use—960,992.

Stations—8.



DENMARK

General—Danish broadcasting is a Government monopoly, which is administered by a special institution called the "Statsradiofonien". The "Statsradiofonien" is expected to rest financially in itself. It obtains its revenue from a license fee which all owners of receiving sets must pay. The present cost of such a license is 10 crowns.

Advertising—Broadcasting of advertisements is not permitted nor is it used by the monopoly.

Sets—In 1929 there were 290,000 registered set owners in Denmark, and according to the latest census of March 31, 1936 a total of 626,000 had then been reached. About 16,000 crystal sets are in use, while the rest of the receiving sets are equipped with tubes, chiefly 2 and 3 tubes. Denmark claims to have the highest number of radio receiving sets per capita in the world, or at present about one apparatus per 5.7 inhabitants, or one apparatus for every other family.

New Developments—The Government broadcasting monopoly has appropriated the equivalent of about \$1,500,000 for the building of new quarters for the radio broadcasting monopoly in Copenhagen, which will include administrative offices, studios, etc. The building is expected to be ready

for use in 1940 and it was originally intended to furnish it with facilities for television. However, it has been decided by the radio council to await the results of other and larger countries' experiments with television before introducing it in Denmark.

The local radio industry is reported to be experimenting with the manufacture of "noiseless" tubes but so far this manufacture does not seem to have developed beyond the experimental stage.

Sets in Use—626,000.

Stations—4.



DOMINICAN REPUBLIC

General—The law requires that owners of receiving sets obtain licenses, but this provision is rarely given compliance. Estimates of the number of sets are entirely a matter of conjecture. Dealers opine that the total number of sets in use in the Republic amounts to 4,500, of which one-half are believed to be in Ciudad Trujillo and vicinity. The import statistics are closely indicative of sales. The returns for 1936 show the number of sets imported was 1,194, valued at \$55,810.

Sources of Supply—The chief source of supply of all radio equipment is the United States. No sets are manufactured in the Republic, but a certain amount of competition is offered by the Philips, made in the Netherlands. Of the imports in 1936 (1,194 sets) 989 valued at \$47,000, are reported to have been imported from the United States, and 203 valued at \$8,788 from The Netherlands. These figures cover receiving sets only.

Patents—There is no patent problem; no radio material of any kind is made in the country.

Tariffs—Radio receiving sets were not subject to customs duty under the customs tariff of 1920. However, by Par. 137 of Law 854 of March 13, 1935, an internal revenue tax of 30 percent ad valorem was imposed.

Short Wave—American short wave stations are received with varying degrees of clearness at different seasons of the year, reception being better at night than during the day in summer and better in daytime than at night in winter. Daytime reception the year round is only fair and only a few stations, like W3XAL, can be heard in the daytime on almost any day.

Advertising—Both the use and the value of radio for advertising purpose are believed to be increasing.

Transcriptions—There has, during the past year, been decided progress in the use of transcriptions. Most of them are supplied by the advertisers or sponsors. In fact the greater part of the programs of some of the leading commercial stations is made up of transcriptions and very many of them contain the entire program, that is, entertainment and advertising matter. Greater attention to adapting the recorded matter to Dominican tastes and customs has contributed largely to the popularity of this program material.

Sets in use—4,500.

Stations—30.



ECUADOR

General—It is estimated that there were approximately 6,000 radio receiving sets in operation in Ecuador on July 1, 1937. Of this number, it is

estimated that 2,750 were in Guayaquil. Radios are generally sold to the public through exclusive distributors who import for their own account and act as retailers as well as wholesalers.

The most popular radio receiver sold in the Ecuadorian market is a 5-tube table model short-wave set sold at 800 sucres (about \$61.55). A 9-tube set having a range of from 13 to 550 meters and selling for 1,800 sucres (about \$138.50), is also popular.

Patents—No sales difficulties have arisen from patents.

Tariffs and Exchange Restrictions—According to paragraph 1148 of the Ecuadorian customs tariff, radio sets and parts are subject to an import duty of 40 percent ad valorem. Imports from the United States under this paragraph are entitled to the preferential tariff reduction of 30 percent from the basic duty.

Central Receivers—There are no central receiver systems in use in Ecuador. Hotels do not use radios except in dining rooms. There are no other structures that offer any opportunity for the use of such systems.

Short Wave—Ecuador is in the zone where short-waves are superior to the broadcast band for any except extremely local broadcasting. The short-wave feature is therefore considered essential in receiving sets. American and European short-wave stations are regularly received as well as South American.

Transcriptions—Recorded music is used for most radio programs but advertising transcriptions have not been used. If used, recordings should be in Spanish and the turntable speed should be the standard 78 r.p.m.

Regulations—The supervision of radio communications in Ecuador is under the jurisdiction of the Minister of Communications in Quito and the provincial radio inspectors in each of the provinces.

Sets in use—6,000.

Stations—20.



EGYPT

General—Egyptian State Broadcasting, through Marconi Wireless Telegraph Company, Ltd., London, was inaugurated in 1934 from two stations, Cairo Station No. 1 and Alexandria Station No. 1, the latter being a relay for Cairo. The Marconi Company has a 10-year agreement signed July 21, 1932, and which can be described as a "monopolistic concession", to operate as agents for the Egyptian Government "Egyptian State Broadcasting" by means of the Marconi-built but Government-owned transmitters. The Marconi Company owns the broadcasting studios at Radio House, Sharia, Elouh, Cairo. Since the beginning of 1935 there has been an increase of 3 additional stations to the 2 original ones referred to above.

Advertising—Egyptian State Broadcasting is modeled after the policies of the British Broadcasting Corporation. There is no advertising, and private broadcasting is not permitted.

Number of Sets—It is estimated that the number of licensed listeners was between 35,000 and 40,000 during the first year of Egyptian State Broadcasting ended June 1, 1935, as compared with 55,000 for the second year ended May 1936.

Foreign Market Competition—The most serious competitor to American equipment is still Philips, followed by British, German and Austrian makes. Some progress was made by a Belgian make (Radio-Bell) recently introduced on account of its close resemblance to American models.

Tariffs—Under Paragraph 785 of the Egyptian Tariff, wireless telephone and telegraph apparatus is assessed 12 percent ad valorem, on substantially the c.i.f. value. A key tax of one-tenth of the duty is added, as well as an import tax of 2 percent ad valorem.

Patents—The question of radio patents and patent licensing has not arisen.

Sets in use—55,000 licensed.

Stations—5.



EL SALVADOR

General—Dealers estimate that 8,000-10,000 receiving sets are in use; the latter figure is more probably correct. The United States continues to handle the greater part of this trade, although English and Dutch (Philips) sets are imported occasionally. American manufacturers visit this market frequently and thus are in a position to hold their positions as the leading sources of supply.

In the field of combined radio-phonographs, the United States appears to be the only source of supply.

Regulations—The Salvadoran Government has established an annual tax of 5 colonos (\$2.00 at present exchange rates) on each radio receiving set. The tax is estimated to yield 12,000 colonos (\$4,800) yearly, which would mean that the Government bases its estimates on 2,400 sets.

Sets in use—8,000-10,000.

Stations—1.



ESTONIA

General—During the past 2 years the number of radio receiving sets in use in Estonia has evidenced a conspicuous increase. Last available report shows a total of 41,436 receiving sets registered in Estonia.

Import Duty and Restrictions—The present rates of import duty levied on radio sets and parts originating in the United States are as follows, shown in Estonian crowns per net kilogram: sets weighing over 16 kilograms, 3; sets weighing 16 kilograms or less 4.50; parts, 2.

Foreign Trade—The number of sets imported during 1936 may be placed at 10,500 sets. As regards countries of origin, 47 percent of the total imports originated in the Netherlands, 20 percent in Germany, 14 percent in the United Kingdom, 12 percent in Latvia, and only about 1.5 percent in the United States.

Transcriptions—In 1936, the Estonian State Broadcasting Company purchased an American-made portable record player. This outfit has been given considerable use. As regards the use of American transcriptions, there seems to be no opportunity therefor, principally on account of the language question.

Broadcasting—Radio broadcasting in Estonia is conducted by the State Broadcasting Company which is entirely capitalized by the Government. There are no official calls assigned to the two stations. In practice they are linked up for broadcasting, and are announced "Tallinn ja Tartu".

Short Wave—There are no short wave broadcasting stations in Estonia. Short wave programs

are received from European broadcasting stations, the reception of American short wave transmission not being entirely satisfactory.

Advertising—Radio advertising continues to be frowned upon by the Estonian State Broadcasting Company, with the result that during 1936, only 83 hours of total broadcasting time were used.

Regulations—For the installation and use of a

radio receiving set a special license is required. These licenses are issued, upon application, by the chiefs of the local telegraph or post offices and are valid until the holder of the license submits a written notice that he has discontinued the use of his radio set, or until it is cancelled by the Director of Postal Administration.

Sets in use—41,436.

Stations—2.

F R A N C E



General—On June 30, 1936, 3,926,902 receiving licenses were outstanding, representing an increase of 1,301,225 during the preceding 18 months. The increase has continued, according to estimates, but no authoritative estimate exists as to the number of sets now in use. The French are inclined to consider radio more of a luxury than a necessity, which somewhat retards the market, but the general rate of sales is good. There is a distinct winter peak.

Sources of Supply—Radio imports are chiefly from the United States and the Netherlands, with some competition from Germany and the United Kingdom. The French industry accepts the fact that American design and technical practices are about 2 years ahead of the best they have been able to do in France, and adjusts its production, both as to price class and quantity, accordingly. The French radio industry is fairly large. Its principal drawback is its inability to finance frequent changes of equipment that would permit producing competitive sets in the more profitable classes.

Tariffs and Restrictions—Radio sets when imported into France pay an ad valorem duty of 22.6 percent, plus the 8 percent tax levied on all finished products entering France, and are subject to an import quota, the annual allotment to the United States being 4,000 metric quintals. Tubes are also under quota, the annual allotment to the United States being 429 metric quintals; the import duty levied being 12.30 percent ad valorem, plus the 8 percent tax levied on finished products.

Television—France is one of the leading countries in television experiment, and experimental transmissions have been made since April 1935. The transmitter has been in the Eiffel Tower since November of that year, and has just been replaced by improved equipment. The antenna projects above the flagpole on top of the tower. The transmitter has a peak power of 30,000 watts, fully modulated, at the feeder of the antenna and is capable of transmitting television images having a definition of 400 lines. The transmitter is connected with studios in the Post Office building and in the Exposition, through coaxial cable.

Broadcasting—French broadcasting stations are of two categories, government and private. The Government stations are operated by the Ministry of Posts, Telegraphs, and Telephones, and are supported by the proceeds of license fees, while the private stations are operated on a basis somewhat similar to that in the United States.

Advertising—The Government stations do not broadcast advertising. However, advertising constitutes the principal means of revenue for the private stations, in which they have been sufficiently successful that income from this source

is now subject to a special tax. Chain broadcasting has been started by only one group, "Radio Information", made up of Radio Mediterranee, Poste de l'Isle de France, Radio Toulouse, Radio Bordeaux Sud Este and Radio Enghien, the two last being interconnected.

There are two methods of advertising, "communiqué publicitaire" and "concerts patronés". The former consists of series of advertising transcriptions, usually involving musical interludes. The second classification refers to sponsored programs, which are in almost every case of 15-minute length. Besides the usual French advertising, there is a growing industry in English publicity, especially for trans-channel reception. The most popular hours for this are 8 to 9 a.m., 12 to 2 p.m., and after 5 p.m. The largest users of radio advertising are manufacturers and dealers in foods, household equipment, and similar products.

