Patrolling The Ether: The FCC's RID and FBIS in WW2

WANTED:

UNCOMMON RADIOS WITH A GOOD STORY

Radios Needing Research

Vintage Radio Picture Collector

Brian Harrison KN4R

briankn4r@gmail.com

704 657-8910 cell

9625 Island Point Road

Sherrills Ford NC 28673

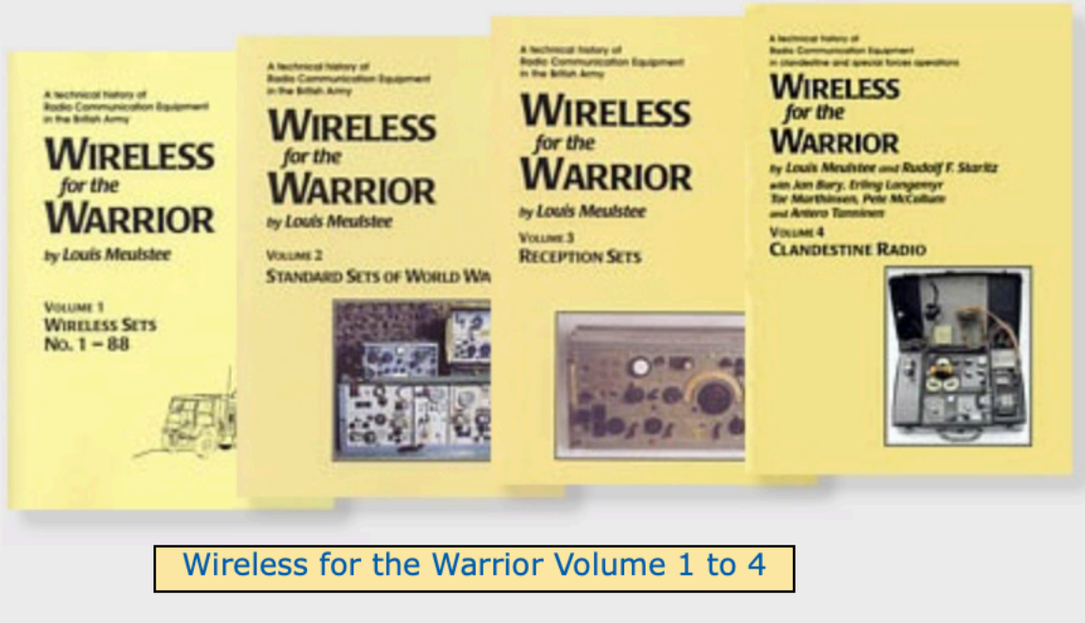
kn4r.com or qrz.com/db/kn4r

AWA

Shelby NC Hamfest 2013


APERIODIC RECEIVER
TYPE K-1 SERIAL No.70
GND.
ANT.
PHONES
ANT. SW.
ON
OFF
OFF
OFF
BALANCE
VERNIER
BALAN

WIRELESS FOR THE WARRIOR



Wireless for the Warrior Volume 1 to 4

Vol. 4 Supplement Pt 1 to Pt 3

BUGS

Wireless for the Warrior – Volume 4

similar
only one known

SSR-201

Country of Origin: USA

APERIODIC
INPUT 110V. 60CY.
TYPE SSR-201 SERIAL No.45

PHONES

ANT. SW.
ON OFF

PLATE ..TS
OFF ON

RELAY
SENSITIVITY

OSCILLATOR
OFF ON

VOLUME
OFF ON

PHASE

BALANCE
VERNIER

BALANCE

Similar Markings

DATA SUMMARY

Organisation: OSS

Design/Manufacturer: OSS personnel (believed)

Year of Introduction: Late WWII

Purpose: Wide-band surveillance receiver

Circuit Features: Aperiodic circuit (AM R/T ar CW)

Frequency Coverage: Wide-band, estimate 10kHz to >30MHz

Valves: 1G4, 6SQ7, 6J5, 6G6 (2x), 6SL7 (2), 6V6, 6G5, VR105 (2x)

Additional Data: The set has a distinct civ ian appearance

Power Supply: 110V AC mains or externa 6V DC vibrator HT power unit

Size (cm) and Weight (kg):
Height 13, length 25, width 43, weight 8.4

Antenna: Length of wire

Remarks

Very little is known of the Aperiodic SSR-201 wide-band surveillance receiver. Although its existence is noted, until recently it was thought that all equipment of this kind was destroyed shortly after the end of WWII at the disbandment of the OSS organisation.

The SSR-201 appears to have been manufactured in a limited quantity by a small workshop having only semi-professional facilities. The serial number of this surviving unit is 45.

No specifically military components are used in its construction, but rather US commercially-branded parts are found. The black crackle sprayed cabinet (fitted with a removable metal cover over the front panel to protect the controls during transit) looks like a standard unit widely available from the trade at that time.

The general appearance of the receiver is quite inconspicuous, resembling a civilian audio amplifier for public address.

An interesting feature of this receiver is the availability of a pair of relay contacts terminating in a socket at the rear to trigger an alarm if it receives a signal. Modulated signals may be monitored aurally from the built-in loudspeaker, and visually on a tuning indicator valve, the latter providing a crude form of signal strength indication. For the reception of CW signals an internal tone generator is triggered by the incoming signals.

An aperiodic radio receiver features wide-band tuning and is designed to have very broad response to incoming signals. It is believed that this 'receiver' covered the frequency ranges normally used by clandestine stations. It may have been designed for 'stalking' radio signals and used by RDF stations and other parties who are trying to locate the station and put it out of operation.

A (clandestine) radio station who has reason to believe that he is being stalked will change frequency frequently to make it harder for the DF station to get a 'fix' on it. The aperiodic receiver is so broadly tuned that even when the station changes frequency, it will still be received. A broadly tuned receiver is not very sensitive and requires that the signal being pursued should be quite strong and at least stronger than others which are transmitting at the same time in that area. It is estimated that in practice its use is restricted to about 100–500 metres range, much depending on the radiated power and frequency.

The History of the Radio Intelligence Division Before and During World War II

1940 – 1945

A collection of articles and manuscript of George E. Sterling
Chief, Radio Intelligence Division (1940-1946), FCC Commissioner (1948-1954)

W3DF

George E. Sterling (W1AE/W3DF)

W1AE

Collected and put on the web by Dan Flanagan W3DF

W1AE circa 1950 in his basement shack on his 40 meter rig. Notice that he is sending with his right hand and has a pencil in his left hand. This technique was used by most commerical operators of his era.

George Sterling's Spark Key

American Marconi "Roadmap" Type C Key

Circa 1912

RADIO 3XY Baltimore, Md., 10/26/24

YR Cw SIGS ~~HRD~~ ~~WKD~~ HR ABT A.M. P.M. E. S. T. 12·30a to 1.00a

WAVE LENGTH 146 to 93 MEASURED BY CALIBRATED RECEIVER ~~OR ZERO BEAT RESONANCE CLICK WITH WAVEMETER~~

AUD 1 to 5 UR "FIST" ~~EXCELLENT~~ ~~GOOD~~ X ~~FAIR~~ ~~POOR~~

VIOLATIONS Mr-C is betters. Letter follows

TRANSMITTER HERE

RADIATION

WATTS INPUT 40

Low Experimental

3DF

RECEIVER-REINARTZ AND H. C. COIL 4-800 METERS. ALL WAVE LENGTHS

REMARKS:-- Z-146 ok QSA- Q-123 ok QSA- G & W wil C ok 93 meters wil steady QRZ- 73's GS

G. E. STERLING, G. S.

ASSISTANT U. S. RADIO INSPECTOR
THIRD DISTRICT

CUSTOM HOUSE
Baltimore, Md.

THE RADIO MANUAL

FOR RADIO ENGINEERS, INSPECTORS, STUDENTS, OPERATORS AND RADIO FANS

By

GEORGE E. STERLING
Radio Inspector, Radio Division, U. S. Department of Commerce
Member, Institute of Radio Engineers

Edited by

ROBERT S. KRUSE
Formerly Technical Editor QST, Magazine of American Radio Relay League; Consultant for Development of Short Wave Devices, Technical Editor and Writer

Four editions 1928 on and many printings (popular!)

Federal Regulatory Commission FRC in the 1930s…

- Regulatory and Enforcement duties
- Mainly frequency measuring and transmitter inspection (ships, and AM broadcast stations)
- Central monitoring site is Grand Island Nebraska
- No Adcock HF/DF capability
- World War on the horizon, site expansion begins

Radio Intelligence Division

Radio Skills Pay!!!

June 1940 QST

page 56

median income for a man in 1940 - $956/yr

WANTED!

RADIO OPERATORS

TO WORK for UNCLE SAM!

Civil Service Jobs Open

$1620 to $1800 a Year!

Now is the time to show Uncle Sam that his faith in us has been justified. The U. S. Civil Service Commission is receiving Applications for positions from qualified applicants. These positions are of two ratings — $1620 a year and $1800 a year.

Vacancies will be filled by the F.C.C., the C.A.A. and other branches of the Civil Service.

The requirements vary according to the rating but necessitate handling code traffic at 25 words per minute or over, 5 years valid operator's license, U. S. citizenship, etc. Duties include standing watch for transmission and reception of radio messages, being responsible for maintenance and operation of equipment, etc.

Additional information, Application Forms, etc. may be obtained at any first- or second-class post office or any U. S. Civil Service office. Ask for **Announcement 93, Radio Operator.**

Those interested in Naval Reserve Appointments should write to Lt. Com. Wycoff, 90 Church St., New York, N. Y.

Available FCC Positions

- NDO = National Defense Operations
- Evolved into the RID = Radio Intelligence Division
- FBIS - Foreign Broadcast Intelligence Service
- Radio Operator $1800/yr
- Ass’t Monitoring Officer $2400/yr
- Monitoring Officer $3200/yr
- Translator/Analyst - even more!

Quieting the Ether

- June 1940 - no more international contacts for U.S. hams (51,000)
- W1AW transmits First Code Practice
- Sept 1940 - National Defense Operations (NDO) section created
- All licensed hams must submit photo, fingerprints and proof of citizenship by October 15, 1940.

December 7, 1941 - War!

- Dec 8, 1941 - U.S. hams go QRT, receive only
- All portable/mobile <56 Mhz prohibited
- 15,000 hams in military by March 1942

War Emergency Radio Service (WERS)

- Created June 1942, ARRL made happen
- 2.5 mtrs 112-116 Mhz, 1.25 mtrs 219-225 Mhz
- Air Raid & Natural Disaster
- Communities licensed, ham license to operate - 1945
  250 entities & 5K xmtrs
- low-power mostly home-brew rigs :-)

Early 2 Meters!

Abbott Transmitter-Receiver Model TR-4.
2.5 m band. Super-regenerative detector.
Frequency 112 to 116 MC
Range: Varying from 5 to 75 miles, depending upon terrain
20 W input power.
List Price less tubes and power supply - USD 65,--

Popular Mechanics (Description in Sept. 1942, p.160)
-- Original prospect or advert (QST - Amateur Radio December 1941 - Page 71)

Growth of FCC Monitoring Stations - WW2

- >100 locations - US, AK, HI, PR
- Washington DC is central point
- Monitoring of Foreign Broadcasts
- D/F and monitoring the ether
- also mobile surveillance capability
- Guarded facilities

Radio Intelligence Division

Grand Island, Nebraska Monitoring Station (August 1942)

Foreign Broadcast Intelligence Service

1424 K St., NW

Functions

- Supply the government with up-to-the-minute news on developments outside US
- Analysis to furnish defense agencies with intelligence
- Discern foreign propaganda strategies so that counter-measures can be taken

Foreign Broadcast Intelligence Service

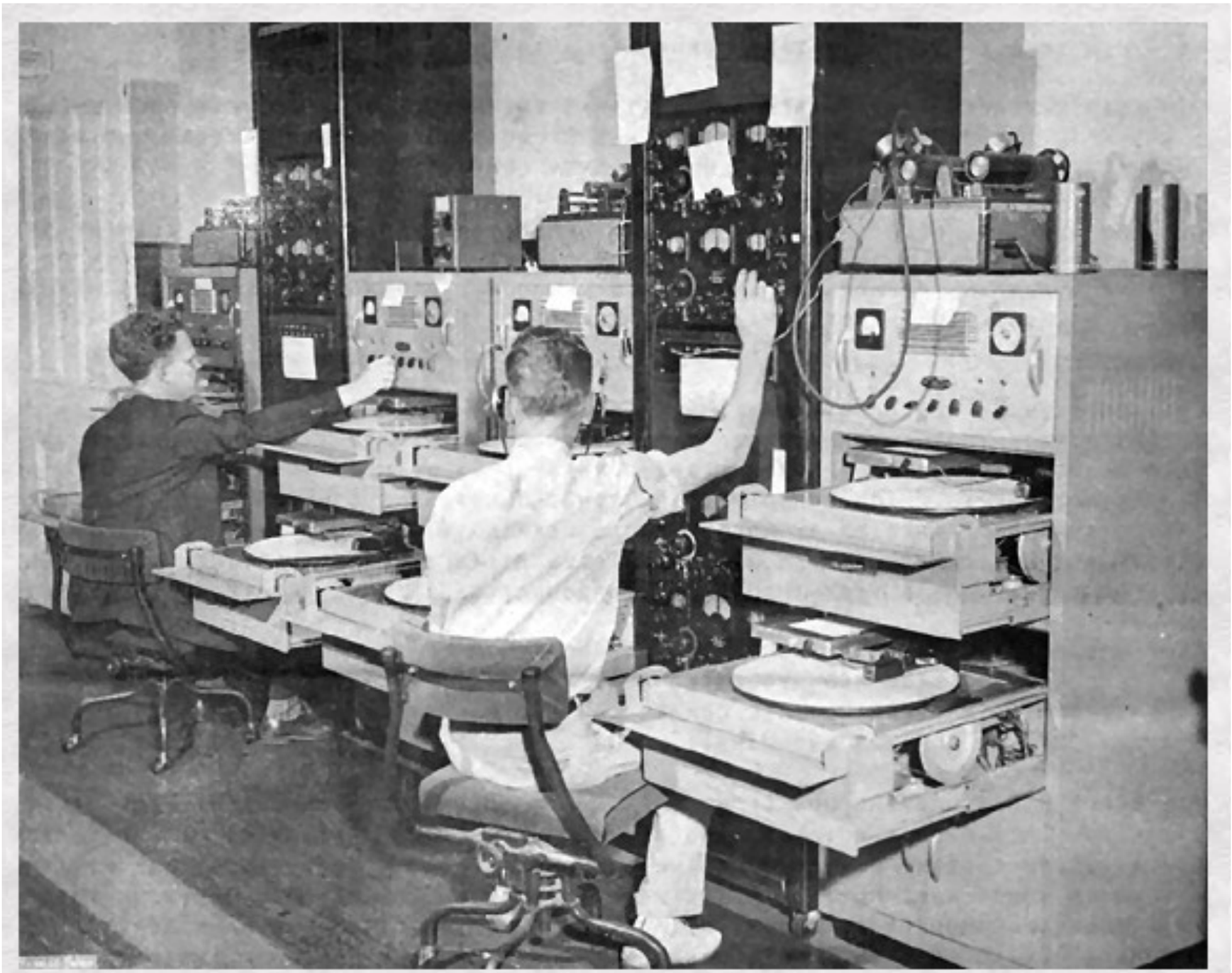
Harold Graves

Japanese Translation Room
(Denver, Colorado)

“Recording,Translating, Analyzing and Reporting”

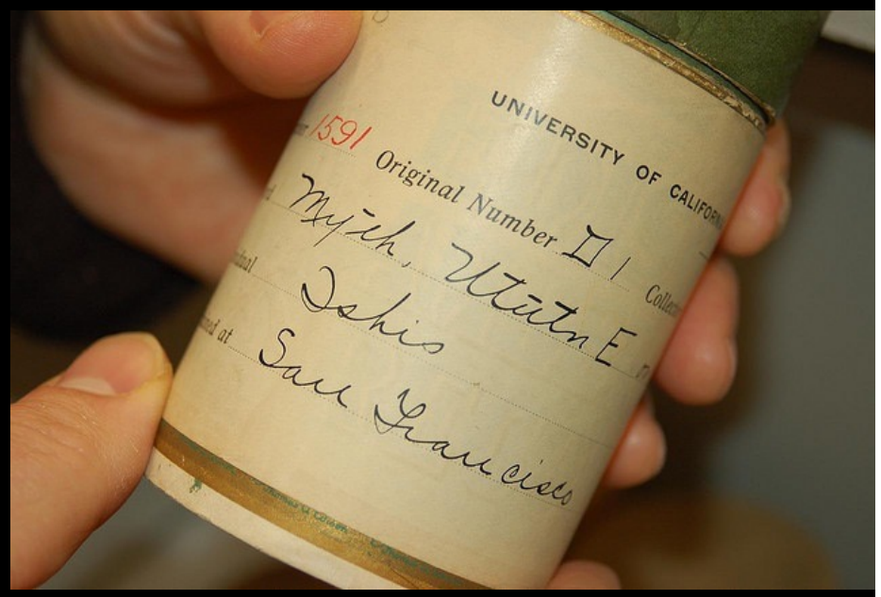
Graves reported on 25 August 1941 that FBMS now had satisfactory language capability in Spanish, Portuguese, French, Dutch, Italian, Swedish, Finnish, German, Lithuanian, Polish, Rumanian, Bulgarian, Croat, Russian, Japanese, Mandarin, Cantonese, and a few other Chinese dialects. For summaries and rough translations, the staff had additional limited capabilities in Danish, Norwegian, Czech, and Hungarian.

FBIS “BRU”- Broadcast Recording Unit



RID operators recording enemy propaganda for the FCC Foreign Broadcasting Intelligence Service. Recorded material was translated and analyzed for the U.S. military and intelligence agencies.

