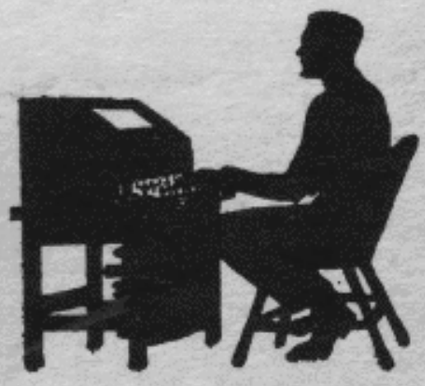
ARTS

50 - 51

MARCH - APRIL 1958
SPECIAL BULLETIN COMMEMORATING
AMATEUR RADIOTELETYPE DINNER
NEW YORK CITY 24 MARCH 1958



NEW YORK, 24 MARCH, 1958: WELCOME TO THE FOURTH ANNUAL AMATEUR RTTY DINNER (FIRST INTERNATIONAL AMATEUR RTTY GATHERING). Altho this publication has no official connection with this gathering, this issue of the bulletin is dedicated to the affair as a news service. The following are to be credited for their efforts and cooperation in organizing and planning this years banquet:

W2EBZ Clay Cool
W2JTP Byron Kretzman
W2PBG Robert J. Straub
W2PEE Elston Swanson

Credit and thanks to the many Net Control and Official Broadcast stations for spreading the word over the air and keeping the subject lively, especially W1BGW Jack, W1OUG Gordon, and WØBP BeeP. Late reports indicate that 16,046,327,501,000 microwatt-seconds of energy were radiated on 3620kc and 7140 kc discussing this years affair. Also thanks to the five radio publications that carried the announcement, printing a total of over 300,000 copies.

PREDINNER LUNCHEON: A few of the leaders of amateur RTTY met at a "pre-dinner" luncheon. The following were invited: W1EDI, W1 BGW, W2 EDI, W2JAV, W2JTP, W2PAU, W2PBG, W2PEE, W2ZKV, W3EMC, W3PYW, W6AEE, W9GRW, WØBP, and ZL1WB. All of these were not expected to arrive in New York in time to attend the luncheon.

Thanks and brickbats to the ARTS Bulletin for covering the dinner so well---altho reasonable effort has been taken to make this issue accurate and complete, because the bulletin must be printed before the dinner, some inaccuracies and omissions will occur. Such that come to the editors attention will be in the next issue.

THANKS to the HAM REGISTER, INC., of 37 S. Sixth St, Indiana, Pa. for their kind permission to use their copyright material appearing on pages 2, 3, and 4 of this bulletin. These interesting thumbnail biographies show that our friends do have some other interests besides RTTY! If you want to look up sketches on more of your friends, get the Ham Register for $5 from above address. Price is less than a cent a page, a bargain these days.

Thanks to W2KCR for the fine polar story for this issue (p. 20).

BANQUET PROGRAM: ZL1WB, remarks. Ralph M. Hirsch, demonstration of Teleprinter's MITE (See p.40). W6AEE, February SS (See p. 40). WØBP, 40M net (p.51-4), RTTY DX, and NFSK Party. W3PYW, 1958 Armed Forces Day (p.18) and ARRL National Convention. W2ATQ, historical development of FSK equipment. W9NOE, stepping switches for call signing. Net Roundups, MARS, CD, etc.

WØEZK TERENCE McDONALD, 1505 HILLCREST RD, NEWTON, KANSAS Sales & Production mgr, American Flours, Inc, Newton. Two Model 26's. Viking II transmitter on 80-40-20 meters. Also on 2 and 6M but so far no RTTY these bands. NC-300 receiver. 500W xmtr under construction for RTTY. Area communications officer for CD.

BULLETIN OF THE AMATEUR RADIOTELETYPE SOCIETY, March-April 1958
443 West 47 St, New York 36, N Y. Clay Cool, W2EBZ, Editor

W1BDI FH Ed
F. E. Handy, 35 Brookline Dr., W. Hartford 7, Conn. ... Licensed 1920 ex 1XAH, 8BCM ... Vice President and Communications Mgr. AARL—

Operational activities and field organization of ARRL, Nat'l traffic system, Emergency Corps, RACES, ARRL operating awards ... College: Maine ... Service: Col. USAF in WW II Directorate of Communications USAF. Overseas in '43 Leg. of Merit, etc.... Hobbies: Dabble in photography and how to do it, but NTS net operating, RTTY, SSB and amateur radio principal interest ... Author of first Radio Amateur's Handbook, 1926.

W1BGW Jack
Jack Berman, 19 Washington St., Boston 21, Mass. ... Licensed 1929 ... Electronic Technician, ex commercial opr. ... in Television ... Service: Army Sig. Corps WW II in S. W. Pacific ... Married ... Hobbies: Tropical Fish, 16 MM home movies ... Work Radio teletype mostly, DXCC, Member IRE, Operate Mobile, CW Man, Have IKW Rig, WAC 3.5 Mc CW.

W1YYZ George
George H. Foley, 1241 N. Main St., Randolph, Mass. ... Automobile Dealer (Buick)—Garage, Sales & Service (Owner) ... Member: Rotary Club, (Secretary) ... Married, 3 children ... Hobbies: Photography, Movies 16 mm.

W2ANB John
John F. Longley, Slingerlands, Albany Co., N. Y. ... Licensed 1924 ... In engineering dept. New York Telephone Co. Albany, N. Y. ... Microwave Radio, TV and Mobile Radio ... College: M. I. T. (BS '33, MS '34) ... Clubs: IRE (S. M.), Adirondack Mtn. Club, Am. Canoe Assn. ... Service: Signal Corps E T G, in England (Radar Work), USAF in Pentagon and Bolling Field ... Family: wife W2ZPR, 3 sons.

W2EBZ Clay
Clayton Cool, 443 West 47 St., New York 36, N. Y. ... Licensed 1942, Ex W8WYP, N9RAH

... My work: Design and technical writing in Communications and Electronics - Editor ARTS Bulletin (Amateur Radio-Teletype Society) ... Clubs: ARRL, ROWH, ARTS, VWOA, AFCEA, NY National Guard ... Hobbies: Philately, numismatics ... ex-Merchant Marine operator.

W2JTP Byron
Byron H. Kretzman, 16 Ridge Drive, High Hills, Huntington Station, N. Y. ... Licensed 1936 ... Electrical Engineer—Ass't. Chief Engineer, Erco

Radio Laboratories, Inc.—Communications systems engineering—airports/airways ... College: Vermont ... Member: AIEE, ARRL ... Service: Signal Corps, U. S. Army; instructor in radio & RTTY, Ft. Monmouth, N. J., Europe and Far East ... Married, 1 boy, 1 girl ... Hobbies: Writing: short story; technical ... Radioteletype Editor and conductor of monthly column in CQ Magazine—activities and technical information about RTTY. Author of technical articles in other publications.

W2NSD **Wayne**

Wayne Green, 1379 East 15th St., Brooklyn 30, N. Y. ... Licensed '41, Ex W4NSD, W8NSD ... Editor of CQ ... Nature of work: Easy ... College: RPI ... Service: USN 3 years in Submarines ...

Hobbies: Travel, Reading, Girls, Psychology, Flying, Horse Training, HiFi, Skin Diving, Water Skiing, Photography, Boating, Mountain Climbing, Astronomy ... Awards: SS section winner 5 times, VHF contest twice, DX contest once ... Have been Broadcast Engineer-Announcer (3 stations) TV Engineer Cameraman, TV Director-Producer. (3 stations). Also practicing Psychologist for two years —manufacturer of HiFi speaker cabinet for four years.

W2PAU **Brownie**

E. Miles Brown, 88 Emerald Ave., Westmont, Collingswood 7, N. J. ... Licensed 1935—Ex W1IRV ... Systems Project Engineer - RCA ... Attended M. I. T. 1939 ... Clubs: IRE, South Jersey Radio Assoc. ... Married - XYL, Shirley, 3 girls and 1 boy ... Hobby: Sports cars ... Former VHF editor and Technical Editor CQ Magazine. Occasional Contest awards—especially active on VHF.

W2RTW **Johnnie**

John M. Mulligan, 819 Clairmont Ave., Elmira, N. Y. ... Licensed 1934 Ex W8RTW ... Communication (Radio) Engineer ... Member: Masons, Consistory and Shrine ... Married—wife and 2 daughters (both married) ... Avid radio teletype enthusiast.

W2TKO **Roy**

Roy W. Weise, 135 Bering Ave., Kenmore, Buffalo 23, N. Y. ... Licensed 1935 Ex W9UTT, W8UXF, D4AFX ... Electronics Engineer—Sylvania Electric Electronics Systems Div.—Military Electronics ... College: U. of Cincinnati ... Member: IRE, ARRL, Radio Assn. of Western N. Y. ... Service: US Army Signal Corps ... Married—3 kids ... Hobby: Square dancing ... First Buffalo RTTY station ... Interested in RTTY, SSB, VHF, CD.

W3FMC **Al**

Fred W. Albertson, 3753 Jenifer St., N. W. Washington 15, D. C. ... Licensed 1923, Ex 8DOE, 8CXY, W8ZZB, W8ZZDB ... Commun. Lawyer and Prof. Engineer ... Partner, Dow, Lohnes & Albertson ... College: Michigan ... Past member House of Delegates, American Bar Assn., Past Pres. Federal Communications Bar Assn. ... Family: XYL and 2 Harmonics ... See "Who's who in America" ... Only person who has been the head of both the Radio Lawyers and the Radio Engineers in the Nations Capital.

W3FU **John**

John M. L. Towse, 706 Alvin Ave., Salisbury, Md. ... Licensed 1931—W4FF ... Manager—Wholesale Distributor, Electronics ... Member: Blue Lodge, Commandery and Shrine, QCWA ... Service: Chief Photographers Mate W. W. II ... Married, two daughters ... Asst. Director—Atlantic Div. ARRL.

W5UHV **Eddie**
Edward F. Aymond, Jr., 7125 Meadow Lake, Dallas 14, Texas ... Electronic Manufacturers Rep. ... Edward F. Aymond Company ... Club: Civitan ... Service: U. S. Navy—Electrician's Mate Second Class ... Married—3 children ... Hobby: Model Railroads.

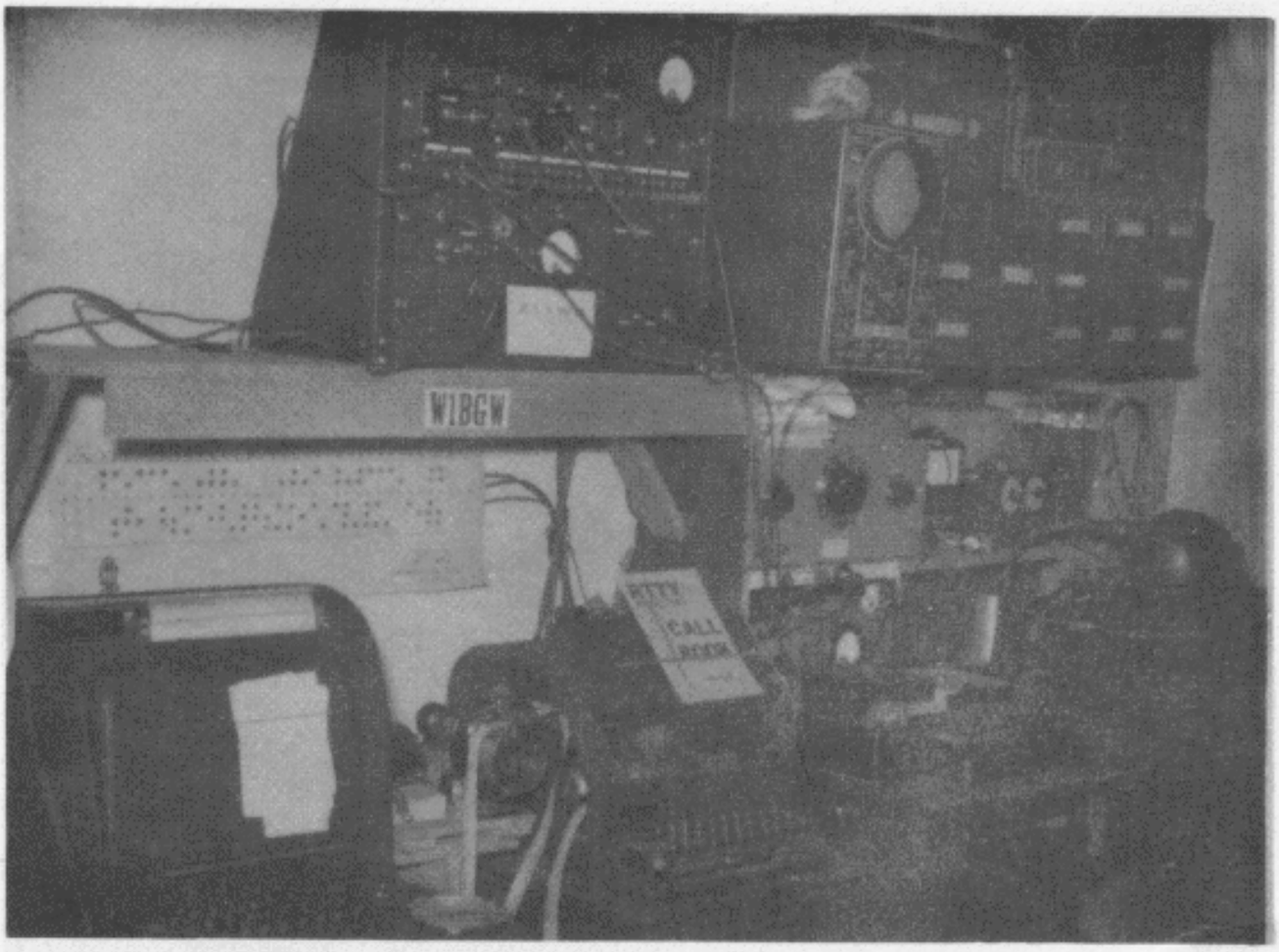
W3NQA **Dick**
Richard A. Gilson, 201 Pioneer Street, Warren, Pa. ... Licensed 1947—W3PQD ... Electrical Eng. ... College: Pitt ... Member: Masonic ... Service: Radar Officer, WW II, 1st Lt. Signal Corps ... Married ... Hold First Class Radiotelephone License ... Member of Army MARS.

W6AEE **Merle**
Merrill L. Swan, 372 W. Warren Way, Arcadia ... Licensed 1920, Ex 5AEE, W6OGM ... Chief Materials and processes, Cannon Electric ... College: Okla. City ... Member ARRL, SEG, IRE ... Married, 2 daughters ... Hobbies: Music, Photo ... Several patents in geophysical instrument field.

W6FDJ **Roger**
Roger L. Wixson, 301 Berlin Way, Oakland 2 ... Electrical Engineer—Shell Research Center ... Member: Masons F&AM, Past Pres. Oakland Radio Club ... Service: USNR since 1942 ... Hobbies: Photo and Mineralogy ... SCM.

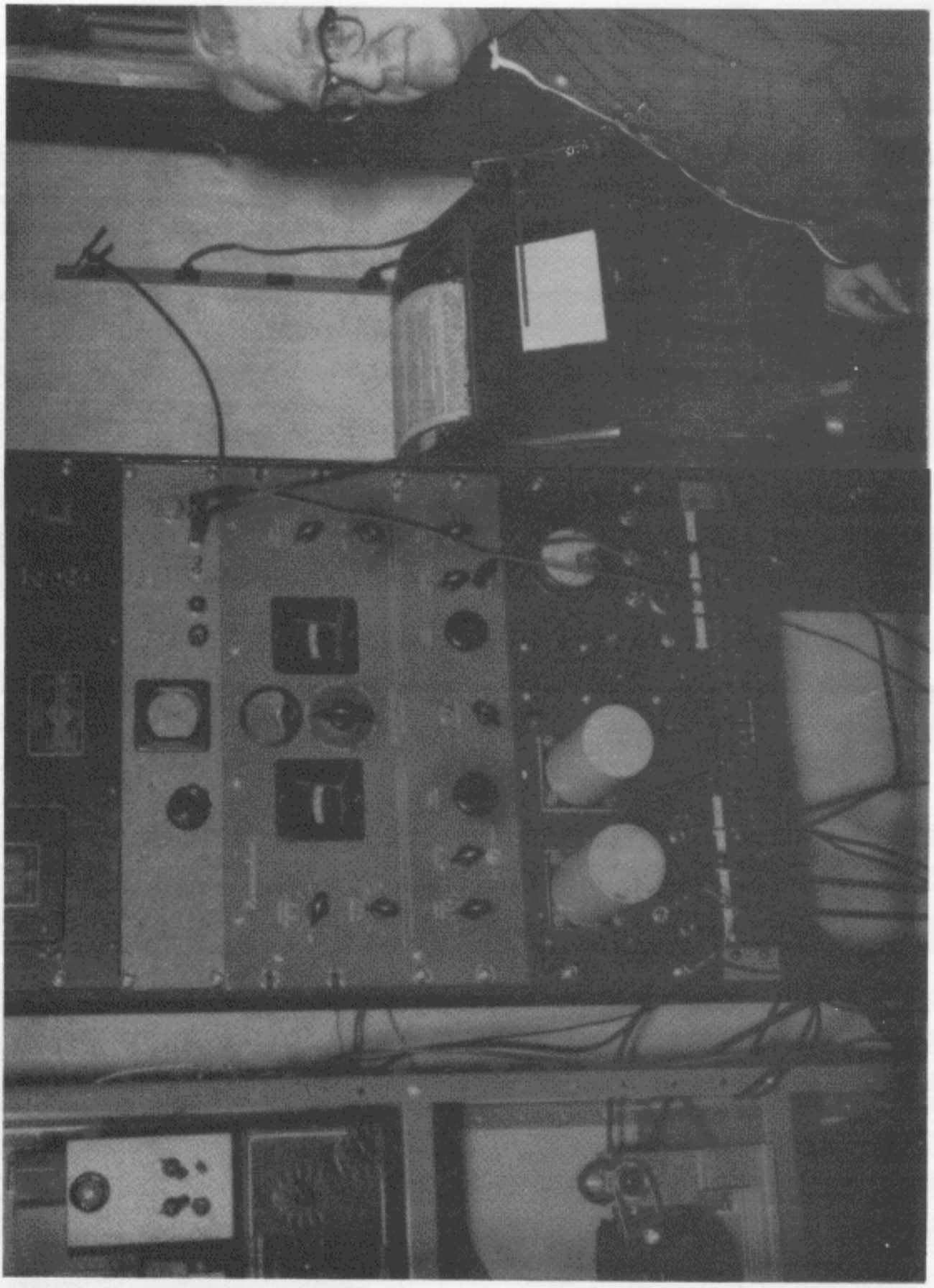
W9NOE **Dean**
Richard D. Cortright, 8219 N. Merrill St., Niles 31, Ill. ... Licensed 1931, Ex W6HGC, W2LEI, W3FWX, W3JZK, W4JZK ... In Engineering and Management—Component Manufacturing (Crystals) ... Member IRE, Lutheran Brotherhood ... Service: LCDR, WW II, OSS WW II ... Married, 2 girls, 2 boys ... Hobbies: Boy Scouts, Camping ... Main interests emergency communications and RTTY. Continuously commercial license since 1929.

WØBP **Beep** **Also W9BP**
Boyd Phelps, 4232 Scott Terrace, Minneapolis 16, Minn. ... Licensed 1911, Ex 9ZT, 9ALL, 1HX, 1XAQ, 2EB, W2BP ... Consulting Radio Engineer —Commercial Radio Frequency Measurements ... Owner & Director: Phelps Precision Labs, Minneapolis ... College: U. of Minn. ... Clubs: Theta Xi, Elks, Shriner ... WW I radio Opr. & instructor—WW II Command of Navy Radio Schools—Comdr. USNR ... Family Status: grandfather ... Used short waves in 1919—one of the first short wave Trans-Atlantic contacts—First communication on 5 meters and on ¾ meters—first public TV—first ham TV (1928) etc. ... Awarded Gold Medal at Radio Amateur Convention in Chicago 1933 for most outstanding pioneer development of Short Waves below 200 meters ... Since 1950 a frequent contributor to advancement of RTTY.