Sets in Use—3,916,902.

Stations—26.



GUATEMALA

General—Radios fall distinctly in the class of luxury goods and the number of those who are able to afford this type of product is very limited. It is very doubtful if more than 1 percent of the total population could be considered as even offering a possible potential market for radio receiving sets at present. While this figure may appear extremely low, it represents probably 5 percent of the total number of families.

Long-wave radio reception is frequently unsatisfactory during the rainy season, but during the dry season, when the atmosphere is generally clear, long-wave reception from the United States and other distant points is usually good. During the rainy season short-wave reception is usually satisfactory, and in general short-wave broadcasting from European stations is received with less static interference than similar broadcasts from the United States. Owing to the use of directional antennae, European broadcasts are received with much greater strength than those from the United States.

Sets in Use.—Estimates in the trade indicate that the total number of sets in use is between 8,000 and 12,000, while official figures based on taxes paid show a total of 6,731, as of August 10, 1937. Of those registered, 4,547 are in the Department of Guatemala, 465 in Quezaltenango, 298 in Izabel, 195 in Escuintla and 182 in Suchitepequez.

Sales—A very marked improvement in sales of radio receiving equipment occurred during 1936, and local merchants state that sales thus far in 1937 indicate a continuation of this situation. One factor which unquestionably favored increase in sales during 1936, particularly as affecting the sale of American equipment, was the duty reduction, 50 percent of the rate formerly in effect, which became effective on June 15 as a result of the Trade Agreement between the United States and Guatemala.

Sources of Supply—Practically all radio equipment on the Guatemalan market comes from the United States. There is a small amount of Dutch and German participation.

Patents—There are no patents in force in Guatemala which in any way interfere with the sale of American radio equipment.

Tariff and Trade Restrictions—Radio apparatus is assessed in the Guatemalan Tariff in the Sixth Division. Under the Guatemala-United States Trade Agreement, which became effective on June 15, 1936, the duty applicable to radio receiving sets (tariff item 491-4-6-3) imported from the United States and from other "most-favored-nations" was reduced to 0.25 Quetzals per gross kilo. In addition to the United States, countries enjoying "most-favored-nation" treatment include Czechoslovakia, Italy, Sweden, Netherlands and Germany.

There is no exchange restriction in force.

The United States is the Principal supplier of all types of radio equipment. In general the American product is regarded as more advanced than the European, and is preferred.

Short Wave Reception of short-wave broadcasts

from foreign stations depends on their power, but the more powerful stations from all parts of the world are heard in Guatemala. As previously indicated, reception from the European stations is generally more satisfactory than from the United States, due principally to the greater use of the directional antennae by these stations.

Programs—Programs for the most part include musical numbers, generally supplied by local bands or "marimba" orchestras and transcriptions are also used. Arrangements have been made for the rebroadcasting of programs of one of the chains in the United States. In addition to the fact that European programs are received more clearly than those from the United States, the fact that these stations cater particularly to Latin American listeners, with several daily broadcasts in Spanish, favors their reception.

Advertising—Although there is a provision for the acceptance of advertising on the station of the Ministry of Fomento and rates have been established, no advertising has as yet been accepted. Likewise, none of the other stations operated by the Guatemalan Government have accepted advertising. The station operated by the newspaper "El Liberal Progresista", is, therefore, the only broadcasting station in Guatemala regularly accepting advertising.

Transcriptions—Only the ordinary commercial transcriptions have been used thus far in Guatemala. Phonograph records for radio broadcasting use are usually purchased locally, but in a few cases transcriptions supplied by advertisers have been utilized.

Sets in use—8,000-12,000.

Stations—7.

G E R M A N Y



General—American participation in the German radio market is obviated by the patent situation, which has had that effect since before the inception of broadcasting and its development of radio trade as an important industry.

Sets in Use—On Jan. 1, 1937, there were about 8,200,000 to 8,300,000 receiving sets in Germany. The majority of these were small, a large number being of the "Volksempfänger" type of 3 tubes. An indefinite percentage represents two or more sets each. The number of sets operated without licenses is not estimated. Germany, perhaps more so than many other countries, still presents a very large market for radio receiving sets. Only about 48 percent of the households in Germany possess a radio receiver, as compared with 78 percent in the United States, and 65 percent in England.

The superhet radio set continues to gain in popularity among German buyers, and 52 percent of the radio sets sold in the first 5 months of the current calendar year were of this design. High-price sets are more in demand now in Germany than heretofore, while about 25 percent of all the radio receivers sold in this country at present are intended both for direct and alternating current.

Sources of Supply—There is no market in Germany for imported radio equipment. Patent exchange agreements reserve Germany for German manufacturers. Some years ago some radio parts, principally loudspeakers, were brought into the country in spite of the patent exchange agreement, but now Germany has strict foreign ex-

change regulations which make it impossible for an American exporter to get his money, even if he could sell here. However, as a result of a patent dispute, an agreement was reached between Telefunken—the principal patent holder in Germany—and Philips of Holland, whereby the latter was licensed to do business in Germany. By the same agreement, Philips allows a certain amount of German participation in the Dutch market, including East and West Indian possessions.

The number of German radio manufacturers is limited by decree of the Minister of Economics to 28.

Patents—German radio patents are controlled by Telefunken, which company also has the rights in several other European countries. The company's position in Germany appears to be unassailable.

Tariffs and Restrictions—Germany's trade regulations with European countries are generally better than with the United States, because of trade agreements which exist. Although some business can be done between German and American firms, trading by barter with European countries is simpler.

Television—Germany was one of the first, and for a long time one of the foremost countries in the world to bring television to its people. For several years there has been one central sender and one relief station handling programs three times a week and a number of other sending stations are said to be planned. As a matter of fact their

construction was announced more than a year ago and they have never been built. The sending station in operation uses intermediate film, 180 lines, 60 frames per second, but within the last year the station has also used direct scanning method. There is a speed truck in operation in the vicinity of Berlin which covers various newsworthy events and broadcasts them either by direct scanning or intermediate film, principally the latter. The truck takes motion pictures and records the sound on magnetized steel tape and these are later run off in the television broadcast rooms. It may be well to note here that Germans do not mind this delay just as they appear to have no aversion to listening to phonograph records by radio. Sometimes when Chancellor Hitler makes a speech, a phonograph record and motion picture are recorded and these are run off later in the radio and broadcast rooms and are sometimes used several weeks or a month afterwards.

The Post Office Department is in charge of television developments and it is making constant experiments.

Broadcasting—Radio broadcasting in Germany is under Government control and has been since the first radio broadcasting station was constructed. The Federal Post Office Department owns all equipment and makes all installations and repairs. It has nothing to do with the broadcasts, everything connected with the programs being in the hands of the Reichsrundfunk-Gesellschaft. Although this is a corporation it is Government owned and it falls under the Ministry of Public Enlightenment and Propaganda.

Programs—In addition to the programs broadcast by the stations for German listeners, this country maintains short-wave directional broadcasts to various parts of the world. The programs are exceedingly popular.

Advertising—Advertising is not permitted on the radio in Germany. It was once allowed on a small scale, but entirely discontinued several years ago.

Transcriptions—There is considerable use of standard record, sound film, and steel tape recording by the German broadcasting system, but all such recordings are made within the organization. The steel tape system employs the principle of spot magnetizing of a continuous tape which is handled by the machine in somewhat the same manner as film in a motion picture camera. The transversing speed is about 1½ meters a second—about double average 78-rev. phonograph record speed. Reproduction can be accomplished immediately after recording, or stored indefinitely for future use. Demagnetization is all that is necessary to recondition tape for recording.

Regulations—All receiving sets are licensed at the rate of 2 reichsmarks (80 cents) per month. The fee is paid to the Ministry of Posts and the money used exclusively for broadcasting. Unemployed, war disabled, and certain other classes are exempt from payment.

Sets in use—8,500,000.

Stations—38.



GREECE

General—Official statistics concerning the number of radio receiving sets in actual operation in Greece are not available, but trade estimates agree that at least 20,000 sets of all types are now in use throughout the country. Between 5,000 and 6,000 sets annually are sold, the limit being set by the operation of the quota, the demand being sufficiently beyond the supply that little effort is needed to dispose of the available quantity. The "all-wave" set is generally in demand.

Sources of Supply—Nearly two-thirds of all the radios sold in Greece are of American manufacture. Practically all the better-known American makes are represented in Greece and, with the exception of Philips Netherland, American radio dealers continue to hold all of the largest individual quota allotments. Among the foreign makes sold in Greece Philips and Telefunken are the only important competitors. Philips radios are considered to be very good and the Philips distributing organization in Athens tops the list of quota holders in Greece, with an allotment 47 percent greater than that of the next largest importer. Perhaps Telefunken's position would have been somewhat stronger in Greece if extra-quota imports of radio receiving sets had been authorized from Germany.

Patents—No patent difficulties are to be noted at present.

Import Duties—The import duty assessed on radio receiving sets is 20 percent ad valorem plus 75 percent of the basic duty for surtaxes. Effective April 24, 1937, the turnover tax was increased from 1½ percent on the landed cost plus duties to 3 percent. As a rule, certified invoices are acceptable for determining the value of radio shipments.

Short Wave—Greece receives broadcasts from all over Europe on short, medium and long wavebands. American stations are heard on the larger sets (eight tubes or more), but owing to the difference in time (6 P.M. Eastern Standard Time is 1 A.M. in Athens) the better part of the American short-wave programs is missed by most radio owners. Reception of early afternoon programs from American short-wave stations which are heard in Greece between 9 and 10 P.M., is not always satisfactory due to static and other interference.

Broadcasting—A 15 KW medium-wave transmitter (frequency 601 kilocycles) is being installed in Athens. It seems unlikely that it will be ready to operate before the beginning of 1938. The station will be owned by the Government, and it has been determined that the broadcasting station will be commercial.

Transcriptions—There is no present demand for transcriptions.

Regulations—There have been no recent changes in existing regulations concerning the ownership and use of radio receiving sets in Greece. The provisions of the dormant laws No. 3054 of 1924 and No. 4795 of 1930 are not being enforced pending the completion of the local broadcasting station, when new supplemental regulations probably will be promulgated. The only regulation which is observed more or less strictly is that requiring radio buyers to register their sets with the Ministry of Communication as soon as purchased.

Sets in use—20,000.

Stations—None—(one by 1938).



HAITI

General—Recent estimates as to the number of receiving sets in use in the Republic do not exceed 3,000 sets. The principal requirements of the Haitian market are for long- and short-wave combinations. Both climate and scarcity of near-by broadcasting tend strongly to increase the value of short-wave reception from the United States and from Europe, which is reasonably good. The 8- and 10-tube table type radio seems to be the most popular.

Sources of Supply—Practically all sets sold are of American origin, five American makes accounting for some 360 annual sales. About 30 Philips

sets are also sold each year. It is reported that the local dealer for Philips is now carrying a more complete line than in previous years.

Patents—No patent situation exists in Haiti.

Tariffs—Radio receiving appliances, equipment, and parts are classified under paragraph 11033 of the Haitian Customs tariff and pay an import duty of 30 percent ad valorem, plus a surtax of 5 percent of the duty.

Short Wave—A great deal of interest is being shown toward foreign broadcasting, especially Paris, as French is the official language of Haiti. American short-wave programs are easily received.

Short wave station III3W is owned and operated by Ricardo C. Widmaier, Jr. Long-wave station III4W works simultaneously with short-wave station III3W.

