

# HEINL RADIO BUSINESS LETTER

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No. 1391

December 30, 1941

## ALL ALIEN ENEMY SHORT-WAVE SETS TO BE SEIZED

The Department of Justice ordering the Japanese, Germans and Italians in the West Coast states to give up their short-wave receivers and transmitters is just a forerunner of a similar demand upon enemy aliens on the East Coast and throughout the entire United States. Cameras are included in the sweeping order.

The Federal Communications Commission foreign broadcast monitoring service will ferret out any sets that have not been turned in and though no penalty has as yet been fixed for those violating the orders, it will unquestionably be very severe. Arrest would follow and probably internment for the duration of the war.

The first order, which will be followed today or tomorrow for other sections of the country, applied to states in the Ninth Corps Area of the Army - California, Washington, Oregon, Montana, Idaho, Utah and Nevada. It was hurriedly issued, it was understood, because of disquieting reports reaching Army headquarters in connection with the recent submarine attacks on merchant ships off the California coast.

Because of the summary nature of the order, Department of Justice officials expect confusion in its enforcement, but it was said that no other course was open than to cope promptly with the situation. In San Francisco and other Western cities the Japanese and others were reported to be rapidly turning in their sets to the police, who will probably pass them along to the Department of Justice and the FCC.

The Attorney General defined a short wave radio set as one receiving messages sent on a frequency of 1750 or more kilocycles or 540 kilocycles or less.

The order declared that "no enemy alien who is found in possession of any short wave radio receiving set will be excused in any manner on the ground that he did not know that the set was a short wave radio receiving set."

All radio sets and cameras are to be forfeited to the United States Government if not surrendered willingly. Receipts for surrendered apparatus will be issued by local police.

In issuing the order confiscating short wave radio sets Attorney General Biddle warned employers not to discriminate against foreign born:

"I am sorry to say," declared the head of the Justice Department, "that numerous instances have come to the attention of the department...of employers discharging workers because of some vague 'suspicion' that they may be disloyal aliens, and even because they have 'foreign-sounding' names!"

"To bar aliens from employment is both short-sighted and wasteful. Our country needs the skills and services of every able-bodied and loyal person, citizen or alien, and to deprive it of such services is an economic waste and a stupid error.

"It is the stated policy of the Federal Government that there shall be no discrimination in the employment of workers in defense industries because of race, creed, color or national origin.

"Under law, there is only one restriction: In the case of secret, confidential or restricted government contracts, and in the case of contracts for aircraft parts or accessories, the employer must secure permission from the head of the Federal department concerned for the employment of aliens."

Lloyd A. Free, Director of the FCC foreign monitoring (or propaganda listening) service, returned to Washington last week from London aboard the Pan American Airways Atlantic Clipper. Mr. Free said that his trip had been quite successful but declined to amplify his statement beyond pointing out that he had had a "full discussion" of his trip when he left here Nov. 21 to fly to Europe. At that time he said the office he planned to establish by using the facilities of the British Broadcasting Company would send reports here on any information or intelligence that could be sifted from broadcasts within Germany and Italy. He also declared that "the office will be essentially a part of the United States Government intelligence service, as we want to know the propaganda strategy of the other countries."

The Columbia Broadcasting System will dedicate WCRC, first of its two new 50,000 watt international short-wave stations to be completed, with a one-hour program beamed to Latin America - - beginning at the stroke of Midnight, EST, New Year's Eve.

William S. Paley, CBS President, will deliver an address in English to the radio audience of the neighbor republics. Edmund A. Chester, Director of short-wave broadcasting and Latin American relations, is to speak briefly in Spanish.