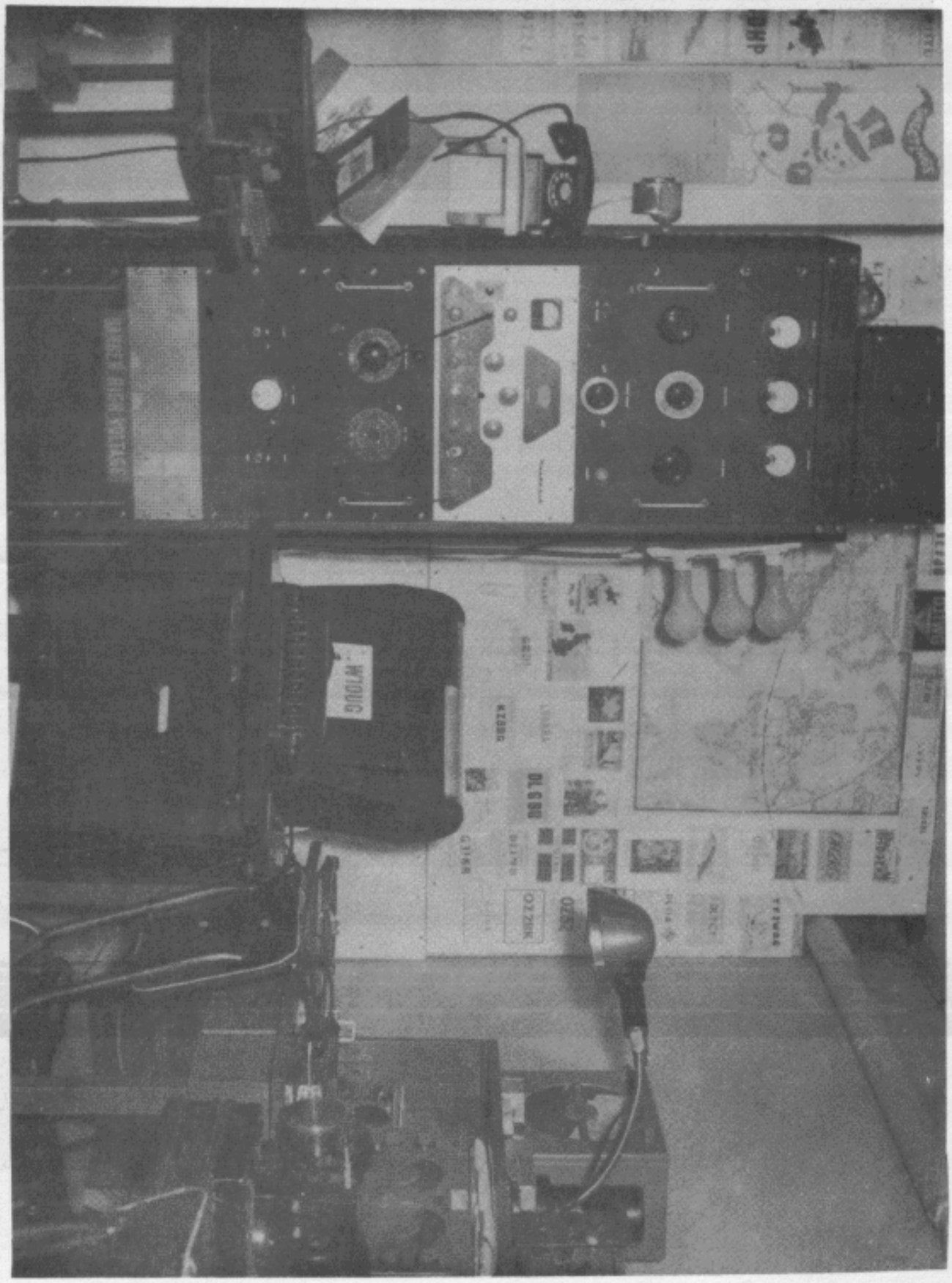


W1BGW JACK BERMAN DORCHESTER MASS ARTS 50-5

ARTS 50-6 W1EVZ JAMES KING HOLYOKE MASS



W1IYU LOUIS MACDONALD SCITUATE MASS ARTS 50-7



ARTS 50-8 W1OUG GORDON STANYS STAMFORD CONN

QRA LIST OF BANQUET GUESTS - FOURTH ANNUAL RTTY DINNER

FIRST INTERNATIONAL RTTY GATHERING - NEW YORK CITY - 24 MAR 1958

GUEST OF HONOR - BRUCE H. ROWLINGS, ZL1WB FROM NEW ZEALAND

ZL1WB BRUCH H. ROWLINGS, MASON ST, ONERAHI, WHANGEREI, NORTHLAND, NEW ZEALAND. SCRTS ARTS Our guest of honor has been pretty well covered in past issues of RTTY and ARTS bulletins, including photos in RTTY. With W1BGW, holds world DX RTTY record. SS contest 1956, and while at WoBP, the Nov 57 and Feb 58 SS. Instrumental in spreading the amateur RTTY art to others down under. With VE2ATC, Bruce makes this the first international amateur RTTY gathering. Bruce hopes to spend a little time seeing New York and New York area RTTYers, and hopes also to be able to visit other east-coast and mid-west cities having active RTTY activity.

W1AFN THOMAS C. HOWARD, ALLTRONICS-HOWARD CO, BOX 19, BOSTON 1, MASS. "Tom" SCRTS ARTS Manufacturer of the Alltronics Telewriter Converter Model "A". Dope sheets giving schematic and connections between converter and Model 26 printer available.

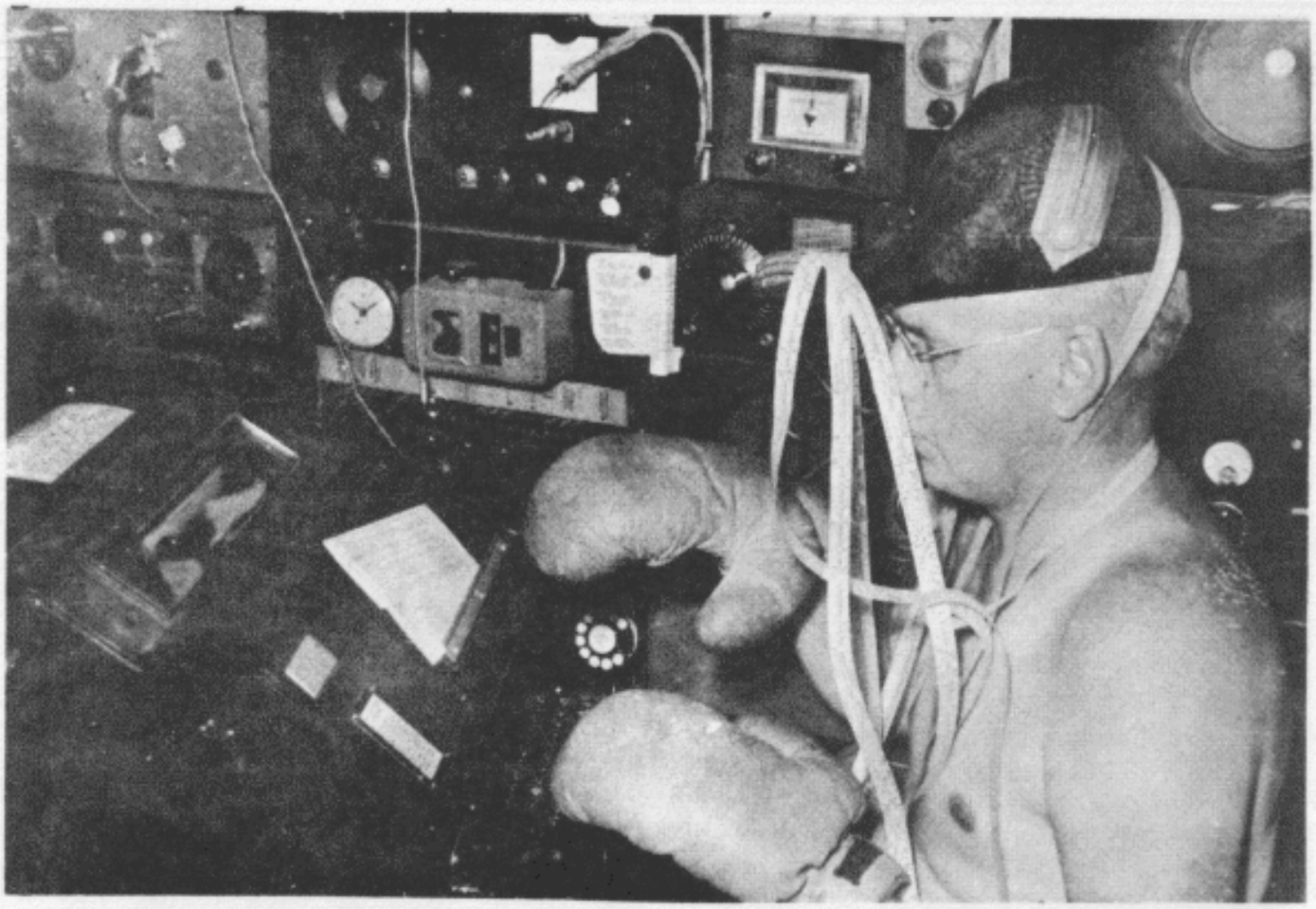
W1BDI FRANCIS E. HANDY, 35 BROOKLINE DRIVE, WEST HARTFORD 7, CONN. "Ed" HR SCRTS ARTS Active SS, Armed Forces Day, etc.

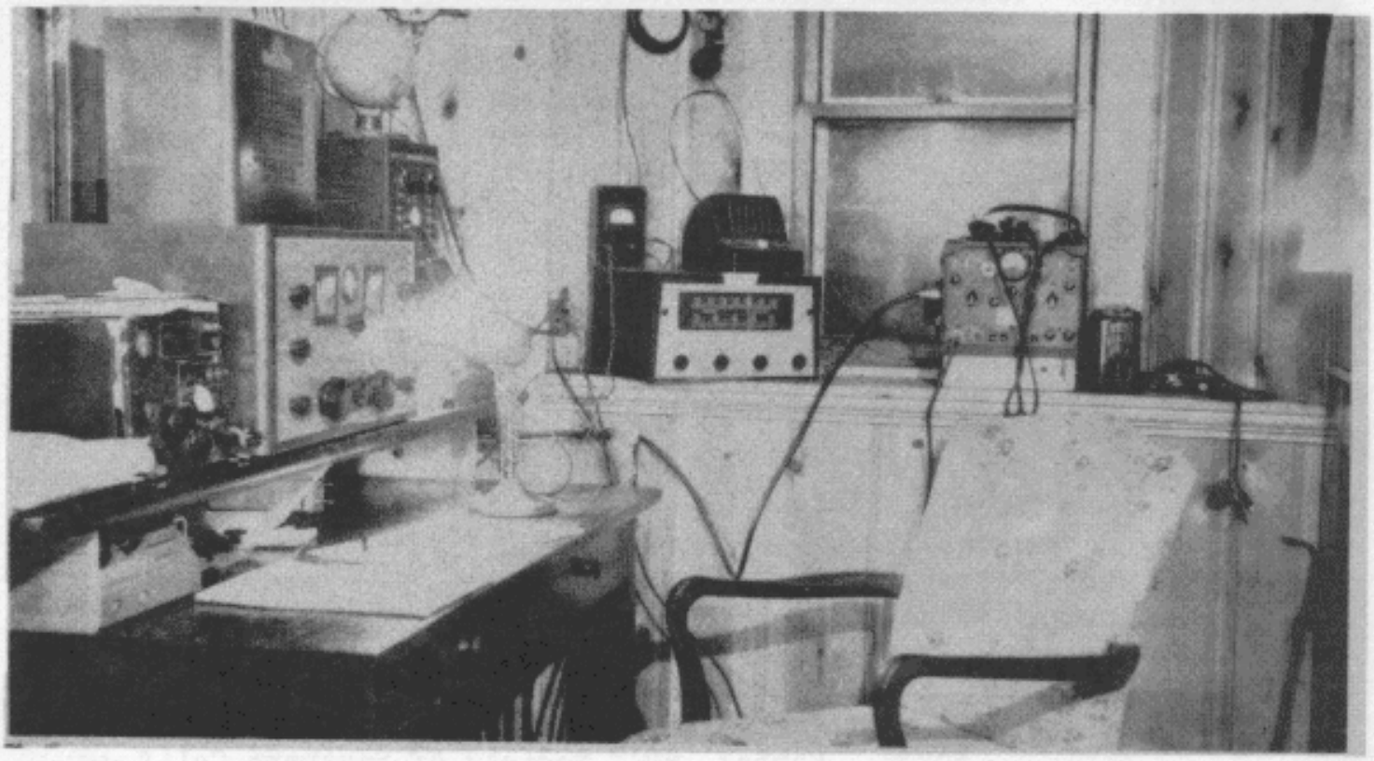
W1BGW JACK HERMAN, 19 WASHINGTON ST, DORCHESTER 21, MASS. HR SCRTS ARTS NCS East Coast Net Wednesday 3620kc 1900EST. Married, 45 years old. Ham 30 years, first exposed to RTTY in Army during WW2 in New Guinea. Amateur extra class license, commercial telegraph and first class phone tickets. Electronic technician. Commercial operating experience. Collins 310B exciter feeding PP 813's running 1 kw. W2PAT converter and Model 26 page printer, Model 14 typing reperforator, and Creed tape head. Receiver 75A2. Best DX ZL1WB on RTTY. DXCC 171 confirmed and WAZ. Works 3.5, 7, 14, 21Mc RTTY. ARRL IRE Photo page 5 Jack is trying to find two panels which are part of the FGC-1.

W1EVZ JAMES W. KING, 913 HAMPDEN ST, HOLYOKE, MASS. "Jim" SCRTS ARTS Photo page 6.

W1IYU LOUIS H. MacDONALD, 14 HARBOR HEIGHTS RD, SCITUATE, MASS. "Lou" Chief Engineer WHUL, International broadcast stations (World Wide Broadcasting System, Inc), 15 years. 56 years, 6 ft 190 pounds. Ham 25 years; RTTY seven months. 10B SSB modified drives 150B final 300 watts; HRO-7; long wire antenna 50 ft high Model 15 complete; W2PAT-type receiving converter; WoHZR tuning scope; W1BGW control panel; Creed tape head; planning for tape puncher and a Model 26 (for living room use). Operation mostly on 80 meters. Photo page 7. (Continued on page 13)

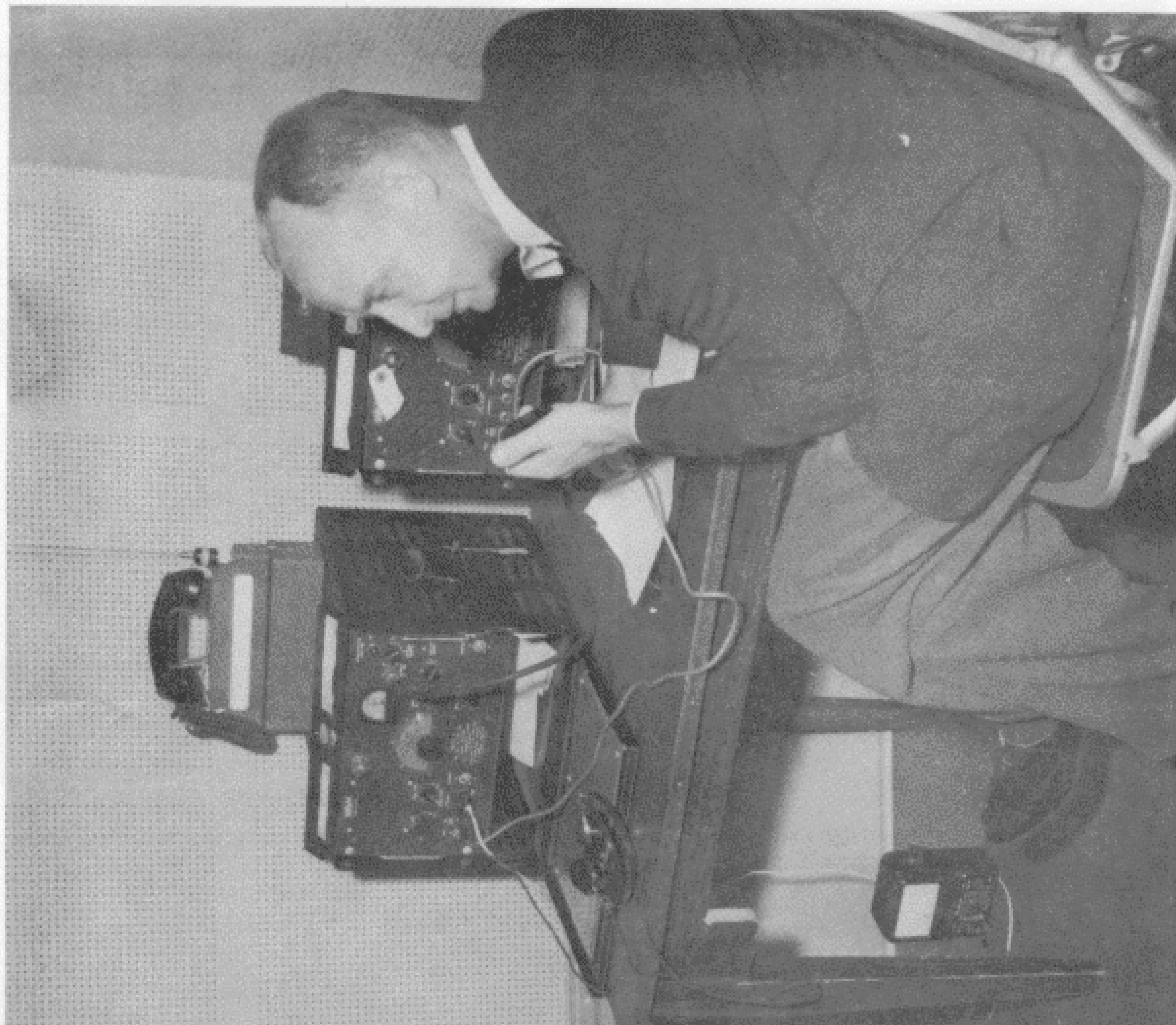
Abbreviations: HR: Listed in Ham Register (see pages 2, 3, 4)
SCRTS: Member, RTTY Society of Southern Calif.
ARTS: Member.





ARTS 50-10 WØBP MINNEAPOLIS (TOP) W1YYZ RANDOLPH MASS (BOTTOM)

W2ATQ WALTER GROSSELFINGER MANHASSET NY ARTS 50-11



ARTS 50-12 W2EBZ NEWYORK (LEFT) W2VKF STATIN ISLAND NY (RIGHT)

W1OUG GORDON STANYS, 27 WARDWELL ST, STAMFORD, CONN. SCRTS ARTS National Broadcasting Company, New York. On air with RTTY since April 1957. Model 26 teleprinter, Creed tape transmitter. Model 14 perforator. Transmitter pair of 813's grounded-grid 900 watts. Receiver NC-183. RTTY converter: FRA and home-brew audio type. OBS (See page 51-4). Photo page 8.

W1PXC VAINO A. KESTILA, 73 SCITUATE AVE, SCITUATE, MASS.

W1YYZ GEORGE H. FOLEY, 1241 N. MAIN ST, RANDOLPH, MASS. HR Owns and operates Foley Buick, Inc, business at same "stand" 22 yrs. Newcomer to RTTY in past year, just getting active on air. Model 26 teleprinter with W2PAT converter; Elmac transmitter 60W receiver HQ140X. Aided in getting on RTTY by W1BGW. EC for Randolph (Pop. 17,000) and active in local CD. Other interests: Hunting, Fishing, Ham Radio, Photography (Cinema), Pretty Women, Liquor. Photo on page 10.

W2AKE ANDY STAVROS: I am scheduled to be in the hospital the 24th so probably cannot make it this year.

W2ANB JOHN F. LONGLEY, 1623 NEW SCOTLAND RD, SLINGERLANDS, N Y HR SCRTS ARTS Very active Air Force MARS. W2BFD converter. Model 15 teleprinter.

W2ATQ WALTER H. GROSSELFINGER, 109 PLANDOME COURT, MANHASSET, N Y SCRTS Director Communication Equipment, Westrex Corp, New York. On air 20 meters one month, 1947. Returned to air Jan 1958. Transmitter: Remotely controlled Westrex 300 watts 7 and 14 Mc. Antenna half wave doublet and quarter wave ground plane, respectively, 40 ft high. Crystal controlled spot frequencies and VFO, shifting 75 to 850 cycles, electronic keying. Receiver Collins 51J-4, 2 Westrex 49B fixed frequency receivers in diversity, 1 Westrex type 50 diversity converter. Printers: Model 15 at 65 wpm and Model 28 at 100 wpm, both electronically keyed. Photo page 11 shows partial view of operating location: Converter, 51J-4, VFO panel, FS exciter, patch panel, monitor relay and electronic receiving keyer. (Transmitter is remote.)

W2AVI WILLIAM H. KUNZLER, 87-16 107th AVE, OZONE PARK 17, N Y "Bill" Model 12 on 2 meters. Building 425c fork oscillator.