Transcriptions—Transcriptions are not used in Haiti to any great extent because of cost. Local importers of phonograph records let broadcasting stations use new records in return for advertising. Station mentions number of record, title and stores where it may be purchased.

Regulations—All forms of communication by radio, (radiotelegraph, radio-telephone and broadcasting) are under the control of the Department of Public Works.

Sets in use—3,000.

Stations—3.



HONDURAS

General—Although under strict Government supervision, radio broadcasting in Honduras is in private hands and is commercially operated for profit. Advertising is the principal, if not the only source of revenue, and consists of short paid announcements interspersed between numbers. These latter, as a rule, are recordings. No complete sponsored programs are used.

Short Wave—Although European short wave programs are clearly received throughout the major portion of Honduras, the difference in time makes them rather unsatisfactory. Short-wave programs from the U. S. are year-round favorites and during the dry season (November to April) long-wave is received very satisfactorily. Owing to the diversification of these programs and the high standards of entertainment offered, they are very popular in Honduras, although the fact that they are announced in English constitutes a distinct handicap. Re-broadcasting of American or other foreign programs is rarely, if ever, undertaken here.

Regulations—The Government has the exclusive right to maintain and exploit the radiotelegraphic and radiotelephonic stations in the country, which are necessary for public service. The private stations established or those that may be established must not disturb the functioning of the national stations, and in the future they are subject to these regulations.

It will be noted that the erection of broadcasting stations is subject to governmental permit. No permits are necessary, however, for receiving sets, nor is there any fee or tax on their use.

Receiving Sets—There are no official statistics as to the number of receiving sets in use. The estimated number is approximately 12,000.

Sources of Supply—It may be said that practically all the receiving sets in use are of American manufacture, although there are a few foreign sets in use which have been imported directly by their owners. There are no radio manufacturing plants in Honduras, but sets are sometimes rebuilt by dealers having complete workshops,

using parts and accessories imported from the United States exclusively.

Transcriptions—Although little use has been made, so far, of transcriptions, this practice is said to be gradually growing and there appears to be a limited market here for these records. For completely satisfactory results they should, of course, be in the Spanish language. The inclusion of advertising is not objected to, in fact it is recommended.

Patents—There is no difficulty as regards patents.

Import Duties—Radios are assessed a duty of 0.75 lempira per gross kilo in the Honduran customs tariff. (2 lempiras equal \$1.) To this must be added a surcharge of 10 percent of the duty plus various small taxes; wharfage, stowage, municipal tax, etc., amounting to fractions of a cent each. There are no import quotas.

The varying nature of the electric current supplied throughout this Republic, the absence of easy transportation and the high cost of bringing goods to the ultimate consumer, all create their own particular problems here quite different from those encountered in the distribution of radios in the United States.

Sets in use—12,000.

Stations—3.



HUNGARY

Advertising—All the broadcasting stations are owned by the Royal Hungarian Postal Department, which permits no advertising through radio broadcasting.

Receiving Sets—The number of radio subscribers in Hungary on Dec. 31, 1936, was 365,354 as compared with 352,967 on Dec. 31, 1935. The radio trade association estimates that the annual sales turnover of its 540 members was slightly over 5,000,000 pengos during 1936. With the exception of 50 radio sets for automobiles imported by a local wholesaler from United States, there appear to be no American radio sets for sale in this market.

Transcriptions—Wax disc records are used by the local broadcasting company for short-wave programs. The turntable revolves 78 times per minute. Announcements are usually made in Hungarian, German and French.

Customs Duty—Radio sets are assessed at the rate of 800 gold crowns (about \$180) duty per 220 pounds, plus 9 percent import sales tax; receiving tubes pay 1.50 gold crowns (\$0.335) duty per unit, plus 12 percent import sales tax, and broadcasting tubes 30 gold crowns (\$6.70) duty per unit, plus 8 percent import sales tax.

Regulations—Radio broadcasting has been developed as a Government monopoly, under control of the Royal Hungarian Postal, Telephone and Telegraph Service, and under the supervision of the Royal Hungarian Ministry of Commerce and Communications. All receiving sets require an operating license in Hungary and the monthly subscription fee is 2.49 pengos (\$0.46), which is collected by the mail carriers.

Sets in use—365,354.

Stations—6.



IRISH FREE STATE

General—According to official figures there were 104,000 licensed receiving sets in the Irish Free

State on Dec. 31, 1936, or approximately one to every 29 inhabitants. The number licensed in December, 1935, was 78,600, and in October, 1934, 54,000. There is a good demand for radio sets in the Irish Free State and the market is steadily expanding.

Sources of Supply—The majority of the radio sets sold on this market are of British manufacture, followed by the United States and the Netherlands—each of the two latter countries supplying about 10 percent of the total imports. The 5-tube all-wave mantle model costing from £15 to £20 has the most sales. The average price of tubes is around 10s., and American type tubes are readily obtainable.

Patents—Insofar as it has been possible to ascertain, there are no existing regulations regarding patents or patent licensing arrangements which affect the sale of American radio products in the Irish Free State.

Customs Duty—A customs duty of 50 percent ad valorem is imposed on all radio sets imported into the Irish Free State. Parts and accessories are dutiable at the rate of 25 percent ad valorem, with the exception of cabinets, which are dutiable at 50 percent.

There is no preferential treatment for these products when imported from British countries.

Short Wave—There is no Irish short wave broadcasting. American and European stations are received regularly.

Broadcasting—The broadcasting service in the Irish Free State is a Government monopoly and is operated by the Department of Posts and Telegraphs. All broadcasting programs are originated in the Dublin station studios and are transmitted simultaneously from the three stations.

Advertising—Sponsored advertising programs have been tried out during the past few years, but the Government does not encourage such programs.

Transcriptions—Records are broadcast approximately 11 hours weekly. The records are obtained from a London distributing house for various record manufacturers. Formerly records were furnished gratis but now an annual rent is paid. Advertising transcriptions are not used. Practically all records are broadcast in English, with the exception of a few in Gaelic. The turntable speed used is 78.

Regulations—The broadcasting stations in the Irish Free State are operated generally in accordance with the provisions of the Radiotelegraph Regulations of the International Telecommunication

Convention, Madrid, 1932, and of the European Broadcasting Convention, Lucerne, 1933.

Sets in use—104,000.

Stations—3.



ITALY

General—According to the E. I. A. R., there are actually in use in Italy about 800,000 receiving sets. Because of excessive tariff rates and import restrictions, foreign receiving sets are seldom seen in the market and foreign type tubes of national production are readily obtainable. The Italian radio industry produces about 100,000 sets annually.

Tariffs and Trade Restrictions—For all commercial purposes the market is closed to American sets by high duties, and import and exchange restrictions, as previously indicated.

Television—Television in Italy is only in the laboratory stage and is also under the exclusive control of the sole concessionaires. Two laboratories of the broadcasting service are working on television and are said to be experimenting on such sets with 30, 60, 90 and 180 lines of analysis; a project is awaiting approval of the Government for the installation of three television stations in Rome, Milan and Turin, which are to be connected by means of a coaxial cable (cavo collaiale).

Programs—The company, through its monopoly and with the strong sponsorship of the Government, has developed its services to a degree comparable with the other European systems. Covering the Mediterranean Basin with broadcasting programs, as well as Europe and the North and South American Continent, special programs are arranged and broadcast in four principal languages: Italian, English, French and German.

Advertising—During 1936 the system of commercially sponsored programs, which had never reached the proportions of certain other countries, was materially and noticeably reduced to the mere mentioning of the announcement of the sponsor.

Regulations—Private owners of radio receiving sets are required to pay a fixed annual subscription to the broadcasting company at the rate of 81 lire per annum if paid at the beginning of the year or 85 lire if paid in advance in two semi-annual installments.

Sets in use—800,000.

Stations 17.

J A P A N



Including Korea and Formosa

General—Broadcasting in Japan Proper is controlled by the Japan Broadcasting Corporation, which in turn is supervised by the Ministry of Communications. Programs are subject to strict censorship. Advertising of all sorts is prohibited. Political speeches cannot be included in the daily program.

The Japan Broadcasting Corporation operates 30 transmitting stations in Japan proper, in-

cluding 3 alternative transmitting stations for the large stations at Tokyo, Osaka, and Nagoya. These stations have certain local features included in their programs but in general they depend upon two main daily programs broadcast from Tokyo and Osaka and then relayed. The stations are distributed on a plan seeking to give approximate equality of reception throughout the islands, aiming toward an ideal of one-station reception in all regions.

Ten-thousand-watt central stations in Japan

proper are located in the principal cities of Tokyo, Osaka, Nagoya, Hiroshima, Kumamoto, Sendai, and Sapporo. To supplement these main stations 25 others have been established with aerial power ranging from 300 to 3,000 watts, at important points throughout the country. All these stations have been linked by a permanent relay line, so that events of national interest can be broadcast to every corner of the country.

Regulations—The revenue of the Japan Broadcasting Corporation is obtained from the license fees paid by owners of radio sets. Each owner pays a monthly fee of 50 sen to the corporation, while an initial fee of 1 yen is paid to the Ministry of Communications. Broadcasting time is not sold and no advertising of any kind is permitted over the radio in Japan. The corporation pays the Government an annual monopoly fee amounting to 20 sen per subscriber.

Broadcasting in Chosen (Korea)—Broadcasting in Chosen is carried on by the Chosen Hoso Kyokai (The Broadcasting Corporation of Chosen), which operates on a monopoly basis. It cooperates closely with the Japan Broadcasting Corporation in relaying programs to and from Japan. The license fee amounts to 1 yen a month.

Broadcasting in Taiwan (Formosa)—Broadcasting in Taiwan is in the hands of the Government of Taiwan as far as the technical details are concerned. The actual broadcasting entity is the Taiwan Hoso Kyokai (Taiwan Broadcasting Corporation).

Overseas Broadcasts—The Broadcasting Corporation of Japan has for some time been transmitting programs by short-wave to Chosen, Taiwan, and "Manchukuo" (including Kwantung) for periods ranging from 5 to 9 hours daily. Encouraged by the response to these programs, not only in the 3 areas mentioned, but also in foreign countries, the corporation decided to inaugurate another special short wave broadcast called the Overseas Broadcast. The new broadcast was designed especially for reception by Japanese subjects abroad, as well as for others interested in the Far East and Japan in particular.

Programs—The present policy aims at controlling the programs in all parts of the country by means of a national hook-up.

Number of Receiving Sets—There was a total of 2,423,925 radio sets licensed for use in Japan proper at the last check-up, according to the Japan Broadcasting Corporation. Further, according to the corporation, a considerable number of unlicensed sets are in operation and the foregoing totals should be increased by about 25 per cent to arrive at an approximate total of licensed and unlicensed sets.

Domestic Production—According to an investigation made by the Japan Broadcasting Corporation, there are at present more than 8,000 concerns and individuals in Japan making and selling receiving sets or parts.

American participation in the radio market in Japan is not expected to show any marked increase in the immediate future. On the contrary, owing to the highly developed stage of the local industry, which is already on an export basis, and because of the distinct preference for very cheap sets, it is possible that total imports of radio apparatus will gradually decline, save for special types and latest developments.

Patents—Imitation is a strong feature of Japanese manufacturing, and any imported article should be fully covered by Japanese patents before being placed on sale.

Sets in Use—3,029,905 (estimated).

Stations—35.