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#### WRUL GETS BIG BOOST IN "LIFE"

"Propoganda from the U. S. A. - the Nazis hate and fear Boston's station WRUL" is the caption of three pages of pictures and an article in a recent issue of LIFE. The article reads:

"Not many Americans realize the U. S. is waging a mighty war of propaganda against Adolf Hitler and his allies. U. S. propaganda, however, is quite a different thing from the mixture of Jew-baiting, personal abuse and chest-thumping boasts that sprays nightly from the short-wave stations of Berlin and Breslau. The best propaganda that the U. S. has is the truth. Night and day eleven U. S. short-wave stations, of which the most powerful is Boston's WRUL, are sending large doses of this commodity to millions in Europe, Africa, Asia and friendly Latin America. Recently, for instance, the Nazi propaganda stations dropped the subject of South Russia after their retreat from Rostov. WRUL's big staff of broadcasters took to the air and hammered home the Rostov defeat in 24 languages. Again, at the moment when General Maxime Weygand was deposed from his North African command, WRUL broke through Vichy's censorship and spread the news in French and Arabic. Many African desertions resulted. WRUL's celebrated Yugoslav announcer, Dr. S. S. Petrovitch, is a hero of the present Serbian revolt. His broadcasts caused the Germans to issue a statement accusing WRUL of "interfering in the affairs of a sovereign nation."



"WRUL is run by a radio genius named Walter S. Lemmon who was at the 1919 Peace Conference with Woodrow Wilson and later made millions by inventing single-dial tuning. It is a nonprofit, noncommercial station, supported by Lemmon, gifts from foundations and worldwide listeners. Its staff is largely made up of ardent young refugees and students. Its two transmitters, of 50,000 and 20,000 watts, are a team equaled only by Radio Moscow. Lemmon is stepping up power to a total of 150,000 watts and is talking of an eventual 250,000, which will make WRUL the loudest voice ever heard around the planet."

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#### SEES DIFFICULTY CHANGING OVER SET MAKING PLANTS

Quite a problem is seen by Dr. W. R. G. Baker, Vice President, General Electric Company, in adapting set making establishments to military uses.

"It is with the facilities normally used for radio receivers that the industry will probably experience the greatest difficulty in converting to defense production. These facilities are normally geared for mass production, utilizing female labor with the production rate controlled by the flow of material", Mr. Baker explained.

"Usually these factories have a minimum of machine tool equipment, use standardized parts produced by other specialized plants, and produce a product in whose manufacturing cost the engineering content is generally low.

"This type of plant is not readily adaptable to defense requirements and very little can be done to make the facilities more adaptable. The solution is rather the design of military equipment that can be manufactured with these facilities. This is neither a quick nor an easy undertaking, but the industry has made some progress."

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#### I. T. & T. "GOOD NEIGHBOR" BROADCASTS BEGIN

A daily broadcast of news from the Latin American nations was started in New York on last Monday by the International Telephone and Telegraph Corporation. The program is called I.T.&T. Good Neighbor News and will be heard over Radio Station WABC Monday through Friday, 6:10-6:15 P.M. The news will be supplied and prepared for broadcast by The Associated Press.

In announcing the broadcast, Mr. Frank C. Page, Vice President of I.T.&T., said that such a program had been under consideration for some time but that the coming of war and the great additional importance which that lends to daily occurrences in the Latin American nations, hastened arrangements. Mr. Page stated also that this was a "round trip affair" inasmuch as I. T. & T. has been handling since last spring nightly 15-minute world news broadcasts over the radiotelephone channels for re-broadcast in South America under sponsorship of the American Chambers of Commerce in Buenos Aires, Montevideo and La Paz.

A similar Good Neighbor News program is sponsored by the I.T. & T. over Radio Station WJSV, Washington, D. C., also from 6:10 to 6:15 each evening with news prepared by the United Press Association.

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## INDUSTRY HAILS RYAN AS CENSOR - HAPPY SELECTION

Great assurance seems to have been given the broadcasting industry, which has been pretty jittery on the subject, in the naming of John H. Ryan, of Toledo, Vice President and General Manager of the Fort Industry Company, as censor of radio broadcasts. Mr. Ryan is one of the most competent and highly respected men in the industry. He has made a great success in his own business and the general opinion is that he is an ideal man for one of the toughest positions in the Government information service.

