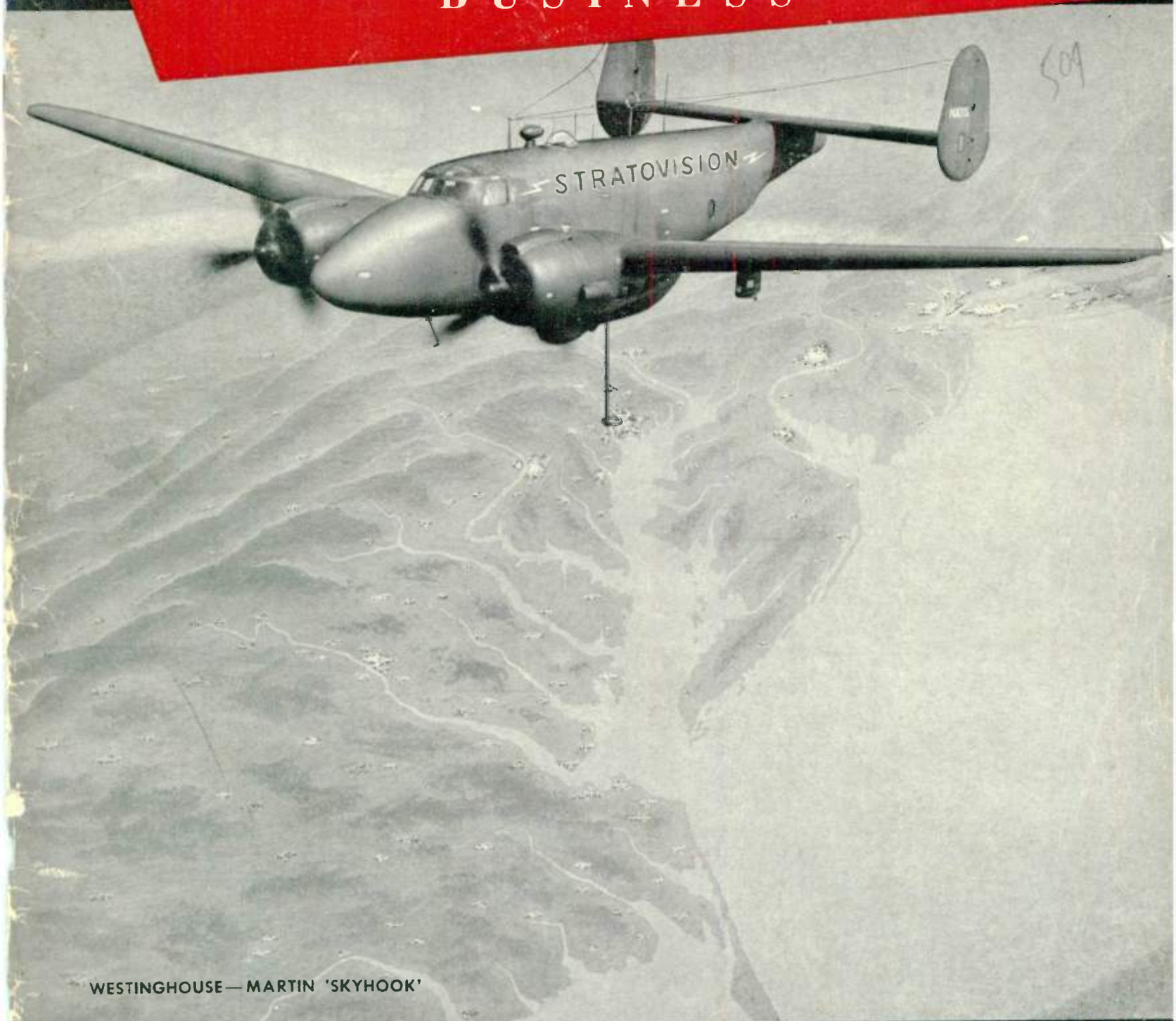
July, 1946

FREQUENCY MODULATION BUSINESS



WESTINGHOUSE—MARTIN 'SKYHOOK'

REPORT ON STRATOVISION by Walter Evans

SO YOU'RE GOING INTO FM by Howard S. Frazier

$3 PER YEAR

The Collins 6M...A Modern program amplifier for progressive broadcasters

If you are planning an up-to-date, forward looking broadcast station or recording studio, or if you are modernizing the one you have, the Collins 6M high fidelity program amplifier will fit into your plans. The thorough engineering that has gone into its design and development is evident in its outstanding performance in both AM and FM applications.

Utilizing choice quality components, conservatively operated, the 6M amply fulfills the requirements for dependable, continuous duty. The self-contained power supply will furnish power for the 6M itself and as many as five preamplifiers. One of the two meters indicates the 6M output in VU; the other measures the power supply voltage and the current drain of the 6M and preamplifiers.

Emphasizing high performance, accessibility, and reliability, the 6M will make a valuable and practical contribution to the quality of your station or studio. Write today for an illustrated bulletin.

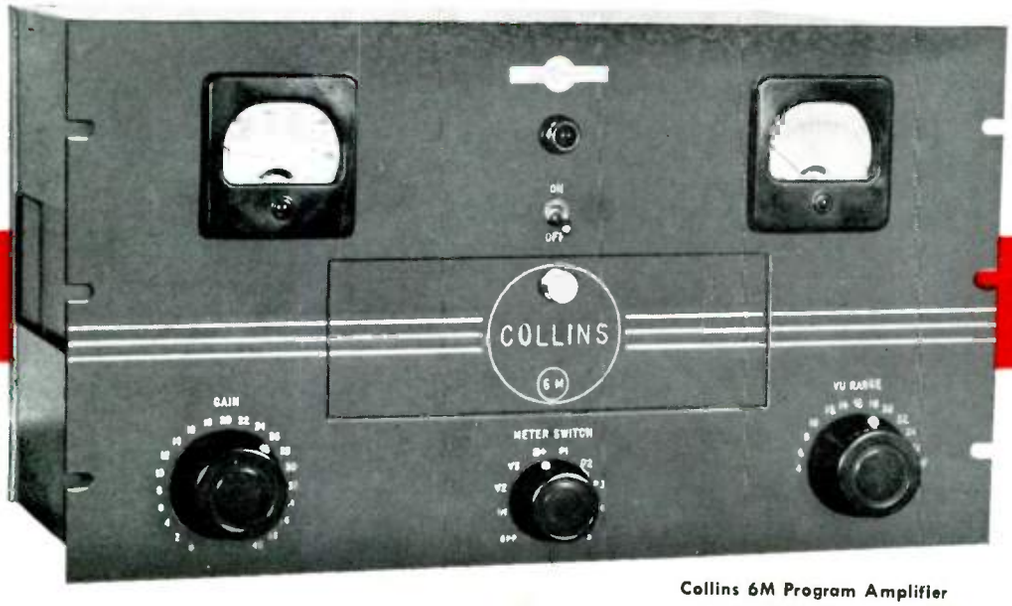
SPECIFICATIONS:

Frequency response: 30-15,000 cps ± 1.0 db
Noise level: — 60 db. from program level
Distortion: Less than 1% at normal program level
Input impedance: 50/250/600 ohms
Output impedance: 600 ohms
Input level: — 50 to —10 dbm
Output level: —10 to +30 dbm
Mounting dimensions: 19″ w, 10½″ h, 7½″ d
Power source: 115 volts a-c, 60 cps
Finish: Metallic gray or black wrinkle

COLLINS RADIO COMPANY
Cedar Rapids, Iowa
11 W. 42nd Street, New York 18, N. Y.
458 S. Spring Street, Los Angeles 13, California

FOR BROADCAST QUALITY, IT'S . . .

COLLINS



Collins 6M Program Amplifier

WHAT FM NEEDS... STANDARD HAS!

QUALITY

SHOWMANSHIP

To sell itself to the listening public, FM needs more than technical excellence . . . it must add to its higher quality that elusive element known as Showmanship. To FM, the STANDARD LIBRARY offers both *Quality* and *Showmanship* . . . *Quality* assured by the highest technical* standards of recording, and *Showmanship* which enhances outstanding "names" with inspired production. This combination has won for the Standard Library its unqualified leadership in the AM field, serving more stations *than any other service*, and now doing the same outstanding job for FM broadcasters.

* *Guaranteed to meet all present and future requirements of FCC for* **FM.**

Standard THE SHOWMANSHIP *Library*

STANDARD RADIO HOLLYWOOD * CHICAGO * NEW YORK

CONTENTS

FREQUENCY MODULATION BUSINESS

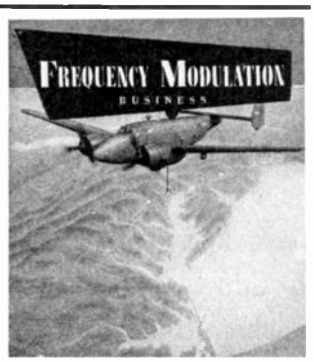
July, 1946 • Vol. 1, No. 6

Features:

Departments:

On the Cover

A PICTORIAL representation of Stratovision and its application to FM and television transmission. The broadcasting antenna hangs from the plane's bomb bay. The plane, cruising in the stratosphere, receives the programs from a station and transmits them back to earth at greatly increased range. Stratovision became a reality after Westinghouse engineer Charles Edward Nobles and aircraft engineer William K. Ebel of the Glenn L. Martin Co., put their heads together to increase signal range. FM and television waves are beamed along the line of sight—the higher one is, the farther one can see. (See story on page 5.)



Offices: Editorial, advertising and executive, 103 Park Avenue, New York 17, N. Y. • Publication, Lebanon, Pa. • Washington, D. C., TV-FM Bldg., 1519 Connecticut Ave., N. W. Executive: Martin Codel, *president and publisher;* Edward Codel, *vice president.* Editorial: George M. Hakim, *managing editor;* F. Reese Brown, *associate editor;* Earl Abrams, Albert Weinstein, *Washington;* Robert S. Lathrop, *art director.* Advertising: Edward Codel, *director;* Arthur Schofield, *promotion;* Robert Irving, *production;* M. Hadad, *auditing.* Circulation: George Dilkes, *manager.*

FREQUENCY MODULATION BUSINESS is published monthly by Telecasting Publications, Inc., with publication office at Lebanon, Pa., U. S. A., and editorial, advertising and executive office at 103 Park Ave., New York 17. Subscription price, $3.00 a year; Canada, $3.50; foreign, $4.00. Entry as second class matter at the Post Office at Lebanon, Pa., under Act of March 3, 1879, applied for.

The Old Order Changeth . . . Yielding Place to New

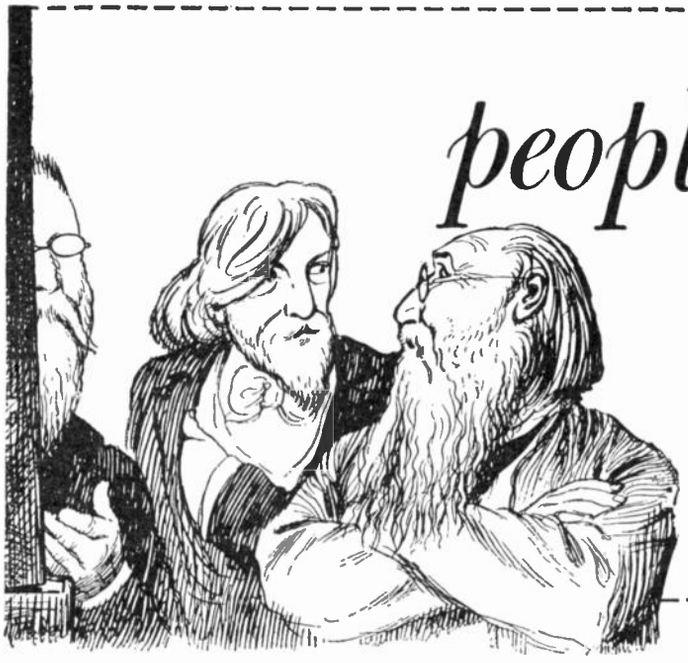
AN OLD FRIEND of prewar years, when our business interest was concentrated on standard broadcasting, points the bony finger at us for being so enthusiastic about FM. He's a broadcaster who struck it rich in AM. His good regional assignment, his favorable network contract and his consistent record of earnings are such that he admits frankly that he shudders to contemplate change. He hasn't even applied for FM, though one of his competitors has a grant, one newcomer has filed, and only one Class B (Metropolitan) channel is still available to his fairly sizeable community. Nor does he intend to apply, even though another competitor or newcomer, just as sure as the dawn, will get that channel.

This chap epitomizes a certain cast of mind that can't even see investing in FM as "insurance" against the predicted day when AM regional and local channels may be abandoned in favor of FM. He simply doesn't want the status quo disturbed—a smug, comfortable status quo that has done right well by him.

Among the AMers, there are still a few who seem to think the same way. In a few instances, as in the wide open spaces where the essentially restricted range of FM mitigates against it, there may be good reason. But in well populated areas, it would seem that the broadcaster who wants to remain in business is shortsighted, if not plain stupid, who doesn't protect his future interests by joining the FM parade.

We've said before, and we say again, that if FM is the "natural heritage" of the existing broadcasters, by reason of experience and proved service, they must still earn the right to that heritage. As far as we're concerned, if the "old folks" persist in remaining stodgy, much as we revere them, we're going to cast our lot with the new and progressive and alert "young folks."

Martin Codel



people say the **NICEST** *things*

WEEK IN AND WEEK OUT since the day it began, WBAM has been an important stopping-off place for all kinds of visitors from every corner of the globe. The fame of our FM station, it would seem, has spread far and wide.

One day it was a Russian Army lieutenant, specializing in electronics. On another, an engineer from Kenya, crown colony, in British East Africa; but scores more have come from places as close to home as Hoboken, Elmira and Toronto.

In almost every case, a letter, card or cablegram has followed the visitor's departure. Typical, though we could quote hundreds, are the excerpts below:

"Amazing! It's the only word that immediately comes to mind in describing the forethought and technical knowledge that has gone into the construction of WBAM." *H. C. R., Cleveland, O.*

"A visit to WBAM should be a required course in every radio engineer's education."
A. McK., San Francisco, Cal.

"I was so impressed by the advanced thinking and construction at WBAM, that on my return home I made immediate arrangements to send two of our staff engineers to visit your station."
B. T., Savannah, Ga.

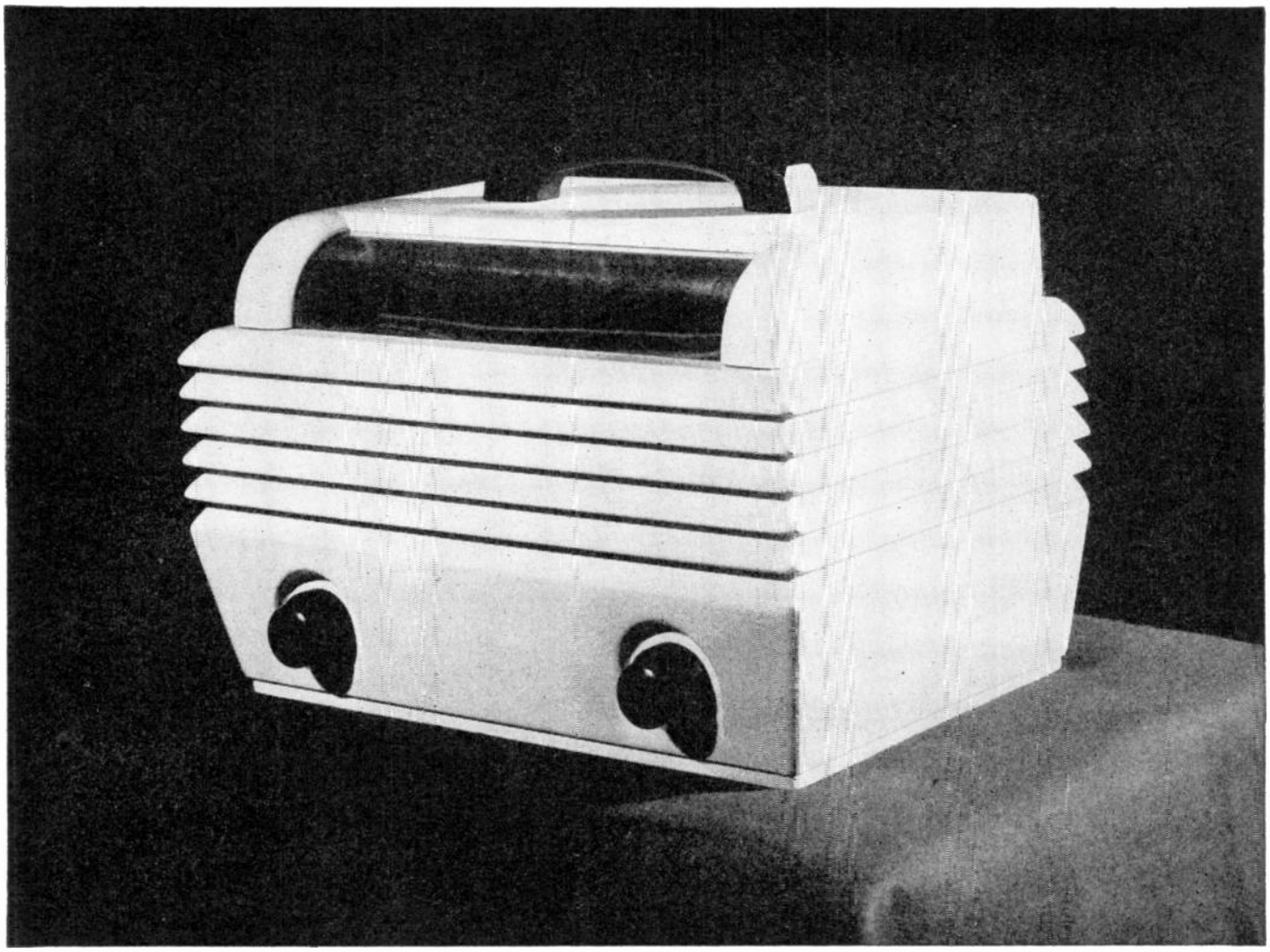
"Your plans for the future programming of WBAM were enthusiastically studied by our creative staff. Thanks and, again, congratulations on your fine work." *W. W., New York City*

"Thanks particularly to the engineer who conducted me on the tour of your FM station, WBAM. His comments and the sights I saw were tremendously helpful to my staff and I." *D. J. N., Seattle, Wash.*

"If you're ever out this way and visit our station, don't blame me if a lot of the features have been copied from WBAM!" *O. F., Harrisburg, Pa.*

WOR'S FM STATION **wbam**

AT 444 MADISON AVENUE, IN NEW YORK



FM sets being shipped to Baltimore!

More and more Baltimore dealers are getting more new radios. And they say the demand for FM bands is one of the biggest requirements.

A lot has been said about FM broadcasting. And most of the public has a vague idea that it's on its way.

But down here in Baltimore people know FM is here! For it is W-I-T-H, the successful independent, who is actually broadcasting on the new 88-108 cycle with W3XMB. And has been since June 1945.

It's another first in Baltimore radio . . . and another ahead-of-the-game event for W-I-T-H.

W3XMB

and W·I·T·H

Baltimore, Md.

Tom Tinsley, *Pres.* • *Represented Nationally by* Headley-Reed

VOL 1, NO 6 • JULY 1946

FREQUENCY MODULATION BUSINESS

Report on STRATOVISION

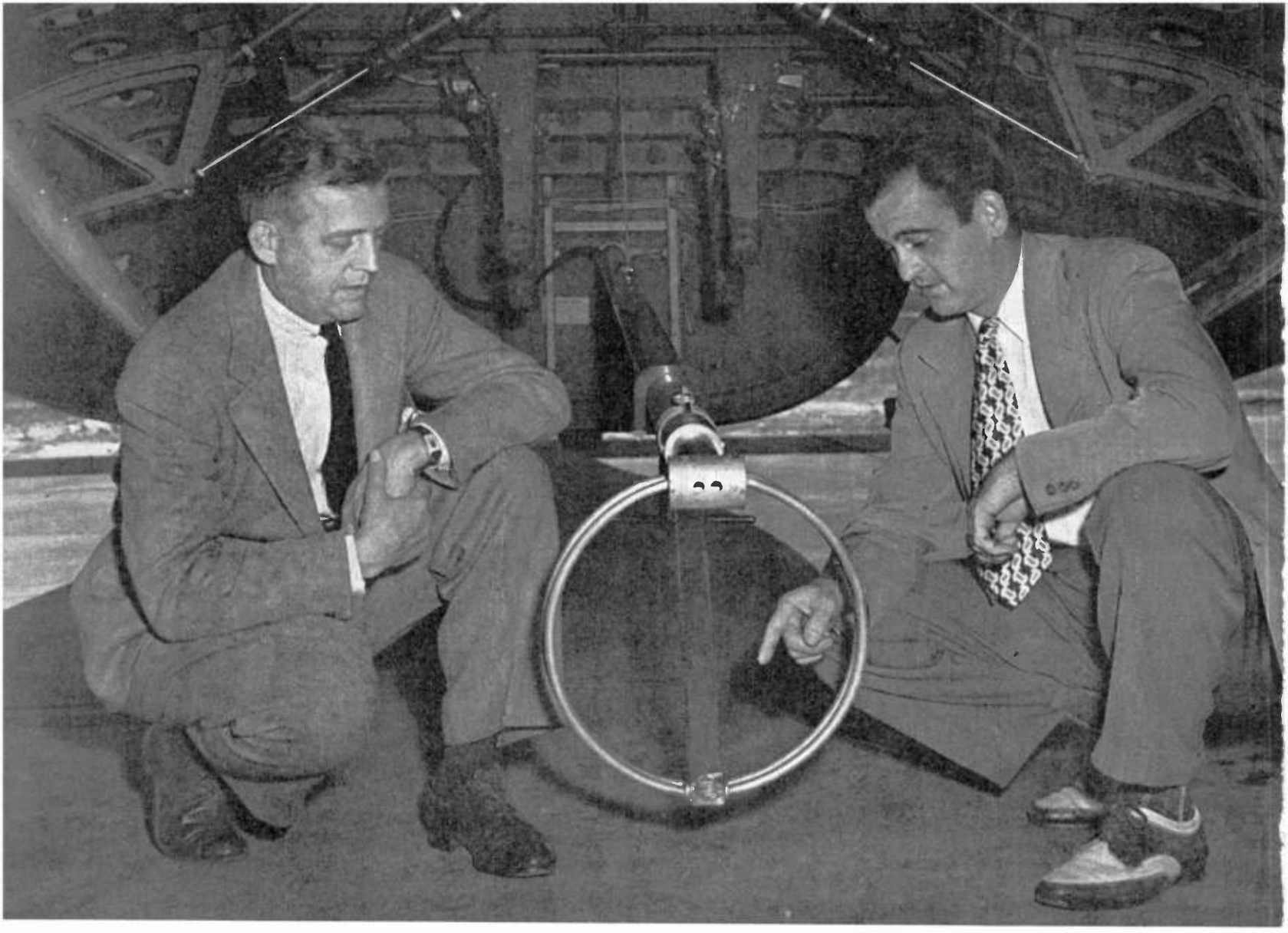
by Walter Evans Vice President, Westinghouse Electric Co.*

Stratovision plane in flight over steel mills at Sparrows Point, Baltimore.

* *Mr. Evans heads up all radio activities of Westinghouse, including the manufacture of transmitter and receiver equipment and the operation of the company's six AM broadcasting stations, five of which have pioneer prewar FM adjuncts—KYW-FM, Philadelphia; WBZ-FM, Boston; WBZA-FM, Springfield; KDKA-FM, Pittsburgh; WOWO-FM, Fort Wayne. Sixth Westinghouse-owned station is KEX, Portland, Ore., which has applied for FM.*

'Skyhook' experiments explained in laymen's terms; principle may be answer to beyond horizon coverage

JUST ONE YEAR AGO this month a small group of men sat in a darkened studio at Westinghouse Radio Station headquarters in Philadelphia with all eyes focused on a series of charts spotlighted in the front of the room. Two speakers unfolded details of a completely new and fascinating story —a proposal to provide FM and television programs to farm and city homes alike all over the land, promptly and at an economically practical cost.