LUXEMBURG

General—There is only one broadcasting station in the Grand Duchy of Luxembourg, and that is one of the most powerful and modern in the world, broadcasting with a power of 200,000 watts on a frequency of 232 kilocycles, or a wave-length of about 1,293 meters, in place of the 1,304 meter wave-length which was employed until a few months ago. Radio Luxembourg is the title of the broadcasting station, but it has no official call-letters. The station is owned and operated by the Compagnie Luxembourgeoise de Radio-diffusion. There are no short-wave broadcasting stations in the Grand Duchy of Luxembourg.

American short-wave programs are received here but with one exception by no means as well as are short-wave European programs received in the United States. The reason for this poor reception in most cases of American short-wave programs is that most American stations do not as yet use "directional sending." With one exception, which comes in like a "local," all American short-wave sending stations use the old fashioned non-directional sending aerials, and are in themselves generally of low power anyway.

An American program broadcast directed to Western Europe by a directional aerial if sent at 10 to 18 kilowatts, is received here as clearly as a "local," when a non-directional broadcast at 40 kilowatts will sometimes only give a flutter or the faint hum of the carrier-wave. American listeners hearing the superb short-wave programs of the English and German world-wide stations are apt to think that American programs are, conversely, heard as well in Europe. This is far from being the case. Directional short-wave programs from Tokyo, Japan, for instance, at around 9,500 kilocycles, come in at much greater strength and program value than those from the American short-wave stations not equipped with directional aerial. This is a point which cannot be too much stressed if American advertisers want to reach European markets on the short waves.

Regulations—No receiver licenses are necessary, and there are no regulations regarding operation. The one broadcasting station is under a Government monopoly for broadcasting which still has some 15 years to run.

Receiving Sets—Probably 30,000 receiving sets are now in use in the Grand Duchy of Luxembourg. This is a very high average, working out to one set to every 10 population.

Sources of Supply—Germany, Belgium and France, in the order named, are the chief countries of supply.

Sets in Use—30,000.

Stations—1.

MEXICO



General—Imports of radios and parts have shown a consistent increase in volume and value. Imports of radio equipment are almost totally from the United States, Germany, Great Britain, Japan and the Netherlands furnish very small quantities. Importers of radios estimate that there are in use at present throughout the entire Republic, 250,000 radios. Approximately 120,000 of these sets are believed to be in operation in the Federal District, the others divided among the larger centers of population and country districts.

Reception also plays an important part in radio sales which are adversely affected by the relatively poor reception prevailing during the rainy season. As a rule, the rains begin in June and continue up until the month of October. During this period reception is very unsatisfactory.

Distribution—Many of the leading U. S. manufacturers of radios and radio equipment have factory sales branches established in Mexico, as a rule, separate corporations organized in accordance with Mexican Law. These branches perform all the services incident to import and assembly and, of course, appoint distributors and assist the latter by every means possible. The distributors so appointed are, as a rule, organizations who operate independently of the factory and are in fact separate and distinct businesses utilizing their own capital.

Competition—Possibly 99 per cent of radios and radio equipment sold in the Republic of Mexico is of U. S. origin. The greatest share of business is in the hands of 4 or 5 of the leading U. S. makes. At least 4 of these leaders operate through factory directed sales branches established in Mexico City. A relatively small number of sets is made locally from parts imported from the U. S. and from locally-made cabinets. The domestic manufacture of radio sets is conducted on a very small scale and, with the exception of one or two larger plants, by individual electricians. There are two organizations established in Mexico City, "Fabrica de Radios Chapultepec," S. A., located on Independencia 46, and "Radio Industrial," S. de R. L., located on Rep. del Salvador 46, which are perhaps the leaders in the field.

Foreign competition in this market excluding that, of course, of the U. S., has come almost wholly from the Philips set manufactured at Eindhoven, Holland. The Philips machine is well regarded but at present is practically out of the market.

Programs—The great majority of the 250,000 radios in use in the Republic of Mexico are sets capable only of receiving local programs. Furthermore, a great majority of owners prefer what might be called a national program. However, with the growing popularity of all-wave reception, there is an increasing interest in the reception of United States programs. Practically all of the larger of the U. S. stations can be clearly heard specially during the winter evenings. One of the largest Mexico City stations has recently been broadcasting the national program of a U. S. automobile manufacturing company, which program for the duration of one hour on Sunday evenings has come in over the telephone wires.

The type of music adopted by broadcasting companies depends to a great extent on the nature of the product being advertised and the section of the public to which it appeals. Sponsors who merchandise an article cheap in price and of universal appeal find Mexican vocal and instrumental music or modern dance music more suitable. If an appeal is being made for an article which it is thought will find its

market among the more restricted cultured and well-to-do classes, then an orchestra selection or classical music or the presentation of a good Spanish comedy might be resorted to.

Small stations and sponsors using them cannot, as a rule, afford the services of live artists and consequently, "canned" music is widely used. Even so the result in a program is generally infinitely superior to that which might otherwise result through the use of cheap or mediocre talent.

Charges for Talent—Radio stations, as a rule, do not include the services of entertainers in their rates, this being left to the sponsor. Radio stations also reserve the right to cancel any contract if in their opinion the quality of the artist does not come up to the standards of the station. There seems to be no requirement against the use of musical transcriptions, which, in fact, are very extensively used by the smaller stations.

Chain Broadcasting—There is no continuous chain broadcasting service at present established in the Republic. Various companies have, from time to time, conducted chain broadcasts but only for special occasions. Actually, it is believed that chain broadcasting would not prove commercially possible since the country has no sponsors desirous of investing the necessary sums in advertising of that description.

Transcriptions—For "canned" programs, the necessary records are obtained from United States sources. Operators of broadcasting stations in the Republic who use records to a considerable extent criticize the available records. They state that there is a considerable difference in the Spanish language as spoken in Mexico, Cuba, the Argentina, and other Latin-American countries. They would prefer, if possible, to have the artist who makes the Spanish language records for use in Mexico speak Spanish as spoken in the Republic. This, of course, may not be feasible due to the relatively restricted markets in the various Latin countries. However, it is an objective which should be kept in mind by the producer.

Buyers of Advertising Time—Largest users of radio advertising time appear to be breweries, manufacturers of beauty preparations, and cigarette manufacturers. These three industries, whose products cover the Republic, advertise on a national scale and so buy radio time from stations widely scattered throughout the Republic.

Sets in Use—250,000.

Stations—87.



NETHERLANDS

General—The number of sets in use January 1, 1937, was 622,228, or approximately 116 per thousand inhabitants. Counting the unregistered sets there is probably a total of 1,000,000. Keen competition and price cutting is causing the radio trade considerable trouble. The demand is mainly for inexpensive sets but the number of people buying higher priced sets is increasing. Cabinet types ranging from 150 to 250 guilders, are preferred.

Imports of American radio equipment consist chiefly of parts which are not covered by Philips' patents. This business declined from 529,000 florins in 1935 to 325,000 florins in 1936. During the first 6 months of 1937, however, imports from the United States showed an increase in value over the same period last year.

Patents—The importation of American radios into the Netherlands on a commercial basis is not permitted because of the control of basic patents by the Philips Company. Although doubt has been expressed of the validity of these patent rights, any dealer attempting to import American radios is liable to an injunction action in the Courts of this country. No case up to the present has been carried to the highest court of appeal, so that the question is still in abeyance, but the position of Philips is considered to be a strong one. As a practical matter the Philips concern continues to enjoy control of the market.

Tariff Restrictions—The customs duty on radio sets with built-in loud speakers is 12 per cent plus a compensating duty of 2 per cent and a 10 per cent sales tax; on radios without loud speakers, the compensating duty is 1 per cent plus a sales tax of 4 per cent; on loud speakers the compensating duty is 2 per cent and the sales tax 10 per cent.

Television—Television in the Netherlands is still in the experimental stage although the progress already made in overcoming technical difficulties would, it is reported, justify the utilization of television in the Netherlands to the same extent as is being done in England, where performances are being given regularly. The Philips concern has secured a number at its laboratories at Eindhoven. The reproductions obtained with the company's newly developed 22-tube sight-and-sound receiver are considered satisfactory even when compared with the best obtained thus far elsewhere. With iconoscopes built in its own laboratories, both outdoor scenes and motion picture films can be transmitted direct, without the intervention of photography, by so-called interlacing at 25 pictures per second; in this manner, larger and clearer pictures are obtainable. There are still many improvements needed, but Philips has introduced complete television transmitters and receivers. This is some indication that the technical difficulties are being surmounted.

Short Wave—More all-wave sets are now being offered for sale in the Netherlands because the Netherlands is interested in developing short-wave broadcasting with its colonies and because listeners desire the option of tuning in on the short-wave band. American short-wave programs can be received in the Netherlands but the great obstacle is the difference in time which makes clear reception possible only with very selective sets.

Broadcasting Revenue—Broadcasting in the Netherlands derives its revenue almost entirely from voluntary contributions to one of the four broadcasting associations in the Netherlands. These associations publish periodicals subscriptions to which as well as advertising therein are an important source of revenue. Owners of receiving sets pay no license fee.

Advertising—Broadcast advertising is prohibited by law.

Transcriptions—Considerable use is made of phonograph records for broadcasting but the market for American transcriptions, even without advertising, is negligible.

Sets in Use—622,228.

Stations—5.



NEWFOUNDLAND

General—Radio has been developed in Newfoundland rather steadily since its beginnings, and the Colony constitutes a stable market of fair proportions at all times. American sets are popular, and the United States supplies practically all of the sets sold. The maritime nature of the country has probably been responsible for a greater appreciation of radio than would have otherwise developed. There is no retarding feature other than the two-dollar receiving license fee.

The reduced import tariff of 1935, under

which there is no preferential treatment of British goods, has been a further aid to the sale of American sets.

Sets in Use—According to the 1935 Census Report there are 7,240 radio receiving sets in operation on the Island. It is believed that this figure is conservative, as many owners of receiving sets have not reported to the Government. More than 90 per cent of the sets in operation are all-wave. More than 80 per cent of the receiving sets are of American origin, and this number is constantly being augmented by new importations.

Sources of Supply—American radio receiving sets and equipment have gained a strong position in the local market, which it hardly seems likely will be easily broken into by foreign competitors. Some few radio receiving sets are imported by private individuals from Great Britain each year. More than 90 per cent of the demand at present is supplied by American manufacturers, some 18 or 20 American radio manufacturers being represented in Newfoundland. Competition is almost entirely among these manufacturers, the only foreign competitor represented locally being the Canadian Marconi Company. American radio receiving sets retail in Newfoundland at prices almost double their wholesale prices in New York.

Patents—There are no patents held by Newfoundlanders which affect the radio trade. Several foreign patents appear to have been registered in Newfoundland, but this circumstance has little or no effect on sales. The preference which seems to be shown by officials of the Department of Posts and Telegraphs for the Canadian Marconi Company is believed to be based on the fact that it is an Empire undertaking, and has no reference to any patent rights.

Tariffs—The Customs Import Tariff, which was promulgated Jan. 1, 1935, assesses imports of radio sets and equipment at 30 per cent ad valorem, with no preference being given to sets and equipment of British manufacture. This reduced tariff has resulted in a considerable increase in the importation of American equipment.

Short Wave—American short wave programs are received in St. John's.

Transcriptions—Stations VONF and VOGY use transcriptions and popular dance recordings to form 60 per cent of their programs. During 1936 the Dominion Broadcasting Company imported for its own use transcriptions (15-minute recordings) valued at \$1,500, U. S. cy. All of these transcriptions were imported direct from the United States. These transcriptions are rented out to individuals or organizations wishing to advertise over the radio. They are never sold outright. The turntable speeds are 78 and 33-1/3 revolutions per minute.

Regulations—The Radio-Telegraph Act of 1930 governs radio broadcasting in Newfoundland.