RID/FBIS Broadcast Recording



Wax Cylinder Recording System

Foreign Broadcast Intelligence Service – BRU Sites

Foreign Broadcast Intelligence Service – BRU Sites

FBIS - Wall of Receivers

RID/FBIS Broadcast Recording Unit (BRU)

Doublet Antenna Field (Grand Island, NE)

RID/FBIS Broadcast Recording Unit (BRU)

Rhombic Antenna Field (Grand Island, NE)

Wire Services

Designated by the symbols A, B, C, D, E, S, X, and PM, these direct FBIS teletype wire services were sent principally to Government agencies concerned with war propaganda. They consisted of the more significant parts of the incoming material from the monitoring stations. Their content was selected to meet the requirements of the activity to which they were sent.

A Wire

A general service wire sent to about 25 agencies, including the State, War and Navy Departments, the Office of War Information, the Coordinator of Inter-American Affairs, the Office of Censorship and the Office of Strategic Services. The Governments and agencies of Allied Nations, including the Philippine Commonwealth, also received some of this wire service.

B Wire

This service consisted of propaganda summaries and texts teletyped to the Office of War Information in Washington and New York.

C Wire

This service consisted of information on Latin America sent to the Office of the Coordinator of Inter-American Affairs.

D Wire

This service sent Far East data to the British Ministry of Information.

E Wire

Texts or excerpts of broadcasts and messages sent by American prisoners of War and civilians interned by Axis Governments over their radio facilities. They were teletyped to the Office of the Provost Marshal General.

S Wire

Wires teletyped to the Department of State consisting of texts and excerpts of broadcasts made by stations throughout the world relating to the withdrawal of Italy from the War in September 1943.

X Wire

Selections of intercepts from European transmitters for use in counter-propaganda programs in the Far East. Sent by FBIS Headquarters to the Propaganda and Analysis Section of the Office of War Information in San Francisco at their request.

Foreign Broadcast Intelligence Service – "E" Wire

CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

1204

SYMBOLS

DL = Day Letter
NT = Overnight Telegram
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

R. B. WHITE, PRESIDENT
NEWCOMB CARLTON, CHAIRMAN OF THE BOARD
J. C. WILLEVER, FIRST VICE-PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

The name of [John Doe] has been mentioned in an enemy broadcast as a Prisoner of War in Japanese [or German] broadcasts. The purpose of such broadcasts is to gain listeners for the enemy propaganda which they contain. The Army [or Navy] is checking the accuracy of this information and will advise you as possible.

(signed)
FBIS of FCC

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Special Agent
Radio Intelligence Division
FCC Field Enforcement

Radio Intelligence Division

S&W Model 10 .38

Colt Model 1911 .45

Radio Intelligence Division Sites

Scranton Charleston Norfolk San Antonio Brownsville Juneau

Philadelphia Aberdeen Salt Lake City Rapid City Chillicothe

Fargo Johnstown Seattle Dallas Portland Muskogee

Cleveland Raleigh Rochester E. Windsor Albuquerque Omaha

Allentown Milwaukee Spokane Houston Kingsville El Paso

Grand Island New York Wilmington Newport Manchester Laredo

Trenton St. Louis Great Falls Fairbanks Kansas City Searsport

Miami Fresno Millis Lexington St. Paul Monterey Nome

San Diego Detroit New Orleans Laurel Wichita San Juan

Mendocino Santa Ana San Leandro Boston Mackinaw Waialua

Pensacola Tampa Little Rock Hartford San Francisco Honolulu

Powder Springs Tucson Duluth Birmingham Hilo Jackson

Denver Allegan Des Moines Indianapolis Chicago Savannah

Some locations and site names are estimated.

RID - Fill The Void!

- Monitor the airways and investigate all signals
- Train military personnel and intelligence agents in radio intelligence, monitoring and radio direction finding techniques
- Support military radio intelligence efforts

Radio Intelligence Division

RID Military Training Class, Laurel

RID Responsibilities:

- hear all signals, even short transmissions!
- identify and document
- jamming
- spoofing
- intelligence sharing
- training others

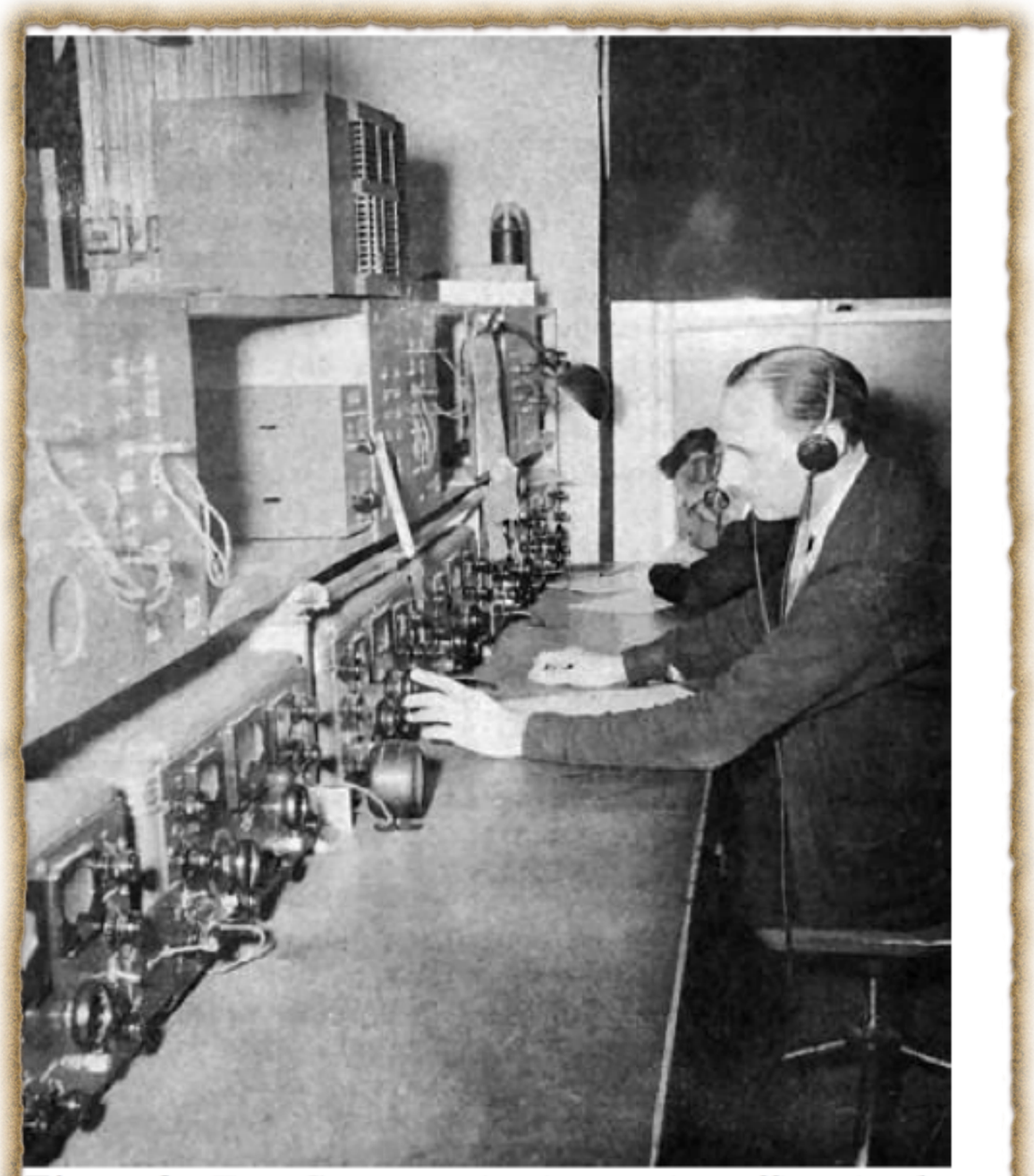


Figure 3: *Tom Cave, monitoring station officer in charge at the RID monitoring station in Scituate, RI*

At each RID monitoring station an operator is engaged in the process which is known as "cruising" the ether. This consists of tuning from frequency to frequency throughout the usable radio spectrum, identifying each signal as it is heard.

Figure 29: *RID operators cruising the ether.*

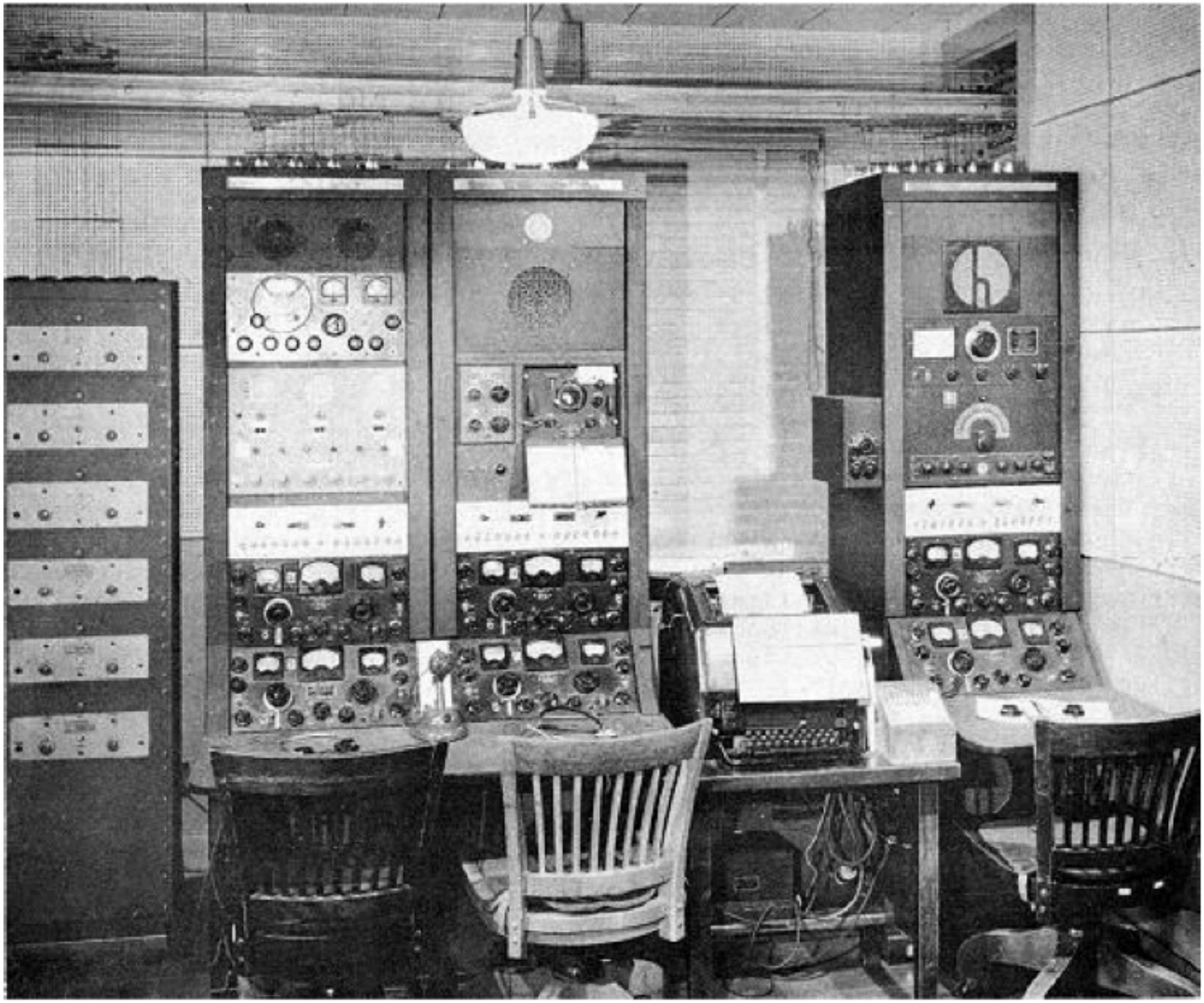


***Figure 50**: Intercept positions at the primary monitoring station in Allegan, Michigan. SX-28s were stacked above another for the convenience of the intercept officer copying both the spy and control station on different frequencies. Transmitters on the left operated on different frequencies to transmit alerts to the secondary monitoring stations and furnish frequencies and calls in FCC cipher code when a case became active.*

Chopmist Hill, Scituate RI

- “The best location in the country for radio transmission and reception”
- Detect transmission from spies in the US
- Signals from Europe, Africa, Caribbean, South America, Pacific
- Assist in locating lost aircraft
- 183 acres
- 80,000 feet of wire
- 11 antennas
- 2 Adcock HF/DF antennas - both sides of conversation

The Western Front ! Hawaiian Islands

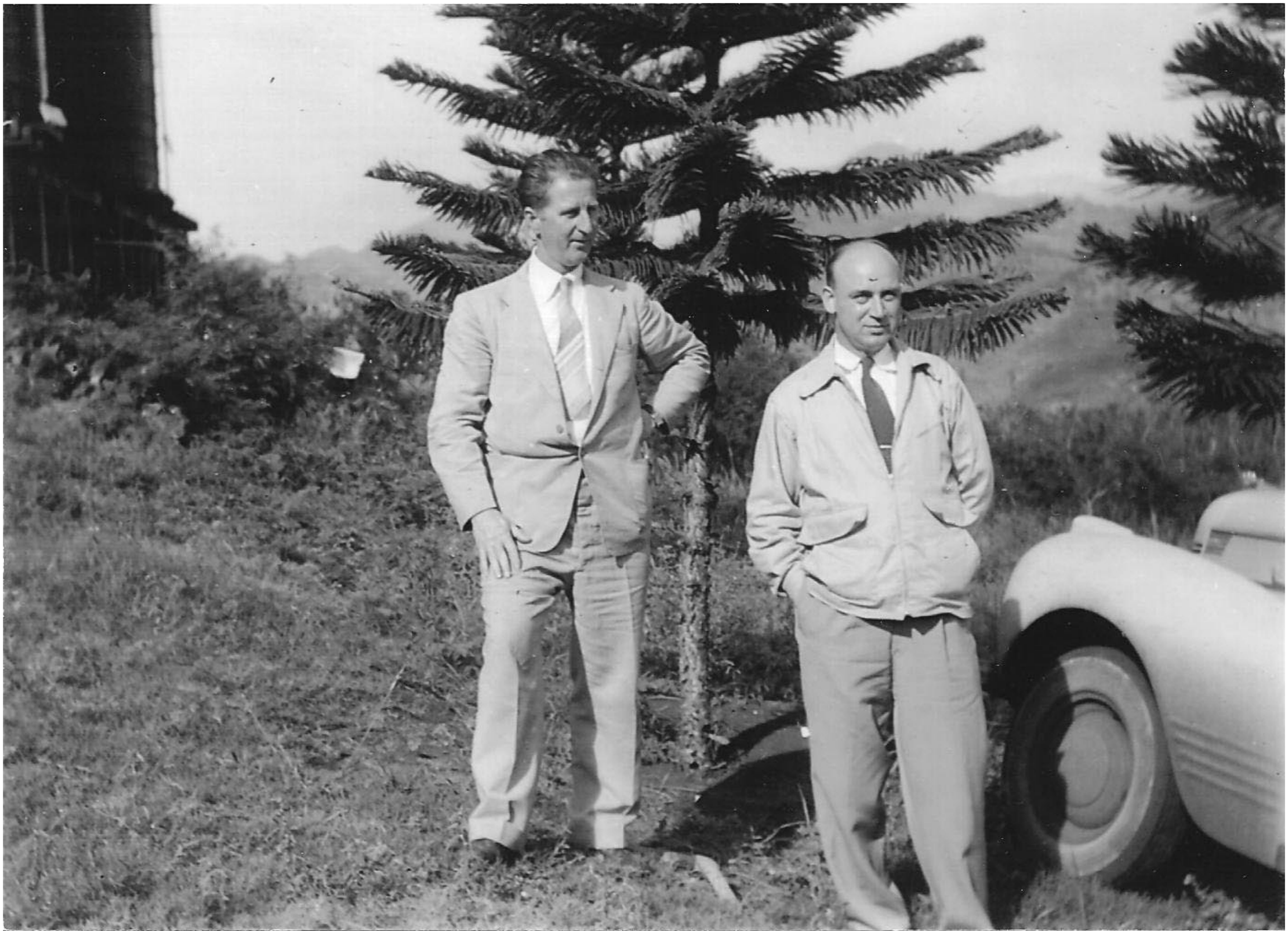
- DNI asks RID to set up 8 new monitoring sites on Oahu, Molokai, Kauai, Maui, Lanai and main island of Hawaii (3)