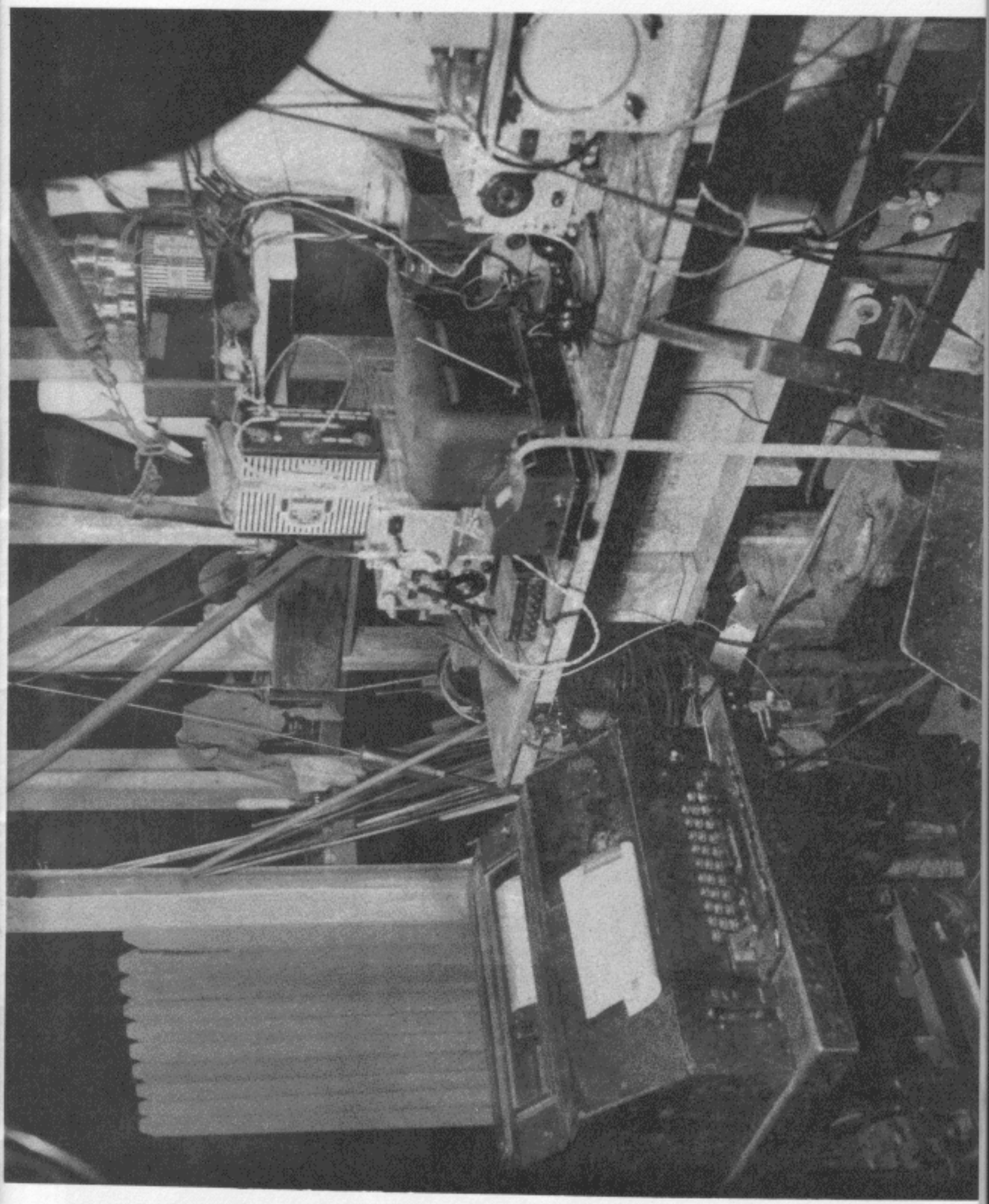
W2BDI EDWARD S. CLAMMER, 1951 HILLCREST, MERCHANTVILLE, NJ SCRTS

K2CSC CHARLES E. ROGERS, 261 NAGLE ST, BOUND BROOK, N J. "Bud" Model 12 and Viking II transmitter on all bands except 2 meters. GPR-90 receiver with GSB-1 slicer on the I.F. Converter designed by Jack Brown of Barker-Williamson.

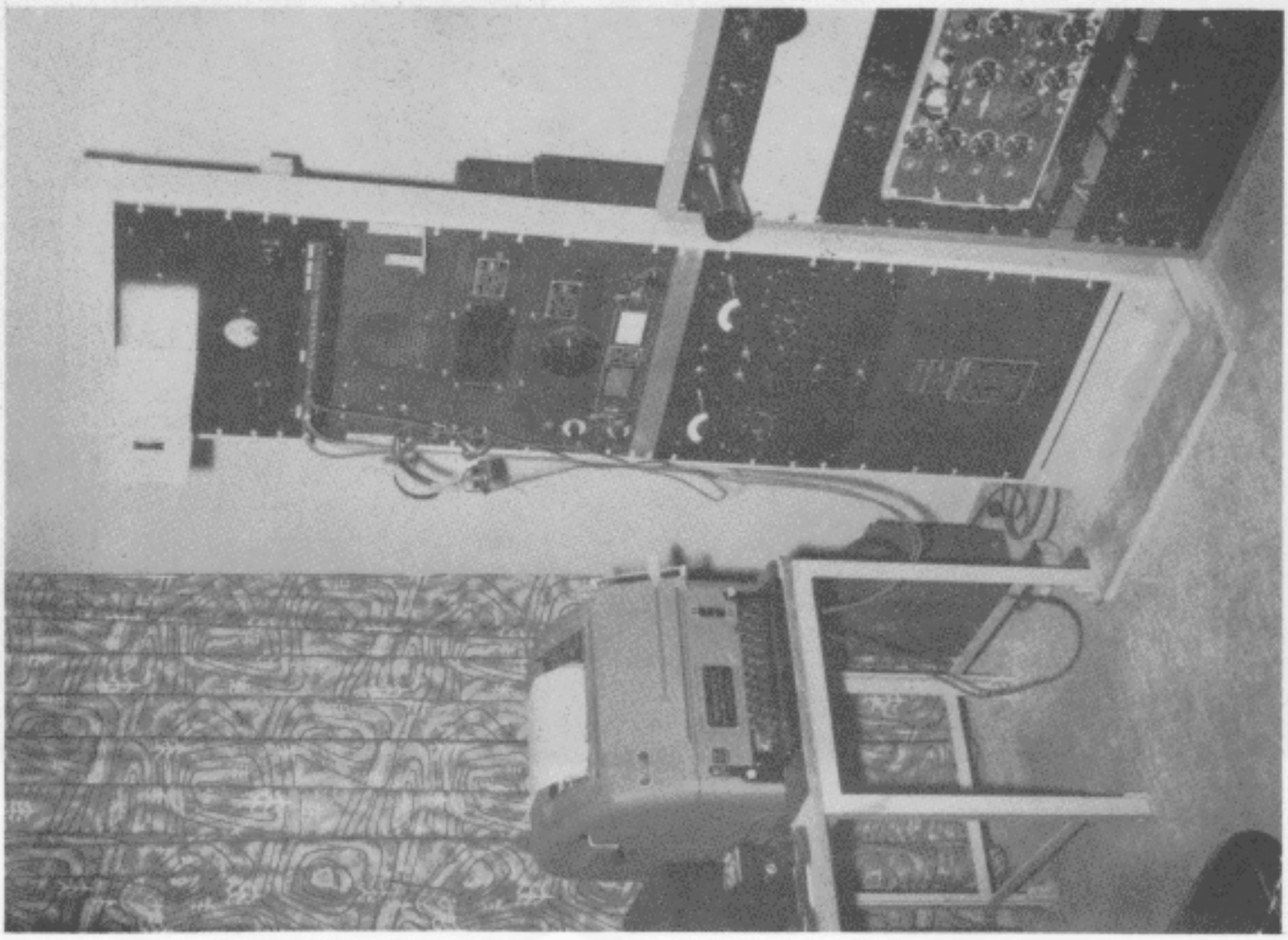
K2CSI JOSIAH WRIGHT, 22 CRESTVALE TERRACE, YONKERS, N Y ARTS Civil Defense; Ward Leonard Electric Co, Mount Vernon. 2 meters Model 26, Model 14 tape transmitter, 522 transmitter, Gonset converter, SX11 receiver. "Joe"

(continued on page 34)

ARTS 50-14 K2OBJ STUART DAVIS UNION NJ



W6AEE MERRILL SWAN PASADENA (B4 QSY) ARTS 50-15



ARTS 50-16 LOUIS BUCK ROSEMERE QUEBEC

W4TLA, Warren, Rocky Mount, N C: At long last I have obtained a 26 machine. I now have it copying with a W2PAT TU and hope to be on one of the bands in the very near future. I have been subscribing to ARTS for several years... Keep the info coming.

S P U T N I K S N O R T E R S O F W E S T A L L I S

Many ham radio contacts (except RTTY) have relegated themselves to "I paid $14 for my mike and it has a blue button while yours has a red one therefor mine is better." Some of the gang in West Allis, Wisconsin were pretty tired of this sort of goings on, and it may be added, these boys are all "builders." They decided to do something about the sad situation, so they formed the "Sputnik Snorters," so named because they talk about things generally considered not in the usual QSO (i. e. - above others heads), and when they get together, they catch a snort (beer). Quite to the gangs surprise, the group has grown. It started with five and is now a howling, arguing, snorting group of fifteen. Informal meetings are held in any handy basement hamshack. Everyone pools for a case (?) of suds. Another odd and somewhat wondrous thing, the XYL's sanction the idea! About ten percent of discussion time is given to ham radio. Numerous other subjects are aired, with every one getting a chance to burp his views. You might call this an old original ham club, but the only organized thing about it is that they get together. Piles of fun, tho!

---Norman Krohne, W9SKF

ARMED FORCES DAY 17 MAY 1958

May 17, 1958 has been designated Armed Forces Day. All U. S. amateur radio operators are invited to participate in the CW, AM, SSB and RTTY communications contest. Co-sponsors are the Army, Navy and Air Force. Increased activity is planned for the radioteletype operators this year. The Secretary of Defense will award a certificate of merit to those making perfect copy of the 25-wpm CW transmission (details in QST). A certificate of merit from the Secretary of Defense will be awarded to those who submit perfect copies of the special Armed Forces Day message which will be sent by radioteletype. Messages copied in the contest should be submitted to: Armed Forces Day Contest, Room BE1000, The Pentagon, Washington 25, D. C.

The radioteletype message will be sent at sixty words per minute and each transmission will commence with a 10-minute period of test and station identification to permit adjustment of receiving equipment. At the end of the test period, the message will be sent. No extra credit will be given for copying more than one station. The message should be submitted as received---make no attempt to correct possible transmission errors. Indicate time, frequency, and call sign of station copied, as well as name, call sign and address of the receiving amateur. The RTTY message schedule is:

Time 17 May 1958	Call Sign	Frequencies (kc)
180330Z	WAR (Washington,D.C.)	3347
(2230-EST)	NSS (Washington,D.C.)	6970
	AIR (Washington,D.C.)	7915
180330Z	A5USA (Ft Sam Houston	5302.5
(2130-CST)	Texas)	
	NDS (Great Lakes, Ill.)	7375
180330Z	AF6AIR (Hamilton AFB, Cal)	7832.5
(1930-PST)	A6USA (Army Radio San	6997.5
	Francisco, Calif)	
180345Z	NDF (New Orleans, La.)	6970
(2145-CST)	NDS (Great Lakes, Ill.)	7375
(1945-PST)	NDW (Treasure Island, Cal)	3319

In the Military-Amateur QSO test, stations WAR, NSS and AIR will be on the air from 171800Z (1200 EST) to 180500Z (2400 EST) on 17 May 1958. Amateur contacts will be discontinued from 180245Z to 180400Z to allow broadcast of the special Armed Forces Day Message (see frequencies and times above for RTTY broadcast, and QST for data on CW broadcast). Military stations will operate on spot frequencies outside the amateur bands as follows:

Station	Military Frequencies (kc)	Amateur Band (mc)
WAR (Army radio Washington,D.C.)	4020 (Voice)	3.8 to 4.0
	6997.5 (CW)	7.0 to 7.2
	20994 (SSB-Voice)	21.25 to 21.45
NSS (Navy Radio Washington,D.C)	4010 (CW)	3.5 to 3.8
	3319 (RATT)	3.5 to 3.8
	6970 (RATT)	7.0 to 7.2
	7375 (CW)	7.0 to 7.2
	14385 (SSB-Voice)	14.2 to 14.3
	14480 (CW)	14.0 to 14.2
	20075 (CW)	21.0 to 21.25
	*20050 (RATT-See Note)	
AIR (Air Force Radio Washington,D.C.)	3347 (CW)	3.5 to 3.8
	7635 (Voice)	7.2 to 7.3
	14405 (SSB-Voice)	14.2 to 14.3

*NOTE: NSS will key 20050 kc simultaneously with 3319 or 6970. 20050 will be used as propagation warrants.

Military stations will listen for calls from amateurs within the appropriate amateur bands. Contacts will be brief exchanges of location and signal reports---no traffic handling or message exchange will be permitted. A QSL card will be sent to each station worked. Each military station will QSL separately.

Certain military stations will operate on spot CW frequencies to work novices only. Thus, the novices will not have to compete with higher powered stations. Details in QST.

Refer to ARTS 48-3 for the 1957 AFD results. With more active stations this year, and with more and better frequencies for the military stations, let's double last year's RTTY score.

ARMED FORCES DAY 1957

W3PTW, Frank, Silver Springs, Md: We (Phil and I) made 75 contacts down at NSS on Armed Forces Day. W6's outdid all other comers 2 to 1. Condx were very poor when we just got started up. We planned to work a gang of the east coasters but thunderstorm moved in and we couldn't hear any locals so that put the kibosh on that. We had loads of fun down at NSS. I didn't recuperate until Monday evening. It was a terrific strain. We didn't get up from our seat except during the 30 min break we stood by for the AFD message Broadcast. Hope to work a big gang of you next year. Perhaps they will give us 2 complete layouts so we won't have to "share" the single setup between 2 ops Some fun that "Tandem" operations Phil and I ran--we still are talking to each other!!! We were both grabbing for the KB at the same time. (Operators were Phil W2JAV and Frank W3PYW, 18 May 1957.)

W2KCR 1957 AMATEUR RADIOTELETYPE CIRCUIT TO OPERATION DEEPFREEZE

by Paul P. Blum, W2KCR, 101 Kristin Rd, North Syracuse, New York, Chairman, Operation Deepfreeze Committee of Radio Amateurs of Greater Syracuse (RAGS)

Our message service for the men in the Frozen South began May 1, 1956. At that time there were only two Bases established in the Antarctic: Little America and McMurdo Sound. Message traffic was handled almost entirely by phone and about two percent by CW. In this manner, over 4500 messages were handled for the men of Operation Deepfreeze One.

With the end of Operation Deepfreeze One and the beginning of the second phase of Operation Deepfreeze, five more Bases were established. This presented a problem due to the possibility of having to handle four times the traffic we had to handle the first year. With the majority of the personnel at McMurdo Sound and Little America, these being the only two Bases with teleprinter equipment, radioteletype sounded like the solution. We felt that the smaller bases could still be handled by phone.

When the radio operators at KC4USA and KC4USV were approached, they were all for the idea. Our next step was to get equipped. We purchased a Model 26 machine and an FRA frequency shift convertor. After the FRA unit was converted to 450 kc, it was fed from our RCA AR-88 receiver through a cathode follower. A small frequency shift unit, about 1⅓-inches square was built, consisting of four transistors and a few other small parts. This was attached to the side of the VFO shield inside our Johnson Viking Pacemaker. With the Pacemaker feeding into our Johnson KW, and a four-element Telrex beam 65-ft off the ground, we felt that we were ready to go.

Before we advised the Antarctic Bases we were ready, we double-checked everything because we felt we might not get a second chance if the first try failed. We had this feeling because we knew a large New York commercial teleprinter firm was ruled out because of poor copy. With a failure on our part also, we were sure use of radioteletype for handling our messages over so great a distance of over 8000 miles would be ruled out as impractical. Everything checked out fine, but we had one big problem. We calculated the best frequency to use was the twenty meter band and the best time was after midnight daylight saving time. With ten to forty messages a night, we had no one here who could type fast enough at that hour of the morning, to make the use of teleprinter an expedient measure. Our only answer was a Model 19 to enable us to make up tapes early in the evening and speed them on their way at 60 words per minute later on. An appeal was immediately made, in person and in writing, to the Syracuse manager of the New York Telephone Company. Our entire service was explained in detail, and within a short period of time a

Model 19 was loaned to us for the duration of our operation with the men down under. Now we were ready to go.

First the schedule was arranged on 14330 kc with Little America. Chief Radioman Bill Williams there advised he was ready to roll with a two minute test tape. At ØØ1Ø EDST on July 2, 1957, we copied:

W2KCR DE KC4USA RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR W2KCR DE KC4USA

It was solid. We gave Bill the OK on the test and started to copy again:

W2KCR DE KC4USA
GRAB YOUR POPCORN, SIT BACK AND RELAX, AND AWAY WE GO - - - - -

NR 2091 . . . . . .

We copied solid to message NR 2122 in three 10-minute tapes.

Teleprinter schedules were set for every other night. On July 21 McMurdo Sound came up on teleprinter and the schedules changed to Ø4ØØ EDST to enable us to clear traffic with the five bases earlier in the morning. Schedules ran until the 28th of September at which time the equipment in the Antarctic was needed on a full-time scale for official traffic.

The results for this two month period on radioteletype are:

553 pieces of traffic from Little America.
542 pieces of traffic from McMurdo Sound.
750 pieces of traffic sent to the Antarctic.
124 messages handled in one morning, on September 14th.
Average time for each message: 2 minutes.

All traffic received was turned over to the Syracuse Chapter of the American Red Cross for transmission by teleprinter to all parts of the country, about two hours after being received. To date (2/20/58), RAGS have handled 16,372 pieces of traffic to and from the Antarctic.

Winter is again setting in at the Antarctic. Ships carrying the press and other visitors have left. The men in Operation Deep-freeze Three are now settling down to again prove to the world that they can live under subnormal conditions, and we here in Syracuse are again getting our equipment ready to try and better the job we did last year.

(Editor's note: Paul modestly forgot to mention that he received the Navy Public Service Award at the 1957 ARRL National Convention. This highest award that the Navy gives to civilians was presented by RADM Bruton, Director of Naval Communications and W4IH. For this story see October 1957 QST, cover, page 10, and page 77. Many thanks for the above modest story of a great accomplishment all amateur RTTYers should be proud to read.)

LENKURT ELECTRIC

SAN CARLOS, CALIF. • VANCOUVER, B.C. • MEXICO, D.F.

Automatic Electric Company and Automatic Electric International Inc., Chicago, and their affiliates are distributors of Lenkurt products.

The Lenkurt DEMODULATOR is a monthly publication circulated to individuals interested in multi-channel carrier, microwave radio communication systems and allied electronic products.

DETECTION OF FM SIGNALS

Day by day, radio as a transmission medium grows more important to the telephone industry. A major factor in this growth is the superior quality of transmission that can be achieved through the technique of frequency modulation.

This article describes some of the common methods used to demodulate FM signals.

The function of any detector (demodulator) is to recover the amplitude and frequency of the modulating signal that enters the input to a transmitter. An amplitude-modulated (AM) wave consists of a constant-frequency carrier which varies in amplitude as the amplitude of the modulating signal varies. The over-all shape or *envelope* of the AM wave therefore takes on the shape of the original signal.

Detection consists of rectifying this wave and filtering out the carrier frequency. The resulting wave is a varying d-c wave which has the same shape as the original signal. When the d-c component is eliminated by a capacitor, the final wave duplicates the original modulating signal.

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However, the nature of a frequency-modulated (FM) wave is quite different and its detection requires an additional process.

Nature of an FM Wave

An FM wave varies in instantaneous frequency above and below a certain center (carrier) frequency. The amplitude of the modulating signal determines how much the FM wave varies from the center frequency. And the frequency of the modulating signal determines how fast these variations occur.