Sets in Use—7,240.

Stations—15.



NEW ZEALAND

General—Number of licensed receiving sets in operation on July 31, 1937 was 251,572, an increase of 48,144 or 23.6 per cent over those licensed at the same period in 1936. Radios are generally sold through wholesale distributors in the four principal cities, Wellington, Auckland, Christchurch and Dunedin. There are about 1,200 dealers, both wholesale and retail. The great majority of American sets are imported without cabinets in order to escape the higher import duty levied on complete machines.

Sources of Supply—The principal makes of radio, other than domestic sets, are imported from the United States, Australia, United Kingdom, (H. M. V.) Canada and the Netherlands (Philips), in order of importance. American sets are estimated to comprise 70 per cent of all imported sets sold. Locally manufactured sets comprise approximately 55 per cent of total sales.

Patents—With respect to radio patents, the New

NORWAY

Zealand Government has decided that the matter is entirely one for arrangement between the manufacturers and dealers, and the holders of the various radio patents. A patent pool known as the Australian Radio Technical Services and Patents Company, Limited, with headquarters in Sydney, Australia, is understood to be authorized to form agreements between patent holders and local dealers and manufacturers. An agreement between the two groups is understood to be still in effect, providing for the payment of 3 shillings sixpence (approximately 0.70) per cathode-anode stream.

Tariffs and Restrictions—The only restriction on imported radios and parts is a Customs tariff which provides British Empire products a large preference over American and other foreign sets.

Short Wave—There is no short-wave broadcasting in New Zealand, except that conducted experimentally by amateurs. The Government has, however, announced its intention of establishing a short-wave station before long. Reception of American short-wave programs is poor, due to the fact that most American broadcasts are received in the early morning hours, and a great deal of static interference is encountered.

Broadcasting—Radio broadcasting in New Zealand is controlled by the Government, which owns and operates 9 class "A" stations and 4 class "C" stations. Only the class "C" stations are permitted to broadcast advertising matter. In addition, the Government has announced that it has recently completed negotiations for the purchase of 15 of the 21 privately-owned, or class "B" stations. Negotiations are continuing for the purchase of the remaining 6 "B" stations. Occasionally, relayed broadcasts are received from Great Britain with respect to notable speeches, ceremonies and sporting events.

The 9 class "A" stations often operate as a national chain, sometimes with "B" and "C" stations added.

Advertising—Inasmuch as no advertising is at present permitted over the air, except from Government-owned "C" stations, the "B" stations rely for their financial support on private contributions for the most part. Some of these stations, however, have received subsidized support from the Government. The Broadcasting Bill provides for additional subsidies to be granted to "B" stations by the Government out of the proceeds of license fees, and it is anticipated that this policy will be continued as regards any "B" stations which are not eventually purchased by the Government. Prospective American advertisers over New Zealand stations should communicate with the Advertising Manager, National Commercial Broadcasting Service, Dixon Street, Wellington. Each 15 minutes of program may include 200 words of advertising. No advertising is broadcast on Sunday. Contracts are limited to 26 weeks.

Transcriptions—Due to the distance of New Zealand from the United States and Europe and to the different type of program broadcast in Australia (commercial), nearly all programs transmitted from local stations are of New Zealand origin. Relatively few New Zealand artists are engaged in broadcasting over the radio, and the major portion of local programs is made up of transcriptions. Most of those used are imported from Australia and the United Kingdom.

Turntable speeds are 78 r.p.m. for 10 and 12 inch records. A limited number of 16 inch records are used for which the speed is 33-1/3 r.p.m.

American advertising transcriptions are used in "C" station broadcasts, although advertising by local announcers is also available.

Regulations—Dealers in the four chief cities of the Dominion (Auckland, Wellington, Christchurch and Dunedin), pay an annual license fee of £NZ 15. (approximately \$60) per year. Other dealers pay an annual fee of £NZ 7. 10. (approximately \$30).

A listener's license fee of 25 shillings (approximately \$5) per year is charged of every radio user. The amateur transmitter's license is 30 shillings (approximately \$6).

Sets in Use—251,572.

Stations—20.

General—Broadcasting in Norway dates from 1925, when a private company was granted a concession by the State for the construction and operation of a radio broadcasting station in Oslo. On July 1, 1933, all stations were taken over by the Government, and an independent bureau, Norsk Rikskringkasting (National Broadcasting), was organized for the administration and control of broadcasting in Norway. At present National Broadcasting is operating 16 stations, including the national station at Oslo.

Revenues of National Broadcasting are derived from the same sources as were those of the privately-owned stations. For the fiscal year 1934-35, revenues amounted to 4,529,498 kroner, of which 3,151,055 kroner were derived from listeners' taxes. Advertising yielded about 5,000 kroner.

Short Wave—Reception of American short wave programs is, on the whole, very irregular, and certainly not steady enough for ordinary listeners to enjoy.

Receiving Sets—During the past few years there has been a growing interest in a certain low priced type of receiving set manufactured by one Norwegian firm and the local factory of the German Telefunken Company. There is also a great demand for the 3-tube Folkemottager radio, which is being manufactured jointly by two local firms for National Broadcasting. The manufacture of these sets was begun in 1936 with a lot of 8,000, and up to the present the demand is understood to have been greater than the supply.

Sources of Supply—There are 5 radio manufacturing firms of some importance in Norway, of which 2 are stated to undertake the greater part of the production. One of these is the Norwegian Telefunken factory. There is also one firm which is considering undertaking the assembly of the Philips product Rex-Aristona. While the United States ranked third in 1933 and 1934, the imports from that source dropped to fourth place in both 1935 and 1936, representing 3.9 per cent and 4.9 per cent, respectively.

While the interest in American receiving sets must be considered as relatively small, there is understood to be an increasing demand for tubes, and imports from the United States of loud speakers increased from 29.7 per cent to 46.7 per cent, tubes for receiving sets from 6.4 per cent to 10.6 per cent, and other apparatus for broadcasting from 10.8 per cent to 26.8 per cent. Imports cover only tubes which do not infringe the patents held by the patent pool.

Transcriptions—Since National Broadcasting bought its present program recording equipment, this has been very widely used, especially for programs received from out-of-the-way places. Outside of National Broadcasting, there would appear to be no opportunities for American transcriptions, with or without advertising.

Patents—A patent pool, consisting of certain European and American manufacturers, is offering a license agreement for the importation of American radio receiving sets, upon payment of a royalty of 7 per cent of the gross list price, less 30 per cent. American tubes, which formerly could not be imported on any basis, are now admitted to sale, providing they do not contain more than four electrodes and do not infringe the pentode or hexode patents. The Schottky (screen grid) and the Langmuir (grid frame) patents, which were great obstacles to the importation of American tubes, have now expired.

Five firms in Norway have now entered into a license agreement with the patent pool.

Sets in Use—Not available.

Stations—16.

PALESTINE

General—Statistics relating to licenses for radio sets show that 8,216 new licenses were issued in 1936, making a total at the end of the year 20,388. Of those issued in 1936, 5,147 (60 per cent) were on applications in Hebrew, 2,264 (26 per cent) in English, and 805 (10 per cent) in Arabic. Sets in use were stimulated by the opening, in March 1936, of the Government-owned broadcasting station at Ramallah, although imports decreased at the same time.

Sources of Supply—The United States is the principal supplier of radio equipment, supplying about 70 per cent. The nearest competitor is the Netherlands with about 14 per cent, followed by Austria, Germany, Great Britain, and Hungary with less than 5 per cent each. The American share is said to be increasing.

Patents—No adverse patent conditions have been reported.

Customs Duties—"Radio Sets and Parts Thereof" are assessed at the rate of 12 per cent ad valorem under Section 311 of the Palestine Customs Tariff. Combination radio and phonograph sets are assessed at the rate of 15 per cent ad valorem under section 180.

Short Wave Short-wave reception is very important, because of climatic interference with medium and long-wave reception of distant stations. American short-wave stations can usually be heard only by the more powerful and expensive sets, and as the principal American programs are only available after midnight, relatively few persons endeavor to receive American programs.

Regulations The Radio regulations of Palestine are based on the Wireless Telegraphy Ordinance of 1924, which had been amended on several occasions.

Sets in Use—20,388.

Stations—1.



PANAMA

General—Radio reception is made difficult in this area by the adverse climate and atmospheric conditions. From the middle of April to the end of December the atmosphere is unfavorable to clear radio reception.

Selling Facilities The average price paid by the consumer for receiving sets is around \$60 for the combination short-wave and broadcast bands. Lower priced units would obviously stimulate sales. It has not been considered feasible to secure distribution in the Isthmian market through commission agents operating on a commission basis. The market is small, highly competitive, and at least ten popularly advertised American makes are represented.

Import Tariff—Radio receiving sets, parts, and apparatus for radios are assessed 15 per cent ad valorem as an import duty plus 3 per cent ad valorem on the f.o.b. value of the invoice as a consular fee.

Sets in Use Trade sources conservatively estimate the number of sets in operation on the Isthmus of Panama (in the Republic and the Canal Zone combined) at 7,000 to 8,000. The local demand for radio receiving sets, all of which must be equipped for short wave reception, has expressed itself in a steadily rising rate since the inauguration in 1935 of regular radio broadcasting within the Republic of Panama.

Practically all of the receiving sets and accessories are derived from the United States, which furnished \$163,399 worth in 1936 out of a total of \$164,553.

Transcriptions—The small number of broadcasting stations that exist in the country naturally impose marked limitations on the opportunities for supplying transcriptions for broadcasting purposes. The equipment of the broadcasting station is, however, 100 per cent of American manufacture, and the recorded programs employed are practically all from the United States.

Sets in Use—8,000.

Stations—7.

PARAGUAY

General—The radio market in Paraguay is somewhat difficult and involved at all times, and unusually so at this time, due to overstocks and weak and unstable exchange. Only about ten per cent of the Paraguayan population can be considered as potential radio set owners, on the basis of income, and the majority of this class is limited to the cheapest type of equipment.

Selling Methods—Competition among distributors is very keen and every saving is effected where practicable. In several instances chassis of established sets are purchased from factories in Buenos Aires and the cabinets are made of domestic woods in shops in Asuncion after designs supplied by the exporter. This procedure, while it eases competition to some extent, tends further to preclude the successful introduction of new American lines when directly complete from the United States.

Sources of Supply—The United States is the principal source of supply for radio sets and parts. Of the 656 sets imported during 1936, 72 per cent were from the United States and 22 per cent were from Argentina; 800 sets were imported during 1935, of which 55 per cent were from the United States and 40 per cent from Argentina. Formerly, Argentina supplied the major percentage, but the general tendency at this time is to import direct.

Patents—There never have been any legal controversies involving radio patent rights.

Tariffs—The Paraguayan Customs Tariff provides a duty of 37 and one-half per cent ad valorem on radio sets. That figure alone, however, has but little significance in calculating duties. The system now employed for arriving at duties payable is extremely complicated. Calculations begin with the invoice value, which should include consular fees and insurance charges.

Short Wave Those who can afford the higher prices therefore prefer all-wave sets, with which they can receive European and North and South American programs not available on the middle waveband.

Advertising—The advertising policies of the various stations are not well organized, running several articles together on the same program with no pause between items. Advertising rates are low because results are negligible.

Transcriptions—Broadcasting stations in Paraguay are not very familiar with transcriptions for broadcasting. The average radio public in Paraguay prefers a type of music peculiar to the country and the number that might appreciate American transcriptions is said to be too small to warrant the expense of importing them.

Sets in Use—10,000.

Stations—12.