EXAMINING MAIN underside antenna are (left) Willem G. Van Zelm, chief of new design for Glenn L. Martin Co., collaborating with Westinghouse in development of Stratovision planes, and (right) C. E. Nobles of Westinghouse whose dream of Stratovision is about to materialize.

With quick, sure phrases Charles Edward Nobles, veteran Westinghouse radar engineer, made his points:

Popular interest in FM and television was high . . . the desire to enjoy these programs great.

Warborn "know how" pointed the way to promising new horizons for these services, both subjects of considerable prewar research and development. But—two major hurdles block the way.

One, the fact that FM and television programs can be received satisfactorily only as far as the eye can see; the other the expense involved in providing many stations because of this limited coverage of a single station.

Why not provide FM and television programs from airplanes, cruising constantly six miles up, in the stratosphere . . . with each station's coverage area vastly expanded . . . with programs available to millions of small town and farm families who might never enjoy these services by any other system. . . .

FM and television for all? From the stratosphere? His small audience leaned forward with added interest.

No Unusual Problems

A second speaker took up the tale. He was William K. Ebel, vice president in charge of engineering for The Glenn L. Martin Company, world-famous designers and builders of aircraft.

He had studied the plan in great detail. FM and television were new to him but airplanes? . . . that was another matter.

He saw no unusual problems in building planes to cruise constantly in tight circles over a given area in any weather. In fact at 30,000 feet a plane was above the weather for all practical purposes and modern radar, blind-flying and anti-icing equipment would make takeoffs and landings possible in anything short of a hurricane.

He must admit the proposal was most dramatic . . . but it was amusing too, because after years of striving for faster and faster airplanes here was a request for a plane which would "go nowhere slowly."

The discussion ended. Lights were on. Enthusiastic conversation swept over the group and before the day ended this jury of top officials of the Westinghouse and Martin companies, summoned to Philadelphia to hear and appraise this new and unorthodox plan, had given it their approval.

So it was that a little less than seven months after the idea first occurred to Mr. Nobles while flying over his native Texas the previous December, possibilities of the plan had been probed and proven on paper and endorsed by the best technical talent of the two companies.

And within one more month the plan

had been readied for public announcement and introduced to a critical but very interested audience of editors and radio executives at New York's Waldorf-Astoria.

Today Stratovision—it was christened Stratovision almost immediately (although many of those closest to the development still know it more fondly as "Sky Hooks")—is more than a concept.

It has been under flight test since December and, although much work remains to be done, we have transmitted a usable FM signal 240 airline miles from an altitude of 25,000 feet with power of only 250 watts. This performance agrees almost exactly with our earlier calculations and would appear to prove beyond reasonable doubt the basic contentions of the Stratovision plan.

Transmission has been on 107.5 mc and most has been of FM carrier with voice announcements. Some FM programs have been rebroadcast but extensive work in this direction is just getting under way with first large-scale public participation tests scheduled this month and next.

In these tests we plan to borrow from the earliest days of broadcasting and ask receiver owners to tune in and report reception. Public participation rebroadcasts of programs from KYW-FM in Philadelphia are planned and dates, times and flight courses will be announced sufficiently in advance to insure maximum audience. These transmissions, too, will be on 107.5 mc.

Stratovision's TV Efforts

Television work to date centers around problems of "ghosting" and considerable data have been obtained in frequencies around 500 mc. Operation in three additional channels, up to 2000 mc., has been authorized by the Federal Communications Commission and transmission on these frequencies is anticipated as our work progresses.

All tests are monitored by the Stratovision laboratory at the Westinghouse Baltimore plant; by the FCC monitoring station at Laurel, Md., and by Westinghouse Radio Stations headquarters in Philadelphia.

Although basic design features of the final Stratovision planes—to be built by the Martin Company—have been worked out, some details cannot be established finally until requirements are more specifically defined in further flight tests.

All airborne work to date has been done with a twin-engine medium bomber obtained from war surplus and refitted by the Martin Company. The ship is manned by a crew of two from the Martin flying personnel and based at the Martin Airport near Baltimore. Two Westinghouse engineers handle Stratovision equipment in flight.

Aviation aspects of the joint development are headed by Mr. Ebel while Mr. Nobles is in charge of FM and television work.

Flights to date have been over three main courses: from the Martin Airport over Wilmington, Philadelphia and New York to New Haven, Conn., and return non-stop; over Washington and Richmond to Rocky Mount, N. C., and return non-stop; and Baltimore to Detroit via Pittsburgh with stopovers in Detroit.

Line-of-Sight Principle

The Stratovision concept is as simple as it is effective. It hinges on the fact that the higher one's point of viewing the farther one can see. Apply this simple example to FM and television waves and you have Stratovision.

Radio waves which carry television and FM programs travel essentially in straight lines and, to all practical purposes, are lost at the horizon. This means that good ground station coverage is in a radius of 35 to 50 miles. Line-of-sight coverage is increased, however, as the antenna is raised and with this elevation comes a proportionate increase in the number of persons who can enjoy the station programs.

Applied to relaying—the matter of supplying a far-reaching FM and television network service—high altitude operation means fewer relay points required, fewer repeaters, better program quality and lowered costs.

Stratovision planes, flying six miles in the air, would cover approximately 103,000 square miles in a large circle more than 400 miles in diameter. Eight such planes, in addition to broadcasting to the respective areas over which they cruise, might form a coast-to-coast high-altitude relay network. Addition of six more planes would make possible program service for approximately 78% of the nation's population, and 100% coverage could be attained by the addition of more planes.

Four antenna systems are required on the test plane in addition to those serving its normal radio operational requirements. One—a 10-foot mast of aluminum tubing with dual loops 15 inches in diameter—is hinged in the bomb bay and lowered into place, loops down, after the take-off. This is the FM broadcasting antenna which sends programs received in the plane from ground stations, back to earth over a greatly increased range.

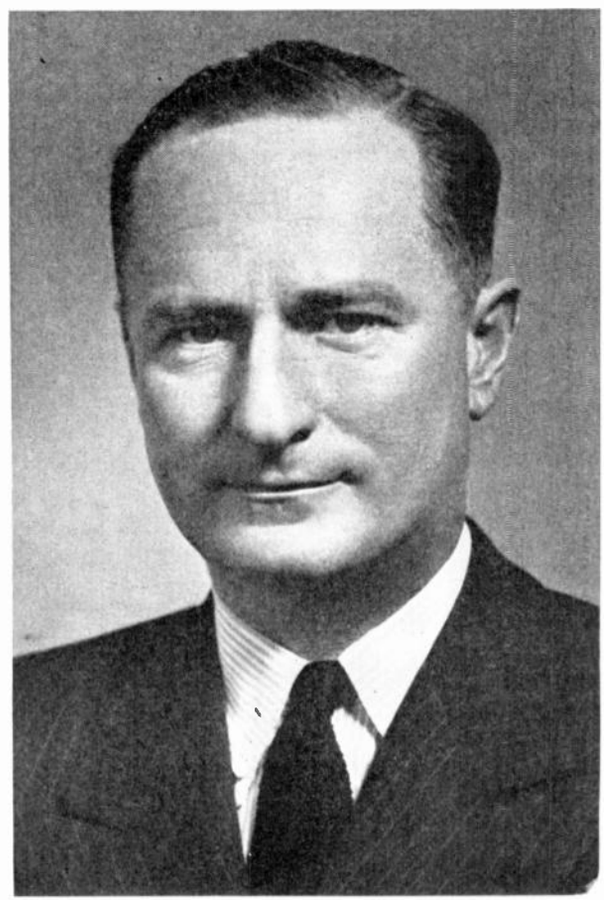
A second underside antenna picks up programs from the ground station for rebroadcast: a third, on the top of the plane, provides the communication channel, and a fourth also mounted on the 10-foot mast serves as a 515 mc television test antenna. The Baltimore ground station employs four antennas mounted on a single 50-foot mast for FM and television studies.

Present plans envision the ultimate Stratovision plane as an all-metal, low-wing monoplane with completely supercharged cabin and power plant similar to those proven in wartime operation of the B-29. They will carry the most modern blind-flying, radar and anti-icing equipment, and takeoffs and landings will be accomplished, when necessary, under conditions of low ground visibility.

Tentative operational schedules call for takeoffs at staggered four-hour intervals with each plane remaining at 30,000 feet for eight hours. While one plane broadcasts a second will be in the air as a standby, ready to take over at any time. This means that four planes will be required for each operating area —with two in the air and two on the ground at all times.

In addition each plane will carry a four-hour reserve fuel supply. This will provide a 50% safety factor in any emergency, and in addition, will make it possible—in the event of unusually bad weather at any operating base—to serve the stormbound area from planes operating out of adjacent bases and flying to and from the broadcast location above the storm.

WALTER EVANS



An authority offers newcomers timely advice, citing factors based on experience with AM

SO *You're Going* INTO FM

By HOWARD S. FRAZIER

THE AURAL broadcast business of the future will not be all "beer and skittles," neither will it be a road to easy riches for the newcomers, or for that matter, the old timers.

This prophecy is based on the opinion of many experts that within the next few years there will probably be 1500 AM broadcast stations on the air and perhaps as many as 3000 FM broadcast stations. Therefore, broadcasting will become a highly competitive business, just like any other industry, except that in broadcasting the competition will be two-way—that is, competition for listeners and for advertisers' dollars.

The term "aural broadcasting" embraces both AM and FM broadcasting. From a standpoint of programming and business economics, the author sees little difference between FM and AM broadcasting. Therefore, the term "aural broadcasting" will be used throughout this article.

Perhaps this grouping of both the new and the old technical methods of broadcasting under the broader definition of "aural broadcasting" may be a little startling to dyed-in-the-wool FM adherents. Let us analyze a little bit the thought which leads to this grouping under one name.

Perhaps there is more confusion in the minds of broadcasters and prospective broadcasters concerning the future potentialities of FM broadcasting than exists in connection with any other aspect of the broadcast industry. The public and the broadcasters have read a steady stream of promotional literature for many years, outlining to the fullest extent the new and improved technical potentialities of FM broadcasting. Much is said about high fidelity, the elimination of interference and static-free FM reception. Little has been said about the limiting factors which make the full realization of FM potentialities difficult.

Let us discuss high fidelity first.

While it is true that FM broadcast transmitters are capable of furnishing a somewhat wider audio frequency range than has been customary with AM transmitters, and while it is also true that properly adjusted FM transmitters produce less audio frequency distortion than do most AM transmitters, little is said about the limitations of the receiver. Obviously, the receiver is an important part of the overall system, and the reception delivered to the listener will be no better than the receiver he possesses is capable of reproducing.

In the past many manufacturers have built high fidelity AM receivers capable of realizing high quality reception which, for all practical purposes, closely approaches FM capabilities. However, the public has evidenced little desire to make the investment in receivers necessary to get even the best performance from AM reception. Actually, the higher audio frequencies are unpleasant to the ear of many people. It is also known the range of the human ear decreases rapidly with the advancing age of the individual. Thus many persons, as they acquire appreciation of good music and high fidelity transmission, gradually lose "the ears" that are necessary to hear these improvements.

From the foregoing, it would seem that many people will continue to buy in large quantities cheap receivers incapable of truly high fidelity performance.

Now let us take a look at FM's freedom from interference and static. Here again the quality and performance of

Photo, by Man April

HOWARD S. FRAZIER likes to call himself an "obstetrician and pediatrician" to the broadcasting industry. As he puts it, his business and that of his firm, Frazier & Peter, is to "assist with the birth of the child and then keep it strong and healthy." Few among the consulting fraternity know his specialty better, for his experience embraces just about every phase of broadcasting from "ham" operator to station owner and manager to the engineering directorship of NAB which he recently relinquished to form his partnership with Paul F. Peter, formerly with NAB and NBC as research chief.

After a boyhood whirl at amateur radio, Howard Stanley Frazier went to Drexel Institute in Philadelphia. In that city he successively served as a control operator for WCAU, chief engineer of the old WABQ, partner and chief engineer of the old WPSW, chief engineer of WPEN and WRAX. After several more years as engineer with various stations in Trenton and New York, he started a consulting engineering practice, which he dropped in 1937 to establish and operate WSNJ, Bridgeton, N. J. In 1942, after selling his station, he joined RCA to handle Navy contracts, later that year being named NAB's engineering director.

the receiver is an important factor in FM's ability to furnish reception free of interference and static. It should also be remembered that the major portion of the radio audience resides in metropolitan and rural areas now receiving strong signals from AM broadcast stations. Under these circumstances, these listeners find their AM reception limited only occasionally by either interference from an unwanted station or from static (in Southern States AM reception is severely limited by atmospheric static during many months) and electrical interference.

The above mentioned limitations of Frequency Modulation are not intended to depreciate in any way from the marvelous technological improvement which is inherent in the FM system of broadcasting. These factors are pointed out solely for the purpose of enabling the prospective FM broadcaster to evaluate the business possibilities of aural broadcasting realistically and to prove our thesis that AM and FM broadcasting are merely different technical methods of furnishing the same broadcast service.

Capital Investment

Now, if we are in complete agreement that FM is aural broadcasting, let's begin to analyze the commercial possibilities for newcomers in this business we call "aural broadcasting." Capital investment, in any business venture, is a very important factor in evaluating potential profits. Not only does the capital investment determine to a large extent the initial funds that should be available to insure the success of the business enterprise, but the fixed charges such as interest and depreciation are an important element in operating expense.

In the past, FM BUSINESS has carried several excellent and informative articles written by well known authorities in the broadcast business concerning initial investment in FM broadcasting. I can find no reason to take issue with these published estimates of the actual cost of the technical facilities required to establish an FM broadcast station. However, I do wish to point out that the physical construction of studios, a suitable transmitter building and acquisition of land in today's highly inflated market may be much higher in many areas than original estimates. Therefore, the prospective broadcaster would be well advised to tentatively select both studio and transmitter locations and obtain competent estimates of cost from realtors and builders before arriving at any final total capital investment estimate.

The largest cost item in the opera-

(*Continued on Page* 30)

PARTNERS: Frazier and Paul F. Peter (right) *Photo, by Man April*

APPROXIMATE AVERAGE OPERATING EXPENSES OF AM BROADCASTING STATIONS IN 1944

Prepared by Frazier & Peter,
Radio Management Consultants, from data published by FCC

	Fulltime Regional Stations (276)	Fulltime Local Stations (390)	Part-time Local Stations (12)
Technical Expenses			
Salaries and wages	$ 22,000	$ 7,550	$ 5,550
Repairs of technical equipment	3,050	1,040	645
Cost of power	2,560	755	450
Other technical expenses	1,870	870	320
Program Expenses			
Salaries and wages of program department	24,000	8,800	5,620
Talent expenses	19,600	2,120	1,800
Royalties and license fees relating to programs	8,000	2,300	1,630
Cost of wire service, exclusive of transmitter line	3,150	2,230	1,030
Other expenses directly related to program material	12,000	4,850	2,900
Selling Expenses			
Salaries, wages and commissions	17,400	7,150	805
Advertising, promotion and publicity	9,650	2,380	455
Other expenses related to selling	3,410	1,170	605
General Administrative Expenses			
Salaries and wages	26,600	11,100	9,800
Legal service, exclusive of salaries	3,500	1,120	1,920
Insurance expense	1,360	520	250
Experimental and development expenses	520	270	None
Supplies and services for general offices	4,400	1,620	1,000
Other general and administrative expenses	11,400	4,000	2,500
Depreciation and amortization of broadcast investments	8,800	2,320	1,560
Rent paid for use of broadcast property	5,100	1,400	1,060
Taxes (other than Federal income tax)	5,800	1,720	1,100
Losses on notes, accounts and other amounts receivable	480	370	276
Total Expenses	**$194,000**	**$ 65,000**	**$ 48,000**

WHY I AM IN FM

By Walter J. Damm, *Vice President and General Manager of Radio, The Journal Company, Milwaukee*

HOLY WRIT tells us about the good king in the ancient land of Babylonia whose banquet was rudely interrupted by a moving finger which wrote a prophetic message on the wall, much to the surprise and consternation of the assembled guests. Well, I saw a modern version of this handwriting on the wall one day in January, 1939 when I accepted an invitation from a certain Major Edwin H. Armstrong to be present at his apartment at Riverhouse in the City of New York to listen to something new in radio.

About ten people gathered in the Major's apartment that afternoon. We heard radio reception of a fidelity, clarity and freedom from noise such as we had never heard before: as a matter of fact, such as we had never envisioned before. And all this was heard against a background of complete silence which left us with the feeling of such closeness to the performing artist that it seemed we could almost reach out and touch him. The Major explained to us that this was Frequency Modulation, or FM as it was soon to be called. I can't speak for the others who were present at that historic demonstration, (most of them have spoken for themselves by also building FM stations before the war) but I feel sure that it was evident to all those present that if sets could be produced commercially at a reasonable cost, FM would revolutionize broadcast transmission.

Seven years have elapsed since that afternoon in the Armstrong apartment and the revolution is not yet. Many factors have held back complete fulfillment of the prophecy. We became engaged in a long and bloody war which froze all further development, particularly the manufacturer of receiving sets. Both above and below board certain interests which were hostile to FM opposed the development of the new service at every turn. And just when research engineers had gotten all the kinks out of operation on the 42 to 50 mc band, the licensing authority at Washington saw fit to move FM "upstairs" to the 88 to 108 mc band and the whole job had to be done over again.

The fact that FM carries on is proof positive of its inherent strength. Here in Milwaukee, The Journal Company did not falter in its belief in FM and now that smoother sailing lies ahead, feels that its faith was well justified. The Journal Company installed the first FM station west of the Alleghenies and put it on the air in February, 1940. When

(*Continued on Page* 38)

By John Shepard 3rd, *Chairman of the Board and General Manager, The Yankee Network, Boston*

I AM IN FM because I believe in progress. And FM is progress in the field of radio communications.

America has become great as a nation because it was willing to pioneer. Our national superiority came from this pioneering.

The Yankee Network was the first to recognize the possibilities of FM when Major Edwin Armstrong, its discoverer, disclosed his findings. It was willing to spend hundreds of thousands of dollars in the FM experimental field, knowing that from all the hard work put into the tests a greater and finer radio would emerge, a radio that would be faithful in tone reproduction, free from static and interference of all kinds. Its faith in FM, despite many heartbreaking set-backs, was justified.

Yankee set out to prove that FM was the perfect radio and its enviable record in this field proves its case. At first there were the scoffers, as there always are. Those who said let well enough alone. Standard broadcasting was good enough. Such attitudes have prevailed whenever and wherever something new and different came into being. But time is the great tester and today after the passage of years during which Yankee worked hard and diligently to prove the importance and perfection of FM, Frequency Modulation emerges triumphant as the radio of today and the future.

It is predicted that when FM hits its stride, and indications show it is getting there fast, there will be 3000 FM stations on the air bringing to the American listening public the finest in programs through the most perfect transmission and reception medium ever devised. Because of fidelity of FM it will be necessary to have superior programs as it would be ridiculous to use perfect equipment for the transmission of other than the best.

FM is a challenge to broadcasters to use their imagination and initiative in raising the standards of radio by better programming. FM makes it imperative that the vast wealth of talent throughout the country be brought to light that all America may share the genius of those whose efforts have been so strictly limited by their local horizons.

The Yankee Network embarked on its course toward this goal when in the months immediately preceding Pearl Harbor it presented over its two FM stations, WGTR, Boston, and WMTW, Mt. Washington, the finest orchestras, choral groups and soloists from the leading educational institutions in New

(*Continued on Page* 38)

The HONORABLE OWEN D. ROBERTS,
Retired Justice Supreme Court of the United States, Permanent Moderator.

Distinguished and Dynamic!

DISTINGUISHED in its sponsorship and its roster of outstanding speakers.

DYNAMIC in its spirited discussion and in its potent appeal to the people of Philadelphia.

That's the Philadelphia and Suburban Town Meeting, another WFIL program in the public interest that captures the public's interest.

TOPICS FOR DISCUSSION

- *Will there be another war in our time?*
- *Do we need higher taxes to obtain needed city improvements?*
- *Is Philadelphia losing its standing among America's first cities?*
- *Are the best interests of management and labor compatible?*
- *Should Philadelphia improve its port facilities?*
- *Can Communism and Democracy exist together in a World at peace?*
- *Should all Americans have equal freedom of opportunity?*

The Philadelphia and Suburban Town Meeting joins the roll of well established WFIL public interest programs such as:

THIS WEEK IN PHILADELPHIA • WITHIN OUR GATES
THE MAGIC OF BOOKS • SCIENCE IS FUN
MUSIC IN THE AIR • CULTURAL OLYMPICS

BOARD OF ADVISORS

HONORABLE BERNARD SAMUEL, *Mayor of Philadelphia*
MR. WALTER H. ANNENBERG, *Publisher, The Philadelphia Inquirer*
MR. WILLIAM L. BATT, *President, SKF Industries, Inc.*
HONORABLE ROBERT V. BOLGER, *Judge, Orphans Court*
MR. EARL D. BOND, M. D., *Director of Research, Pennsylvania Hospital*
MR. EDWARD G. BUDD, *President, Edward G. Budd, Mfg. Co.*
MR. RICHARD L. DAVIES, *Chairman, Foreign Policy Association*
DR. THOMAS S. GATES, *Chairman, University of Pennsylvania*
HONORABLE HERBERT F. GOODRICH, *Judge, United States Circuit Court of Appeals*
MR. EARL HARRISON, *Dean, Law School— University of Pennsylvania*
MRS. YARNALL JACOBS, *Chairman, Inter-Cultural Committee, United Nations Council*
DR. ROBERT L. JOHNSON, *President, Temple University*
MR. JAMES L. McDEVITT, *President, Pennsylvania Federation of Labor Unions*
MR. JOHN W. NASON, *President, Swarthmore College*
MR. CLARENCE E. PICKETT, *Director, American Friends Service Committee*
REVEREND EDWARD M. RILEY, JCD, *Director, Philadelphia Parochial Schools*
MR. BENJAMIN RUSH, *Chairman, Insurance Company of North America*
MR. THEODORE SPAULDING, *Director, National Association for the Advancement of Colored People*
DR. ALEXANDER J. STODDARD, *Superintendent, Philadelphia Public Schools*
MR. LEON C. SUNSTEIN, *Chairman, Allied Jewish Appeal*
HONORABLE NOCHEM WINNET, *Judge, Municipal Court*

560 KC
FIRST ON YOUR DIAL IN PHILADELPHIA

WFIL
The Philadelphia Inquirer Station

An ABC Affiliate
REPRESENTED NATIONALLY BY THE KATZ AGENCY

FM's 'Operation Crossroads'

A glance at FM by an articulate proponent who warns over-promoting high fidelity may prove a boomerang

By HERBERT L. PETTEY

EVEN THOUGH we have operated a Frequency Modulation station more than four years, the pattern of ideal Frequency Modulation operation has not made itself quite apparent. This is due to several causes.

The principal cause, it seems to me, for which a solution is not yet evident, is the lack of receiving sets in the homes of American listeners. This inability to provide the listeners with adequate Frequency Modulation receivers thus prevents the conscientious listener from giving us the proper type of criticism so necessary in order to build an ideal program structure.

It has been a difficult task indeed for operators of Frequency Modulation stations to feel the pulse of the listener and to profit from the latter's experiences. Time and again the FM station operator asks himself the important question: What does the listener like? The answer has not been forthcoming.

Much has been said and much has been written about the increased fidelity and crystal-clear reception of Frequency Modulation radio. Columns have been written about the wonders of FM, how it doesn't wobble, fade or burst at the seams. All that has been said about the improvement of this medium is true only if the receiver itself is capable of reproducing the quality that is transmitted.