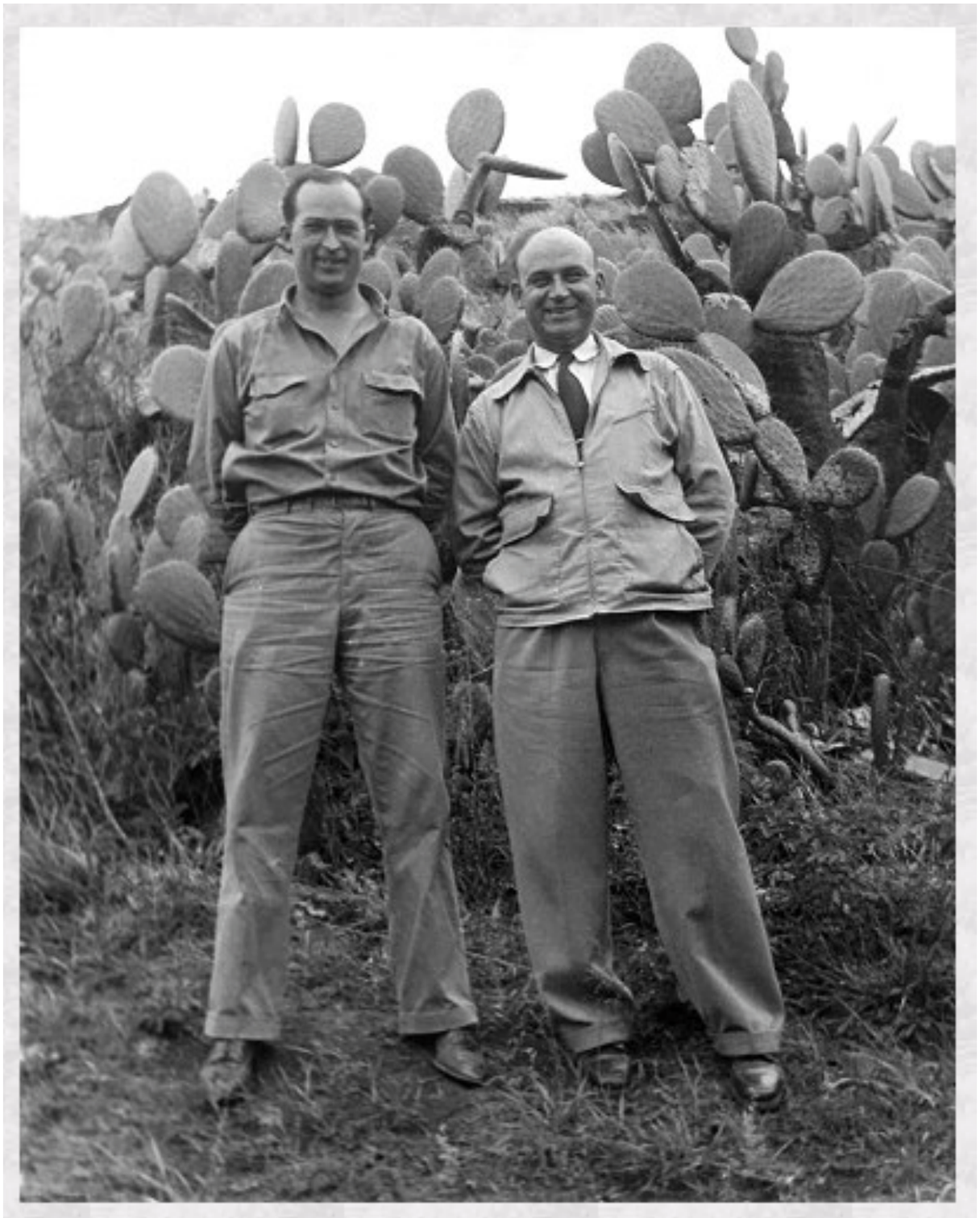
- 2-year detail

- George Sterling (W3DF), Prose Walker (W2MBX), Charlie Ellert (W3LO), Walt Maxwell (W8KHK later W2DU) & others

2-Year Field Day…!

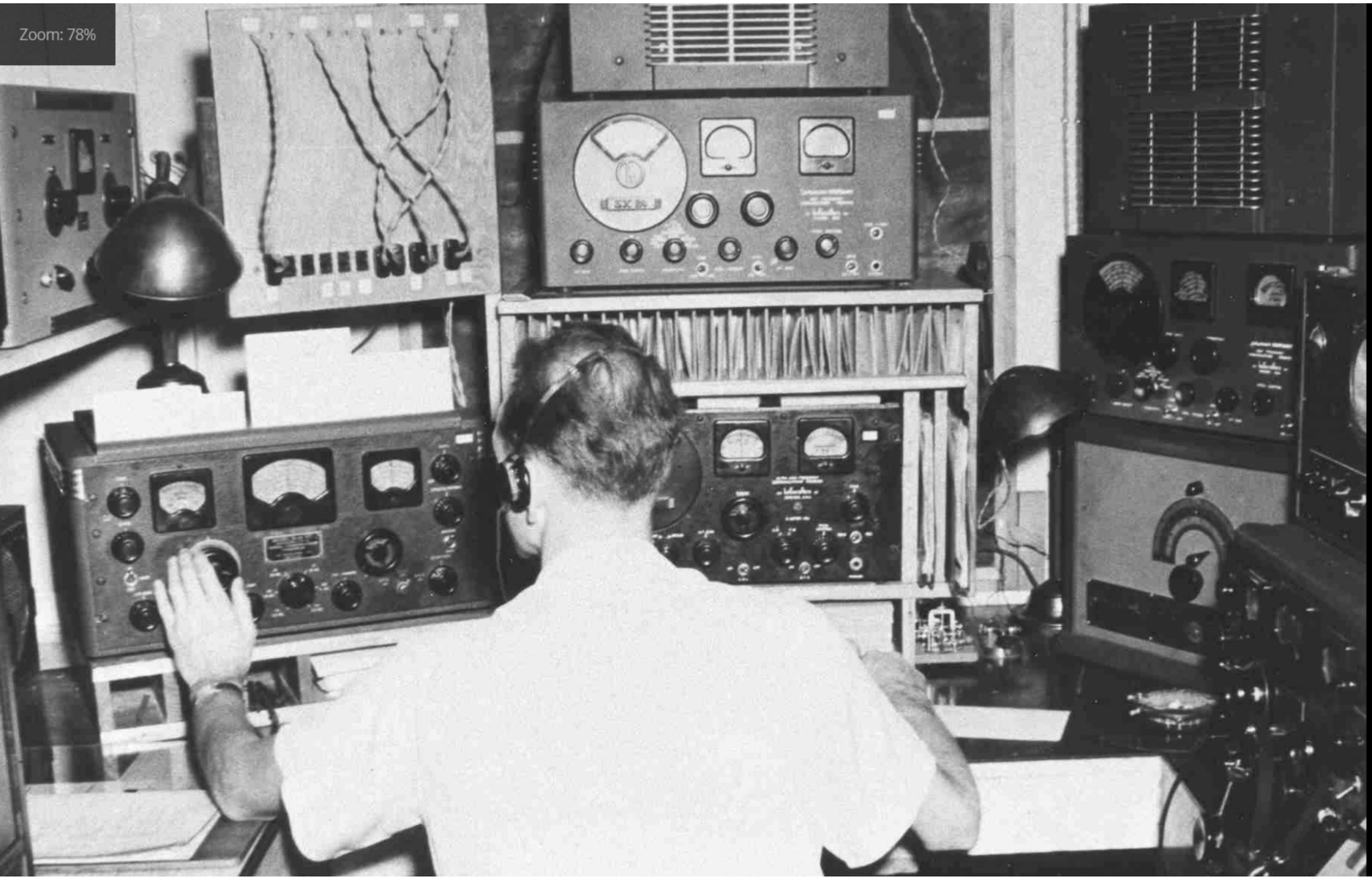
George Sterling and Charlie Ellert
The Punch Bowl (Hawaii)

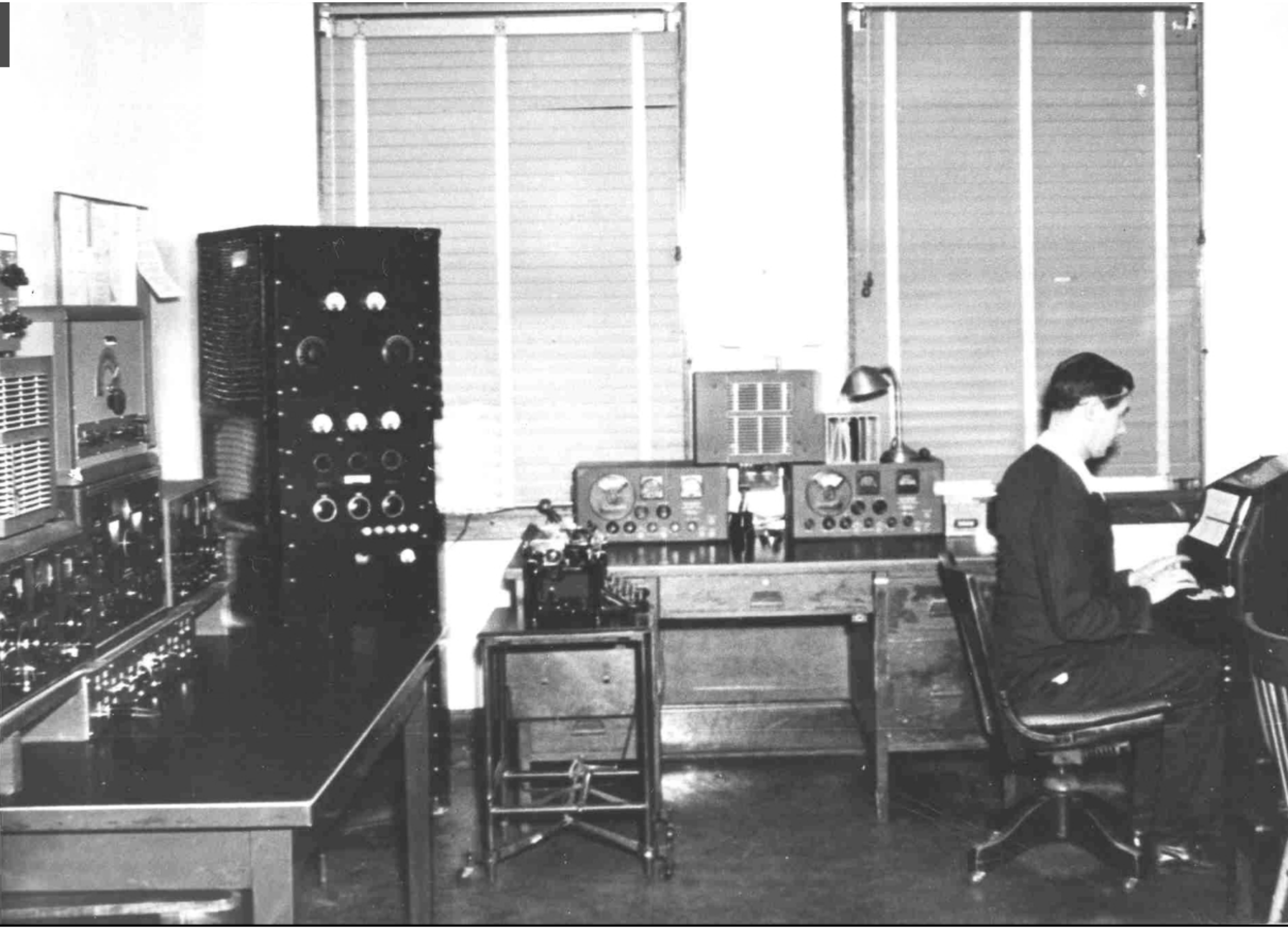




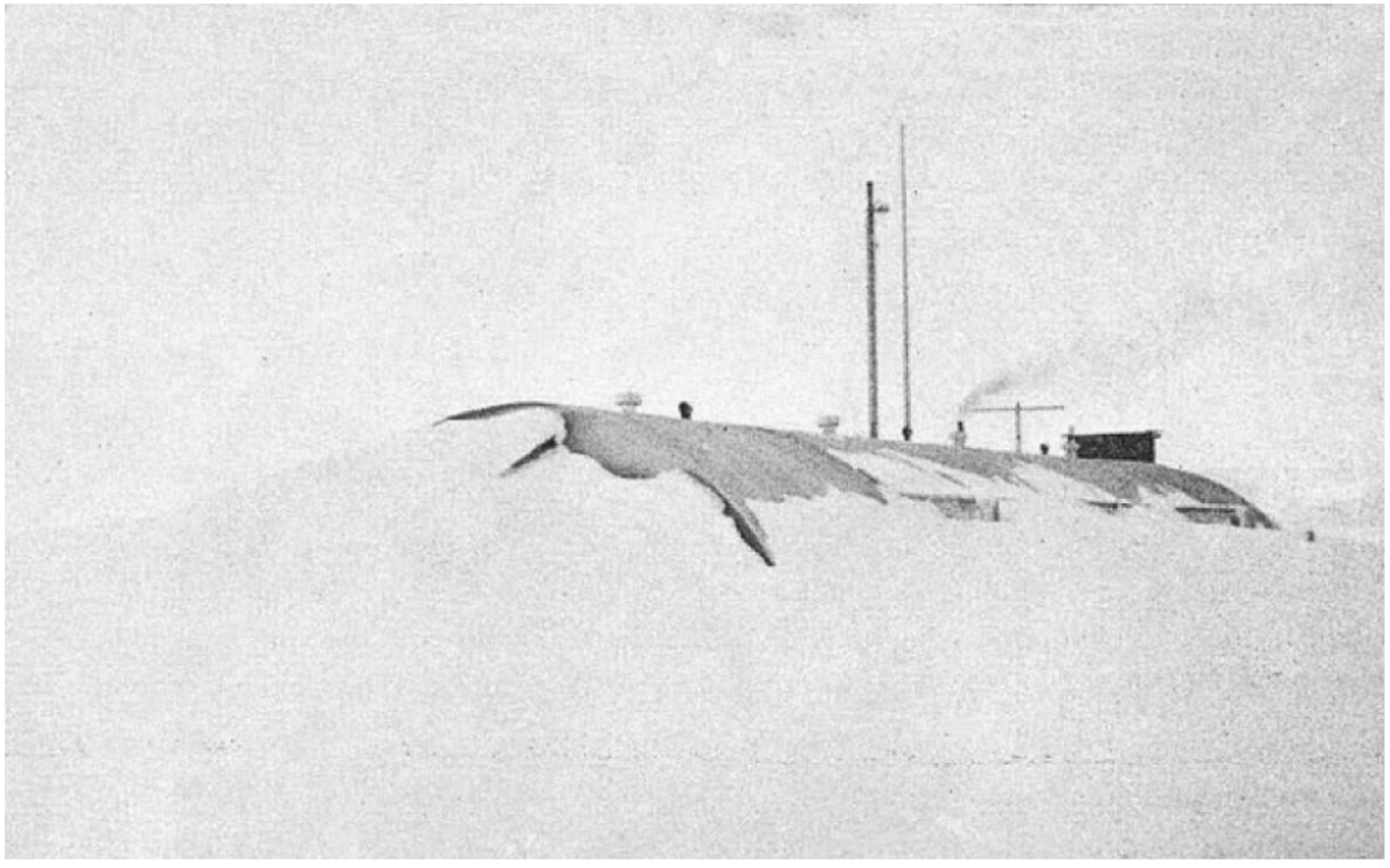
Prose Walker (W2BMX) and Charlie Ellert (W3LO), Honolulu primary monitoring station, March 1942. Hawaii was not a state at that time and martial law was imposed for about a year after the bombing of Pearl Harbor.

RID Field Office, Honolulu





North to Alaska



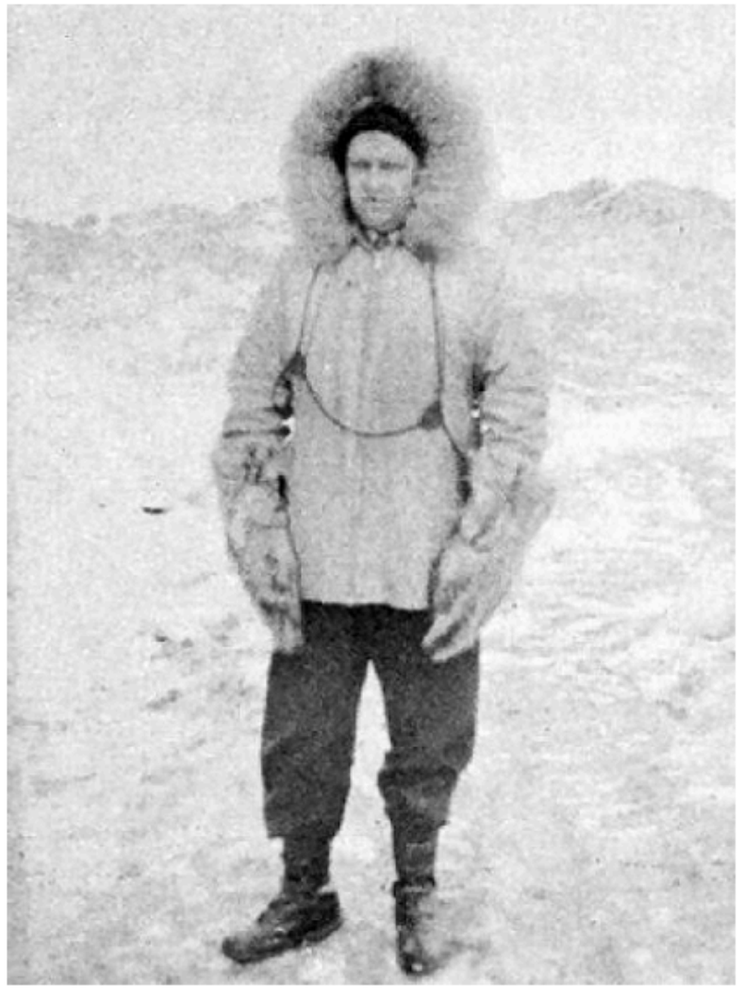


Figure 139: *The Nome, Alaska monitoring station. Buried deep in the snow drift is the Nome Monitoring Station. The Japs have had a hard time findings us. In fact for several weeks during the year no road was maintained to the station and we who worked there had trouble finding the place on dark nights with all the lights blacked out. It was not a pleasant experience to flounder through deep drifts across the tundra with cold wind and snow cutting your face. Proof that the wind blows here in the far north is shown by the smoke. Located on the site of a gold mine, untold wealth lies beneath it.*

Identify and Eliminate:

Clandestine Stations Across the Americas

The third meeting of the Foreign Ministers of the American Republics on January 15, 1942, 22 days after Pearl Harbor, adopted a resolution recommending that the several governments take immediate measures to eliminate clandestine stations.