PERU

General—There are 9 broadcasting stations operating in Lima and 5 elsewhere in Peru, all but one privately-owned.

Advertising—All Peruvian stations are supported by advertising. No fixed advertising policy exists and rates, are, therefore, the result of bargaining. All stations use phonograph records; two stations also use electrical transcriptions.

Foreign Competition—The bulk of the business is secured by 3 or 4 well-known American makes, with a large number of other American makes sharing in about 10 per cent of the total sales.

A few German "Telefunken," and Dutch "Philips," sets are sold but the total to date is reported to be negligible. At present "Philips" is practically off the Peruvian market.

Import Duties—Import duties are not restrictive.

Patents—There are no patent requirements for the introduction of radio sets in Peru. Trade marks should, however, be registered.

Short Wave—Short wave broadcasting was undertaken by two stations. Many persons have reported difficulty in getting Schenectady, as a result of German broadcasts on DJA 31.38 meters—9,560 kilocycles and DJD 25.49 meters—11,770 kilocycles, programs of which are now advertised in the Peruvian press.

Transcriptions—While phonograph records are still widely used more talent is being hired. Electrical transcriptions are used regularly by several stations. Special transcriptions are in Spanish; however, popular songs from the United States are given in English.

Restrictions—There are no exchange, import, or other general restrictions.

Sets in Use—19,000.

Stations—14.



PHILIPPINE ISLANDS

General—The radio is particularly valuable in towns and districts remote from Manila, which cannot otherwise get news, produce quotations, etc., promptly. It would seem that the provinces outside of Manila should offer an excellent field for expansion in the sale of radios, to the extent that economic conditions permit their purchase. Nevertheless, at least 75 per cent of the sets sold are sold in Manila.

Sets in Use—At the end of 1935, there were 24,231 sets licensed, of which 11,313 were in Manila and 2,683 in the province of Rizal, which includes Manila suburbs. Of the total 60 per cent were registered in the Manila area. The total number of sets registered at the end of 1936 was 27,995.

Short Wave—The majority of the sets in use are long-wave, probably 60 to 70 per cent of the purchasers are not interested in short-wave. This is probably due partly to the fact that there has been no short-wave broadcasting in the Philippines and the majority of Filipino purchasers are not much interested in outside stations. There is a good market for sets, however, among the Chinese, Americans, Europeans and many Filipinos, particularly those who have traveled abroad, require short-wave sets capable of getting European stations. American stations are not as a rule heard successfully in the Philippines.

Sources of Supply—Probably two-thirds of the sets sold are of two American makes. The remaining third of the business is divided among 8 or 9 sets, chiefly American, with the exception of Philips, which gets a moderate amount of business in the high-priced class.

Patents—Situation not of importance.

Short Wave—Reception of American short-wave programs is generally unsatisfactory. They can sometimes be heard on very good sets, but European programs come in much better.

Advertising—KZRM in 1936 broadcast 282 hours of sponsored programs, including some electrical transcriptions from the United States. There are occasional rebroadcasts of important events in the United States and Europe brought in on short-wave and rebroadcast by KZRM. KZEC's programs are made up mainly of phonograph records. It had an advertising revenue of 13,845 pesos in 1936, which approximately covered the cost of operation. KZIB is operated by I. Beck, Inc., department store owners and radio distributors. Programs are made up about 35 per cent of local talent, 15 per cent electrical transcriptions and 60 per cent of phonograph records and are heard throughout most of Luzon and sometimes in the southern islands.

Advertising revenue averages about 1,000 pesos a month, which is not quite sufficient to cover operating expenses.

Transcriptions—A few electric transcriptions are received from American advertisers. Aside from that, there is no considerable use of transcriptions, although phonograph records are used a good deal.

Regulations—Of the 27,995 sets registered at the end of 1936, it appears that registration fees were paid on not more than half, as the total amount received, on the basis of 10 pesos per year per set—was 123,559 pesos.

Sets in Use—27,995.

Stations—3.



NICARAGUA

General—Little control is exercised in Nicaragua over the activities of broadcasting stations, although there is in existence a set of regulations covering licensing and other pertinent features.

The total number of sets in Nicaragua is unofficially estimated at about 1,700.

Broadcasting—Advertising by radio is not, as yet, beyond its first stages and is usually limited to local enterprise.

Short Wave—American and other foreign short wave reception is good during the later hours of the afternoon and during the evening, except, of course, where there is interference from local stations.

Receiving Sets—Practically all radio receiving sets sold in Nicaragua are of American manufacture. The most popular sets are those with all-wave reception and from 6 to 11 tubes. Eight or 9 tube sets in table models appear to have the greatest sales appeal.

Import Restrictions, Quotas—At present there exist no import restrictions or quotas. No permits are required for importation of radios into Nicaragua at present.

Sets in Use—1,700.

Stations—9.



POLAND

General—There were only 763,693 registered receiving sets in Poland on June 1, 1937, of which 483,547 were tube type, the remainder being crystal sets. The total number registered represents an increase of 104 per cent from the 374,000 registered on Jan. 1, 1935, and an increase of 55 per cent over the 491,823 registered on Jan. 1, 1936. About 14 per cent of the total are in Warsaw.

Germany is the principal source of imports of radio sets, parts and accessories, followed by Holland and Austria. Small quantities are also received from the United States, England, France, and Switzerland. The demand for American sets is greatly limited by present market conditions.

Tariffs and Restrictions—Radio receiving sets are classified under tariff item No. 1118, paragraph 1, which has "normal" rates of from 2,000 to 5,000 zlotys per 100 kilograms but, conventional rates of from 1,400 to 3,600 zlotys. Conventional rates apply to imports from the United States. Quotas for the importation of American radios are not established officially, but it is understood that at present allocations of import permits are being made to the extent of 450 kilos net weight per quarter.

Short Wave—The short-wave program over station SPW of Warsaw on 22 meters starts at 5:30 p.m., Central European Time, and ends at 7:30 p.m. on Sunday and starts at 6:30 p.m. and stops at 7:30 p.m. on Mondays, Wednesdays, and Fridays only. Programs consist mainly of Polish music, news comments, talks on Poland and Poles, etc. Reception of American short-wave programs, even with 6 and 7 tube sets is fairly good. This is likewise true of such far away stations as Buenos Aires, Argentina and Tokyo, Japan.

Broadcasting—Broadcasting in Poland is under the control of Polskie Radio (The Polish Radio Co.) which is a Government owned and operated enterprise. The broadcast programs, which still have room for improvement from an American standpoint, are supported by subscription fees paid by radio owners.

Advertising—Advertising, which did not reach American standards, was interspersed between records in the recorded musical programs but on April 1, 1937 all commercial advertising over the radio was discontinued. In 1936 the income from advertising amounted to 535,359 zlotys, and up to April 1, 1937, 172,723 zlotys.

Transcriptions—Slightly more than 20 per cent of the broadcasting time of the most important Polish radio stations is devoted to the broadcasting of recorded music. Additional time is devoted to recorded talks but this time is not regular. Owing to the fact that the local record making industry is well established, no opportunity is offered for supplying American transcriptions, either with or without advertising; in fact, Poland offers only a very small market for American made phonograph records. Imports of records come principally from Germany, England and Austria. The most important record makers are Syrena-Rekord, Tow. S. A. and Polskie Zaklady Fonograficzne, both of Warsaw. These firms do not furnish records for broadcasting but retail record shops do.

Sets in Use—763,693.

Stations—10.



PORTUGAL

General—At present there are 23 broadcasting stations in Portugal, and one additional short wave station under construction. Of the total, 2 are owned and operated by the Government, 2 by the Radio Club Portugues, and only these 4 are of any considerable importance, the remaining 19 being stations of low power and small coverage, known locally as "amateurs." There are 3 short-wave stations included in the total given above. None of the stations in Portugal have sufficient power to cover the entire country.

Advertising—Radio advertising is prohibited by law in Portugal, but a special temporary concession has been granted the Radio Club Portugues to broadcast advertisements. It is reported that owners of several small stations have recently petitioned the Ministry of Public Works and Communications for authorization to broadcast advertising, but no decision has been announced as yet.

Regulations—The Government exercises control of radio in Portugal through a Director of Radio Electrical Services (Direccao dos Servicos Radio Electricos) in the Ministry of Public Works and Communications. Regulations are contained in Decrees Nos. 22,783 and 22,784 of June 29, 1933, published in the Diario do Governo of the same date.

Sets in Use—According to recent statistics, there were 52,303 licensed sets in use in Portugal as of Nov. 30, 1936. It is estimated, however, that the total number in use is not less than 65,000. No statistics are available covering the types of sets in use, but it is believed that the greater number are 4 or 5 tube medium-wave band sets.

Foreign Sets—While American radios continue to dominate the Portuguese market, accounting for more than 50 per cent of imports in 1935, the competition of European sets is becoming increasingly severe.

Patents—According to local importers, there are no patent regulations or patent licensing arrangements which would operate to restrict the sale of American radios in Portugal.

Customs Duties—Radio receivers are classified under Article 651 of the Portuguese Customs Tariff, and are dutiable at 0.60 gold escudos per kilogram, plus a surcharge of 20 per cent on radios weighing less than 5 kilograms and of 5 per cent on those weighing more than 5 kilograms (according to the terms of the commercial agreement with the Netherlands).

Sets in Use—65,000.

Stations—24.



RUMANIA

General—In proportion to its size and population, Rumania is still far from being adequately supplied with the radio equipment necessary for its requirements. Economic difficulties have considerably restrained Government promotion of developments. At present the major obstacles to sales are the import and exchange restrictions and high rates of duty, with limited consumer purchasing power. Last official statistics showed 127,041 sets in use of which 114,284 were tube and 12,737 crystal sets. This amounts to one set for each 151 inhabitants. Estimates place unlicensed sets at 75,000.

Sources of Supply—The Rumanian market is supplied about 75 per cent by European manufacturers, 8 per cent by American, and the remainder by domestic industry. Austria is now consistently the first supplier of sets, the Horniphon factory in Austria manufacturing Philips sets to give Philips the advantages of the more lenient Austro-Rumanian agreements. American participation appears to be slowly improving, despite the difficulties attendant upon this trade.

Foreign Trade—The United States holds third position as supplier of sets, total imports therefrom in 1936 amounting to 18,732 net kilograms. The peak of imports from the United States in that period was reached in 1932 with 25,979 net kilograms.

Short Wave—All-wave sets have been in demand since 1933 as a result of demonstrable superiority of reception during the summer months over medium band sets. Short-wave reception is excellent the year round, and popularity is growing from year to year. Approximately 90 per cent of current sales of imported sets are for those with short-wave tuning, as well as about 80 per cent of the domestic. American transmissions are heard in the evening (from 7 to 9 p.m. local (Eastern time)), and early in the morning (3 to 6 a.m.), although not as well as the European broadcasts.

Advertising—The broadcasting company has placed all advertising arrangements in the hands of the Advertal Publishing Co. of Bucharest. The general quality of advertising is low, and consists almost entirely of announcements. The only rates are by the word, at 20 to 30 lei per word (12 to 18c). Fully sponsored programs can be arranged, but rates seem to be a matter of bargaining. The broadcasting company is said to have earned approximately 4,000,000 lei in each of the past three years for advertising broadcasts.

Transcriptions—Recordings are used extensively.

Regulations—Receiving licenses for tube sets cost 200 lei, and for crystal sets 50 lei. In addition there is a subscription fee of 600 lei per year for home tube sets and 300 lei for home crystal sets. Sets in public places are assessed a subscription of 3,000 lei in municipalities, 1,800 in other urban centers, and 1,200 in rural districts, and those in State institutions, 600 lei. Any extension outlet increases the liability by 300 lei. The fees are collected directly by the broadcasting company or through the post office, and are payable quarterly, semi-annually, or annually.