A Conditioned Response

If you ask Joe Doakes what FM means to him as a listener, he will probably quickly answer, as if it were a response carefully conditioned in a psychological laboratory—high fidelity. His automatic association of high fidelity with FM demonstrates the effectiveness of his education at the hands of FM stations, manufacturers and dealers. And the industry complacently pats itself on the back for doing a bang-up job. Well, we must admit that it is certainly an example of the advertising policy of selling the sizzle instead of the steak. High fidelity is sensational, and it sounds great.

Let's gaze into our crystal ball for a moment. The time is early 1947, AM-FM combination receivers are displayed in dealers' show windows from Maine to California, our man Doakes is in the market for a new radio. He's an ardent music lover and he wants FM because he has been educated to know that FM means high fidelity.

Doakes is a $50 a week man so he looks for something to fit his bank roll. He settles for an AM-FM combination table model retailing for $49.75. After connecting his new receiver, he prepares himself to hear music as it should be heard. But he soon finds that from the high fidelity aspect he can't distinguish FM from AM reception. Feeling there's something wrong with his set, he sees his dealer who explains to him that a properly designed amplifier and acoustic system necessary to reproduce high fidelity FM reception is bulky and expensive—and only found in the expensive consoles. It may not be until the next thunderstorm that Doakes begins to realize that, although he isn't receiving high fidelity, FM offers him many other advantages that may be even more important to his listening enjoyment.

Mistaken Emphasis

The fault doesn't lie with the manufacturer, the dealer or with Doakes himself—it lies with the entire radio industry. The industry as a whole educated Doakes to expect high fidelity. His attention had been so focused on the high fidelity feature that the other FM advantages had more or less escaped his notice or seemed of minor significance.

By stressing and over-selling high fidelity—a feature thousands of people have been educated to expect but won't get in small sets—the industry may quite conceivably be launching its own boomerang. It isn't that the FM industry is intentionally dishonest—its zeal and eagerness have just led it to put the wrong foot forward.

Doakes should have been educated to know what he *can* expect—high fidelity is only one paragraph of the FM story.

The purchasers of small table model

(*Continued on Page* 34)

HERBERT L. PETTEY

OHIO BORN and Kansas educated Herbert L. Pettey, executive director of New York's WHN and WMGM, has the right to a fatherly attitude toward radio after 15 years in the business. Before the 1932 elections, he tried to sell sound film equipment for use in the Roosevelt campaign. He didn't sell the equipment but he did sell "Herb" Pettey with the result that he was appointed Radio Director of the Democratic National Committee. The following year President Roosevelt appointed him secretary to the Federal Radio Commission, where he had a hand in preparing the Communications Act of 1934. He resigned his Washington duties in 1936 to become director of sales at Loew's WHN. He became managing director in 1939. An early convert to FM, he has secured two grants for the Loew organization for Frequency Modulation stations in New York (WMGM) and Los Angeles (KMGM).

margin for perfection

FROM THE DEEP TONE of sound throbbing at fifty cycles a second to the keen brilliance of sound at more than ten thousand cycle vibrations—FM broadcasting is a vehicle to transmit the whole range of human hearing.

Perfect complement to the exacting standards of FM is the NBC THESAURUS radio recorded library service. NBC THESAURUS offers a system of reproduction free from traceable distortion—reproduction harmonically balanced—reproduction of unique clarity. That is the RCA-NBC Orthacoustic recording system.

In content, NBC THESAURUS is designed in accordance with specific program requirements of 1000 station operators. In performance, NBC THESAURUS provides balanced, full-cycle, undistorted sound reproduction. For FM broadcasting, NBC THESAURUS offers the inherent advantages of its lateral-cut system—**the margin for perfection.**

NBC RADIO-RECORDING DIVISION

AMERICA'S NUMBER 1 SOURCE OF RECORDED PROGRAMS

A Service of Radio Corporation of America

RCA Bldg., Radio City, New York • Chicago • Washington • Hollywood • San Francisco

LESTER H. NAFZGER is a calm, broad-shouldered man, 35 years old, softening somewhat at the waistline and possessed of a terrific enthusiasm for FM. During an interview in pursuit of this story, 2 o'clock in the morning found him still going strong, telling of the kick and sheer pleasure he has gotten out of sweating to make WELD programming and promotion something for Columbus AM stations to shoot at—rather than sitting back, dreamily contemplating a beautiful FM signal.

"Les" Nafzger is RadiOhio's engineering v. p., which means he also takes care of the Wolfe newspaper family's AM station WBNS. But as station director of WELD, he keeps his sparkling staff divorced from, and in competition with, WBNS. Naturally, the engineering problems of both stations fall into his lap; but they haven't, by any means, kept his nose to the ammeters. He has devoted a large percentage of his time to making the people of Columbus know that WELD has a signal out, whether they own one of the area's 3500 FM receivers or not.

"We got into FM," says Nafzger, "shortly after Major Armstrong invited us out to New York in 1938 to look over his idea and we decided FM certainly had something to offer.

"We picked up a 250-watt transmitter from GE and started broadcasting experimentally March 29, 1940 on 43 mc, using the call W8XVH.

Highly Successful Test

"In tests, we compared our signal with those of Columbus AM stations. One night, 30 miles out, it was the only station that could be heard. Not only could it be heard, but you could hear the needle being placed on the transcription.

"We went commercial November 9, 1941 as W45CM, on 44.5 mc with 3 kw, using the WBNS transmitter site on Barnett Road."

W45CM (WELD November 1, 1943) made itself known.

The station ran large, imaginative ads in all three Columbus dailies, concentrating on the Wolfes' *Dispatch* and *Ohio State Journal*. The ads frequently carried names of FM set dealers. Dealers were provided with display placards. WBNS carried a "Have you heard FM?" series. Billboards were set up and splashed with the call letters. Actual demonstrations, found to be one of the most potent promotional methods, were held before the Columbus Ad Club, church groups, radio dealers association and a score of other groups. These featured a color film followed by a WELD broadcast. Station engineers built a model "postwar receiver"—embodying FM, AM, facsimile and a record player—and used it as part of a travelling window display.

Nafzger picked his staff carefully, and since he couldn't afford a large one, stressed versatility. As a result, Jim Yerian handles promotion, announcing, advertising and facsimile. Herb Welch writes continuity, announces, does programming. Walter Knick rigs the popular music programs, plays organ and piano. Busy Ethlyn McAlpine, ex-music teacher, really has a variety of chores. She arranges the classical music programs, pounds the varitype for facsimile, runs the office. Young George Ackors announces and writes continuity.

WELD's novel studio, on the basement floor of 33 North High St., was designed with the idea of determining the studio requirements of FM. The angled side walls have removable panels, behind which acoustically absorptive blocks can be added, removed, rearranged. The end walls slope in to the checkerboard floor.

Nafzger's acoustic conclusion is that

(*Continued on Page* 35)

PERSONABLE HERB WELCH, program director, writer, announcer, parks WELD's handsome mobile unit in a Columbus playground and teases a shy quote out of an admiring member of the younger set.

VERSATILE WALTER KNICK, music director, prepares to do a quickie on the Hammond for station director Lester Nafzger. Between them is Western Electric's 640-A condenser mike Nafzger praised highly.

A top-flight engineer describes the great wartime developments in radio and their impact on FM

WORLD WAR II *Contributi*

By A. B. CHAMBERLAIN, Chief Engineer, Columbia Broadcasting System

A. B. Chamberlain

A GREAT deal has been published and much has been said concerning new developments and advances in the art and science of electronics brought about by World War II. Many of the technical papers presented at the recent 1946 Institute of Radio Engineers Winter Meeting, held in New York City, dealt with this subject directly or indirectly and many fine exhibits at this meeting illustrated some of the progress made. Later, additional papers on this subject were presented at the Broadcast Engineers Conference held at Ohio State University. Considerable information has been published in various trade and industry magazines since V-J Day. In this article it is intended to summarize what are believed to be the major wartime electronic developments, particularly those relating to FM broadcasting.

World War II has demonstrated, in no uncertain fashion, what concentrated research, development, design and large scale production may accomplish when unlimited financing, maximum engineering effort and stark necessity exists. Great strides have been made in electronics during the last five years—ten or more years' work, representing tens of thousands of engineering man hours, have been compressed into a few years. Unlimited finances and the concentration of all available qualified engineers to wartime problems have demonstrated that "nothing is impossible, it just takes a little longer." It remains to be seen just how far engineers can and will go, within peacetime economic restrictions, in applying the vast fund of new knowledge and experience with new circuits, components, systems and techniques developed during World War II.

Dr. F. E. Terman recently made this statement to a group of high ranking Army and Navy officers at a final review of accomplishments at the Radio Research Laboratory, Harvard University, headquarters of electronic countermeasure development activities for the Army and Navy during World War II:

> *"There has been a steady trend, in past radio development work, in the direction of higher and higher radio frequencies. First came broadcast radio, then shortwave radio (International Broadcasting), and finally FM. This trend has been enormously accelerated during the war by the need for radar and allied devices. However, much of the radar technique, such as the pulse-echo method itself, is highly specialized. Electronic countermeasures development work, on the other hand, has been concerned with continuous-wave techniques similar to those used in ordinary radio communication.*
>
> *"The new developments embod-*

PROBABLY no broadcast engineer in the United States played a more important role in World War II than the Columbia Broadcasting System's engineering topkick, A. B. Chamberlain. He brought to his job with the Bureau of Ships Electronics Division more than 25 years of experience in radio and electronics. As a Navy Commander, he received the Legion of Merit for the design and production of special airborne radar intercept equipment successfully used by Naval and Marine night-fighter combat forces in the Pacific. He was commissioned a Captain in March, 1945.

Back with CBS after three wartime years, Mr. Chamberlain returned to his post as Chief Engineer, a position he held for eleven years before entering the service. During his association with CBS, Mr. Chamberlain was directly responsible for the design, installation, operation and maintenance of many phases of broadcast equipment, some of which has become "standard gear" in national and world-wide use.

IN AN IMPROVISED SHELTER "Somewhere in France," this recently released photo shows a U.S. Signal Corps operator on duty with a compact and efficient AN/TRC-1 radio set. *(Signal Corps Photos, Courtesy Fred M. Link)*

THIS ANTENNA SERVED a radio relay station maintaining communications between a front line unit and Army Headquarters. *(Signal Corps photo)*

ons to FM

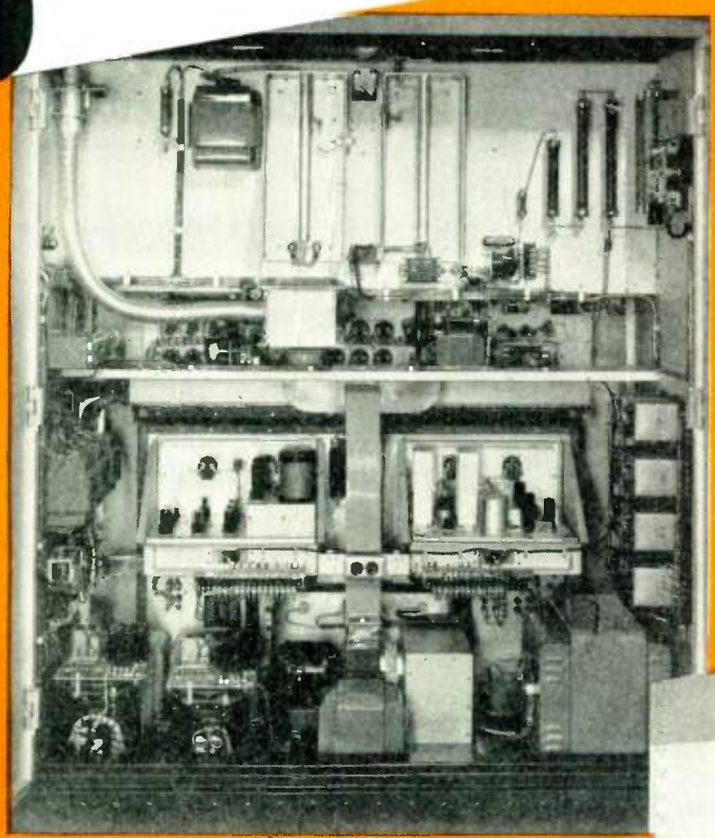
ied in the design of countermeasures equipment represent the very developments that were needed to solve many postwar problems and to make possible many additional postwar developments. Basically, much countermeasures research was directed toward the improving and developing of radio transmitters and receivers of a type very similar to those which will be used in postwar FM, television and radio relay transmission."

The Army and Navy utilized many models and types of FM equipment for communications and other purposes. There are now available to us, with Army and Navy security restrictions lifted, many new and interesting tools which are destined to improve, and in some cases already have improved, the science and art of broadcasting, including vhf FM broadcasting in the new 88-108 mc band. Some of the more

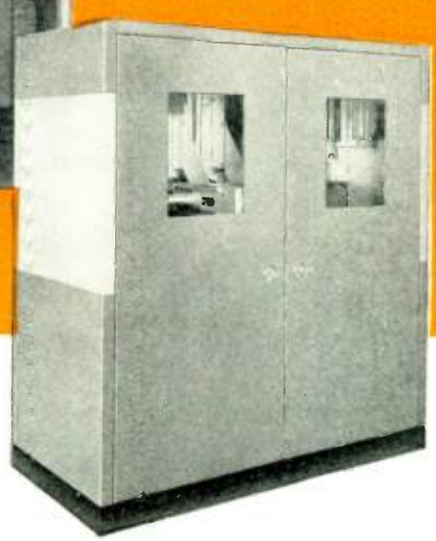
(Continued on Page 37)

FM PLAYED a vital role in combat operations; note FM antenna. *(Signal Corps photo)*

The Inside Story of New Operating Advantages



Large windows in rear doors permit inspection of interior. Note, in open view, the convenience power outlet at the bottom and lamp at top. Upper panel houses, from right to left, the r.f. driver, concentric, line-type, tank circuit; variable coupling loop; and P.A. concentric, cathode line.



BACKED BY THE OPINIONS OF FM OPERATORS IN 56 CITIES IN 22 STATES

If you want a solid basis for analyzing transmitter design, here's one of the best: the opinions of 162 station owners and operators.

Westinghouse used your expert counsel to help design modern FM transmitters with the features you want most. For example, 92% declared the vertical open arrangement was best and 94% thought air-cooled tubes extremely important. These new Westinghouse transmitters have both:

Example: Quiet, efficient blower directs rapidly changing filtered air over all tubes to insure clean, cool operating conditions at all times. Dust-tight covers provided for plug-in units.

Example: Quick, easy servicing with the vertical open arrangement of the interior.

This inside story of the new advantages in Westinghouse FM transmitters is backed by even more features you have asked for. New 270° meters and indicating instruments are at eye level. All overload protection is fuseless . . . construction makes installation easy. Excellent shielding at 100 mc is also insured.

The combination of Westinghouse engineers and station operators is a natural one, for Westinghouse men have an unmatched background in actual station experience in five FM and six AM stations.

Write your nearest Westinghouse office today for the facts. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-02083

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Electronics at Work

This new book gives you the complete picture story of the operating advantages built into Westinghouse transmitters and the way operators approved them. Ask for your copy of B-3829.

A PROPOSAL

Why Not a Station for Kids?

By HAROLD AZINE*

KNOWN FOR A LONG TIME by AM broadcasters and their advertisers is the fact that children are radio's most avid listeners, that a good kid program is assured of a large, loyal and responsive audience.

It is truly surprising that no AM broadcaster has attempted to cultivate this huge category of young listeners beyond the point of jamming one or two children's shows into his crowded program schedule—usually somewhere between the afternoon's last soap-opera sob and the first wave of news commentators—with, perhaps, a couple slices of "glad-to-get-rid-of-it" time on Saturday and Sunday mornings.

Why is it that no standard station ever seriously set its cap to become the acknowledged "Children's Station" of a large community? The answer, of course, is that the AM yield in recent years has been so lush and bountiful that no one has been forced to get out and break the fallow ground.

But, one of these days, someone with a brand new FM license in his pocket and a little grit and gamble in his makeup is going to hit on this idea of a children's station, and he is going to wind up with a dandy piece of FM property! Here is why.

In the city of New York there are nearly 1,000,000 children between the ages of 7 and 15! In Chicago, within the same age group, there are 430,000 kids! In Philadelphia, 265,000! Detroit, 235,000! Los Angeles, 165,000! Cities the size of Boston and Pittsburgh each have around 100,000 youngsters in the age group.

As has already been noted, these small-fry are eager, loyal and responsive listeners. Directly and indirectly they are responsible for the purchase of millions of dollars of products in their respective communities each year. Advertisers are aware of this.

With these facts in mind, let's consider further why the idea of an FM station for children in the major city is sound and fitting.

The full ascendancy of FM broadcasting will bring with it an important change in the method of gaining wide listenership. Greater power and fancier facilities no longer will give any station a sharp numerical audience advantage over its competitors. The emphasis will become one of superior programming to win the greatest audience. True, the local outlets which are lucky enough to have network affiliation will have an edge in audience-winning programs just as they do in standard radio, and the independents will have to scramble, as they do today, to make up the difference. But, in FM the independent licensee must face the fact that he has so many *more* competitors than had his AM counterpart for the same advertising dollar in the same community.

The farsighted FMer, taking cognizance of this situation, is going to do some very serious thinking about his programming—not about this specific program or that particular show—but about his station's basic editorial format. He is going to realize that an urban population is a heterogenous one, consisting of classes, groups and segments, and that a radio station can profitably devote itself to serving the needs and tastes of one of these common-interest groups, providing it is a large enough group.

Thus, we shall find an FM station setting itself a policy of specializing in "Fine Music," another station emphasizing "Labor," another labeling itself the "Sports" station, still another, a "Mother Tongue" station. And, if you please, there will also be that FM station which devotes itself to the community's army of boys and girls—the "Children's Station!"

What kind of kid's programs? How about children's news programs and commentaries, written and interpreted at their level? Children's music programs, especially prepared by trained musicologists. Action and thriller programs—not the bloody variety—but clean, wholesome stuff that stirs young imaginations and interest. Dramatic enactment of famous children's stories. Readings. Children's quiz shows. Comics. Scoutcraft. Sunday school programs.

It is not proposed that every moment of each and every day should be programmed for kid's ears. Children, of course, are in school a good part of the day, and they go to bed earlier than adult listeners. During the periods when the living habits of the youngsters would preclude the likelihood of their being at the loudspeaker in great numbers, the station would be free to deliver standard programs to the general audience, a considerable portion of which is made up of parents who would have a high feeling of good will toward the station. Mothers particularly, holding the station in special favor, should be inclined to tune it in themselves during the morning and afternoon hours when the kids are in school.

Too obvious to dwell on is the public service potential of a "Children's Station." No worry here about the "Blue Book" or listener criticism. A station dedicated to children is in itself a tremendous public service conception, one which will be praised by the public, the industry, the FCC, and the children who will be served. For advertisers such a station, certainly, would be the "natural" outlet through which to reach all the boys and girls of the community—but, just as surely, it will have the enthusiastic support and cooperation of all public and private organizations concerned with child-welfare and youngsters as a whole—the schools, parent-teachers groups, child development institutes, Boy Scouts and Girl Scouts, clinics, churches, educational societies, music and dramatic clubs, etc. For the FM licensee who really wants to perform an outstanding public service, what finer opportunity than to present to the community a radio station devoted to the entertainment, enlightenment, wants and needs of its children?

---

* *Former programmer of WBAL, Baltimore and WLS, Chicago, Mr. Azine has just returned to civilian life after serving as a USMC officer with the Pacific Armed Forces Radio Service.*

MORE *POWER* FOR FM BROADCAST SYSTEMS!

with

Federal's "Specialized" Triodes

1000 and 3000 Watts at

88 TO 108 MEGACYCLES

(MAXIMUM OUTPUT UP TO 150 MC)

7C 26

7C 27

THESE TWO high-performance power triodes have been especially designed in every detail, to provide the best possible combination of operating characteristics for FM transmitters.

Every feature—from electrical characteristics to the most minute detail of mechanical construction—has been "custom tailored" to meet the specific requirements of frequency-modulated transmission service up to 150 megacycles.

Highly efficient forced-air-cooling is assured by the use of pure copper anodes, joined to the cooling fins by a thin solder film of high thermal conductivity. Radial cooling fins provide large surface area and unrestricted airflow path. Federal's vast tube-making facilities, backed by 37 years of experience, give you real assurance of matchless performance, rugged dependability and maximum tube life.

RATINGS FOR FM BROADCAST SYSTEMS IN THE 88 TO 108 MEGACYCLE BAND
(MAXIMUM OUTPUT UP TO 150 MC)

	7C 26	7C 27
Maximum plate dissipation	1000 watts	3000 watts
Filament voltage	9.0 volts	16.0 volts
Filament current	29.0 amp.	28.5 amp
Amplification factor	17	21
Mutual conductance	20,000 Umhos.	20,000 Umhos
Cooling air velocity at maximum output	75 cu ft/min	150-175 cu ft/min
Maximum overall dimensions		
Height	4¼ in	8 in
Diameter	2½ in	3½ in

"Federal tells how to make tubes last longer—" Write to Department K326 for this interesting and informative 20-page book which gives helpful hints on how to get the most out of your electronic tubes.

Federal Telephone and Radio Corporation

Newark 1, New Jersey

An IT&T Associate

In Canada:—Federal Electric Manufacturing Company, Ltd., Montreal
Export Distributor:—International Standard Electric Corporation

Modulations

FM-Television Interference

SOME OWNERS of television receivers have been saying that they are receiving interference from FM transmitters operating on the new high-band (88-108 mc). Such interference is reported as being particularly noticeable in the vicinity of upper Manhattan, Westchester County and northern New Jersey.

Chief Engineer O. B. Hansen of NBC has a simple but sure-fire remedy for the owners of television receivers who are experiencing interference from unwanted signal response caused by a high-band FM transmitter. To eliminate such interference, Mr. Hansen suggests that a quarter-wave open ended stub be attached on the antenna terminals at the back of the television receiver. The stub, consisting of two parallel copper wires, hangs loosely down the back of the receiver tail-fashion.

The length of the stub varies according to the specific frequency of the interfering FM transmitter. For example, Mr. Hansen says that to eliminate any interference from an FM transmitter operating on 92.1 mc a stub approximately 26 inches long is necessary, depending upon the type of wire and spacing between the wires from which the stub is made.

To eliminate several interfering frequencies would therefore require the attachment of several stubs—one for each interfering frequency. Mr. Hansen says that to get around the impracticality of attaching several stubs to the antenna terminals, an electrical filter could be constructed to eliminate all of the FM higher-band frequencies interfering. Such a filter would be a small device consisting of little coils and condensers which would serve to short circuit all FM interfering frequencies above 88 mc.

Because manufacturers did not contemplate the assignment of any FM frequencies immediately above the television band, no provision was made for such possible FM interference in the prewar television sets. But Mr. Hansen says that the new postwar television receivers are basically designed to remedy the situation by eliminating any possibility of FM high-band interference.

Pacific NW Gets First FM

LESS THAN AN HOUR after receiving permission from the FCC, the Portland *Oregonian's* new KGW-FM, the Pacific Northwest's first FM station, went on the air. The eagerness to take to the air shows the pioneer spirit behind the *Oregonian's* new station—only about a dozen new combination FM-AM receivers have been sold in Portland and at least for the present KGW-FM will be airing its 3 to 10:30 p.m. programs to but a handful of listeners.

The station's confidence is best summed up by the remarks of Quenton Cox, manager of the new FM station and KGW: "FM bears the same relation to AM broadcasting that a high-power 1947 limousine bears to a tin lizzie. In a few years, you'll hear nothing but Frequency Modulation."

During the first week of operation, "What do you think of FM?" was one of the questions asked on the new station's daily man-in-the-street program.

The station's initial appearance on the air was followed by a two-column story with cut in the *Oregonian* in which were mentioned FM's advantages to the listeners. In the next edition William Moyes devoted his "Behind the Mike" column to an elaboration of the merits of FM, some human interest remarks about the new station's personnel and a brief description of programming plans.

