The Broadcast Engineers' Journal
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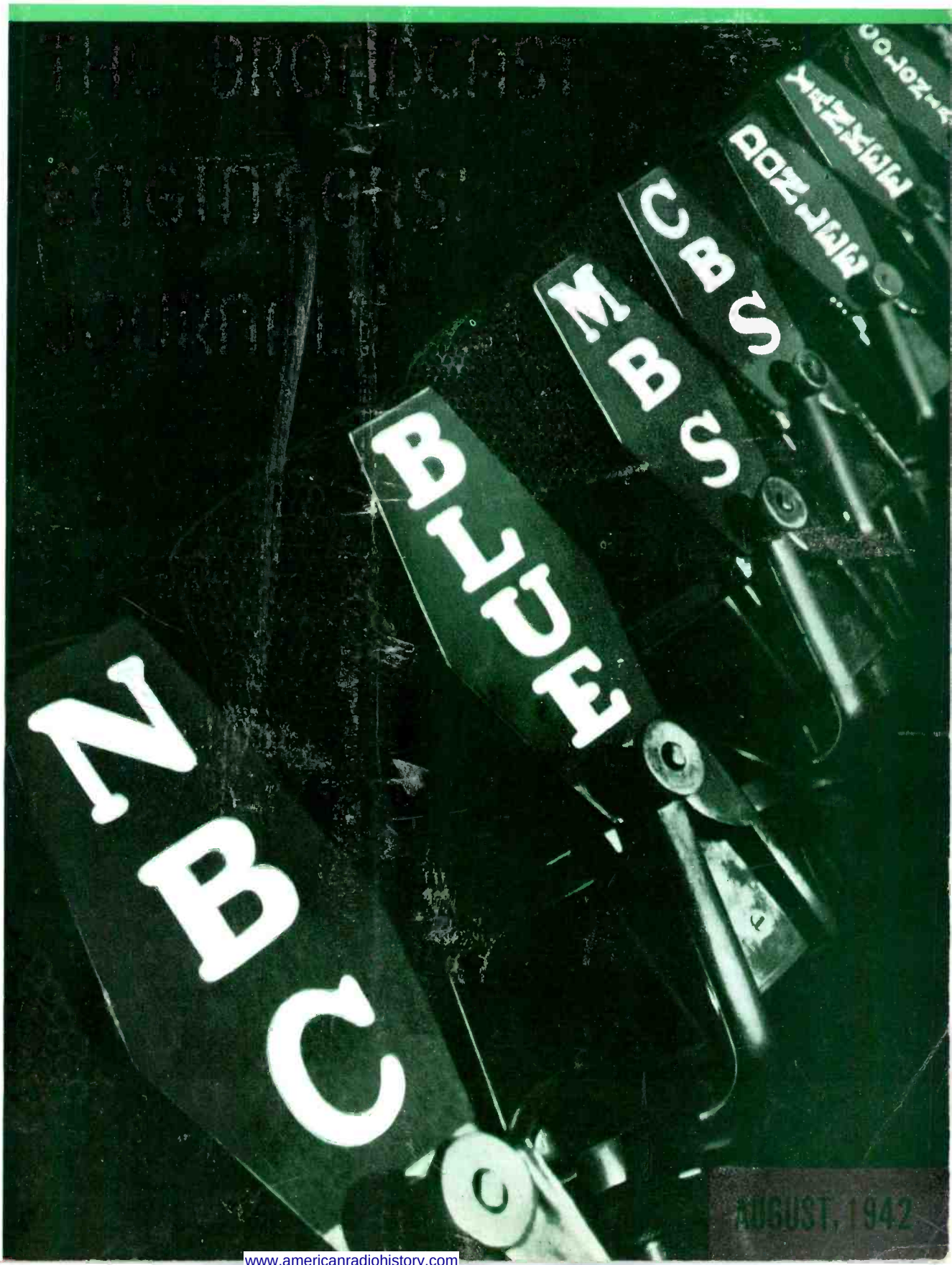
U. S. Destroyer *Shaw* Broadcast
A Carrier and Tone Alarm System



AUGUST, 1942

...this is the consensus of opinion from impartial tests conducted by major station engineers from coast to coast!

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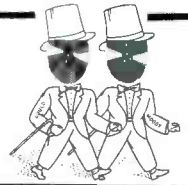

THE GOULD-MOODY COMPANY

RECORDING BLANK DIVISION • 395 BROADWAY • NEW YORK, N. Y.

THE BROADCAST ENGINEERS' JOURNAL

Volume 9, No. 8 — 409 — August, 1942

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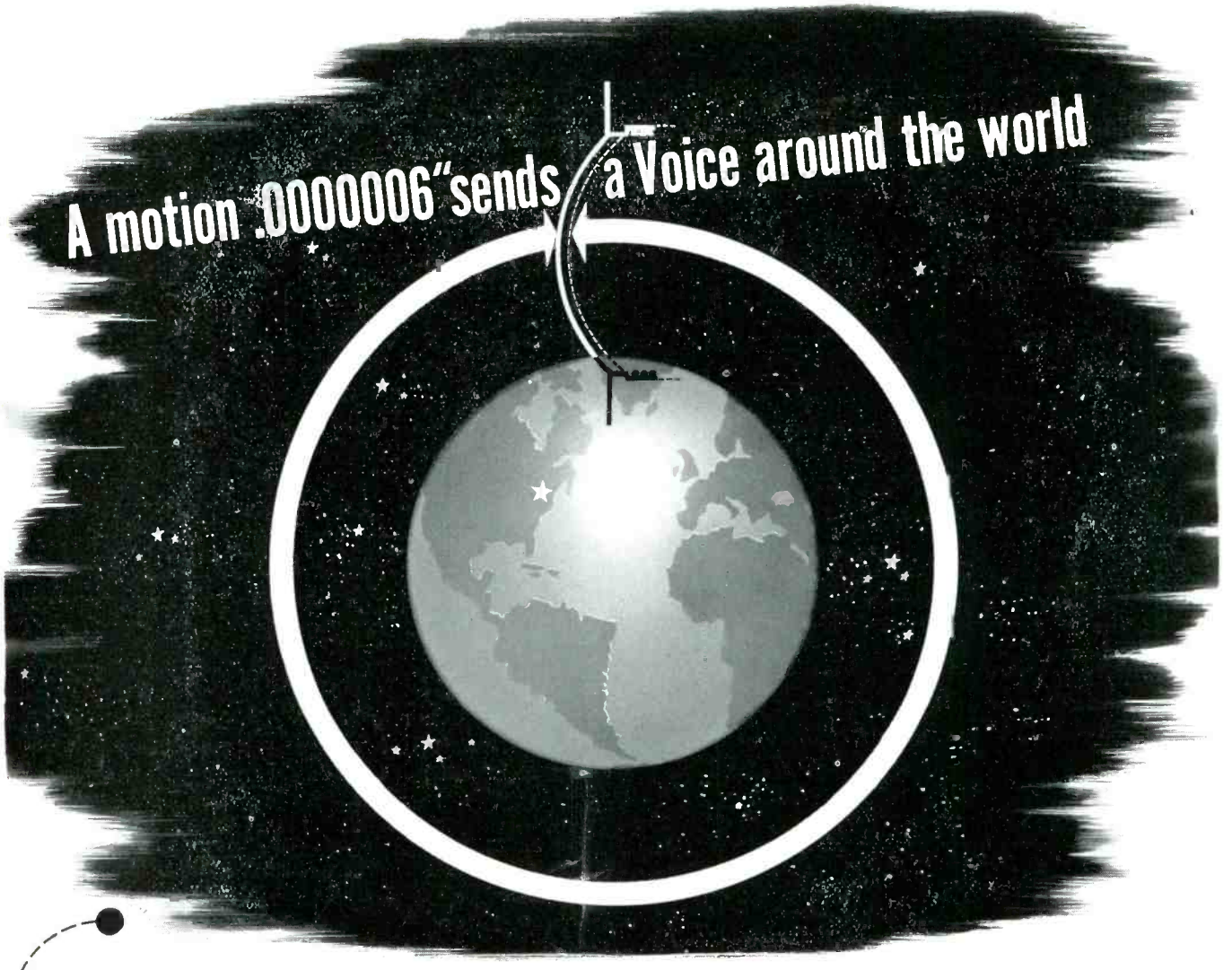
The Broadcast Engineers' Journal is a privately printed monthly publication, issued by A.T.E. Publications, Inc., a corporation of the State of New Jersey. Address all communications to Editor's office: E. Stolzenberger, 116-03 91st Avenue, Richmond Hill, L. I., N. Y. Telephone VIrginia 9-5553. **THE BROADCAST ENGINEERS' JOURNAL IS THE OFFICIAL PUBLICATION OF THE N.A.B.E.T.**

Advertising rates and information supplied on request. Subscription, $1.50 per year; $3.00 for three years. Single copies, except Christmas Yearbook, 25c; Christmas Yearbook free to subscribers. All remittances in advance. Foreign: Add postage.

formerly A·T·E JOURNAL — DIRECTED TO BROADCAST ENGINEERS AND EXECUTIVES



Microphone Diaphragm Design is a Difficult and Fascinating Art

THE Diaphragm is the heart of the Microphone. It responds to sound wave vibrations and actuates the translating element-carbon, piezoelectric crystal, moving armature or moving coil. A Diaphragm must be extremely light—present a correct driving impedance to the sound wave and to the translating system—vibrate with uniform displacement or velocity at all frequencies. It must withstand atmospheric changes, extreme temperatures and hard service conditions of vibration, shock, gunblast. Whether designed for the studio or the battlefield, *it must function.*

The Diaphragm in the "556" Shure SuperCardioid Microphone is .0010" thick and weighs only 1/470th of an ounce. It drives a coil of wire in a magnetic field through .0000006 (six ten-millionths) inch, for average speech at 1 foot from the Microphone. This Diaphragm is designed so that it vibrates equally well at all frequencies from 40 to 10,000 cycles per second, yet is rugged enough to withstand the abuse encountered in daily service.

