

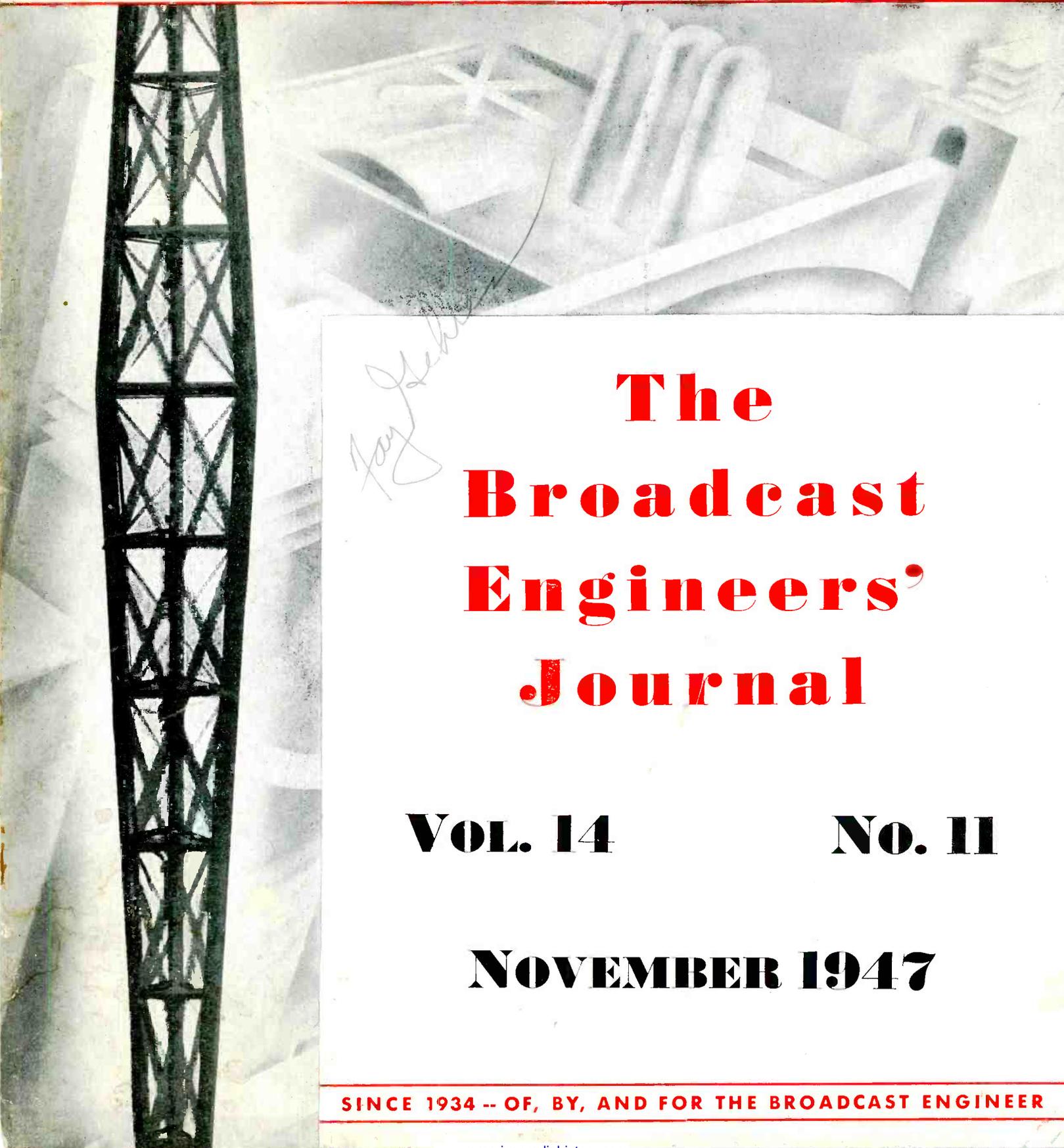
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The Broadcast Engineers' Journal

VOL. 14

No. 11

NOVEMBER 1947

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Editorial, Advertising and Circulation Offices:
116-03 91st Avenue, Richmond Hill 18, N. Y.
Telephone: Virginia 9-5553

Volume 14, No. 11  409 November, 1947

Contents Copyright, 1947, by NABET Publications

TABLE OF CONTENTS

	Page
Trends in the U.N.	2
Television Progress	3
New York Notes	8
Review of Current Technical Literature ..	10
American Labor History	11
Chicago News	12
About Rochester	14
Rochester Ham Calls	15
Television Clinic	16
Television & FM News	18
NABET-ABC-Pittsburgh Ham Calls	19
Conclusion of IRE Papers	20

THE BROADCAST ENGINEERS' JOURNAL

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Advertising rates and information supplied on request. Subscription, \$2.50 per year; \$4.00 for two years. Single copies, except Christmas Yearbook, 35c; Christmas Yearbook, \$1.00. All remittances in advance. Foreign: add postage. Back copies 50c, back Yearbooks, \$2.00.

Nothing appearing in The Broadcast Engineers' Journal shall be construed to be an expression of The Broadcast Engineers' Journal or the National Association of Broadcast Engineers and Technicians, but must be construed as an individual expression of the author or authors.

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Labor Trends in the U. N.

JOB outlook is reported good and on the upgrade in the plastic products field. Many electronic controls and applications in plastics make this field worthy of consideration by the electronic technician.

Thirty new State laws have been enacted which restrict union activities in the fields of picketing, secondary boycotts, and jurisdictional strikes.

ILO Trade Union Program before UN. From the Labor Information Bulletin:

The General Assembly of the United Nations has before it the resolution and program of action of the International Labor Organization on "freedom of association."

The ILO report was sent to the General Assembly by the Economic and Social Council after a debate of several hours at the Council's fifth session. Under Secretary of Labor David A. Morse appeared before the Council's plenary session as the ILO spokesman to report on the problem, originally referred to ILO by the Council's fourth session.

Morse described the discussions held by the committee of which he was chairman on which the governments of 44 nations were represented; how three weeks of arduous committee work had brought about unanimity in the committee and, subsequently, in the Geneva ILO plenary session. This was more important because, in addition to the governmental delegates, the committee included 22 employer representatives and 22 workers' delegates from as many countries.

Opposition to the ILO report came from the Soviet Council member, Alexander P. Morozov. Elmer Cope, Assistant Secretary-General of the World Federation of Trade Unions, also urged the Council to take a different course.

The ILO program was approved by the Council, 15 votes in the affirmative and 2, the USSR and Byelo-russia, negative. Czechoslovakia abstained. The vote was on a resolution proposed by the United Kingdom, the Netherlands, and the United States and was adopted with the addition of two points from another resolution submitted by Czechoslovakia.

Speedy Action Recommended

Aside from sending the ILO report to the Assembly, the Council left the problem in the hands of the ILO, whose speedy and efficient action on the matter was commended.

By adopting the resolution, the Council rejected the views of Soviet and the WFTU, that the Council itself should, at that session, consider the substance of the original WFTU proposal for a guarantee of trade-union rights, including creation of a special commission to safeguard these rights. The Council also rejected a plan to refer the problem to its social commission in addition to ILO.

Free Collective Bargaining Stressed

The Geneva conference action on freedom of association consisted of a report, two resolutions and a program for putting the policies expressed in the main resolution into the form of conventions (international labor treaties) during the next two years. This resolution asserts the freedom of employers and workers to join organizations of

(Continued on Page Eight)

TELEVISION PROGRESS

BY DAVID SARNOFF

President and Chairman of the Board, Radio Corporation of America

This important address was delivered at the recent NBC Convention, Atlantic City. General Sarnoff lucidly reminds us that Television is Progress; he recalls the fate of those who ignored the potentialities of wireless communication and radio broadcasting. It is our pleasure to present his address in full, with introductory comments by NBC President Niles Trammell.—Ed S.

INTRODUCTION

RADIO is a product of man's vision. Born of creative genius, radio is nurtured by industrial leadership and grows in the fertility of public service. For one man to possess qualities of leadership in every phase of radio is singular indeed. But radio is particularly fortunate in having such an individual, who since boyhood, through sheer ability and great aptitude for work, achieved success. He climbed from messenger boy to wireless operator, and then on to the heights of industry in service to the public and this Nation in war and in peace.

In introducing our speaker today, I can do no better than read to you a tribute paid to him by the late General James G. Harbord, the former Chairman of the Board of Directors of the Radio Corporation of America, in a foreword he wrote in 1945 to a little book entitled "Pioneering in Television." I now quote General Harbord:

"David Sarnoff thirty years ago—in 1916—envisaged the 'radio music box' which came into being in 1920. Now it is known everywhere by millions of people as the radio receiver—an ear to all the world. Since that time, Brigadier General Sarnoff, as a leader in all phases of radio, advanced this new art as a science and an industry. His statements on communications, broadcasting and television reveal his sound business judgment and keen foresight; a great faith in science and a vision that has inspired scientists, inventors, research men and engineers. He has been a pioneer in pointing the way through the wilderness of the unknown in radio and electronics.

"In 1922, he conceived that broadcasting could render a great service to the public if it were conducted on a national scale rather than on merely local lines. Four years later, in 1926, he planned and organized the National Broadcasting Company as the first nation-wide network to make the best programs available for broadcasting throughout the country. Later, he

extended NBC's programs internationally.

"General Sarnoff's statements on television serve as a historic record of scientific and industrial progress in the face of many obstacles, a challenge to the imagination of youth and a chart for the future of television as a service of entertainment and information to the American people. His prophecies have become realities.

"A staunch advocate of research, General Sarnoff sees the hope and opportunities of tomorrow in the new knowledge gained today as men of science continue their advance across new frontiers. He looks to television as a new picture-window opening out upon the world from homes of rich and poor alike.

"The Television Broadcasters Association at its first Annual Conference on December 12, 1944, presented General Sarnoff with the following citation: 'For his initial vision of television as a social force and the steadfastness of his leadership in the face of natural and human obstacles in bringing television to its present state of perfection. The Committee on Awards wishes to call him The Father of American Television.'

Ladies and Gentlemen, it is my great pleasure to present to you now, General Sarnoff, who will discuss "Television Progress" as he sees it from the horizon of 1947.

TELEVISION PROGRESS

In speaking of television for the past twenty-five years or so, we have been accustomed to say that "television is around the corner." In my observations today I should like to bury that phrase. Television is no longer around the corner. It is beyond the doorstep; it has pushed its way through the door into the home!

I would like to go into the subject directly and with a few timely and conservative figures. They will help to illustrate the general remarks I will make about the possibilities of tele-

vision as a new industry and as an important new service to the public.

Television Stations

The Federal Communications Commission has authorized to date a total of 69 television stations, and 16 applications are pending. This means that 85 television stations already have decided to lead the way. I believe that many more will follow. Today there are 13 stations on the air with regular television programs. By the end of 1947 this number may be doubled. In 1948, the list of stations will increase as transmitting equipment becomes available.

My estimate is that by the end of 1948 there will be approximately 50 television stations on the air in this country with regular programs. There may be more.