CHIEF ENGINEER Harold Singleton plugging in control of Portland Oregonian's KGW-FM transmitter—the first FM station to take the air in the Pacific Northwest.

KGW-FM is operating on 95.3 mc, 250 watts, until it can build to its assigned 50 kw. The transmitter is situated on S. W. Healy Heights where a temporary wooden building has been erected while a sleek modern structure is being built.

Mr. Cox says that three other FM station applications for Portland have been approved and that a total of 12 local stations will eventually receive the FCC green light.

Emerson's FM Plans

STRIKES AND SHORTAGES of material are temporarily delaying the Emerson Radio Phonograph Corporation's production of FM receivers, according to Dorman D. Israel, vice president in charge of engineering and production. For this reason, he says, the Company's long-laid FM plans have been continually setback from month to month but that by the end of summer Emerson expects to be producing AM-FM sets.

Emerson, the "world's largest maker of small radios," plans to bring out three FM models, ranging from $80 to $175. Scheduled for early fall production is a television console lowboy having a 10-inch cathode ray tube and FM and AM aural bands which will retail for $250.

It was announced by Ben Abrams, president of Emerson, that the company has upped its estimated production for 1946 to 40,000. The company plans to go into full-scale production of AM-FM receivers in 1947, Mr. Abrams added.

Mr. Israel says that "high fidelity reception requires an amplifier and an acoustic system which is both bulky and expensive." For this reason, he says, the small table model AM-FM sets cannot give the listener much better reception on FM than AM in the way of higher fidelity. Mr. Israel added, however, that even in the small receivers FM's wider dynamic range will give the listener the sensation of better tonal quality and that the absence of background noise on FM reception will add materially to the listener's enjoyment.

Dual Purpose FM Antenna

SUBURBAN AND COUNTRY FM listeners are going to need antennas a bit more complex than they have been accustomed to with AM. These listeners, who are expected to become among the most enthusiastic boosters

for FM, sometimes get hash, interference and all sorts of background noises in their present AM reception. To help them, Workshop Associates, Inc., 66 Needham St., Newton Highlands, Mass., has developed two dual-purpose FM antenna kits.

For the listener who wants to receive signals from all directions, Kit No. 1 includes four aluminum elements that radiate from a plastic head, a tubular steel mast, and adjustable mast mounting brackets adaptable to the side of any type roof. For the listener who lives away from a metropolitan center, Kit No. 2 includes in addition to the above, other elements which convert the omni-directional antenna into a high-gain, directional array. This is done on the principle of a dipole, with reflector and director. Antenna is matched to RG-59. U low-loss coaxial line.

WFIL-FM's New Promotion

WFIL-FM recently made an offer to Philadelphia and suburban radio dealers to stimulate sales and interest in FM listening. Under the offer made by Felix Meyer, the station's program supervisor, WFIL-FM mailed an introductory copy of its program booklet to each dealer and offered to send copies to his customers with the dealer's compliments (see cut below).

Complimentary copies of the new booklet also were mailed to a list of music lovers in Philadelphia to recreate interest in FM which fell off due to wartime restrictions on set production.

Included in the booklet are articles on FM broadcasting written by prominent radio and music authorities. The guest columnist in the June issue was Eugene Ormandy, musical director of the Philadelphia Orchestra. Mr. Ormandy expresses high praise for FM in the following excerpt from his article:

"FM has brought the concert auditorium into the home. Due to this wonderful system, the most delicate nuances of sound are perfectly reproduced, and reach the listener as easily as if he were present in the hall. At last we can say that musician, recording and broadcasting companies are working together in perfect harmony for the same great end, that of giving the people great music, beautifully performed, carefully recorded, and faultlessly broadcast."

WATG Is 'At It Again'

EVEN BEFORE RECEIVING their brand new CP, WATG's promotion-wise owners, Robert M. Beer and Edgar Koehl, co-publishers of the Ashland, Ohio, *Times-Gazette*, began promoting FM among the dealers in the station's vicinity. Earlier promotional efforts with the public were in the form of newspaper advertisements (page 17, April issue).

Being fully aware of the importance of dealer support in FM promotion, they recently sent three attractive letter-size broadsides to each dealer within the WATG area. Each handbill has a cut of CBS's Vice Chairman Paul Kesten with his laudatory remarks about FM (see cut below), NBC's President Niles Trammel with his complimentary statement, and ABC's President Mark Woods and his comment on the advantages of FM.

Cuts and testimonials were taken from an FM BUSINESS article, "They're On Record," (page 14, May issue).

The following is the personal letter written by Mr. Beer, WATG's manager, which accompanied each set of broadsides:

> I am sure you will be glad to know that WATG, Ashland County's new FM radio station, is under construction now and should be on the air the latter part of this year.
>
> I find that most receiver manufacturers have instructed their distributors to spot the delivery of the new FM sets in localities that are to be served first with static-free FM transmission. WATG will become one of the first new FM stations on the air in Ohio and I urge you to advise your distributor of this and ask that he supply

(*Continued on Page* 26)

TWO RECENT EXAMPLES OF DEALER PROMOTION

WFIL-FM
WIDENER BUILDING
PHILADELPHIA 7, PA

Dear Mr. Dealer:

FM, its history and its present status, is probably an old story to you, but we thought you might like to sit in on the tale which follows:

Frequently during the past weeks we have been asked, "What ever became of FM?" Thinking the matter over we have come to the conclusion that you, too, are beset by your customers for information. For that reason, we should like to present, briefly, the present conditions as they appear:

FM is back on the air, but most stations are broadcasting on a higher frequency which is not received on the majority of FM sets now in operation. The frequency move was, as you know, directed by the FCC

Some distributors now have available a converter device to permit higher frequency reception on present sets. Your customers should appreciate this knowledge

In the meantime, WFIL-FM and KYW-FM are broadcasting daily on both frequencies -- which means that they may be heard by both the owners of pre-war FM receivers and also new FM set buyers. WFIL-FM is using 45.5 megacycles in the old band and 99.3 megacycles in the new band.

We are enclosing a copy of the WFIL-FM Program Booklet, published monthly to facilitate selective listening. As a further service to your customers, we should be happy to send them a copy of this program booklet with your compliments. If you will kindly send us their names, we shall be happy to take care of mailing, and will send a covering letter stating that the booklet is being mailed at your request.

Perhaps it might help you in explaining the FM story to your customers, to have on hand a supply of the program booklets If you so desire, we should be pleased to furnish them to you

In order that we may address future material on WFIL-FM to the proper individual in your organization, we shall appreciate your filling out and returning the enclosed post card.

Sincerely yours,

Felix Meyer
FELIX MEYER
Program Supervisor, WFIL-FM

WHAT THEY SAY ABOUT FM

MARK WOODS
Pres. Amer. Broadcasting Co.

"FM will be the principal medium of broadcasting, especially in urban areas. With few exceptions, every station operating on a regional or local channel can not only improve its service in the area being served, but can extend that service area materially at night. . . . Eventually FM should replace all local and regional stations in urban areas so that these channels can be available for rural service at higher power. Only through the establishment of FM can there be an equalization of facilities between networks and provision for additional program services."

"Will YOUR New Radio Have It?"

Ashland County's Own FM Station

WATG

Will Be On The Air . . . SOON!

BIG NAMES LIKE THESE RAISE YOUR LISTENER LEVEL
Every Capitol name is an audience-builder. And every listener can find programs to enjoy. Singers . . . top bands . . . western stars . . . variety groups—all under exclusive contract to Capitol. Even the smaller stations can headline the biggest stars:

BIG NAME BANDS
Duke Ellington • Jan Garber; • Skitch Henderson; • Stan Kenton • Gene Krupa • Eddie LeMar • Enric Madriguera • Alvino Rey.

BIG NAME SINGERS
June Christy • Hal Derwin • Dinning Sisters • Carolyn Grey • King Sisters • Peggy Lee.

BIG NAME VARIETY
Buddy Cole's Four of a Kind • Frank DeVol • King Cole Trio • Danny Kuaana • Del Porter and his Sweet Potato Tooters • Juan Rolando • Dick Shannon's Aleutian Five • Paul Weston.

BIG NAME WESTERN
Shug Fisher • Wally Fowler • Jack Guthrie • Karl & Harty • Oak Ridge Quartette; Tex Ritter • Merle Travis • Wesley Tuttle • Uncle Henry's Original Kentucky Mountaineers.

SHOWS THAT SELL SPONSORS . . .
With 22 different program formats—30 hours of programmed entertainment each week—you can build a show to please any listener, any sponsor. Each dated format in your conveniently-bound Capitol format service suggests each transcription by title number, and times every phase of the period. Perfect programming aids, flexibly prepared to favor that extra zip and zest that can come only from your own program staff.

16 Quarter-hour shows • 3 Half-hour shows • 3 One-hour shows

2000 SELECTIONS . . . 50 MORE EACH MONTH
The basic library of the Capitol Transcription Service contains more than 2000 selections. Every month Capitol *guarantees* you a minimum of 50 additional numbers. (As an extra bonus, production schedules indicate not 50 but 70 new monthly releases . . . and at no cost increase.) Your library comes in this handsome metal sliding-drawer cabinet designed to simplify selection.

CAPITOL SIMPLIFIES YOUR PROGRAMMING
. . . Like This—from sign-on to sign-off, production brighteners refresh every Capitol program format. Open and close each show with a brilliantly arranged musical theme. Perk up your audience with a few remarks by the featured artist. And background your commercials with distinctive musical interludes.

Capitol TRANSCRIPTIONS
A DIVISION OF CAPITOL RECORDS INC.
PROGRAM SERVICE FROM HOLLYWOOD

A RECORDED DEMONSTRATION SAMPLE FOR YOU
To show just what the Capitol Transcription Service can do for you, Capitol will be glad to send you a recorded demonstration. Hear many of the features that make the Capitol service *different*.

SUNSET AND VINE

you with sets without further delay. In most cases the dealer who makes such a request should be given special consideration through priority delivery.

Mr. Koehl and I are both grateful to you for the cooperation extended to us thus far and we assure you that we shall continue to encourage the purchase of FM receivers through promotional advertising which will carry your name. If you will notify us upon the arrival of your first shipment of FM receivers we shall be glad to make a complimentary announcement in the *Times-Gazette.*

Studying German Developments

GENERALLY SPEAKING, electronic developments of German origin are either already in use in the United States or have been tried and found wanting or, as has often been the case, have been found unnecessary here since they were brought about by a material scarcity. American radio manufacturers feel that about covers the value of German equipment thus far unearthed; nothing far-reaching and revolutionary has yet been found.

However, to conduct an investigation of developments of interest to American manufacturers, the Department of Commerce has assigned Dr. Todos M. Odarenko, technical assistant to the president of I. T. & T., to go to Germany. Before joining I. T. & T., Dr. Odarenko served as adviser and consultant with Bell Telephone, the Navy's Bureau of Ships and the Radio & Radar Division of the WPB.

Dr. Odarenko feels that the comparative quality of American and German wartime work is difficult to determine, since much of the German effort was devoted to the development of substitutes. However, before he left, he mentioned that the following items were of some interest to American manufacturers: condensors, smaller than American-made, self-healing after overload breakdowns; die cast magnesium set chassis; synthetic dielectrics; tape recorders; synthetic quartz crystals.

Denny's Hopes for FM

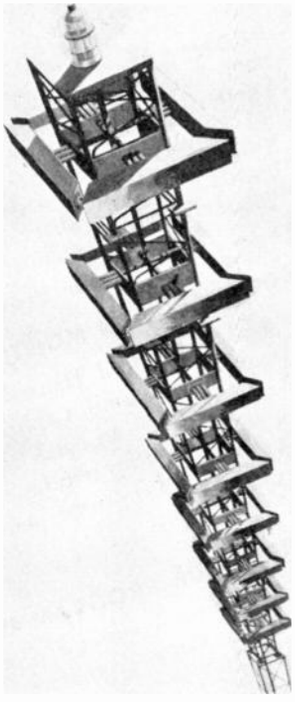
ACTING FCC CHAIRMAN Charles R. Denny, Jr., expresses his aspirations for FM in "If America Had a 10-Year Plan" appearing in the July issue of *Everybody's Digest:*

"I would like to see several thousand FM radio stations with adequate network facilities making this type of static-free broadcasting, available to every home. In addition, I would like to see hundreds of FM stations operated on a noncommercial basis by educational institutions and broadcasting programs of interest to schools and the general public. Such an abundance of stations would foster a degree of competition that could be relied upon to raise program standards far above what they are today.

". . . Also, there should be facsimile broadcasting which will print by radio right into your living room a newspaper complete with photographs and comics."

New High Gain Antenna

A SQUARE LOOP antenna, which establishes a new high in FM broadcast efficiency, has been developed by Federal Telephone and Radio Corp., Newark, New Jersey, manufacturing associate of International Telephone and Telegraph Corp. When eight bays are used, this antenna provides a power gain of nine which in practical terms means that 90 kw of effective radiated power can be obtained from



Federal's New 8 Square-loop Antenna

a 10 kw transmitter, 180 kw from a 20 kw and 450 kw from 50 kw.

For even greater efficiency more loops can be stacked so that with a 16 bay antenna a power gain of 20 is entirely feasible. Furthermore, the spacing between loops is not critical and the same structure can be used over the entire FM band with only a slight reduction in gain at the extreme frequencies.

Other characteristics of the antenna, according to Federal, are omnidirectivity in the horizontal plane, a minimum of resonant circuits, lightning protection, horizontal polarization, no field tuning—all loops are the same size and factory pretuned, and standard, RMA-specified, 51.5 ohm 3⅛" or 1⅝" coaxial lines can be used to feed the array.

Continuous operation of the broadcast station can be assured by the use of two feed lines. Thus should one set of loops or one transmission line fail the other set would carry on with only a 3 db reduction in effective radiated power. A 16 page booklet describing this new antenna is available upon request. Prices range from $2200 for the two-element antenna to $12,400 for the 12-element unit.

Stromberg-Carlson's Merchandiser

NOW THAT FM is universally acknowledged to be the ultimate system of sound broadcasting . . . is how Stromberg-Carlson's President, Dr. Ray H. Manson, introduces the company's new publication, the *Merchandiser.* The twelve-page publication is tailored to fit the radio dealer's sphere of interest and is scheduled to come out quarterly—the second issue is slated for fall. Dr. Manson points out in his article that Stromberg-Carlson first pioneered FM receivers and FM phonograph combinations in 1939 and that "our FM experience has been accumulating in the seven years since."

Dr. Manson also mentions that in anticipating the public's future desire for wire recording facilities, the company has made provision in all of its FM floor models for the later installation of its wire recorder.

The *Merchandiser's* two lead articles, the one by Dr. Manson and "Sell Up to FM" by Clifford J. Hunt, Sales Manager of the Radio Division, are examples of first-rate promotion copy for FM. The publication is to help Stromberg's authorized radio dealers in sales promotion—selling, displaying, advertising, publicity. It's a publication, written to and for dealers, in the language they understand and can pass on to the consumer.

FM Telephone Goes Commercial

RADIOTELEPHONY via FM came of age recently when the FCC granted the first commercial license, permitting a charge for the service. Southwestern Bell Telephone Co., was licensed for a fixed station and 10 mobile units in St. Louis; construction permit is outstanding for 140 more mobile units. St. Louis is the first of 30 cities in which Bell Telephone expects to have the service operating by the end of the year.

Construction permits were also granted for a rural radiotelephone service centered in Cheyenne Wells, Colo. A central station, four subscriber stations on isolated ranches and a mobile test station were included in the grant to the Mountain States Telephone & Telegraph Co.

Omaha Goes FM

NEBRASKA'S first FM station, KOAD, began broadcasting on the first of July. The station (Class B rural), owned by the Omaha *World-Herald*, is authorized to operate on 92.5 mc with a 584-foot antenna and a radiated power of 160 kw. But until building and technical equipment are available, the new station is operating with a 1000-watt Federal transmitter feeding a 100-foot antenna. Construction of the higher tower will begin immediately.

For its transmitter location, the *Herald* bought a 40 acre farm six airline miles northwest of Omaha. When local contractors were unable to provide a suitable building within the CPA thousand dollar construction limit, the Cornhuskers displayed real resourcefulness—a nearby milkhouse was moved to the construction site and converted into a transmitter building for the temporary equipment.

As a promotional stunt, the *Herald* conducted a contest in the newspaper to name the new station—the prize, $100. More than 6000 letters were received during the four weeks of the contest.

The new station is operating from the studios of KOWH, the *Herald's* daytime independent AM station. Under its sixteen-hour broadcast schedule, the FM station carries some KOWH programs during the day, with its nighttime programming emphasizing music. Frank Shopen has been appointed manager of the new station.

Federal Telephone and Radio assured delivery of the 1000-watt transmitter by May 25. When the railroad strike threatened to prevent delivery, Federal loaded the transmitter on a five-ton truck at Newark. The equipment was delivered in Omaha on the designated day—May 25. The equipment is the first commercial FM transmitter built by the company since it converted to non-military production.

University Station WBKY

THE UNIVERSITY of Kentucky's FM station in Lexington, WBKY, provides a working laboratory in which students can learn radio on as professional a basis as possible. With the exception of the station's director and program supervisor, all personnel, including the chief engineer, are university students. The engineer selects and trains the studio operators and in his spare time is designing and building a new 1000 watt FM transmitter.

The station's present schedule offers six hours of programming a week—from 7 to 9 on Monday, Wednesday and Friday. Besides picking up the university's football and basketball games and concerts, this educational FM station contributes a tri-weekly live agriculture show and a weekly hour-long transcription show to WHAS, Louisville. Two 15-minute programs are supplied each week to Lexington's WLAP.

The university's recently created Department of Radio Arts plans for its first-year classes in announcing, production, dramatics, newswriting and radio survey techniques.

New Finch Fax Equipment

NEW FACSIMILE equipment designed primarily for FM broadcasters has been announced by W. G. H. Finch, president of Finch Telecommunications, Inc.

Chief among these is the company's new complete broadcast studio facsimile transmitter-monitor system. This system consists of two precision broadcast facsimile scanners, each with associated monitor receiver, power units, amplifiers and selective switching arrangements for insuring uninterrupted transmission for any number of facsimile pages. The two complete scanning units make it possible to start a new page as soon as the preceding page has been transmitted.

The system is provided with automatic copy loading and ejection and also includes a receiver operating on the outgoing signal of the unit thus making it possible to observe the program while it is being broadcast. Amplifiers and power units are supplied so that the output signal of the installation may be handled by the master control desk in the same manner as the output of a studio.

Fax Resumed at WENA

FACSIMILE TRANSMISSION, temporarily discontinued during the war, soon will be resumed in Detroit, according to an announcement made by W. J. Scripps, radio director of the *Detroit News*. The *News* will supply all news, pictures, makeup and other material that is necessary for the contemplated service. Mr. Scripps says that facsimile broadcasting will give the Detroit public an added service by complementing both newspapers and radio news coverage.

The Detroit *News* FM transmitter WENA, now in operation, will place its facsimile recorders in homes and other locations in the Detroit area just as soon as delivery of equipment can be made by Finch Telecommunications, Inc. Delivery can be made shortly, according to Capt. W. G. H. Finch, president of the facsimile manufacturing company.

Other FM broadcasters soon to in-

stall and use Finch facsimile equipment are: WMGM, New York City; WGHF, New York City; KMGM, Hollywood, California; KJBS, San Francisco; WJJD, Chicago; the San Bernandino Broadcasting Co., San Bernandino, California; and the Western Reserve Broadcasting Co., Cleveland, Ohio.

Another University Gets FM

ST. LOUIS UNIVERSITY, the first university to operate an AM station, WEW, will soon go on the air with FM. WEW's General Manager Nicholas Pagliara recently signed a contract with Federal Telephone and Radio Corp., for a 10 kw FM transmitter and equipment from microphone to antenna. The Federal 8 element square loop antenna, with a gain of nine, will give the station an effective radio power of 90 kw. Delivery of the installation, which will operate on a frequency of 94.1 mc, is scheduled to begin next month.

Assist in New FM Designs

MORE THAN 150 working radio men—station owners, chief engineers and operators—assisted in designing the new line of Westinghouse FM transmitters, according to C. J. Burnside, manager of the Industrial Electronics Division. Their preferences and suggestions, running all the way from improved eye-appeal to more efficient operation, were recorded in a nationwide survey of 91 stations in 56 cities in 22 states and drawn upon in establishing the basic design.

First of the new FM line—the one and three-kilowatt units—already are in production. These are to be followed by the 10-kilowatt model to be ready about the end of the year, and later by the top-of-the-line 50-kilowatt unit.

While public interest in FM has been at a high peak for many months, and the great and growing number of applications for FM stations before the FCC bears ample testimony of the willingness of broadcasters to provide FM service, little was known of the special features most desired—either for increased efficiency or greater comfort—by men who will operate and maintain FM transmitting equipment in stations all over the nation. It was with these "forgotten men" in mind that a nationally-known agency was retained to conduct the survey, with orders that the sponsor's identity be held in strict secrecy.

Program departments will have no corner on showmanship in the new FM stations—engineers, too, welcome visitors and are eager to show control rooms, transmitters, etc. They want equipment readily visible, colorful—grey and blue-grey were the preferences—and arranged for easiest housekeeping.

They want it of modern, rather than conservative, design; roomy, for easy maintenance and adequate cooling; with generous glass doors and windows, for convenient checking as they work and for easy viewing by visitors; and dustproof, for tidyness and "because of large percentage of repair and maintenance is caused by dirt and dust."

Little things listed as important, too, were: added knee and leg room in consoles; lights and convenient outlets inside transmitter; more storage space; call letters displayed prominently; single-purpose, large-face, eye-level meters with readings taken at the tip of pointers recessed into the meter face (this non-parallax arrangement avoids arguments as to exact readings, they point out); non-glare finish on panels, and console space for a long-carriage typewriter.

First GE Transmitter to WGNB

WGNB, FM sister station of Chicago's WGN, is now operating the first postwar FM transmitter to come off GE production lines. G. William Lang, chief engineer of both WGNB and WGN, says the 250-watt unit is the first of three GE FM transmitter units ordered by the station. When all three are installed, they will bring WGNB's full-rated power to 20,000 watts.

GE has orders to manufacture the new transmitters in "substantial quantities," according to C. A. Priest, transmitter division manager. They will be made at the GE electronics department plant on Thompson Road in Syracuse, New York.

G. WILLIAM LANG, Chief Engineer of WGN-WGNB; Marion Claire, director of WGNB; and Stephen Pozgay, GE official admire first postwar FM transmitter off GE's lines.

Radio Tomorrow: FM

Veteran radio publisher paints bright FM picture for ad-men

BECAUSE OF FM, the next few years are going to see a complete change in the American broadcasting structure if God is willing—"and James Petrillo, the CPA, the OPA and the FCC," Martin Codel, publisher of FM BUSINESS and editor of *Television Digest & FM Reports*, said in a talk on June 27 before the Advertising Clubs Assn. at Spokane, Wash.

FM means "you are going to see the good drive out the bad, better broadcasting displace good broadcasting, superlative reception displace antiquated reception," he said.

Mr. Codel told his audience that "AM-FM duplication has suffered a temporary setback by the edicts of Jimmy Petrillo." He spoke of Mr. Petrillo as "trying to strangle the goose that can lay golden eggs of future employment for musicians—more stations, more music, more musicians."

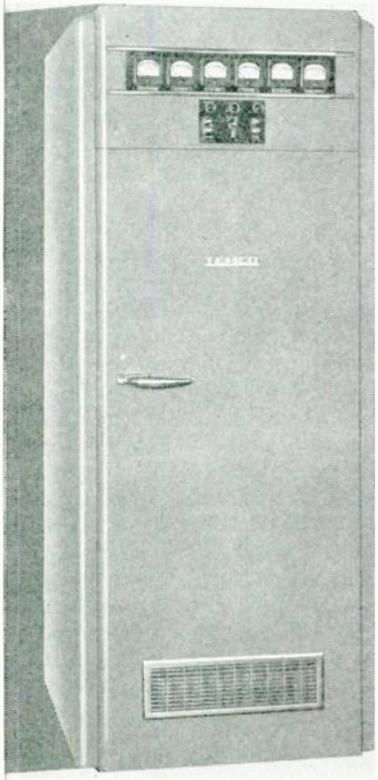
The war stopped FM receiver production but production is now starting anew and "millions of AM-FM combinations should be sold to the public within the next few years." He added that the construction of FM stations has been delayed by "strikes, material shortages, construction restrictions, etc. Certainly, anyone who buys a receiver now that does not include the FM bands is a plain damn fool."