The appointment was entirely unsought by Mr. Ryan, having been recommended for the place by the key men in the radio industry. Mr. Ryan dropped everything instantly and was in Washington and on the job before hardly anyone knew that the appointment had been made. He is working directly with Byron Price, Director of Censorship. Mr. Ryan's title in fact is Assistant Director of Censorship.

Seen here shortly after his arrival in the Capitol, Mr. Ryan's big problem - which is also the worry of Mr. Price and John H. Sorrells, Executive Editor of the United Press, another newly appointed Assistant - appeared to be in finding working quarters. Mr. Price first was assigned to a little office next to that of the Postmaster General, then to a couple of different offices in the new Post Office Building, which is the same building in which the FCC and the Interstate Commerce Commissions are housed. One report was that the Censorship people might land in the Apex Building. Another was that the FCC would be moved out of its present happy home to accommodate the censors.

Asked about this at his weekly press conference, which by the way Mr. Ryan attended, Chairman J. L. Fly, Chairman of the FCC, seemed to doubt that the Commission would be disturbed saying:

"I certainly think that the Office of Censorship ought to have plenty and good space but I don't believe we will run into any conflict either actually or potentially there. We have been in a tough situation on our own space problems. I think we have as many as nine engineers in one room now. I suspect that my office is the only one where there is any real space in the whole establishment.

"We might have to cut it up to provide for 20 engineers. We are going to have a substantial number of people on this priorities problem and the OPM people will be working with us so we ourselves will have not only a continuing problem but one which is quite aggravating, but I didn't hear of any inconsistent position between this office and Censor. I don't think there is any suggestion of that kind and I have some reason to believe that they have their eyes on space in another spot."

The correspondents then turned to Mr. Ryan and asked him about the situation.

"Well, we would like to have some place to put our feet under the desk," he said.

"Under, Mr. Ryan?", a newspaperman queried.

"I think that is significant too", Chairman Fly interjected, "Mr. Ryan wears no spurs".

One opinion expressed was that if anybody moved out of the building it would not be the FCC, whose work would be closely related to the censorship, but the Interstate Commerce Commission.

Asked by the writer if his work would be confined to news broadcasts, Mr. Ryan replied in the negative. He said questionable program scripts would be scrutinized as well.

The new Assistant Director of Censorship is 57 years old, was born and raised in Toledo, O., and is a Yale graduate. As Vice President and General Manager of Fort Industry Co., he was in charge of WSPD, Toledo; WWVA, Wheeling; WMMN, Fairmont, W. Va.; WLOK, Lima, O.; WHIZ, Zanesville, O., and WAGA, Atlanta. Mr. Storer is President of the Fort Industry Co., and is Mr. Ryan's brother-in-law.

For a time after leaving College, Mr. Ryan was Secretary of his father's concern Arbuckle-Ryan Company of Toledo, manufacturers of agricultural equipment and railroad supplies. With Mr. Storer, Ryan was for a period engaged in the gasoline business - the Fort Industry Oil Company. They began using radio as an advertising medium and finally bought the station WTAL, changing it to WSPD. In 1928 WGHP was purchased in Detroit, but after three years it was sold to the King-Trendle interests and now is WXYZ. In 1931 the gasoline business was sold. WWVA was purchased and placed under Mr. Ryan. In 1932, CKOK, which later became CKLW, was established in Windsor, Ont., serving the Detroit area. It was later disposed of. In 1935 WMMN was purchased and in the fall of 1938 WLOK joined the Storer-Ryan group. A year later came WHIZ and last year WAGA was acquired.

Mr. Ryan is residing temporarily in Washington but later may move his family to the Capitol.