Television Receivers

All kinds of figures have been mentioned about television receivers, and here is my estimate: between 150,000 and 175,000 receivers will be in use by the end of 1947. By the end of 1948, I foresee a total of 750,000. This means that for 1948 our estimates are approximately 600,000 above the number that will have been installed at the end of the present year.

Television Audience

Surveys have been made of the number of people within range of present television programs. Approximately 30,000,000 people live within the areas covered by current television broadcasts. By the end of 1947, this figure will be 40,000,000 and thereafter this audience will be augmented by many millions.

Surveys indicate that seven viewers constitute the average audience at each television receiver. Therefore, if you multiply 750,000 by seven you will see that by the end of 1948 there will be a large audience for television—somewhere near 5,000,000.

The broadcaster must build his own television circulation as does a new magazine or newspaper. That is the broadcaster's job. He cannot toss that responsibility to the television set manufacturer, any more than the magazine or newspaper publisher can transfer his problem to the printer.

A newspaper or magazine spends a substantial part of its initial investment in building circulation; the job of the broadcasting stations, likewise, must be to build circulation in television.

Fusion Of Sound And Sight Broadcasting

I have previously advanced the idea that sound and sight broadcasting will in due course combine. I repeat that thought now. The fusion of sound broadcasting with television is destined to come in radio ultimately, just as the combination of sight and sound took place in motion pictures. Indeed, the time may come when an important broadcast program that we cannot see will seem as strange as a movie we cannot hear. This does not mean that such development is around the corner.

Programs limited to sound and prepared through the techniques of sound broadcasting alone will continue to serve millions of people through many hours of the broadcasting period when the eye cannot be concentrated on the television picture. We must expect that these services will continue to grow and to supplement each other. Therefore, during the years of transition, it seems to me, there will be ample opportunity for broadcasters operating AM and FM receivers to do a substantial volume of business and to render a vitally necessary public service.

Local Television

I should like to say a few words about local television before entering into a discussion of national service. Television programming can be started by local stations in a small way with a minimum of facilities and expanded as receiving sets and commercial sponsors increase. In the meantime, until nationwide networks are available, films of live shows and newsreels can be flown to stations throughout the country to add to their program variety.

Like the many independent local broadcasting stations which are successful and profitable, television stations also can thrive upon local talent and community service. There is no end to local program possibilities, for the small town is a natural television

stage. People like to see their friends and neighbors on the screen. I can foresee many uses for television in religious and educational activities. Television can be a great aid to good government in city, town and county by making citizens better acquainted with their local leaders and their work.

Local merchants will find television an effective means of advertising. Dramatic groups, county fairs and community sports events will enlarge their audiences. Often a local baseball or football game or a prizefight is as interesting to a community as a professional sports event in a distant city. Civic and fraternal organizations and women's clubs also are sources of programs for local television stations.

You can imagine the interest that would be shown in a local community if, for example, one or more department stores were the scene of a shopping hour in the morning or afternoon. The television camera would show the merchandise and the shopper at home could see what each store had to offer before she left home for her marketing. I should think that this would be an interesting experiment in advertising.

Network Television

Automatic relay stations, either alone or in combination with the coaxial cable, show great promise for speeding extension of television program service throughout the nation. Radio relay stations are now in operation between a number of cities, and others are being erected. Eventually these microwave channels will reach out further to connect additional communities in television network service, especially cities not reached by coaxial cables.

Doubtless you have heard about the experiments being conducted from time to time with coaxial cables and radio relays which can carry not only television, but ordinary speech, telegraphy at high speeds, and of course FM and television programs. Because these new cables and relays can handle several services simultaneously, they will be completed, I believe, sooner than we expect. I should not be surprised, if it is possible to have a television coast-to-coast network within the next few years.

Television Programs

In considering home-television, we must recognize that good programs are the master key to public acceptance of the art. Television's popularity, as well

as its speed of advance, will be governed by the caliber of the shows. That is the important responsibility of the broadcaster. The success of television and the popularity of the video station will depend upon it.

The telecaster will, of course, have the problem of talent. He cannot depend solely upon the radio, motion pictures, and other established sources of entertainment for his performers. Television is a new art form that calls for new techniques and for the development and encouragement of new talent to supplement present radio entertainers. Many well-known radio artists will adapt themselves to television as successfully as the artists of the silent screen adapted themselves to the talkies.

News and sports already have proved natural drawing features for television. Films also will play an important part in the flexibility of television programming. But timeliness is the great advantage which television has over all other forms of visual entertainment. Those who recently watched the American Legion Parade in New York, the Davis Cup tennis matches, and big league baseball games throughout this summer, can attest to this. News associations are studying methods of television news service to supplement the service they now perform for sound broadcasting. The presidential nominations and election in 1948, with political candidates competing for public attention, will stimulate public interest in television on a widening scale.

It is an interesting fact that broadcasting received its first real impetus in 1920, when the Harding-Cox election returns were broadcast and picked up by amateur stations. It was the presidential election that really put broadcasting in the news and stirred public interest. Then came the Dempsey-Carpentier fight in 1921, which gave tremendous impetus. And strangely enough, the same factors are asserting themselves in these early days of television.

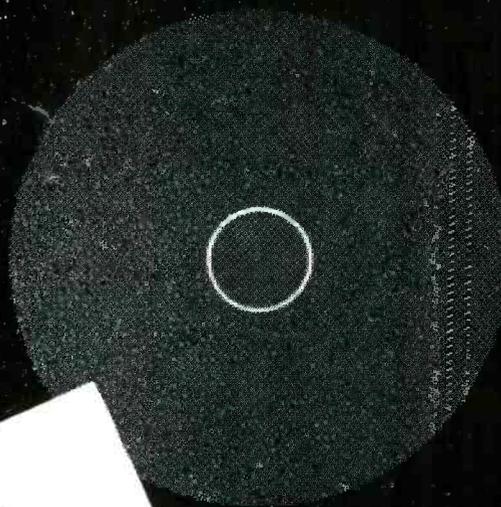
Recent Television Demonstrations

Recently, there have been several extraordinary demonstrations, one this week, which you perhaps read about in the press: several surgical operations at the New York Hospital were televised by RCA, enabling those attending the American College of Surgeons Congress to view the operations on television screens in the Waldorf-Astoria.

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Television may prove to be the Medical Lecture Hall of the future. A prominent surgeon remarked, "This is a teaching medium that surpasses anything we have had in the past—I never imagined television could be so effective until I actually saw it!"

In still another field, the U. S. Navy recently announced success in underwater television experiments in which RCA equipment was used. This opens an entirely new field in deep-water investigations and novel television programs. Fishermen may use television to locate schools of fish and oyster beds. Explorers can scan marine life on the ocean floor as well as wrecks, by lowering television cameras into the sea. Submarines may yet be equipped with television eyes.

Ultrafax

You may have observed recent announcements of revolutionary progress in radio communications—only yesterday in Chicago I spoke before a meeting of the United States National Commission for UNESCO and reported that RCA within the next month will demonstrate in Washington, D. C., a new system of communications known as Ultrafax. It is a combination of television and facsimile. Ultrafax uses a television station for transmitting printed matter and messages, maps, books, documents, letters, drawings, balance sheets, etc. This new system can transmit and receive at the rate of one million words a minute. I used to think, in the days when I was a wireless operator, that if an operator could send 35 to 40 words a minute and keep it up for eight hours, it was quite an accomplishment.

Now by the Ultrafax system, a 500-page book can be sent from New York to San Francisco in half a minute, and a Sunday metropolitan newspaper, including the comics, in one minute. A single circuit could carry the equivalent of forty tons of airmail, coast-to-coast, in a day. So we have something here that may dip into the mail bag. We may have a radio mail system!

All of this may give you an indication of the march of science and a picture of the important place which a television station in the future may occupy in the community.

International Television

Today, international television may seem far off. But let us recall that five years after sound broadcasting started as a nation-wide service, we had inter-

national broadcasting. While the technical problems of international television are more difficult to solve, nevertheless I believe we shall achieve international television in about the same period of time. The scientific knowledge for doing the job exists. In fact, I know of no problem in international television that money cannot solve.

Television Will Continue Free

Television will reach the home by radio as free to the audience as broadcasting is now. A proposed system of so-called wired "phone-vision" would introduce a monopoly feature into television by limiting its service to telephone subscribers only. Such a system, which would further limit its service only to those who would agree to pay for the programs as well as for the receivers, is an idle dream. The political implications, the legal and regulatory aspects as well as the technical difficulties of preventing non-payers from receiving the same programs doom such an impractical system from the start. Moreover, the idea is not in keeping with the traditional American policy of "Freedom to Listen" and "Freedom to Look." These are the principles upon which our country's broadcasting is founded and under which it has developed and prospered.

Relation Of Manufacturing To Broadcasting

I should like to digress a bit to make an observation regarding a statement I have heard from time to time which implied that it is sinful for a company to be interested in both broadcasting and manufacturing. The truth is that manufacturing interests have been largely responsible for the development of television and have provided broadcasters with new opportunities for service. If it were not for research, engineering and manufacturing, there would be no broadcasting, either sound or sight.

Therefore, I feel that while a broadcaster should not be criticized for confining his activities to broadcasting or a manufacturer for confining his operations to manufacturing, nevertheless, where both are conducted by the same organization, the art and industry are advanced rather than retarded. Years of experience have amply demonstrated this to be a fact.

The 25-year period of experimentation and development of television has been full of difficulties. It has been an extremely complex new science and

art to establish in the laboratory, the factory and on the air. The scientists, research men and engineers have done heroic work, for which all of us will ever be indebted.

Television As A New Industry

Television is moving forward rapidly and is destined to become one of the major industries of the United States. In addition to serving the home, television has application to the theatre, the motion picture studio and the entertainment film. In the manifold processes of industrial life, television also is destined to play an important role.

The possible size of the television industry is indicated by the following figures: in the first two years of sound broadcasting, that is, 1921 and 1922, the sales of receiving sets amounted to approximately \$100,000,000. In those two years, more than 500 broadcasting stations were on the air.

Now, for the first two full years of postwar television operation, namely, 1947 and 1948, with approximately only ten percent as many stations on the air, that is 50 instead of 500, it is estimated that the public, during this two year period of television, will spend approximately \$375,000,000 for receiving sets—\$375,000,000 in television, as compared to \$100,000,000 in sound broadcasting. This does not take into account the additional expenditures on television transmitters, the cost of erecting and operating them and the cost of programs. Therefore, in round figures, within a year and a half or so from the present time, we shall approach a \$500,000,000-a-year industry in television. And that will be only the beginning. As time goes on, I am confident the industry will grow substantially.

Television As An Advertising Medium

Television will be supported by advertising, both local and national, for it is an ideal advertising medium, unsurpassed in its simultaneous appeal to the eyes and ears of many millions of people. Studies indicate that the pulling power of advertising on television is many times that obtainable by sound broadcasting alone.

Television is setting a much faster pace as an advertising medium than broadcasting did in its pioneering days of the early 20's. It is apparent that sound broadcasting soon will face keen competition from television. As television expands on a national scale, this competition is certain to increase.

