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Associate Editor

73 Tests

The Gonset Communicator IV

IN THESE parts the Gonset Communicator is known as a "Gooney Box." This is said as affectionately as the famous "Gooney Bird" C-47 of World War II fame. Reliable and trustworthy, regardless of the operator.

In fact operating ease is one of the outstanding characteristics of the Communicator IV, yet with a technical perfection usually ascribed to fine custom made VHF equipment. Amateur radio, whatever the mode of transmission, passed through the stages of breadboard construction, six foot racks with glowing "jugs," the table top set of matched cabinets, and now is concentrating upon portable integrated equipment which can match the performance known previously only to fixed station operation.

Portable equipment has been with us longer than most people appreciate. The writer had the dubious pleasure of field operating the heavy wood cased single VT-1 tube, battery powered, portable at Ft. Monmouth when it was a military operational radio. For a long time we have come to accept many limitations in portable gear, attributing peak performance to the weight and bulk of fixed station equipment. I am happy to report that the Communicator IV packs in its 21.8 lbs all of the refinements of fixed station performance on 2 meters, and is a proponent of the modern trend where you can use it at home or take it with you.

Although the Communicator IV functions as a transceiver in convenience and operating ease, it is essentially a separate transmitter and receiver in the small cabinet. The only part common to transmit and receive is the audio system. Although it is a 20 watt trans-

mitter, it seems to have more "punch," which can be attributed to the fact that there is 10 watts of audio modulation provided, with high level speech clipping instead of the commonly used screen modulation system. This means a peak power of 80 watts rather than a possible 20 using the rf system limits. The receiver sensitivity of better than one microvolt and a triple conversion super heterodyne winds up with very credible performance indeed, better than many fixed stations can boast. When you add to these characteristics an *ac and dc mobile power supply as an integral part* within the cabinet dimensions of 5" high, 12½" wide and 11" deep, you begin to appreciate the compactness of the system.

No external gadgets, plugs, relays, meters, inter-connecting cables, etc., are necessary for functional operation. You merely plug in the appropriate power cord for 110 v. ac, or 12 v. dc, the antenna, then load and talk. The slide rule dial is illuminated, and is driven by a dual ratio planetary drive knob. The illuminated self contained meter reads either rf output, facilitating antenna loading, or in "S" units for relative receive strength readings. There are no transmitter intermediate stage tuning controls, and the six crystal sockets in the rear provide ample frequency selection for average operation. Incidentally, the spotting switch which shows your transmit frequency on the receiver dial and "S" meter, serves as a good indication of crystal activity in case you are in doubt as to the merit of your surplus crystals.

Although there is no means of receiving sideband or cw, it is said a bfo conversion kit may be offered as an optional accessory

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An rf wattmeter in series with the antenna indicates the Communicator meter as being sufficiently accurate and responsive in order to obtain maximum output. Although the output is 50 to 75 ohms impedance, it was possible to load an unmatched antenna. However, it is recommended that the antenna impedance be determined since the meter understandably re-

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sponds only to rf voltage. A mismatch of higher rf voltage could be misleading if it were to be construed to indicate a greater output.

Audio Section

On one transmission I rambled through a long dissertation, only to have one of the fellows who watched me on a 'scope tell me to turn up the gain, since I appeared to be undermodulated. This caused a search for a gain control, since none appears on the front panel. The old Communicators had one in the rear. After a fruitless search, the schematic diagram was spread out.

The boys were really impressed, as was I, to find none in the circuit. In my customary SSB operation, wandering from the mike merely means a not very noticeable lesser output. Here I had failed to take into account a basic design feature. The gain level and Astatic 331-18 ceramic microphone design has been set for mobile and field use where close talking is essential to the reduction of background noise. Close talking brought the modulation level back to 100%.

The pentode section of a 7059 is used as a speech amplifier, with its triode section as a phase inverter feeding a pair of 6BQ5's in pushpull. This provides 10 watts of Class AB₁ audio to plate modulate the 6360. The 7059 and 6BQ5 tubes serve a dual function as both receiver audio and transmitter speech and modulator. The microphone employs a push-to-talk switch which I personally prefer to VOX. It operates an internal relay which changes the antenna from transmit to receive, B plus