The Shure Engineering Staff are specialists in Microphone Diaphragm design. **At Radio Station WRUL, America's Powerful Short-Wave Station, Diaphragms in Shure SuperCardioid Microphones are moving this .0000006 (six ten-millionths) inch to send the Voice of Freedom around the world!**

Send for Booklet 172J

This booklet describes the theory of the SuperCardioid and the Shure SuperCardioid Microphone.

SHURE BROTHERS

Designers and Manufacturers of Microphones and Acoustic Devices

225 West Huron Street, Chicago, U. S. A.

SHURE

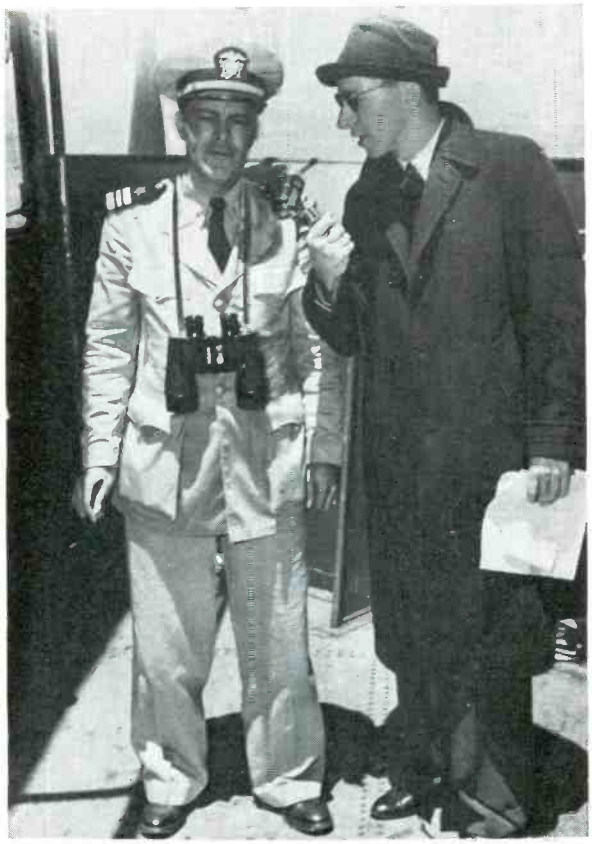
U. S. Destroyer *Shaw* Broadcast

(Publication Approved by U. S. Navy)

ALTHOUGH we are becoming accustomed to reading daily in the columns of our newspapers of heroism, and deeds of daring or overcoming the seemingly impossible in the way of salvaging operations by the men who man our Navy's ships, we still recount with a particular thrill the operations of the U.S. Destroyer Shaw, which took such a terrific pasting during the blitz of Honolulu, and yet today is prowling the sea's surface begging for a fair vengeance upon her sneak attackers.

We all were amazed at the spectacular photos which appeared in every newspaper in the land snapped at the split-second interval by some fortunate photographer that shows the Shaw's magazine spouting skyward from some lucky hit of a marauding Jap, blossoming out like the feathery plumes of some lacy flower. The picture appeared to spell annihilation for both ship and crew. Yet that same ship lives today, more formidable than before, and with the same skipper, Lt. Cmdr. W. G. Jones, of Boone, Iowa, and other members of the same crew ready to risk everything for a fairer chance to defend themselves than they were granted on December 7, 1941.

The Shaw was lying in drydock when she received her



Lt. Cmdr. W. G. Jones and Announcer "Bill" Baldwin of Blue network. Lt. Cmdr. Jones was in command of the Shaw throughout the blitz, as well as during her spectacular voyage to the mainland, and remains in command of the rebuilt vessel.

Explosion of U.S.S. Shaw's magazine, Pearl Harbor, T. H., December 7, 1941 Official U.S.Navy Photo

U. S. Destroyer *Shaw* Broadcast

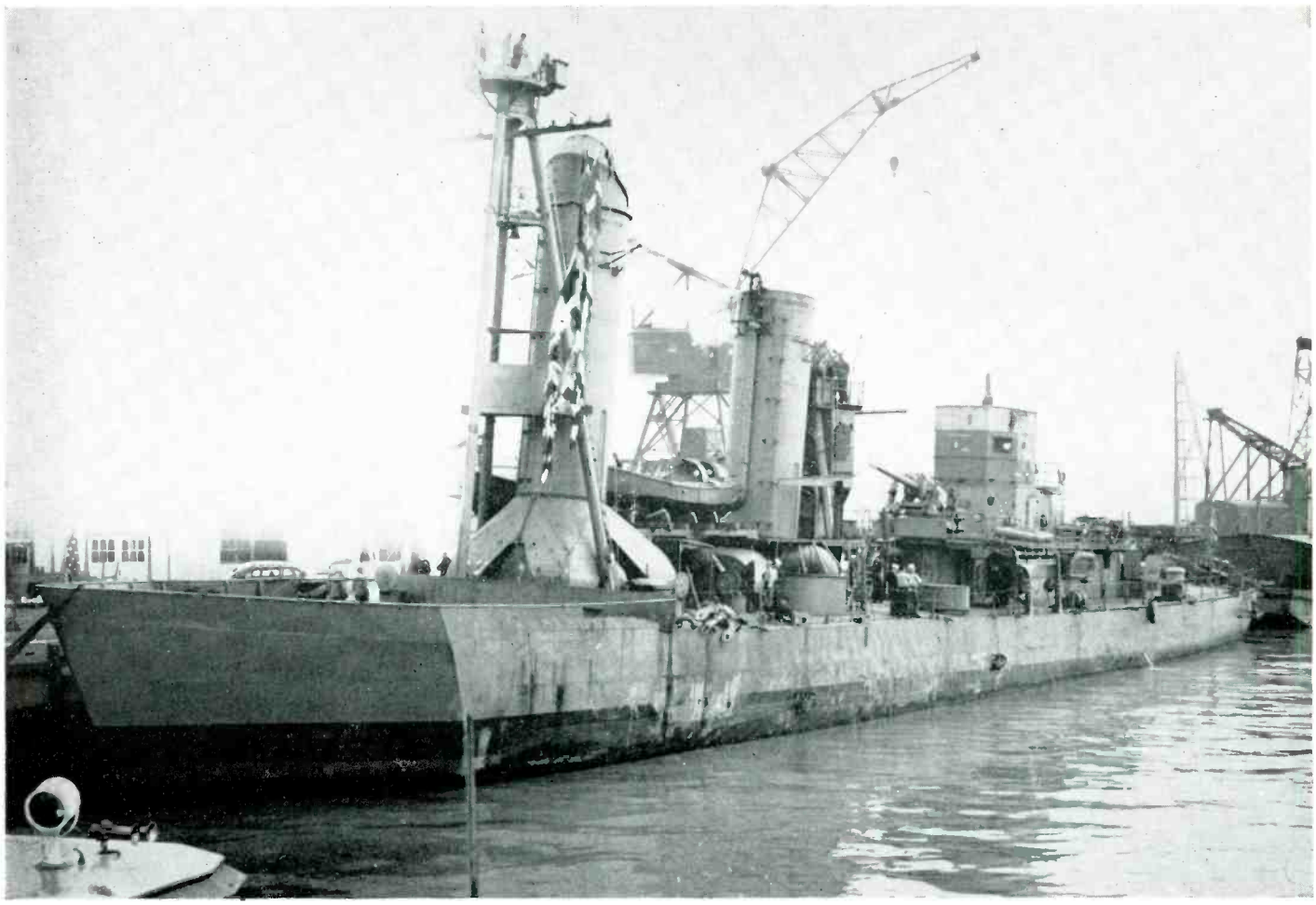
mortal wound, but not until she is reputed to have accounted for eight Jap planes. Her entire foredeck was blown away in the resulting explosion, and when the all clear signal was sounded a scene of marine devastation presented itself which would make the ordinary maritime salvager throw up his hands and declare "scrap iron"!