Safeguarding The Broadcaster's Future

It seems to me that broadcasters should not consider television solely from the standpoint of profits or losses during the pioneering period. We must look to the opportunities ahead and weigh the obligation which all of us share to render maximum service to the public.

There are other important economic considerations, which must not be overlooked. As the television audience increases and programs improve—and both results are sure to be achieved—many listeners are bound to switch from sound broadcast to television programs. I do not mean that they will switch permanently from sound broadcasting to television, but they will be switching back and forth between these two services. They cannot enjoy both at the same time unless sight and sound are combined in all programs. As the switching goes on, it will reduce the audience of sound broadcasting stations and increase the audience of television broadcasting stations. Those who are not in television will find their sound broadcasting revenue, which is based on circulation, diminished. That fact is self-evident.

To maintain their present position in their local communities, to render the greatest possible service and to safeguard the capital investments and earning capacities of established sound broadcasting stations, prudent owners will consider television as an added new service, vitally necessary to insure their existing business against reduction of audience, loss of profits and depreciation of investments.

A Message To Broadcasters

Affiliates of the NBC: This is the message I should like to bring to you. I do not want to ask you to buy television stations, or to erect them, or to urge you to enter television beyond your own convictions, or to promise you immediate profits. But I feel that I should be less than frank if I did not on this occasion, particularly when you are all assembled, share with you the thoughts I hold, not only about the future possibilities of television—and my enthusiasm is unlimited as to that—but also about the possible effects that television may have upon the present broadcasting business.

I have lived through several periods of development in the fields of communications and entertainment. I remember the day when wireless as a

service of transoceanic communication was regarded by some as a joke. In the days when I worked as a wireless operator, a cable company could have acquired the Marconi Wireless Telegraph Company of America for only a few million dollars. Those who owned the cables could not see wireless as a competitor of cables. Who, they asked, would send messages that were not secret through the air? Who would entrust important messages to a service that was filled with static?

Today, the law says to the Western Union: "You must divest yourself of the cables." But now it is difficult to find a buyer for cables. Today, radio is the modern method of international communications, and can reach every country directly.

I lived through the day when the Victor Talking Machine Company—and those who founded it did a great job in their day—could not understand how people would sit at home and listen to music that someone else decided they should hear. And so they felt that the "radio music box" and radio broadcasting were a toy and would be a passing fancy. What was the result? Not many years after their fatal dream, RCA acquired the Victor Talking Machine Company, and the little dog changed its master.

I saw the same thing happen in the field of talking motion pictures. It was argued by many that people would not go to a movie that made a lot of noise and bellowed through an amplifier and disturbed the slumber of those who enjoyed the silent movie. That, they said, was a preposterous idea! The very virtue of the silent movie, they contended, was its silence! And then—in 1927—came Warner Brothers with "The Jazz Singer" and Al Jolson. Almost overnight a new industry was born. The silent actor became vocal, and the silent picture was given an electronic tongue. Today, who goes to a silent movie?

Now, I should like to impress upon those of you engaged in radio, that for the first time in its history, radio itself has a stake in the present. It must be careful not to act like the cable company, the phonograph company and the silent motion picture company, which looked upon the new children of science as ghosts of obsolescence that might adversely affect their established businesses. In their desire to perpetuate and to protect their existing businesses, some of them stubbornly resisted change and progress. Finally, they

suffered the penalty of extinction, or were acquired by the progressive newcomers.

Let me assure you, my friends, after more than forty years of experience in this field of communications and entertainment, I have never seen any protection in merely standing still. There is no protection except through progress. Nor have I seen these new scientific developments affect older businesses, except favorably, where those who were progressive, gave careful thought and study to the possibilities of new inventions and developments for use in their own business.

Despite the fact that the Victor Talking Machine Company passed into radio hands, more phonograph records are made and sold today than ever before. And so it is with the entertainment industry. Talking pictures saved that industry at a time when it needed saving and has kept it prosperous ever since. Television in the theatre may be as much of a stimulant to an industry which at the moment, at least, needs a new stimulant, as sound was to the silent movie.

Therefore, may I leave you with this final thought: I am not here to urge you to enter the field of television beyond the point where you yourselves think it is good business for you to do so; nor to propose that you plunge all at one time. Rather I would suggest that you reflect carefully and thoughtfully upon the possible ultimate effects of television upon your established business if you do nothing, and of the great opportunities for your present and future business if you do the right thing!

NABET

100% Of, By, and For
the Broadcast Engineer

Inquiries should be addressed directly to:

A. T. Powley, President

N.A.B.E.T.

66 Court St.,

MAin 4-

Brooklyn 2, N. Y.

2855

or to any of the NABET National Officers
listed on page two.

U. N. Trends

(Continued from Page Two)

their own choosing without previous governmental authorization and proposes a guarantee for the free exercise of this right. This resolution also sets forth the responsibility of employers and workers to bargain collectively, and rejects "yellow dog" contracts which would make the pledge of the worker not to join a union a condition of employment. It also would ban discrimination because of union activity, or dismissal because a worker is a union member,

ference next year. Other more controversial phases of industrial relations were approved for "first discussion" at the next ILO conference, with adoption of a convention planned at the subsequent session.

The resolution adopted by the Economic and Social Council pointed out that enforcement of rights, whether of individuals or of associations, raises common problems which should be considered jointly by the ILO and the UN Commission on Human Rights.

NEW YORK NOTES

NOT much news this month fellows and girls—but after all your departments haven't sent in very much. First of all we are sorry to tell about an unfortunate accident which happened to **Alfred Wies**, Master Control Engineer, who lost the tips of two fingers in an accident while working on the engine of his motor boat. Then our very good friend and ABC studio engineer, **Charles Younger**, recently underwent an operation for a foot condition and is coming along very nicely. **Frank Thielker** formerly with ABC studio, and **Jack McNally**, formerly with NBC studio, are both with DuMont television. We wish them lots of luck.

A meeting was held not so long ago with representatives of A.C.A. and NABET at which time pertinent points of the proposed F.C.C. lowering of the standards of broadcast licenses were discussed. The friendly meeting was a co-operative attempt to bring about a solid front against the F.C.C.'s proposals to lower the standards of the broadcast transmitter engineer and by the same token cause a lowering of the salary standards. I.B.E.W. did not accept A.C.A.'s invitation to participate.

Larry Williams and **John Kinsel** doing a good job on the Paul Whiteman Club show—Larry spins the platters and John mixes. What a job!

Here is a thought which has come to our attention from time to time—The suggestion is to have a National column of local news, rather than have each Chapter publish its own column—this would create much more space for matters of general interest—most of the local news is stale by the time it hits print anyway—what are your reactions? Please send your ideas to either of us, Room 558, 30 Rockefeller Plaza, New York City.

Dudley Connolly
Patrick Simpson

Retail Food Prices

		JUNE 1946	JULY 1947	PERCENT INCREASE
		CENTS	CENTS	↓
SUGAR - 1 Lb.		7.3	9.7	32.9
TOMATOES No. 2 can		12.5	19.9	59.2
NAVY BEANS 1 Lb.		12.5	21.0	68.0
OLEO-MARGARINE		24.1	39.9	65.6
COFFEE 1 Lb.		30.7	45.3	47.6
FLOUR 5 Lbs.		31.9	48.5	52.0
PORK CHOPS 1 Lb.		37.5	74.6	98.9
BACON, sli. 1 Lb.		41.8	74.5	78.2
ROUND STEAK 1 Lb.		41.7	80.0	91.8
BUTTER 1 Lb.		61.0	76.6	25.6
POTATOES 15 Lbs.		75.2	90.5	20.3

SOURCE - BLS

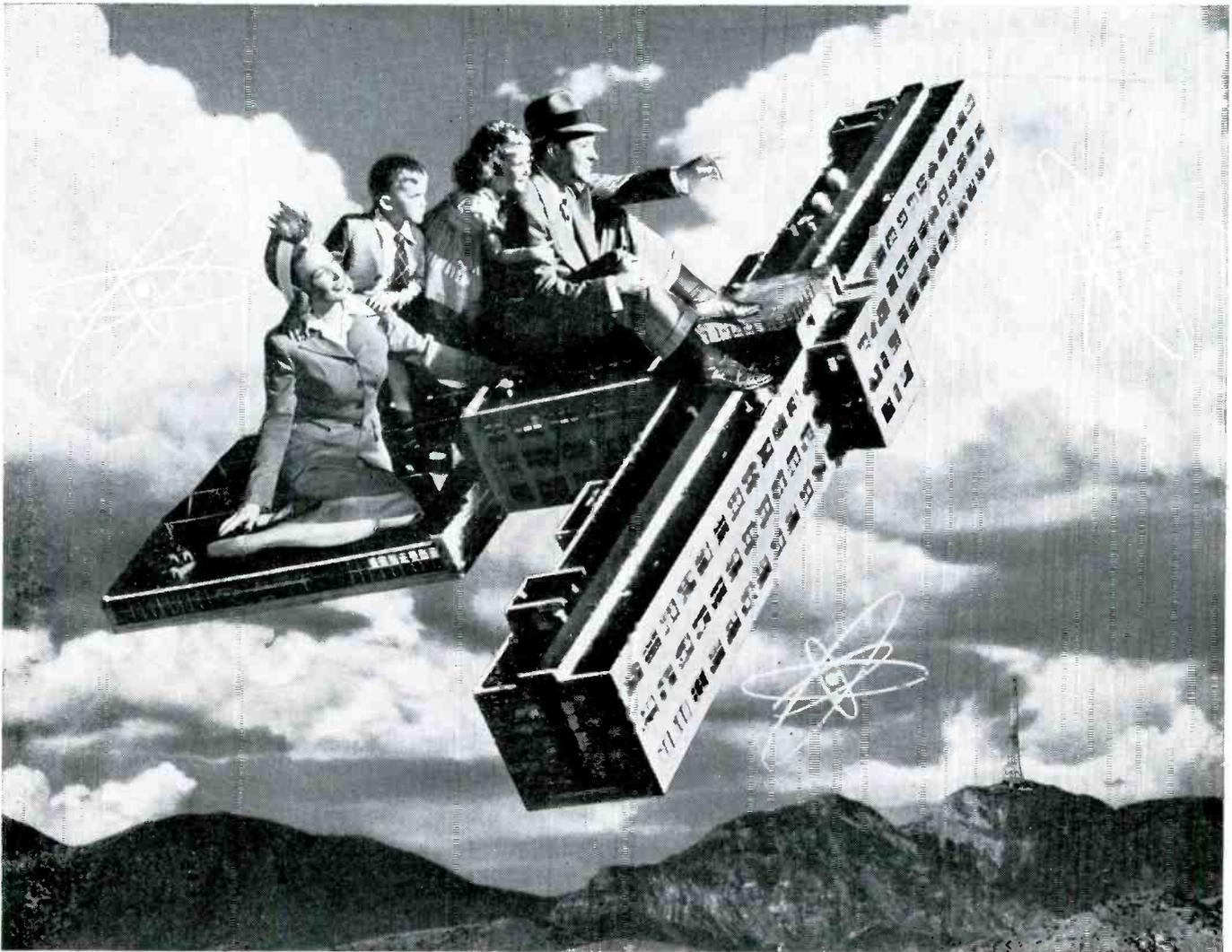
agent or official. It also condemns company domination of unions. One clause states that a freely concluded collective agreement making membership in a trade union a condition of employment would not be inconsistent with the resolution.