Referring to the difficulties Major Armstrong had in launching his FM invention, Mr. Codel said: "Skepticism, smugness, inertia, at first inclined even some of his engineering colleagues to scoff, not to mention the Big Boys of Broadcasting who hated, and many of whom still hate, to see their profitable status quo disturbed." Selling FM was similar to convincing "the hard-headed stable owners of our boyhood days that the horseless carriage was not a mere tinker's toy."

FM "service areas can be defined almost with exactitude," he told the ad men. "You'll soon be buying time on FM stations, assured of first-rate primary service areas, guaranteed coverage" and fine signals unmarred by static and "as strong at the periphery as at the core."

Mr. Codel said that sparsely settled rural areas must continue for the present to be served by high power AM stations. He mentioned, however, that "even little hamlets may eventually have their own stations, modestly budgeted, locally supported, holding the same place in the community as the weekly newspaper."

Need Communication Equipment?

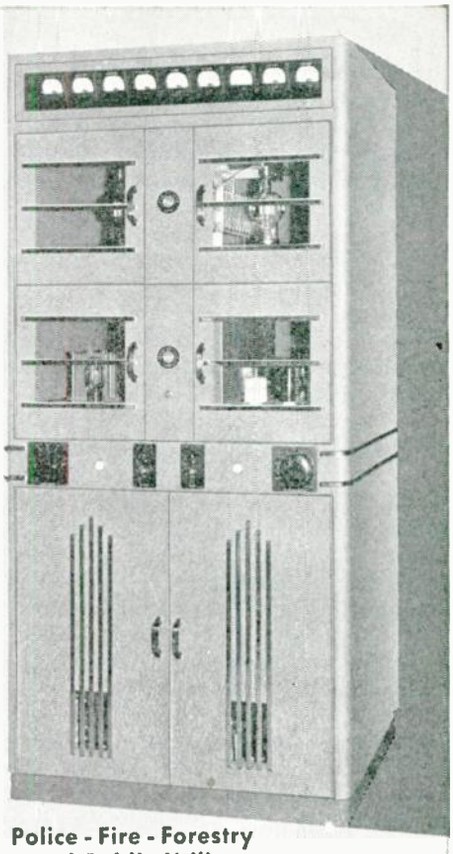


FM and AM Broadcasting

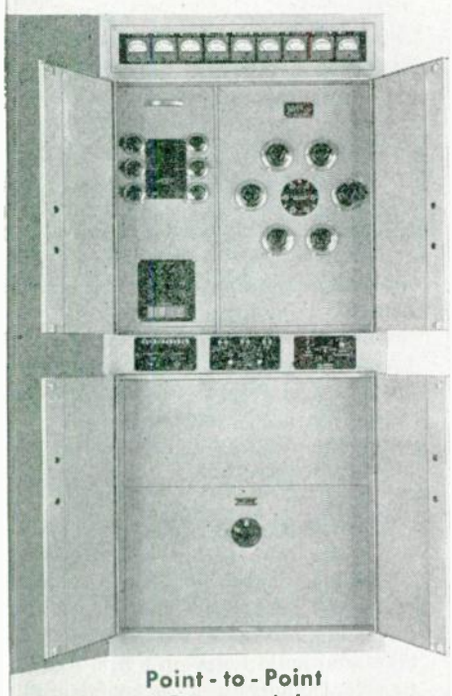
TEMCO will deliver *within 30 to 60 days* equipment for any of the following services:

- FM and AM BROADCASTING
- AVIATION and MARINE
- POLICE - FIRE - FORESTRY and PUBLIC UTILITY
- POINT - TO - POINT COMMERCIAL
- AMATEUR and CITIZEN

Send us your requirements for IMMEDIATE action



Police - Fire - Forestry and Public Utility



Point - to - Point Commercial

Amateur and Citizen

Aviation and Marine

TEMCO

RADIO COMMUNICATION EQUIPMENT

TRANSMITTER EQUIPMENT MFG. CO., INC.

345 Hudson Street, New York 14, N. Y.

SO YOU'RE GOING

(*Continued from Page 9*)

tion of aural broadcast stations is payroll. A direct relationship exists between the payroll expense item and the operating hours of broadcast stations. Thus FM stations, during the initial operating period, may hold expenses to a minimum by restricting operating hours to the FCC minimum requirement of six hours daily.

However, prospective aural broadcasters are cautioned against an over optimistic appraisal of operating costs based on FCC minimum operating hours. It is true that little reason exists to operate FM stations more than six hours daily until FM receivers are installed in a substantial number of radio homes, but the day will come when FM receivers have been sold in quantity and large potential audiences will be available to the FM aural broadcaster.

This is the period when FM is ready to assume its position as an important part of aural broadcasting and the individual FM station must be prepared to meet the competition of other aural stations for the advertiser's dollars and the listening audience. Surely in this competitive period the FM broadcaster must be prepared to operate his station *full time*. This means at least 12 to 18 hours daily. Therefore, payroll costs will closely approximate those of AM broadcasters operating a comparable number of hours.

Now let's take a look at some other expenses, as set forth in the average industry figures released by the FCC for the year 1944:

1. *Salary and wages.* Hold your breath, this is where the money goes, 46% is the payroll cut of the expense dollar.

2. *Program Expense (except salaries).* The second largest chunk of the broadcast expense dollar is 23.5%, labeled "General Program Expense." This item includes music royalties, program transcription purchases, news wire services, etc.

3. *Selling expenses including sales promotion, advertising and commissions.* In 1944 it cost the broadcaster 15.5% of each expense dollar to secure the all important advertising revenue.

4. *Depreciation.* This item amounted to 4.1% and significantly reflects the high obsolescence of broadcast equipment.

5. *Rent of broadcast property.* About 2.5% of the cost dollar goes into this item. The actual cost of broadcast property is much higher as many stations own the real estate they utilize.

6. *General office supplies and services.* Here another 2.5% must be expected.

7. *Replacement tubes, parts and other technical expenses.* This cost classification takes 2.7 cents out of the operating expense dollar. Here FM costs may be higher, the big power tubes for FM transmitters will be costly and operating life will probably be less than in comparable AM transmitters.

8. *Power.* This item accounts for less than 1.6% of total operating costs. Not much chance for FM operators to save money here although the higher powered FM transmitters consume slightly less power than AM transmitters of the same power output.

9. *Miscellaneous.* Items not accounted for above are grouped under this classification amounting to 1.6%.

Cost in Dollars and Cents

These percentages will serve to give the prospective aural broadcaster some idea as to how the average broadcast operating expense dollar is divided. However, the question all prospective broadcasters will ask is, "What will be the annual cost in dollars of operating the proposed station?"

It has been shown that FM and AM operating costs are closely comparable, particularly in view of the fact that most FM broadcasters will find it necessary and desirable to conduct extensive promotional activity in their service areas in order to stimulate the sale of FM receivers—and promotional campaigns, while not necessarily expensive, will nevertheless tend to increase overall operating expenses.

The table on page 9 has been prepared from published information of the Federal Communications Commission for the purpose of presenting a detailed analysis of aural broadcast operating costs. The first column of the table refers to fulltime regional AM stations. For practical purposes, these figures are closely comparable to the operating expenses which may be anticipated by FM broadcasters utilizing Rural or Metropolitan assignments (Class B) with substantial power. The second column lists the average expense items for fulltime local stations. These figures may be used for comparative purposes for the proposed FM operation of low power Metropolitan stations and larger Community operations employing a larger staff than the smallest Community stations. The last column, part-time local stations, will serve to indicate to the prospective FM operator of a small Community station (Class A) probable operating expenses.

The figures shown in the table are not, of course, directly applicable to any specific instance. There are so many unknown and intangible factors that affect operating costs, that a careful analysis should be made of each individual proposed station before drawing final conclusions. It will obviously be possible to operate many small FM stations, at least during the first few years, for less than the $48,000 average shown in the table for part-time local stations.

". . . and here is today's weather report."

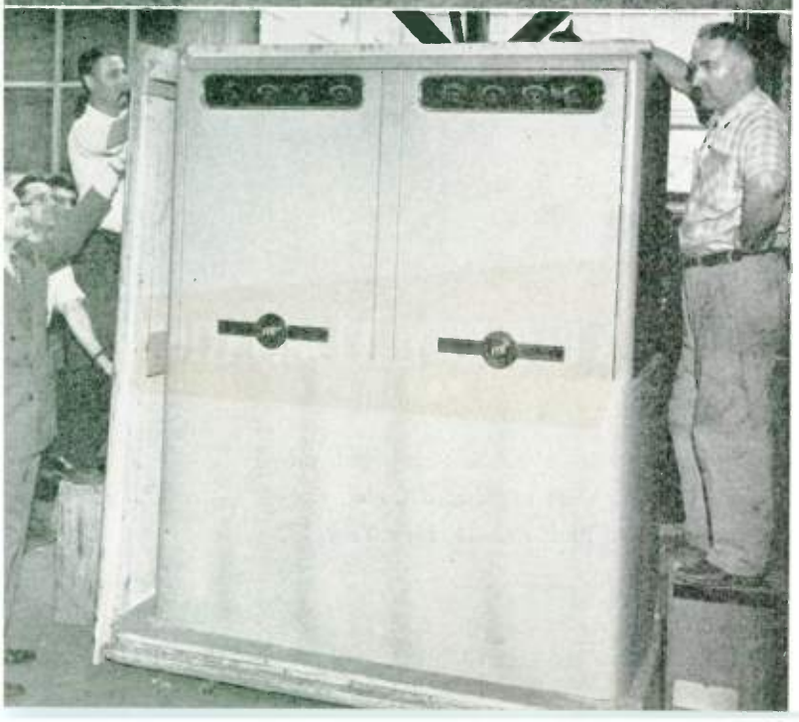
Loss Operations

The FCC reports that 58 stations in the United States operated with gross revenues of less than $25,000 during 1944. Of these, 43 were unlimited local stations showing an average total operating expense of only $17,000. It should also be remembered that during the same year, 41 AM stations reported operating losses. Many of these 41 stations are included in the total of 58 stations reporting revenues of less than $25,000. Of the 41 stations reporting losses, 27 were affiliated with national networks and 14 enjoyed no network affiliation.

Throughout this discussion of aural broadcast operating costs, the author has endeavored to be factual. Cold statistics do not always appeal to the optimist—and one should enter any new business venture with a certain amount of optimism.

Undoubtedly, in the years ahead, the competition in aural broadcasting is going to make the margin between profit and loss a constant struggle for some, but for those who have what it takes and build today on a firm foundation for tomorrow, it is confidentially predicted that the rewards will more than justify the effort.

Pictorial

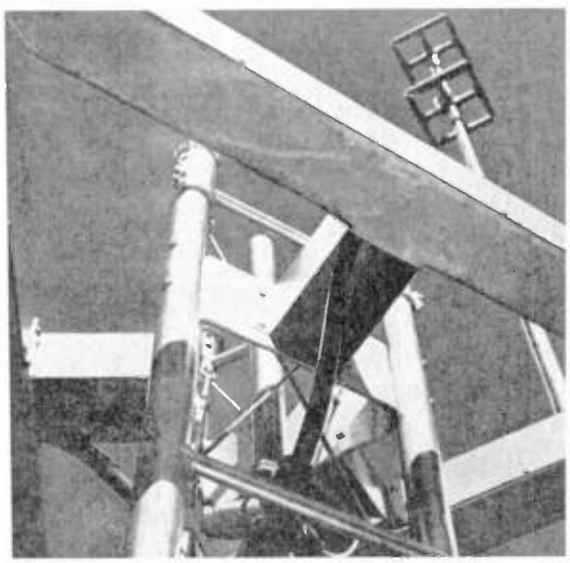


WHEN KGW-FM went on the air, Program Director Homer Welch (left) and Station Manager H. Quenton Cox (center) scoured Portland to find an FM receiver. William Hodeker (right) saved the day by producing above set from his department store.

TIMES TOWER on historic Talcott Mountain to house the Hartford (Conn.) Times' new FM transmitter. Formerly a $1,000,000 landmark; rises 1000 feet above sea level.

(Top left) WHEN CPA restrictions curtailed erection of new buildings, Station KOAD, owned by the Omaha World-Herald, put its well-known ingenuity to work and transformed a former milkhouse (one of several farm buildings purchased with the site) into a transmitter building. (Lower left) Mr. N. E. Wunderlich, Federal Telephone and Radio Corp., supervising shipping of KOAD's new FM transmitter.

VISUAL EVIDENCE of the Federal Telephone and Radio Corporation's full-speed-ahead program on its FM transmitter deliveries. Shown above is a section of Federal's Newark, N. J., plant's busy line.



FEDERAL TELEPHONE and Radio Corporation's new VHF antenna will give a power gain of 20 if enough loops (approx. 16) are stacked.

H. WALTER MITCHELL, shown testing Raytheon's two-way mobile radio telephone equipment. Ray Wilson, electronic engineer, (left), inside Raytheon mobile laboratory which operated at the Indianapolis Speedway during the Memorial Day race.

HERE'S A FIRST for FM Broadcasting. George Emerson Markham (left), GE Stations Manager, and Frank L. Wiswall (right), President, Saratoga Harness Racing Association, announce the broadcasting of summer and fall meetings over GE's FM station WGFM, Schenectady, N. Y.

'OPERATION CROSSROADS'

(*Continued from Page* 12)

receivers will get these very distinct and significant advantages in their FM reception—(1) no background noise, (2) less harmonic distortion, (3) greater dynamic range (spread between the loudest sound in intensity and the weakest sound reproduced by the receiver), (4) complete selectivity (no unwanted station signals), (5) virtually staticless reception, (6) no fading, (7) same quality of reception—daytime and nighttime.

Clearly, FM can stand on its own merits as a definitely superior system of aural communication—even when bypassing high fidelity completely. Promotional campaigns of manufacturers, dealers and stations should be geared to emphasize this impressive array of seven advantages that FM can offer *every* purchaser of a properly designed receiver regardless of its size or cost.

What Price High Fidelity?

Let's turn back the pages of radio's history about 15 years when manufacturers were trying to market extremely high fidelity AM receivers. This program failed primarily because of the high costs of the sets. But there was another reason, perhaps less significant but just as real—a large percentage of the quality set buyers did not like high fidelity.

And reliable surveys show at the present time that a substantial percentage of the listening public does not like high fidelity—it sounds "eerie and unnatural" and makes them feel uncomfortable. It's a psychological fact that people normally feel uncomfortable in unfamiliar surroundings. This irritation is temporary—it is largely the result of years spent in conditioning listeners to accept the more rounded and less distinct gradations of the sounds received over AM.

It will take time to recondition listeners to appreciate and universally accept high fidelity. Radio researchers are convinced that the general public, once it is exposed to high fidelity over a period of time, will rapidly come to demand it. Trained musicians and those schooled in the discrimination of subtle tonalities of sound, of course, eagerly embrace FM from the start because of its high fidelity feature.

The FM stations themselves have a responsibility in serving the listeners. There will be some Frequency Modulation operators who might better, from a standpoint of technical operation, enter the horse-shoeing business because, over this noble medium of sound, they will be slothful and run scratched 78 rpm 10-cent-store records and thereby create in the mind of the average listener the feeling that all this Frequency Modulation talk of crystalline perfection of tone and extraordinary naturalness is nothing more than a subterfuge to sell a new radio set every year.

It is my opinion that the Federal Communications Commission has not helped matters along. The FCC by switching FM frequencies back and forth has, to put it mildly, complicated matters. Let us hope and pray the frequency moving day is over, with respect to FM and also television.

Once the Frequency Modulation broadcast band situation is straightened and radio receiving set manufacturers have given the public the ideal unit for the home, it will then be imperative that the station operator becomes as practical and realistic as possible in so far as his station's program structure is concerned. Obviously, there will be strong competition and a similarity of programming which will not advance the art of FM broadcasting.

Each station will have to establish its own character if it is to compete for business and larger audiences. Following in the footsteps of successful amplitude modulation station operation, the FM station, ripe with the potentialities of a newborn infant, will have to become a specialist—that is, a sports station, classical music station, popular music station, forum type, etc.

Future FM Networks

A study of the Frequency Modulation field should convince any informed observer that within five years after Frequency Modulation has gotten under way, this country will see at least six or seven FM networks. One can also predict the eventual desertion of many standard broadcast band operators with commercial operators beating a path to Frequency Modulation's door. Frequency Modulation, in my opinion, will have an unprecedented and impressive growth and AM radio will disappear, with the exception of clear channel stations in strategic geographical areas.

Boiled down, FM won't be any better than AM to the average listener, except in lightning storms, unless the listener is provided with a good receiver and the station delivers a better quality product. If the listener and the licensee do not respect FM for what it is, then Major Armstrong's invention might as well have been left in the laboratory.

WILMOTTE Manufacturing Co., Washington, adjunct of the consulting engineering firm headed by Raymond M. Wilmotte, last month received the Naval Ordnance Development Award for distinguished service in connection with its wartime work on Fire Control Radar Mark 29 and on the VT Proximity Fuse.

PROFILE: WELD

(*Continued from Page 14*)

complete diffusion of sound is best. He hopes to achieve meticulous and minute control of reverberation electronically with an electric tremolo he's finally coaxed out of the Hammond organ people. With it, he expects to get a whole range of audio effects—from the sound of someone talking in a phone booth, to valley echoes.

An Experiment in 'Mikes'

He has experimented with all kinds of microphones. But with acquisition of two of Western Electric's rare, prewar, projectile-shaped, 640A condenser mikes, he's about as content as a born experimenter ever is. "They're wonderful," he says, "they have amazing sensitivity and fidelity. They pick up anything in the studio perfectly."

Nafzger deplores the "utter fallacy that FM should be devoted particularly to the classics." Further, he's impatient with stations that lash up with the networks for "easy programming." But he doesn't feature local talent simply because it's local. "If it's local and good, we use it. If it's not good, we don't."

Lack of network and advertiser commitments has enabled WELD to experiment—and obtain many exclusives. Features which the AM stations wouldn't or couldn't carry have come over FM in remarkable variety.

WELD has taken pains to acquaint its prospective advertisers with the nature of its "balanced program." Time wasn't sold, but sponsors were given opportunity to test WELD's novel rate structure, wherein the number of words in a commercial determines the length of the program that goes with it. Advertisers also rotated sponsorship, advertising on different types of programs different times of the day. They were also permitted to substitute their own programs, the station reserving the right to fit them into proper times to maintain the day's balance.

Better Program Balance

The whole idea was to keep the listener happy with that program balance carefully predicated on a survey of his likes and dislikes, keep him tuned to WELD and thus serve the advertiser.

Twenty-four Columbus business firms cooperated and WELD surveyed the audience. Results: 90% found these locally sponsored programs "more pleasing" than local programs of the AM stations, none found them "less pleasing" and 10% found them "equally pleasing."

The surveys upon which the "balanced program" is based showed 74% were tired of drama and serials, 70% wanted more music. What types of music? Popular music was demanded by 56%, semi-classical by 35%, classical by 9%.

Nor has WELD neglected those vital men—the dealers and servicemen. They've proven highly cooperative. In addition to running names of dealers in ads and providing them with display placards, Nafzger plans to distribute a booklet to be given prospective set buyers, give eye-catching tags to identify and distinguish FM sets immediately, and revert to its noon to midnight schedule from a war-clipped 4-11:15—permitting store demonstration.

The station will have servicemen give free inspection to newly installed sets, benefiting all hands. The owner is assured of best reception, the serviceman leaves his card for future reference, and poor installation will be removed as a cause for complaint to the dealer and the station.

Active in Facsimile

RadiOhio is also one of the older hands in the facsimile field. The experimental station W8XUM is operated in conjunction with WELD and has been going since April, 1939, first on 31.6 mc then on 25.2 mc. Nafzger can't understand why broadcasters and publishers haven't urged facsimile along faster. He sees the system really getting hot with the advent of multiplexing with FM, and when the station can turn the home receiver off and on with a sub-aural tone, relieving the customer of the necessity of remembering the thing.

WELD is about ready to go to town. It has a 10 kw Federal transmitter on order, expects to be radiating full 20 kw on 94.5 mc by July or August. Current signals are going out both on the low-band and an "interim" high frequency of 92.9 mc.

Nafzger has plans for a new building and a new tower capable of carrying FM, television and facsimile antennas. Receivers are beginning to trickle in, but a really powerful infusion is not expected until Christmas.

Why, then, if RadiOhio has such great hopes for FM, did it drop its applications for Springfield, Zanesville, Marion and Portsmouth? Well, Nafzger explains, there is the dragging difficulty of building an FM audience in the smaller towns. And WELD's signal will cover some 12,000 square miles, a considerable segment of the central Ohio market, some of which the other stations would have overlapped.

Soon, with the sale of time, WELD will test, in the hard arc light of commercial operation, ideas and policies developed in the stringent but experimentally valuable war years.

—AL WEINSTEIN

Local Station Preference

Survey reveals that a local broadcaster can compete with outside network stations

THERE'S BEEN MUCH speculation as to how successfully small market stations can compete for listeners with outside network stations and their greater talent and more expensive programming facilities. Those contemplating a small market area FM station are particularly interested in this problem and will be glad to learn that, according to a recent survey, the family listening hours preponderantly favor the community station.

A listenership check, prepared for the Keystone Broadcasting System by the Ross Federal Research Corp., shows that the local station "captures by far the greatest number of total family listening hours"—even when competing with outside network stations. Of the stations surveyed, the following three stations are situated in areas receiving a primary signal (i.e. ½ mv/m or better) from a major network station: KID, Idaho Falls, Ida.; WINC, Winchester, Va.; WLAY, Muscle Shoals City, Ala.

KID—total listening hours amounted to 2.27 times more than total listening hours of the next most listened to station, a major network station.

WINC—total listening hours amounted to 6 times more than total listening hours of the next most listened to station, a major network station.

WLAY—total listening hours amounted to 1.09 times more than total listening hours of the next most listened to station, a major network station.

This tabulation clearly shows the dominance of these local stations in their respective areas.

Ross Federal gathered its data for KBS by using a ballot and a technique similar to that employed by Broadcast Measurement Bureau. Not only did the questionnaire ask the respondent what stations he listened to at night and in the daytime but also how often each week and how many hours per week during the evening and during the day.

The transcription network KBS, the only network covering "beyond-metropolitan" markets exclusively, had the survey made because of the wide interest in single station coverage.

The public service function of the small market station puts the station in a unique position, according to KBS President Michael M. Sillerman. "Its close integration with community affairs gets and holds that local audience that an outside station can't and doesn't get." He says that the Ross Federal survey bears out the old adage—"You can see the ball game from inside the ball park better than from the roof across the way."

The smaller communities are far more important advertising areas than many persons realize. According to KBS, Department of Commerce figures disclose that cities of 50,000 and under supply 49% of all national retail sales, 53% of all national food sales and 47% of all national retail drug sales. Cities 20,000 and under supply 38% of all national retail sales, 42% of all national food sales and 35% of all national retail drug sales. Towns 2500 and under supply 17% of all national retail sales, 19% of all national retail food sales and 13% of all national retail drug sales.

It Has Happened Here

ONE OF FM's most ardent advocates, Everett L. Dillard of KOZY, Kansas City, owner of Commercial Radio Equipment Co., walked into a downtown Washington radio and music shop the other day and asked to see an FM set.

"FM?" the shopkeeper said. "We won't have any FM sets till next summer. Anyway, there aren't any stations in Washington and they will be much too expensive for the ordinary buyer. Why, you'll need a special antenna, coaxial cable for a lead-in, and . . ."