Accordingly at the request of our State Department, RID sent monitoring officers and equipment to our neighbors to the South while, at the same time, RID took a step to train 30 representatives of the several countries in radio intelligence theory and technique at our training school at Laurel, Maryland.

At the conclusion of the course these trainees were required to locate hidden transmitters in the surrounding countryside, sometimes 15 to 20 miles away.

Radio Intelligence Division

RMS Queen Mary, 1945

Radio Intelligence Division

```
B V V U A   F E V D U   K D K Q S   T M F X W   G Y C Y L
T V E G Y   N R Z L T   I O M Q Z   E G O U F   Q J V L L
P L W N R   E P O L B   Q K J U I   A E S F R   W J L P W
N Z H F Q   K Z L K F   B X O G G   Y P P A T   P V V I I
K A Y V V   B F L W Z   T Z F W K   T Y A D V   I Q S Z P
G T U F Z   E F C O G   B Q G T S   N R D W S   J Z J L V
N P E F J   C F W M P   Z V J H N   B E U W O   X I I O A
```

Ciphertext Example

```
Sixty from Vesta to Stein,
Queen Mary reported off Recife by
Steamship Campeiro on eleventh at
eighteen o'clock middle European time.
```

EVI Plaintext

Radio Intelligence Division

RID Military and South American Training Class, Laurel

RID outside the U.S.

RID agents prior to leaving for South America to clean out the Nazi spy network there.

Key Suppliers

Hallicrafters

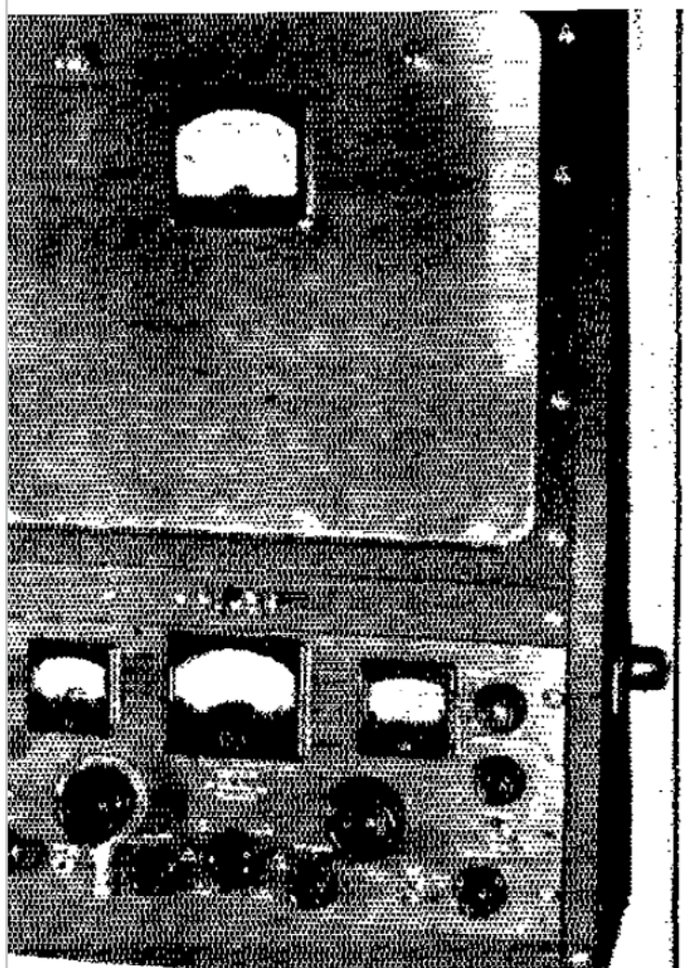
- SX-28 - HF workhorse
- S-27 - “ultra highs”
- SX-25 Super Defiant
- HT-6 xmtr 25W
- HT-9 xmtr 100W
- HT-7 crystal frequency standard
- SSR-202 SX-28 with dual IF strips for sideband selection
- SX-28FCC for mobile use (12V tubes)
-


TONE
A.C.
OFF
B.F.O.
IN
BASS
OUT
A.F. GAIN
PHONES
GAIN
Super SKYRIDER
MODEL SX-28 FCC
MANUFACTURED FOR THE
FEDERAL COMMUNICATIONS
COMMISSION
the hallicrafters Inc.
CHICAGO, U.S.A.
21
43 MC.
11
21 MC.
.55
1.6 MC.
5.8
11 MC.
1.6
3.0 MC.
5.8 MC.
ANT. TRIMMER
A.V.C.
ON
OFF
B.F.O
ON
A.N.L
OFF
CRYSTAL PHASING
RECEIVE
SEND
SELECTIVITY

SSR-202:
Special Surveillance Receiver

Also on the list of RID devices is the employment of the selectable side band adapter developed by James McLaughlin and fitted to the Hallicrafters SX-28 receiver. The SX-28 receiver was the work horse of RID among its many other types. The selectable side band receiver was used to advantage to eliminate jamming while recording the enemy's propaganda.

McLaughlin, "The Selectable Single-Sideband Receiving System," QST, June, 1941

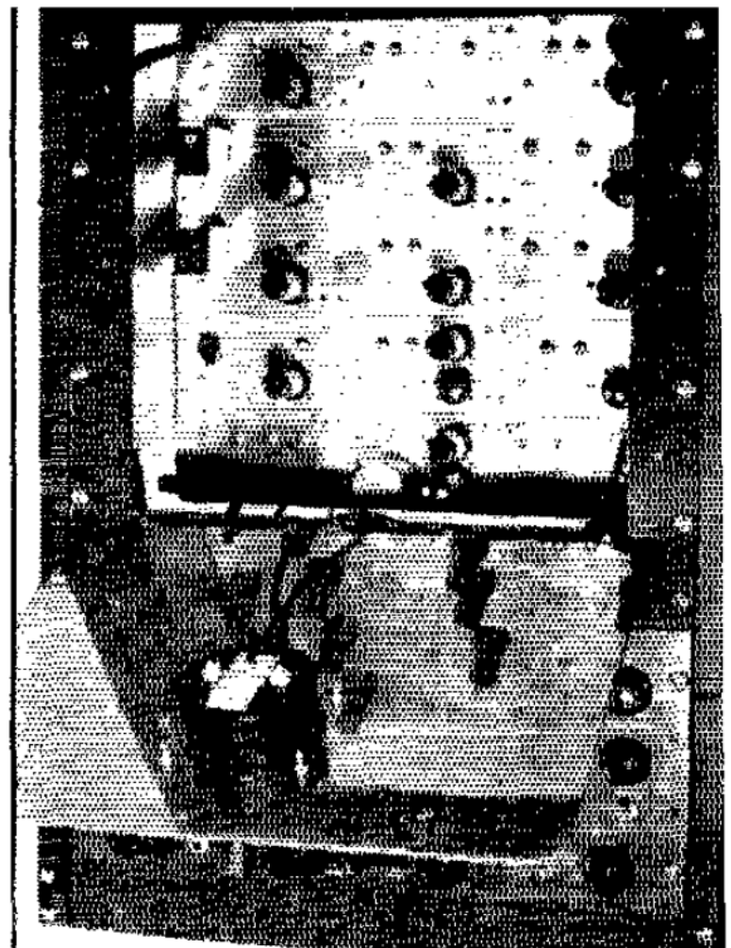


A Brute-Force Attack on Heterodyne Interference

♦

A front view of the selectable single sideband receiver. A regular communications receiver, in this case an SX-28, is used in conjunction with the sideband selector system which occupies the upper part of the rack. The key switch between the two has three positions giving normal receiver, upper side band alone, or lower side band alone.

The front panel drops down to give access to tubes and controls. The controls are all screwdriver-adjusted and need no attention in regular operation. A cast aluminum catacomb with individual front cover plates gives individual compartments for each stage, with stages readily removable for servicing or revision.



MODEL S-27 FCC
MANUFACTURED FOR THE
FEDERAL COMMUNICATIONS
COMMISSION
the hallicrafters inc.
CHICAGO, U.S.A.

S-METER ADJ

TONE

PITCH CONTROL

SEND

REC.

A.M.

F.M.

A.F. GAIN

SHARP

BROAD

ON

OFF

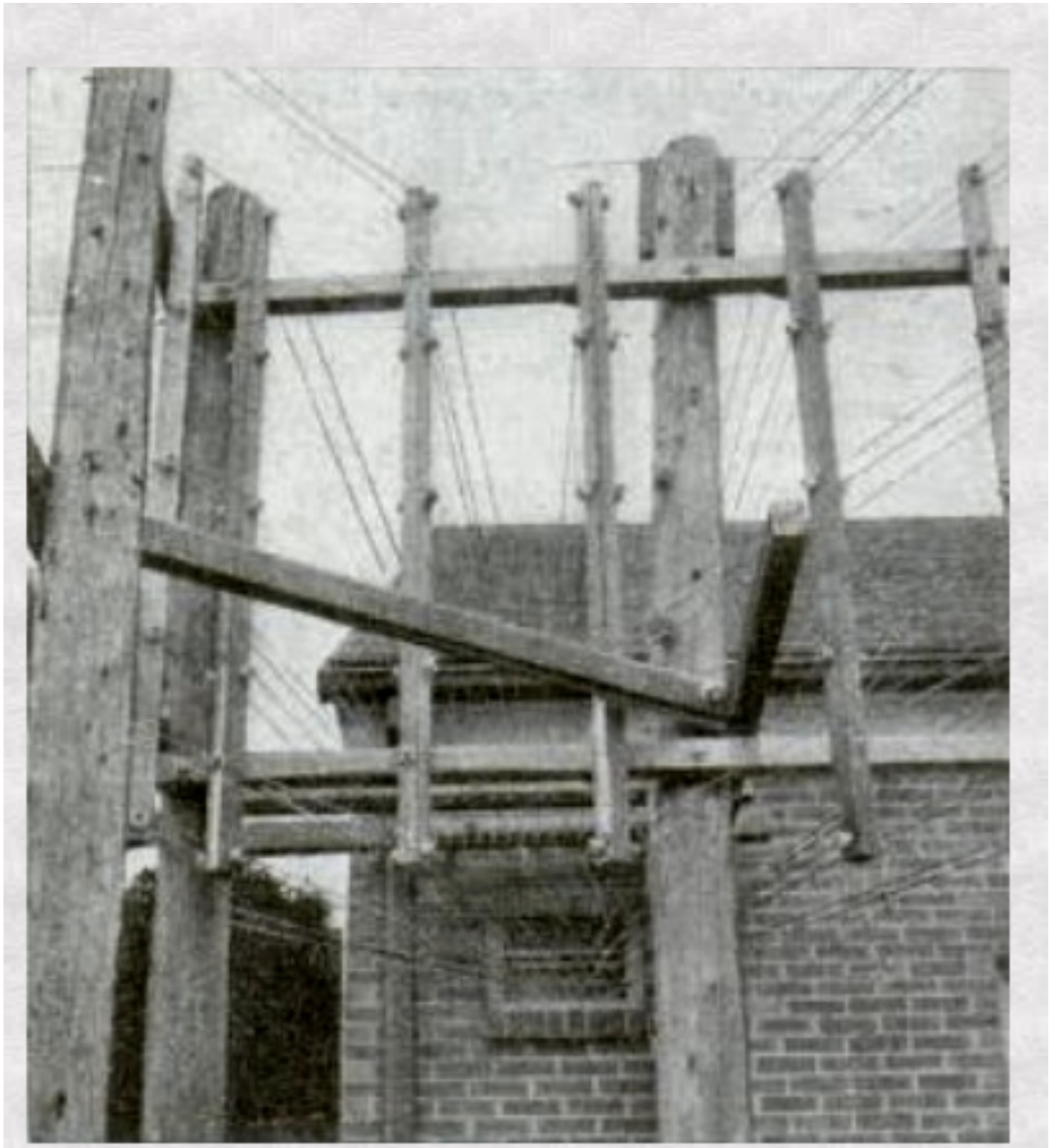
A.N.L.

B.F.O.

OFF

PHONES

Specialized Antennas



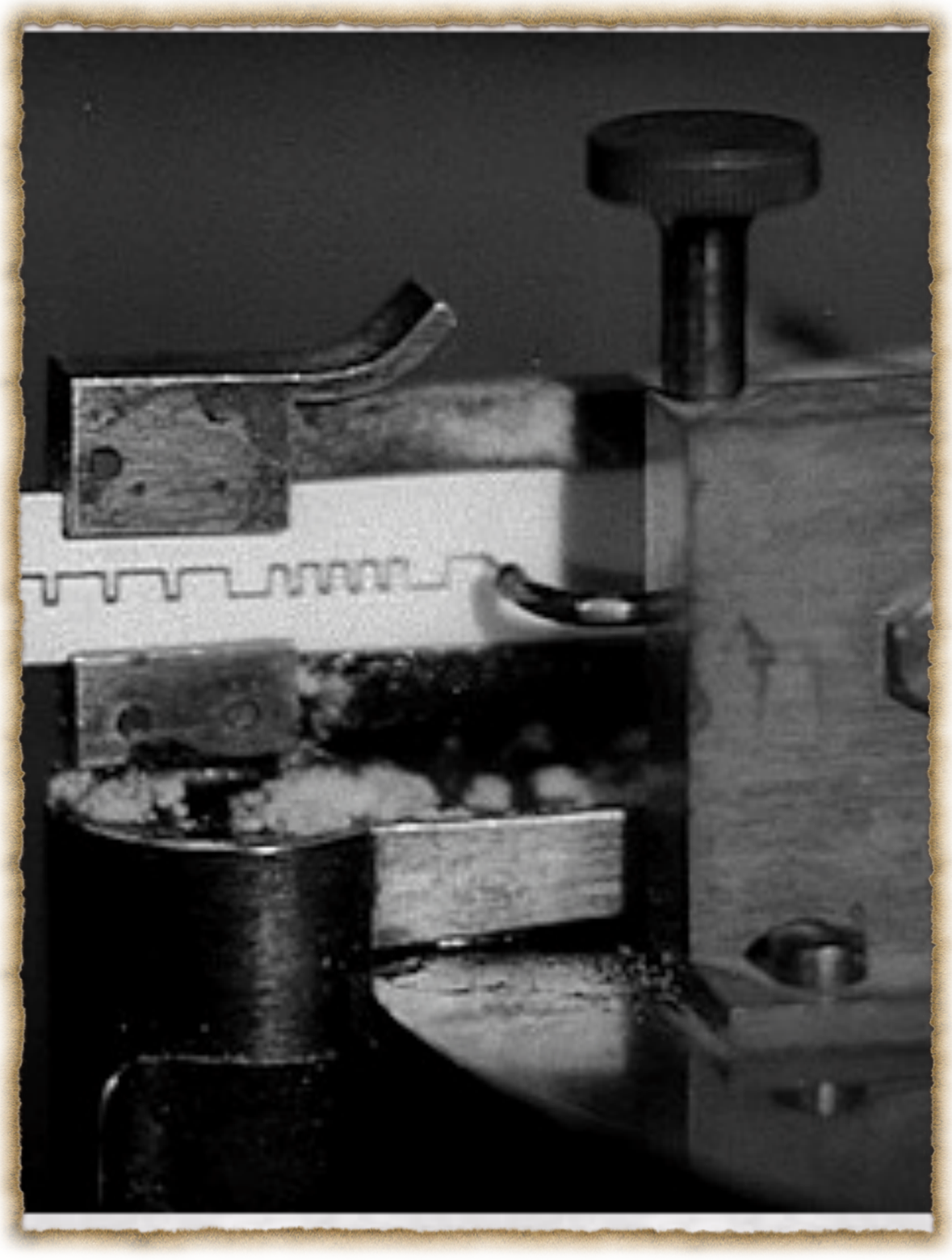
Beverages - receiving

Rhombics - transmitting

Other Specialized Gear

- Memorox paper disc recorder
- Telecord wax cylinder recorder (“dictaphone”)
- Boehme ink recorder (recording CW)
- HF Direction Finding (sky-wave)
- Close-in transmitter “locating” (ground-wave)

Boehme Ink Recorder: Record CW at Any Speed



CW Transcription

Figure 53: *RID typist transcribing copy from Boehme tape.*

...the long range direction finder used by the F.C.C is one built to their specifications using a manually rotated Adcock antenna mounted in a wooden shelter. The indication is by aural null, the receiver is a SX-28...

Radio Intelligence Division

Type "A" Adcock (GI, 1940)

HF/DF “Skywave”

- Type “B” Adcock
- two per location
- made of wood
- one AC one DC powered
- underground wiring
- radio, telephone or teletype link to Washington DC

Figure 30: *Assistant Supervisor K.W. Miller, W5AOC, taking a bearing with an Adcock direction finder. The antenna was rotated to obtain a null in signal strength. At this point the antenna is broadside to the direction of arrival of the signal.*

Radio Intelligence Division

Powder Springs, GA (?)

Radio Intelligence Division

Powder Springs, GA (?)