The second resolution calls for an ILO governing body study of the desirability of creating machinery to safeguard freedom of association.

The conference set up two "lists of points" as basis for conventions. In one, freedom of association and protection of the right to organize are set up for final action on the adoption of a convention at the San Francisco ILO con-

NABET Employment Service

Due to the day-to-day changes in status and availability of unemployed NABET members, President Powley has deemed it impractical to publish such a list of names in each issue of the Journal. Instead, each available member should immediately notify the National Office, with copies to his Chapter Chairman, of availability together with brief resume of experience, etc., and notify them immediately of any change in status or availability. The Chapter Chairman for the area, and the National Office, each of whom are called upon to fill vacancies, will thus be kept up-to-date to the mutual advantage of all concerned.



Your enjoyment climbs to new altitudes through radio and television achievements of RCA Laboratories.

RCA LABORATORIES—your "magic carpet"

to new wonders of radio and television

More and more people will go sight-seeing by television as the number of stations and home receivers increases. Eventually, television networks will serve homes from coast to coast . . . bringing you the news as it happens . . . sports events . . . drama . . . vaudeville.

Many of the advances which have made possible these extended services of radio-electronics, in sound and sight, originated in research conducted by RCA Laboratories.

Recent RCA "firsts" include: ultra-sensitive television cameras that give startling clarity to all-electronic television . . . tiny tubes for compact, lightweight portable radios . . . "picture tube" screens for brilliant television reception.

In other fields of radio-electronics, RCA has pioneered major achievements—including the electron microscope. Research by RCA Laboratories goes into every product bearing the name RCA or RCA Victor.



RCA Laboratories at Princeton, N. J., one of the world's centers of radio and electronic research. • When in New York City, see the radio-electronic wonders on display at RCA EXHIBITION HALL, 36 West 49th Street. Free admission. Radio Corporation of America, Radio City, New York 20.



RADIO CORPORATION of AMERICA



Review of Current Technical Literature

By Lawrence W. Lockwood

Audio Engineering — Sept. 1947

Multi-Lingual Interpreting Systems—C. A. Tuthill

Describing a unique and most useful application of audio equipment.

High-Frequency Equalization for Magnetic Pickups—

C. G. McProud

Methods of using shunt capacitance to provide low-pass filter action and NAB compensation for users of Pickering and GE pickups.

Planning a Studio Installation—J. D. Colvin

Third of a series covering broadcast studio installations. The methods outlined are also suited to large public-address projects.

Musical Acoustics—B. Tilson

Fourth of a series on music theory written for sound engineers.

Bell Laboratories Record — Sept. 1947

A New Miniature Double Triode—G. C. Dalman

Description of the characteristics and manufacture of the Western Electric 396A tube.

Glass-Sealed Switches and Relays—C. G. McCormick

Description of operating characteristics (with photographs and drawings) of two types of hermetically sealed, plug-in relays developed during war.

Journal of Applied Physics — Aug. 1947

Electron Beam Deflection—R. Hutter

Two general mathematical methods are discussed which may be used to study the effects of electric and/or mag-

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netic deflection fields on electric beams and then these methods are applied to describe the action of balanced, two-dimensional electric deflection fields on electric beams.

Proceedings of the I.R.E. — Sept. 1947

An Experimental Simultaneous Color-Television System— R. Kell

This paper is the introduction to the two following articles (also in this issue) which describe the transmitting and receiving apparatus used in the simultaneous system.

Design of Speech Communication Systems—L. Beranek

A method is presented for calculating the ability of a communication system to transmit speech intelligibly in the presence of noise.

Proposed Method of Rating Microphones and Loudspeakers for Systems Use—F. Romanow

Proposed is a method of rating microphones and loudspeakers whereby the over-all performance of a sound system may be determined.

I-F Amplifiers for Frequency-Modulation Receivers— J. Adams

Selectivity and stability formulas, stabilizing methods, and methods of aligning double-tuned transformers are discussed.

QST — Sept. 1947

How Sensitive Is Your Receiver?— B. Goodman

The diode noise generator for testing receiver sensitivity.

Tele-Tech — Sept. 1947

UN Telecommunications Facilities—J. Peterson

Proposed plan to cost \$6,000,000, will have strategically located transmitters and rebroadcast stations to provide world-wide coverage.

Broadcasting and Television methods in the Soviet Republics—Dr. A. Huth

Relying principally on high-power longwave transmitter, 195,000,000 people speaking over 200 dialects must be reached—collective listening predominates.

2½ Watt FM Transmitter Permits City-Wide Coverage

With effective radiated power of but one watt, Syracuse University installation give 50 micro-volt/meter at distance up to 7 miles.

Optical Design of Philco Television Projection Receiver— W. Bradley and E. Traub

Details of lens and mirrors in folded Schmidt arrangement giving excellent detail, brilliance and contrast with new type specular screen.

Comparative TV Network Costs

Charts showing comparison of charges proposed by AT&T as opposed to DuMont.

Engineering Problems Involved in TV Interference— A. Francis

FCC and industry engineers study diathermy, amateur and receiver emanations, tropospheric propagation and allocations—Increased spectrum space suggested.

Television — Sept. 1947

Selecting Your Image Orthicon Lenses—

H. C. Miholland, manager of DuMont's transcription department details the type of lenses needed for studio work, sports and news.

Lighting Effects

J. Caddigan, veteran of more than twenty years with Paramount, discusses some lighting techniques.

Electronics — Sept. 1947

A New Television Projection System— W. Bradley and E. Traub

Combination of a Schmidt optical system, a new phos-

phor, directional viewing screen, keystone projection, and ingenious cabinet arrangement produces a 15 by 20 inch picture of exceptional brightness and contrast.

Automatic Gain Control and Limiting Amplifier— W. Jurek and J. Gunther

An AGC amplifier regulates the audio signal applied to a peak limiter. A memory circuit holds the gain constant for a predetermined time to preserve dynamic range of program.

FM Reception Problems

Built-in and outdoor antennas for FM reception, front-end and IF circuit arrangements and demodulation systems are discussed in the symposium.

Adjustable Bandwidth Discriminator— W. Tuller and T. Cheatam, Jr.

Easily adjustable bandwidth control, output frequency characteristics complementary to the frequency-voltage characteristics of stabilized FM microwave oscillators, and freedom from critical adjustments.

Labor History

From the Labor Information Bulletin

THE history of the American labor movement goes back to Colonial times.

Before the Declaration of Independence in 1776 and the establishment of the United States of America in 1789, skilled artisans in handicraft and domestic industry joined together in benevolent societies whose primary purpose was to provide members and their families with financial assistance in the event of debt, serious illness or death.

After the Colonies had won independence from Great Britain, there arose an increasing demand for goods and services originating in the United States. As the American market expanded, buying and selling became the specialized function of the "merchant capitalist." His efforts to buy at the lowest possible prices were at first resisted by unions of both journeymen and their employers.

The forces of competition, however, slowly separated the employers' interest in producing cheaply and in quantity from the journeymen's concern over maintaining their skill and wages.

Organizing Began in 1791

In the face of wage reductions, crafts such as carpenters, shoemakers, and typographers formed separate organizations in Philadelphia, New York, and Boston as early as 1791.

These early craft unions were confined to a local area and they seldom included all the workers of a craft. In addition to the welfare activities which characterized earlier organizations, their aims frequently included higher wages, minimum rates, shorter hours, enforcement of apprenticeship regulations and exclusive union hiring, later to become known as the "closed shop."

By the opening of the nineteenth century, the principle of collective bargaining was already well understood in labor and employing circles and was frequently applied in disputes. The first recorded meeting of worker and em-

ployer representatives for discussion of labor demands occurred between Philadelphia shoemakers and employers in 1799.

Out of this period came, also, the forerunner of the union "business agent." Early "tramping committees" checked on shops to see whether they were adhering to the union wage scale.

Strikes, or actions of workmen in quitting their employment in a body, paralleled the development of organization and collective bargaining. The New York bakers were said to have stopped work to enforce their demands as early as 1741.

The first authenticated strike was called in 1786 by the Philadelphia printers who provided benefits for their striking members. A sympathetic strike of shoe workers in support of fellow bootmakers occurred in 1799 in the same city. In 1805, the shoemakers of New York created a permanent strike benefit fund and, in 1809, these same workers participated in what was, perhaps, the first "general" strike when they extended their walkout from one employer to several others who had come to his aid.

Employers Turn to Courts

Employers, organizing to resist wage demands, attempted to destroy the unions by hiring non-union workers and by appealing to the courts to declare labor organizations illegal. The basis for this legal fight against unions, carried through the courts of Philadelphia, New York, and Pittsburgh between 1806 and 1814, was the old English common-law doctrine that combinations of workmen to raise wages were a conspiracy against the public.

The attempt to apply this doctrine aroused a controversy lasting through most of the century. Slowly, the courts turned their attention from the question of whether a mere combination of workmen was a conspiracy to consideration of the means they used to gain their ends. Thus, for a long time, strikes, boycotts, and other attempts of workers to secure their demands were the subject of legal action in the courts. This, together with a business recession following the Napoleonic wars, caused many trade-unions to fold up.

After 1820, however, worker organizations again sprang up in larger cities among hatters, tailors, weavers, nailers, and cabinet makers. Organizations of factory workers appeared for the first time.

Labor in Politics

WITH the abandonment of property qualifications on the right to vote, which had been imposed by the first State constitutions, workers' organizations between 1827 and 1832 turned gradually to independent political activity.

Several other factors were responsible for this trend, among them the prosecution of labor unions in the courts of law, growth of the factory system which added rapidly to the number of industrial workers and created closer association among them, and the idea that the hours of labor should be fixed universally at 10 per day by legislation rather than by the painful method of strike.

The effort of workers to improve their status by political action spread to many industrial cities. In Philadelphia in 1827, craft unions formed the Mechanics' Union of Trade Associations which nominated and elected candidates to "represent the interests of the working classes" in the city council and State legislature.

Labor Parties Take Action

Local labor parties sprang up in many cities. Political programs, supported by 50 or more labor papers, included: the 10-hour day, restriction of child labor, abolition of convict labor competition, free public education, abolition of debt imprisonment, exemption of wages and tools from seizure for debt, rights of mechanics to file liens on property to secure wage payment, and abolition of home and factory sweatshops.

For a short time labor succeeded in electing candidates, but in general they failed to attain their aims. Nevertheless, they had called public attention to the social and economic inequalities suffered by workers and helped shape much future legislation. Eventually, State legislatures prohibited imprisonment for debt, recognized the 10-hour day, and laid the foundation of the American free public school system.

In the early 30's the interest of workers in reform movements and political action declined. To offset the rapidly rising prices between 1835 and 1837 they turned with renewed vigor to organize craft or trade unions. By 1836 over 50 local unions were active in both Philadelphia and New York. Workers also organized craft unions in Newark, Boston, Cincinnati, Pittsburgh, and Louisville.