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A call for more than 200 qualified young men in the Army's Seattle-Alaska radio communications system was issued at Fort Monmouth, N. J., headquarters of the Signal Corps.

Special inducements, the announcement said, included allowances of \$2.35 a day at Seattle and \$4 a day in Alaska in addition to pay, rations and quarters. The enlistment requirements are high and include ability to send and receive messages in the international Morse code, typewriting skill and a high school education or its equivalent.

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President Roosevelt complimented the radio stations and newspapers on the way they had complied with censorship suggestions. Mr. Early said Mr. Roosevelt was very much pleased and commented several times upon the fact that Prime Minister Churchill's trip was not announced before his arrival here and that his departure for Ottawa had not been mentioned until Mr. Churchill had arrived there.

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DUE TO MOST OF THE GOVERNMENT DEPARTMENTS BEING CLOSED ON THURSDAY, JANUARY 1, THERE WILL BE NO ISSUE OF THIS SERVICE ON FRIDAY, JANUARY 2.



12/30/41

## WARTIME STANDARD FREQUENCIES ANNOUNCED

The wartime standard frequency service of the National Bureau of Standards station WWV has been extended to include another carrier frequency (15 megacycles). Temporary equipment is still in use while a new transmitting station is being built. The broadcast is continuous at all times day and night from 1-kilowatt transmitters, and carries the standard musical pitch and other features. The radio frequencies are:

5 megacycles ( = 5000 kilocycles = 5,000,000 cycles) per second

15 megacycles ( = 15,000 kilocycles = 15,000,000 cycles) per second.

The standard musical pitch carried by the broadcasts is the frequency 440 cycles per second, corresponding to A above middle C. In addition there is a pulse every second, heard as a faint tick each second when listening to the 440 cycles. The pulse lasts 0.005 second, and provides an accurate time interval for purposes of physical measurements.

The 440-cycle tone is interrupted every five minutes for one minute in order to give the station announcement and to provide an interval for the checking of radio measurements based on the standard radio frequency. The announcement is the station call letters (WWV) in telegraphic code (dots and dashes).

The accuracy of the 5 and 15-megacycle frequencies, and of the 440-cycle standard pitch as transmitted, is better than a part in 10,000,000. Transmission effects in the medium (Doppler effect, etc.) may result in slight fluctuations in the 440-cycle frequency as received at a particular place; the average frequency received is however as accurate as that transmitted. The time interval marked by the pulse every second is accurate to 0.000 01 second. The 1-minute, 4-minute, and 5-minute intervals, synchronized with the seconds pulses and marked by the beginning and ending of the announcement periods, are accurate to a part in 10,000,000. The beginnings of the announcement periods are so synchronized with the basic time service of the U. S. Naval Observatory that they mark accurately the hour and the successive 5-minute periods; this adjustment does not have the extreme accuracy of the time intervals, but is within a small fraction of a second.

In general, during the winter day, the 5-Mc carrier frequency can be used at all distances out to about 1000 miles and the 440-cycle tone out to about 700 miles; the 15-Mc carrier frequency is usable from about 800 to 5500 miles, and the 440-cycle tone from about 800 to 4000 miles. During the winter night, i. e. between about 8 PM and 6 AM E.S.T., the 5-Mc carrier frequency is usable from about 700 to 7000 miles and the 440-cycle tone from about 700 to 5000 miles; the 15-Mc broadcast is not usable during the winter night, except for the short-distance ground wave (see below). During the summer day, the 5-Mc carrier frequency is usable at all distances out to about 400 miles and the 440-cycle tone out to about 300 miles; the 15-Mc carrier frequency is usable from about 900 to 3000 miles and the 440-cycle tone from about 900 to 2500 miles. During the summer night before midnight EST, the 5-Mc carrier frequency is usable out to about 2500 miles and the 440-cycle tone out to about 1400 miles, except for a period of 2 or 3 hours before sunrise when it is difficult to receive at distances between about 50 and 400 miles; the 15-Mc carrier frequency is usable from about 1000 to 7000 miles and the 440-cycle tone from about 1000 to 5000 miles.