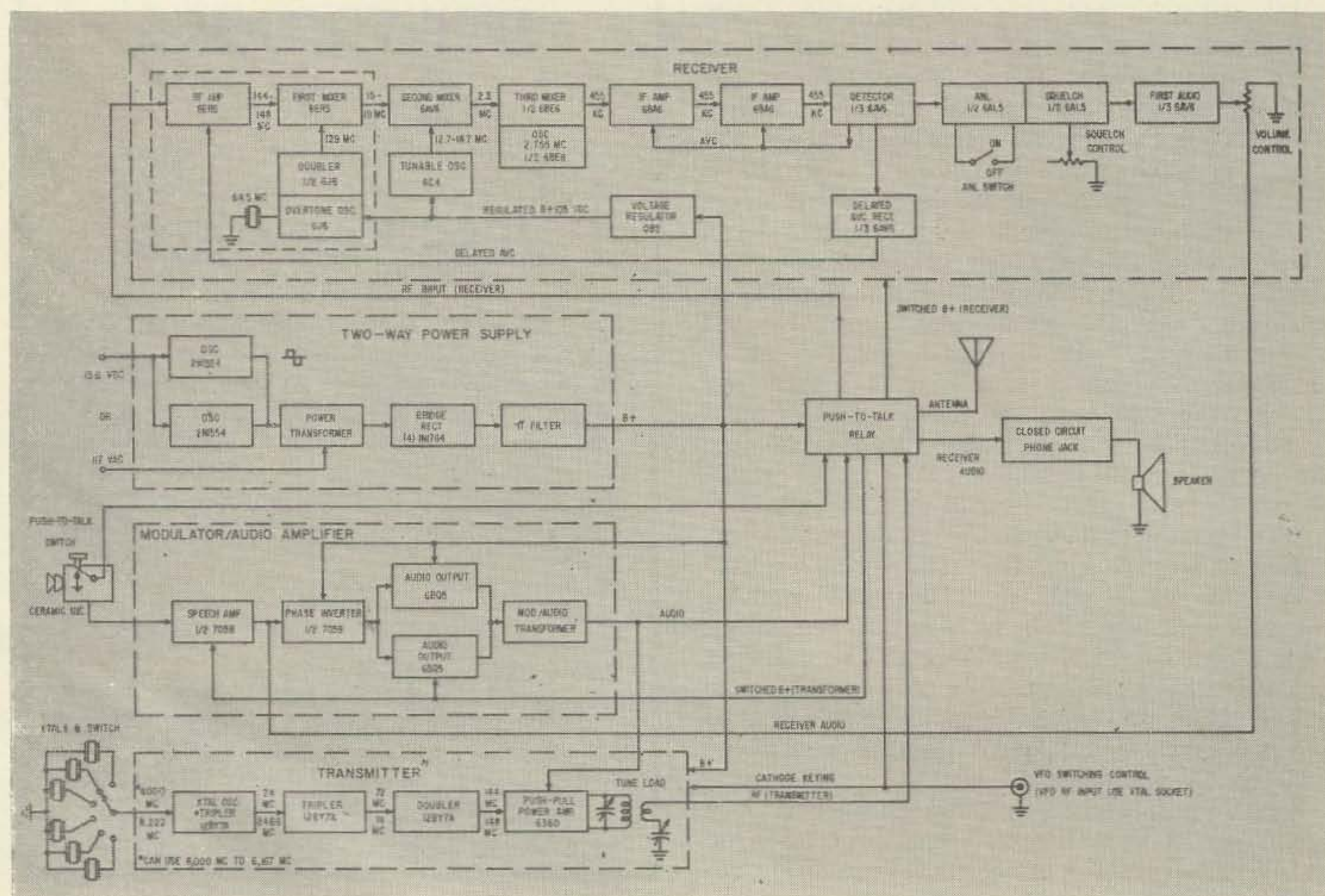
from receiver to modulator, disconnects the speaker and keys the transmitter.

Receiver Section

There are a number of outstanding features in this receiver, to the degree that it is difficult to pinpoint that which is the most outstanding feature. Certainly the fact that the receiver handles like a first class communications set does on the lower frequencies, yet operates within the 2 meter band with such performance, does indicate something out of the ordinary. When this is coupled with a simplified control system, as it has to be for the non-technical users of Civil Defense and the Civil Air Patrol, yet retains the features desired by critical amateur radio users and is compared with meticulously custom designed VHF gear, that is something!

The receiver is a triple super heterodyne, thus giving excellent selectivity and freedom from annoying images. The antenna feeds a 6ER5 frame grid rf amplifier designed for low-noise. Stability is achieved through use of a 6J6 oscillator using an overtone crystal, operating at 64.5 mc and multiplying to 129 mc for injection into the first mixer, another frame grid 6ER5. The second oscillator, a 6C4, is tunable over the frequency range of 12.7 mc to 16.7 mc, and combines with the first if frequency of 15 to 19 mc in the second mixer, a 6AV6, resulting in a fixed frequency output of 2.3 mc.

The 2.3 mc second if is coupled through a double-tuned bandpass transformer to the third mixer, a 6BE6, where it is heterodyned



Specifications

Size: 5" x 12½" x 11" deep

Weight: 21.8 lbs.