This rapid growth led to the formation of union groups in a city-wide basis, called "city centrals" or "trades' unions," for the purpose of discussing problems and promoting union-made goods.

National Organizations

In 1834, city central bodies from seven cities met in New York to form the National Trades' Union. In 1835 and 1836, cordwainers, typographers, comb-makers, carpenters, and hand-loom weavers tried to set up country-wide organizations.

These experiments in federation could not withstand the financial panic of 1836, followed by a long depression. Unemployment in the 40's wiped out nearly every form of labor organization.

Their unions swept away in the economic storm, many workers turned their efforts toward forming producers' and consumers' cooperatives. Others were attracted by Utopian schemes for cooperative communities which were urged as the solution to the social and economic ills besetting labor.

These schemes received little support from workers. In this period was also born the "homestead movement," which has been described as a demand that the Government "open an escape to the workers from the wage system in self-employment by way of free land . . ." This movement dominated politics during the 50's and 60's.

In the late 40's industry revived, labor was in great demand, prices rose, and trade unions once more were active. During the 1850's several national unions were founded. The printers held a national convention in 1850. By the end of that decade the stonecutters, hat finishers, molders, machinists, and locomotive engineers had created national organizations.

The decade was marked by another depression and a series of strikes involving almost every craft and a majority of our cities. Collective bargaining between unions and management was, however, becoming more common in several leading trades.

CHICAGO

By Minor Wilson

WE ARE all welcoming Garry DeVleig back to work from a long absence due to illness. Nice to see you back Garry.

Jim Mehren has transferred to KGO; Jim has a lot of friends in Chicago who are sorry to see him go. They all say KGO is getting a good man.

Ed Holm is in the market for a new home; the one he has occupied for years has been sold. But Ed won't move into any location until exhaustive field strength and local QRM measurements have been made!

Andy Forgach is in Northern Wisconsin hunting deer with a bow and arrow. No doubt we will all be eating deer any day now.

Our congratulations to Bud Bombaugh, he has just made Lt. Commander in the Navy. Bud also has a new Buick but he says it keeps him broke feeding it and his family at the same time. Does any one have a model T to trade? He might be able to make a fast deal.

Russ Sturgis says he doesn't have any news to contribute; says any one who comes to work at 330 AM never meets any one interesting. I know what he means.

Vern Mills has the tower for his new beam installed but there seems to be some question whether wife Ardith will allow him to complete it. He will probably talk her into it, tho.

Time was when Joe Alusic was a good studio engineer but that was before he went west on his first out-of-town nemo in ten years. He came back from Wichita, Kansas, with a well neglected beard and 2 guns swinging at his side. Being that impressionable, ABC better not send him out to cover any burlesque assignments; no telling what would happen!

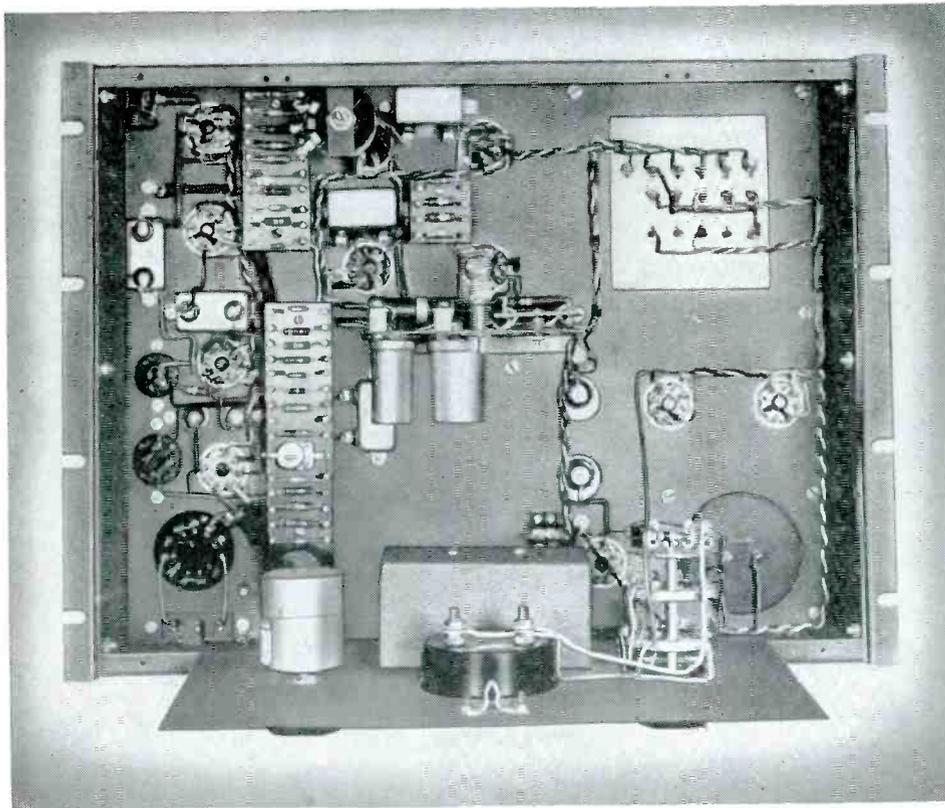
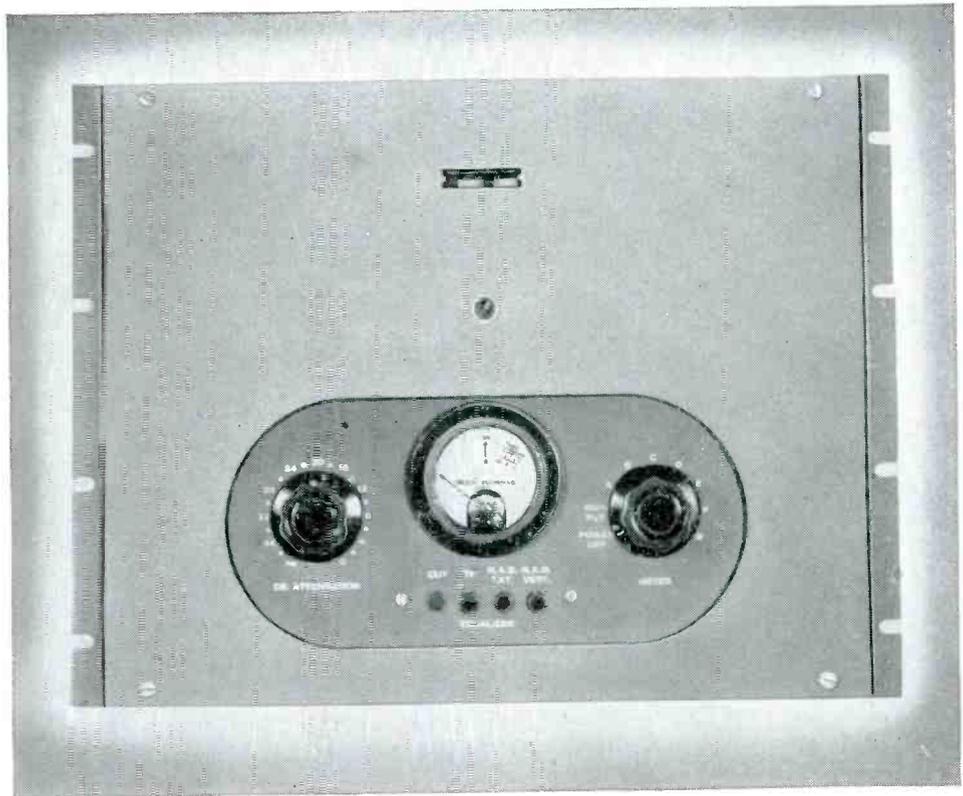
Frank Ahlgrim has been painting his house, doesn't seem to worry over the fact that he is scab labor on that type of job.

Odds and ends: Russ Sturgis and Herb Wyers comparing maimed fingers acquired from winding up model planes.

(Continued on Page Eighteen)

Presto Presents Something New in Recording Amplifiers...

The new Presto 92-A is a 50-watt amplifier designed specifically for recording work. It answers the need for an amplifier of exceptional quality and performance, and includes a number of outstanding features thoroughly proved in operation:



↑ **1** Selector switch and meter provide both output level indicator (not for "riding gain") and plate current readings for all tubes.

← **2** Chassis is vertically mounted. Removal of the front panel gives access to all circuits without removing amplifier from rack.

← **3** The output stage has four 807's in push-pull parallel with an unusual amount of feedback. This produces ample peak power with low distortion and an extremely low internal output impedance for best performance from magnetic cutting heads.

Push buttons select any of these recording characteristics: flat, 20-17,000 cps, 78 rpm, standard NAB lateral, NAB vertical—all within an accuracy of ± 1 db. Distortion is only $1\frac{1}{2}\%$ at full output.

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About Rochester

THE Rochester Chapter Chairman, **Ed Lynch**, was instructed on procedure at the National Council meeting in October at the September 30th meeting of the Chapter in the Sheraton Hotel. Many other local and national affairs were discussed, including some parts of **THAT LAW**, the latter confusing everyone here, too. Altogether, it was a highly satisfactory meeting, both in content and conduct. Notable among those present were three men from **WENY**, Elmira, New York, who drove some 150 miles to make it. Those men (**John Murphy**, **George Mousteller**, **John Murphy**) should be commended for their interest in the chapter and for their real contribution of writing individual letters to the F.C.C. protesting the prospective changes in license requirements. **John Murphy** is a man new to **WENY** and **NABET** whom we heartily welcome. New men at **WRNY**, Rochester, are **Ed Menzner**, **Charlie Leniak** (who came from West **BY GOSH** Virginia), **Bob Tracy**, and **Ken Henderson**. The latter is a familiar face, having worked at **WHEC** some time ago.

Well sir, the boys at the **WHAM** transmitter have been having their troubles of late. Their source for cooling water for the tubes is a 180 foot well with a pump to bring up the water. After many years service this pump finally broke down. Problem: how to cool water-cooled tubes without water? The answer was found by hauling water ten to fourteen miles from "nearby" towns. No sooner was all this taken care of and the pump fixed than the heat interchanger sprung a bad leak, allowing impure water to mix with the distilled supply and you know what happened to the leakage current—the pointer was off scale. That is now temporarily fixed—new interchangers aren't obtained these days on a moment's notice. Both major troubles occurred, of course, as the new transmitter building is slowly taking shape. Why does equipment so many times fail when not quite expendable?

A visitor at the same spot these past weeks has been "Topsy," a dog belonging to **Mr. Fay**, our General Manager. Since he was moved temporarily to a spot unsuitable for pets the boys

are doubling as dog watchers. Their training must be good—the station hasn't yet gone off the air due to dog trouble. We'll assume the boys are doing well at their sniffing and barking lessons, too.