Besides the distances covered by the sky wave as just described, the



ground wave provides coverage at short distances as follows. At all times, the 5-Mc carrier frequency is usable out to about 100 miles and the 440-cycle tone out to about 50 miles; and the 15-Mc carrier frequency is usable out to about 70 miles and the 440-cycle tone out to about 35 miles.

The service from the temporary transmitters will continue for some months. It will be continuous except for such breakdowns as may possibly occur because of the use of temporary apparatus. As rapidly as possible the Bureau is establishing a new station to provide more fully than in the past standard frequencies reliably receivable at all times throughout the country and adjacent areas.

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#### NEWSPAPER HEARING STILL SET FOR JANUARY 8

The Federal Communications Commission's inquiry into newspaper ownership of broadcasting stations apparently will resume Thursday, January 8, the war to the contrary notwithstanding. Chairman Fly said last Monday that he was under the impression that the Newspaper Committee wanted additional time but added that as far as he knew there had not been any formal request from them.

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#### HOW COME, JAPS ON U. S. WAVE FCC ASKED?

The question was raised at the Federal Communications Commission as to how it was that the Japanese could use an American frequency and be permitted to get away with it? This was on the broadcast to the Philippines that San Francisco was being bombed.

It was said at the Commission that there had been some interruption reported on a broadcast of one of our international stations to Manila and that they were looking into it and expected soon to have a full report in the matter.

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#### SMOKE EATERS RADIO CLUB FORMS

Out in Pawhuska, Okla., is located the headquarters of the Smoke Eaters Radio Club, a nation-wide organization of "ham" radio operators connected with the fire service. The service which "ham" operators have performed in connection with disasters in recent years is generally recognized. Where earthquakes and tidal waves have occurred, the first word to the outside world was oft-times by these amateur radio operators. They were the means of securing help promptly and they provided the much needed means of inter-communication between relief organizations and stricken communities.

The Smoke Eaters Radio Club would be of tremendous value to the fire service following air-raids. No matter how destructive a blitzkrieg may have been there will still be plenty of amateur stations to maintain contact between fire fighting forces and other defense and emergency bodies. The Club deserves encouragement and support. (Fred Shepperd in September Fire Engineering.)

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12/30/41

## PRIORITY MACHINERY UNDER CONSIDERATION

Asked if he had anything to give out about the Defense Communications Board, Chairman J. L. Fly replied:

"No, we are getting out a little order in a matter which is of no great interest and for that matter of no concern to the industry - maybe of some little general interest. It may be out in a day or two."

"Is that priority machinery worked out yet?", the Chairman was asked.

"I'm not sure", he replied. "As you know the OPM is going through some reorganization pains over there and I don't know whether they are entirely clear as to how they want to do their particular end of the job. We ourselves are, our plans are definite and, for that matter, the framework of the plan over there is definite. At the moment there is some question as to where the communications section there will be located and to whom it will be responsible. That is in particular, I think, whether it will be responsible to the Director of Civilian Supply or directly to Mr. Knudsen. I have not heard that this has been clarified but I assume that it will be very promptly and of course we hope to get moving on the whole thing."

"Have you heard the report that is going around that the broadcasting industry is going to meet with Mr. Ryan and possibly yourself on war set-up and censorship?", Mr. Fly was asked.

"No, I don't think I have", he replied.

"Do you think such a conference would be helpful?", the Chairman was asked further.

"I assume there will be continuing conferences", he concluded. "I have had some talks here with different individuals and leaders of the industry and trade association people from time to time - generally on more or less specific angles of the matter and I know there will be continuing contact. However, the question which you are posing, I think, is whether or not there is a formal conference arranged in round-table fashion, and as far as I am concerned the answer is no."