The ingenuity of our Navy personnel was called into play and it was decided to send the Shaw to the mainland for her repairs, leaving the heavier jobs to the local yard which obviously was badly overtaxed. A jury bow was immediately started under construction, instructions wired to the mainland which permitted construction of the new bow to begin, even before the Shaw had left the Islands. An emergency bridge was rigged up "aft," and many other innovations in ship constructing were resorted to.

She made it, God only knows how! as well as the men that were with her, and when she arrived she was no beautiful sight to behold to one who admired clipper rigged bows, fan-tail sterns, and rakish funnels, but, anyway, she made it. Then it seemed as if she sunk into oblivion.

After a comparatively few months we were electrified to hear that the Shaw was ready for sea, and interest ran high in admiration from those who had followed the crippled struggle homeward of the plucky little ship. What is more, the Navy Department was going to permit a broadcast to take place from the ship while she was on her shakedown cruise. This was to be the first time in history that such a precedent shattering event was to take place: a broadcast from a warship during war time conditions; a warship shuddering violently through the shock of instant reversal from "full speed ahead" to "full speed astern," twisting, rolling and diving through all her strenuous maneuvers.

The matter of the broadcast was placed in the hands of George McElwain, field supervisor, and he immediately started weighing over his plans. UHF transmitters obvi-

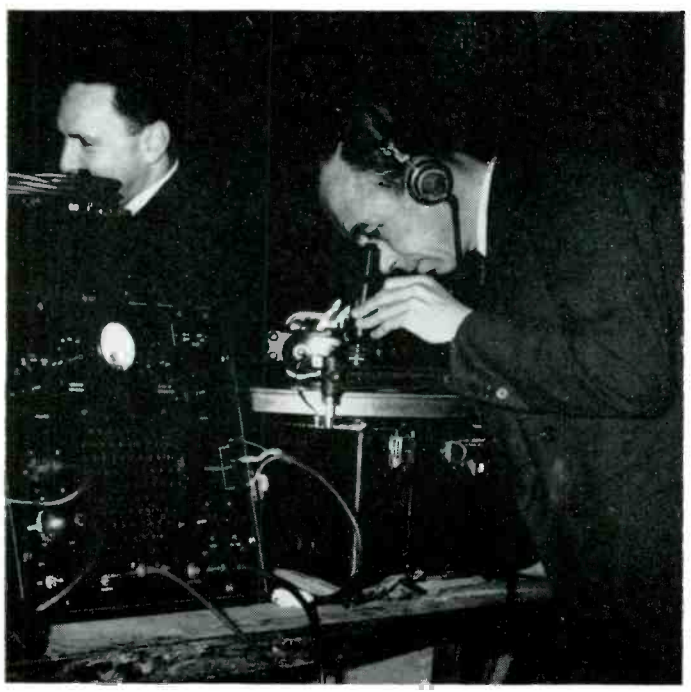


U.S.S. Shaw's arrival on mainland, showing jury bow and jury navigating bridge, aft Official U.S.Navy Photo

ously were out, as even with the ordinary obstacles of this channel with varying distances it was not permissible to radiate from a vessel, particularly a war vessel in dangerous waters. Therefore, no other choice but "delayed recording."

Delayed recording, but what a maze of problems that presented. George is an old sea-going dog from the "way back" days and he knew a few things about the movements of ships, especially sleek destroyers in a wallowy sea. "Side wall pressure," broken grooves, even the entire recording apparatus dashed to the deck, were many of the mental problems that Mac weighed over. However, he accepted the task with alacrity and began planning his own campaign. The program was to be of thirty minutes duration.

The day, June 30, arrived and with his picked assistant, J. R. McDonnell, they set out with a truckload of equip-



Field Supervisor George C. McElwain, operating the portable recording equipment throughout U.S.S. Shaw broadcast.

ment for the designated point on the coast to board the Shaw and bring home the record. May we add that McDonnell was not an old sea-salt, and of all things to pick for your first trip, a destroyer about to go through her bag of tricks.

The third member of the broadcasting staff was announcer "Bill" Baldwin, who is also a special events director for the Blue. "Hot Mike" Baldwin he is known to us out here, because it is claimed that you can give Bill a "hot" mike and any word in the dictionary, and he will give you a rapid-fire thirty-minute program on that subject that will make you believe the stuff yourself.

McElwain and his boys boarded ship and were imme-

(Continued on Page Seven)

Meet . . .

James H. Brown

President

JAMES H. BROWN was born in North Dakota in 1906 and came to California in 1912. He completed high school in Long Beach, graduating from Long Beach Polytechnic High School. Following the World War he was active in amateur radio and obtained a commercial license in 1922.

He went to sea as a radio operator on various ships on the intercoastal, Oriental and around-the-world runs for Federal Telegraph Co., RCA, IWT, and Dollar until 1926, when he went to KFS at San Francisco as marine shore station operator. He remained at KFS and performed other miscellaneous duties for Federal Telegraph Co., Mackay Radio and Telegraph Company, and the International Telephone and Telegraph Co., until 1929. He entered broadcasting at that time and was operator and Chief Engineer at various stations in the Southern California area, until going with NBC as maintenance engineer in 1937. Brown also served a turn as announcer, handling his own program in 1931 and 1932. In 1940 he was made Control Relief Engineer, the position he now holds with NBC.

James H. Brown

While Chief Engineer at various stations, he took work at the University of California relating to acoustic, audio and radio frequency design, and also during that time finished his prelegal requirements. He started graduate work in law in 1935 and graduated cum laude in 1939, after which he passed the California Bar Examination and was admitted to the California and Federal bars as an attorney and counselor-at-law. While in graduate school, he was Chancellor of Phi Delta Legal Fraternity for two years.

In 1931 Brown became engaged in the manufacture of radio transmitters and receivers for yacht and deep sea fishing boat installations for a period of five years and has acted as consultant at various times for manufacturers of radio equipment.

He was elected Hollywood Chapter Secretary of NABET (then A.T.E.) in 1939, remaining in that position until elected Hollywood Chapter Chairman of NABET in 1940. He was elected NABET vice-president at the 1941 convention and upon Ed Horstmann's resignation (March, 1942), Jim Brown was elected NABET president.

National Association of Broadcast Engineers and Technicians

U. S. Destroyer *Shaw* Broadcast

(Continued from Page Five)

diately installed in the wardroom for setting up. A critical audience of technically minded naval officers were always present, and Mac had to unloose his theories.

It is reported that Mac had thought of an elaborate system of "gimbles" but discarded that; then he thought of heavy rubber padding, but the priorities board stymied him on that plan; later he thought he might be able to borrow a Simmons mattress from one of the officers to act as padding, but remembering some of the mattresses he had slept on while going to sea, decided there wouldn't be much shock absorption in them and didn't want to embarrass himself with such a request. The final plan resorted to remains a secret between McElwain and McDonnell, who he had sworn to secrecy. The result? As perfect a set of discs as ever came off any "Scully" anywhere; a characteristically broad grin on the two Macs, and a deserved "well done" from the boss and the Navy.

The program was delayed until July 4 for release to the public and immediately created widespread comment from listeners over a wide area. Immediately we were requested for copies by Washington, New York, Chicago and Hollywood, a fact which substantiates the quality of the material obtained. Again, the technical personnel of both organizations had tackled and overcome the difficulties involved on a new and strange assignment.

Engr. J. R. McDonnell, who handled the monitoring of program. Taken while at work in wardroom of U.S.S. Shaw.