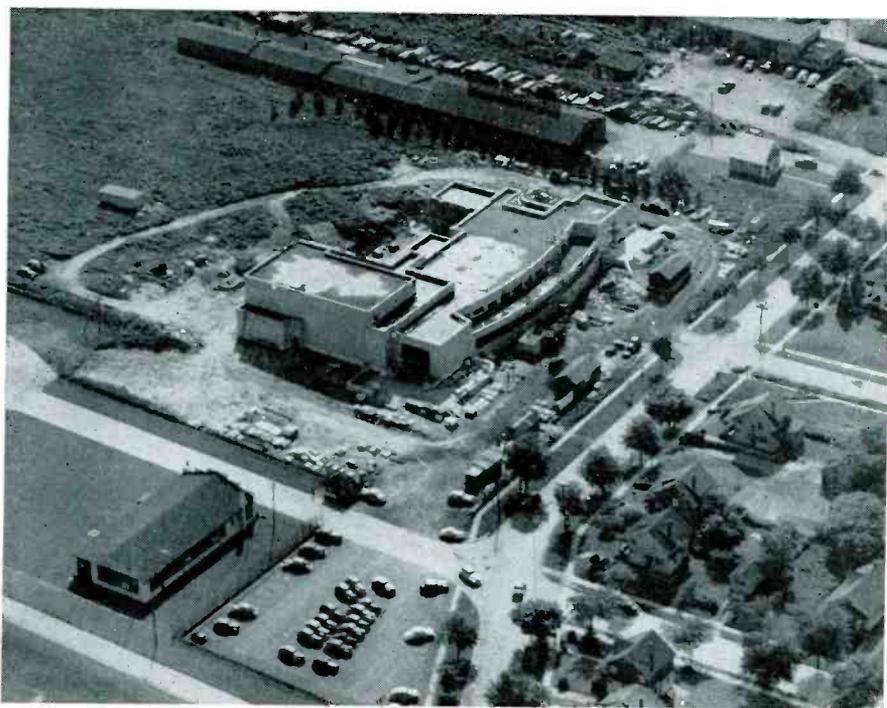
To add to their troubles, lightning got a more or less direct hit on the phone lines coming into the transmitter, which resulted in a fused pair under the floor plus a line-transfer switch that'll never be the same again.

Ed Stiles, not satisfied with lightning being present on the job, invited some into his camp in the Bristol Hills. The lightning accepted and the resultant stubborn fire in the deep carpet of pine needles surrounding the cottage gave him some bad moments before it was finally ushered out. **Walt Malone**, sand and gravel king (on his off time) is so proud of his ten-ton truck that he's been driving its new, fire-engine red respendency to work. Well, it does have more capacity than a station wagon, at that. Kinda rough to park it at the corner grocery, though, one would think.

Work has progressed on **WHAM's** "Radio City" to the point where the city slickers in the control room are very busy helping install the new technical equipment. Of course, some of the old equipment can be used and (guessing) it will shortly become a problem to keep the station on the air as the racks are robbed of relays, pads, etc., to complete the new setup. Some notion of the new building can be gained from the enclosed picture, taken some time in late August. We hope to have completion at least in sight soon.

WHM's only news is that **Tony DeLucia** drove himself to the hospital at one A.M., to have his appendix removed two hours later. Now convalescing, he's probably thoroughly enjoying the blessed surcease from those everlasting platters. We would, anyway.

Haven't heard much from **WHEC** lately. **Ray Jobs** had a bad time a while ago when he heard an unearthly, screaming-meemie type shriek issuing from the monitor speaker. Much wild-eyed, feverish searching, to eventually discover that the phone company's howler (used for waking up absent-minded characters who leave their receivers off the hook) had somehow gotten into the program line. This was, no doubt, to get even for **WHEC's** program being **R9** on all 600 pairs of a busy, downtown cable some sixteen



PROGRESS ON ROCHESTER'S "RADIO CITY"

Aerial view of **WHAM's** new AM, FM, and (later) Television studios. Auditorium studio at left, offices across the curved front, other studios, control room, monitor booths in back of offices. Studios are located on Humboldt Street, near the plant of Stromberg Carlson Company, station owners.

years ago. Radio is seldom dull! . . . The control room men are considering a vote of thanks to the salesman who brought in that popcorn and pretzel account. Seems the company believes all concerned will do a better job if they know whereof they speak and so is generous with samples of their product. "Damn good, too!," one muncher was heard to say. Now if the sales department can successfully work on a suds account. . . . !

That does it, with the exception of the list of ham calls for the Rochester Chapter, as promised. See you next month, and good CQ-ing!

P.S.—Question: What's happened to Norm Dewes—and Mabel?

Don Anderson
George Wilson

Ham Calls Rochester Chapter

Ed Stiles	W2BJW
Alex Gresens	W2RHZ
Yoe Seiler	W2EB
Walt Malone	W2PZH
Wilfred O'Brien	W2BHM
Hank Boyce	W2RVS
Ray Gondek	W2UMC
Elmer Grabb	W2DOD
Charlie Snyder	W2PWY
Ormond Bullis	W2REC
Gerard Hall	W2AHK
Ray Lucia	W2BEN
Ken Gardner	W2BGN
Arthur Kelly	W2ROB
Tony DeLucia	W2RLE
Bob Tracy	W2QZY
Charlie Leniak	W8ZPC
Dick Sanderl	W2WMD
Howie Mouatt	W2VVO
Bert Allis	W2FBD
Ed Schum	W2CNT
Craig Williams	W2REA
Al Keltz	W2TXB
Fran Sherwood	W2QCF

Elmira

George Mousteller	W2QXH
Ed Pettingill	W2PYE
Benny Kilpatrick	W2PPQ
Leroy Hartman	W2UBU

Do We Have Your Zone Number?

The Broadcast Engineers'
Journal for November, 1947

15

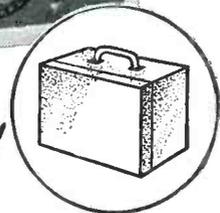
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GAIN or LOSS

TYPE 1A
TRANSMISSION
MEASURING SET



Completely Self-Contained
PORTABLE • AC OPERATED



With this instrument it is possible to quickly and accurately analyze and service equipment in different locations without fuss in time consuming demounting and transportation of apparatus. It will thus pay for itself in a short time and no modern radio station can afford to be without it. It can also be used to good advantage in factory checking and inspection of audio equipment.

The set combines in a modern efficient manner an accurate vacuum tube voltmeter, an audio oscillator with four fixed frequencies and a precision attenuator all mounted in a handy cabinet easily carried by the operator.

SPECIFICATIONS

- GAIN: Up to 80 db.
- LOSS: 60 db. maximum.
- VACUUM TUBE VOLTMETER:
Range—40 to +40 db.
(1 mv. ref. level)
- AUDIO OSCILLATOR:
Freq. Range; 100 to
10,000.
- PRECISION ATTENUATOR:
Flat to 20 KC; 93 db.
in .1 db. steps.
- DIMENSIONS:
10 1/4" x 16 1/4" x 8 3/4"
- WEIGHT: 30 lbs.
- INPUT: 115 Volts.
60 cycles, 70 watts.

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Television Clinic

BROADCAST engineers from leading radio networks and independent stations throughout the United States have just concluded participation in a second RCA television engineering clinic, undertaken to meet a widespread demand from the broadcasting industry which followed RCA's presentation of the first such clinic last May.

Stations and networks represented at the first clinic sought a "repeat performance" for the benefit of staff engineers who had not attended the first, and additional stations indicated their interest in taking part in such a course.

The week-long television course, which is the second technical training program conducted by the RCA Engineering Products Department "by popular request," was a comprehensive and practical training program which enabled the participants to face the problems which will confront them when their own stations install and operate television equipment.

To acquaint the visiting broadcasters with typical problems of installation, and maintenance, RCA appointed as

instructors their top-notch television engineers, the men who have designed and worked with the equipment and are thoroughly familiar with every phase of its operation. The technical sessions included discussions of all aspects of television, ranging from fundamental theory to design of television studio, studio air-conditioning, and erection of a superturnstile antenna.

Members of the visiting group had an opportunity to gain practical experience in the operation of the newly announced image orthicon studio television camera, performing such operations as alignment focusing, and adjusting. RCA's 7000-megacycle microwave television relay link equipment was demonstrated by actual transmission across the room, and the technicians were able to check operational characteristics as they would in the field by the use of oscilloscopes and other test equipment.

Other equipment operated by the broadcasters included the 16mm and 35mm television motion picture projectors and the new television switch-

ing unit for fading and lap dissolving of video pictures fed to it from studio cameras, film cameras, or a remote pickup. They also received instruction in the use of the synchronizing generator, the monoscope camera, and the studio master monitor.

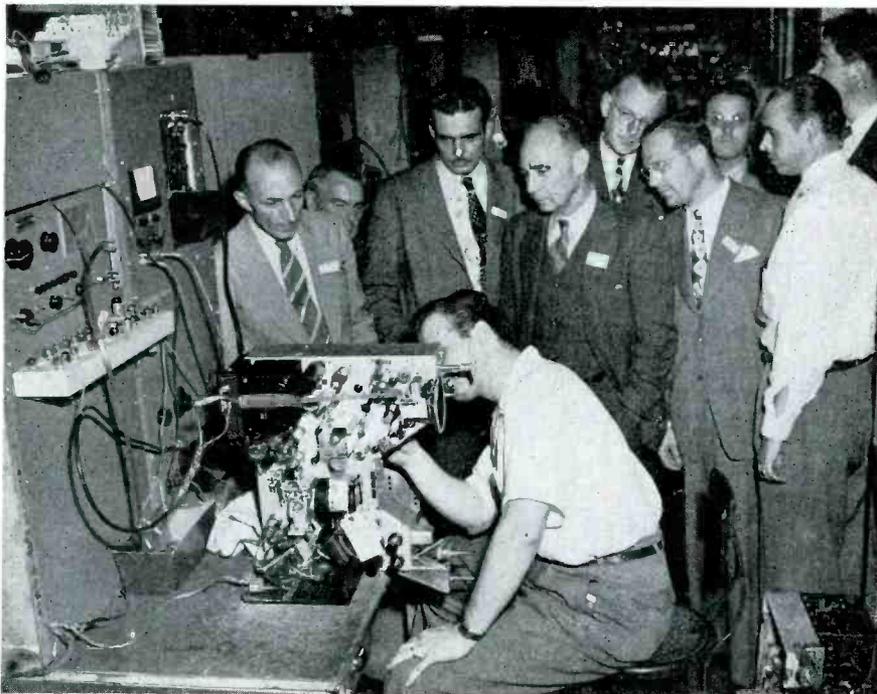
Several tours were arranged for the broadcasters, including trips through the RCA Victor Camden plant and the RCA Laboratories in Princeton, N.J. In the Camden plant, the engineers toured the RCA Victor television receiver production line, where a stream of receivers is produced, tested, and shipped every day. In another section of the Camden plant, they saw the 5-kilowatt television transmitter (Type TT-5A) and other standard broadcast and FM transmitters in production.

In Princeton the visitors were welcomed by Dr. C. B. Jolliffe, Executive Vice President of the RCA Laboratories Division. Dr. P. T. Smith, who developed the 8D21 high-frequency power tube used in the 5 kilowatt television transmitter discussed the operation of the duo-tetrode tube. Dr. R. R. Law outlined the reasearch work being carried out on a new power triode for television work in the 500 to 1000 megacycle band. Dr. H. F. Olson, famous for his research in acoustics and the development of the RCA Duo-Cone Speaker, demonstrated a wide-range sound reproduction system and a new electronic pickup for use with transcriptions. Dr. Albert Rose, co-inventor of the image orthicon television pickup tube, discussed the history and development of this super-sensitive tube, now used by the entire television industry.