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The Defense Communications Board has prescribed that all ship radio stations and facilities shall be subject to use control supervision inspection and closure by the Navy Department.

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All of its employees in the armed forces received a Christmas gift of a week's salary at their former rate of pay, the Hygrade Sylvania Corp., New York City announced.

The corporation likewise gave Christmas checks amounting to one week's salary to each of its 6,000 employees in plants at Salem, Danvers, and Ipswich, Mass., and Emporium, St. Mary's, and Towanda, Pa.

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12/30/41

## PRESIDENT JOINS IN OPENING RADIO TO AUSTRALIA

An exchange of messages between President Franklin D. Roosevelt and Prime Minister J. H. Curtin of Australia featured the opening by RCA Communications, Inc., of the first direct radiotelegraph service between Australia and the United States.

Others participating in the opening were the Hon. R. G. Casey, Australian Minister to the United States; James Lawrence Fly, Chairman of the U. S. Federal Communications Commission; the Hon. Senator W. P. Ashley, Postmaster General of Australia; David Sarnoff, President of the Radio Corporation of America; Maj. Gen. James G. Harbord, RCA Chairman of the Board; W. A. Winterbottom, Vice President and General Manager, R. C. A. Communications, Inc., and Sir Ernest T. Fisk, Managing Director, Amalgamated Wireless Australasia.

The texts of the messages follow; in part:

"The opening of a direct radiotelegraph circuit between Australia and the United States normally would be an event of great interest to our respective peoples. Today, however, the event which we celebrate assumes proportions that extend far beyond its peace-time significance. The deep-rooted and sturdy friendship which has existed between us has survived the years because it has been nurtured in the principles of democracy. In my opinion this new link will serve not only to facilitate the more rapid exchange of communications between the United States and Australia but to serve notice on the axis powers that the free peoples of the world are leaving nothing undone effectively to guarantee, through spiritual and physical unification, an ultimate victory which lies ahead of us.

"I extend my greetings to you personally and to you as the representative of the people of Australia. Mr. Churchill, who is staying with me, joins in these greetings, and we give you our assurance that we consider the safety of your great commonwealth as a definite essential in every plan of defense and in every plan of offensive action against our common foes.

FRANKLIN D. ROOSEVELT "

"The inauguration at this time of direct radiotelegraph service between the commonwealth of Australia and the United States of America has a profound and far-reaching significance. It not only serves to forge another link in the chain of friendship that binds together two great English-speaking nations, but also symbolizes the unity of purpose for the accomplishment of a common task to which your country and mine are dedicated. I send you my most cordial greetings on this momentous occasion.

DAVID SARNOFF"

"I am especially happy that a dream has come true by the opening of our radio circuit with your great country. I have only pleasant memories of my visit to Australia. Please transmit my greetings to Lady Fisk; Their Excellencies, Lord and Lady Wakehurst; former Prime Minister and Dame Mary Hughes; my friend, former High Commissioner to this country, Herbert Brookes and his wife at Melbourne; Mr. and Mrs. Molesworth; Mr. and Mrs. Hooke; and Mr. and Mrs. McClure Smith of the Herald.

J. G. HARBORD"

"The establishment of direct radiotelegraph communication between Australia and the United States marks a new epoch in Pacific relations and will inure to the everlasting benefit of both peoples. Please accept my sincere felicitations.

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W. A. WINTERBOTTOM"



12/30/41

## ZENITH TO DEVOTE MAJOR PRODUCTION TO DEFENSE

It is expected, according to Commander E. F. McDonald, Jr., President of the Zenith Radio Corporation, that the rapidly increasing defense requirements for radio apparatus will be greater than the present capacity of the entire industry. It will, therefore, be necessary for Zenith to devote the major part of its efforts to the production of electronic equipment for defense. Present indications are that the industry will be taxed, not only to its limit for defense work, but expansion and additional shifts will be required to meet the Government's needs.