A Carrier and Tone Alarm System

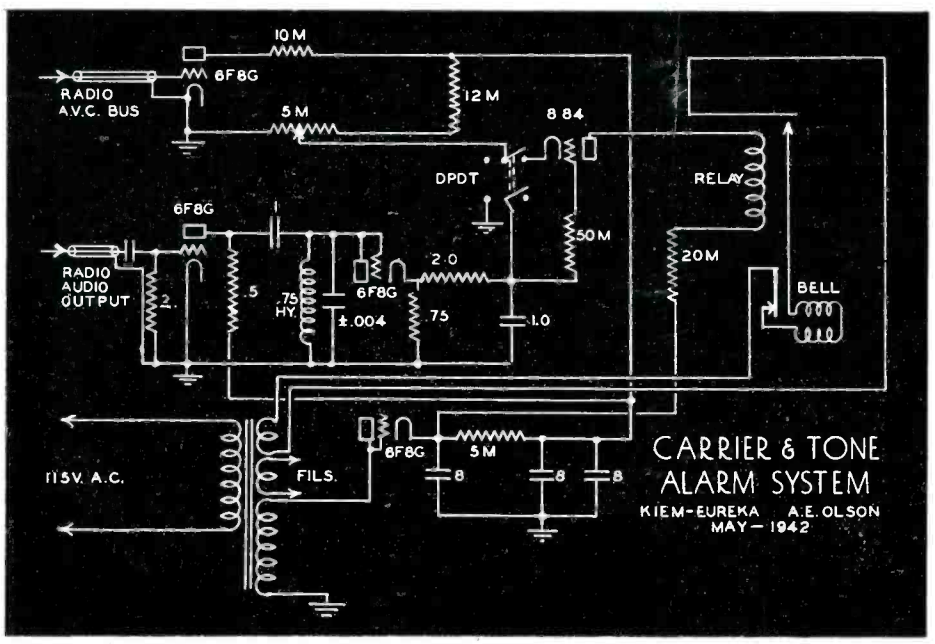
By A. E. Olson
Chief Engineer, KIEM, Eureka, California

The following article and circuit diagram should prove a boon to many a small transmitter operator who is required under the national emergency orders to monitor a near or distant key station for black-out signals. We feel that Mr. Olson's technical solution in aleviating this double worry of monitoring for the subordinate stations will prove helpful to all our readers

NEED for the continuous monitoring of a control or key station, in case of a radio black-out, requires that the broadcast station engineer be informed at all times as to whether the key station's carrier is on, and if the 1-000 cycle alert tone is broadcast.

Numerous duties make it difficult in many cases for the transmitter engineer to properly monitor two program circuits at one time. Industry accepted means for an alarm system proved to be inadequate in our case, where at times very little carrier is received, although the station antenna is used for reception through a filter system to eliminate the carrier of the station. Consequently, even though the receiver has amplified avc, inadequate voltage for control is available. Particularly is this true in evenings and mornings when selective fading may be severe. A d.c. amplifier is provided in the alarm system, which will assure that no alarm will be sounded unless the carrier should be taken off, or if a complete fade-out should occur.

Incidentally, one control tube and alarm bell provide check on both carrier and alert tone signal. The alert tone is taken off the receiver (a Hallicrafters SX 28) at the detector, so that the position of the volume control will not affect the audio signal in the control circuit. The signal is quite low at the output of the receiver detector, so a stage of amplification is provided in the alarm circuit. After amplification the audio signal is subjected to a band pass filter tuned to 1,000 cycles, and is then rectified. The output of the rectifier passes through a time delay RC circuit to the grid of the control tube, and 884. The time delay circuit is required so that a musical note of around 1,000 cycles, but of short duration, will not affect the alarm system. Values shown for this portion of the circuit require a signal of over 5 seconds duration to sound the alarm.



It will be noted that the alert tone signal is fed to the grid of the control tube, and that the cathode is connected to a potentiometer in a circuit across the power supply. Any variation in the power supply will then affect the grid bias on the control tube. Small line fluctuations do not have any appreciable effect on the circuit, but the avc amplifier, one section of a 6F8G tube, has sufficient mutual conductance to cause quite a variation in the power supply voltage by the amount of avc voltage applied to its grid. Poor regulation in the power supply is really an advantage, so a resistance-capacity filter is used, further simplifying the circuit. This system provides control from two independent sources, on one tube.

The double pole-double throw switch will, in case of an alarm, remove the control tube from the circuit, and discharge the 1.0 mfd. time delay condenser, so that just a flip of the switch will immediately return control to the circuit, without having to await the slow normal discharge of the circuit.

Values are not critical except in the band pass circuit. This should be tuned by finding a combination of capacity which will accurately tune the inductance to 1,000 cycles.

One 884 and two 6F8G tubes were used, the four triodes in the two 6F8G's being wired into the circuit, as the parts layout best permits. The relay is one of 5,000 ohms, and operates on under 5 ma. Only half wave rectification is used in the power supply, which permits the use of one 6F8G sec-

tion, and further simplifies the circuit. Capacity values shown are in microfarads, and resistance values are in thousands of ohms (M) and in megohms.

The circuit is easily adjusted. From vacuum tube volt meter measurements, a value of 100 per cent modulated signal voltage is found, at the output of the receiver detector. A like value of 1,000 cycle audio tone is fed into the alarm system, and the bias adjustment of the control tube is varied until the audio tone will readily trip the alarm system. This adjustment must be made with avc of the carrier applied to the avc amplifier. Some changes may be required under different reception conditions, and with other receivers, but no great difficulties should be encountered.

"The Flaw"

By Bert Pruitt

If Hitler knew just what I know
I'll bet he'd have a fit,
Then fall his armies in and say,
"Well, boys, it's time to quit!"

If Hitler knew just what I've seen
And heard around this town
I'll bet he'd call his bombardiers
And order them right down.

Why Joe the soda-jerker knows
More strategy and stuff
About the way to win the war
Than any Major Guff.

And Bob the porter . . . look at him . . .
He has more on the ball
Than all the military men
Since someone captured Gaul.

And Pete the butcher knows just how
To plan and plot a trip
That's bound to bring success and fame
To any battleship.

And Frank the barber . . . goodness me . . .
He feels that razor blade,
Then gives you details of the way
He'd make a midnight raid.

But gosh . . . I think I see a flaw—
Perhaps our towns consist
Of military genius—
And no one to enlist!

TECHNICAL PRESS

A digest of leading

[In these busy times few engineers can spare the time requir purpose of this regular feature to provide an index of current te

Proceedings of the I.R.E.

July, 1942

The Engineer in Modern Society
By Arthur Van Dyke

A Technological High Command
(Reprinted from *Fortune* Magazine)

Wartime Engineering
By Alfred N. Goldsmith

Navy to Commission Radio Engineers
By Jay L. Kerley

This group of papers deals with the engineering policy, organization, and procedure and their relation to the national welfare. Current conditions unmistakably show the importance of technology both in war and peace. These papers are stimulating to thought and action, having as their aim the better utilization of available technological resources.

A New Frequency-Modulation Broadcasting Transmitter
By A. A. Skene and N. C. Olmstead

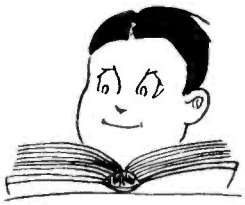
A new frequency-modulation transmitter is described which uses a novel amplifier circuit permitting an unusually simple mechanical design and an economical vacuum-tube complement. The choice and design of circuit components, governed by both mechanical and electrical considerations, are discussed in detail.

The Self-Impedance of a Symmetrical Antenna
By Ronold King and F. G. Blake

The rigorous formula for the input impedance of a symmetrical cylindrical antenna as derived by Hallen is used to obtain complete tables and curves for the input resistance, reactance, impedance-magnitude and phase angle as functions of the variable *h/wavelength* and *a/wavelength*. Here *h* is the half length and *a* the radius of the center fed antenna. Expressions are derived for the maximum input resistance and for the resonant and anti-resonant lengths. Curves are shown for the input resistance of resonant and anti-resonant antennas, as functions of *a/wavelength*.

An important part of this issue of the Proceedings was issued in supplement form and bear these titles:

s REVIEW



By Ed. Stolzenberger

technical articles in the current contemporary press.

ed to read all the current technical literature. It will be the chnical articles on radio broadcasting and related subjects.—Ed.]

Standards on Radio Wave Propagation—Measuring Methods

Standards on Facsimile—Definition of Terms

Standards on Radio Wave Propagation—Definition of Terms

Electronics

for July, 1942

Plastics as Dielectrics

By John Sasso

The role of plastics as dielectric and constructional materials in electronic applications with significant details on the characteristics of plastics to enable them to be used advantageously.

Flexible Equalizer Amplifier

By E. G. Cooks

A combined amplifier and equalizer network which has many applications in altering the frequency response as desired in audio systems.

Transitron Oscillator and Amplifier

By Stanley R. Jordan

Analysis of the transitron oscillator shows that providing an additional resistance control the adjustments for frequency and oscillation become independent so that good wave form may be obtained. The instrument may also be used as a variable frequency audio amplifier of high selectivity.

Periodic Wave Form Analysis—Part I

By H. M. Lewis

After a brief survey of the operation of cathode-ray tubes, the author presents a survey from the patent and technical literature of the various methods of providing suitable timing circuits of saw tooth, square and circular form.

Graphical Analysis of Saw Tooth Wave Forms

By Ulrich Furst

This reference sheet shows the amplitudes of various harmonics which are required for producing saw tooth wave forms of various trace and retrace intervals.

Communications

for July, 1942

Substitute Material

By E. A. Leach

This paper presents some of General Electric's interesting experience—which is typical throughout the industry—of developing substitute materials in manufacturing processes.

A Report on the Cleveland IRE Convention

By Lewis Winner

Highlights of papers presented at the convention.

Bell Laboratories Record

July, 1942

Automatic Production of Oscillator Scales

By T. Slonczewski

To avoid the laborious and costly process of hand calibrating a number of variable frequency oscillators of wide frequency range, a photographic system has been developed to expedite the work.