For example, suppose a sine wave signal of peak amplitude one volt and frequency of 200 kc modulates a center frequency of 100 mc. As the signal starts its cycle, its amplitude is zero. The

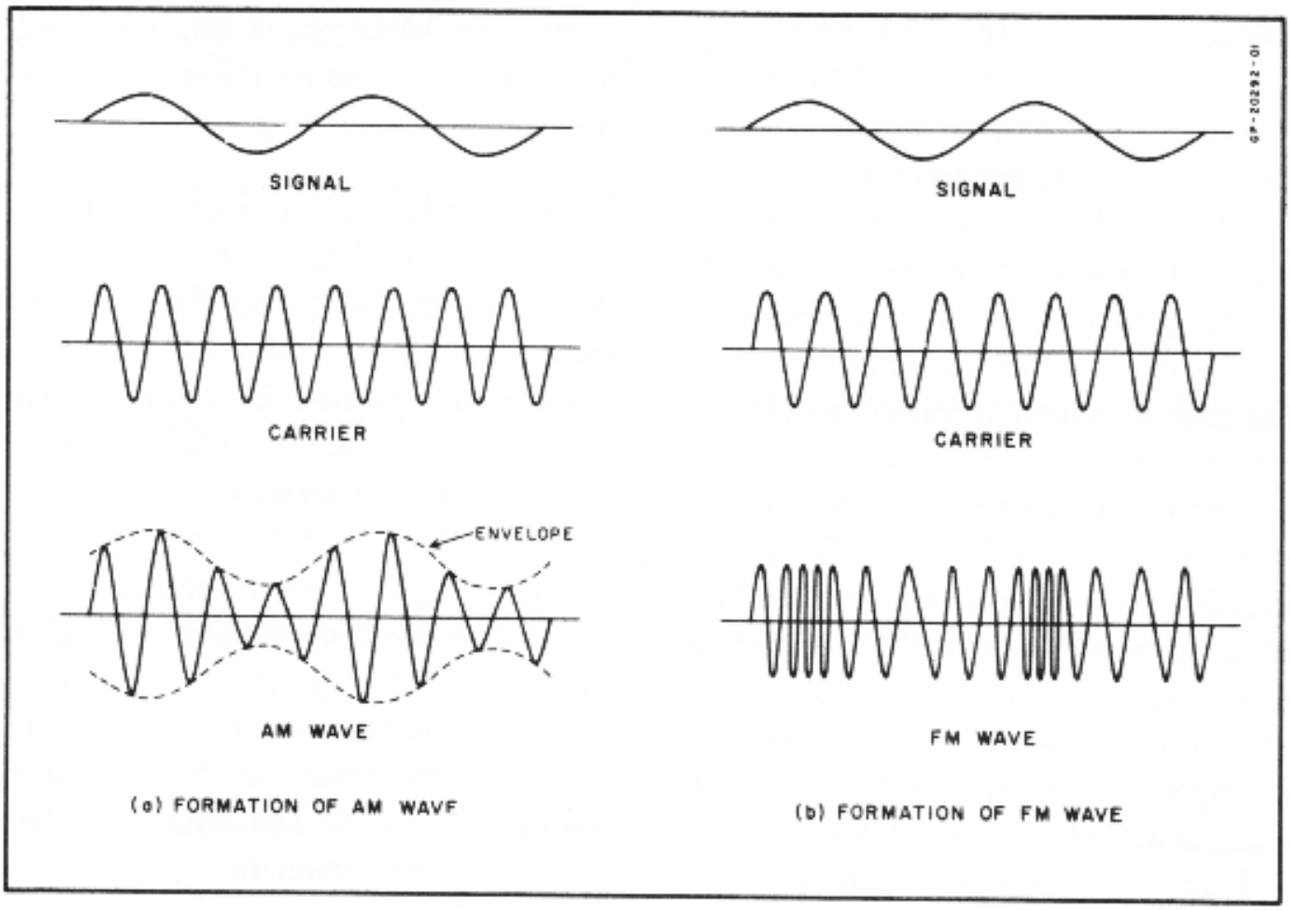

Fig. 1. Formation of AM and FM waves from a sine wave signal and a carrier.

carrier frequency is then an unmodulated 100 mc. As the amplitude of the modulating signal begins to rise, the frequency of the carrier wave begins to increase. It reaches its highest frequency when the amplitude of the signal is at its peak value of one volt. Then as the amplitude of the signal begins to decrease, the frequency of the carrier wave also begins to decrease. When the signal has completed one-half its cycle, its amplitude is again zero. The frequency of the carrier wave is again at the center frequency of 100 mc.

On the second half of its cycle, the amplitude of the signal decreases toward its negative peak. The frequency of the carrier wave then decreases below the center frequency. At the negative peak of the signal, the carrier-wave frequency reaches its lowest value. Then as the signal swings upward toward zero, the frequency of the carrier wave increases. When the signal has completed one cycle and its amplitude is again zero, the frequency of the carrier wave will be back to the center frequency of 100 mc.

If, in the above example, one volt caused a 100-kc change in frequency, the FM wave would go from its center frequency to a maximum frequency of 100.1 mc (100 kc above the center frequency), down past the center frequency to a minimum frequency of 99.9 kc (100 kc below the center frequency) and back up to the center frequency again. Since the frequency of the signal is 200 kc, this would happen at a rate of 200,000 times per second.

The amount by which the frequency differs from the center frequency is proportional to the amplitude of the signal. If the amplitude of the signal

is doubled, the amount of frequency swing will double. The frequency would then change from 100 mc to 100.2 mc to 99.8 mc to 100 mc at a rate of 200,000 times per second.

If the peak amplitude remains at one volt and the signal frequency is doubled, the frequency would still vary between the limits of 100.1 and 99.9 mc. But the rate at which it varied would increase to 400,000 times per second.

The amount by which the modulated wave differs from the center frequency is called the *deviation* of the wave. The maximum amplitude of the modulating signal determines the maximum deviation of an FM wave. For the preceding example of the one volt signal, the maximum deviation is 100 kc.

Figure 1 compares the steps in the formation of AM and FM waves. In the resultant FM wave, the amplitude remains constant. Only the frequency changes. The job of an FM detector is to convert these variations in frequency into variations in amplitude and to extract from the resulting AM wave the original modulating signal.

Slope Filter Discriminator

One of the simplest forms of FM detectors is the slope filter discriminator shown in Fig. 2. The FM input is coupled to a parallel LC circuit which is tuned to a frequency either above or below the center frequency of the incoming wave.

The voltage across a parallel tuned circuit has the characteristic of Fig. 3 for frequencies near the resonant frequency. This figure shows that the voltage is a maximum at the resonant frequency. As the frequency deviates above or below resonance, the voltage decreases.

Figure 3 also shows what happens when the tuned circuit is resonant at a frequency above the center frequency

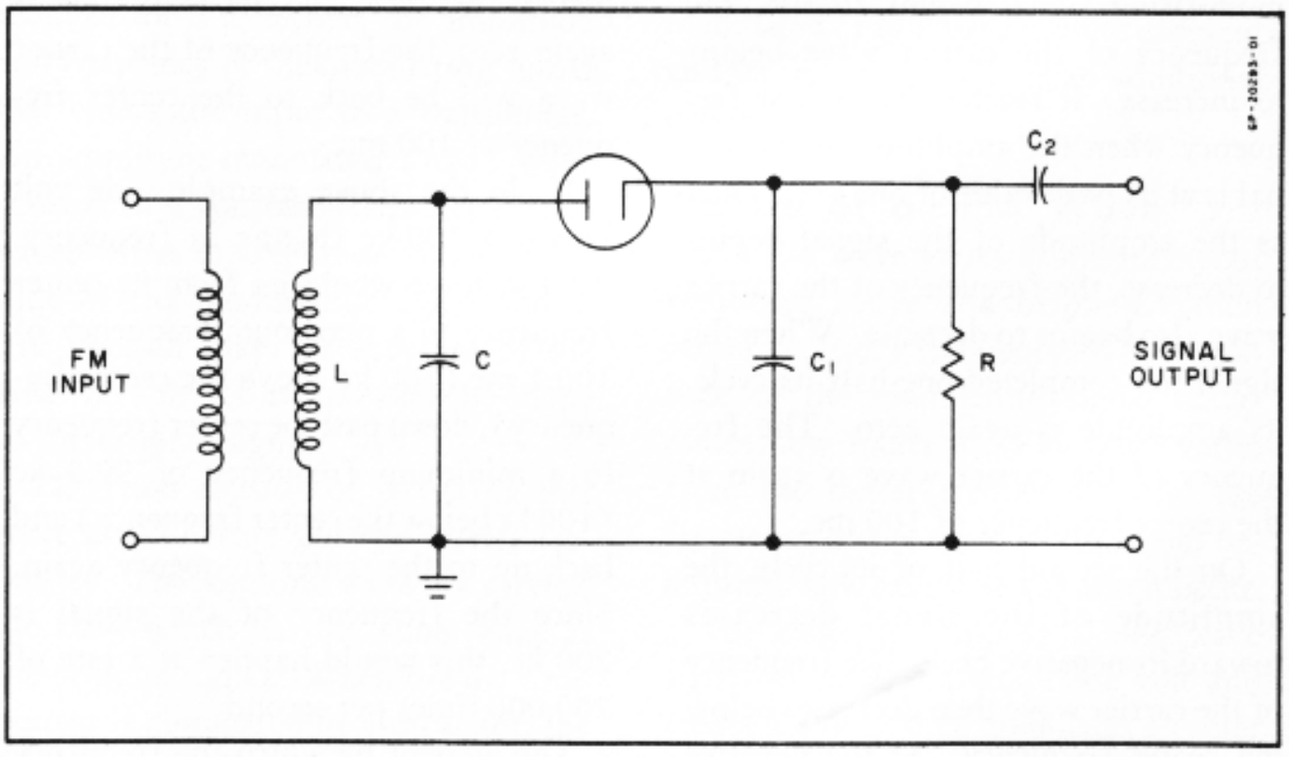

Fig. 2. Simple slope filter discriminator. Capacitor C_1 bypasses the high center frequency and its variations. Capacitor C_2 removes d-c component from output.

and its highest deviation frequency. All frequencies of the incoming FM wave will then fall on the sloping segment of the curve. The center frequency will produce a given voltage across the resonant circuit. Higher frequencies will produce higher voltages and lower frequencies will produce lower voltages.

As long as the segment of the curve is linear, the voltage variations across the resonant circuit are proportional to the input frequency. The circuit has converted the FM wave of constant amplitude and varying frequency into a wave which now varies in amplitude and in frequency.

On positive halves of the cycle, the diode of Fig. 2 conducts. The resulting current through the diode takes the form of d-c pulses which are proportional to the amplitude of the voltage across the resonant circuit. This current flowing across the load resistor sets up a voltage proportional to the current. Therefore, the voltage across the load resistor will be proportional to the voltage across the tuned circuit. Since the voltage across the tuned circuit is proportional to the input frequency, the voltage across the load resistor is proportional to the input frequency.

Bypass capacitor C_1 shunts off the

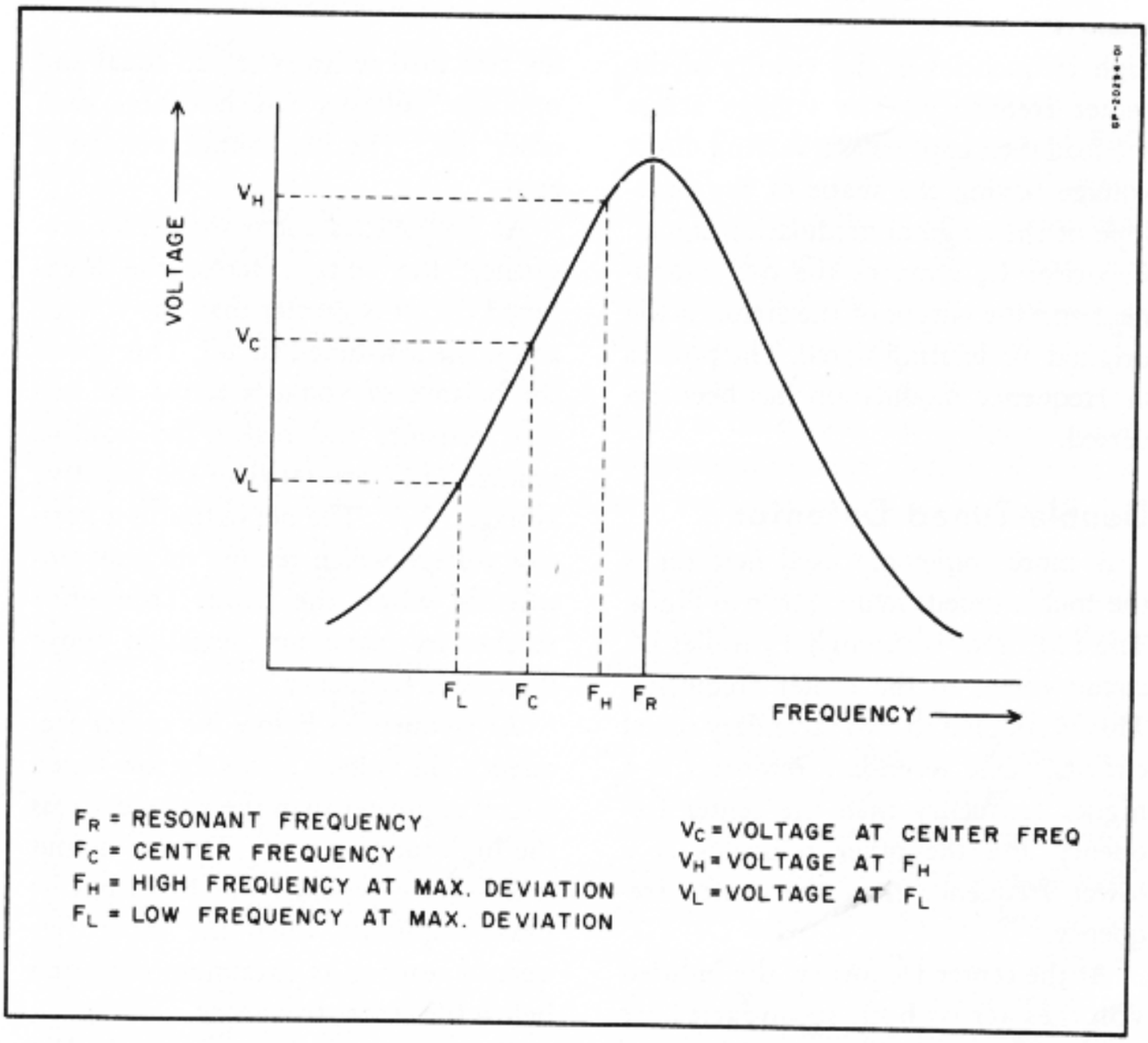

Fig. 3. Voltage-frequency characteristic of a parallel tuned circuit.

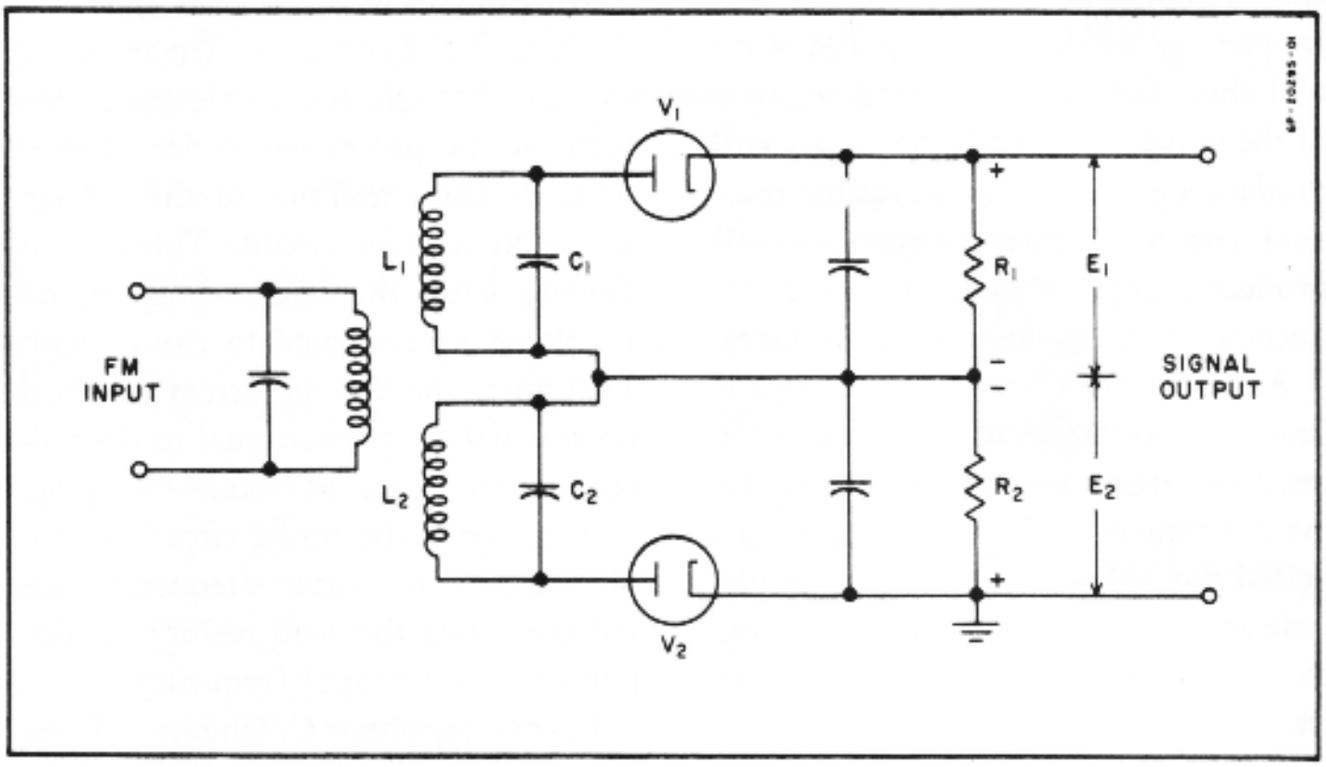

Fig. 4. Circuit of a double-tuned FM detector.

high frequencies in the vicinity of the center frequency. The voltage across the load then appears as a varying direct voltage having the shape of the envelope of the original modulating signal. Capacitor C_2 removes the d-c component and the output of the circuit is the original modulating signal. The process of frequency modulation has been reversed.

Double-Tuned Detector

A more commonly used detector is the double-tuned circuit shown in Fig. 4. The FM input is through a parallel LC circuit tuned to the center frequency. This is coupled to two secondary tuned circuits. One secondary resonates at a higher frequency than the center frequency and the other resonates at a lower frequency than the center frequency.

At the center frequency, the induced voltages across both secondaries are equal. The diodes then conduct equal currents. These currents flowing across the two load resistors set up equal and opposite voltages which cancel each other out. The net output voltage is zero.

At frequencies above the center frequency, the voltage across the high-tuned circuit is greater than the voltage across the low-tuned circuit. This upsets the balance of voltages across the two load resistors and makes the positive voltage (E_1) greater than the negative voltage (E_2). The net output is a *positive* voltage which reaches its peak amplitude when the input frequency reaches its maximum deviation above the center frequency.

At frequencies below the center frequency, the voltage across the low-tuned circuit is greater than the voltage across the high-tuned circuit. The net output is a *negative* voltage which reaches its peak amplitude when the input frequency reaches its maximum deviation below the center frequency.

For any specific frequency of the FM carrier wave, the output is therefore a

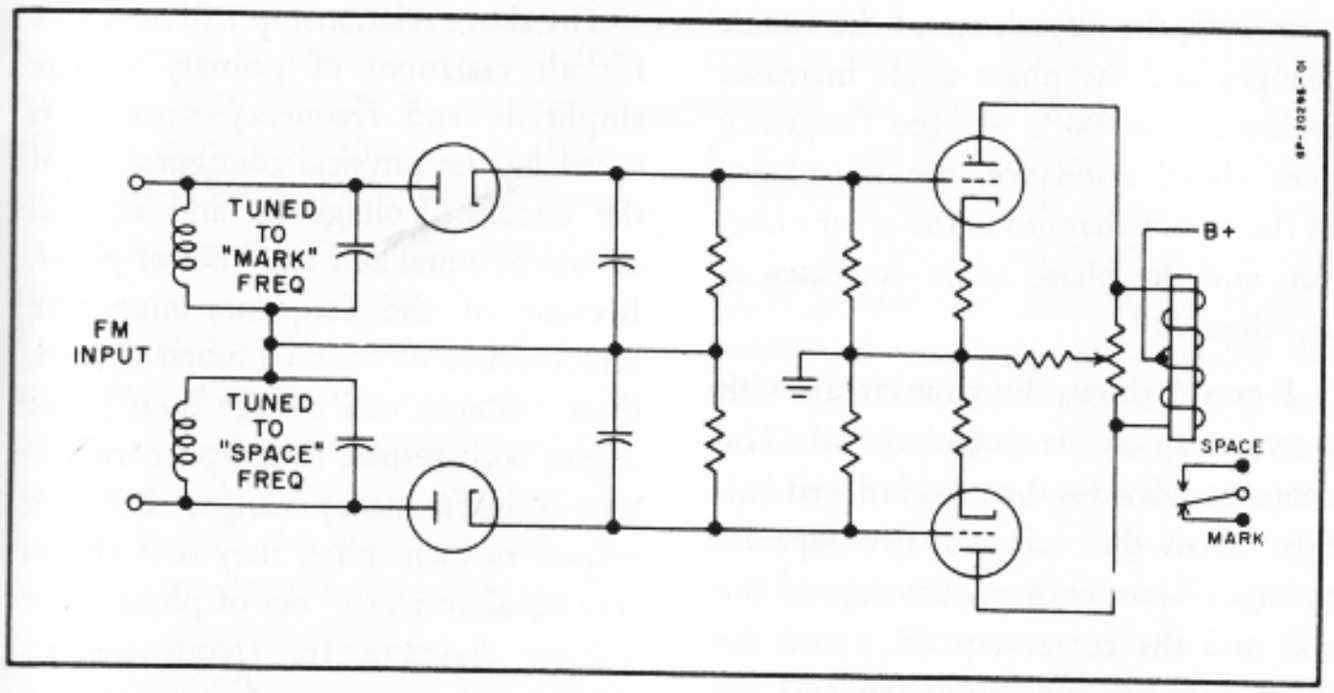

Fig. 5. Simplified form of detector circuit for FM telegraph receiver.

direct voltage. But since the frequency of the wave is varying at a frequency of the modulating signal, the output shows a voltage which varies in amplitude at the frequency of the modulating signal.