Sets in Use—127,041.

Stations—2.

S W E D E N



General—Authoritative estimates of the number of wired homes approximate 90 per cent of the total homes, owing largely to the intensive development of a national electrical system. On June 30, 1937, the total number of receiving licenses outstanding was 1,026,372. This represents a steady increase from 1926, when the number was 242,559, or approximately one-fourth of the present total. The Swedish set manufacturers, as well as the principal European producers selling on the Swedish market, have their own marketing organizations and sell directly to retailers. Most of the rather limited American radio set business is also done through representatives who act as retailers.

Market for Sets—A well-informed trade source estimates that sales of sets during 1936 were between 150,000 and 175,000. While some concerns now entrenched in the market will do everything possible to hamper sales of American sets, others would like to see this business expand and to further connections with reliable manufacturers in the United States. Signs have continued that the obstacles which have stood in the way of the expansion of this business have been decreasing. The American sets which are now found here are, to a noticeable extent, the smaller and cheaper models. The most popular sizes in this market are of 5 and 6-tubes (including the rectifier).

Sources of Supply—The Philips is the only one of the leading European suppliers which has been holding its own as regards set sales in Sweden. Marconi sales have declined and Telefunken is disappearing from the set market. The Hungarian manufacturer of Orion sets has increased his business lately, it is stated. The trade also express the belief that American sales of sets in this market in 1936 increased to approximately 750,000 to 800,000 crowns worth of sets (estimated at about 500,000 crowns in 1935). The trade estimates that the American share in Swedish imports of radio apparatus and parts is made up roughly of 750,000 to 800,000 crowns worth of sets and the rest is split up among tubes, small parts, and loud speakers.

Patents—The principal factor in the present marketing situation is the local patent pool, which has thus far served as a means of keeping down American competition, and has fought Swedish outsiders, or independents, such as Luxor and Centrum. The previous patent pool, called Patentkonsortiet for Rundradio, formed in 1931 and fairly successful in collecting royalties from users of the patents, was dissolved on August 1, 1934, and soon succeeded by Konsortiet for Rundradiopatent. It collects royalties to the amount of 4 per cent on the gross value of each set, without tubes, alike from manufacturers and importers. Its minimum fee is 7.50 crowns for each set.

The pool situation described has undoubtedly and obviously restricted the development of the Swedish market for American radio products, as can be seen from the records, but the position has undergone some amelioration in the past year, especially by reason of the fact that one Swedish firm, importing in quantity from the United States, was sued and won the suit in the court of first instance. The case is still pending in the higher courts.

Tariffs and Trade Restrictions—The Swedish customs tariff provides a basic duty of 10 per cent ad valorem plus an additional duty of 10 per cent, making a total of 20 per cent ad valorem applicable to assembled radio sets, loud speakers and parts. Tubes are only subject to the basic duty of 10 per cent ad valorem. No other restrictions are applied.

Short Wave—There are two short wave broadcasting transmitters in Sweden, both at the Motala station. European stations are regularly and quite satisfactorily received. Reception from the United States is had, but it is not generally very satisfactory without large sets and outside the larger cities. The demand in Sweden is for all-wave sets.

Advertising by Radio—None.

Transcriptions—Steel band (electro-magnetic) transcriptions of interviews with prominent personages, local color interviews and records of important events are employed by Radiotjänst. No advertising transcriptions are permitted. Phonograph records (turntable speed—78 r.p.m.) are only used for musical programs.

Regulations—The monopoly stations are owned by the Royal Telegraph Board, a division of the Government, which has supervisory control over all broadcasting.

Sets in Use—1,026,372.

Stations—33.



SWITZERLAND

General—The situation for American radios on the Swiss market at present is decidedly unfavorable. American products are faced with the formidable competition of domestic and certain foreign makes.

Advertising—Commercial advertising is prohibited. Radio propaganda is confined for the most part to talks in German and other languages intended to attract tourists to the numerous Swiss mountain resorts.

Radio License Fees—The right to issue licenses and collect fees for the operation of receiving sets is reserved to the Federal Government. The fee at present is 15 francs per annum, or approximately 4 centimes per day.

Radio Sets in Use—The number of licensed radios in Switzerland corresponds to 10 per cent of the population as compared with 16.5 per cent in Great Britain, and 17.1 in Denmark.

Telephone Broadcasting—On the whole, radio reception is not satisfactory in Switzerland, owing to much static and atmospheric disturbances. To overcome this difficulty "wired" wireless was introduced in 1931. This system makes it possible for telephone subscribers to receive radio programs through an ordinary telephone wire. The charge is 36 francs per year.

Radio-Rediffusion—Radio-Rediffusion, operated by a private company, is another form of "wired" wireless. This type of transmission also requires only an amplifier and loudspeaker. The fee for this form of radio reception is 15 francs per annum plus a weekly rental charge for the equipment of 1.20 francs.

Declining Sales of U. S. Radios—American radios were among the first on the Swiss market and for several years enjoyed a leading position in this country. As a result of various adverse factors, however, sales have been steadily declining. According to leading radio dealers, one of the principal reasons for the decline in sales is that the reputation of American radios has been impaired as a result of imports of large quantities of old and obsolete models.

American sets are regarded as being superior to European and domestic makes for short-wave reception. However, interest in short-waves for

overseas reception is not as wide-spread in Switzerland as in the United States.

Patents—The situation with respect to patent litigation instituted by the Philips-Telefunken interests against various importers and dealers continues substantially unchanged. It is understood that 28 law suits are pending before Swiss Courts but that the proceedings are being deliberately drawn out because the Philips-Telefunken interests fear that the final outcome might be unfavorable. The fact that imports of American radios have declined to approximately 4 per cent of the total demand tends to detract from the importance of the pending litigation.

Television—In the field of television very little headway has been made in Switzerland.

Use of Records—Various manufacturers of phonograph records, contending that the broadcasting of records injures the sale of their products, have instituted a suit against the Swiss broadcasting companies.

Sets in Use—439,356.

Stations—6.



URUGUAY

General—Uruguay has 39 broadcasting stations, or one to 50,000 persons. Montevideo, the population of which approaches 700,000, has 24 stations and the remainder are fairly well distributed throughout the interior. The power of these stations ranges from 50 watts to 10,000 watts, mostly between 250 and 10,000 watts. All but one of the stations broadcast on middle waves, between 201 and 526 meters. One short-wave station operates; it is CXA4, on the 6,125 kilocycle channel (49.95 meters) and authorized power of 1,000 watts. Authorization has also been granted for the establishment of another short-wave station, CXA2. Broadcasting is permitted to private interests, which devote much of their programs to advertising.

Sets—There are no accurate figures available on the number of radio receiving sets in Uruguay (no tax on sets is levied, and no registration required); however, it is estimated that about 115,000 receivers are currently in use. The market for all-wave sets is general, no one-wave sets being imported at present. Short-wave reception from Europe is reasonably satisfactory, although local interference frequently mutilates British news transmissions. American stations are almost entirely blanketed by German ones.

Customs Duties—The duty on radio sets and loudspeakers is 120 per cent of a fixed valuation of one peso per kilogram, or 1.20 pesos per kilogram; 25 per cent of this duty must be paid in gold or in currency to the equivalent of the Uruguayan gold par, and for the months of November and December 1936, the premium of gold over paper was 2.915. A computation shows the actual amount of the duty to have been 1.7748 pesos per kilogram. The premium is changed monthly when exchange fluctuations make it desirable. The duty on spare parts and accessories is 120 per cent of a fixed valuation of 80 centesimos per gross kilogram. Tubes up to 10 watts pay 120 per cent on 50 centesimos per tube; and those of over 10 watts pay 20 percent on 10 pesos per tube. In all cases 25 percent of the duty must be paid either in gold or its equivalent, as in the case of radio sets.

Foreign Sets—In 1934, the United States contributed 93 percent of the sets imported into Uruguay. Argentina, Holland, Germany, Japan, and Great Britain are attempting to secure a foothold in the Uruguayan field, but have met with little success so far.

Sets in use—115,000.

Stations—39.

UNION OF SOUTH AFRICA

Including the Rhodesias, Bechuanaland, South West Africa, etc.

General—The Union of South Africa commercial area includes the Rhodesias and South West Africa. According to the Post Office Department, there were 176,337 listeners in the Union of South Africa as of July 31, 1937. This is approximately one receiver to every 11.4 white inhabitants of the country. The Corporation estimates the ultimate capacity of the country to be 250,000 receivers.

Market for Sets—As the monthly sales of approximately 1,900 will show, the market in South Africa is an excellent one. The demand is universal and well distributed throughout the year.

Standard type sets with 5 to 11 tubes are favored. The importance of the rural business may be judged from the fact that an estimated 25 to 30 percent of the sets sold are battery operated.

Reception of local programs on the usual broadcast waves is fair at most seasons of the year, but coverage is not so complete as to give all districts clear reception at all times. This fact and the lack of attractive programs emanating from South African stations have built a demand for all-wave sets and for combination radio receivers and phonographs known as radiograms.

Sources of Supply—Chief United States competitors here are the United Kingdom and the Netherlands. The United Kingdom supplied about 15 percent of the imports in 1936, and even some of that amount was made up of products originating in the United States and assembled in the United Kingdom for export to South Africa. Holland's position in 1936 does not compare favorably with that of 1935. Although South Africa's total imports increased considerably, Holland's share dropped from approximately 16 percent in 1935 to 8 percent in 1936. All other suppliers to this country furnished about 2.4 percent of the total. United States now controls slightly more than 75% of the market.

Short Wave—Because of the general lack of appeal in local programs, practically all receiving sets in use in South Africa are all-wave sets. The Continent can be received fairly well here all the year round, particularly those stations in England, Germany, Italy and France that transmit in South African direction. American short-wave programs can be picked up but not with sufficient clarity to recommend them to the majority of listeners. It would appear logical that in order to preserve the excellent trade, American interests should cater to South African listeners by taking steps to provide them with suitable programs. A high power station with a directional aerial broadcasting a daily program designed for this country at such a time that most listeners here could listen in would do much good.

Advertising—Sponsored programs are not broadcast in South Africa and the Broadcasting Corporation is definitely against them. There is provision in the Radio Act to permit the operation of commercial broadcasting but it is unlikely that the Government's radio control board will allow such a development in view of its general plans for the next few years' developments nor is it likely that any private organization would risk the necessary investment in view of the Corporation's ambitious plans for the future development of its services.

Transcriptions—Transcriptions form an important part of the broadcasting material in all the Corporations' studios. Rebroadcasting of local events is resorted to from time to time. English recordings of broadcasts are losing favor in comparison with American chiefly because their quality is mediocre. The accepted procedure at present is to substitute South African continuity on imported albums of recordings. Turntable speeds are 78 and 33 r.p.m.

Regulations—Licenses are required for the ownership and operation of receiving sets, the fees

being graduated according to a zone system, depending upon the question of reliability of service as indicated by the distance of the installation from the nearest broadcasting station.

Sets in Use—176,337.
Stations—12.



UNION OF SOVIET SOCIALIST REPUBLICS

General—With the exception of a small number of amateur transmitters, all broadcasting and radio transmission stations in the Soviet Union are owned and operated by State organizations. The maintenance and management of the technical equipment of general broadcasting stations are in the hands of the People's Commissariat for Communication of the U.S.S.R., while the broadcasting is controlled and supervised by the All-Union Radio Committee, which is attached to the Soviet of People's Commissars of the U.S.S.R.