Power: At 117 v. AC

Receive 87.5 watts

Transmit 110 watts

At 12.6 v. DC

Receive 7.2 amps

Transmit 10.3 amps

Tubes: 18 plus 2 power transistors and 5 silicon diodes, including dual and triple purpose tubes.

Transmitter: 6 or 8 mc xtals; 6, 8, or 24 mc VFO
20 watts input, high level modulation RF Output Meter

Receiver: Triple conversion super-heterodyne
Squelch; noise limiter "S" meter
Sensitivity, 1.0 uv for 10 db S + N/N ratio
Noise figure, 3 to 5 db
Selectivity, from BW 6 db at 8.5 kc to 60 db at 47 kc
Tunes 143.7 mc to 148.3 mc (CAP & MARS)

Price: Model 3341 Transmitter-Receiver \$369.50
Universal Mounting Kit Model 3365 \$ 3.95
Telescoping Antenna Model 3152 \$ 3.95
Carrying Bag (Blue)..... \$ 12.00

against a 2755 kc oscillator to produce the 455 kc third *if* signal. Two stages of *if* amplification, using 6BA6's, are employed at 455 kc. Six tuned circuits produce the desired selectivity.

A vacuum diode (⅓ of the 6AV6), is used as the detector. This same tube is used as a delayed AVC rectifier, furnishing delayed AVC to the rf amplifier. One-half of a 6AL5 is used as a highly effective automatic noise limiter, switched in or out by a front panel control. The other half of the 6AL5 is used for squelch operation to permit muting of the background noise in the absence of a signal. The first audio amplifier is the triode section of the 6AV6. This audio is then fed into the 7059 which is employed as a speech amplifier when transmitting, thence to the 6BQ5's. An audio jack is provided on the rear apron for an external speaker or headphones.

The squelch range of 0.1 uv to 50 uv introduced the writer to an innovation for tuning in local stations. There is a fair amount of background noise at the site at which the equipment was put through its paces. A relief from noise in the hours of listening throughout the band was provided by setting the squelch to just override the fairly uniform background noise, then the fast tuning knob of the receiver could be rapidly rotated for band scanning with stations "popping in" out of the

TEST EQUIPMENT

FREQ. METER—LM., Navy type of B.C. 221 with Mod. and Orig. Calif. book and metal carrying case, brand new, a \$125.00 value, our price.....\$75.00
FREQ. METER—same as the above but used, good condition, less carrying case.....\$49.00
FREQ. METER—same as the above — \$49.00 unit — but less Calif. book.....\$24.00
POWER SUPPLY—115 V. AC, for LM Freq. Meter....\$15.00
FREQ. METER—B.C. 221, used, good condition, Calif. book\$59.00
FREQ. METER—TS-173/UR. Hi Freq.....\$125.00
SCOPE—Dumont 224—\$49.00, 208—\$59.00, 208B.....\$69.00
SCOPE—Browning Labs., Oscilloscope.....\$95.00
SCOPE—RCA 3"—\$24.00, 5" RCA or Heath.....\$29.00
KAY—Mega-sweep \$65.00; Marka-sweep-model Vidio...\$95.00
AUDIO OSC.—Hewlett-Packard 200 BR.....\$69.00
SIG. GEN.—Hewlett-Packard 608.....\$275.00
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TUBE CHECKER—B-K 500—\$69.00; Precision 10-15.....\$59.00
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SIG. GEN.—Hickok 610, universal T.V.....\$69.00
SIG. GEN.—Hickok 188X AM-FM, like new.....\$69.00
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G.R. 1330 A. Bridge Oscillator\$250.00
G.R. 700 A—Wide range BFO.....\$195.00
G.R. P522 Sig. Gen. 250-1000 mc.....\$175.00
G.R. Navy LP-5 Sig. Gen.\$75.00
SIG. GEN.—Measurements #75, 50-400 mc.....\$150.00
SIG. GEN.—Measurements #80.....\$175.00
T I C—model 1482 multi Freq. Gen.\$20.00
L & N—H67-45 Voltage divider.....\$20.00
SIG. GEN.—Precision E-200\$35.00
WAVEMETER & OSC.—OAP, 150-230 mc.....\$29.00
TUBE CHECKER—Weston Navy OCL\$49.00
PULSE GEN.—Measurements 79 B.....\$45.00

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Elco 720 69.00	Johnson Viking I.... 95.00
Johnson Viking II... 145.00	Elco 723, Globe Ch. 90 59.00
Heath DX-40 59.00	Sonar SRT-120 79.00
Elco 730 mod. DR.... 45.00	Johnson matchbox 275W, new
Globe Scout 680..... 75.00	SX-111 175.00
H.Q. 110 with Clock.. 175.00	S-40 A 49.00
S40 B with Q Mult... 65.00	HRO with Pow. Sup. 65.00
Hammarlund SP600 .. 350.00	S-36 A 95.00
SX 28 95.00	RBM-2-20 mc, 110V. 49.00
S-20 R 35.00	B.C. 312 45.00
B.C. 342 49.00	

MISCELLANEOUS

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FM COMM. RECEIVER—450 mc, RCA CRU-1A..... 40.00
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T C S Xmitter, Receiver and Power Supply..... 75.00
G. E. 6 Tube 25 Watt Amplifier 20.00
T B S Xmitter, 100 W, 60-80 MC, 6 Mtr 35.00
G. R. Variac 5 Amp. \$12.00; 10 amp. 16.00
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silence as they were tuned in.