"Fortunately, our facilities are ideal for such a program, and the experience being gained during this emergency will be of incalculable value to our organization after the termination of hostilities, when the electronics industry will, in our opinion, be one of the main three industries to lead business back to normal", Commander McDonald said.

"Zenith has just put on the market a radically new development in a battery and line-operated Portable which receives not only broadcast, but short-wave European stations, in the home, on trains, on boats, in planes and other metal-shielded structures. This new standard and short-wave Portable has been coming through our laboratories for over two years, but deliveries have just started this week. This product will be invaluable, not only in blackouts, but for our forces in foreign or isolated areas where the men want to listen to home news and standard broadcast does not penetrate.

"The Zenith Radio Corporation reports a consolidated operating profit for the first six months ended October 31, 1941 of its current fiscal year, amounting to \$1,150,073 after depreciation, Excise taxes and liberal reserves, but before provision for Federal Income and Excess Profits Taxes, as per the company's books. After deducting estimated Federal Income and Excess Profits Taxes, based on present existing regulations, the net profit will amount to approximately \$754,533."

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## ADVANCE TIPS FOR LISTENERS ON SPECIAL WAR NEWS

Alert CBS listeners can detect the operation of the system to warn technicians at every station on the network that special news will follow.

Five minutes before a regularly scheduled broadcast goes off the air, an unobtrusive tone signal is added to the sounds of the program, just a little less loud than the level of the program which the listener is hearing.

Three short dashes indicate that special bulletins will follow the end of the current show. Five short dashes means the news to be heard is more than usually important.

One long tone advises technicians over all the CBS network that an urgent announcement will be made, not in five minutes, but at once. Ten seconds after that dash of tone is heard, whatever is being broadcast is interrupted so that vital information may go out to the country.

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12/30/41

## DR. ANGELL APPROVES NBC SCHOOLROOM TRANSCRIPTIONS

After four years of experimental study in the field of radio education through recorded programs, the Public Service division of the National Broadcasting Company established a transcription service for the nation's classrooms.

The four-year research project was conducted under the direct supervision of Dr. James Rowland Angell, NBC public service counselor and former President of Yale University.

"Results indicate," Dr. Angell said, "that radio recordings are an effective supplement in affording background information for the student, motivating his interest in a subject and stimulating a desire for further study. They also serve to remove some of the difficulties inherent in the presentation of classroom broadcasts simultaneously to the classrooms of an entire nation."

Dr. Angell pointed out that network broadcasts presented during school hours present obvious difficulties. These are the differences in time zones from coast to coast, lack of uniformity in classroom schedules where the rotating plan is used and variations in curriculum and course content."

"All of these problems," he said, "present arguments in favor of the recording, for no one series of network broadcasts for the schools can hope to serve the teachers of an entire nation at the hour best suited to their needs and with subject matter best adapted to their requirements. The recording, offering a permanent transcription of educational material available for preliminary audition by the teacher and for repeated playings in part or as a whole, at any time, solves these problems most effectively when proper utilization methods are observed."

"To determine the most desirable utilization methods, practical experiments were conducted in actual classrooms in several sections of the nation under NBC auspices. A striking result of these tests was the unanimity of impression made by each recording upon any class. In many instances, more than 80 per cent of the essential facts were recalled by the students, with pupils strongly in favor of the recordings. In every case, pupils and teachers jointly agreed that recordings generally increased the scope of the course of study.

In establishing this educational recording service, NBC's plans are governed by the desire to supplement the effectiveness of a large and varied offering of public programs presented over NBC networks during out of school hours, direct into the classrooms of the nation at a time best suited to the individual requirements of all schools, large and small.

Dr. Angell indicated that permanent central libraries for the circulation of recordings on a loan basis will be established in key cities of the country. He predicted that educational recordings of network broadcasts will be as widely accepted in the future as the educational film is accepted today. He also pointed out that inevitably the audio-visual field will include a combination of both devices.

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