Radio Intelligence Division

Type “B” Adcock Windbreak (GI, 1943)

Radio Intelligence Division

Type “B” Adcock Windbreak (GI, 1943)

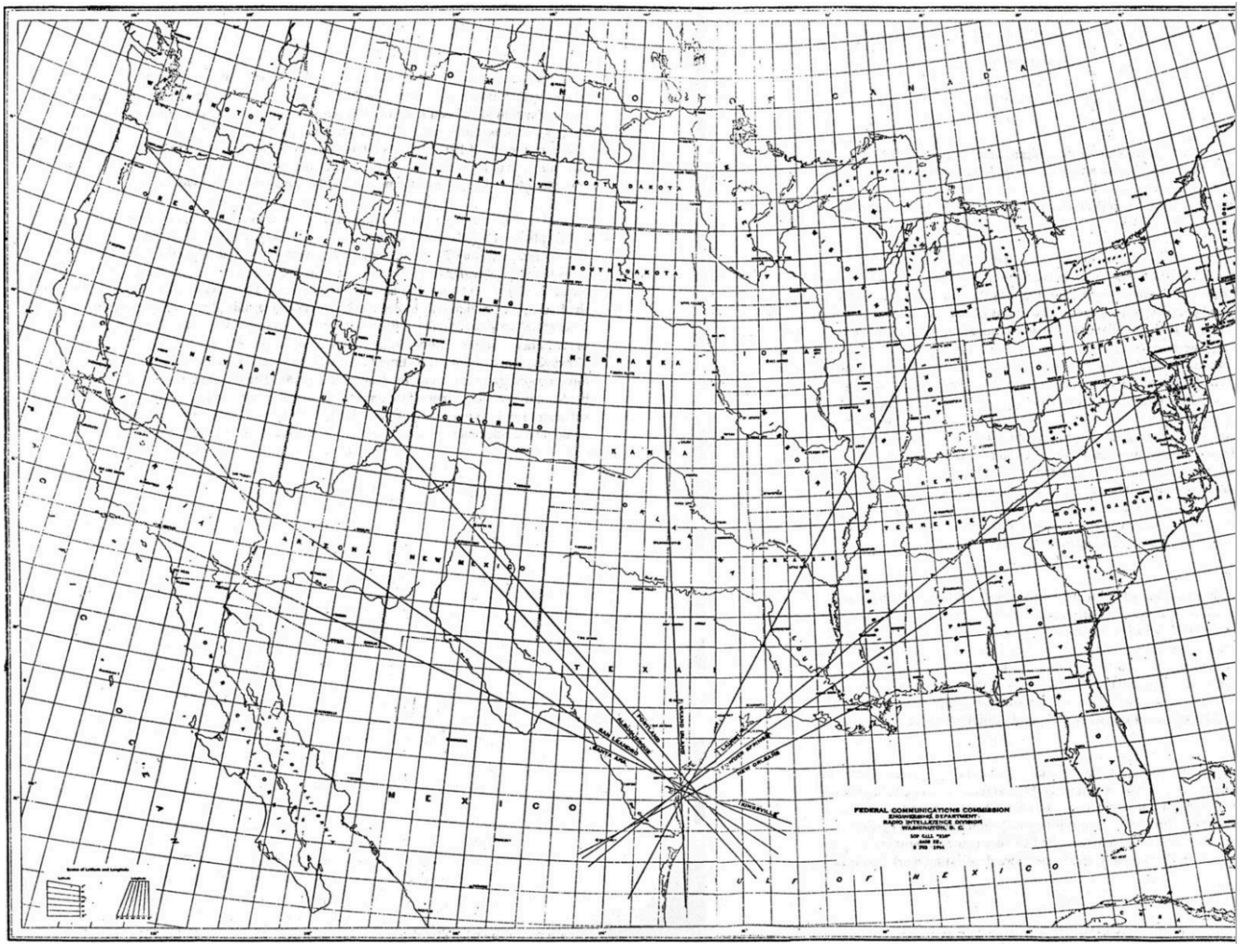
Constant Testing…

- 127 tests
- Portable transmitter set up at Pentagon, w/ antenna out the window
- See how long it would take to be reported
- Scituate RI reported it within 7 minutes

More Testing…

On October 27th a small Navy boat carrying this transmitter proceeded to a location unknown to the FCC and the transmitter was put on the air, with the following results. Again I quote from the official Coast Guard Report:

"The high-frequency transmissions from the emergency transmitter were immediately intercepted by FCC direction-finder stations in all parts of the United States at distances up to 2600 miles... Bearings taken and teletyped to the plotting room of the Radio Intelligence Division of the FCC at Washington resulted in an initial fix within 20 minutes of the time the transmitter first went on the air... Those fixes compare with a dead reckoning location of the small Navy boat at the time in the vicinity of 33-55N, 72-10W, and indicate a maximum error of some 15 miles in latitude and less than 10 miles in longitude." This is in the general order of accuracy to be expected of high-frequency bearings taken over such distances."


FEDERAL COMMUNICATIONS COMMISSION
ENGINEERING DEPARTMENT
RADIO INTELLIGENCE DIVISION
WASHINGTON, D. C.
SCALE OF LATITUDE AND LONGITUDE
LATITUDE
LONGITUDE
PORTLAND
ALBUQUERQUE
SAN LEANDRO
SANTA ANA
GRAND ORLANDO
LAUREL
FLOWOOD SPRINGS
NEW ORLEANS
KINGSVILLE

Mobile Surveillance

- Hudson and Ford automobiles w/receivers and loop direction finder
- Locate transmitter within radius of one block or so
- “Snifter” hand-held field strength meter
- Telecord wax recorder
- transmitter - communicate with local monitoring site
- heavy-duty batteries
- call books - commercial and ham stations
- look for antennas!

Radio Intelligence Division

1940 Hudson Direction-Finding Car

Radio Intelligence Division

1939 Ford Deluxe Direction-Finding Car

Radio Intelligence Division

1940 Hudson Direction-Finding Car

1941-42 Hudson Sedan

Internal view of RID prowl car used to intercept signals and locate sources of interference. The loop did not show while the car was cruising but only when taking a bearing. Equipment included an SX-28, dictaphone recorder and other receivers covering 75 Kc to 300 Mc.

RID mobile intercept and direction finder unit used to home-in on clandestine radio activity.

Radio Intelligence Division

1940 Hudson Direction-Finding Car

The Loop

3. Much dependence is placed on mobile units, mounted in automobiles. These are the Finch model F-115-A, and employ a rotatable loop mounted on the vehicle roof.

Loop Coupler

4. The so-called "Snifter" is a small suit-case type aperiodic portable receiver manufactured by Fada. It is of low sensitivity, and indicates relative field strength on a meter. It indicates signals from 200 kc to 60 mc.

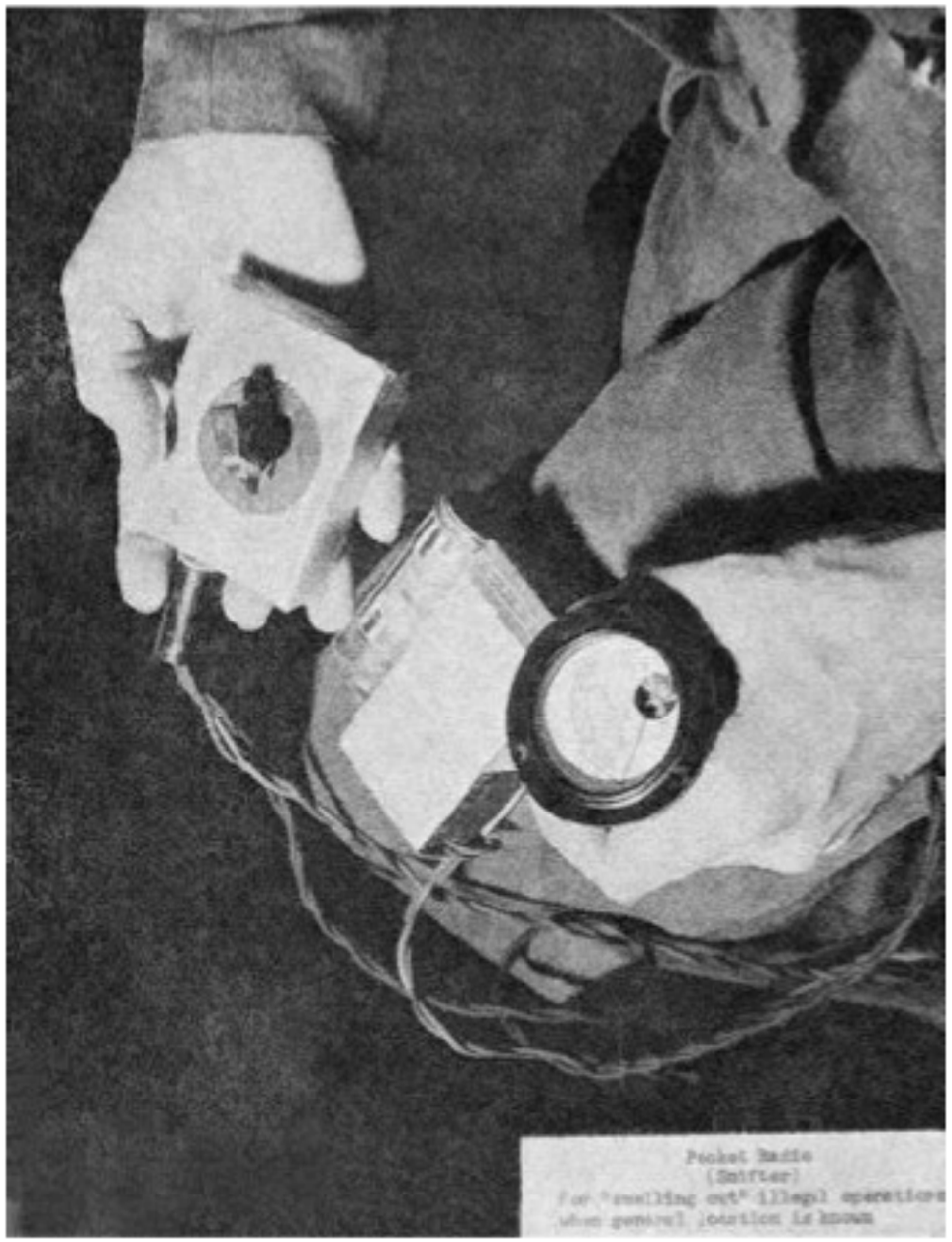


Figure 7: *The Snifter*

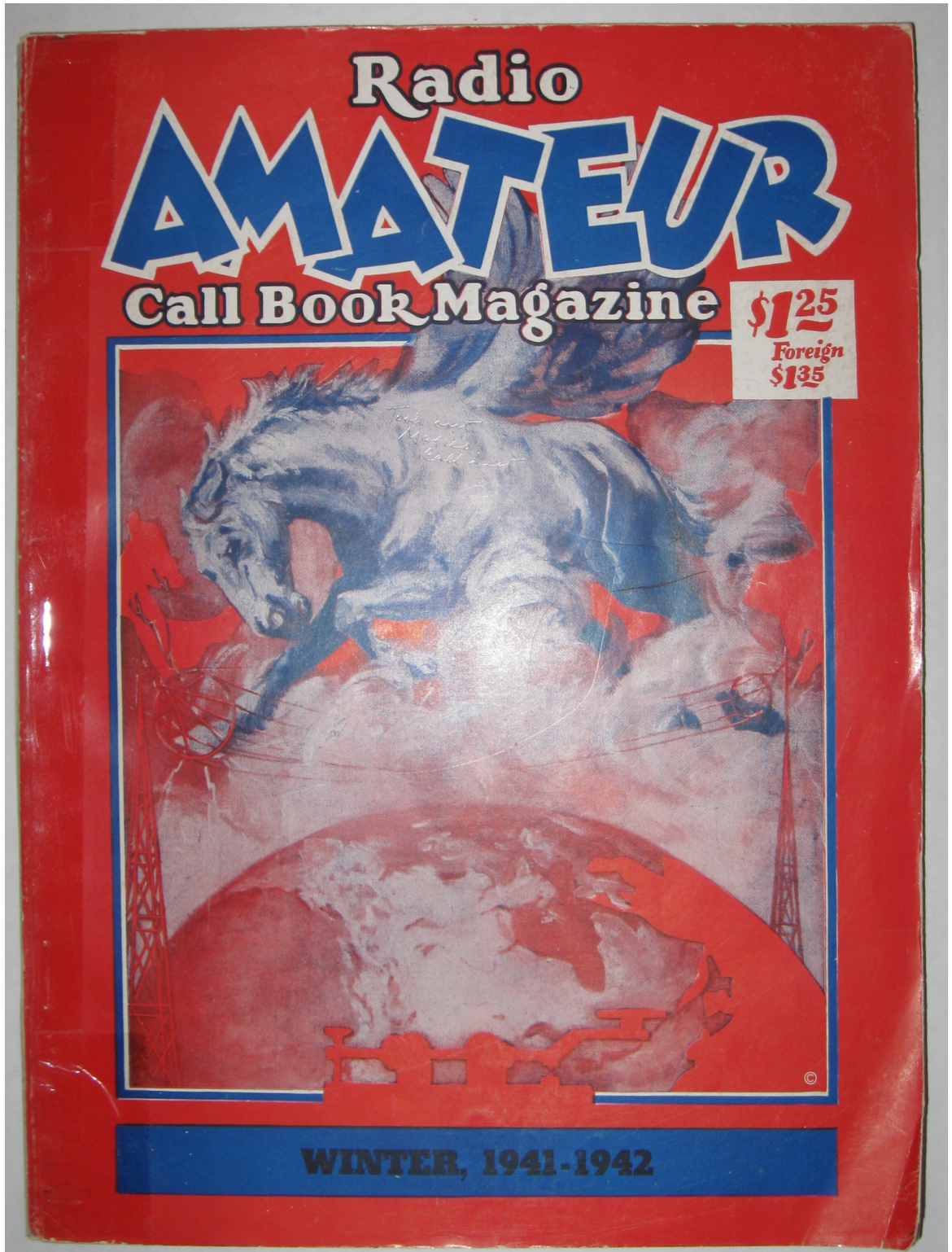
Figure 5: *Charles Ellert (W3LO) March 1942*

“Ground-wave” - 15 miles or less

Callbooks!
Used by the RID - fixed and mobile

- Contains Foreign and domestic Amateur listings

- Winter 1941-42
  last pre-war issue —->



Dr. Marcel Wallace F3HM, inventor of the panoramic display (Panoramic Radio Corp, NYC)

Figure 6: *Receiver panoramic display*

RID employed for the first time in counter-espionage operations the panoramic receiver developed by a Dr. Wallis in his New York City laboratory.

Dr. Marcel Wallace

Radio Spectrograph SA-1 T-100
100 Kc display bandwidth

signal and fist analysis
transmitter fingerprinting

Patrolling the Ether

- How to monitor all HF freqs at once?
- Could miss transmission
- Panadapter not the answer
- Need for specialized equipment

SSR-201

Aperiodic receiver

indication of someone transmitting nearby

>50 Kc to 60 Mc, all at once!

range depends on antenna used

fixed, portable, mobile, “stake-out”

“watch-dog” (nickname)

designed and built “in-house”

5. The Series K aperiodic receiver, manufactured by the Kann Manufacturing Company of Baltimore, Md., is AC powered and can be used for unattended monitoring of a near-by transmitter. It includes a relay which will turn on a recorder during periods in which a signal is received.

When the war was underway, most manufacturers were loaded with defense contracts and not interested in small orders. Consequently RID persuaded Mr. Manuel Kann, W3ZK, of Baltimore to manufacture our aperiodic receivers and Adcock direction finder parts in the basement of his home at nights aided by technicians employed at local broadcasting stations when they were off duty. Before Kann knew it, he was up to his neck in the manufacturing business for the Navy Department and OSS as well as RID. I imagine his neighbors often wondered what went on in his house with lights burning in the basement and particularly with men going in and out all hours of the night.

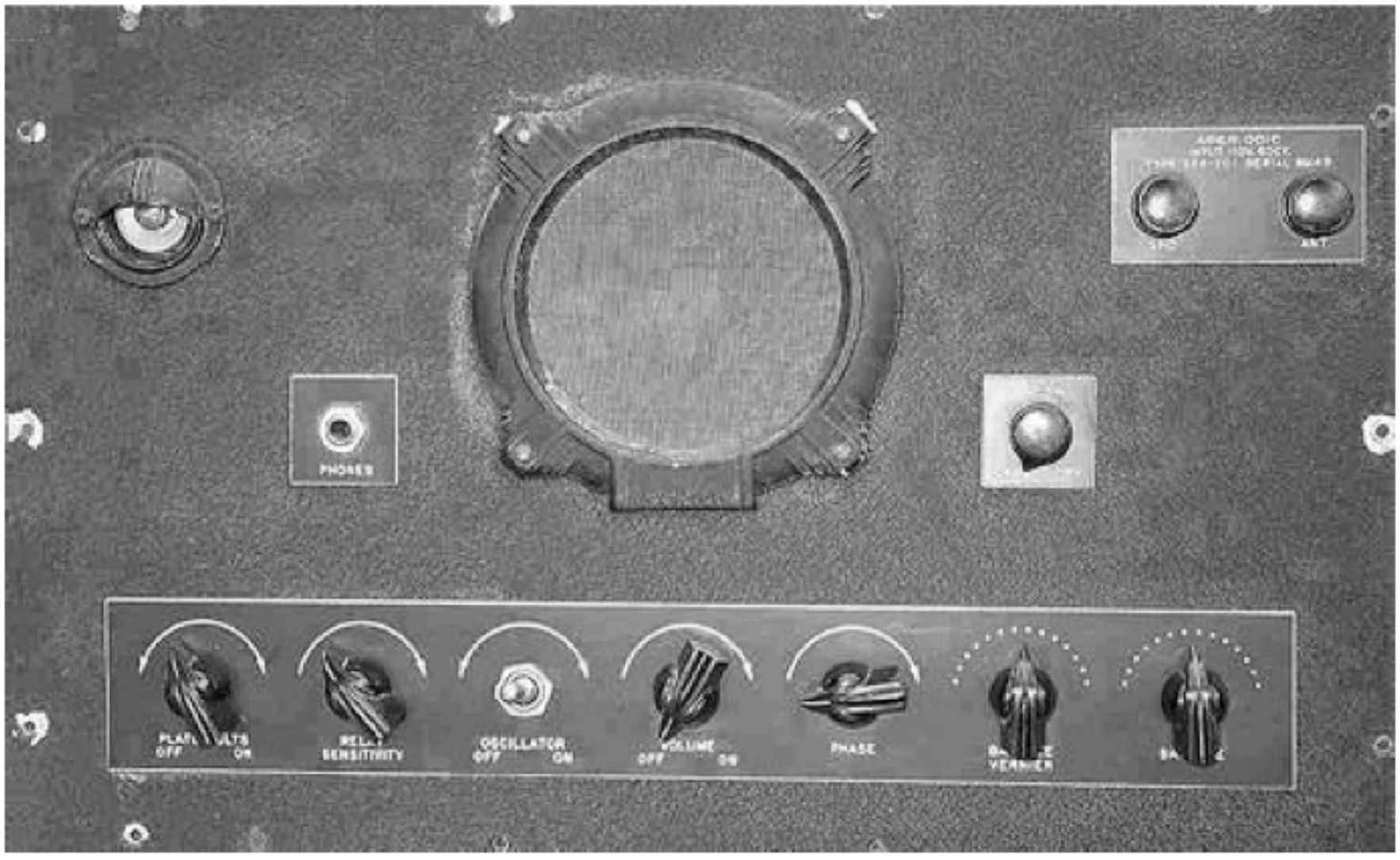


Figure 11: *Aperiodic receiver developed by RID.*

Radio W4ADX Ur stn wkd hr at 9:55 A M.E.S.T 6/29 1930

Sigs QSA 3 N 4-6 on 40 meter band, with pdc note

PSE QSL

REMARKS

Sorri ur sigs faded ob.