Dillard interrupted at this point, asked him if he'd like to hear an FM signal. When he said yes, Dillard walked over to a floor model, switched it on, tuned it to one of Washington's two developmental stations and the store was suffused with the golden tones of FM. The dealer was amazed, then grew ecstatic. "Why, I had no idea there were any FM broadcasts in Washington," he said. "I never even knew that this set had an FM band. Tell me, what is this FM?"

There's a moral in this little episode. If your dealers don't know the score on FM, how can you expect the public to? It is imperative that FM be sold first to dealers—first and immediately. You can bet your bottom dollar there is no time to waste.

WORLD WAR II

(*Continued from Page* 17)

important wartime contributions include:

1. Many new and improved standard component parts, with a definite trend toward miniature and sub-miniature components, are now available. These parts were designed for use in electronic equipment installed in aircraft, small ships and landing craft, mobile units, portable equipment and in weapons such as the VT (proximity) fuse. The proper selection and use of such components will result in smaller, more compact and serviceable, lighter weight and more flexible studio and remote equipment. This is especially desirable in portable, transportable and mobile equipment designs. These parts include ceramic capacitors, carbon type resistors, i-f iron core transformers, electron tube sockets, new electron tube types, crystal diode detectors, and quartz crystals mounted in standard size holders.

2. Improved antenna designs and systems, and techniques for the measurement of their performance has resulted from advanced development work, including scale model work, which has been or is being done at California Institute of Technology, Ohio State University, Radio Research Laboratory, Radiation Laboratories, Army Air Force, Signal Corps and Naval laboratories and at several of the larger commercial company electronic laboratories. Antenna designs which are broad band, high gain, horizontally polarized, omnidirectional and directional, used in counter measure applications have already been applied at FM broadcast stations.

3. Miniature and other new electron tube designs are now available, the use of which permits better vhf FM receiver and transmitter designs and production. The new GE Company-Zenith phase modulator tube known as the "phasitron" and other new miniature tube types such as the 6AK5 and 6H6, are examples of such components.

4. New and improved vhf test and measurement equipments and techniques are available that include convenient and accurate means for determining: r-f power and frequency, modulation characteristics, standing wave ratio of transmission lines, wave guides and antenna systems; wave shape characteristics, field intensities, noise intensities, r-f stability, dielectric constants and other required data.

5. Vhf, uhf and micro-wave propagation studies made by government and commercial laboratories have produced considerable data of great value to the industry. The Central Radio Propagation Laboratory, National Bureau of Standards, was recently created to carry on the many and complex broad phases of this and related research and development activities.

6. Standard wave guides, concentric type transmission lines, solid dielectric r-f cables and the necessary fittings for these various types of transmission lines were developed and are now available for broadcast station use where applicable.

7. A better understanding and correlation of design, production and test of electron tubes has been brought about by JAN standards and the formation of JETIC, the Joint Electron Tube Engineering Council.

New Personnel Available

8. Many additional well equipped, well staffed laboratories and shops are now available for the development, design and production of special as well as standard electronic devices and from the armed services have come thousands of young and well-trained installation and service personnel, the proper use of whom should raise the standards of home radio set installations and maintenance service. FM and TV broadcast receiving set service work will require and should absorb a large number of these men. In fact, the availability of such personnel should help speed up the transition from AM to FM.

It should be noted that although wartime electronic developments have contributed to FM broadcasting, from a technical standpoint, the war actually held up the introduction and public acceptance of FM. When all factors are considered, including the choice of frequency spectrum for this important service, this delay will undoubtedly prove to be beneficial from a broad and long-term viewpoint.

The greatest technical advances as a result of World War II are in the uhf and micro-wave field where, from a broadcast standpoint, they will contribute to uhf color television systems and especially to micro-wave radio relay which will probably make a large scale appearance on a regional and national basis during the next ten years.

When the final chapter of electronics is written, it will clearly be seen that radar uhf and micro-wave World War II electronic developments hastened the day of wide acceptance and use of radio relay links, on a regional and national basis, by many years. This work, which was slowly getting under-way prior to the war, has received a terrific impetus and acceleration by wartime Army-Navy requirements and because future FM, high definition color television, and other new services, on a national basis, are dependent upon the availability of such facilities. Many experimental and military systems have already been built, tested and used, an example being the U. S. Army's Signal Corps models AN/TRC5 and 6 systems described at the recent 1946 IRE Winter Meeting and in a recent issue of the Bell Telephone Record.

The American Telephone and Telegraph Company, Western Union, Westinghouse, International Business Machines Corp.-General Electric Company, Philco, RCA and Raytheon, among others, are conducting active experimental systems work and field tests the results of which give promise of eventually taking over, in whole or in part, the work done heretofore by wire lines and cables in transmitting standard broadcast, FM, TV, multiplex telephony and high speed telegraphy (Teletype), facsimile, radio photo, business machine data and other forms of modern communications.

The Westinghouse Electric Co., working in collaboration with the Glenn L. Martin Aircraft Company has advanced the idea of the unique and interesting stratovision system which proposes to employ aircraft relay and broadcast stations at high altitudes.

This system, based on early studies and field tests along the Eastern seaboard, shows considerable technical promise but much work remains to be done to establish its advantages electrically, physically and economically, over other systems or combination of systems. The proposed system envisions aircraft in flight over several widely separated, properly selected points from which national relay or broadcast network systems would be afforded with the required degree of flexibility.

In considering this and similar projects one of the major points which must be kept in mind is the complexity of the circuit and its terminal equipment necessary to provide the degree of flexibility eventually needed. A national radio relay system must be two-way and capable of looping in and out of key metropolitan points in order that each such city or combination of cities, may originate its share of the transmission or program, as may be required. This is a practical requirement involving complex ground facilities, irrespective of whether or not the stratovision relay system is used. This idea is one of considerable interest to all electronic engineers and executives and warrants close scrutiny by all interested activities.

WALTER J. DAMM

(*Continued from Page* 10)

the Commission gave the green light to commercial FM the company applied for and received a grant for a 50-kilowatt FM station. Twelve hours a day, seven days a week of virtually unduplicated programs were broadcast to Wisconsin listeners, who purchased approximately 21,000 sets before receiver production ceased entirely.

When The Journal Company built its present Radio City building, provision was made for both FM and television in addition to standard broadcasting. WTMJ-FM is now operating on its new frequency of 92.3 mc and is also providing service to present set owners by simultaneous operation on the old frequency of 45.5 mc from an auxiliary transmitter at the Radio City site.

A new 550-foot tower has been ordered to replace the present 200-foot tower at the regular Richfield transmitter site. A tentative order has also been placed for an eight-element high gain antenna to be used in the event that the FCC grants the company its pending application for an increase in service area above that now authorized in the Metropolitan grant for WTMJ-FM.

In our estimation the technical advantages of FM are the practical consideration which will make it the sound broadcasting medium of the future. We felt that way at the start; that's why we got into FM and why we are staying with it.

JOHN SHEPARD, 3rd

(*Continued from Page* 10)

England, admittedly the best in America from a cultural viewpoint. That the public was aware that a new and finer radio, FM radio, was aborning can be attested by the flood of congratulatory letters received at Yankee after each of these concerts.

Solid achievement marks Yankee's exploring in the FM field. Here are but a few of the milestones which Yankee has firmly planted along the highway of FM progress:

Was the first to recognize the importance of FM to New England radio listeners in June, 1936, as a result of an investigation by Paul A. deMars, then vice-president in charge of engineering for The Yankee Network.

First regular FM program of 16 hours daily in America on W43B. Paxton, Mass. (now FM station WGTR) July 24, 1939.

First successful transmission of news pictures by FM, Yankee Network, in cooperation with International News Service and Massachusetts Institute of Technology, June 5, 1940.

First exclusively FM linking of stations on full-time network (without wire lines) January 4, 1940.

First commercial permit in New England, W39B, Mt. Washington (now station WMTW).

First seven-days-a-week commercial in New England, Mondays through Saturdays, 6:00 to 6:15 P.M., sponsored by Socony Vacuum Oil Co., Inc., the Mobilgas News Service, May 26, 1941, over W43B and W39B.

First studios in America designed and built especially for FM broadcasting, at 21 Brookline Avenue, Boston. Dedicated in March, 1942.

Originated first FM network broadcasts carried by stations in Boston, Hartford, New York, Alpine, N. J., Philadelphia, Penna., and Schenectady, N. Y., November 30, 1941.

This is an impressive record of Yankee's FM pioneering. It justifies our faith not only in FM, but in ourselves. The American public is entitled to the best in radio. And the best in radio is FM.

This is "Why I am in FM."

WGHF Goes Commercial

NEW YORK'S NEWEST FM station WGHF, went on the air commercially for the first time Saturday, June 22 at 2 p. m. The station has been broadcasting experimentally on its new frequency, 99.7 mc, since Jan., 1946.

The station's basic program format will be at the start, "fine music, symphonies and emphasis on the classics," according to Capt. W. G. H. Finch, owner and operator of WGHF. "Time will be divided, however, between programs for special events, news and programs of interest to the public," he added. Herbert Stone is the station's new program manager.

Congratulating the station on its commencement of commercial broadcasting, Charles R. Denny, Acting Chairman of the FCC, in a wire to Capt. Finch said: "Please accept my best wishes upon the occasion of your inaugurating a commercial Frequency Modulation broadcast service in New York City. The FM service which you and the other FM licensees throughout the United States will provide, represents from a technical standpoint the finest rural broadcasting which is obtainable in the present state of the radio art. I am sure that this new high fidelity and static free broadcast service is destined to have the widest public acceptance. Also the experiments which you and other licensees are about to undertake in the broadcast transmission of facsimile will no doubt play an important part in the development of that new art. I wish you success in both of these undertakings."

What They Say . . .

FM's Wartime Momentum

Frequency modulated radio, given a full-dress rehearsal by the Signal Corps, obtained an impetus during the war which might not have been acquired in many years of normal peace-time development. After considerable research and experimentation we used it effectively for static-free communication between tanks and other mechanized units. I have heard experimental broadcast programs utilizing frequency modulation, and I am convinced by the quality of the reception that this development is going to have a revolutionary effect on the broadcast industry.—MAJ. GEN. FRANK E. STONER, Chief, Army Communications Service, U. S. Signal Corps.

Look Before You Leap

I think that very influential forces in the industry, who are concerned primarily with an equalization of facilities, see in Frequency Modulation a means whereby all broadcasters can be put on a common denominator. American business has not, and I doubt seriously whether it ever will, react to such a desire, no matter how strong it might be on the part of some broadcasters who hope, through Frequency Modulation, to cut all broadcasters down to their level. . . . We do not feel that there is any real conflict between high power for a station like WLW, and the Frequency Modulation possibilities offered, under this new system, to you, gentlemen, as publishers of small town and weekly or semi-weekly papers. . . . A Frequency Modulation station would be of great help to you in expanding and solidifying your field, and your opportunity of service to your community. . . . The fact that Frequency Modulation will permit almost anyone in a small town to build a station does not carry with it the assurance, nor in many cases the likelihood, that the station can support itself. . . . Before spending money for a careful, exhaustive and comprehensive study of your market in its relation to broadcasting . . . spend a modest amount of money in analysis and investigation. It will save you, I am sure in many cases, a lot of uncertainty, confusion and heartache. . . . —JAMES D. SHOUSE, vice president, Crosley Corp., before National Editorial Assn.

Lemon or a Plum?

It could have been argued at one time that the grant of higher power to a few stations would operate to the economic disadvantage of others; indeed it could have been argued that the Commission was fostering a monopoly. But with the advent of FM, the opening up to commercial broadcasting of new segments of the spectrum, inevitably broadening rather than contracting the licensing base of the Commission, that can no longer be argued. As a matter of fact, the commercial value of long-wave broadcasting on high power is bound to be diminished, it seems to me, by the advent of FM. It could be that the Commission, in granting higher power to improve service, would be handing the recipients a lemon rather than a plum.—MARK ETHRIDGE, vice president, *Louisville Times and Courier Journal*, at FCC Clear Channel hearings.

Facsimile Going Places

Facsimile, radio's Cinderella, may shortly surprise the industry and attain an outstanding position in both home and business applications. The new improved facsimile outfits are turning out sharper, cleaner copy at greatly increased speeds. Continued devotion of seasoned engineers like Finch and Hogan is bearing fruit that may make facsimile one of the very valuable uses of the FM channels. Already plans are afoot among representative broadcasters to put out hundreds of "home printing presses" for nationwide experiment with public participation. Besides which, facsimile also has a host of commercial, government and police uses where it is uniquely appropriate.—DR. O. H. CALDWELL in *Electronic Industries.*

Serious Revolt Ahead

If it were not for the background against which it was made, the undisguised effort by James C. Petrillo to coerce the judgment of the Supreme Court could be brushed aside as the ranting of a man made reckless by the prospective loss of some of his dictatorial powers. But the background is there, and it cannot be ignored. . . . In the one instance in which a labor-opposed law has become law, Mr. Petrillo, going further than any of his union contemporaries, presumes to bring pressure to bear upon the Nation's highest court. . . . Whether he realizes it or not, Mr. Petrillo is threatening a revolt against the Government. . . . This is a challenge of gravest import, and if the Government lacks the courage to meet it the Nation will soon find that, in any effective sense, it lacks a Government.—*Washington Star.*

The Court or Petrillo

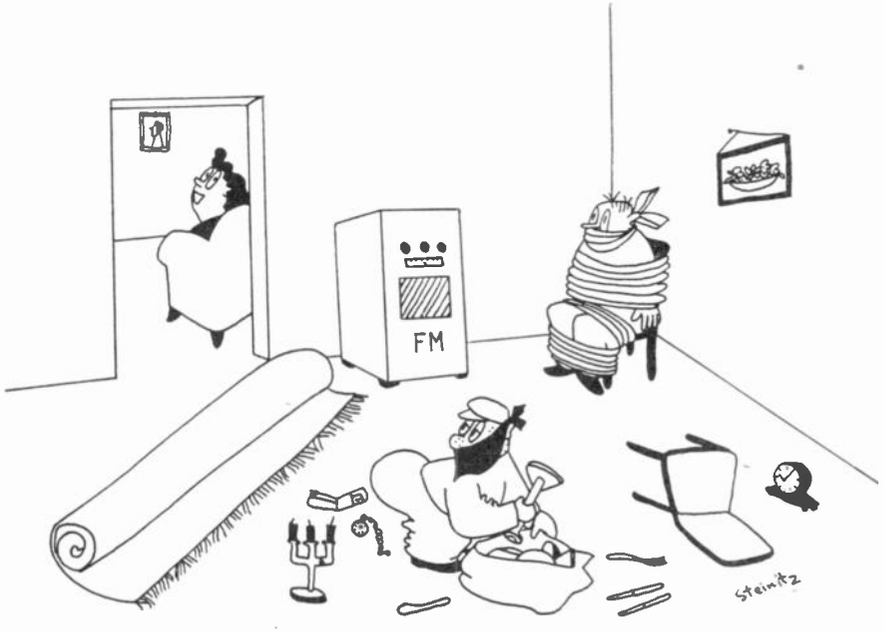
Courts in this country are in the habit of issuing orders to persons who come before them. James Caesar Petrillo, boss of the Musician's Union, has now reversed that custom by issuing an order to a group of our courts . . . ordering these courts to turn thumbs down on this particular law without inquiring into its essential rights or wrongs. That is an order to these judges just to abdicate as judges and become rubber stamps for Petrillo. . . . You would expect any self-respecting Federal judge who could catch Petrillo in said judge's territory to jerk him in and soak him the limit for contempt of court.—*Washington Times-Herald.*

Congress Should Act NOW

It is the Wagner Act as it stands at present, which makes Mr. Petrillo's power possible. Under the Act he is not obliged to deal with anybody, but everyone who employs musicians is compelled to deal with or through him. Because of this, individual musicians are as much victimized as employers. They are compelled to join his union and to obey his dictates if they hope to make a living. Mr. Petrillo, who is so free in his defiance of Federal laws, is himself the creature of one of them. He will tolerate no restrictions on unions or on himself; but he has forgotten, as Congress itself seems to have forgotten, that his present power exists only because of the restrictions that Congress already imposes, and that the executive arm enforces, against employers.—*The New York Times.*

A Joint Responsibility

Surely, it cannot be construed as a challenge to freedom of speech to insist that a person using a public property treat that property as he himself said he would. The real significance of the FCC's action (Blue Book) lies in the Commission's own tacit admission that in the past it had not discharged what was an essential part of its public duty. For that dereliction the FCC must bear with the industry the responsibility for the widespread imbalance in programming of which it now complains. That it should not again default in its responsibility to the broadcaster and listener alike is the FCC's major assignment for the future. . . . —JACK GOULD, *New York Times.*



"Darling, Gang Busters sure sounds realistic on FM!"

Newspapers vs. Facsimile?

Do we junk our old-fashioned newspapers? If so, will all our printers and pressmen get jobs installing, overhauling or selling facsimile sets? Our answer is, "not on your life." In the first place facsimile is only a speedier method of delivering the news. It can't take the place of a newspaper because it needs a newspaper plant to prepare the copy it transmits. It takes the same editorial staff to gather and organize the news, the same photographers to take pictures, linotype operators to set the type, admen to set ads, proofreaders to correct copy, and pressmen to deliver page proofs, before the radio operator can dispatch the facsimile. In the second place, to transmit a complete newspaper, facsimile's only advantage would be lost, that's time. In the present setup it takes 15 minutes to send a four-page 8½ x 12 facsimile. The newspaper could be printed and delivered across town by bicycle before the facsimile could be printed electronically. The great possibility of facsimile will be as a supplement to the newspaper. Instead of competing with the newspaper, it will cause the reader of facsimile to rush to the newspaper for details of the day's news. —P. A. Sugg, manager, WKY, affiliate of *Oklahoma Publishing Co.*

What Are 'Excesses'?

When the Commission sets up as a standard for renewing licenses the "elimination of advertising excesses," no one is in a position to quarrel with that recommendation as stated. What constitutes advertising excesses is, however, a debatable subject. If the Commission means the piling of commercial upon commercial, it may be justified. But if it means carrying a great many sponsored programs, we are inclined to think that advertisers who have to spend good money for radio time probably devise their programs to please the American public to a far greater degree than a local station would in its creation of sustaining programs. And who is to say that pleasing the greatest number of listeners isn't in the public interest?—*Printers' Ink.*

Greatest Advance in 20 Years

Undoubtedly the greatest improvement in the radio field in the past twenty years is the introduction of Frequency Modulation. Westinghouse through their research and development work has played a prominent part in the creation and perfection of this important improvement. We believe FM will give to the public greater appreciation of performance and tone than they have experienced before, and as a result will bring about increased interest in radio programs.—E. W. Gaughan, Westinghouse Electric Supply Co.

Radio's 'Scarcity Angle'

One of the results of the FCC Blue Book which you may not have expected is this: The broadcasters will work harder than ever to develop FM speedily. FM's arrival would take the "scarcity angle" out of radio frequencies—which is the basis on which the FCC often gets into such controversial subjects as *program policy.* Another thing you may expect to hear eventually is much more talk of a government-owned-and-operated network of FM stations.—*Tide Magazine.*

Freedom of Listening

Petrillo may demand next that radio sets be licensed in his union's behalf, so as to squeeze the public, having milked radio and movie companies. Or maybe, if one listens to music, there will be a juke-box contraption on our sets in which we'll have to insert a penny or a nickel each time. . . . Free listening may die before free speech, RCA Sarnoff fears.—Mark O'Dea in *Printers Ink.*

The Remedy Is at Hand

If, therefore, the Supreme Court does invalidate the Petrillo law as unconstitutional, the country will be faced with a continuance of the coercive practices complained of, or else Congress will have to make such things unlawful as applied to all industries or businesses and all unions. Mr. Petrillo is probably taking no chances in disregarding the law and at the same time he will be inadvertently rendering a service exposing the negligence of duty by the Congress of the United States.—David Lawrence, *Washington Star.*

A Technical Editor Speaks Up

The howl of anguish with which the broadcasters greeted the March 7 FCC 139-page report on the "Public Service Responsibility of Broadcast Licensees" indicates that blood has been drawn. If so, it is blood-letting in the interests of the broadcasters themselves and may relieve the pressure sufficiently to avoid more serious repercussions . . . shows that station owners will promise practically anything and everything to get a license or renewal; that having got their piece of paper they promptly say pfui to the commission and to the public by disregarding all their promises. . . . The report shows that the broadcasters' plea that the industry itself should set the rules of good service does not seem to work. The trade organizations have advisory functions only and no power to enforce good practices. Indeed, on reading the report one cannot help but believe that the members of the trade organization made suggestions for improving the service in the front office and then rush to the back room where they think up new devices for thumbing their noses at the public.—Keith Henney, editor, *Electronics.*

Letters

[Reprinted from the *New York Times*]

To the Editor of the
New York Times:

In your issue of Wednesday last you carry a report of a controversy concerning FM broadcasting between Mr. Ray C. Cosgrove, President of the Radio Manufacturers' Association, and Mr. Joseph Mattson, Regional Director of the UAW. [*see Washington*] Mr. Cosgrove is reported to have branded as stupid the charges by the United Automobile Workers that the radio manufacturers are deliberately holding up FM combination set production.

Mr. Mattson is reported to have asserted that the Radio Corporation of America controls 60 per cent of all FM patents and that "its production and sales practices and policies have an important bearing on the number of FM sets which will be available to the American public."

Mr. Mattson's first statement, that RCA controls 60 per cent of all FM patents, is not correct. The invention which eliminated static in radio signaling, popularly known as FM, was made by me, and no one in the eleven years since it was first publicly announced has ever claimed to have made it.

Several well organized but unsuccessful efforts have been made in the past to block FM. Hence the introduction of FM broadcasting has been delayed.

The statement which implies that all set manufacturers are engaged in the process of delaying FM is too broad. A substantial number of them are doing their utmost to get FM going again and are slowly succeeding despite all sorts of difficulties caused by the recent shift in the FM frequency band. Their very existence, in fact, depends on its success.

New York, N. Y. Edwin H. Armstrong

Praise for Poppele

Sirs:

If I were to enter the FM broadcasting field, I would certainly hire Jack Poppele to conduct my entire negotiations from beginning to end.

His article, "Primer For Prospective FMers" in the May issue of your publication definitely establishes Mr. Poppele as an authority. Written in a language any person can understand, Mr. Poppele's article will no doubt create a new rush of FM applications from all parts of the United States. More power to FM.

New York, N. Y. Ralph Nardella
Commercial Manager, WOV

VOL. 1, NO. 1

Invariably people say "Start my subscription with Vol. 1, No. 1—if possible." No wonder that a complete file of FREQUENCY MODULATION BUSINESS is at a premium. Listed below are some of the features published in our first five issues that frequently are called for:

Broadcasters have requested PLANNING AND BUILDING AN FM STATION; TRANSMITTER—ANTENNA COSTS; A NATIONWIDE NETWORK FOR FM; FM—ITS RELATION TO STANDARD BROADCASTING.

Agencies and Advertisers have requested APPRAISING FM'S ADVERTISING POTENTIAL; PROGRAMMING FOR FM; $600,000,000 MARKET; MARKETING YOUR FM RECEIVER; FM NEEDS PUBLIC RELATIONS.

Publishers have requested BIGGEST RADIO PROJECT YET; PRIMER FOR PROSPECTIVE FM'ERS; WQXQ; A STATION PROFILE; ON BEING A RADIO CRITIC.

Manufacturers have requested WESTINGHOUSE STRATOVISION PLANS; BROADCASTER - MANUFACTURER - DEALER; APPLICANTS FOR NEW FM BROADCAST STATIONS.