Repeater for Submarine Telephone Cable

A repeater has been developed which will be included as an integral part of the cable, containing vacuum tubes designed to last 20 years.

A Grounded-Plate Amplifier for the F-M Transmitter

By A. A. Skene

This is essentially the same article referred to above in the July Proceedings of the IRE.

No Nickel, No Ride!

By Tom Gootee

[After reading the article "*Grip With Your Knees*" in the October 1941 Issue of this Journal.]

I clenched my teeth—and leaned forward in the saddle. Other horses were all around me then. Applying quirt and spurs I urged my own horse faster, faster! The fear of a stampede flashed across my mind, and I was panic-stricken. But my own horse could go no faster—no matter how I drove it onward, onward—faster, faster! I strained every muscle—urging my mount to pass the others! But it was hopeless! And then *everything* started spinning around, and I became dizzy—and then it stopped!

What was happening? What was wrong?

Then—clearing my eyes—I saw. The earth had stopped going around.

And doggonit! So had the merry-go-round!

San Francisco News

By Frank Barron

J. R. McDONNELL, SE, has been doing the daily "Breakfast at Sardi's", from the Sir Francis Drake Hotel while that popular Blue show has been sojourning in S.F. Mac is looking particularly well fed as a result. G. Warren Andresen handling the big community close out job of the same show from the Civic Auditorium for the farewell pgm.

The way the S.F. public took to "Breakfast at Sardi's" we can look for an almost constant stream of outside shows to put in an appearance. Production staffs are always overwhelmed with the characteristic San Francisco audience reception.

George McElwain, Field Supervisor, not reluctant to start well-earned vacation after the bag full of tricks he has had to pull out on recent heavy schedule of field shows. Last heard from, he was at home painting.

Hal Ashby, SE, a true nimrod, is having a headache trying to get his vacation located. Purposely put his vacation into the deer hunting season, and each time he picks a locale the Game and Forestry Division closes that area to prevent sabotage or forest fires. Hal says he is going to hit a deer this season if he has to plug one on a sign board at the city limits.

Thomas (Senator) Watson on vacation and got us puzzled as to what draft status he will have on return. Tommy, always a stoutly professed batchelor, finally found his "THE" girl, no other than Madge Bellamy, movie top-notcher of a few years back. Tell us, is it honeymoon as well as vacation, Tom?

Jim Summers, CR, back from vacation and thrilled. Jim, whose main hobby has always been fast cars finally found out the U. S. has a Greyhound Bus System. Took his entire vacation on Greyhound clear up to Salt Lake City and way points. Oh, yes; remember our article about Jim's legacy? Just two days before boarding the bus another relative thought of Jim to the tune of fifty bucks ($50)! Where does that guy get all those relatives?

Lee Kolm, CR, in Relief Supvr's chair throughout the summer season. Hope it might be permanent, Lee.

S. A. Melnicoe, SE, still treks clear to Palo Alto daily but has his eye on house in S.F. Says he is reluctant but that the rubber situation is driving him to it.

J. Allen O'Neil, Recording Supvr, back from vacation, part of which was spent at Carmel. Got dizzy first day watching tables spin around.

Art Dingle, KPO Eng, planning a trailer-camping trip to mountains. Distance not to exceed a hundred miles from home.

It Never Happens This Way

(One-Minute Script)

Announcer: And now — the Rise of the Ginsbergs! (Pause) (Quietly) Poor old Papa Ginsberg is dying over the little store on Maxwell Street. Mama, his daughter and three sons are at the bedside—waiting. Mama Ginsberg wipes away a tear, and speaks—

Mama: (Sibbingly) Papa, can you hear me? The whole family is here—praying for you.

Papa: (Weakly) Is—is Herman here?

Herman: Yes, papa!

Papa: (Feebly) Is—Abie here?

Abe: Yes, papa!

Papa: (Faintly) And—is Harry here?

Harry: Yes, papa!

Sound: (Old man sits up in bed suddenly.)

Papa: Then who in hell's running the store? Curtain

—*By Tom Gootee.*

"The Answer"

By Bert Pruitt

From the little village crossroads and the roaring city mills;
From the ranches and prairies and the cabins in the hills;
From the farms of Indiana and the stores of Illinois
Comes a peaceful country's answer in a line of marching boys!

From the cottage on the corner and the mansion down the street
Come the boys to take their stations on a warship in our fleet;
From the fields of Minnesota and the timbered hills of Maine
Come the boys to man the bomber and the famous fighter plane.

In a steady stream they're marching from the cities and the farms;
Our country's now in trouble and they're marching forth to arms;
In a steady stream they're marching as their fathers marched before—
A peaceful country's answer to a challenge at our door!

WLS Demonstrates Audience Response

A MILLION pounds of scrap metal and 73,000 pounds of old rubber was added to the nation's scrap pile by the WLS National Barn Dance when 7,500 people swarmed to see the broadcast from Normal, adjacent to Bloomington, Ill. Price of admission was either 100 pounds of scrap metal or 50 pounds of rubber for each ticket!

The scrap material turned in for tickets totaled 605,000 pounds of metal, 53,000 pounds of rubber—all now on its way to mills to be made into tanks, guns and ships for our armed forces. But, in addition, WLS listeners brought even another 420,000 pounds of metal and rubber, over and above that required to get their Barn Dance tickets.

All proceeds from the sale of the scrap—$3,600—was donated by WLS-Prairie Farmer, to the local McLean County U.S.O. Fund.

Winners of the WLS-Prairie Farmer prize for the family turning in the most scrap were Mr. and Mrs. Edward F. Coolidge, living on a rural route outside of Bloomington. They were invited to spend the weekend in Chicago as guests of WLS, and were special guests at the WLS National Barn Dance, all expenses of their two-day vacation paid by the radio station.

The entire cast of the WLS National Barn Dance made the Bloomington trip, putting on the same two shows they usually broadcast from the Eighth Street Theater in Chicago. Originally, 3,500 people were expected at the two shows, 1,750 at each, filling the seating capacity of the gymnasium at Illinois State Normal University. When advance demand for tickets indicated a far greater crowd, additional microphone facilities were set up outdoors, and the second show, from 10 p.m. to midnight, was broadcast before an overflow crowd in the ISNU outdoor amphitheater.

People came to the broadcast from 75 miles away. One farmer drove his Model T Ford onto the scale at the salvage collection depot at Gridley, got out and said: "Give me two tickets and she's yours!" Another man brought in a set of huge iron wheels from an old-fashioned wheat drill. He had bought them twenty years ago, never had used them, and when he turned them in for his tickets to the WLS National Barn Dance they still had the shipping tags attached to them.

The success of the drive was as welcome to government officials as to WLS-Prairie Farmer executives. Donald M. Nelson, chairman of the War Production Board, wired from Washington: "Let me congratulate WLS for this enterprising and public-spirited effort which I am sure will be of substantial value to the war effort."

Ben Regan, executive secretary for Illinois, Bureau of Industrial Conservation, general salvage section, telegraphed: "Congratulations on your splendid idea for the National Barn Dance. Tonight's party will bring home to many people the vital necessity for salvaging materials such as rubber and scrap iron for our war effort."

Some Famous Last Words

(Compiled by Tom Gootee)

"Go ahead! The power's shut off the transmitter."

"And tomorrow, at this same time, you'll hear another chapter in——"

"Honestly, it was *that* long—but the line snapped just as I got him up to the boat."

"See that rear tire? Fifty thousand miles—and the tread's hardly worn!"

"Walk right in! They're not on the air."

"I can get you a good price on a radio set."

"But I can see in the gas tank better, if I use a match!"

Cleveland News

By Bert Pruitt

SOME of the readers of The Broadcast Engineers' Journal haven't met the engineer-in-charge of the N.B.C. Cleveland Division. To those we say, shake hands.

As far as we know Mr. Leonard is the only N.B.C. engineer to receive a free egg shampoo from a studio engineer . . . uninvited.

In 1934 Mr. Leonard, John Disbrow and Harry Caskey made a trip over to Johnston's Island for a broadcast. They went over on Mr. Leonard's cabin cruiser. The broadcast was a grand success, as all broadcasts are, and they started back in good spirits.

S. E. Leonard

Lake Erie was in one of her sullen moods, so they were doing some tossing. Caskey decided he needed an egg sandwich, so he went to the ice-box and got one. He took the egg, bent over to put it in the skillet just as an unusually large wave smacked the bow of the boat. Caskey slipped on the deck and the egg slipped, too. Caskey hit the deck and the egg hit a crossbeam six inches above the Chief's head. Caskey groaned. The Chief smiled.

Historians leap from the Stone Age to Henry Ford's River Rouge Plant in one sentence, so I doubt if I will create much of a sensation by peddling back to 1909.