W3ZK

XMTR:

1-DeForest 510-15 watts.

Hartley 660 V. D.C. plate.

HANT.

RECUR:

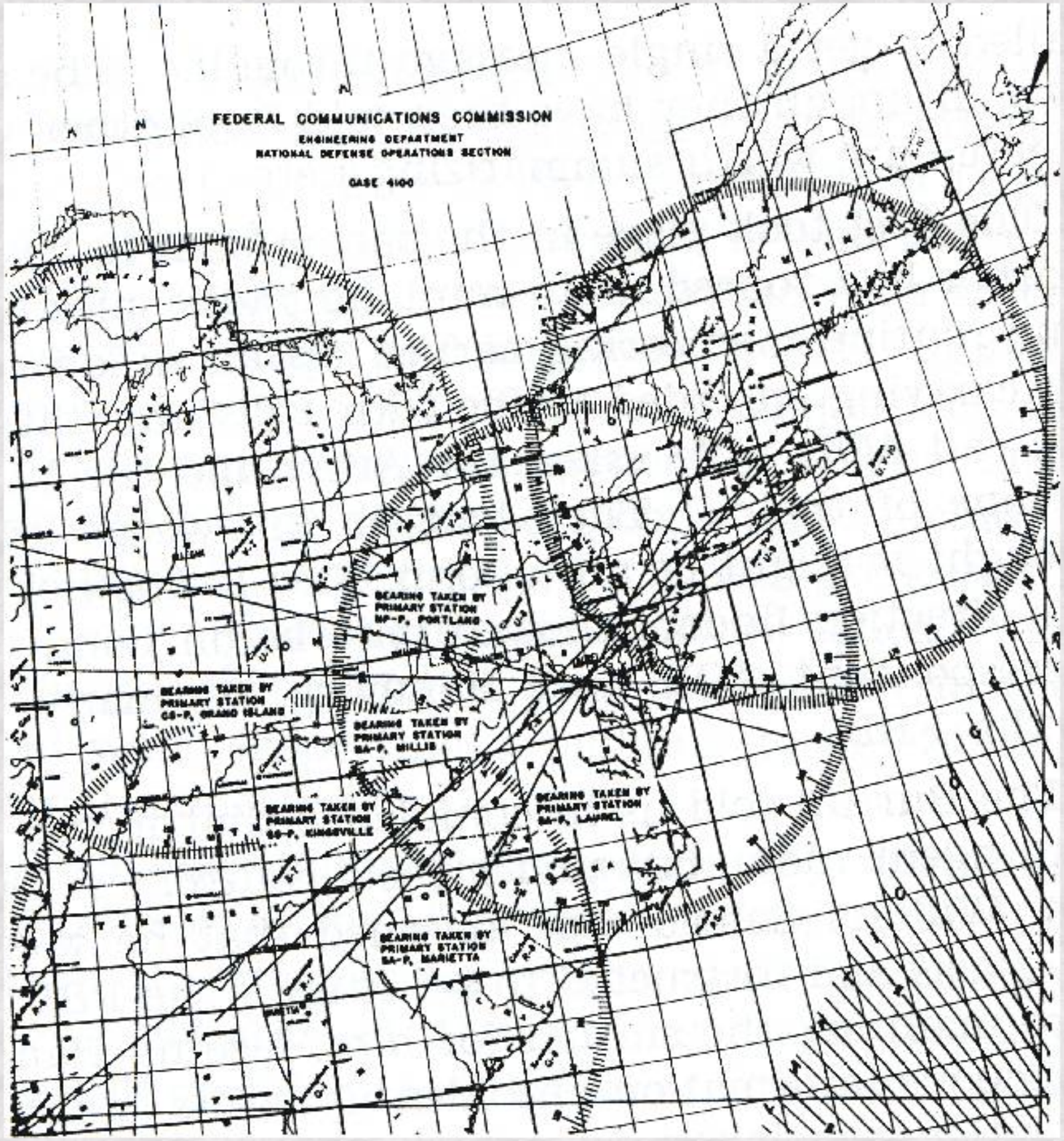
V-V4 RF V-V4 Det es

V-V27 Audios

2452 Callow Ave. BALTIMORE, MD. MANUEL L. KANN

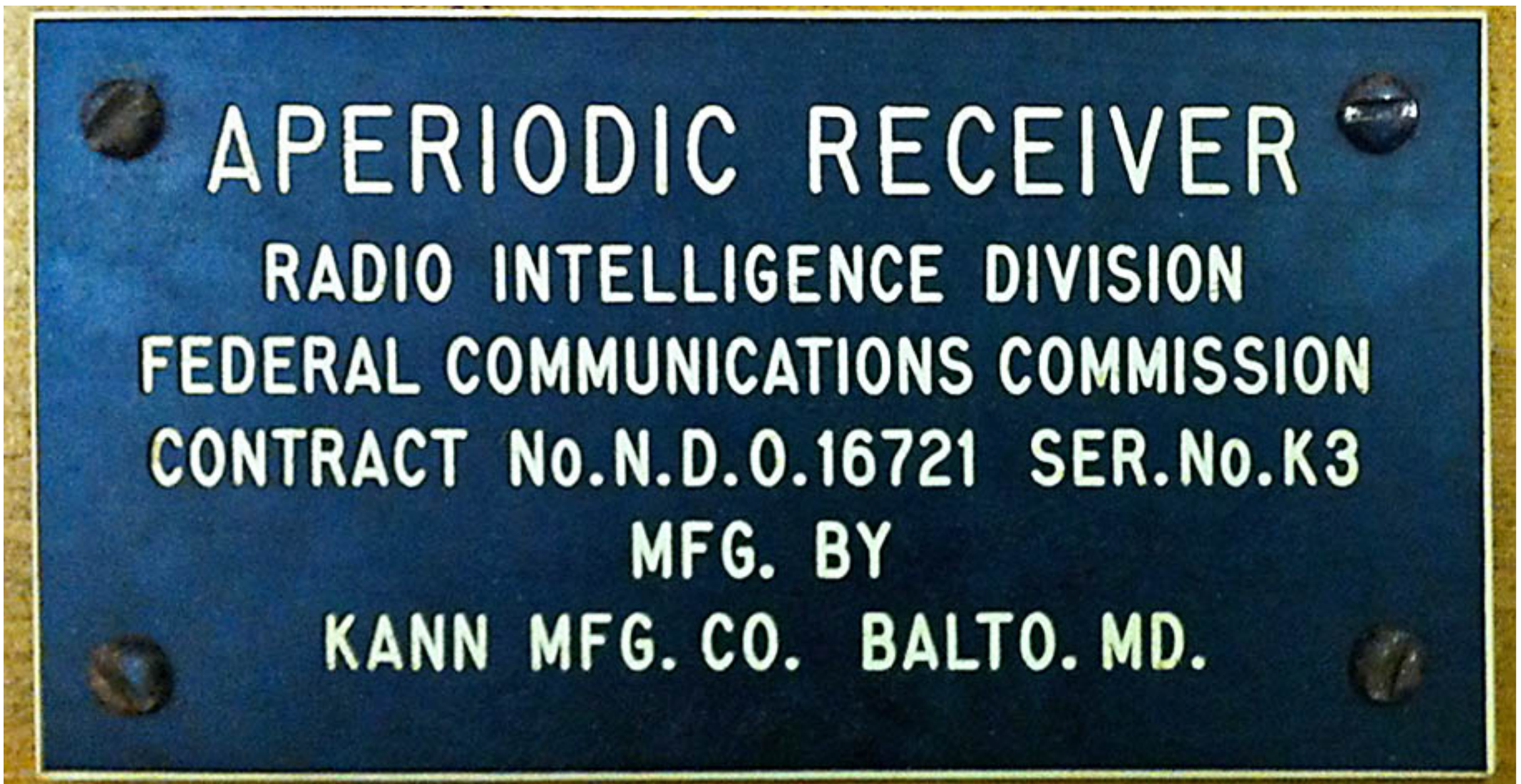
Page 265:

In the general alert which followed that shocking Sunday morning(Pearl Harbor)we had put several mobile monitoring units out cruising the Washington streets. These were equipped not only with loop direction finders but with a device we called the watch-dog, an aperiodic receiver we had developed which would sound an alarm when it received a strong signal on any of a wide range of frequencies. (It was patented by two RID engineers and later used by OSS and the Navy.) In the wee hours of Tuesday, December 9, one of these watch-dogs was triggered by signals on a transatlantic frequency.



Plot of bearings taken by RID primary monitoring stations to determine the location of a clandestine transmitter in Washington, DC area on December 9, 1941. The first alert was sounded by an aperiodic receiver in a mobile unit cruising DC that was immediately followed by an alert from the primary monitoring station in Portland, Oregon.

A 3rd SSR-201 Found!



Original Manual Found

APERIODIC RECEIVER

OPERATING INSTRUCTIONS

SERIES K

Manufactured for

RADIO INTELLIGENCE DIVISION
ENGINEERING DEPARTMENT
FEDERAL COMMUNICATIONS COMMISSION

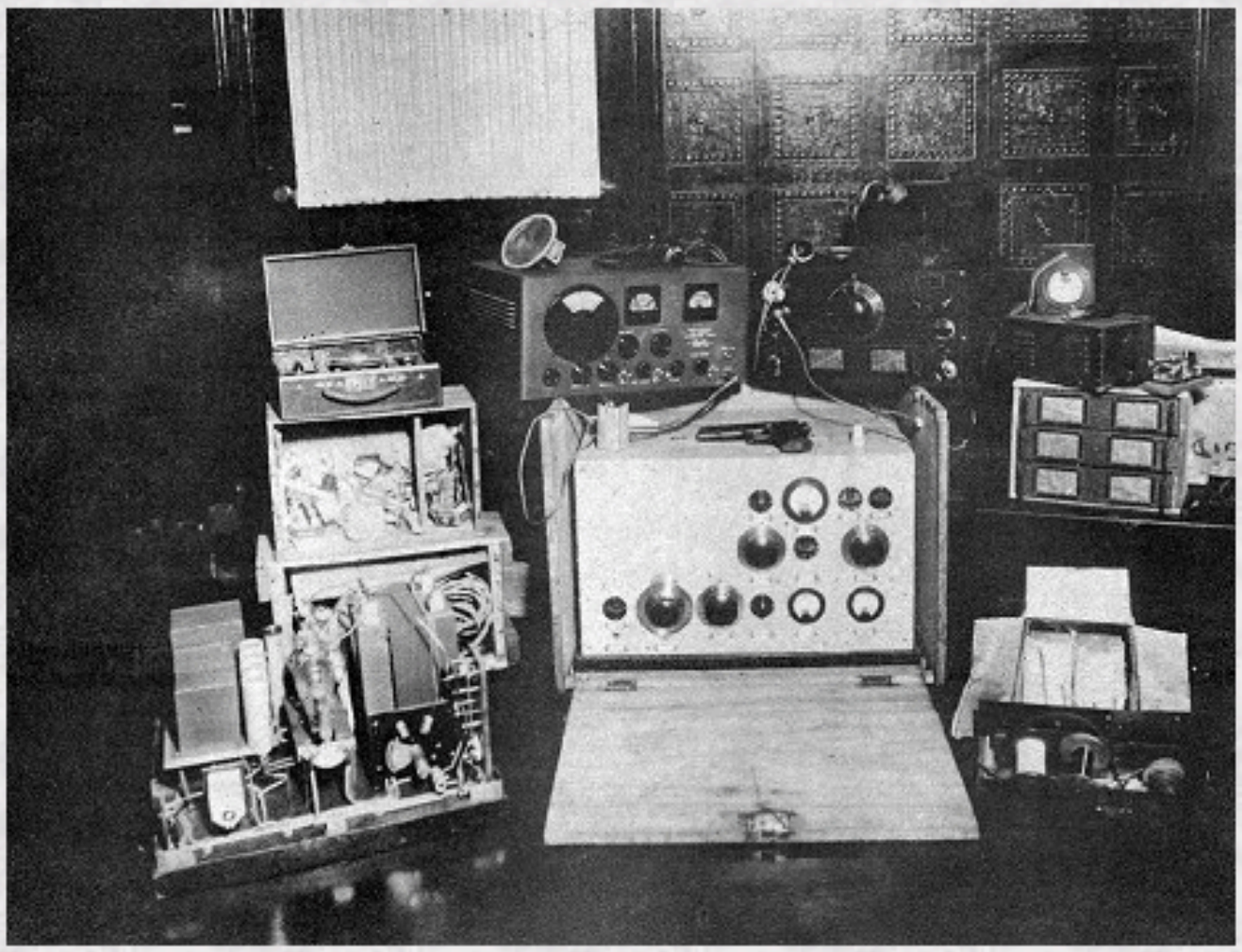
by

KANN MANUFACTURING Co., 401 Calvert Building
Baltimore, Md.

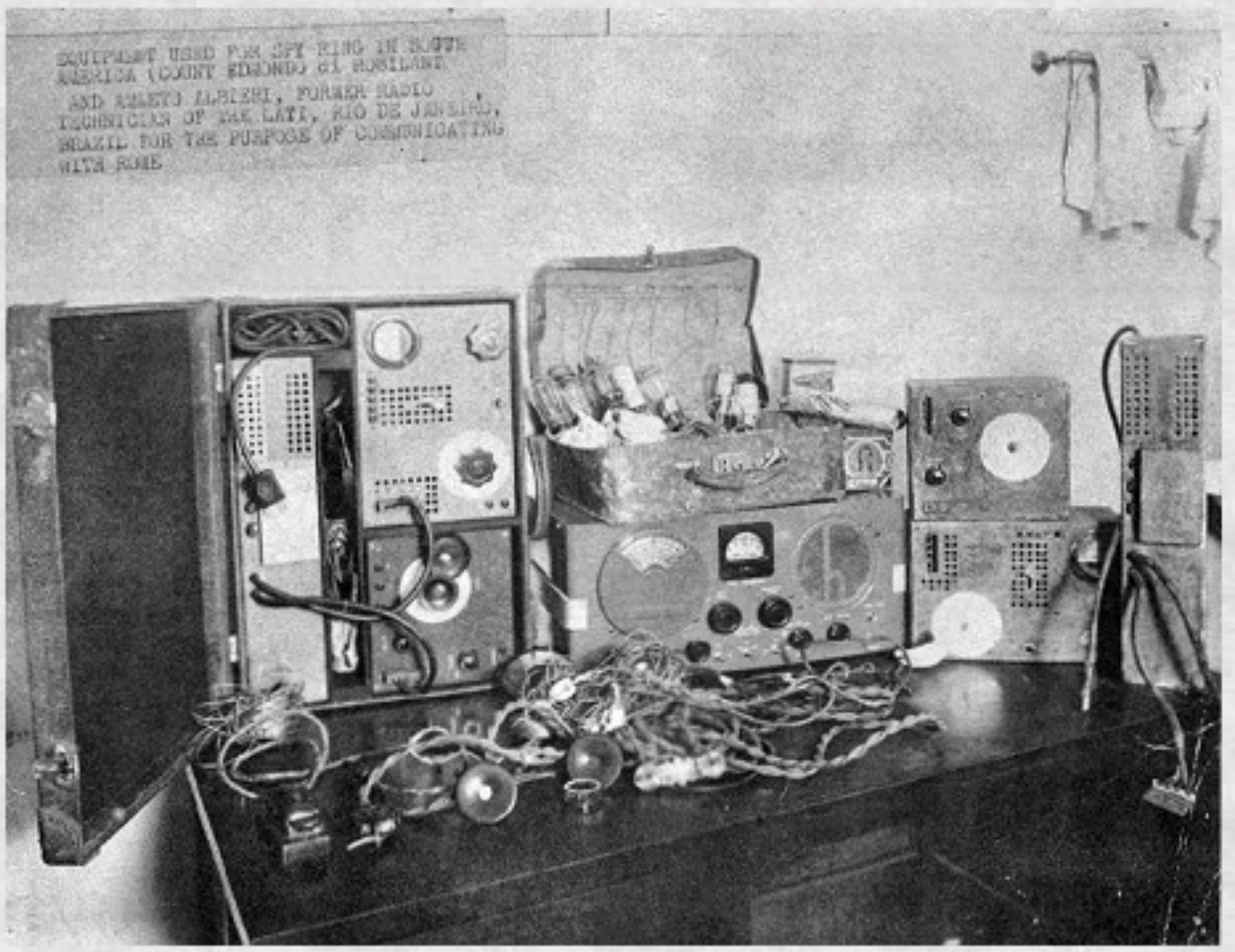
RID Scorecard

- 9000 signals investigated
- 400 unlicensed stations silenced
- 200 spies rounded up (South America)
- > 600 military aircraft flying between West Coast and Hawaii saved
- Thousands of lives saved…