The list of broadcasters who attended the course included:

James Kyle WMBG, Richmond
 Earl W. Lewis WTVJ, Miami
 K. A. West Ft. Monmouth, N. J.
 Hans E. Inslerman
 Ft. Monmouth, N. J.
 A. H. Saxton NBC, Hollywood
 Howard Luttgens NBC, Chicago
 S. E. Leonard WTAM, Cleveland
 A. C. Anderson KTAR, Phoenix
 Gilbert Rix WWJ, Detroit
 W. F. Coleman WTIC, Hartford
 A. E. Towne KSFO, San Francisco
 Frank V. Bremer WAAT, Newark
 Richard K. Blackburn
 WTHT, Hartford

I. B. Robinson
 The Yankee Network, Boston
 Leo M. Feller
 Signal Corp, Belmar, N. J.
 George Lewis WCAU, Phila.



Television receiver chassis are given a thorough inspection at one of the test stations along the RCA Victor television production line as broadcasters attending RCA's technical television training clinic look on. They are, from left to right: E. W. Lewis, WTVJ; W. F. Coleman, WTIC; G. Lewis, WCAU; A. C. Anderson, KTAR; A. H. Saxton, NBC, Hollywood; H. Luttgens, NBC, Chicago; J. Kyle, WMBG; Herman Walter, RCA; and E. J. Meehan, RCA Television Equipment Section.

R. CraigWCAU, Phila.
 Louis L. LewisWOI, Ames, Iowa
 C. Richard EvansKSL, Utah
 Philo StevensWBEN, Buffalo
 Carl H. Menzer
 WSUI-KSUI, Iowa City
 A. F. RekartKXOK, St. Louis
 Harold NebeWSMB, New Orleans
 Jack LeitchWCAU, Phila.
 C. RobinsonWCAU, Phila.
 David MartinWMAR, Baltimore

Fall and Winter

When summair is go
 Soon com the Fall
 Turn red the leaf
 When frost he call

Back in school
 Are girl an boy
 Vacation fineesh
 Gone summair joy

Farmair cut corn
 An dig potato
 Bring pumpkin in
 Cut wood for grate

Horse tak the sniff
 Of air lak wine
 Mak kick the heels
 For feel so fine

Cow not much care
 One way or other
 She chew the cud, say;
 "You worry brother"

The huntairs dog
 Him test the nose
 For is much glad
 See hunting clothes

But Grouse an Pheasant
 Shake in the boot
 Soon com Huntair
 Wit gun for shoot

Squir'l gather nut
 Much as are able
 So all wintair
 Can set the table

Fish is suspect
 Soon com the snow
 No givum dam
 Is much snug below

Now from this storee
 Is plain for know
 Smart feller prepare
 For ice an snow

(Continued on Page Nineteen)



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U2

Television and FM News . . .

* GE announces the GL-5648, a new tube for the ultra-highs up to 2,500 mc under full plate input of 100 watts. This new tube is of the "lighthouse" design, and is capable of 25 watts output at 500 mc.

* RMA-IRE meeting at Rochester, Nov. 11-17th, will discuss these important topics: "Avenues of Improvement in Present Day Television," "Use of Miniature Tubes in AC/DC Receivers for AM and FM," "A New Television Projection System," "IF Selectivity Considerations in FM Receivers," and "Engineering Responsibilities in Today's Economy."

* DuMont announces its type 314 Oscillograph-Record Camera, developed to simplify the photography of cathode-ray images, and is applicable to all standard 5-inch oscillographs.

* The John Meck Industries announces wide acceptance of its \$19.95 FM-Converter which is attachable to any ordinary AM radio.

* The FM Ass'n reports indicate the FM music problem is still the hottest issue facing the FM broadcasters; high-fidelity needle scratch gets monotonous. . . .

* A number of complementary comments have been received on our coverage of television and FM—including a nice note from Cmdr. Ross Plaisted who headed up Television Reconnaissance Project "Ring." A greatly expanded coverage is planned for 1948-9.—Eds.

* WMAL-TV set a speed record as the broadcast industry's quickest installation of a complete television station. The Washington Evening Star station went on the air less than a month after delivery of the RCA transmitter and other equipment.

* North American Philips Co. announces the addition of several new air-dielectric variable capacitors to its line, with Q's varying between 3000 and 5000 at 1 mc, with capacities varying from 5 to 50, 5 to 80, and 5 to 120 mmf.

* RCA demonstrated a complete television station at the NAB-Atlantic City Convention.

* North American Philips announces its type 3QP1 carthode-ray tube for light weight television service equipment. The tube is only 6" long, with a 2 3/4" face diameter. Feature low cross-talk, electrostatic deflection and focus.

* GE announces an image orthicon camera weighing only 56 pounds, including a turret of three lenses.

* GE announces three new miniature FM and television receiving tubes designated as 6T8, 19T8 (containing 3 diodes and a hi-mu triode for use as combined AM and FM detector and audio amp), and the 12AT7 (twin-triode for grounded grid RF amp or converter).

* RCA announces installation of 40 Radars of 3.2 cm post-war design on American vessels, and 41 on foreign vessels since Jan. 1st. Twenty-five went to Sweden, 24 to Norway, and 6 to Turkey.

* RMA reports August AM-FM production: 72,000 units; Television, 12,000 units; 8-month television total: 68,669 units.

Chicago

(Continued from Page Twelve)

Harvey Koehnitz still having engine trouble. Pete Cavannah looking for hookless and sliceless golf clubs. Transmitter engineers worrying about studying for a new license. Ray Limberg taking up flying. Ed Bernheim back in the recording room. John Martin and Minor Wilson walking the floor with new babys. Art Hjorth still looking for a car.

NABET — ABC

Network Ham Calls

New York Studio/Field:

W1ACQ	J. D. O'Neill
W1KZ	A. R. Bradley
W2AEB	I. C. Grabo
W2BUY	W. R. Simpson
W2HHK	N. C. O'Leary
W2HTW	M. C. Worster
W2IGB	R. S. Massell
W2IP	C. H. Campbell
W2KCY	A. J. Perry
W2KJG	P. Simpson
W2KK	G. O. Milne
W2LYC	W. D. Tietz
W2MOJ	W. T. Tague
W2ND	C. A. Younger
W2OMT	R. J. Cooke
W2PRD	P. F. Narkon
W2ZA	G. O. Milne
W2CHK	G. E. McDonald

WJZ Transmitter:

W2AMS	H. J. Treger
W2CCC	T. J. Cain
W2ESP	M. Kamke
W2JRS	A. T. Griffen
W2KP	N. Hagmann
W2MME	A. J. Sturhann
W2MMS	W. K. Storrs

Chicago Studio/Field:

W9DBT	R. B. Witnah
W9FKX	H. C. Eckland
W9FQ	W. H. Cummings
W9FVV	J. V. Lato
W9HIY	I. Wrablik
W9HZD	R. E. Hunt
W9KDI	R. H. Parker
W9NKY	G. F. Kemp
W9REZ	A. P. Johnson
W9YMZ	K. A. Slobb

San Francisco Studio/Field:

W6RRR	G. W. Andresen
W6UO	R. T. Parks

KGO Transmitter:

W6BGU	J. J. Blanchet
W6CRO	H. C. Dunton
W6ECW	H. V. Kramer
W6EVG	M. D. Case
W6WPL	E. E. Nickels
W6YDC	K. Martin
W7BSK/6	J. D. Barnard

Hollywood Studio/Field:

W6HDF	R. P. McGaughey
W6ITD	R. A. Binkey
W6LJM	H. B. Bekkar

W6LN	T. E. LaCroix
W6OJ	S. K. Heffernan
W6PKA	C. H. Lorenz
W6TC	P. T. Crosby
W6TE	W. J. Breuer
W6TW	N. H. Dewes
W6VFX	A. L. Hockin
W6VUJ	R. H. Baird
W6WJC	K. W. Grinde
W6YVN	J. A. Pierce
W6YRN	W. H. Williams
W6GRU	R. G. Schroeter

KECA Transmitter:

W6FHO	J. L. Smith
-------	-------------

NABET — WCAE Hams

Clinton Prewitt	W3LJZ
Howard McClelland	W3KJY
Clarence Fabian	W3HJ
Frank Henry	W3TVD
William Sabo	W3BCV
Frank Waltemar	Ex W8EMJ
Roland Gray	Ex W8RCD
Jack Kear	W3MCB
Virgil Miller	Ex VO6H

NABET — KDKA Hams

Earl Sneathen	W3KPS
Glenn Luther	Ex W8BT
Fred Leonard	W3AZG
Ward Landon	Ex W8VN
Buck Dice	Ex W8AER
Elvin Solley	W3LFO
Gus Saldon	W3LUK
Kenny Walburn	W3KYO
Babe Stuehgon	W3MUV
Fred Claus	W3EDK

Poem

(Continued from
Page Seventeen)

Then let howl the win'
Lak Loup Garou
Roun' cabin wall
An down the flue

When night she fall
Lak woll blanket
We trow log on fire
An tabl set

When meal fineesh
An work is done
Can read the book
An oil the gun

When fire is low
An timbair snap
Is time for tak
Long wintair nap.

—Bateese

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JOHN D. COLVIN, Audio Facilities, American Broadcasting Company.

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MAJOR PAUL W. KLIPSCH, Designer of the Klipschorn.

NORMAN C. PICKERING, Pres. and Research Engineer, Pickering products.

And personnel of progressive radio stations who have had an opportunity to install and test this equipment.

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The 1947 Winter IRE Meeting

Summaries of Technical Papers—Continued From Last Issue

By Ed. Stolzenberger

No papers are available in preprint or reprint form nor is there any assurance that any of them will be published in the "proceedings of the I.R.E.," although it is hoped that many of them will appear in the subsequent issues.

ANTENNAS

Chairman, C. R. BURROWS
(Cornell University,
Ithaca, New York)

109. A. Fundamental Limitations of Small Antennas.

H. A. Wheeler
(Consulting Radio Physicist,
Great Neck, L. I., New York)

A capacitor or inductor operating as a small antenna is theoretically capable of intercepting a certain amount of power, independent of its size. The practical efficiency relative to this ideal is limited by the "radiation power factor" given by a simple formula, which is about the same for capacitors and inductors of the same volume.

B. Helical Antenna for Circular Polarization.

H. A. Wheeler
(Consulting Radio Physicist,
Great Neck, L. I., New York)

A helical coil radiates a wave of circular polarization in a doughnut pattern, if the area and pitch of the turns are properly related to the wavelength of the wave. This type of antenna offers television the advantages of circular polarization in suppressing echoes from reflecting surfaces.