We find Mr. Leonard still smiling. He has a pair of headphones on and the sign on the door says "Wireless Station."

His brother Harry, a radio operator, asks him why he wants to be an operator. Ed is copying a weather report and doesn't answer.

Mr. Leonard has held an operator's license since the Government began issuing them in 1912. I have, too, but they didn't have my name on them.

From 1915 to 1918 he rode the Great Lakes as an operator for the Marconi Company. He was promoted from operator to superintendent of construction for the same company.

I forgot to mention that I shifted gears from rear to forward back there in 1909.

1919-1920, Marconi and R.C.A. Most of this time was spent in northern Europe as wireless operator.

1920-1922, construction superintendent R.C.A. Great Lakes area.

1922-1928, engineer for Willard Storage Battery Co. and chief engineer of WTAM.

Did you ever hear the one about the guy that was always changing jobs? Perhaps I had better not tell it until September.

1928-1930, Cleveland Electric Illuminating Co., chief engineer WTAM.

1930 to date, engineer in charge of Cleveland Division of N.B.C.

Somewhere higher up on this page Mr. Leonard built a station in Canton, Mexico. Stations in Akron, Ohio. Atlantic City, Baltimore and if Podunk has one he disclaims any part of it.

Every story must end somewhere and by now there may be eyebrows stratosphering . . . "Just what does that punk Pruitt mean by trying to get an in with his boss this way?" Well, it's like this . . . I want my vacation time doubled . . . With what I have I hardly have time to take a cruise around the world.

C. C. Russell, station engineer, says he is anxious for his assistant, Art Butler, to return from his vacation. His vacation begins when Art's ends. I won't be at all sorry to see August 10 roll around, for the same reason.

Alvin MacMahon returns with a three weeks' tan. Mack says he had a peck of fun teaching his son Jimmy to drive a tractor.

John Disbrow returns from a Canadian fishing trip. He isn't overly enthused with train connections, but says the fishing made up for it.

I have a good story I could tell you about John, and I would if it weren't for the fact that he makes out the work sheet.

J. J. Francis starts his vacation tomorrow. He's making a trip down the Ohio River in his cruiser. J. J. promises us a good story for October.

W. C. Pruitt proudly revealing the fact that he had corn-on-the-cob July 22 . . . From his own patch.

If I don't end here Stolzenberger will, so to save him the trouble I will jab the final period. 73 till next month.

New Shure Booklet

"Long Live Your Microphone" is the title of an interesting new four-color sixteen-page booklet prepared and published by Shure Brothers, designers and manufacturers of microphones and acoustic devices, Chicago.

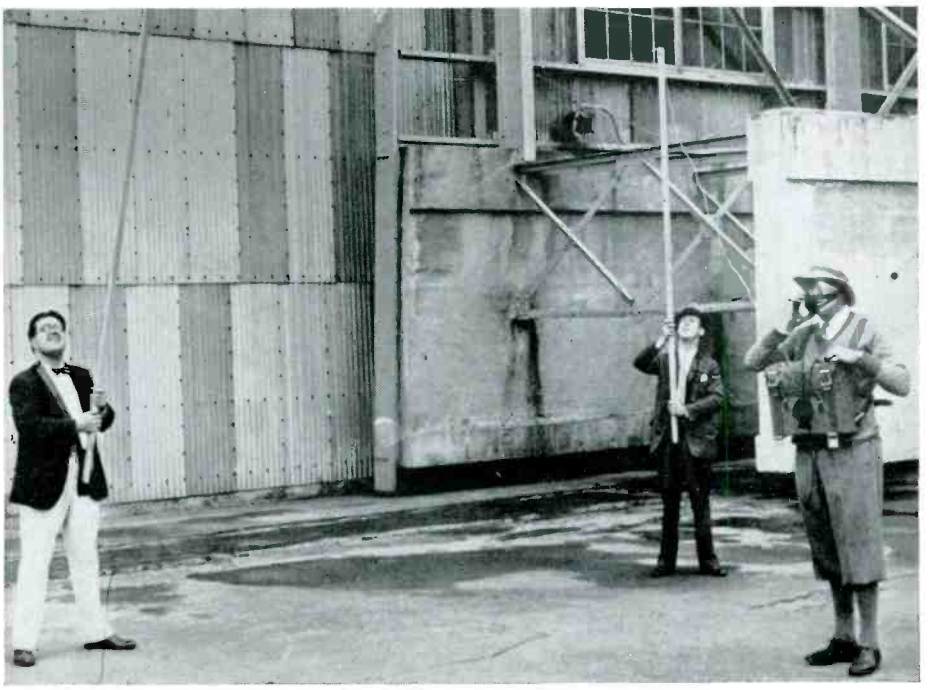
This unusual booklet tells in story and picture "how to get the best service from your microphone." There are helpful hints on the use and care of crystal, dynamic, and carbon microphones . . . practical pointers on feedback, cable, plugs, output, response, and other valuable information.

It is the first booklet of its kind ever published and is an important contribution to the war conservation plan.

All the material and data are based on actual statistics from the Shure Service Department, and make it a practical guide for microphone users.

A copy can be obtained free of charge simply by writing for Bulletin 173G to Shure Brothers, 215 West Huron Street, Chicago, Illinois.

1929 Model Pack Transmitter



DIGGING back into the dim and dusty archives of radio broadcasting, this photograph was recently brought to light after a twelve-year absence.

Shown above is a working model of NBC's *first* pack transmitter, in its initial use reporting the arrival of the giant *Graf Zeppelin* at Lakehurst, New Jersey, in 1929.

The apparatus is held by the late Floyd Gibbons in describing the first arrival at Lakehurst of the German dirigible. It will be recalled that Floyd was always interested in using every new-fangled kind of field "gadget" and equipment of that era—and nothing was impossible (though often not too successful). Floyd is shown using a "cheek" microphone which, in reality, was but a small carbon mike. This microphone was built into a leather strap which held it close to the cheek, to facilitate interviews by the announcer-wearer. The pack transmitter was a small portable job, weighing about twenty or twenty-five pounds—and fed an antenna which required the use of two other men. Shown in the photograph are: G. W. (Johnny) Johnstone (then manager of the NBC press dep't) as the left support, and Burke Miller (then assistant press manager, and now NBC's Director of Talks).

Remembrance of another year—when broadcasting had just cast aside its swaddling clothes.

—T.E.G.

HOW TO PLAY GOLF (In One Easy Lesson)

By Tom Gootee

SUMMER will soon be here. And with it comes the urge to get outdoors and tramp in the woods, or wander aimlessly about green fields. While so engaged it is simple and convenient to play a game called: Golf. Therefore, golf is not only a sport—but a great time-killer.

And it has other advantages. It combines all the lesser features of ditch-digging, grass-mowing, carpet-beating and letter-carrying. In short, a form of work made expensive enough for business men to enjoy. Your best friends are probably golfers—so you should take up this so-called delightful sport.

The idea of the game is to hit a little white ball from a given point (a *tee*) into each of 18 assorted holes (or *cups*). By means of a surious set of gadgets known as golf *clubs*, the ball is knocked, slugged, or whacked (or even thrown, when no one is looking). These *clubs* come in assorted shapes and sizes, depending on where you think you want to hit the ball; sets of these instruments are purchased for large sums of money, and carried around on the golf course by small boys known as *caddies*.

There are 18 holes to a golf course. The first 17 are quite unnecessary, and are installed to delay the game over a period of several hours. The player progresses from one hole to the next—in rotation, like in pool—until the last hole has been completed. During the game the player keeps a vague account of the number of *strokes* he has taken; and on completing the 18th hole, he adds up the score and then stops when he has reached 90.

After this strange feat of arithmetic, he proudly announces his total, carefully destroys his score-card—and proceeds to the locker-room in the club house. This is where the most interesting phase of the game of golf takes place.

After a hot shower and a good rub-down, the player produces a bottle of four-year-old Scotch—and other players in the locker-room participate in its exudation. Then all players present chime in, and sing off-key ballads.

Shortly thereafter the player excuses himself from the group, and goes out to 'phone his wife to say he has been detained at the office by urgent business—and won't be home 'til late. This is the game of: Golf.

Behind the Mike

By Con Conrad

H. P. JACKSON, NBC studio engineer, Chicago, Ill., just completed a new motor scoot (see photo). Hal devised the scoot from used pieces of thin wall conduit and various other scrap parts. Original idea was to commute from one studio to another at NBC Chicago, the studios being far removed from one another. However, with the war and all, Hal has decided to use the scoot for commuting to and from work. Latest engineering reports are better than 30 mph. and almost 90 miles to the gallon! The girl on the back? Oh, just a bit of something for you readers to gaze upon.

John Straiton, KOMA, Oklahoma City, has taken leave to assume new duties with the Army. He has been assigned to the Officers Training School at Ft. Monmouth.