A variation of the double-tuned discriminator is used to detect FM telegraph signals. A simplified schematic of such a circuit is shown in Fig. 5. In this case, a specific frequency is used to denote the "mark" signal and another frequency to denote the "space" signal. One of the tuned circuits is then resonant at the "mark" frequency and the other is resonant at the "space" frequency.

When a "mark" frequency is received, the output is a direct voltage of one polarity. When a "space" frequency is received, the output is the other polarity. These output voltages control a polar relay which then indicates "mark" or "space" to the receiving apparatus.

In FM telegraphy, the input frequency does not vary continuously but shifts from one frequency to another. For this reason, this method is often called frequency-shift (FS) telegraphy.

Phase-Shift Discriminator

The most widely used form of FM detector is the phase-shift or Foster-Seeley discriminator. This circuit can be designed to give a very linear response over the total range of frequency deviations of the incoming wave. It also eliminates the very delicate adjustments of the double-tuned discriminator where three resonant circuits (a primary and two secondaries) must each be tuned to a different frequency. The detectors used in Lenkurt Type 72 radio equipment are based on the phase-shift discriminator circuit.

The phase-shift discriminator works on the principle that the voltage induced in a resonant circuit by another resonant circuit will vary in phase as the frequency of the inducing voltage varies. Figure 6 shows two circuits tuned to the same frequency and coupled together inductively. At the resonant frequency the output leads the input by 90°. As the frequency goes below

resonance, the impedance of the circuit changes and the phase angle increases to more than 90°. As the frequency goes above resonance, the impedance of the circuit changes in the other direction and the phase angle decreases to less than 90°.

Figure 7 shows the same circuit with a center tap on the secondary coil. The center tap divides the total induced voltage across this coil into two separate voltages—one between the top of the coil and the center tap (E_3) and the other between the center tap and the bottom of the coil (E_4). These voltages are equal. If the center tap is taken as a reference, E_3 is a rise in voltage and E_4 is a drop in voltage. These are the voltages which could be measured between terminals 2 and 1 and between terminals 2 and 3. Thus the two voltages referred to the center tap are equal and opposite (180° out of phase).

The above relationship will hold true for all variations of primary voltage amplitude and frequency since it is based on the physical configuration of the circuit. Voltage E_3 and E_4 will always be equal and 180° out of phase. Because of the frequency-impedance relationships of coupled tuned circuits, these voltages will change their phase angles with respect to the primary voltage as the frequency changes. But with respect to each other, they will always stay equal and 180° out of phase. The voltage diagrams for frequencies at, above, and below resonance are also shown in Fig. 7.

Changes in input frequency vary the phase angles between the two induced voltages and the primary voltages. The phase-shift discriminator converts these variations of phase into variations of amplitude. The circuit to do this is arranged by coupling the primary voltage to the center tap through a capaci-

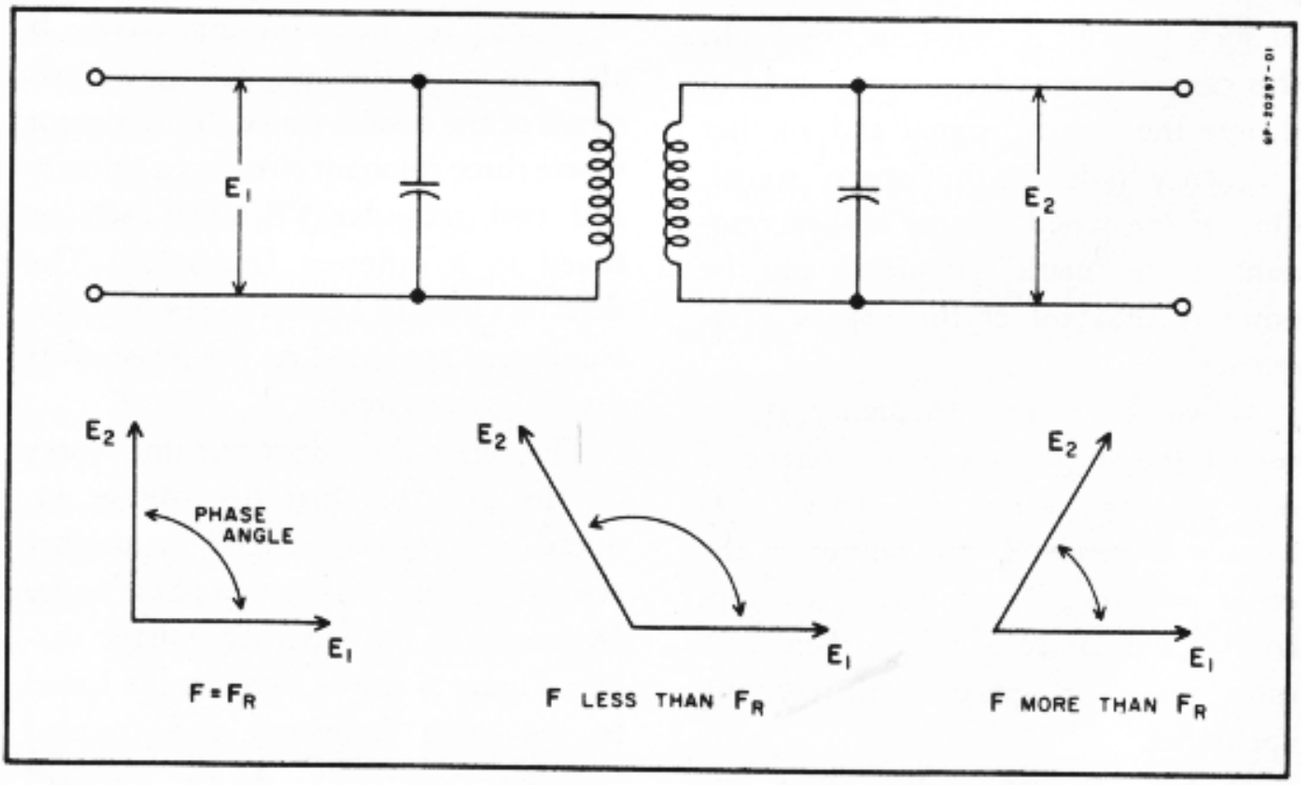

Fig. 6. Two coupled tuned circuits showing the phase shift that occurs as the frequency varies.

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tor as shown in Fig. 8. The capacitor must be large enough to provide an effective bypass so that E_1 is always present at the center tap. It also serves to block any d-c from the preceding stage.

The voltage across the top half of the secondary coil now consists of two components—E_1 plus the *positive* induced voltage E_3. And the voltage across the bottom half of the secondary coil consists of two components—E_1 plus the *negative* induced voltage E_4.

The voltage diagrams for frequencies about resonance are also shown in Fig. 8. These diagrams show the resultant voltages E_{21} and E_{23} which appear at the anodes of the two diodes. Voltage E_{21} is the combination of E_1 and E_3 and voltage E_{23} is the combination of E_1 and E_4.

At the resonant frequency, E_{21} and E_{23} are equal in magnitude. (The arrows indicating their magnitude are equal in length.) But as the frequency changes, the phase changes of E_3 and E_4 will cause these voltages to add with E_1 so as to make their magnitudes unequal. At frequencies below resonance, E_{23} is greater than E_{21}. While at frequencies above resonance, E_{21} is greater than E_{23}. Thus the circuit of Fig. 8 has converted changes in frequency of the input signal into changes in the amplitudes of two voltages.

The relationships shown in Fig. 8 are not strictly accurate. Actually, E_3, E_4 and E_1 change in magnitude as well as in relative phase as the frequency varies. But the diagram shows the general way in which amplitudes of the voltages vary with frequency.

Voltages E_{21} and E_{23} are then applied to the anodes of two separate diodes. The cathodes of the two diodes are tied together through two equal resistances, R_1 and R_2.

The voltages at the anodes of the two

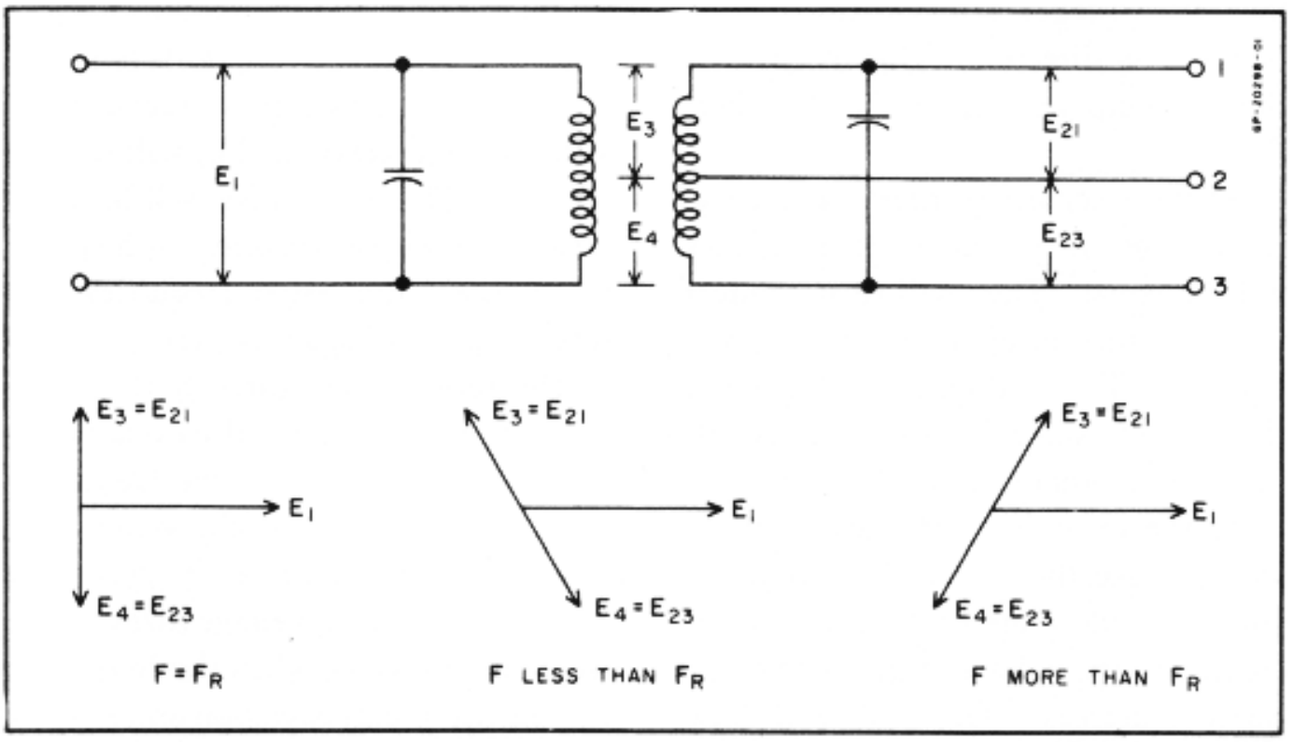


Fig. 7. Two coupled tuned circuits with a center tap on the secondary coil. Diagrams show the phase relationships between the two induced secondary voltages and the primary voltage.

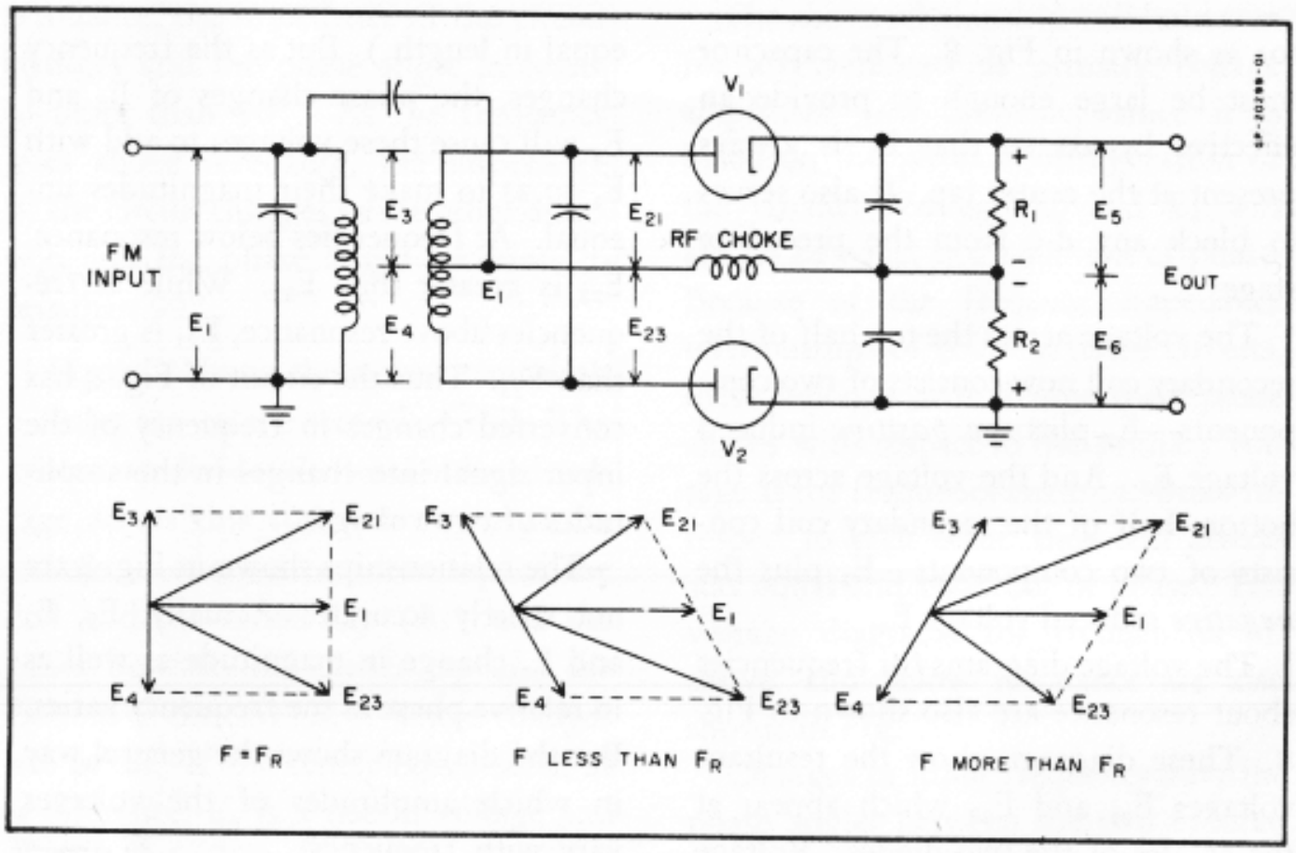


Fig. 8. Typical phase-shift discriminator circuit. This is also known as a Foster-Seeley discriminator.

diodes will cause them to conduct. The currents will set up voltages across R_1 and R_2. Since the currents through these resistors will be opposite in direction, the two voltages across them will be opposite in direction. This means that the total output voltage will be E_5 minus E_6.

At the resonant (center) frequency, the voltages at the anodes of the diodes will be equal. They will then conduct the same amount of current and E_5 will equal E_6. The total output voltage will then be zero since the two voltages will cancel each other completely.

As the incoming FM wave starts to swing above the center frequency, the voltage at the plate of V_1 starts to increase and the voltage at the plate of V_2 starts to decrease. Diode V_1 will draw more current than V_2 and the voltage across R_1 will be greater than the voltage across R_2. The total output of E_5 minus E_6 will be a positive voltage which reaches its maximum value when the incoming wave reaches its maximum frequency deviation above the center frequency.

As the incoming wave starts to swing back toward the center frequency, E_5 will start to decrease and E_6 will start to increase. The net voltage will be a decreasing positive voltage. When the input passes the center frequency, the total output will again be zero.

The reverse takes place as the input frequency swings toward its maximum deviation below the center frequency and then back toward the center frequency. On this half of the cycle, the output is a negative voltage that reaches its maximum value when the frequency is at its maximum deviation and returns to zero when the frequency returns to the center frequency.

The phase-shift discriminator thus

converts an FM input of constant amplitude and changing frequency to an output which varies in amplitude in accordance with the input's variations in frequency. The capacitors in parallel with the two load resistors bypass the high center frequency and its variations. The frequencies which appear at the output consist only of the relatively lower modulating frequencies. A typical output voltage-frequency curve is shown in Fig. 9.

To give an undistorted output, the input to the phase-shift discriminator must be free of any variations in amplitude. If this is not so, the amplitude variations will cause E_1, E_3, and E_4 to have different values for the same frequency. These variations will appear at the output of the discriminator. The output will not then be a true duplication of the original modulating wave. For this reason, FM receivers using phase-shift discriminators for detectors usually have one or more limiting stages to clip off any variations in amplitude.

This additional stage is eliminated in some types of receivers by using a variation of the phase-shift discriminator called the ratio detector The general circuit differs in that the polarity of the two diodes are arranged so that their load voltages are additive. The output leads are then connected to pick off a portion of the total load voltage which is proportional to the ratio of the voltages at the diodes. Amplitude variations in the input signal will increase or decrease these voltages but their ratio will remain constant for a particular frequency. This makes the ratio detector relatively unresponsive to amplitude variations of the input.

The need for limiting stages does not exist in ratio detectors. But, in general, the phase-shift discriminator has a more linear response which justifies the additional stage. Other forms of FM detectors using locked oscillators and pulse counters may also be used for specific applications. But the basic phase-shift discriminator or some modification of it is the most commonly used circuit for FM detection.

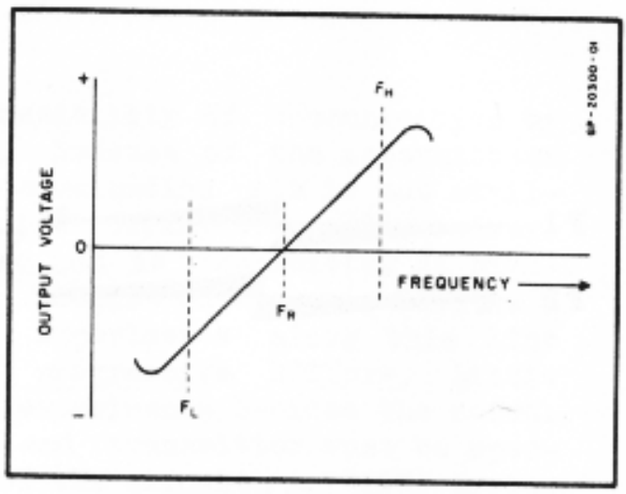
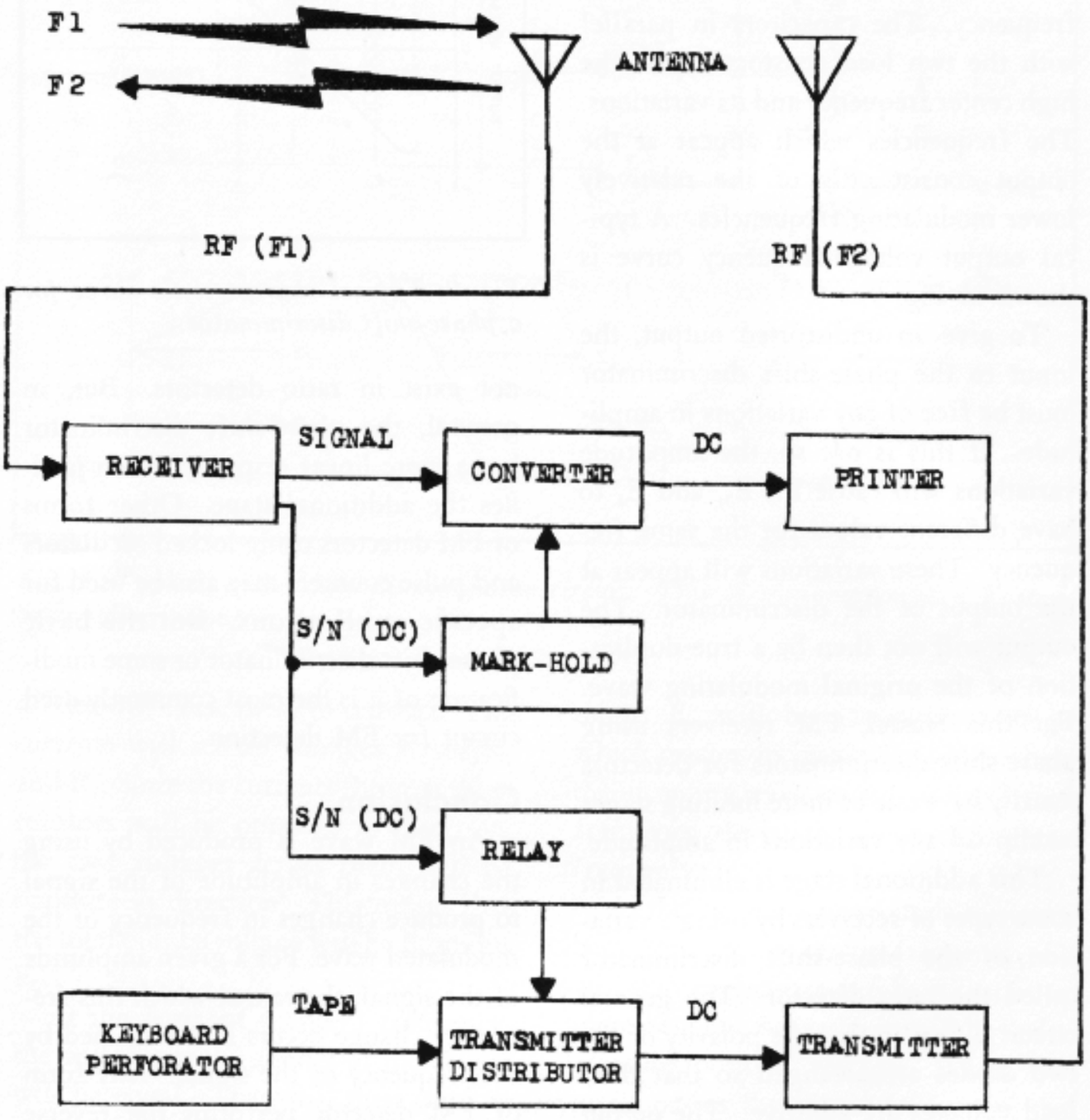


Fig. 9. Typical characteristic curve for a phase-shift discriminator.