The All-Union Radio Committee is a central body which carries out the radio broadcasting programs of the main stations in Moscow and supervises the activities of 70 local committees in different parts of the Soviet Union.

Advertising—Advertising in the sense in which that term is usually understood is not broadcast by Soviet radio stations. Foreign business firms have not, apparently, at any time advertised over the Soviet radio broadcasting system. It is believed, moreover, that advertising over the Soviet radio would not, in view of the Soviet Government monopoly of foreign trade and other factors of merchandising peculiar to the Soviet Union, achieve the purposes for which intended since such factors would seem to obviate the necessity for that type of advertising.

Reception of American Programs—American short-wave broadcasts are received in the Soviet Union by good short-wave receivers, but such receivers are extremely rare and appear to be mostly in the possession of members of the various foreign colonies in that country. It should be added, in this connection, that American radio programs have, although infrequently, been rebroadcast by standard and long-wave Soviet broadcasting stations.

Receiving Sets At last report, there were 350,000 receiving sets in the Soviet Union or about two sets to each one thousand of the population, in addition to which there were approximately 2,000,000 outlets in community systems.

The sources of supply of radio receivers and radio materials and replacement parts in the Soviet Union are Soviet factories. No foreign receivers or replacement parts are available on the market.

Television and Facsimile Transmission—Considerable experimentation with television appears to be in progress in the Soviet Union. The V. Ts. S. P. S. (trade union) station at Moscow is said to maintain regular television transmission based on the 30-line or 1,200-element system. Television receivers are not available on the Soviet market. A few have apparently been constructed by amateurs.

Facsimile transmission is used to some extent in Government communication services. A regular facsimile service has been established between Moscow and Leningrad.

Transcriptions—Transcriptions of radio broadcasts are apparently not made in the Soviet Union. Transcribed programs consist of broadcasts of phonograph recordings and sound films. As was pointed out previously, 2000 of the 5,800 hours devoted, during 1936, to musical programs by the central stations are designated for the broadcast of transcribed music.

Patents—In endeavoring to raise its own technical standards and to free itself from dependence upon foreign products, Soviet industry is engaged in copying on an extensive scale machinery and other articles which have been invented and patented in other countries, samples or descriptions of which it has obtained by purchase or otherwise. This practice has been facilitated by the fact that it is not illegal in the Soviet Union to copy articles or processes not patented in that country and that relatively few Soviet patents have been granted to persons or firms resident abroad.

Customs Duty—The Collection of Customs Tariff of the U.S.S.R., 1935, provides, under item No. 92 a minimum and a maximum import duty on radio receivers and radio materials amounting respectively to 25 and 30 per cent ad valorem. The minimum duty, it is understood, is paid upon the importation of radio receivers and material according to plan and the maximum duty is paid upon the importation of such articles outside of the plan.

Sets in Use—350,000.
Stations—63.

UNITED KINGDOM



England, Scotland, Wales, Northern Ireland, and Minor Islands

General—Total number of licenses in force at the end of July, 1937, was 8,269,500 compared with 7,718,794 at the end of July, 1936. This does not represent the total number of radio sets in use in the country, as one license may cover more than one set and there is doubtless a certain additional number of unlicensed sets being operated illegally.

Demand for Sets—It is estimated that during the last 2 years the majority of the business has been in replacements. In one instance, it was calculated that 75 per cent of total sales of one factory during 1936 was replacements. The sales of sets to new users will continue slowly, but in the future the replacement business will be the most important. The most popular sets in the United Kingdom are those costing between

£9 9s. and £15 15s., table models with from 6 to 8 tubes, and operating on 3 wave-bands, long, medium, and short. The demand for short-wave sets, or rather all-wave sets, has increased enormously.

Sources of Supply—The British Radio Manufacturers' Association has been active for several years in developing expedients by which foreign goods may be excluded from competition in the British market, especially through pressure upon wholesalers and retailers. Several plans have been tried, employing both punitive measures against dealers in foreign goods through restricting their supplies of British products, and by rewarding dealers in British goods exclusively through added discounts.

Patents—The sale of American sets on the British market is severely handicapped by the activities of the Patent Pool, whose policy it is to exclude if possible American sets. This the pool has been successful in doing to a great degree

and the imported American sets on sale are as a rule boot-legged into the market. Some American manufacturers have overcome this difficulty in part by manufacturing in England.

The pool has no objection to licensing branch plants of American firms, provided the terms of the license, described below, are adhered to and also provided the conditions regarding British content be complied with. British manufacturers have rather opposed the policy of the pool in granting licenses to American firms manufacturing in this country. The pool has invariably replied that there is no reason in law or otherwise why licenses should not be granted in these cases, providing the conditions are accepted and unfair competition eliminated. To support this policy the pool has brought legal action against many American makes of radios.

Members of the pool are the British Thomson-Houston Co., Ltd.; Electric and Musical Industries, Ltd.; Hazelpat, Ltd.; Marconi's Wireless Telegraph Co., Ltd.; Standard Telephones & Cables, Ltd., and the Western Electric Co., Ltd. The operating member is Marconi's Wireless Telegraph Co., Ltd., with offices at Electra House, Victoria Embankment, London, W. C. 2., to which all applications for a license should be addressed.

The importation of American sets into Great Britain in a satisfactory way is rendered extremely difficult by the pool, and American Manufacturers seeking outlets in this market should be warned that a patent situation exists, that a powerful pool is in active operation, and that their dealers, if any appreciable volume of sale is reached, will probably be sued. American manufacturers should also be advised to inquire carefully into the financial position of any British firm applying for a radio agency.

Tariffs—It must be understood that information regarding any foreign tariff rate is especially unstable and should be verified as nearly to the date of importation as possible. The current import duty on radio receiving sets in the United Kingdom is 20 per cent ad valorem, on tubes 33-1/3 per cent, and on radio-phonographs 33-1/3 per cent. These duties are levied on landed cost values.

Television—See Television Section.

Government Control—Broadcasting in the United Kingdom is operated by the British Broadcasting Corporation, a semi-governmental organization operating under a charter granted by the Postmaster General with the approval of Parliament. Early in the year, the charter which expired at the end of 1936 was renewed for another period of 10 years. No commercial or sponsored programs are permitted by the charter of the B.B.C., which is responsible for all programs transmitted through the National and Regional stations and the Empire transmitters as well.

Programs—The program policy of the B.B.C. remains with a few slight changes the same as in past years. Greater emphasis is being placed on broadcasts to schools and talks than hitherto. Recorded programs are used principally during the earlier hours of the broadcasting day and are widely used in the Empire broadcasts. The departments of the B.B.C. are Music, Variety, Drama, Outside Broadcasts, Dance, News, School Broadcasts, Religion, Program Planning, Television, and the Empire Services.

Advertising—As a policy of the British Broadcasting Corporation, no advertising is broadcast. There is no other restriction, however.

Regulation—Every owner of a wireless set is required by law to obtain a license which costs 10 shillings annually and is good for 12 months. One license will cover any number of radio sets in one house but a separate license is required for car sets. The only exemption from this license fee applies in the case of blind persons. Receipts from the license fees are applied to the cost of programs after a percentage has been deducted for the use of the National Exchequer. It is estimated that this year the B.B.C. will get 6 shillings 4½ pence net of each 10 shilling license fee.

Sets in Use—8,269,000.
Stations—18.

VENEZUELA

General—Radio broadcasting in Venezuela dates from 1926, when a station was established under a monopoly that had been granted 2 years earlier. The monopoly included, besides exclusive broadcasting rights, the importation and merchandising of all radio apparatus.

Short Wave—American short-wave programs are easily received throughout Venezuela on standard receivers, broadcasts coming through more clearly in the evening and at night than during the day. During the winter, American long-wave broadcasts are also regularly heard. European short-wave programs from England, Germany, France, Spain, and Italy, in the order listed, are also easily picked up here, while almost all Latin-American countries can be heard.

Transcriptions—The use of recorded programs for broadcasting is generally prevalent, especially in morning broadcasts, and from the smaller stations in the Interior of the country. According to a ruling of the Ministry of Labor and Communications, however, recordings may not occupy more than 90 per cent of any Venezuelan program.

Sets in Use—80,000.
Stations—31.



YUGOSLAVIA

General—According to figures published by the Radio Control Office of the Ministry of Posts and Telegraphs, there were on May 30, 1937, 103,683 receiving sets in actual use. It is estimated that there are actually about 125,000 sets in operation.

Sources of Supply—Foreign competition is confined to a few large firms. Philips has about 31 per cent of the present turnover in imported sets, followed by Austrian firms with 20 per cent, German with 20 per cent, Hungarian with 11 per cent, and the United States with 7 per cent. In 1932, the United States led in the Yugoslav radio market, but it has since lost position to Holland, Austria, Germany and Hungary. European manufacturers of radio appear to have a great advantage over the American manufacturers as regards quality and price and can fill orders more promptly.

Patents—Patents are controlled by the local firm Siemens-Iljasek A. D., associate of Telefunken A. G., Berlin, which owns the most important radio patents. There are also numerous American patents registered but only Siemens is enforcing its patent rights.

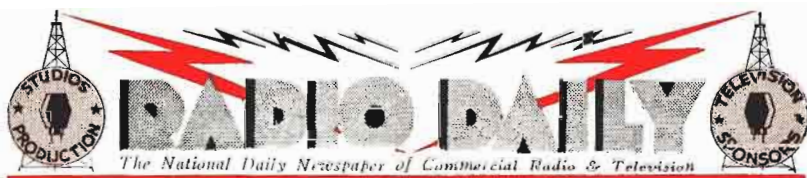
Tariffs; Import Restrictions—On June 25, 1936, the Yugoslav Government placed into effect an order prohibiting the importation from countries having no clearing agreements with Yugoslavia (this includes United States) of certain types of merchandise including radios and parts. Since the placing into effect of this order, the National Bank has withheld the issuance of permits for imports from the United States. Permits will be only granted upon condition that the would-be importer undertake to export to the United States a compensating amount of Yugoslav products. As dealers are generally not in a position to organize an import trade on such a "compensation" basis, the importation of American radios and parts has decreased.

Advertising—The Yugoslav stations broadcast some advertising, but the total is limited by the stations as a matter of policy.

Transcriptions—Records are extensively used in broadcasting, amounting to about 20 per cent of the total program time. American dance music is popular but difficult to obtain in satisfactory records on account of the unsettled copyright questions.

Sets in Use—103,683.
Stations—4.

***I
Wonder
What***



***Will
Say
About
It***



Presenting...

**THE
ITALO-
AMERICAN
MARKET**

WBIL

NEW YORK

WC

NEW

A CONCENTRATED

"A concentrated WOY-WBIL-WPEN—conscious audience of 2,300,000 individuals."

PURCHASING POWER

"Possessing a purchasing power of one billion dollars annually."

WITH STEADY- INCOME AUDIENCES

"All residing and working in productive areas the full 52 weeks of the year."

WHO ARE THRIFTY

"Recognized as the Nation's greatest buyers of insurance."

AND EXTREMELY RADIO CONSCIOUS

"A consumer group whose sensitivity to radio's exploitation makes them the ideal market."

A READY MARKET- FULLY DEVELOPED - WITH PROVED PERFORMANCE

WOY

NEW YORK

WPEN

PHILADELPHIA

14

OUT OF EVERY

ONE OUT OF EVERY FOUR NETWORK
CLIENTS USED MUTUAL IN 1937

MUTUAL BROADCASTING SYSTEM

COAST TO COAST