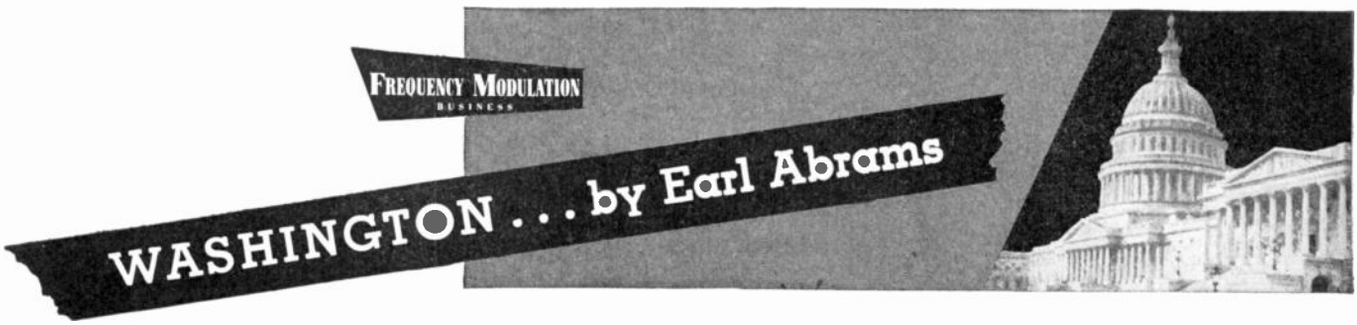
Community Groups have requested FM'S COMMUNITY OBLIGATIONS AND OPPORTUNITIES; THE COMMUNITY FM STATION.

Radio-Minded Men and Women have requested FACSIMILE: WHAT IT CAN DO NOW; TEMPLE U. SCHOOL OF RADIO; FAX IS DEMONSTRATED TO FCC; TEXT OF PETRILLO BILL; LOG OF PIONEER FM STATIONS; THINGS TO COME, BY EDWIN H. ARMSTRONG.

If you are not already a subscriber, make sure that you get your copy of the August and following issues of FREQUENCY MODULATION BUSINESS. Just fill in and mail the handy ordering form inserted in this issue—no postage is required.

FREQUENCY MODULATION
BUSINESS

103 PARK AVE., NEW YORK 17



Sixty Stations Now on Air

THE FCC's recent log of FM stations actually on the air with programs enumerates 46 prewar licensees (see February issue) and 10 postwar CP-holders operating under special temporary authorization with reduced power pending construction to full power. Thirty-three cities are receiving commercial FM programs; three more are getting service from four developmental stations. The few prewar stations not on the air are in the process of changing over from the low to the high band. The survey lists 30 stations transmitting on the high band only, 22 on both bands, four still on low band only; the 10 new ones, of course, are all on the high band.

Following are the new stations: KRCC (Contra Costa Broadcasting Co.), Richmond, Cal.; WRCM (Supreme Broadcasting System, Inc.) and WTPS (Times Picayune Publishing Co.), New Orleans, La.; KSTP-FM (KSTP, Inc.), St. Paul, Minn.; WIL-FM (Missouri Broadcasting Corp.), St. Louis, Mo.; KOAD (World Publishing Co.), Omaha, Neb.; WCOY (Capitol Broadcasting Co.), Raleigh, N. C.; KGW-FM (Oregonian Publishing Co.), Portland, Ore.; WHP-FM (WHP, Inc.), Harrisburg, Pa.; KAMT (Agricultural and Mechanical College of Texas), College Station, Tex.

Shouse on FM

FCC COMMISSIONER Jett: *Do you like high fidelity?*

James D. Shouse (vice president in charge of broadcasting, Crosley Corp.): *No, I do not. To give you a concrete example: In the time I have been in broadcasting I have had an eternal fight with our engineering department, whether on WSAI or WLW. Our sales department is always at loggerheads with the engineering department on the type of speakers to be used for auditions. Now, the engineering department will put in a high fidelity speaker and the sales department will make many complaints about it. So, we will get it changed, and we will get a speaker that will present a program in the tonal range that is pleasant for people. We will get it that way for a month, and then, the next thing you know, the engineer is in there and he has got a high fidelity speaker back in there. Now, that has been going on for 18 years.*

Jett: *I don't believe that you have heard high fidelity; you say you don't like it. I am just wondering if you ever heard it.*

Shouse: *I have listened to a great many experiments of one kind or another.*

Jett: *What kind of fidelity have you listened to?*

Shouse: *I couldn't properly describe that, technically, Mr. Commissioner.*

Jett: *Well, there are some sets on the market just coming out which, in my opinion—and I have listened to them within the last few weeks—are very good high-fidelity sets, as compared with any degree of fidelity I have ever heard in an AM receiver before. I was wondering whether you have listened to any of the new sets that are just coming out.*

Shouse: *No, I have not.*

Jett: *Also, have you ever listened to FM in an automobile, driving around a city, to compare it with AM; AM versus FM?*

Shouse: *No.*

Jett: *From the standpoint of automobile reception?*

Shouse: *No.*

Jett: *You have not?*

Shouse: *No, sir.*

Jett: *Well, you are in for a big surprise, then. You will find FM has got much to offer over AM. That is all.*

FCC Acting Chairman Denny: *Did you ever listen to a small FM station at night, a station comparable to a 250-watt local station? I have in mind a comparison such as this, for example: listening to WINX, which is a local Washington 250-watt station on the AM band, and then listening to the FM band on that same station. They operate simultaneously at night, when the interference is crowding in on the local channel.*

Shouse: *No, sir, I have not done that.*

Denny: *You have not exposed yourself, I think, Mr. Shouse, to the advantages of frequency modulation.*

Shouse: *I admit I am prejudiced.*

Denny: *Perhaps if you did not have a clear channel on 50 kilowatts, you might feel differently.*

Shouse: *Yes, I might feel differently.*

Denny: *And, perhaps, if this proceeding resulted in a consent to the transfer, you may be interested [in applying for FM], in New York City.*

Shouse: *I may be so interested.*

The above is an excerpt from the recent FCC hearing involving Crosley's application to purchase Hearst's AM station WINS in New York City. The exchange on FM grew out of an attempt by the Commission to get Shouse to reconcile his lack of enthusiasm for FM with his persistence in seeking FM outlets in Cincinnati and Columbus and his intention to apply for FM in New York if the WINS purchase was approved. A week earlier, at the Colorado convention of the National Editorial Association, Shouse had deprecated FM, telling publishers that it was just another way of doing what AM is already doing. (See Page 39.)

Separate AM-FM Ownership

SHOULD THERE be a cut-off date, when AM and FM licensees must drop one or the other of their two licenses? Or should the transition to FM be permitted to evolve of its own accord, even though it takes a decade or more? That's the question agitating the Washington end of the broadcast fraternity these days. The question was posed recently by FCC Commissioner Clifford J. Durr, one of FM's most assiduous mentors.

In order to foster FM's growth, the Alabama Commissioner has for the past year contended that a date should be set by the FCC after which one licensee could not own and operate both an AM station and an FM station in the same city. This would fall within the Commission's power under the duopoly regulations.

The question was first raised at the preliminary hearings on FM Rules last year and was dropped only after very few adherents testified in its behalf. The great majority of broadcasters pressed their opposition to this proposal on the

ground that "FM is only a better means of transmitting a broadcast signal" and therefore in order to win listeners must carry the popular AM programs. To do this, they claimed, one broadcaster must be permitted to own both an AM and an FM station.

Another aspect of Durr's desire to give FM a healthy push may be seen in his dissents during recent months to FCC approval of changes of facilities of AM operators. It is his feeling, he has stated, that in many cases a hearing on such a request would show that improvement of broadcast service would result just as well, if not more so, if the applicant were to go into FM. Durr looks at FCC approvals which permit the betterment of AM service as a drawback to the acceptance of FM. Not only that, but he fears that the money spent in improving AM service means that much less for the building of FM stations by AM operators.

Although at the present time, Durr is fighting a lone battle, he feels his ideas are bearing fruit in the industry comment that have attended them.

Laurel Tests Convincing

"STRIKING" is the word for the FM demonstration before members of the press during the FCC's recent press tour of its important monitoring station at Laurel, Md. Conditions were ideal: a thunderstorm was in progress. Static had Tom Tinsley's Baltimore AM station WITH, 20 miles away, barking like an asthmatic moose despite a field intensity at Laurel of 520 uv/m. But Tinsley's developmental FM station, W3XMB, with only 98 uv/m, came in bright, clear, powerful.

Shown, too, was the equipment which produced many of the measurements bitterly argued during the controversy on high vs. low band FM (FM BUSINESS, April, 1946). Being recorded currently are signals from Baltimore, 20 miles; Philadelphia, 90 miles; New York, 200 miles; and Paxton, Mass., 350 miles. Getting careful study is the little understood phenomenon of "burst"—sudden, brief yet fairly strong signals from as far away as 1,200 miles. The theory is that they are caused by meteors and occur when high powers are involved. "Bursts" are being received at Laurel from Yankee Network's WGTR at Paxton which radiates some 200 kw effective power.

Collaborating with Westinghouse in their Stratovision experiments, Laurel engineers report excellent FM signals from planes flying over New York City some 200 miles distant, although power radiated from the plane's transmitters is only 250 watts.

Chicago Holds the Answer

THERE'S A WEIGHT pressing down on FM and its name is James Caesar Petrillo. If that weight could be lifted, FM should quicken toward fulfillment—provided some of the other drawbacks now tethering FM are also removed—like the good earth after a summer downpour. The answer to whether that weight is going to be withdrawn lies in Chicago.

In the windy city on July 15, Joe Padway, attorney for James Petrillo, is to file motions on the Government's charge that the musicians' leader has broken the law. Criminal information action was filed June 13 by U. S. District Attorney J. Albert Woll against Petrillo for violation of the Lea Act, which provides a $1000 fine and a year in jail penalty for featherbedding and other make-work practices when applied to a radio station. The specific step was Jimmy's demand that WAAF, a daytime-only station owned by the Drovers Journal, hire more musicians, although the station's operators insisted they didn't need them.

Padway has until August 5 to file briefs defending Petrillo against the charges. The Government has until September 9 to reply.

Every indication is that the case will be carried to the Supreme Court. The results will be precedent-making for labor generally. Both Petrillo and Padway, at the AFM convention in St. Petersburg early last month, insisted that the act was unconstitutional and that they would fight it to the highest court. The music master himself, in fact, asserted before his delegates that if the Supreme Court did not find the law unconstitutional, there would be no more network music; every local station would have to hire its own orchestra.

At the convention too, Petrillo excoriated the NAB and the radio industry as responsible for the anti-Petrillo legislation. But NAB did not deign to take notice of his harsh words, insisted that no matter what names it was called, the radio industry still had to deal with Petrillo and his musicians. Thus far, another meeting between Justin Miller's NAB committee and Petrillo's AFM executive board remains on the agenda—of NAB, at least.

Because Woll, the Chicago D.A., is the son of AFL Vice President Matthew Woll, Rep. Clarence F. Lea (Dem., Cal.), author of the Act, asked Attorney General Tom Clark to designate another attorney to try the WAAF case. This was late in June.

Much has been made of the importance to FM of AM duplication on high frequency outlets. Since Boss Caesar's duplication ban falls under the Lea Act provisions respecting the hiring of more

FM RECEPTION TESTS highlight FCC's press showing of its Laurel (Md.) monitoring station. At left, Commissioners Denny and Jett are onlookers, while Denny's assistant, Walter E. James, is at far left. Center W. K. Robert, FCC Laboratory Division, studies FM field intensity recordings. Right, Laurel Laboratory Chief Charles A. Ellert explains to Martha Kearney of INS how FM differs from AM reception. *Photos by Man April*

employees than needed, exactly the test in Chicago, the outcome there is of prime importance to FM's future.

Manufacturers Conspiracy?

IT'S PRETTY WELL AGREED that there have got to be stations on the air before many persons are going to buy FM sets. Therefore, the flurry of accusations made by labor and consumer organizations and by radio-active Senator Glen H. Taylor (Dem., Idaho) last month that radio manufacturers are conspiring to retard FM by holding back on FM sets may be considered a little premature. Where there are FM stations operating, FM sets have appeared—not in too great a quantity as yet, perhaps, but enough so that a real promotion campaign to sell FM can be made by local station operators.

This has been proven in Washington, for example, where Zenith, Philco, Stromberg-Carlson, Stewart-Warner, Scott and others have shipped sets containing FM to distributors and dealers in the nation's capital. Local FM operators—Everett Dillard (W3XL) and the Washington Post (W3XO)—have instituted dealer promotion so that those who sell radio receivers know they can demonstrate the FM bands. That's a selling point not to be overlooked.

Still it is clear that sets with FM are going to be more expensive than the ordinary run of sets without FM. Or, to put it another way, the vast number of receivers are going to have the AM band only. This was made perfectly clear at the resumption of the Chicago FM hearing in Washington late last month. There Joseph B. Elliott, v.p. in charge of the Home Instrument Dept., RCA-Victor, stated that 60% of the RCA line, excluding portables, battery-operated, and automobile sets, would be AM-FM receivers. Prices he said, for sets that contained FM, would start at $69.95 and go all the way up to $400. All RCA consoles would have FM, he explained, with the exception of one purely phonograph model. Some table models, not more than two or three, he thought, might also contain an FM band. No set selling for less than $69.95 would contain FM, he declared, because the company did not consider it "commercially feasible." RCA sets with FM would begin hitting the market in September, he announced.

Elliott was present at the request of UAW-CIO, one of the Chicago applicants, which also had charged that manufacturers were attempting to retard FM by not producing sets. Yet it was obvious from Elliott's testimony that RCA could not fairly be accused of establishing marketing policies directed to the detriment of FM. RCA, naturally, has followed the policies of most every other set maker in its desire to get receivers on the market by immediately turning out small AM models.

Nevertheless, it was also evident from Elliott's testimony that, using RCA's price standards as a basis, there are not going to be many, if any, FM receivers in the mass $35 price market. And it is the $35 set that is sold in the greatest quantities. Zenith, however, already has brought out its $56 table model, and it is possible that other makers may bring out FM sets selling for less.

Although Attorney General Tom Clark quickly acknowledged Senator Taylor's letter, asking for an antitrust investigation of the radio manufacturing industry, close observers feel that nothing much will come of the request. They do feel, however, that if enough publicity about FM is disseminated

NEW FM CONSTRUCTION GRANTS
During June

ANNISTON, ALA.—Harry M. Ayers (WHMA). Class B. Channel 103.9 mc (No. 280). Power, 24 kw. Antenna, 654 ft.

BIRMINGHAM, ALA.—Johnston Broadcasting Co. (WJLD, Bessemer). Class B. Channel, 93.5 mc (No. 228). Power, 40 kw. Antenna, 750 ft.

ONTARIO, CAL.—The Daily Report. Class A. Channel, 104.3 mc (No. 282). Power, 250 watts. Antenna, -194 ft.

RICHMOND, CAL.—Contra Costa Broadcasting Co. Class A. Channel, 104.7 mc (No. 284). Power, 140 watts. Antenna, 346 ft.

SAN BERNARDINO, CAL.—Lee Brothers Broadcasting Co. (KFXM). Class B. Channel, 103.3 mc (No. 277). Power, 470 watts. Antenna, 2,260 ft.

SANTA MARIA, CAL.—Santa Maria Daily Times. Class A. Channel, 104.3 mc (No. 282). Power, 250 watts. Antenna, -289 ft.

NEW HAVEN, CONN.—Elm City Broadcasting Corp. (WHNC). Class B. Channel, 102.9 mc (No. 275). Power, 20 kw. Antenna, 490 ft.

NEW LONDON, CONN.—Thames Broadcasting Corp. (WNLC). Class B. Channel, 97.9 mc (No. 250). Power, 20 kw. Antenna, 500 ft.

JACKSONVILLE, FLA.—Jacksonville Broadcasting Corp. (WPDQ). Class B. Channel, 97.5 mc (No. 248). Power, 40 kw. Antenna, 317 ft.

MIAMI BEACH, FLA.—A. Frank Katzentine (WKAT). Class B. Channel, 96.7 mc (No. 244). Power, 306 kw. Antenna, 730 ft.

ST. PETERSBURG, FLA.—Pinellas Broadcasting Co. (WTSP). Class B. Channel, 92.1 mc (No. 221). Power, 30 kw. Antenna, 437 ft.

AUGUSTA, GA. — Augusta Broadcasting Co. (WRDW). Class B. Channel, 94.5 mc (No. 233). Power, 30 kw. Antenna, 664 ft.

COLUMBUS, GA.—Columbus Broadcasting Co. (WRBL). Class B. Channel, 96.7 mc (No. 244). Power, 12 kw. Antenna, 510 ft.

ROME, GA.—Rome Broadcasting Corp. (WRGA). Class B Channel, 100.9 mc (No. 265). Power, 1.4 kw. Antenna, 910 ft.

CARBONDALE, ILL.—Southern Illinois Broadcasting Partnership. Class B. Channel, 100.5 mc (No. 263). Power, 3.4 kw. Antenna, 345 ft.

CHAMPAIGN, ILL.—Champaign News Gazette Inc. (WDWS). Class A. Channel, 104.3 mc (No. 282). Power, 250 watts. Antenna, 415 ft.

EVANSTON, ILL.—North Shore Broadcasting Co. Class A. Channel, 104.3 mc (No. 282). Power, 250 watts. Antenna, 225 ft.

QUINCY, ILL.—Lee Broadcasting Inc. (WTAD). Class B. Channel, 98.1 mc (No. 251). Power, 33 kw. Antenna, 639 ft.

QUINCY, ILL.—Quincy Newspapers Inc. (WSOY, Decatur). Class B. Channel, 97.7 mc (No. 249). Power, 32 kw. Antenna, 743 ft.

SPRINGFIELD, ILL.—WCBS Inc. (WCBS). Class B. Channel, 101.7 mc (No. 269). Power, 19 kw. Antenna, 417 ft.

ELKHART, IND.—Truth Publishing Co. Inc. (WTRC). Class B. Channel, 103.1 mc (No. 276). Power, 21.6 kw. Antenna, 422 ft.

WICHITA, KAN.—The Radio Station KFH Co. (KFH). Class B. Channel, 96.5 mc (No. 243). Power, 185 kw. Antenna, 411 ft.

LOUISVILLE, KY.—Northside Broadcasting Corp. (WGRC). Class B. Channel, 100.3 mc (No. 262). Power, 29.8 kw. Antenna, 355 ft.

FREDERICK, MD.—The Monocacy Broadcasting Co. (WFMD). Class B. Channel, 98.1 mc (No. 251). Power, 2 kw. Antenna, 1,150 ft.

HAGERSTOWN, MD.—Hagerstown Broadcasting Co. (WJEJ). Class B. Channel, 95.7 mc (No. 239). Power, 1 kw. Antenna, 1,400 ft.

FITCHBURG, MASS.—Mitchell G. Meyers, Ruben E. Aronheim and Milton H. Meyers (holds CP for AM in Waterbury, Conn.). Class B. Channel, 99.9 mc (No. 260). Power, 20 kw. Antenna, 490 ft.

HOLYOKE, MASS.—The Hampden-Hampshire Corp. (WHYN). Class B. Channel, 95.5 mc (No. 238). Power, 3.5 kw. Antenna, 940 ft.

SALEM, MASS.—North Shore Broadcasting Co. (WESX). Class A. Channel, 105.5 mc (No. 288). Power, 250 watts. Antenna, 209 ft.

MINNEAPOLIS, MINN. — Independent Merchants Broadcasting Co. (WLOL). Class B. Channel, 101.3 mc (No. 267). Power, 34 kw. Antenna, 510 ft.

JOPLIN, MO.—Joplin Broadcasting Co. (WMBH). Class B. Channel, 102.3 mc (No. 272). Power, 2.6 kw. Antenna, 336 ft.

ST. LOUIS, MO.—The Pulitzer Publishing Co. (KSD). Class B. Channel, 93.3 mc (No. 227). Power, 36 kw. Antenna, 520 ft.

LAS VEGAS, NEV.—Nevada Broadcasting Co. (KENO). Class A. Channel, 104.3 mc (No. 282). Power, 250 watts. Antenna, -125 ft.

BUFFALO, N. Y.—Roy L. Albertson (WBNY). Class B. Channel, 92.9 mc (No. 225). Power, 48 kw. Antenna, 590 ft.

JAMESTOWN, N. Y.—James Broadcasting Co. Inc. (WJTN). Class B. Channel, 101.5 mc (No. 268). Power, 9.5 kw. Antenna, 750 ft.

SYRACUSE, N. Y.—Central N. Y. Broadcasting Corp. (WSYR). Class B. Channel, 93.5 mc (No. 228). Power, 7 kw. Antenna, 750 ft.

SYRACUSE, N. Y.—Onondaga Radio Broadcasting Corp. (WFBL). Class B. Channel, 92.7 mc (No. 224). Power, 1.5 kw. Antenna, 740 ft.

WATERTOWN, N. Y. — The Brockway Co. (WWNY). Class B. Channel, 100.9 mc (No. 265). Power, 6.7 kw. Antenna, 530 ft.

ASHLAND, O.—Beer & Koehl. Class B. Channel, 100.7 mc (No. 264). Power, 8.6 kw. Antenna, 380 ft.

ATHENS, O.—The Messenger Publishing Co. Class B. Channel, 102.9 mc (No. 275). Power, 16.5 kw. Antenna, 550 ft.

CINCINNATI, O.—Cincinnati Times-Star Co. (WKRC). Class B. Channel, 96.9 mc (No. 245). Power, 22 kw. Antenna, 480 ft.

COLUMBUS, O.—The Pixleys (WCOL). Class B. Channel, 92.1 mc (No. 221). Power, 31 kw. Antenna, 370 ft.

OKLAHOMA CITY, OKLA.—WKY Radiophone Co. (WKY). Class B. Channel, 98.9 mc (No. 255). Power, 132 kw. Antenna, 928 ft.

PORTLAND, ORE.—Pacific Radio Advertising Service (KWJJ). Class B. Channel, 95.7 mc (No. 239). Power, 3.2 kw. Antenna, 911 ft.

ALTOONA, PA.—The Gable Broadcasting Co. (WFBG). Class B. Channel, 100.7 mc (No. 264). Power, 3.9 kw. Antenna, 900 ft.

EASTON, PA.—Easton Publishing Co. Class A. Channel, 105.7 mc (No. 289). Power, 250 watts. Antenna, 120 ft.

HARRISBURG, PA.—The Patriot Co. Class B. Channel, 96.9 mc (No. 245). Power, 5.5 kw. Antenna, 790 ft.

SUNBURY, PA.—Sunbury Broadcasting Corp. (WKOK). Class B. Channel, 99.3 mc (No. 257). Power, 3.4 kw. Antenna, 871 ft.

YORK, PA.—Susquehanna Broadcasting Co. (WSBA). Class B. Channel, 94.9 mc (No. 235). Power, 20 kw. Antenna, 500 ft.

SPARTANBURG, S. C—Spartanburg Advertising Co. (WSPA). Class B Channel, 92.1 mc (No. 221). Power, 24 kw. Antenna, 2,125 ft.

CHATTANOOGA, TENN. — WDOD Broadcasting Corp. (WDOD). Class B. Channel, 95.3 mc (No. 237). Power, 37 kw. Antenna, 1,321 ft.

JOHNSON CITY, TENN.—WJHL Inc. (WJHL). Class B. Channel, 101.7 mc (No. 269). Power, 9.7 kw. Antenna, 720 ft.