110. Radiation Patterns of Thick End-Fed Antennas.

C. H. Page, R. D. Huntoon, and
P. R. Karr
(National Bureau of Standards,
Washington, D. C.)

Experimentally obtained directivity patterns for thick antennas excited near one end are shown and some of their properties discussed. The patterns all have a characteristic "lean" away from the feedpoint. For antennas in the form of thick cylinders the measured patterns are found to agree with those computed from a simple linear current distribution consisting of a standing-wave component and a travelling-wave component.

111. A New Type of Broad-Band Zero-Drag Aircraft Antenna.

A. Dorne and J. Margolin
(Airborne Instruments Laboratory, Inc.,
Mineola, New York)

For some purposes zero-drag aircraft antennas must have radiation patterns which are similar to those obtained from a stub. Such patterns, although not produced by a

linear slot, are obtained from a symmetrically excited annular slot. Antennas of this type have been designed to be broad-band and of sizes that are practical at microwave frequencies.

112. Circularly Polarized Antennas.

W. Sichak and S. Milazzo
(Federal Telecommunication Laboratories,
Inc., New York, N. Y.)

A convenient and consistent terminology is suggested for circularly polarized waves. Various general properties of these waves are developed. The possibility is demonstrated that two circularly polarized antennas may be blind to each other, unless both antennas have the same screw sense. Elliptically polarized waves are examined.

113. Aircraft-Antenna-Pattern Measuring System.

O. H. Schmitt
(Airborne Instruments Laboratory, Inc.,
Mineola, New York)

Spherical radiation patterns for aircraft antennas in the 5- to 1000-megacycle range are automatically drawn in standard polar-co-ordinate form using inexpensive metal-clad scale-model airplanes fitted with scale-model antennas and illuminated with microwave radiation correspondingly scaled in frequency.

WAVE GUIDE TECHNIQUES

Chairman, I. WOLFF
(RCA Laboratories Division,
Radio Corporation of America,
Princeton, New Jersey)

114. An Adjustable Wave-Guide Phase Changer.

A. G. Fox
(Bell Telephone Laboratories, Inc.,
New York, N. Y.)

A wave-guide phase changer is described which makes use of circularly polarized waves to provide a continuously adjustable change in phase of transmitted power. This process can be made to take place with negligible loss of power. Fundamental principles of the scheme will be demonstrated.

115. Developments in Broad-Banding of Microwave Plumbing Components.

J. H. Vogelmann
(Watson Laboratories,
Red Bank, New Jersey)

This paper will investigate the basic principles involved in the design of broad-band crystal mixers and tunable holders for use with wave guides and coaxial lines up to

the frequency range of 30,000 megacycles. Several newly developed fundamental types will be discussed. Performance characteristics and operational features will be evaluated. Also, trends and possible future designs will be briefly dealt with.

116. A Consideration of Directivity in Wave-Guide Directional Couplers.

S. Rosen and J. T. Bangert
(Bell Telephone Laboratories, Inc.,
New York, N. Y.)

A hypothesis is developed for the directivity characteristics of wave-guide directional couplers having two, four, and eight coupling orifices in the common narrow wall of the couplers. Formulas based on H. A. Bethe's theory of orifice coupling are derived and design curves are presented with supporting experimental data. Interaction and proximity effects are considered.

117. Electrical Measurements on Transmission Cavity Resonators at 3-Centimeter Wavelengths.

M. S. Wheeler
(Westinghouse Electric Corporation,
Bloomfield, New Jersey)

The electrical characteristics of a resonant cavity may conveniently be defined by its resonant frequency, loaded Q , and insertion loss. An interesting method has been devised to measure the resonant frequency of a transmission device to 1 part in 200,000, which at the same time suggests a means of obtaining the loaded Q but with much less precision. Insertion loss is measured by the method of substitution.

118. Design of a Resonant Cavity for Frequency Reference in the 3-Centimeter Range.

R. R. Reed
(Westinghouse Electric Corporation,
Bloomfield, New Jersey)

The requirements of a resonant cavity for use as a frequency reference is discussed. The "nosed-in" design is briefly considered and a comparison of calculated and experimental resonant frequencies given. The actual design of the 1Q22-24 series is evolved with attention given to shock, vibration, methods of mounting, temperature compensation, and other factors. **END**

If It Concerns

The Broadcast

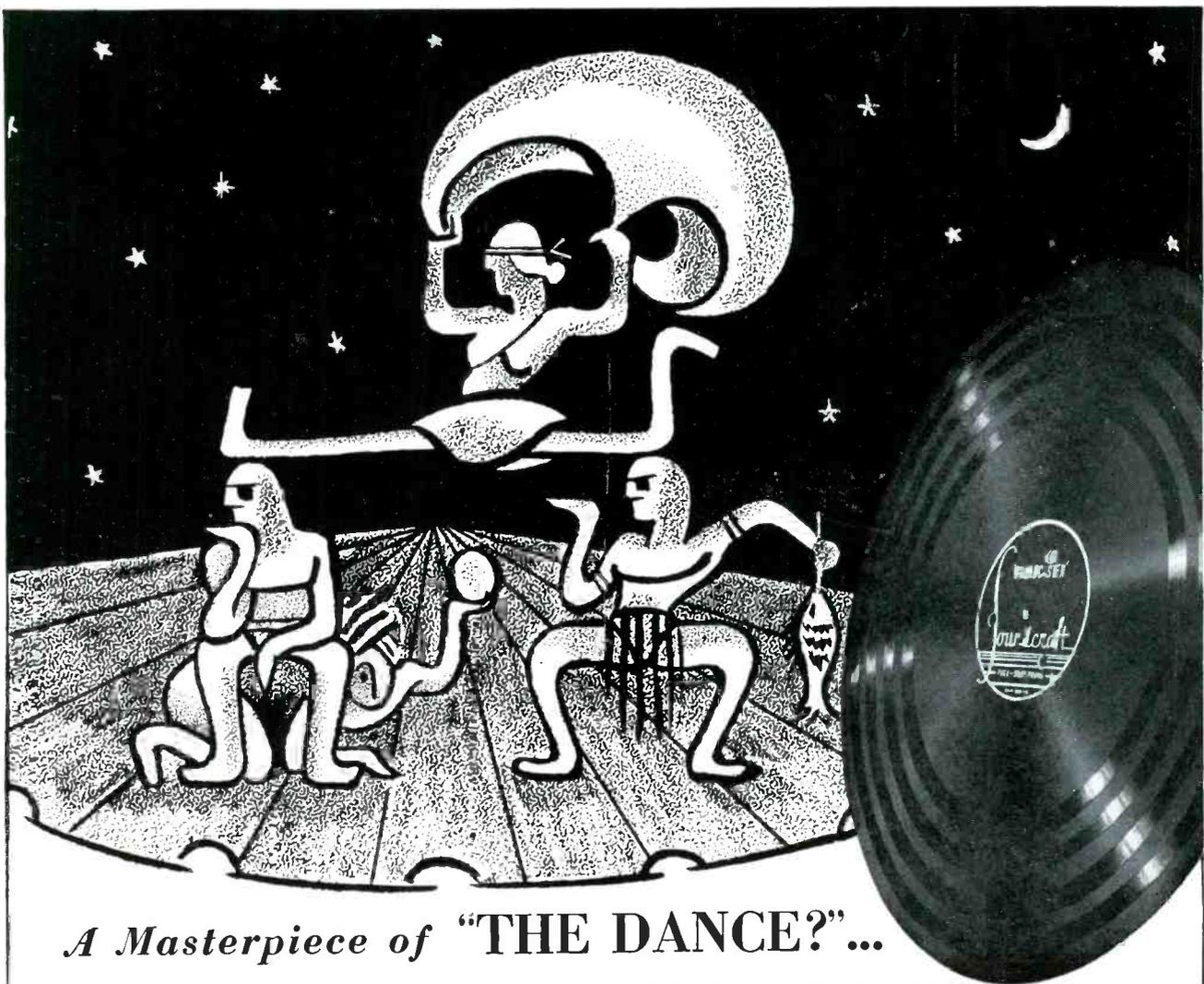
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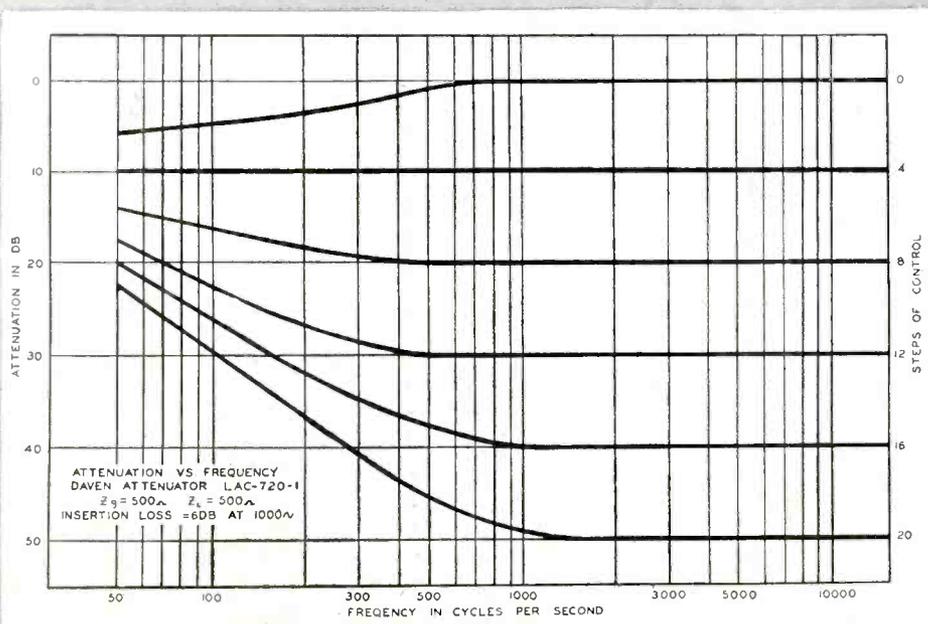
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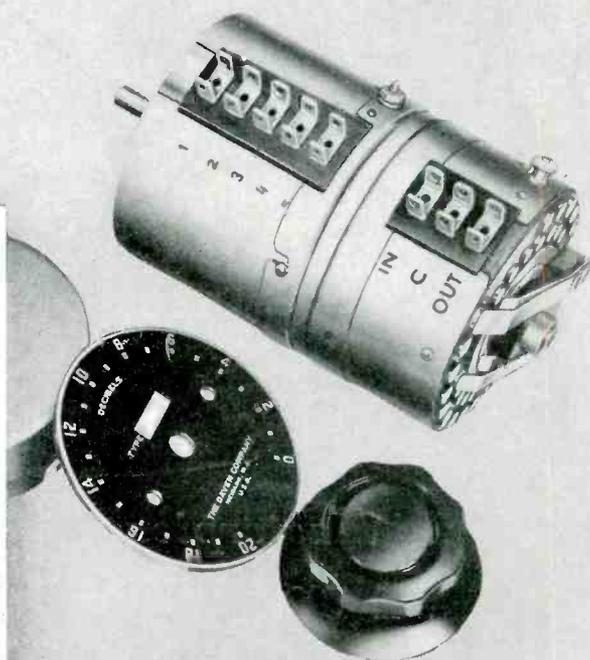
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