Conclusion

An FM wave is produced by using the changes in amplitude of the signal to produce changes in frequency of the modulated wave. For a given amplitude of the signal, the rate at which this frequency change occurs is determined by the frequency of the signal. Any form of FM detector performs the reverse process. This means converting the changes in frequency of the FM wave to changes in amplitude. The resulting wave is then rectified to recover the original modulating signal.

Almost every form of FM detector uses the properties of tuned circuits to convert the frequency changes to amplitude changes. The remaining step is similar to the detection process used in AM receivers.



AMATEUR RADIOTELETYPE METEOR SCATTER SYSTEM. Reflections from meteors should provide a communications path for 5% of the time for a distance of 1200 miles on 6 and 11 meters. The other terminal of the system is identical except receives on frequency F2 and transmits on F1.

ARTS 50-32

(See discussion next page.)

METEOR TRAIL RTTY

Recent experiments show the possibility of communication by reflections from meteor trails. Because of the intermittent nature of meteors, a continuous communication path is not available. Storage must be used at both transmitter and receiver. When the path is available, information is transmitted at high-speed and stored at the receiver. Because of storage, RTTY is a natural for meteor trail work. Experiments along this line may be of interest to the more progressive RTTYers. Little equipment is required for initial experiments besides the normal RTTY installation. The receiver and transmitter must be operated simultaneously at both ends of the circuit. An "AVC" system must be employed to trigger transmission when a path exists. The recommended "AVC" system for triggering transmission is a signal-to-noise type. For example, a mark-space system without limiting. On noise, both mark and space outputs are equal. When signal level rises, the ratio between mark and space indicates the signal-noise ratio. Because of the short duration of meteor trails, for 60wpm equipment the RTTY system should give better results if modified to transmit single pulses instead of whole characters. With 5-magnet reperforators, this should not be extremely difficult. Another way to take advantage of short transmission bursts is to use a photo-electric tape reader at 600wpm.

According to Vincent et al (VHF Propagation by Ionized Meteor Trails, Elec. Indust. Oct. and Nov. 1957), the rate of meteors entering the atmosphere peaks at 5 o'clock in the morning, and has a minimum in the evening, due to the motion of the earths surface. Unpredictable meteor showers often occur at odd hours. The average duration of usable signals is in the order of tenths of a second. Average occurance is 10 a minute in the morning, and 1 a minute in the evening. The rate varies with the season. For East-West paths, antennas should be pointed south of the path during the afternoon, and north of the path during the morning. For North-South paths, antennas should be aimed east of the path in daylight, and west of the path at night. Gain is improved by pointing the antenna off-path up to 30 degrees. Reflection occurs at heights of 100 km. Usable range of communication is about 1400 miles, using frequencies of 10 to 100 Mc (allowing use of amateur "A∅" bands of 11 and 6 meters). Three-element yagi antennas have been used (too much directivity reduces the area where meteor trails can be illuminated).

Experimental meteor trail links have operated with power of 1kw.

W2EBZ CLAYTON A. COOL, 443 WEST 47 ST, NEW YORK 36. HR SCRTS ARTS. Technical writer. 100-series printer, FRA and audio converters. Spends time windowpeeking on 3620 kc and editing ARTS bulletin. Photo page 12 shows W2EBZ and W2VKF Bob Link, New York City CD RACES supervisor holding down the WNYC end of November 6, 1956 election returns circuit (See ARTS 45-9). Asst RO for 6 meters, Manhattan RACES.

K2GVQ JAMES F. OLSSON, MOUNTED ROUTE, FLOYD RD, ROME, NY "Jim" US Air Force. XYL is K2HWX. ex-KG1JB in Greenland. Licensed 5 yrs. HB 4-125's in parallel, 15 meter wide spread beam, 10 meter quad using telephone poles and prop-pitch motors. Receiver SX-100. On RTTY since 11 Jan 58 and really does enjoy it. Has 18 years of military service. Presently M/Sgt, for past several years with Rome Air Development Center as engineering aide. Some time spent in American Embassy, Oslo, Norway.

K2HNM THEODORE K. RIGGEN, 922 BRIDGMAN ST, ELMIRA, N Y. "Ted" Technician, very interested in the "printing" art, has several inventions in the making at the present time.

W2IRT ANTHONY W. LANDRY, 12 GREENWOOD RD, YONKERS, N Y "Tony" SCRTS ARTS Yonkers Civil Defense Director. Telecini department of CBS-TV in New York. Model 12, 2-meter AFSK. Tony's printer and converter are shown in WNYC photo on page 12.

W2JAV PHILLIP CATONA, 400 N. SECOND ST, HAMMONTON, N J. "Phil" SCRTS ARTS Has designed a bit of amateur RTTY equipment. Quite active in SS and Armed Forces Day Contests, etc.

W2JTP BYRON H. KRETZMAN, 16 RIDGE DRIVE, HIGH HILLS, HUNTINGTON STATION, N Y. HR SCRTS Active in representing the interests of RTTY enthusiasts as the RTTY editor in CQ magazine. Erco Radio Laboratories, Inc, Garden City, N Y.

K2OBJ E. STUART DAVIS, 224 ELMWOOD AVE, UNION, N J "Stu" SCRTS ARTS Also call W4ZC. Earns coffee and cakes as research director for Potter Aeronautical Corporation of Malibu, Calif and Union, N J, makers of World-famous Pottermeters. Worked in satellite program. First RTTY in 1922 from Dr Rogers station 3XR using Western Electric Model 10 and Roger's rotary printer. Second and strictly amateur band activity was from 1926 through 1932 using a variety of gear ranging from a Morkrum typewheel printer to the 14's and finally the Model 15. Gear runs 250 w 80 through 10 meters. Printers are Model 21-A and Model 26. Terminal unit is described in ARTS 30-31 (December 1953) with a few minor improvements.

W2PAU E. MILES BROWN, 88 EMERALD AVE, WESTMONT, COLLINGSWOOD 7, N J. HR SCRTS ARTS "Brownie" Active RTTYer last 5 years. 500 W all bands, autostart on 2 M. With RCA-Victor.

W2PBG ROBERT J. STRAUB, 42-35 205th ST, BAYSIDE 61, N Y. SCRTS

W2OOG CECIL W. BASTIAN, PROJECT OFFICER, TASK GROUP 7.1 TU-3, PROJECT 6.6, BOX 3, APO 437, SAN FRANCISCO. Cecil sends his 73 to the gang at the fourth annual dinner, which he will miss due to kicking around in the KX6 atolls until June or July. There is going to be 6 or 8 ham stations active there, and Cecil will make a real effort to get at least one station on RTTY.

W2PEE ELSTON H. SWANSON, 15 CLEVELAND AVE, GLEN HEAD, N Y. Works for Instruments for Industry, Inc, of Mineola, N Y (electronic instruments and research and development). 2 meter AFSK autostart and 80 meter FSK. Models 101A, 26, and 400 printers. Model 12 and 15 reperforators, and 1A tape head. SCRTS ARTS

W2QGH/K2AVP WILLIAM T. KNOTT, 7 EAST AVE, LARCHMONT, N Y "Bill" ARTS CD Director. Met RTTY in Army Signal Corps in 1944-45 at stations JEAR and WAR. Made f i r s t amateur cross-continental RTTY contact with aid of W6PSW (Jan 23 and 29, 1949---See QST p. 10, March 1949---almost a year before the "claimed" first by some others on 1 Jan 1950). On March 9, 1949 worked one-way amateur RTTY DX with JA3RO in Japan. Bill has a Model 12 and tape equipment on 2 meters 20 watts AFSK and 600 watts FM (F2). Also works 6 meters. Antenna is 250-ft above sea level. Active in Westchester CD.

W2RTW JOHN M. MULLIGAN, 819 CLAREMONT AVE, ELMIRA, N Y. "Johnnie" HR SCRTS ARTS Sold the 2-way radio business in 1957, on retired list since. With XYL Hazel W2 QBJ visited England last Sept-Oct, failed to find anyone interested in RTTY. On all bands looking for RTTY contacts, especially during daytime. Will sked any stations any time. Located in the "sticks" of New York state and has yet to see in person any other RTTY station and to meet another operator!! Became interested in TT about 1949 when in charge of 2-way radio repairs for group of police departments (N Y Sheriff's Radio Network). Became facinated with police wire TT but could get no data on how they operated. During a raid on a gambling establishment ("Horse" room) several hundred pin ball machines and several "ticker machines" were taken and given to me by the judge for scrapping. I held one of the Edison "tickers" and one Teletype ticker unit. After much study and tinkering finally got the Teletype machine going by bridging across a regular TT circuit. After the original article by W2BFD on the converter the idea of "window peeking" on radio circuits seemed possible using this same machine. After many hours spent in getting it printing, finally got very good copy. Having been ham 20 yrs and having followed ham RTTY quite close, was ready to go with the "ticker" tape machine and a WU 1A tape head (via Tom Howard), a keyboard perforator and AP distributor (via W2BFD) when Feb 20, 1953 came around. Method of operation was to receive on printer and transmit by the perf and tape head. First contact Marvin W2PAT---on second go around the polar relay in transmitting circuit burned out (200 mils made a layer of winding go up in smoke). Finished this contact by CW! Since has acquired from many sources: 2 Model 26 with tables, Model 12 with keyboard and table, Model 21 with 12 keyboard and

distributor, 1-A tape head and AP distributor, Kleinschmitt reperforator, Kleinschmitt distributor, keyboard perforator without end-of-line indicator, 2 Northern Radio Type 107 Model 2 dual diversity converters, home built electronic distributor for tape transmitter, homebuilt tone source using Motorola Vibrasender, home built audio frequency meter. Kilowatt transmitter on 80 uses pair of 813's. Collins 32V2 on other bands. Trap antenna and 75A3 receiver. Millen 90810 transmitter for 2 and 6 meters with Tecraft converters for the 75A3 with dual stacked beams for 2 and 6---however has yet to hear any RTTY stations on either 2 or 6! Active SS and Armed Forces Day contests.

W2TBD THOMAS E. STEWART, SUNSET TRAIL, R D 2, MEDFORD LAKES, N J Tom expects to be so busy meeting and greeting customers at the IRE show that he will be unable to take an evening off for the dinner. However, he sends his best to the gang, and hopes he will see some of us around the show.

W2VKF ROBERT J. LINK, CD Radio Director for New York City has taken off for Florida, but you can see his picture on page 12 operating the election returns circuit at WNYC (See ARTS45-9).

W2ZKV FELICIANO I. ESTEBAN, 84-24 57th AVE, ELMHURST 73, N Y SCRTS ARTS Felix buys, fixes, and sells RTTY gear for amateurs. Also can furnish parts for most machines. His recent advertisments have been making possible a bigger and better and oftener ARTS bulletin. (Many thanks to Felix from the editor) Felix used to be on 2M RTTY, but has been too busy of late. Works 20M voice skeds to his daughter going to college in Spain.

RALPH M. HIRSCH, TELEPRINTER CORPORATION. Ralph will demonstrate the Teleprinter MITE (See illustrated article this bulletin). Like any drastically new design, the present price tag may look high, but when the machine is broken in, eventual price will be greatly affected by the volume of production. We are very glad to have Ralph with us for this first official amateur showing of the MITE. (Move over, OM, it's my turn to type on it awhile!) Ralph is familiar with other TT machines from military service.

W3CRO RICHARD URIAN, 256 PARHAM RD, SPRINGFIELD, PA. "Dick" SCRTS Active 3620 kc and SS and Armed Forces Day Contests.

W3FMC/W4FMC FRED W. ALBERTSON, 3753 JENIFER ST NW, WASHINGTON 15, D C. Dow, Lohnes and Albertson, Munsey Bldg, Washington. HR SCRTS ARTS

W3FU JOHN M. L. TOWSE, 706 ALVIN AVE, SALISBURY, MD HR SCRTS ARTS Runs Model 26 to KWS-1 all bands. Mostly 40 meters. Has missed the RTTY dinner for past two years, and doesn't intend to miss this one, Hi.

W3PLG HARRY RAPPAPORT, 752 ELMWOOD AVE, SHARON HILL, PA SCRTS Ham activities 10 yrs, active RTTY receiving only in 1957. Hopes to transmit on 144 Mc soon, shortly thereafter on 3.5 Mc, etc.

(cont'd)

Employed with Pennsylvania RR in communication dept. Held call W9CWY in Chicago and Fort Wayne. Enjoyed himself very much at dinner last year, and expects to again this year. Model 15.

W3PYW FRANK C. WHITE, 2706 HARMON RD, SILVER SPRINGS, MD. SCRTS Famous RTTYer. Active SS Contests, etc. Likes to use 40Kw, long wire rhombics, and call sign NSS on Armed Forces Day (Page 19).

W6AEE MERRILL L. SWAN, 372 WEST WARREN WAY, ARCADIA, CALIF. HR SCRTS ARTS and XYL MARGARET. Manager, quality control, Los Angeles division of Cannon Electric (plugs). Will be at Cannon booth part of time during IRE show. Presently a bit QRL with printer for RTTY (official publication of SCRTS) and an RTTY handbook and second edition of RTTY Callbook, and going to night college. Ham since 1920, commercial license 1924. Used to operate RTTY before QRL with RTTY Bulletin, etc. Receiver SX-88, Transmitter DX-100 exciter to pair of 304-TH's to a 65 ft vertical. Printer Model 28, 14 transmitter distributor, 14 typing reperforator, AN/FGC-1X and W6AEE converters. FRR receivers for the FGC. ARC-5 receiver and transmitter on 2 meters, with a "mobile" ground plane on top of the 65 ft vertical, work San Diego and Bakersfield. Work 7140 mostly, monitor it while answering letters, and pasting up the dummy for RTTY. Needs South America for RTTY WAC. Most important piece of mechanical gear in the shack: old Elliott Addressor for the RTTY bulletin! (Took too long on the Model 28 at 60 wpm to make tapes, hi). Active every RTTY SS, Armed Forces Days. Margaret and Merrill's tour includes Boston March 20, New York March 23, Washington D C the 28th, and Oklahoma City March 29th, 1958. Photo page 15 shows W6AEE station some years ago when a Model 12 clunker was used!

W6BEX DONALD A. DAVIS, 7840 E. 46th PLACE, DOWNEY, CALIF SCRTS "Don" Cannon Electric Company, Los Angeles, Calif.

W6DRL ARTHUR J. CASEBEER JR, 2043 MAR VISTA, ALTADENA, CALIF SCRTS Manager, manufacturing division, Cannon Electric. Build-BFO type FSK exciter.

W6OZE CHARLES PATRICK, 421 W GARVEY, EL MONTE, CALIF has a few odds and ends of Bohme equipment laying around for disposal.

W9COW is Chief of Publication Section, Teletype Corporation, Chicago. Many thanks to him for the copies of the A B C's of Teletype Equipment and the generaous supply of TT Code Rulers for this affair.

W9GRW: "Sorry I can't be with you for your RTTY dinner, but I send my best wishes for a successful meeting. I will pass the word along (bulletin broadcast) as requested." --Ray Morrison

W0BP BOYD PHELPS, 4232 SCOTT TERRACE, MINNEAPOLIS 16, MINN. HR SCRTS ARTS "BeeP" Well known contributor to amateur RTTY art, contest high scorer, NCS 40M Sunday net, etc.

WoDEL/AFoDEL WILBUR E. GOLL, 10511 W 56th TERRACE, SHAWNEE, KANS Recent changes in his plans prevent Wilbur from being with us this year, and he regrets not being able to meet some of the gang. He has a Model 14 and Model 26 working, but no receiving converter as yet. Has 05B/FR exciter unit and ARTS Frequency meter (See ARTS 42). Presently gathering ideas and parts for a converter and AFSK oscillator for 2 meters. . . Wilbur is a charter member of the Midwest Amateur RadioTeletypers Society, Inc (MARTS) recently formed in Kansas City area (covered in Oct 1957 issue of RTTY). . . Presently active in Air Force MARS and will be working 7915 kc RTTY as soon as converter is ready. RTTY is also permissible on Tenth AF MARS frequency of 4450.0 kc during free time, and on the Central Technical Net frequency of 7305.0. AFoDEL is NCS of 10th AF Net 6 on 4450 kc.

VE2ATC LOUIS BUCK, ARMSTRONG AVE, ROSEMERE, QUE. "Lou" SCRTS Lou is a fast typer, which is not painful to look at on 3620kc (Some slow typers are so tantalizing to look at, and allow so much excessive bandwidth in the time domain for fortuitous White QRN to add extraneous characters!) First interested in radio 1920 -- crystal gear, loose couplers, spark transmitters, chemical rectifiers, storage B batteries, home wound transformers. First RTTY late 1936 operating Model 14 printer across town in Ottawa, and has been tinkering with them ever since. Regular twice weekly skeds with Jack Berman, W1BGW for five years, plus usual RTTY activities. Presently uses Model 15 printer, Model 14 tape transmitter, Model 14 tape perforator. Using W2BFD converter for 9 yrs, none better. For 29 years with Canadian Press engaged in installation, operation, maintenance of Teletype, Teletypesetter and Wirephoto equipment. Before that, 9 yrs with commercial telegraph company. Photo page 16 shows HRO receiver, but a 75A-4 has just been received---biggest event since 1920! With ZL1WB, Lou makes this the first international amateur RTTY gathering.

MORE K R 6 DX COMING---

W6WEM left in early March for Okinawa, and hopes to take up the slack that "CAS" KR6AK leaves when he goes home. Jim is taking Model 19 table, a Model 14 typing reperf, O-5B FSK unit, and a W2BFD autostart panel. He also has placed an order for a Central Electronics 100V to be shipped from the factory. Jim has good prospects of getting a dual diversity job capable of narrowshift reception (URA-8). He will be beaming both 20 and 15 meters from a Johnson Rotomatic, and is looking forward to some RTTY contacts in KR6 land. QTH is James A. Johnston, W6WEM, 17th comm Cnstr Sqn, APO 239, San Francisco, Calif.

WANTED: WEATHER TELEPRINTER, receiving only. W7ANX Fred Decker, Dept of Physics, School of Science, Oregon State College, Corvallis, Oregon.

WANTED: Information on Tone Keyer Navy Type CALO 35049, unit of RDM equipment, manufactured by Bond Equipment Co. W6WEM James Johnston, 17th Comm Cnstr Sqn, APO 239, San Francisco, Calif.