Nazi Spy Radios Captured…

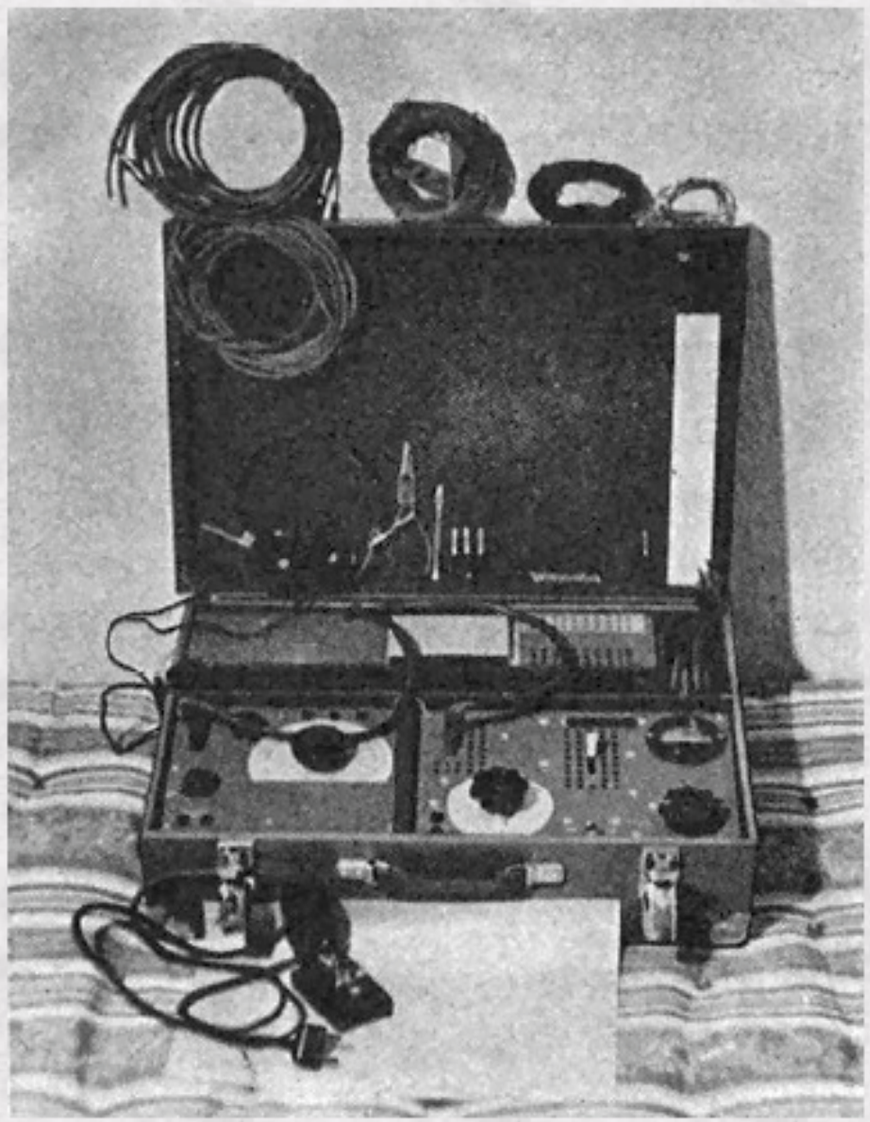


Nazi spy equipment located by RID in Rio de Janerio South America on July 20, 1942. A homebrew transmitter, Hallicrafters receiver and various other radio items. Notice the fire arm sitting on top of the transmitter (center). RID agents were not protected by the Geneva Convention if they were captured.

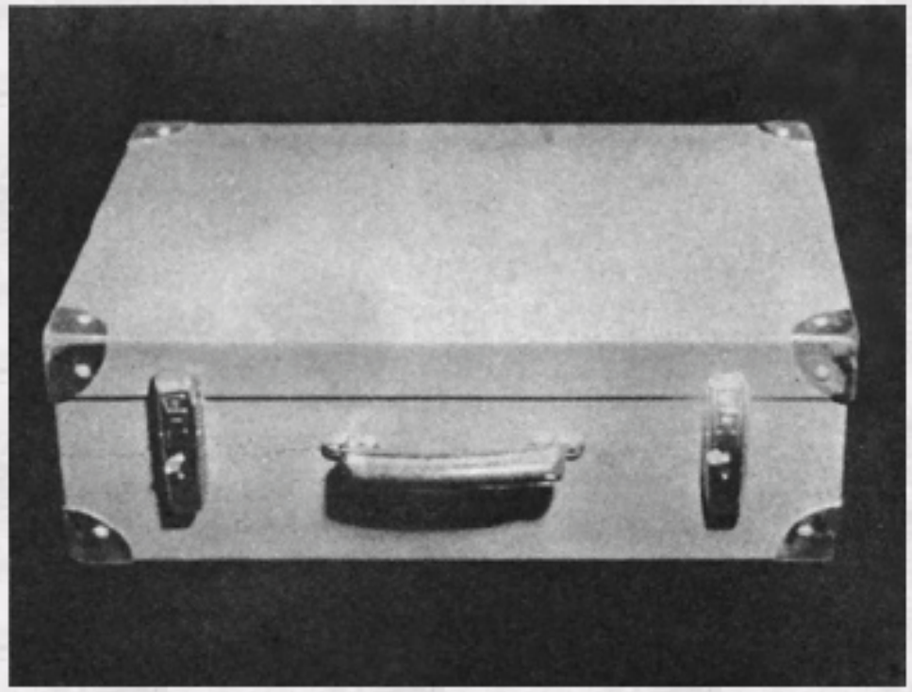


The usual Nazi stock and trade - suitcase transmitter and Hallicrafters receiver. RID used Hallicrafters equipment to locate spies who also used Hallicrafters equipment purchased and sold to legitimate sources in South America.

Sterling's German Spy Set: Where Is It Now?



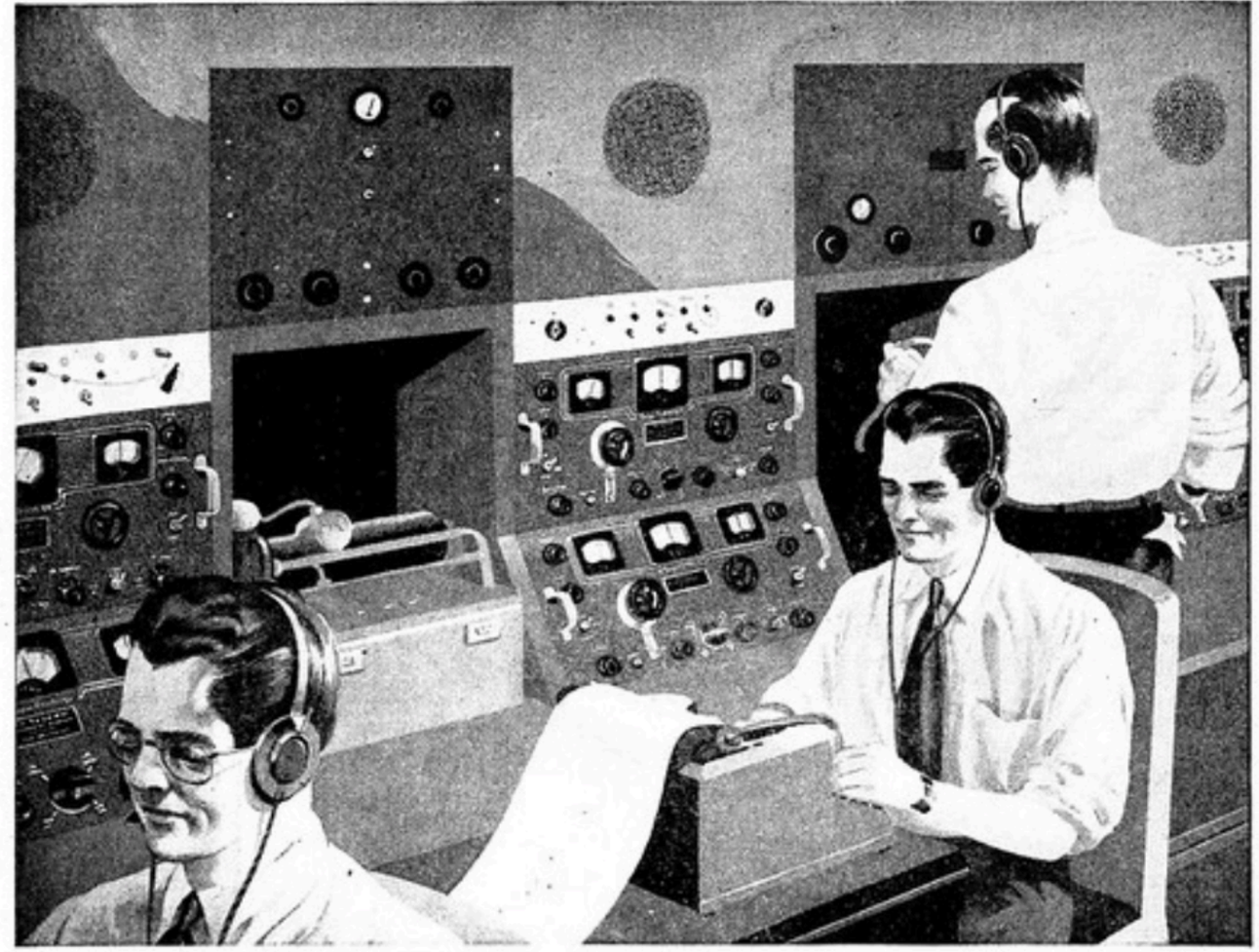
Nazi spy radio equipment carried in a suitcase.



The primary tool of the Nazi spy. This case was preseneted to George Sterling as a momento in recognition of his achievements as Chief of RID.

A transmitter found on ebay

unique
chirp
on the air!



RID at work — HOW RADIO INTELLIGENCE DIVISION KEEPS WATCH...

● The radio amateur has distinguished himself outstandingly in the service of his country in time of war. One of his most important jobs is in the RID — Radio Intelligence Division of the Federal Communications Commission. Above you see sketches of typical hams at work in the intercept room of one of the RID's monitoring stations. With high powered, extraordinarily sensitive equipment like this, manned by experts, the RID patrols the ether, spots illegal transmitters, locates lost planes and keeps watch on the entire radio spectrum to guard home front security. Vigilance like this has put more than 400 clandestine stations out of commission. About 70% of the personnel employed by RID consists of licensed amateur radio operators. For these exacting technicians Hallicrafters has developed the finest equipment that can be made. When the time comes Hallicrafters will be ready with a full line of HF, VHF and UHF communications equipment — designed specifically for the amateur and for all others who need the latest and best combined "in the radio man's radio."

This is a model SX-28A, a communications receiver operating on a frequency range of 550 kc to 42 Mc, continuous in 6 bands including regular broadcast band.

hallicrafters RADIO

THE HALLICRAFTERS CO., WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF SHORT WAVE RADIO COMMUNICATIONS EQUIPMENT, CHICAGO 16, U. S. A.

Typical Federal Communications Commission monitoring car with Hallicrafters equipment.

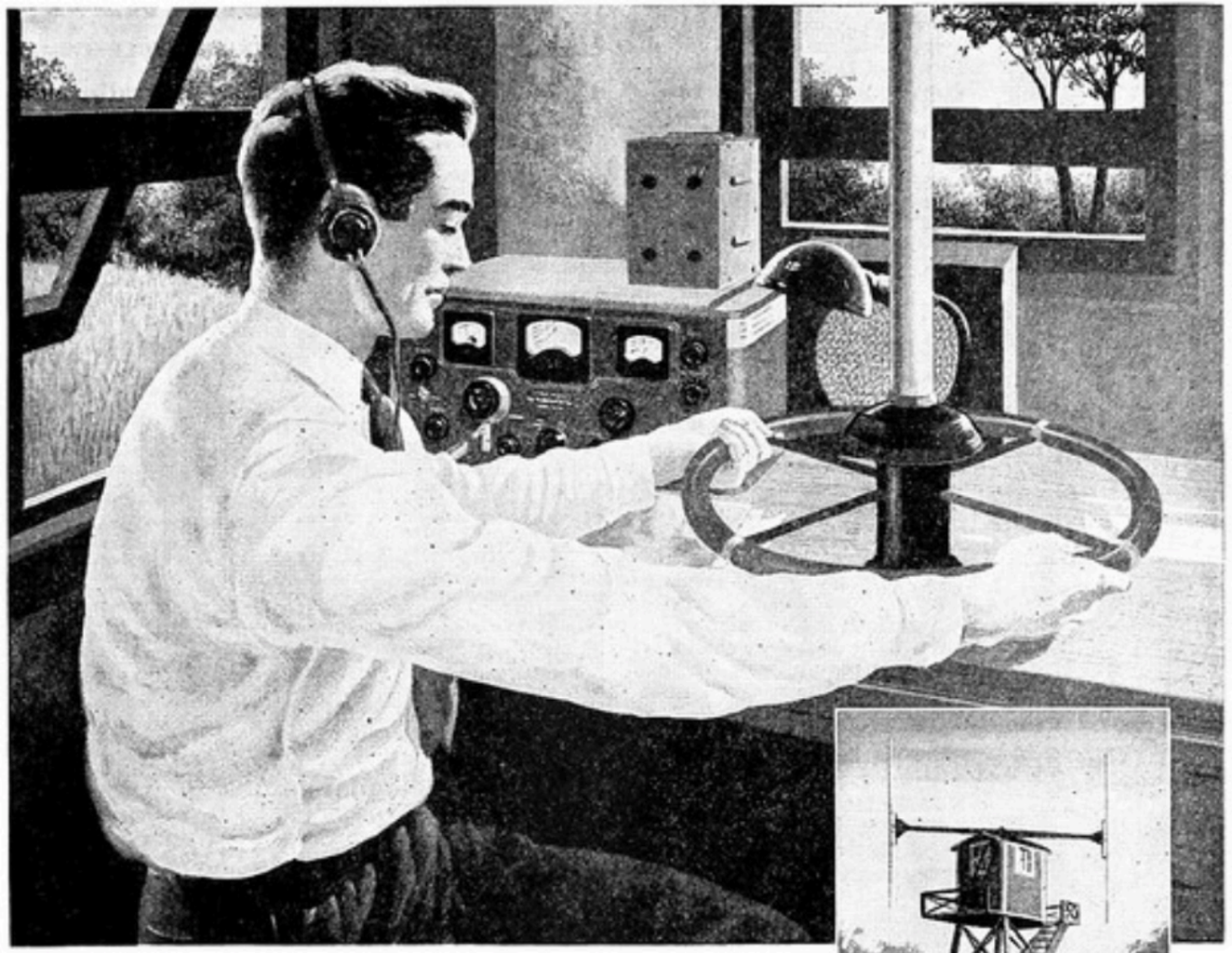
Pioneering **in FM circuits, up to 300 mc. (1 meter), the FM products of the Hallicrafters laboratories have been adopted by government agencies, broadcasting stations, manufacturers of FM home receivers and general purpose users because of uniformly high FM standards.**

We do not build FM home receivers or recommend Hallicrafters FM equipment for use in the home except in cases of exceptional operating skill.

Had it not been for Major Armstrong's contributions to radio science none of these developments would have been possible.

USED BY 33 GOVERNMENTS • SOLD IN 89 COUNTRIES

1941



NEW DIRECTIONS...

New directions in radio will be charted by Hallicrafters

The radio amateur has distinguished himself outstandingly in the service of his country in time of war. One of the most interesting and valuable contributions the ham has been able to make is in the ranks of the RID—Radio Intelligence Division of the Federal Communications Commission. RID polices the airways, tracks down illegal radio stations, traps enemy spies. About 70% of the big RID staff are licensed amateur radio operators. Above you see a sketch of a typical ham in employment of RID taking bearings on a radio signal.

For dependable continuous reception, selectivity and stability on a great range of frequencies, the amateur who must be sure of results, picks Hallicrafters equipment. Hallicrafters sets have been developed in the great testing grounds of amateur radio. When the time comes Hallicrafters will be ready with a full line of HF, VHF, and UHF communications equipment, designed specifically for the exacting amateur—and for all others who need the best and the latest combined in the "radio man's radio."

