

Couldn't bear to throw 'em away when we moved. The old lady raised a fuss over it, but I got 'em down here just the same. Got a pipe? Can't smoke a pipe out in front, but this here is my shack and anything goes. Don't take to cigarettes much, though."

Presently he sat down and started up his rig — a pair of fifty-watters in what looked like t.p.t.g. p.p. I looked around the room as he tried to contact his 9. What familiar chord did all this strike? I couldn't place it. Here was probably the country's oldest ham. I could see how this hobby made his declining years pass swiftly and pleasantly.

"The skip is on and I can't raise him," he announced presently. "Mighty funny thing about that skip business. Another kind of rotten radio, if you get me."

I almost fell off the chair, so great was the shock I received at that. Rotten radio — surely an expression of The Old Man's. Had I stumbled on a great secret? Was this, in truth, The Old Man himself? If so, I should be able to find corroborative evidence here, now. Presently I calmed myself, but took a keener interest. If he should spit on the cat and do it naturally, as born of long practice, I would be convinced. Idly I took down a volume of *QST* and thumbed through the pages until I came to an Old Man story. No penciled notation. No particular evidence of the book having been opened here more than anywhere else. I was at a loss. And he didn't spit on the cat.

How I craved to look at his junk pile in the cellar. Would "Old Betsy," the famous spark gap, be there? How about the chemical rectifier with the mason jars? Hardly hearing what he was saying, I finally decided to ask him point-blank if he were The Old Man himself.

"You know," said I, trying to be nonchalant and at ease, "you might almost be The Old Man of amateur radio. You've heard of him, of course. Why, I'd —"

"Say, son," he interrupted with a twinkle in his eye, "I've been accused of that before. What's more, I get a kick out of having you young squirts popping in on me and taking me for The Old Man. Maybe I am and maybe not. I greatly admire the old duffer, though I think he's been layin' down on the job lately. Been thinking I would write to that feller Warner some day and give him a piece of my mind about what this game is a-comin' to. Even if I was The Old Man, maybe I couldn't prove it if I wanted to! No, son, you got a bum steer. I switched into this game from train dispatchin' on the U. and U. Here, try some of mine — hain't changed brands in forty years. Say, I've something here you don't see in every ham layout!"

He pulled back a curtain from a case against the wall and disclosed row after row of Crow-foot batteries.

"'Had to put a brace downstairs under 'em. Use 'em to give me pure d.c. for things I monkey with. Got a little crystal rig over to a feller's down the road a piece. He's tryin' it out. Cut and ground the crystal myself. Took three months, but was worth it. Can't keep track of all the new tubes and don't try to, either."

I was too confused to know what to think. Finally, I decided that I didn't want to know whether he was The Old Man or not. I hoped he wasn't. We stayed up till eleven and then turned in. He was not up when I had breakfast and I drove away without seeing him again. As I drove out of the yard, a sudden gust of wind whirled some leaves and a bit of paper into my car. The paper was an opened but empty envelope bearing the West Hartford postmark! I wonder.

Still More Tubes

SINCE the tube announcements in last *QST* information has been released on six more types. One of these, the Type 1, is a small half-wave mercury vapor rectifier with an indirectly-heated cathode. The Eveready ER-1, which was described in March *QST*, is not the same as the Type 1 described here since it is a vacuum-type rectifier. The difference should be kept in mind if a "1" tube is to be purchased.

The ratings on the mercury-vapor Type 1 are as follows:

Heater voltage	6.3 volts
Heater current	0.3 amp.
Max. a.c. plate voltage (r.m.s.)	350 volts
Max. peak inverse voltage	1000 volts
Max. d.c. output	50 ma.
Max. peak plate current	400 ma.

The tube is primarily intended for automobile receiver power supplies. The usual precautions should be taken as to shielding and r.f. suppression to prevent rectifier hash when mercury-vapor rectifiers are used in receiver power supplies.