V H F T E L E T Y P E S O C I E T Y
38-06 61ST STREET, WOODSIDE 77, N.Y.
BULLETIN-LETTER NUMBER 567-A

A LETTER, JUST RECEIVED AT RTTY HEADQUARTERS, YIELDS THE FOLLOWING INFORMATION:- "WE HAVE AN ASSORTMENT OF EQUIPMENT HERE, CLASSIFIED BY OUR AUTOMATICS DEPARTMENT AS "JUNK", WHICH MAY OR MAY NOT BE OF INTEREST TO YOUR MEMBERS. WE ATTACH HEREWITH A LIST OF THIS MATERIAL. IF YOUR ORGANIZATION HAS NO USE FOR IT WE WILL DISPOSE OF IT AS SCRAP METAL, AFTER SMASHING. PLEASE INDICATE YOUR WISHES AS WE ARE CRAMPED FOR WAREHOUSE SPACE------".

33 KEYBOARD PERFORATORS OF OBSOLETE DESIGN. SOME HAVE CRACKED CASTINGS, SOME ARE MISSING PARTS, SPRINGS, COVERS ETC., ALTHOUGH MOST HAVE THEIR 5-HOLE TAPE PUNCHBLOCKS INTACT. NONE HAVE END-OF-LINE INDICATORS. PAINT JOB GENERALLY POOR AND, AS THEY HAVE BEEN STORED HERE SEVERAL YEARS, MOST HAVE SLIGHT TRACES OF RUST. $13 (INCLUDES PACKING CHARGE)

24 KEYBOARD PERFORATORS, MODEL 14. THESE WERE TORN DOWN COMPLETELY SEVERAL YEARS AGO FOR 100 PERCENT REBUILDING. THE CASTINGS, PUNCH-MAGNET COVERS ETC., WERE SPRAY-REPAINTED PROFESSIONALLY BUT, BEFORE OUR MAINTENANCE DEPARTMENT GOT AROUND TO RE-ASSEMBLING THEM, THE ORDER CAME THROUGH TO PUT THEM ASIDE. REPAINTED PARTS LOOK LIKE NEW BUT PLATED PARTS WERE NEVER CLEANED. SOME HAVE MISSING PARTS, SPRINGS, SMALL NUT-AND-BOLT HARDWARE, ETC. A FEW HAVE END-OF-LINE INDICATORS. MOST HAVE 5-HOLE PUNCHBLOCKS. $23 (INCLUDES PACKING CHARGE)

27 MODEL 25-A PRINTERS, COMPLETE WITH COVERS AND KNOWN TO BE IN WORKING CONDITION AT TIME THEY WERE STORED HERE. SLIGHT TRACES OF RUST FROM STANDING HERE THREE YEARS. INK RIBBONS PROBABLY DRIED OUT NOW. THESE ARE SAME AS 25-A MACHINES YOU HAVE OBTAINED FOR YOUR AMATEUR SOCIETY ON A NUMBER OF OCCASIONS FOR $28. THESE FOR $18 (INCLUDES PACKING).

45 TYPE 7-A, 7-B AND 7-C TAPE TRANSMITTERS FOR 5-HOLE TAPE. THESE EITHER HAVE SLIGHT DAMAGE OR ARE OUT OF ADJUSTMENT. PAINT JOB FAIR TO POOR. A NUMBER ARE PERFECT EXCEPT FOR BROKEN TAPE-GATE LATCH SPRINGS. WE WILL ACCEPT $12 FOR THESE.

25 DOUBLE-FACEPLATE START-STOP DISTRIBUTORS OF VARIOUS SIMILAR TYPES. GOVERNED MOTOR COUPLED TO TRANSMISSION THROUGH UNIVERSAL COUPLING. EACH END OF OUTPUT SHAFT OF TRANSMISSION HAS FRICTION CLUTCH AND BRUSH-ARM CONTACTING SEPARATE FACEPLATES. PAINT JOBS FAIR TO POOR AND SLIGHT TRACES OF RUST. $23 (INCLUDES PACKING).

41 PUNCHBLOCKS IN NEW OR GOOD CONDITION. THESE ARE FOR 5-HOLE CHAD OR CHADLESS TAPE AND WERE INTENDED FOR A SPECIAL TICKETING MECHANISM. THEY CONTAIN BUILT-IN SPUR-WHEEL TO ENGAGE TAPE FEED-HOLES. ON SHAFT OF SPUR-WHEEL IS A RATCHET-WHEEL AND A KNURLED KNOB FOR MANUAL ADVANCE OF TAPE. $4 EACH.

19 NATIONAL CASHREGISTER COMPANY SMALL CASHREGISTERS. YEP! YOU READ THAT CORRECTLY! THESE ARE NOT PRECISELY RTTY ITEMS FROM OUR POINT OF VIEW BUT WHO ARE WE TO ARGUE WITH THE TELEGRAPH COMPANY PEOPLE? WE DON'T EXACTLY KNOW HOW THESE WERE INCLUDED IN THE LOT OF SUPERSEDED EQUIPMENT BUT HERE THEY ARE! THEY ARE OF MAHOGANY-FINISHED STEEL AND HAVE A SALES-TOTALIZING MECHANISM BUILT INTO THE MACHINE. THE USUAL POP-OUT CHANGE DRAWER AND POP-UP NUMBERS IN TOP BEHIND A GLASS WINDOW. THEY ARE SAID TO BE IN WORKING ORDER AND ARE OFFERED TO US FOR $28 PACKED.

650 POUNDS MISCELLANEOUS TELEPRINTER PARTS. THESE PARTS ARE BRAND-NEW SURPLUS STOCK AND ARE MOSTLY UNPACKAGED - ALL DUMPED TOGETHER AND MIXED. CONSISTS OF CAMS, PUSHBARS, FUNCTION LEVERS, TYPEBARS, BAILS, SHAFTS, SELECTOR PARTS AND MAGNETS, KEYCAPS, KEYLEVERS, GEARS, ECCENTRICS, SPRINGS, PLATENS, TYPEWHEELS, FRICTION CLUTCHES, LINKS, PARTS FOR TRANSMITTER-DISTRIBUTORS AND REPERFORATORS. PRINTER PARTS ARE FROM 4 OR 5 MODELS. YOUR ORGANIZATION WILL HAVE TO ARRANGE TO PACKAGE AND DISTRIBUTE THESE - THE LABOR INVOLVED WOULD MAKE IT UNPROFITABLE FOR US.

- -

IT IS OBVIOUSLY IMPOSSIBLE FOR V.H.F.T.S. TO DISPOSE OF THESE PARTS, AS WE HAVE DONE WITH PREVIOUS RELEASES OF SIMILAR MATERIAL WHICH WERE SEPARATE AND INDIVIDUALLY PACKAGED. WE ARE ARRANGING TO "SHOVEL" IT INTO CARTONS CONTAINING 2 LBS EACH FOR $5 PER CARTON - A SORT OF TELETYPE "GRAB-BAG"!

FIFTH ANNIVERSARY RTTY SWEEPSTAKES CONTEST, FEB 14-16, 1958
(EARLY RESULTS -- TO 1 MARCH 58)

STATION	SECTIONS	POINTS	SCORE
W2RUI	33	183	6039
WoBP	35	156	5460
W3PYW	31	176	5456
K4RRG	30	120	3720
W6MTJ	25	120	3000
W6AEE	31	91	2821
WoLZL/o	26	91	2392
W6HIF	23	90	2090
W4EHU	25	70	1750
WoKXB	20	86	1720
WoFQW	23	72	1656
W7PQJ	20	80	1600
K6CHR	18	78	1404
K6OUR	16	76	1216
KoASR	17	68	1156
W8CRY	18	64	1152
W6CQK	18	48	872
W1BDI	22	53	1166
W6WIS	15	52	780
W1BGW	16	46	736
W6CG	16	44	704
W6NRM/6 (W9TCJ)	15	43	645
W9YT	13	44	572
W9QIX	15	38	570
KL7OOT	13	33	429

STATION	SECTIONS	POINTS	SCORE
W1ZXA	12	34	408
W8NIY	12	30	360
K2HHH	9	32	288
W5BOT	11	24	264
W9VMG	10	26	260
WoEZK	11	22	242
ZL1WB/Wo (rcvg)	15	17	225
W7CSC	7	27	189
W2ATQ	8	20	160
WoZWN	8	20	160
KL7ALZ (xyl)	5	18	90
KL7MZ	4	14	84
KR6AK	3	16	48
W6LFF (xyl)	3	12	36
W9HKA	4	8	32
WoYKZ	3	10	30
W1AW	3	9	27
K6OWQ (xyl)	3	8	24
W7ALE	3	6	18
W6UJX	1	10	10
W8DOO	2	4	8
K6ZBL	1	4	4
W7YZQ	1	2	2
W6NKP	1	1	1

(Courtesy RTTY, W6AEE, WoBP)

SPECIFICATIONS, M.I.T.E. TELEPRINTER (See ARTS 48-1 and next page)

Line voltage	26 volts DC
Power requirements	25 watts maximum
Signal	120 volts DC, 20 or 60 MA basis 7.42 Baudot start-stop code
Operating Speeds	368.1, 404, 600 OPM (60, 66 100 words per minute)
Distortion tolerance	40% marking or spacing bias 35% marking or spacing end distortion.
Keyboard arrangement	standard communications keyboard with repeat, break and bell keys.
Inking ribbon	standard 1/2 inch Underwood type
Recording medium	standard 8½" pressure fed paper
Characters per line	72
Weight	printer unit 9 lbs. keyboard unit 3 "
Dimensions	printer unit 3½" x 8" x 12" keyboard unit 1½" x 8" x 12"

TELEPRINTER CORPORATION'S "MITE" TELEPRINTER EQUIPMENT

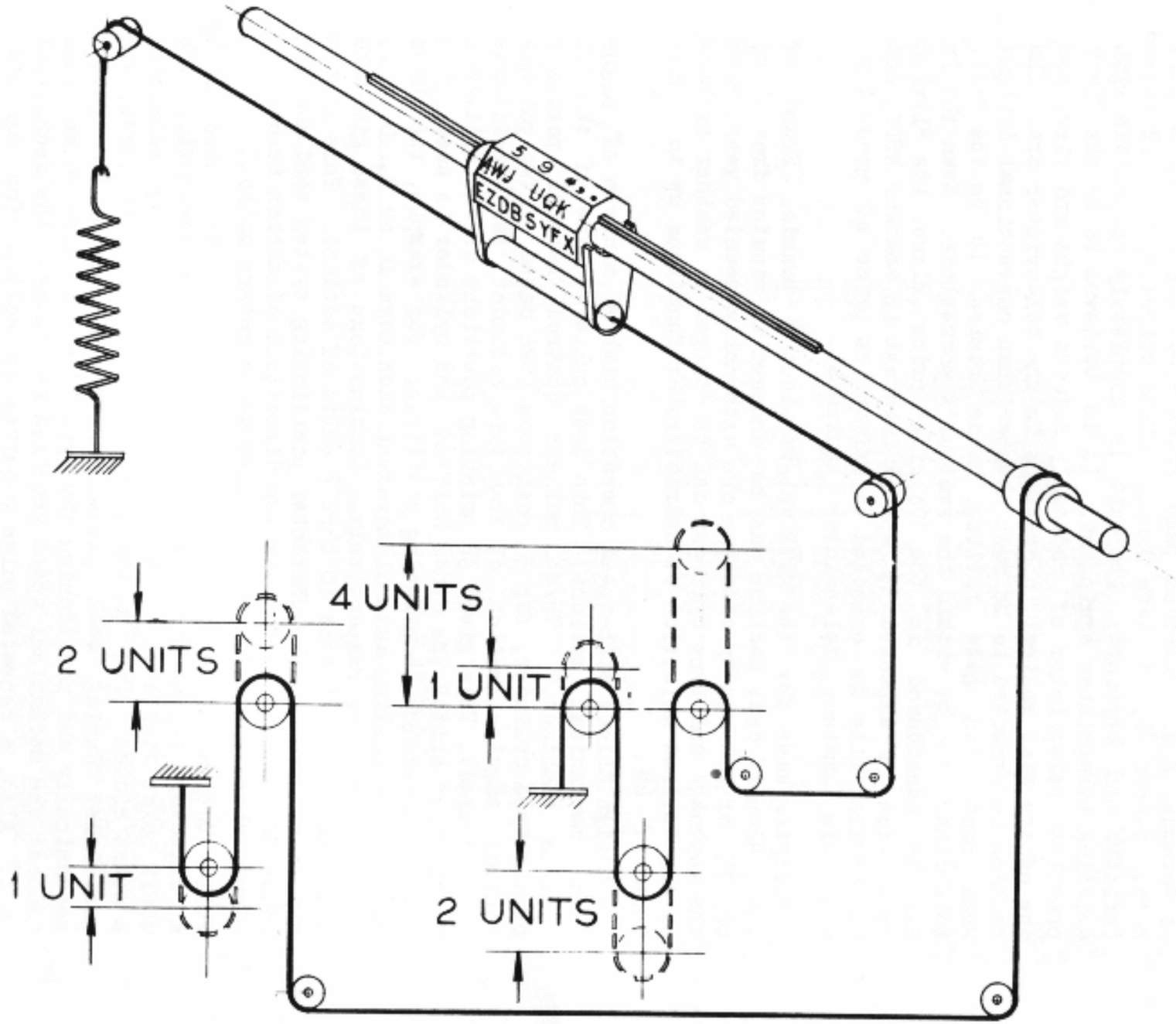
MITE is the acronym for Miniaturized Integrated Telegraph Equipment being developed for production by Teleprinter Corporation of Paramus, N J. Previous page shows specifications of a unit being tested by Western Union. Altho weighting only 12 pounds (printer and keyboard), the unit is completely compatible with existing teleprinter equipment. It is believed to be the first practical teleprinter of radically reduced weight and size, and one of the most radical innovations in the teleprinter art. The machine is expected to be much cheaper than conventional designs when production gets rolling, hence promises to be the first teleprinter to be within the amateur's pocketbook. Even tho it may be considered in the "Collins" price class, its "living room" size is expected to spread interest in amateur RTTY; and its availability is expected to affect the price of presently available amateur teleprinter equipment.

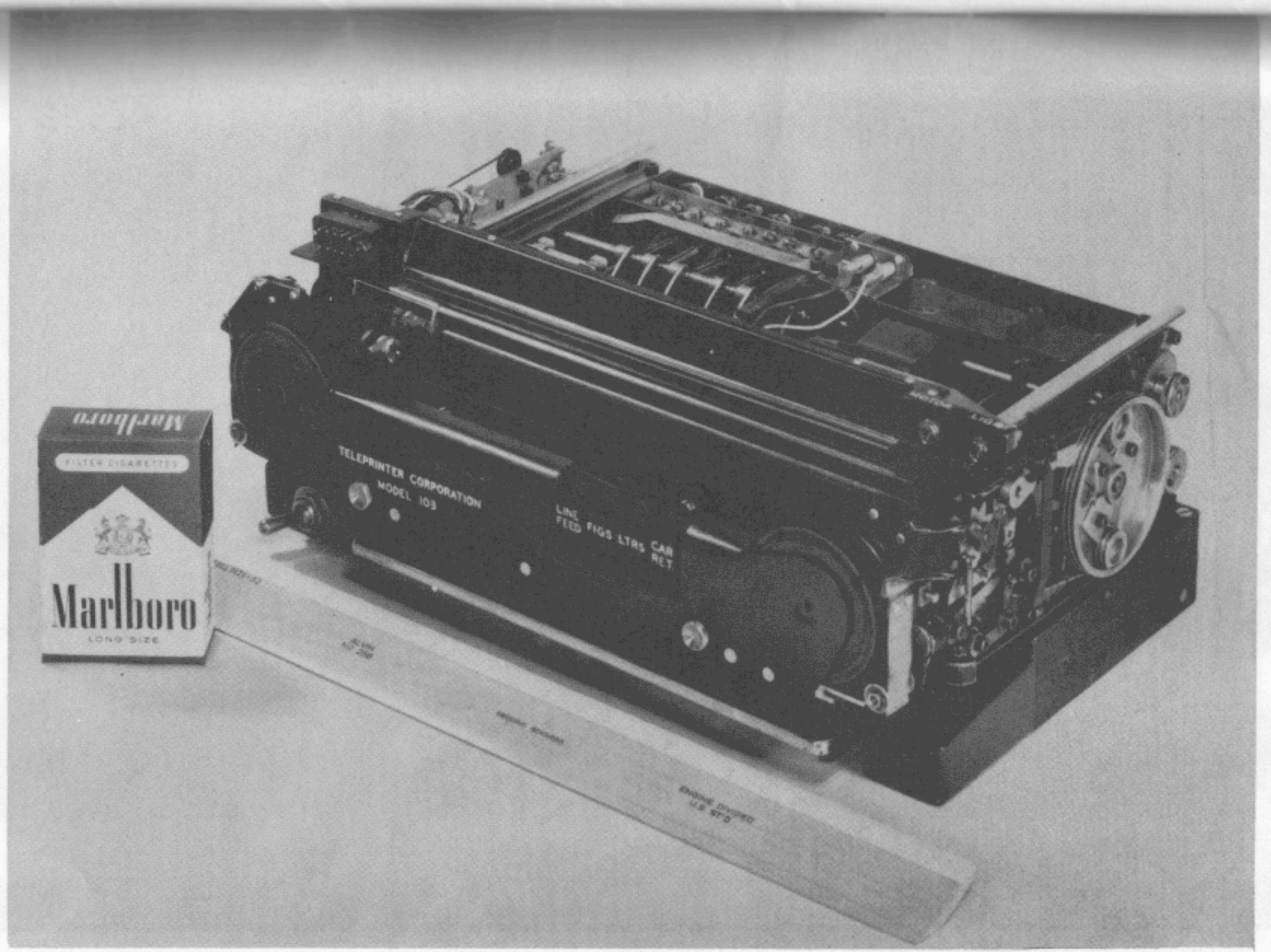
A carrying case for the MITE weighs about 4 pounds. Speed of the 7.42-unit code machine can be changed in minutes from 60 to 66, 75, or 100 wpm by changing one externally-mounted gear. Both the keyboard and type cylinder can be changed to weather symbols, or any desired selection of characters or functions up to a maximum of 64.

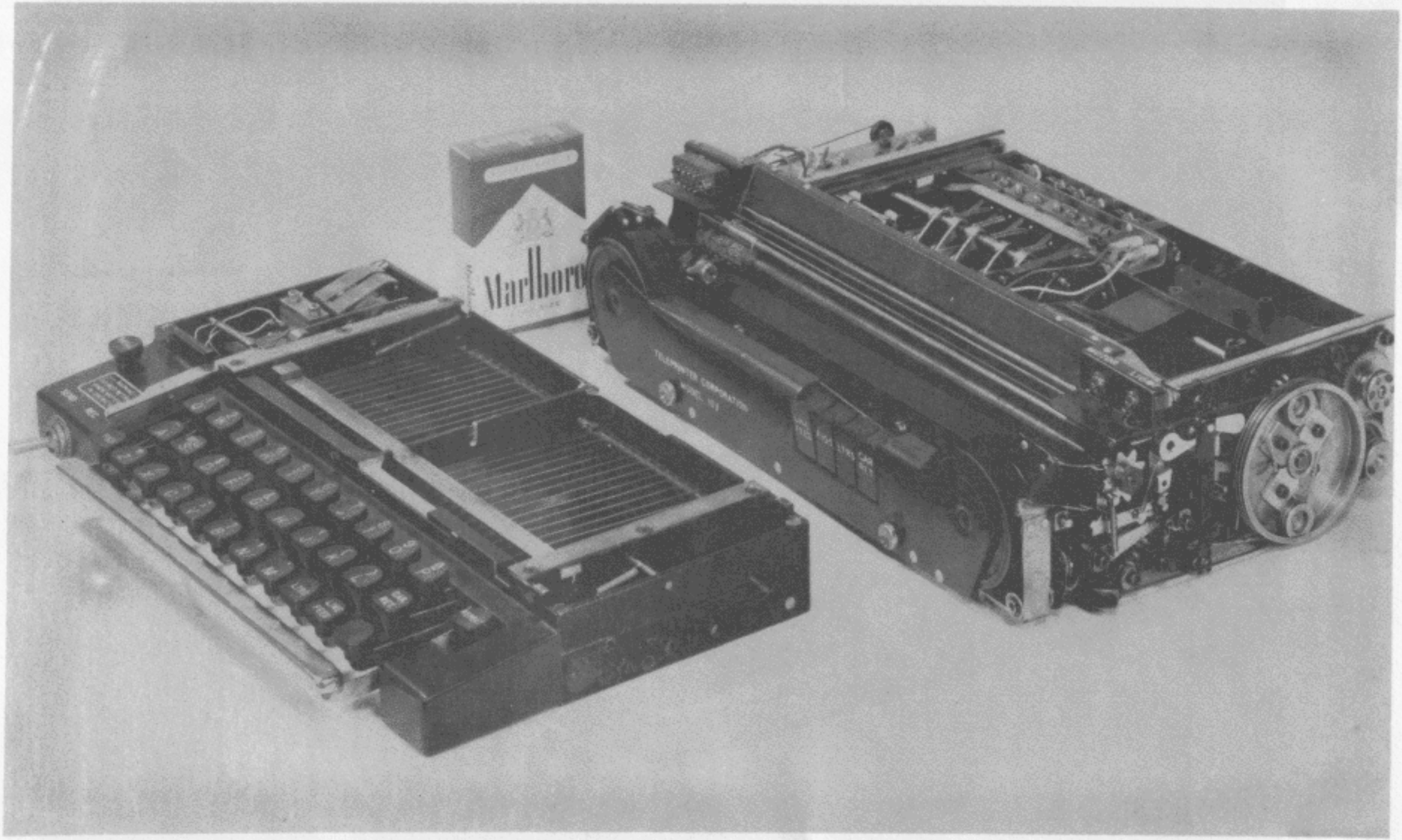
The design allows high-speed operation with a minimum of high-speed mechanical motions. This uses pulleys---one of the six "simple machines." Three pulleys control lateral position of the type cylinder, for 8 positions (two cubed). Two pulleys control angular motion of the type cylinder, for 4 positions (two squared). This gives 32 printing positions of the cylinder. By "figures shift" the other half of the cylinder is used, giving the total of 64 printing positions. For example, the three pulleys controlling lateral movement each move 0 or 1, 0 or 2, and 0 or 4 units respectively. Combinations of these give the eight lateral positions (0 thru 7 units of motion). This system may be compared to the character positioning system used in the Model 28 machine, which uses two directions of motion in one plane, where the MITE uses a linear and a rotary motion.