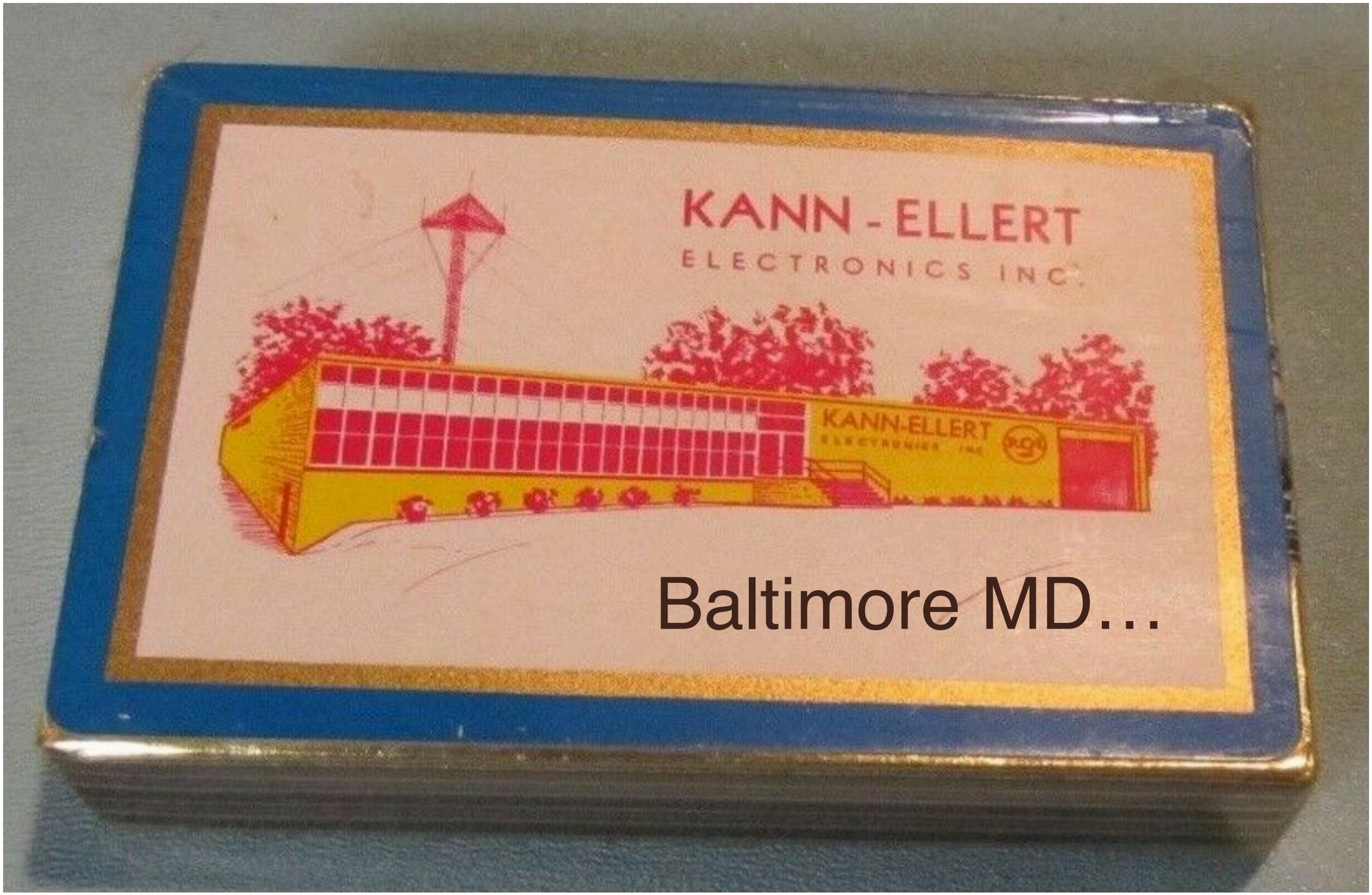
This is the famous Model SX-28A communications receiver. 15 tubes including rectifier. Covers all frequencies from 550 kc to 42 Mc continuous in six bands including standard broadcast band.

hallicrafters RADIO

THE HALLICRAFTERS CO., MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT • CHICAGO 16, U. S. A.

1945

Post-WW2



Further Reading

The History of the Radio Intelligence Division Before and During World War II

1940 – 1945

A collection of articles and manuscript of George E. Sterling
Chief, Radio Intelligence Division (1940-1946), FCC Commissioner (1948-1954)

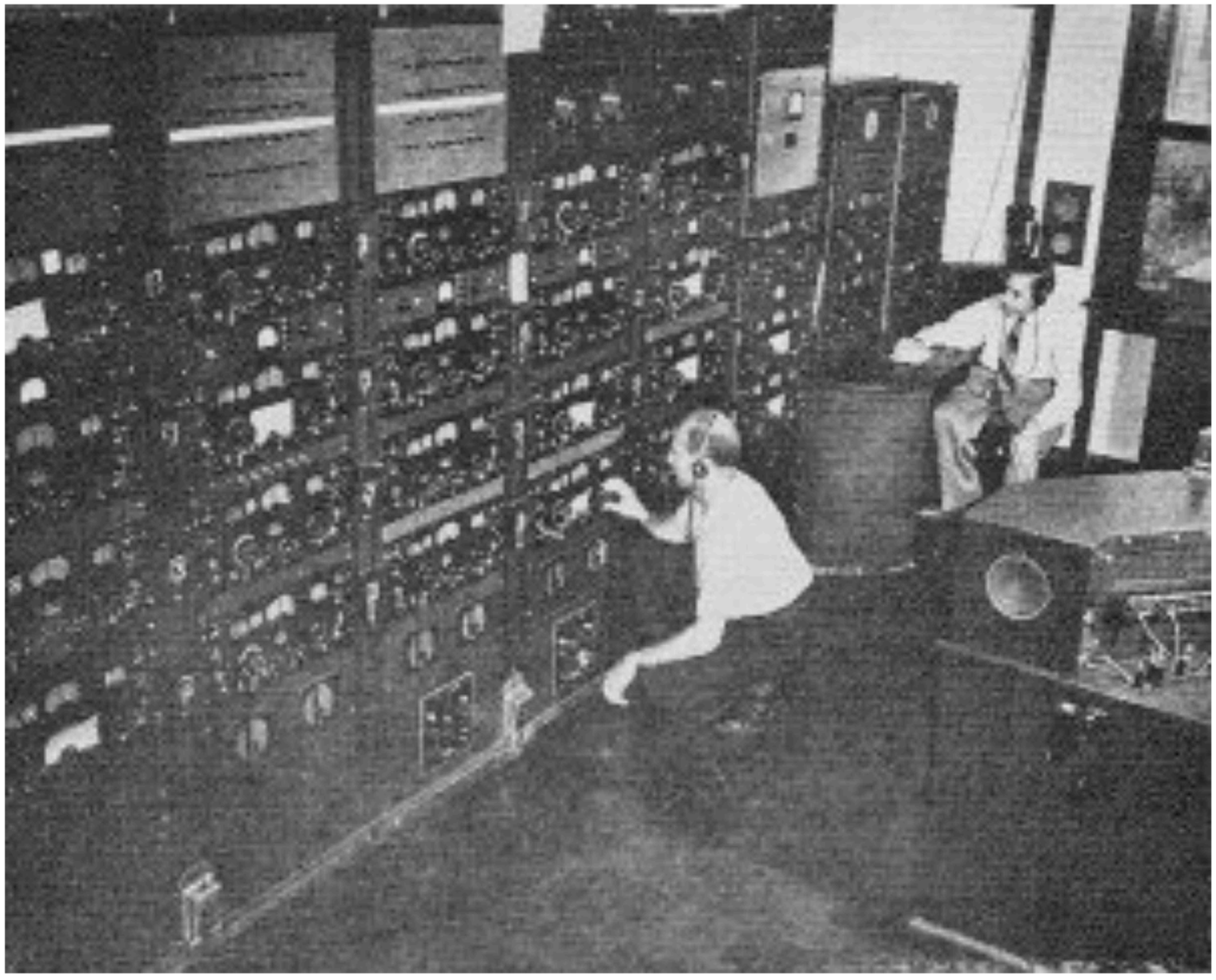
George E. Sterling (W1AE/W3DF)

“Hams in the RID”

QST - October 1944

“Hams in the FBIS”

QST January 1945



The monitoring officer in the foreground adjusts the receiver of a station to be monitored a few minutes later. The officer in the background scans the ether for new or unknown stations.

AWA

THE AWA REVIEW

Published by

Volume 5 — The Antique Wireless Association — 1990

SPIES USE RADIO

THE RADIO INTELLIGENCE DIVISION IN WW II

George E. Sterling, W1AE
Portland, Maine

[This article is a consolidation of Sterling's history as serialized in the Old Old Timers Club "Spark Gap Times," August 1963 to August 1964.]

INTRODUCTION

The story which I am about to narrate encompasses the operations of the Radio Intelligence Division, Engineering Department, of the Federal Communications Commission immediately before and during World War II.

During the 1940-41 period of neutrality, while war was being waged in Europe, new responsibilities were imposed on the Commission. They fell particularly on the Field Division, which was responsible to enforce radio rules and regulations and international treaties as to the technical operation of radio stations.

Reports of fifth-column activities by enemy agents in Europe using radio transmitters gave cause for alarm should they spread to our hemisphere. Moreover, it was essential to keep the channels of communication free of interference.

At this time the Field Division had only seven monitoring stations, whose operations were confined mainly to frequency measurement and analysis of the emissions of stations. None of these stations had high-frequency Adcock direction finders, recorders, or other essential equipment. Three were poorly located, with no room for expansion. One was on a Navy munitions site where there was a limit on the numbers and heights of antennas. Another was on the grounds of a West Coast fort where artillery practice interfered with monitoring, and a third was at a Navy radio training-school location where interference was becoming intolerable. The field offices were not equipped with mobile direction finders to locate an illegal station or a source of interference quickly.

So, in the face of the alarming use of radio by German spies in Europe and of the special problems at home, the FCC acted to put this country in a state of radio preparedness. A plan was drawn up to modernize and increase the number of monitoring stations and to provide mobile units. There was to be at least one station in each state to do local investigations, pinpointing illegal stations and sources of interference.

The plan was approved by the Bureau of the Budget and President Roosevelt allocated $1,600,000 from his emergency fund. Congress later supplemented the grant. Before the war came to America, the monitoring system, identified first as National Defense Operations, then the Radio Intelligence Division (RID), was mobilized with equipment and trained men. RID was neither too little nor too late. There was no Pearl Harbor in radio surveillance. When war came upon us, RID was given a share of duties far beyond what it ever thought it would be called on to perform.

From its inception until the end of the war, RID intercepted hundreds of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A Crime Does Not Pay Subject
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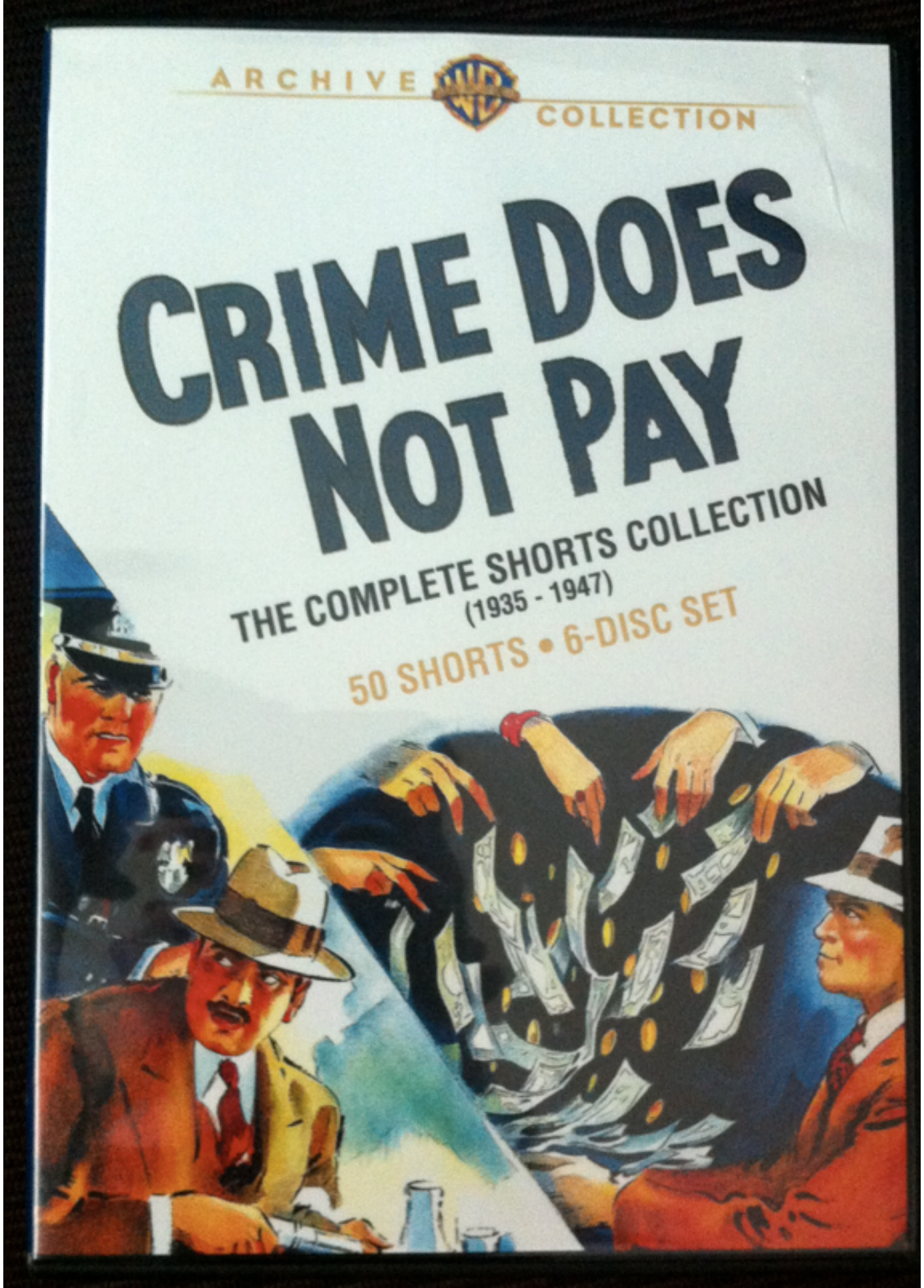
ARCHIVE COLLECTION

CRIME DOES NOT PAY

THE COMPLETE SHORTS COLLECTION

(1935 - 1947)

50 SHORTS • 6-DISC SET



The Video

- “Patrolling the Ether”
- premiered April 10 1944!
- first film broadcast simultaneously on more than one (experimental) television station
- shown on 5 TV stations “coast to coast!"

Participating (Experimental) TV Stations

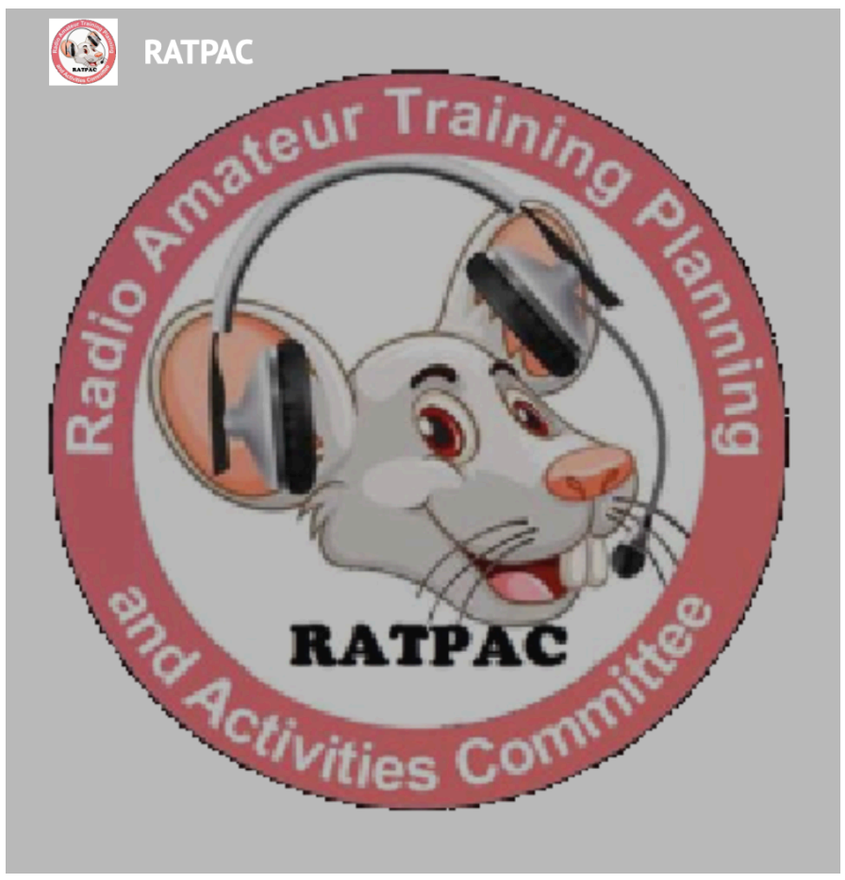
- Zenith Corporation Chicago, IL - W9XZV
- New York City
- Schenectady NY
- Philadelphia PA
- Los Angeles CA

Special Thanks to:

Warner Brothers Archive Collection
Dan Flanagan W3DF
Bob Weller N6NE (ex-FCC)
Bob Mroz K3OZ (ex-FCC)
Carl Huie AH6R (ex-FCC)
Paul Thekan N6FEG
Louis Meulstee PA0PCR
Al Parker W8UT
Steve Ellington N4LQ
Jim Kreuzer N2GHD
Joel Kosoff W3ZT
Paul Reuvers PE1BXL
Marc Simons PE1RRT
“CR” Reade Williams
William Culpepper W4BZ
Others…
and the Internet!

Now:
The Video!

Q&A afterwards



Unused Slides

Radio Intelligence Division

German Embassy (DC)

June 1945: George Sterling and his assistant Al McIntosh inspecting Nazi spy equipment located in the German Embassy in Washington, DC.

Primary Monitoring Stations

- Laurel, MD
- Millis, MA
- Allegan, MI
- Grand Island, NE
- Santa Anna, CA
- Honolulu, HI
- San Juan Puerto Rico
- Anchorage, AK
- San Francisco, CA
- Powder Springs, GA
- Kingsville, TX

58 Secondary Monitoring Stations

- Scituate, RI
- Ft. Ward (Washington)
- Winter Harbor, ME
- Amagansett, NY
- Cheltenham, MD
- Jupiter, FL
- Portland, OR
- South Miami, FL
- Pittsburgh, PA
- Albuquerque, NM
- New York City
- Portland, CT
- Bayshore, LI
- Laredo, TX

Hallicrafters SX-28 was the workhorse receiver used by the FCC/RID monitoring stations and mobile units.

Hallicrafters S-27 receivers were also used by the FCC/RID monitoring stations and mobile units.

hallicrafters