THE 2A7 AND 6A7

The 2A7 and 6A7 carry the imposing title of "pentagrid converters" meaning, for one thing, that these types are five-grid tubes. The two tubes are identical in characteristics with the exception of the heaters, the 2A7 having a 2.5-volt heater taking 0.8 amp., and the 6A7 having the 6.3-volt, 0.3-amp. heater. This type of tube is used as a combined oscillator and detector or "mixer" for superhet receivers.

The construction of the 2A7 is rather interesting. There is a regular control grid next to the cathode, and next in line is a pair of wires which look like ordinary grid supports but which constitute the No. 2 grid. The No. 1 and No. 2 grids form the grid and plate, respectively, of a triode oscillator. The No. 3 grid acts as a screen between the oscillator portion of the tube and the detector

(Continued on page 68)

QUESTIONS—

What is the regulation concerning amateur station logs? What persons may operate amateur stations? How does a vacuum-tube oscillator operate? What class of message holds precedence over all others? What is the regulation governing the location of amateur stations?

ANSWERS—

the *right* answers — to these and more than sixty other questions which you may be asked when taking your operator's license exam, are given in full in the latest reprint of "Passing the Government Examination for Amateur Operator's License." Originally a series of two articles appearing in the January and February, 1930 issues of *QST*, they proved so popular that the entire back copy supply of these issues was exhausted within a year. Rewritten, they were again published in October and November, 1931 and reprinted several successive times, with necessary revisions. Every amateur preparing to take the exam NEEDS the "Passing" articles, for in their convenient economical pamphlet form can be found the answer to every exam question. 20c per copy, postpaid. No stamps, please.

**THE AMERICAN RADIO RELAY LEAGUE
WEST HARTFORD, CONNECTICUT, U.S.A.**

instead of triodes in the output portion. Considerably greater voltage amplification is therefore obtainable from these tubes, making them have greater overall sensitivity than the duplex-diode triodes. Since the tubes are chiefly of interest to builders of broadcast receivers, we shall not go into details about them beyond mentioning that they can be used to give detection, audio amplification and automatic volume control in much the same way as the older duo-diode types. If desired, the pentode portion also can be used as an r.f. amplifier.

Characteristics of the 2B7 and 6B7 are identical except for heater ratings which correspond to those of the 2A7 and 6A7 respectively. Both tubes have the small dome-top bulb, small 7-pin bases, and grid caps. Pin connections are: Pin 1, screen; Pin 2, plate; Pins 3 and 4, heater; Pin 5, cathode; Pins 6 and 7, diode plates; Cap, control grid.

THE 2A6

The 2A6 is a duo-diode high-mu triode with a 2.5-volt, 0.8-amp. heater. Its characteristics are the same as those of the 75, described in April *QST*, and it simply furnishes a tube of the 75 type in the 2.5-volt series.

The information on the above types was received from RCA-Cunningham and Eveready-Raytheon.

— G. G.

W8AFM

(Continued from page 38)

power supplies for the crystal oscillator and doubler are below the level of the desk.

The large number of crystals permits operation in almost any part of all three bands. During operation the frequency can be changed 10 kc. or so simply by selecting another crystal. No change in tuning is required, so it is unnecessary for the operator to move from the desk.

The receiver is a Hammarlund Comet Pro. It will later be mounted in a rack which will occupy the left-hand side of the desk and will contain in addition an electron-coupled frequency meter and monitor.

Checking the Performance of First Detector

(Continued from page 35)

have been made which are not universally true. To begin with, the addition of two sine waves to give a heterodyne voltage does not give a curve mathematically identical with a modulated sine wave. This has been shown by Terman,² and others. However, if one voltage is very small compared to the other, as in this case, the results are identical for all practical purposes. Secondly, the effect of the load resistance on the plate current changes has been neglected. With screen-grid tubes, the internal plate resistance is several megohms so that the usual plate load of one or

² "Radio Engineering," Chap. VIII.