Pulley motion in response to the signal pulses is controlled by a selector in conjunction with motor-driven camshafts. The start pulse starts rotation of the timing camshaft by releasing a start clutch. The pulleys, and hence the type cylinder, are positioned during each pulse, instead of storing the pulses mechanically and positioning the type after the last pulse. This reduces the mechanical speed required and reduces the mechanical load. Also, a repeated pulse requires no motion, for example, if the #1 pulse for a given character is marking, and the #1 pulse for the following character is also marking, the pulley #1 remains in its position for the second character.

Range of the MITE is excellent---it has regularly been observed operating with ranges in excess of 75 points at 60 wpm in the laboratory, and has tolerated signal distortions in excess of 35 points under the same conditions.







A pair of pulsing contacts control the pulses from the keyboard: one set of contacts control the stop, 2 and 4 contacts, and the other set of contacts control the 1, 3, and 5 contacts. Thus, the adjustment of the 5 keyboard contacts is non-critical as the pulse length is controlled by the separate pulsing contacts.

For 60 cps operation, a 3600 rpm synchronous motor is used, and for 400 cps a 12,000 rpm motor. For d-c line, a 10,000 rpm motor is used: The governor is adjusted with a 101.69 cps tuning fork. On a d-c line, power consumption is 25 watts, including power to operate the magnets.

The type cylinder prints from behind the paper. The print hammer presses the inking ribbon against the front of the paper. This unusual arrangement keeps the type face clean, and reduces mechanical wear on the inking ribbon which is struck by the smooth hammer instead of a sharp type face. The operator has greater visibility of the printing as it is received.

The type cylinder weighs about 1/2 ounce. Carriage return of the type cylinder is accomplished in the time of one character. Automatic carriage return and line feed is provided.

Four functions---carriage return, line feed, figures and letters ---can be controlled by buttons without putting a signal on the line. Special "stunt" functions can be provided to operate on any desired character.

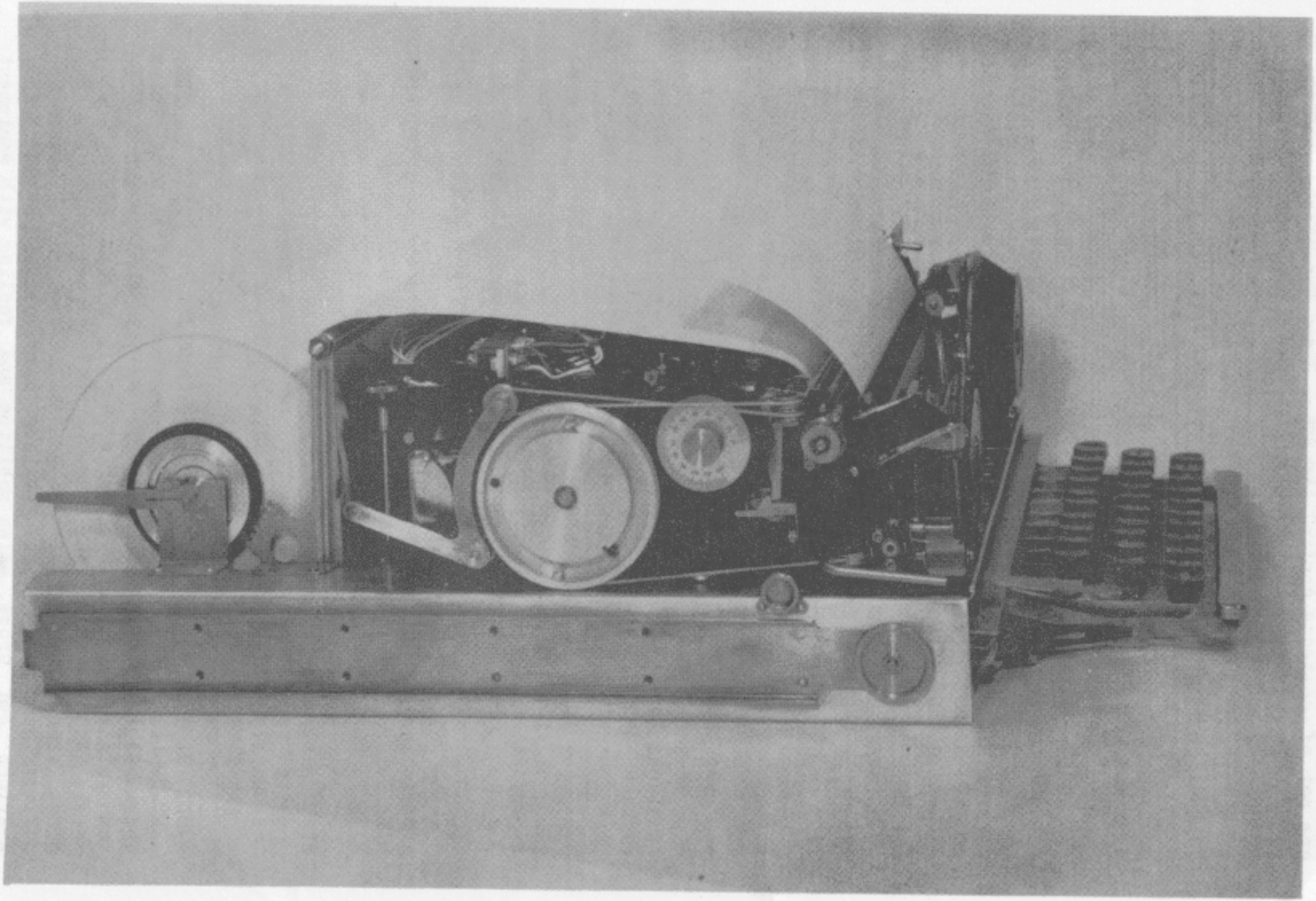
The MITE operates in any position. Unitized construction permits replacement of whole sections. Breakdown into subassemblies requires less than ten minutes and removal of eight screws. Persons familiar with typewriter and other business machine maintenance can be taught to service the MITE in two weeks.

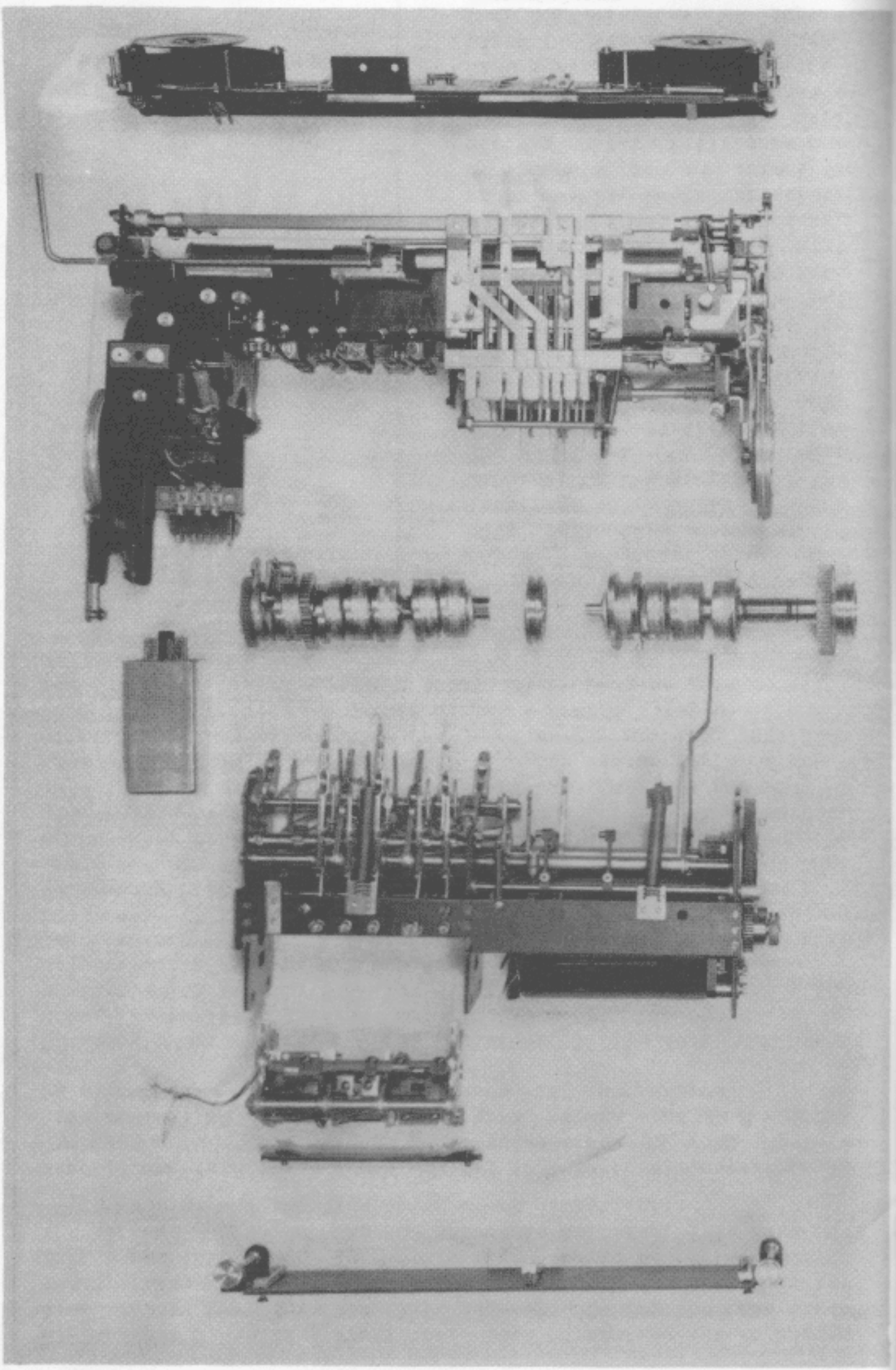
Companion machines to the MITE teleprinter that are under development include a miniaturized transmitter-distributor and a reperforator. The transmitter-distributor is expected to add one inch to the width of the MITE and 7 ounces to the weight.

ILLUSTRATIONS: Principles of character selection (cylinder positioning), page 42.
MITE Teleprinter with keyboard recessed for receiving only, p.43
MITE Teleprinter with keyboard detached, page 44.
MITE Teleprinter, cover removed, showing printer, keyboard, and standard-sized paper roll mounted on chassis, page 46.
MITE Teleprinter, major subassemblies, top to bottom: rear plate, selector clamp, selector, rear frame assembly, plug-in transistorized switcher, main shaft, printer frame assembly, ribbon magazine.

---W2EBZ

W9NOE RICHARD D. CORTRIGHT, 8219 N. MERRILL ST, NILES 31, ILL. Ham Register (see page 50-4). Manager, Crystal Div, Union Thermoelectric Corp, Forest Pk, Ill. Active amateur since 1931, commercially since 1929. Calls W6HGC, W3FWX, W3JZK, W4JZK, W2LEI, W9NOE. Active on amateur RTTY 3 yrs, commercial RTTY since middle of WWII. Main amateur interest: public service activity, emergency communications, many years in interest of American Red Cross. Also mobiling and fooling with equipment designs.





W3PYW FRANK C. WHITE: Frank has been operating out at NSS on Armed Forces Day for the RTTY two-way QSOs for the past three years. Last year Phil W2JAV helped, and Frank is trying to get Phil again this year. This years plans should be of interest to the fellows---also how the NSS layout is arranged. It's fabulous ---15 kw rigs and rhombics going every direction!!!

Also, Frank is RTTY chairman of the ARRL National Convention in Washington this year. Frank wants suggestions on what the fellows would like to have on the program. Frank has a few ideas in mind, and would like to swap ideas with the fellows.

E. LeRoy Hymel, W5ENH, 2608 S. Taylor St, Little Rock, Ark has a Model 12 complete, governed motor on keyboard, 1800rpm motor on printer which he will SWAP for other gear. Also will swap a 12 receiver-only with governed motor. Armatures are round, the gear is in good shape and clean. Hy WANTS some good mobile gear such as AF-67 transmitter, PMR-6 receiver, Gonset converters, heavy-duty high-voltage vibrapacks, etc. Also wants a sync motor for his Model 12 keyboard. . . . Hy recently got the bug again after being almost dormant for a year, and dragged out the old "PAT" converter, cleaned it up somewhat, replaced a shorted 1N34, scraped some crud off the old 12-type, and may now show some activity on 20 and 40 RTTY. . . One reason for Hy's inactivity is that after an 8-hour 5-day weekly grind of rassling tape from 8 repokers, 6 printers, and 4 transmitting positions for the MoPac Railroad---he's about had it when he gets home!!!!

GENERAL WINDUP... This about does it for this bulletin. It's been a ratrace as usual. March 9 Broadcast from WØBP adds following scores to SS (see page 40): W2JAV 25-84-2100; W3NQA 2-4-8; W8CAT 7-14-98; W9GRW 5-14-70. BeeP also notes thirty stations active in SS that have not yet submitted their logs to W6AEE. Now that we are down to the last few inches of space to fill in this bulletin, we find loads of material on hand that must be held over to the next bulletin. Shoot in your news, wants, sells, swaps, brickbats or bouquets, and we expect to see the next bulletin come out a bit more promptly. We hear a rumor in the wind that a CARD certificate is being prepared for issuance to meritorious RTTY stations. ---Clay

BULLETIN OF THE AMATEUR RADIOTELETYPE SOCIETY - NUMBER 51

CLAYTON COOL, W2EBZ, EDITOR, 443 WEST 47 ST, NEW YORK 36, N Y

INDEX FOR NUMBER 37 THROUGH NUMBER 48 - APRIL 1955 TO NOV 1957

RTTY CALENDAR OF ANNUAL EVENTS

ANNIVERSARY RTTY SWEEPSTAKES CONTEST. Middle of February. Commemorates granting of amateur FSK on lower frequencies in 1953.

RTTY, Inc., 372 Warren Way
Arcadia, Calif.

NARROW SHIFT PARTY. Middle of March. Commemorates granting of narrow frequency shift to amateurs in 1956.

WoBP, 4232 Scott Terrace
Minneapolis, Minn.

AMATEUR RADIOTELETYPE DINNER, NEW YORK. End of March (Monday of IRE National Convention).

NY/RTS c/o Clay Cool W2EBZ
443 West 47 St, New York 36, N Y

SSB DINNER, NEW YORK. End of March (Tuesday of IRE National Convention).

S-S-B- Amateur Radio Assn, Inc.
267 Madison Ave, New York 16, N Y

ARMED FORCES DAY. Saturday, middle of May. RTTY and CW msg broadcast; RTTY, AM, CW, SSB contacts between amateur and military stations.

Armed Forces Day Contest
Room BE1000, The Pentagon
Washington 25, D C

ARRL NATIONAL CONVENTION. Summer.

Information via W1BDI, Ed Handy
38 LaSalle Rd
West Hartford 7, Conn.

AMATEUR RTTY DINNER, CHICAGO. Early October (co incides with National Electronics Conference).

(continued next page)

N E T S O F I N T E R E S T

7140kc MIDWEST RTTY NET
SUNDAY 1300CST

WoBP, Acting Net Control Station

Stations:

W2VLL	Dave	Lewiston, N Y	N Y
W5DDJ	Garth	Houston	Texas
W7YHS	Marv	Billings	Mont
W7YZQ	Ted	Billings	Mont
W8CAT	Dick	Dearborn	Mich
W9BQC	Don	Rockford	Ill
W9DJE	Stan	Racine	Wis
W9DDG	Gene	Madison	Wis
W9QIZ	Gene	Merrill	Wis
W9MVG	Don	Geneseo	Ill
W9SPT	George	Chicago	Ill
W9UE	Ben	Chicago	Ill
WoBDZ	Owen	Gillman	Iowa
WoBP	Beep	Minneapolis	Minn
WoFQW	Lyle	Des Moines	Iowa
WoKXB	Ken	Topeka	Kans
WoLFH	Si	Algona	Iowa
WoLZL/o	Gene	Omaha	Nebr
WoQKA	John	Mankato	Minn
WoYKZ	Bob	Wichita	Kans
WoYMB	Cory	Mobridge	S Dak
WoZWN	Joe	nr St Louis	Mo

3620kc EASTCOAST RTTY NET
WEDNESDAY 1900EST

W1BGW, Jack, Dorchester, Mass. is Net Control Station.

Stations:

W1BGW	K2CSC	W2TKO
W1EFF	K2GVQ	W3CRO
W1IYU	K2HHH	W3IVL
W1OUG	W2JAV	W4TLA
W1PBS	W2JTP	WoBP
W1RMH	K2OBJ	VE2ATC

7540kc MARS EASTERN TECHNICAL NET
SUNDAY 1400EST
(rebroadcast on 15,715 143,460)
Technical discussions, programmed topics.

7305.0kc MARS CENTRAL TECHNICAL NET
(no details at hand)

(CALENDAR, continued)
George Boyd W9SPT
3540 N. Seeley Ave
Chicago 18, Ill. (or W9GRW)
RTTY SWEEPSTAKES CONTEST. Early November (weekend near ARRL SS). RTTY, Inc., 372 Warren Way Arcadia, Calif.

OFFICIAL BROADCAST STATIONS

W1OUG, STAMFORD, CONN (ARRL)

SUNDAY	1900EST	7140kc
	2030EST	3620kc
MONDAY	2000EST	7140kc
WEDNESDAY	1900EST	3620kc

W6ASJ or K6OUR CALIFORNIA

SUNDAY	1400PST	7140kc
		147290kc
SATURDAY	1400PST	7140kc
		147290kc

K6KFT CALIFORNIA

WEDNESDAY	2000PST	6 meters

W6VPC or K6OUR CALIFORNIA

WEDNESDAY	2000PST	3620kc
		147290kc
FRIDAY	1700PST	14330kc
		147290kc

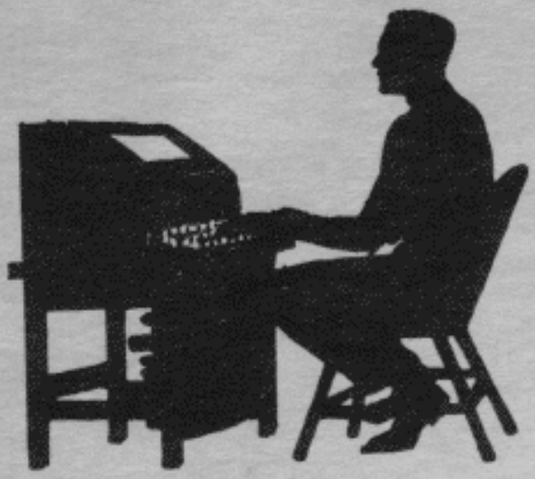
VE7KK VANCOUVER - B C - CANADA

TUESDAY	2015PST	7144kc
FRIDAY	2015PST	7144kc

E Q U I P M E N T :

Equipment obtained for ARTS members from the wire companies MUST be covered by the "WAIVER" document. Blank sent on request. If you have filed waiver in past two years (since ARTS commenced retaining originals and forwarding photostats to those companies requiring them) you need not furnish additional copies when you need more Equipment.

Does THE BULLETIN meet with your satisfaction? If not, let us know why not. If it does, let us know that, too. This is your bulletin: You pay for it- - -and you must supply the material to fill it. So if the bulletin is incomplete, or does not cover the news properly, it is your falt for not sending in the material. We cannot make news out of empty air! ---Clay W2EBZ



JR RADIOTELETYPE SOCIETY AMATEUR RADIOTELETYPE SOCIETY