Hal McIntyre has joined the staff of KSFO, San Francisco. Hal formerly an announcer, becomes another convert to the engineering field.

Charles Meledonis, engineer for WORL, Boston, Mass., has taken leave to join the Signal Corps.

Marjorie Shaughnessy, another of the fairer sex to take up operating duties for the duration. She has joined the staff of CHEX, Peterborough, Ont. (Photo please—Ed.)

Frank Shannon, WCAU, Philadelphia, Penna., has taken military leave to join the Army Air Force as a captain. Frank, a member of the engineering staff, was a radio operator for the Navy in World War number one.

Paul Firman, new to the engineering staff of WTTM, Trenton, N. J., was formerly transmitter engineer with WWRL, New York City.

Reginald MacWilliams, formerly reported through these columns as being with the Ferry Command for the RCAF, suffered a fractured thigh recently in an airplane accident. Reginald was recently connected with CFCF, Montreal.

Al Fitzpatrick, WCFL, Chicago, Ill., has taken military leave from the engineering staff to join the Army.

Louis F. Heerten has joined the staff of WSGN, Birmingham, Ala., he was recently assistant chief engineer of WSKB, McComb, Miss.

Hugh LaCrosse, new to the engineering staff of WKRC, Cincinnati, Ohio. Hugh gained his early radio training through having been an amateur. Along with this change, Jack Hohman also joins the engineering staff of WKRC.

Alden C. Packard, reported through these columns some time ago as joining the Navy, has been upped to the rank of lieutenant commander. Alden was connected with KNX, CBS, in Hollywood.

William Scholz, NBC engineering department, Chicago, Illinois, has resigned to return after twelve years to the A. S.

Schulman Co., Electric Engineers and Contractors. Scholz's work with the Schulman Co. will be quite important, since that company has some important defense work on its schedule.

Dick Haysel, also formerly of the KNX-CBS staff, has been upped from the grade of lieutenant to captain in the infantry.

B. F. Fredendall, NBC engineering department, New York, has been loaned to the Chicago office of NBC, to replace P. J. Moore, in the position of transmission engineer. Moore recently joined the Army Signal Corps.

Edgar Garreau, engineer with CKPR, Ft. William, Ont., has taken military leave to join the Royal Canadian Navy.

K. G. Spradlin, new to broadcast radio, has joined the staff of WGAC, Augusta, Georgia. He replaces Bill Strauss, who has enlisted in the Navy.

Hugh Abfalter, NBC engineering department, Chicago, Ill., has taken leave to join the staff of the Hazeltine Service Corporation. Hugh will study in New York for a short period before going into the field to supervise projects under the Hazeltine License.

Roy Darby has joined the staff of WCOS, Columbia, S. C. His duties will entail engineering and some announcing.

Winifred Sinclair, new to the operating staff of CKGB, Timmins, Ont. She replaces Leslie Harting. Congrats to Winifred, another of the women in our ranks for the duration.

Mark Spies, chief engineer of WDZ, Tuscola, Ill., has taken military leave to join the Navy. Mark has been commissioned as a lieutenant and is in training at Champaign, Ill.

Clyde Hunt, chief engineer of WSJV, Washington, probably is the first to make a step toward saving gas and tires in connection with mobile work. Clyde has installed the more important items of their mobile unit in a motorcycle side-car. The saving in gas and tires has made the change well worth while.

Beecher Gold, Jr., is new to the engineering staff of WDRC, Hartford, Conn.

George Heuther has taken leave from his post as transmitter operator with WWRL, New York City, to join the Signal Corps. Temporarily he will be stationed at Ft. Devens, Mass., with the rank of sergeant.

"Quickie or not so quickie." Maintenance supervisor for NBC Chicago recently sent this memo to all engineers: "The Preamp number four which was in Studio 'K' is now in Studio 'G' where there wasn't any, leaving none in 'K' where there was one. Turntable in 'K' has been moved from number four where there isn't any to number three where there is one."

"Freddy's Frog"

Freddy Fisher didn't know the nature of a frog,
Well . . , not until he dropped a toad into his pappy's grog:
And how was he to know his dad had reached that certain stage
Where common sense is in the book, but on a hidden page.
Well, here's the story Freddy told, and I believe it's true;
Otherwise I'd never think of telling it to you.

"I didn't know," he said to me, "just what a frog would do
If dropped into a mug of grog and hidden from our view,
So when my pappy lit his pipe and looked the other way
I dropped the frog into the mug and then came action, say——
You've never seen a frightened man until you've seen my dad
A starin' at that greenish thing that used to be a tad.

"Why, when he saw that jumpin' thing with shinny, hairless skin
His jaws were sort of hangin' to a badly stretchin' chin,
And then the frog began to croak and dad began to shout
For me to reach into the mug and take that green thing out.
Then with a mighty croak and leap the frog jumped out and winked
At dad and frightened him until he shook and kind of blinked.

"Then with another knowing wink the frog jumped back into
The middle of the mug of grog and disappeared from view,
And dad just stood and rubbed his eyes, then looked at me and said:
'I think I've had enough tonight — I'm going home to bed!' "

—Bert Pruitt.

Important! F.C.C. Requires *Each* of Your Ham Transmitters to be Registered

Advise your fellow-hams of this important regulation. The complete text of F.C.C. Order No. 101 follows:

FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C.

Order No. 101

At a session of the Federal Communications Commission held at its offices at Washington, D. C., on the 19th day of June, 1942:

Pursuant to the authority conferred upon it by Order No. 4, dated April 16, 1942, of the Defense Communcations Board:

It is ordered, that

(a) every holder of an amateur radio station license in possession of a radio transmitter and

(b) every other person or organization in possession of a radio transmitter which is owned by a holder of an amateur radio station license

apply for registration of such transmitter with the Commission (if such transmitter is not registered under FCC Order No. 99) in accordance with the following provisions:

(1) "Radio transmitter" as herein used means a device designed for transmission of communications by radio frequency energy. This Order is not intended to include phonograph oscillators, test oscillators, signal generators and wired radio systems.

(2) Every person now in possession of a transmitter required to be registered under this Order shall apply for such registration not later than August 25, 1942. Every person who, at any time after the date of this Order, comes into possession of a transmitter which is required to be registered hereunder, shall apply to the Commission for a Certificate of Registration within 15 days after obtaining such possession, or by August 25, whichever is the later date.

(3) Application for registration shall be made on forms furnished by the Commission and such forms shall be obtained from the Federal Communications Commission in Washington, D. C., or from any of its field offices.

(Continued on Page Nineteen)

KFSD Votes NABET 100 Per Cent

The makers of a famous cigarette use as their slogan, "With Men Who Know Tobacco Best It's . . . " This might well have been the slogan adopted by the engineers of Station KFSD in San Diego.

In a recent NLRB election at KFSD to determine who was to be the sole bargaining agent for the engineers there, the men chose The National Association of Broadcast Engineers and Technicians as the best bet, by a 100 per cent vote.

F.C.C. Order No. 101

(Continued from Page Eighteen)

(4) Individual application must be made for each transmitter to be registered and each transmitter must be separately registered. All requests for application forms should state the number of transmitters to be registered.

(5) All application forms should be returned to the Secretary, Federal Communications Commission, Washington, D. C. (not to any field office).

(6) If, upon receipt of an application for registration, the Commission finds that sufficient and reliable information has been furnished, it will issue to the applicant a non-transferable certificate of registration for each transmitter.

(7) The registrant shall be responsible for having the certificate of registration conspicuously affixed to the transmitter for which it is issued. No certificate shall be destroyed, obliterated or altered in any way without the authority of the Commission.

(8) If a transmitter for which a certificate of registration has been issued is transferred, sold, assigned, leased, loaned, stolen, dismantled, destroyed or in any way removed from the possession of the registrant (holder of a certificate of registration), he shall notify the Commission thereof within five days thereafter, furnishing a statement as to such loss, disposal or disappearance and furnishing the name of the recipient of the transmitter if such person is known to the registrant. In such case it shall be the duty of the registrant to return the certificate of registration to the Commission unless it has been stolen or destroyed.

(9) The registrant shall notify the Commission, within five days, or by August 25, 1942, whichever is the later date, whenever the transmitter registered is moved from its registered location to another location.

(10) Any transmitter required to be registered under this Order and for which there is no valid registration certificate outstanding shall be subject to closure and removal by the Commission.

(11) The following transmitters shall not be subject to the registration provisions of this Order:

Transmitters, the operation of which is authorized under a Commission station license other than an amateur radio station license.