One of my first QSO's was with two stations who were complaining about QRM. This was news to me, because I could not hear any QRM on the frequency due to the receiver selectivity. As received from the factory, the receiver bandpass is broader than the maximum selectivity than can be achieved. This is because of OCDM requirements, when used for Civil Defense. It is 6 db at 10.3 kc, 20 db at 15.5 kc, and 60 db at 47 kc. For most amateur areas, this is plenty good and facilitates easy tuning. If you are faced with a QRM situation, three 2 mmfd QC type coupling capacitors on the 455 kc *if* transformers can be removed with a pair of diagonal cutters. No readjustment of the *if* transformers is necessary, and the selectivity curve will start at 8.5 kc instead of 10.3 kc.

Power Supply

I wish all the rest of my gear in the hamshack had supplies like it. It is a universal supply, using a single power transformer for 110 v. ac, or 12 v. dc. The changeover is made by plugging in the appropriate power cord so that switching is automatically done. The filter and four silicon diodes, 1N1763 types, are arranged in a bridge for both modes of operation. One transformer winding is for 110 v. ac. The primary and feedback windings utilized by the 12 v. dc source employ two 2N1554 transistors.

Accessories

This is usually an important part of the game when it concerns any major piece of equipment. The Communicator IV is remarkably free from the need for accessories for any normal operation. You can operate it on a desert island if you have 110 volts of ac, or 12 volts of dc, a crystal, and a 19 inch piece of wire to insert in the rf plug in the rear. You could do better with a good antenna, of course. In fact there is no limit as to how good the antenna could be. A minimum starting point should be at least a 5 element Yagi. Do the best you can, and it will do justice to the equipment.

The shape of the cabinet lends itself to convenient mobile operation. The Mounting Kit Model 3365 is inexpensive and is designed for the job. There are times when a telescoping set mounted antenna for portable use would be invaluable. The Model 3152 Telescoping Antenna is used for both the 2 meter Communicator IV and the Communicator IV-220, the latter being a 220 mc job.

The carrying bag, Model 3363, was designed primarily for Civil Air Patrol or Civil Defense use. It is a darn good item for amateur portable use also, and much more reasonable in price than a fitted case. The Communicator IV tested has a permanently fastened microphone,

and these are available at distributors. There has been a demand for a detachable microphone and jack, rather than the permanently fastened system, which is to be produced. For these sets, the Turner Model 350 microphone, Gonset part number 113-021 has been recommended, although your old favorite may do the trick for you.

The equipment has been put through all its paces with many hours of continuous operation. This report has been as objective as possible with an attempt to reduce to the minimum the reviewer's own personal preferences. It is hoped the manufacturer will smooth out the irregular rim on the rear dust cover. This resulted in a slight wrist cut when unpacking and could conceivably happen again in handling. A BFO for CW and SSB reception would bring forth many voters. So would CW keying. These things are relatively minor, and can be set up by the user as well as the manufacturer.

The specifications are pretty severe for gear of this type, frequency and price range. The quality control, sometimes a greater factor than design engineering in the end, appeared to be very good as is the design. It is difficult to produce production equipment for the higher frequencies where there are so many advanced amateur specialists and yet meet their approval. However, few will quarrel with these specifications, purpose and overall quality of the equipment.

For the non specialist, and one who has had most of his operating experience on the lower frequencies, he will be agreeably surprised with the dependable and familiar communications receiver type of operation, as here is no haywire. There is a freedom from the headache producing QRM of the lower frequencies and an opportunity to meet people who are closer to you. Many on VHF also operate on the lower frequency bands and have common interests. VHF is still on the fringe of amateur frontiers, and the Communicator IV is a better tool.

RF Output Indicator

John Wilson

THE question of how much power a transmitter is putting out is one that often arises. There are a number of devices on the market which measure rf output, but most of them are pretty expensive. The device explained in this article will measure rf output in watts and should cost less than 10 dollars to construct . . . or almost nothing if you have a light meter.

This unit operates by measuring the amount of light given off by a dummy load consisting of five 20 watt light bulbs. The unit is designed