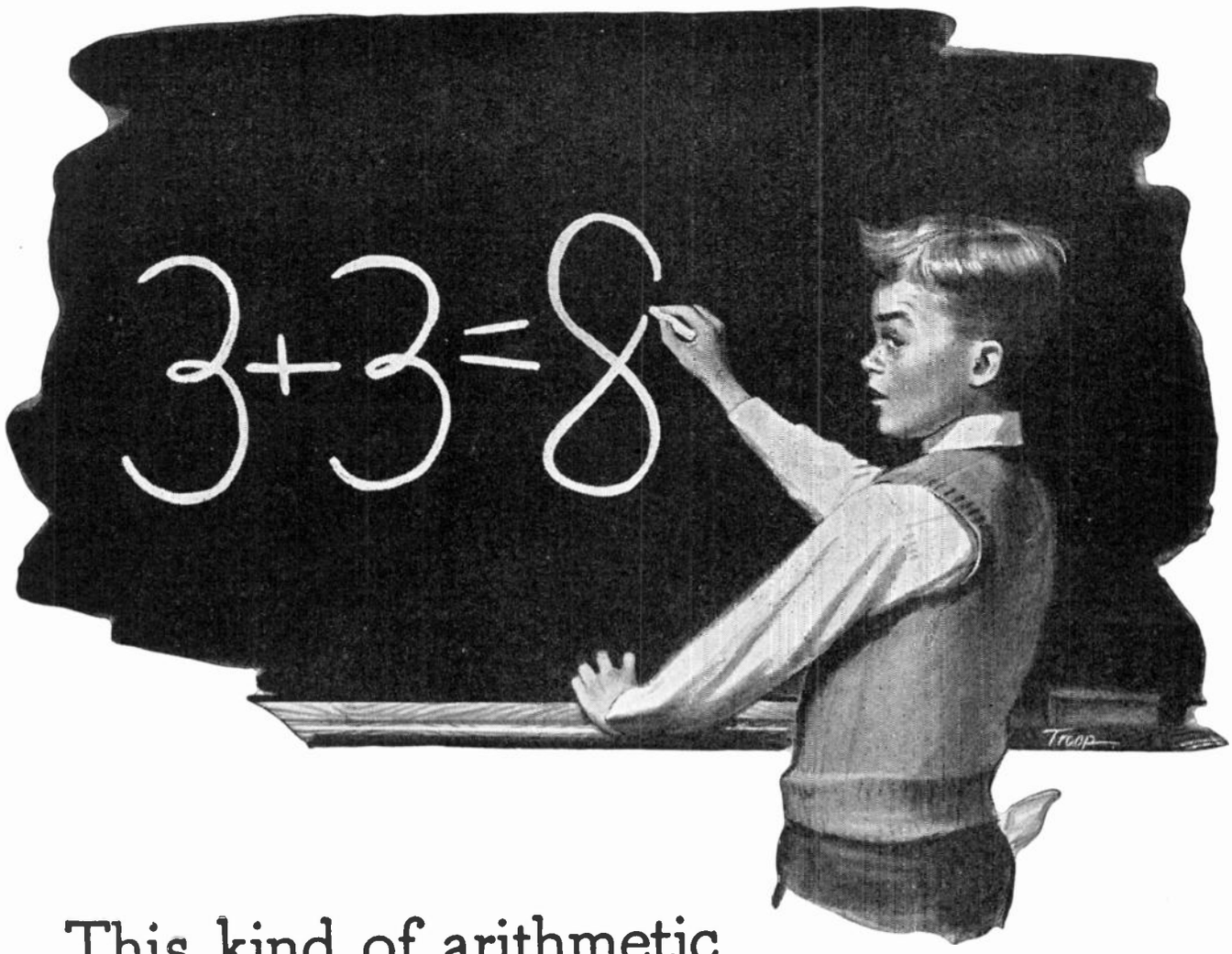
WICHITA FALLS, TEX.—Times Publishing Co. Class B. Channel, 97.7 mc (No. 249). Power, 20 kw. Antenna, 500 ft.

SALT LAKE CITY, UTAH —Intermountain Broadcasting Corp. (KDYL). Class B. Channel, 98.5 mc (No. 253). Power, 3.2 kw. Antenna, -14 ft.

LYNCHBURG, VA.—Lynchburg Broadcasting Corp. (WLVA). Class B. Channel, 101.5 mc (No. 268). Power, 3.7 kw. Antenna, 2,080 ft.

WINCHESTER, VA.—Richard Field Lewis, Jr. (WINC). Class B. Channel, 92.5 mc (No. 223). Power, 15 kw. Antenna, 1,365 ft.

BECKLEY, W. VA.—Beckley Newspapers Corp. Class B. Channel, 101.1 mc (No. 266). Power, 3 kw. Antenna, 430 ft.



This kind of arithmetic may put Johnny through college

Here's how it works out:

$3 put into U. S. Savings Bonds today will bring back $4 in 10 years.

Another $3 will bring back another $4.

So it's quite right to figure that 3 plus 3 equals 8 . . . or 30 plus 30 equals 80 . . . or 300 plus 300 equals 800!

It will . . . in U. S. Savings Bonds. And those bonds may very well be the means of helping you educate your children as you'd like to have them educated.

So keep on buying Savings Bonds—available at banks and post offices. Or the way that millions have found easiest and surest—through Payroll Savings. Hold on to all you've bought.

You'll be mighty glad you did . . . 10 years from now!

SAVE THE EASY WAY... BUY YOUR BONDS THROUGH PAYROLL SAVINGS

Contributed by this magazine in cooperation with the Magazine Publishers of America as a public service

through such actions, there should be some gain for FM.

Radio manufacturers since the beginning of the year have publicized the fact that the lag in getting FM sets to the consumer was not of their own volition but was compounded of shortages, OPA pricing policies and labor problems. Wood, so essential for cabinets, for example, was still so short last month, that several large set makers —Philco and Crosley among others— actually purchased timber lands and cabinet plants to insure their own supplies.

Cleanup on FM Hearings

WITH THE FM hearings scheduled for Peoria July 5 and for New York July 8, the first round will be cleaned up. Every indication is that there will be no FM hearings set for August, since the FCC wants its staff to have some time for summer vacations and it knows that hardworking attorneys and consulting engineers are looking for a breathing spell, too.

Although the first FM hearing was held in Washington beginning March 11, not one final decision has been handed down yet. The Washington grants, originally made without adhering strictly to legal procedures, last month were voided and in their stead a proposed decision was issued. The proposed decision reaffirms the grants to the same eight applicants (see Washington, April) and asks for more information on the other three.

Further complicating the Washington FM picture was the filing last month of a CBS application for the capital, and the proposed reservation plan (see story below.)

Designated for hearings, but with no dates yet set, are the applicants for Bridgeport, including Danbury and Stamford; Greensboro, N. C.; St. Louis, Atlanta, Mansfield, O.; Toledo, O. and Philadelphia.

Channels on Ice

ALTHOUGH IT IS KNOWN that most of the Commissioners are not sold completely on the idea of "putting on ice" some 93 FM channels, proposed by the FCC early last month, the hearing on the question July 12 promises to supply enough pros and cons to make prognostication risky.

As it looks at month's end, support for the proposal will come from liberal and labor groups, farm organizations and veterans' representatives. Also small business adherents, of which there are a number in Congress, are expected to lend their weight in favor of the suggested plan. Opposition, and it will be all-out opposition, can be expected from the broadcast industry, including the old FMBI, now the FM Department of NAB.

The plan, put out in the form of a proposed amendment to the FM Rules, proposes to hold out for a year one out of every five FM channels in cities where five or more channels had been allocated (see February issue). It has been determined that this would amount to 93 channels, mainly from the larger cities of the eastern seaboard. Purpose of the reservation plan, according to the FCC, is to permit smaller communities adjacent to larger metropolitan cities to have a chance at getting their own FM stations. The proposed action is being taken under the provisions of Sec. 307 (b) of the Communications Act, which deals with "equitable distribution of broadcast facilities" throughout the country. But back of the Commission's action is the long advocacy by Commissioner Durr to reserve some FM channels for veterans and small businessmen, not yet ready to get into broadcasting.

It was not until the last week in June that the industry made its position clear, although before then questions as to the legality of the FCC's move had been raised informally. The Commission has insisted that it has the legal right to withhold a facility, even though there are qualified applicants for it.

Meeting in New York for two days, the NAB-FM Executive Committee, under the chairmanship of Walter Damm of Milwaukee (WTMJ-FM) thrashed out its position and decided upon its course of action. On June 27 it issued a resolution opposing the withholding of any FM channels from those already allocated. It also urged that the FCC "indicate at this time a specified portion of the spectrum for future allocation to FM broadcasting for the further development of this service."

The resolution, which was addressed to the NAB Board of Directors asking that the association's counsel appear at the hearing, added: "The Committee disagrees with the Commission that the objectives of Sec. 307 (b) can best be served by a reservation of presently allocated channels and is of the opinion that these objectives can be better served by the allocation of additional channels for FM use and the committee is strongly of the opinion that reservation of channels at this time will obstruct the speedy development of FM broadcasting and therefore recommends that the Commission at this time designate such additional channels either as a result of a Commission hearing or by its own action."

Questioned as to where the additional channels for FM are to come, if the Commission follows the Committee's suggestions, Wayne Coy, a member of the Committee and general manager of the Washington Post's WINX and W3XO, recommended that TV Channel Nos. 5 and 6 (76-88 mc) be added to the FM band. In this he was seconded by C. M. Jansky, Jr., Washington consulting engineer and active in FM engineering circles, who added, "This [the Commission's proposal] shows that the FCC erred in not making available sufficient FM channels for all comers."

Rules Changes Made Final

THERE WASN'T even a murmur of dissent to the FCC's proposed changes to the FM Rules, changing nomenclature and specifying power-antenna height ratios for Areas I and II. So they went into effect with no changes from the digest we published in these columns last month.

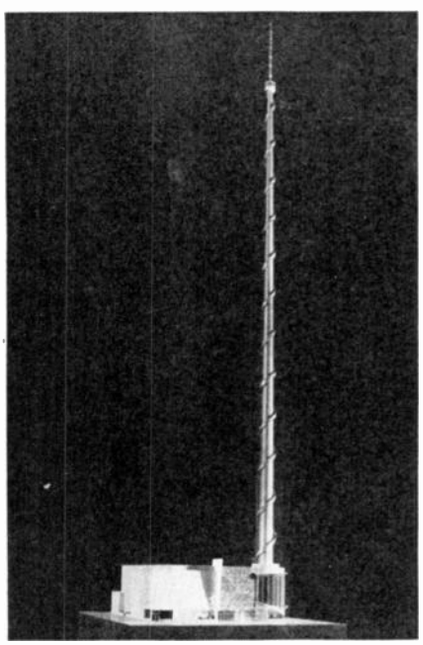
FM for Mentally Sick

THE EXPERIMENTAL use of music in the treatment of mental cases has received added impetus in Philadelphia with the installation of lines feeding all of WFIL-FM's musical programs to the Institute of the Pennsylvania Hospital, one of the nation's leading institutions caring for the mentally ill.

WFIL-FM has completed installations and hospital patients already are receiving good music as a part of their daily treatment.

Although so-called "musical therapy" is still in experimental stages, the hospital plans to use the facilities placed at its disposal in several ways: Music can be used as an adjunct therapy, that is, to aid in giving patients an interest in something tangible. It is indirectly helpful as a means of occupying the patients' time, to keep them from brooding self study, and through musical and vocal training, patients can be taught to develop hobbies that may help to lead them from the dark reaches of insanity.

Program booklets are prepared by WFIL-FM a month in advance listing every musical broadcast by orchestra or artist, composer and works. In this manner the hospital's music staff will be able to plan listening for the patients. Hospital authorities have not yet attempted musical therapy to the extent of prescribing certain types of music for certain types of cases. However, music will be planned according to moods and personalities.



BALABAN & KATZ Corporation's proposed 600-foot Chicago FM-Television tower will be constructed to support an interior elevator and coaxial feed lines, while around the exterior a spiral staircase can be seen.

Consulting RADIO ENGINEERS

H. V. ANDERSON & ASSOCIATES
715 American Bank Bldg., New Orleans, La.
Telephone: Raymond 0111

ANDREW CO.
363 E. 75th St. Chicago 19, Ill.
Telephone: Triangle 4400

JOHN BARRON
Earle Bldg. Washington 4, D. C.
Telephone: National 7757

WILLIAM E. BENNS, JR.
830 Gregg St. Columbia, S. C.
Telephone: 7342

CHAMBERS & GARRISON
1519 Connecticut Ave. Washington 6, D. C.
Telephone: Columbia 8544
Joseph A. Chambers Millard M. Garrison

COLTON & FOSS
927-15th St. N.W. Washington, D. C.
Telephone: Republic 3883
Roger B. Colton William L. Foss

COMMERCIAL RADIO EQUIPMENT CO.
1319 F St., NW. Washington 4, D. C.
Telephone: District 1319
Porter Bldg. Kansas City 2, Mo.
Telephone: Logan 8821
1584 Cross-Roads-of-the-World
Hollywood 28, Calif.
Telephone: Hillside 9008
Everett L. Dillard (Washington) Robert F. Wolfskill (Kansas City)

JOHN CREUTZ
328 Bond Bldg. Washington 5, D. C.
Telephone: Republic 2151-2

GOMER L. DAVIES
P.O. Box 71 College Park, Md.
Telephone: Warfield 9089

GEORGE C. DAVIS
Munsey Bldg. Washington 4, D. C.
Telephone: District 8456

GILLE BROS.
1108 N. Lillian Way Hollywood 38, Calif.
Telephone: Gladstone 6178
Benson D. Gille C. E. Taylor

GLENN D. GILLETT & ASSOCIATES
National Press Bldg. Washington 4, D. C.
Telephone: National 3373

PAUL GODLEY CO.
Lab.: Great Notch, N. J.
Telephone: Little Falls 4-1000
Offices: Upper Montclair, N. J.
Telephone: Montclair 2-7859
Paul F. Godley, Murray G. Crosby & Staff

GRETHER RADIO ELECTRONICS CORP.
115 Rodgers Ave. Norfolk 2, Va.
Telephone: 2-4408
Julius L. Grether William P. Grether

JANSKY & BAILEY
National Press Bldg. Washington 4, D. C.
Telephone: Metropolitan 5411
C. M. Jansky, Jr. Stuart L. Bailey

KEAR & KENNEDY
1703 K Street, N.W. Washington 6, D. C.
Telephone: Republic 1951
Dr. Frank G. Kear Robert L. Kennedy

LENT & POAST
1319 F St. N.W. Washington 4, D. C.
Telephone: District 4127
W. C. Lent L. M. Poast

LOHNES & CULVER
Munsey Bldg. Washington 4, D. C.
Telephone: District 8215

MAY & BOND
1422 F St., NW. Washington 4, D. C.
Telephone: Republic 3984

FRANK H. McINTOSH
710-14th St. NW. Washington 5, D. C.
Telephone: Metropolitan 4477

McKEY & SHAW
1730 Connecticut Ave. Washington 9, D. C.
Telephone: Adams 3711
Dixie B. McKey Robert C. Shaw

McNARY & WRATHALL
National Press Bldg. Washington 4, D. C.
Telephone: District 1205
James C. McNary Grant R. Wrathall

GARO W. RAY
991 Broad St. Bridgeport, Conn.
Telephone: Bridgeport 5-0255

RING & CLARK
Munsey Bldg. Washington 4, D. C.
Telephone: Republic 2347
Andrew D. Ring Lt. Comdr. R. L. Clark

HAROLD B. ROTHROCK
1909 Eye St., N.W. Washington 6, D. C.
Telephone: National 0196

WELDON & CARR
1605 Connecticut Ave., Washington 9, D. C.
Telephone: Michigan 4151
James O. Weldon Lester H. Carr

NATHAN WILLIAMS
20 Algoma Blvd. Oshkosh, Wis.
Telephone: Blackhawk 22

RAYMOND M. WILMOTTE, INC.
PAUL A. deMARS, ASSOCIATE
1469 Church St. N.W. Washington 5, D. C.
Telephone: Decatur 1231
236 W. 55th St. New York City 19

HERBERT L. WILSON & ASSOCIATES
1018 Vermont Ave. Washington 5, D. C.
Telephone: National 7161
1000 N. Seward St. Hollywood 38, Calif.
Telephone: Hollywood 6321

Opinion

Food for Faith

ON THE MORNING of June 10, 1946 the Schenectady *Gazette* carried two ads on facing pages which spelled out in bold, unmistakable terms good news for FM. To those individuals who have patiently waited for the FM industry to emerge from the doldrums becalming it since the close of the war, these ads offer real hope that the long, anxious days of waiting might soon be over.

The two ads were sponsored by FM-conscious Zenith and aggressive, hard-hitting WBCA, Schenectady's independent FM station. Using the entire right-hand page, Zenith announced the distribution of FM receivers in the Schenectady area, ran pictures of the various models, listed local dealers handling the line.

On the opposite page, plainly by design, was the widely-publicized WBCA advertisement, "If you buy a new radio without FM you'll obviously have an obsolete radio!" Topping this stopper line in bold face type was the announcement, "FM sets are here!" Also included was a listing of the city's two existing FM stations, one conditional grantee and three nearby applicants, potential rivals, in an ad prepared and paid for by WBCA!

Here indeed is food for faith.

Dr. FCC's Chance

THERE'S MERIT, we think, in Commissioner Durr's proposals that the FCC cease making so many grants to AM operators who want changes in existing facilities. It is Commissioner Durr's thesis that where an AM broadcaster wants to spend $10,000 or $20,000 to change his antenna location or increase his power in order to improve his service, the Commission should inquire carefully whether such improvement could not better be accomplished by steering the applicant into FM. In many cases, Durr and others who think like him aver, an FM station would render better coverage than an "improved" AM station. And, they say, if an AM owner spends that amount of money on an existing service, he will not be so keen about spending the same amount again to get into FM.

It is no secret that such applications take up a great part of the time of the FCC's hard-pressed personnel. Not only do they account for about half the work on AM matters, but every approval adds another log to the barricade that FM must overcome.

If the Commission were to act on Durr's recommendations, AM operators would be on notice that the FCC was interested in FM and that an AM request for a change of facility would be carefully scrutinized and granted only if the improvement could not better be made through FM.

The Commission has it within its power to do this. If it does, it means a concrete boost for FM; if it doesn't, it means that FM's growth must still be made against the great lethargy that envelops AM broadcasters respecting this new service. What FM needs is a shot in the arm. The FCC is the doctor who can inject the hypodermic.

A Firm, Guiding Hand

IT IS BRUITED in some radio circles that a move is under way to set up a new organization of FM broadcasters and manufacturers to replace the FMBI which to all intents and purposes has died of desuetude since its fusion with the NAB.

Paralleling this is the rapidly growing separatist movement spearheaded by FMers within the NAB. It is generally conceded that a lot more can and should be done to further the cause of an infant industry beset with a plethora of ailments and disputes. A firm guiding hand and a definite program of promotion are needed—a leadership and a program which the separatists claim have not been forthcoming from the NAB.

Some of them emphasize that it is the independent AMers and the networks who foot the NAB bill and that when any problem arises within the organization which pits AM against FM, it's the AM interests which prevail.

That may or may not be true, but one thing is certain. Commercial radio's lusty progeny needs organized leadership. There's a tremendous job to be done before it can claim its rightful place in the communications family. Whether the job is to be done by NAB or a "merged" FMBI or an entirely new organization is unimportant. Someone should do it and the time to start is now.

"It solved my construction problem and, incidentally, I find I get best coverage with 20° left rudder."

TELEFAX—WORLD'S FASTEST, MOST ACCURATE COMMUNICATIONS...

BY RADIO TO HOMES—Finch self-synchronizing Telefax (Facsimile Equipment) enables broadcasters to transmit and homes to receive facsimile copies of anything that can be printed or written on paper... a complete Air Press Service of news, photos, market reports, box scores, printed and illustrated advertising... by radio! The present rate of speed is 2760 square inches of text matter per hour—equal to about 30,000 words. Reservations for equipment are now being made ... make yours NOW, to be first in your territory!

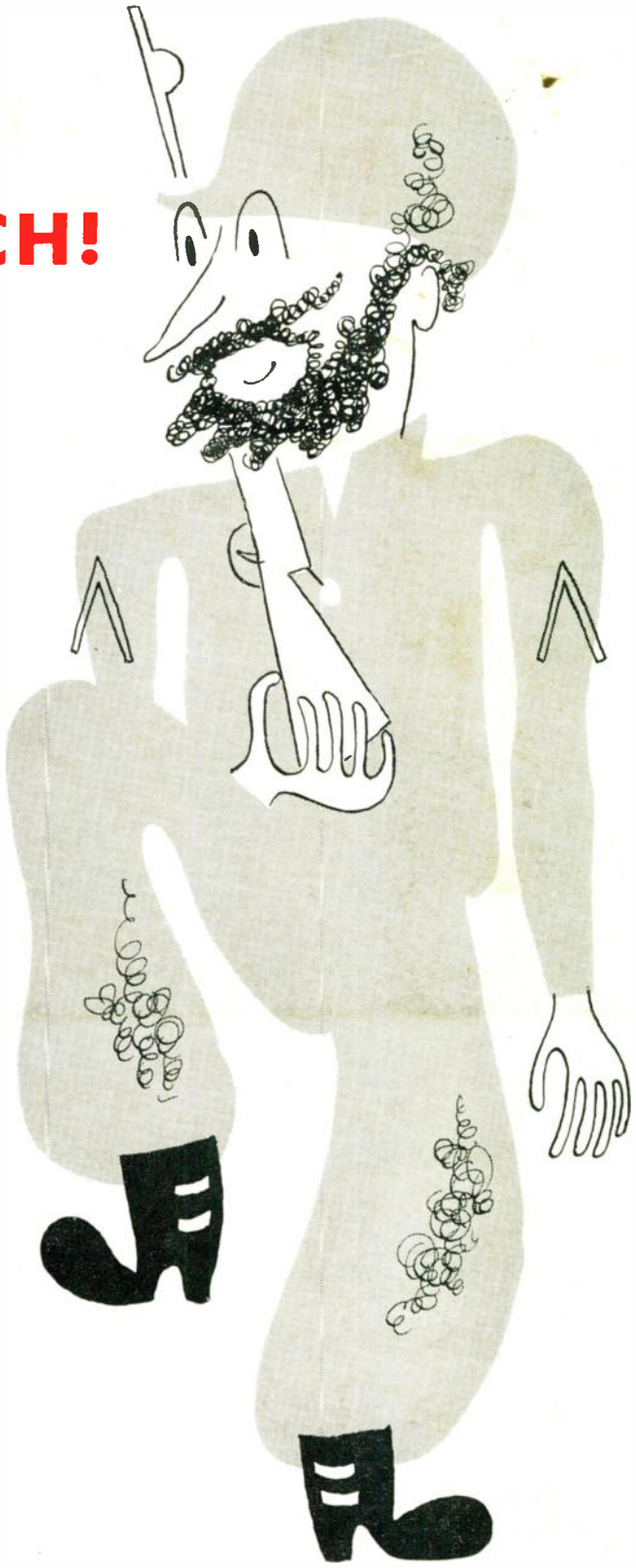
BY RADIO OR WIRE TO EVERYWHERE With Telefax (Finch Facsimile) written or printed messages can be exchanged as by some "instant courier" between any two points, mobile or fixed, far or near, which can be connected by electric circuits. The messages as received are exact *facsimiles* of the original—complete in every detail of text or illustrations, and entirely free of errors in transmission. The rate of speed in words per minute far exceeds old-style telegraphic printing, and 100% accuracy is assured.

TELEFAX (FINCH FACSIMILE) gives you a new, faster, more flexible and completely accurate means of communication, with higher speeds, greater economy and total freedom from mistakes in transmission. It opens up rich new fields for broadcasting, will assuredly replace with better service hitherto accepted methods of transmitting intelligence by wire. Write for folder giving full information, and list of principal Finch patents covering all important phases of Facsimile. Finch Telecommunications, Inc., 10 East 40th Street, New York 16, N. Y.

self-synchronizing

finch facsimile

MARK TIME...MARCH!



WMGM enlisted back in 1942, when it first went on the air as W63NY.

Today, our boy is still a private — *very private* indeed since few sets have been produced to permit listeners to enjoy the finer benefits of high-band FM. But his daily drill in the unsullied air at 99.3 megacycles has rendered him stronger, better equipped for the day when he will get into real action and expected to produce results.

WMGM
NEW YORK

99.3 mc., CHANNEL 57

AFFILIATED WITH WHN, NEW YORK
KMGM, LOS ANGELES—LOEW'S THEATRES
AND METRO-GOLDWYN-MAYER