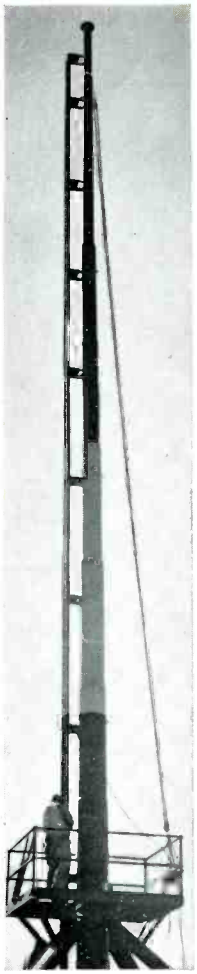
Transmitters in the possession of the United States Government, its officers or agents, or which are under contract for delivery to the United States.

It is further ordered, that every holder of an amateur radio station license who neither owns nor has a radio transmitter in his possession shall so report to the Commission, in writing, and shall notify the Commission of his present address not later than August 25, 1942; and further, he shall notify the Commission, in writing, within five days of any change of address.

FEDERAL COMMUNICATIONS COMMISSION

(Signed) T. J. Slowie, Secretary

Windy City F-M



Chicago's newest F-M station (CBS outlet W67C) boasts of one of the coldest, windiest radiating-tower locations in the country—the first of a radically new F-M design, engineered by Dr. Andrew Alford of the Federal Telegraph Company.

Towering 81 feet above the roof of the One North La Salle Street Building, the high-gain directional stacked looped antenna radiates programs averaging over eight hours daily to an estimated area of 10,000 square Illinois miles. And up that high—700 feet above street level—the wind frequently howls and rages off the Lake at the rate of fifty or sixty miles an hour. Which makes for pretty chilly F-M.—T.E.G.

VOLUNTEER WANTED

to donate his August, 1935, issue of this Journal. Please mail directly to: President J. H. Brown, N.A.B.E.T., Room 210, 1509 N. Vine Street, Hollywood, Calif.

Latest RCA Tube Data Available

A NEW 16-page booklet on RCA Receiving Tubes and Allied Special-Purpose Types (Form 1275-B) as well as a copy of the new 1942 RCA GUIDE for Transmitting Tubes has just been made available.

The RCA Receiving Tube booklet contains three charts. Chart I classifies RCA Receiving Tubes according to their cathode voltages and function. Chart II gives charactertistics of each of 329 receiving types arranged in numerical-alphabetical sequence. Your attention is directed to the type numbers set in light-face print. These types are included in the War Production Board's Limitation Order L-76 discontinuing the manufacture of certain receiving types for general civilian use. Chart III includes information on certain tubes closely allied to receiving tubes but customarily tabulated separately and identified as "special purpose". These tubes are particularly of interest for applications involving special performance requirements.

The 72-page, 1942 RCA Guide for Transmitting Tubes retains the same general appearance as the 1941 edition but it has been completely revised and much new material has been added. New information includes a Special Reference Chart cataloging air-cooled and water-cooled transmitting tubes, transmitting and television rectifiers, cathode-ray tubes, phototubes, voltage-regulator tubes, and special purpose tubes.

As in the previous edition, the 1942 RCA Guide contains three major sections, as follows:

(1) TRANSMITTING-TUBE DATA: This 37-page section gives pertinent data, basic circuits, and socket connections for popular power tubes. Also included are gas-triodes, gas-tetrodes, and the u-h-f acorn and midget types. Supplementing these data, 5 pages are devoted to the Special Reference Chart.

(2) TRANSMITTING-CIRCUIT FACTS: This section includes 6 pages of helpful information on the design, adjustment, and operation of transmitters.

(3) TRANSMITTER CONSTRUCTION: In this 20-page section, the layout, adjustment, and operation of equipment is illustrated by descriptions of several rigs. These descriptions will be of help to all those engaged today in the design of similar equipment to meet specific requirements.

Readers in the United States can obtain a copy of 1942 RCA Guide for Transmitting Tubes from their nearest RCA distributor or by sending 35 cents to Commercial Engineering Section, RCA Manufacturing Company, Inc., Harrison, N. J. From the latter source you may obtain a copy of RCA Receiving Tubes and Allied Special-Purpose Types on request.—M. S.

How to Win Friends And Annoy People

(One-Minute Script)

He: (Cautiously) A-a-a, hello!

She: (Indifferently) Yes?

He: Don't—don't I know you? Don't you—?

She: Of course not!

He: But I *must* have seen you somewhere.

She: (Coldly now) Huh! I should say not!

He: But didn't you ever come up to my broadcasting station for an audition? I seem to remember seeing you——

She: Oh! Do you work at a radio station?

He: Well—uh-h-h, yes!

She: (All smiles) And can you get me an audition?

He: (Nods)

She: (Laughs)

Both: Exit arm in arm.

—*By Tom Gootee.*

U. S. NAVY OFFICIAL PHOTO

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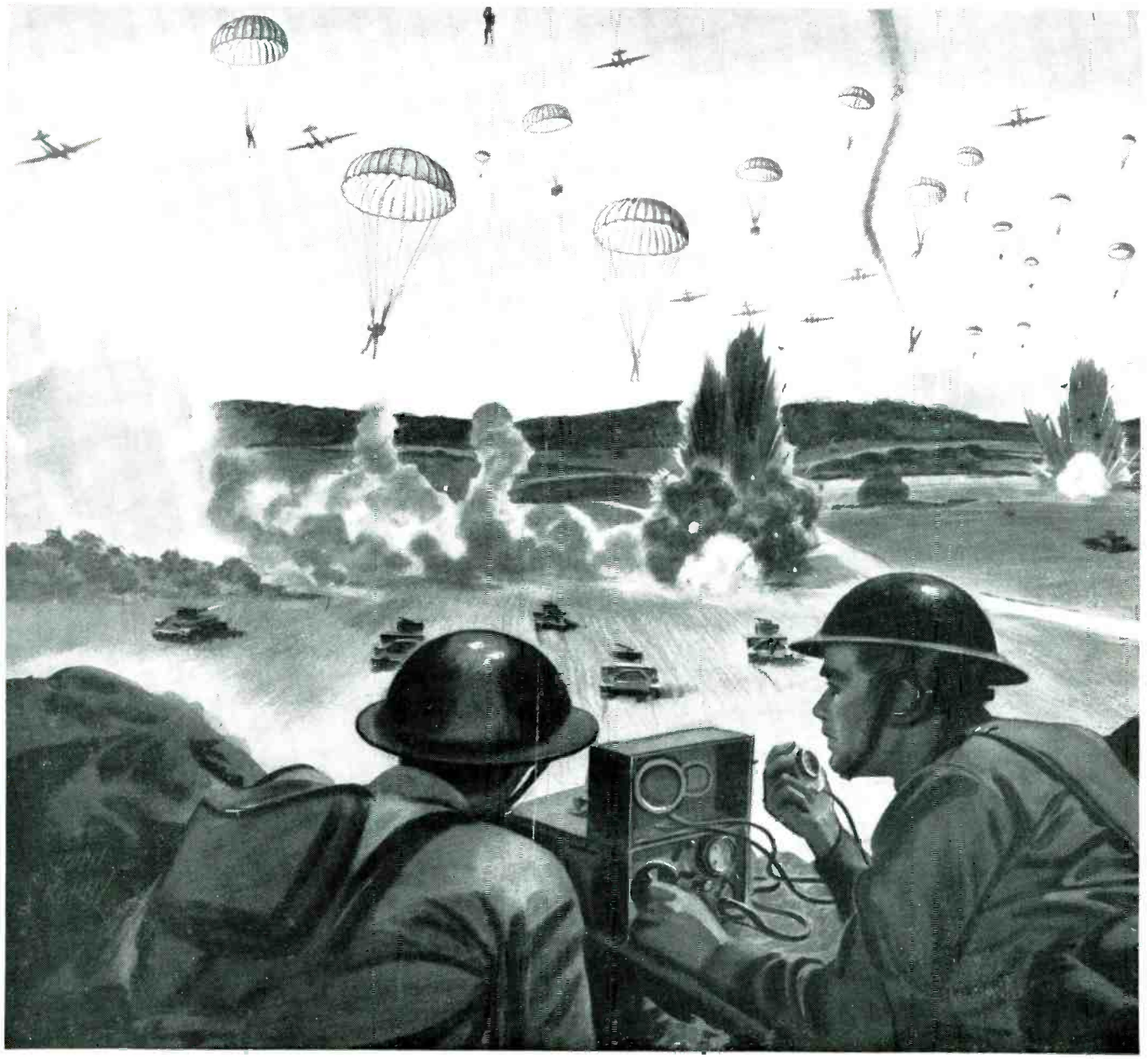

So much—So quickly...BY RADIO!

Radio is the voice and ear of modern war.

Radio follows the flag and the fleet—locates the enemy—flashes urgent orders—safeguards the convoy—guides the bomber—directs the artillery—manoeuvers the tank.

From submarine to flying fortress, from jeep to anti-aircraft gun, radio is on watch, always ready to speak and to listen—to give warning and to guide.

Radio brings information and relaxation to the free—courage and understanding to the oppressed.

Radio fights on every front!

Radio Corporation of America

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