

After our visit to the fabulous Texas thermal country last summer, the Memphis Soaring Society felt the need for radio communications in its cross-country operations. In one case, at dusk, we got a phone call from an errant pilot who had landed 165 miles from base. The retrieving crew was still loafing around just 40 miles up the line, never expecting the bird to fly that far. The crew wasn't back until 4:00 A.M. the next day, which made for short tempers and bloodshot eyes.

Obviously we needed radio for this type flap, so, being a radio ham I undertook to build the necessary equipment. I wanted to achieve the ultimate of maximum communications, occupying no space and weighing nothing. I found that sub-miniature tubes (hearing-aid type) are impractical and transistors not available for this frequency. So I turned back to miniature tubes, and settled



Dr. Battle's young son displays the miniature glider transceiver built by his father.

on a design from the "RADIO AND TELEVISION NEWS MAGAZINE" for November 1955, written by J. F. Sterner of RCA.

If you plan to build one of these, first get the magazine article from your library, radio friends, or by sending 40 cents to R & T NEWS, Circulation Dept., 64 E. Lake St., Chicago. The transceiver shown is for use on 148 mc. for CAP, with batteries and transceiver in the same case; (these motorized yo-yos have lots of room). By altering the coils and locating the batteries at a distance, the transceiver is made to operate on 123 mc., and squeezed into a 5" x 7" x 3" aluminum chassis. This locates nicely on the left side of our 1-26 cockpit. Transmitter out-

RADIO FOR A SOARING CLUB

By DR. J. M. BATTLE

put is maybe a watt, and the receiver, a superregenerative, is stable, non-radiating and sensitive.

Since the glider transceiver represents about the minimum acceptable performance with both transmitter and receiver, I felt I would try to make up for these minimums at the car end, where power, size and weight are not so severely limited. I increased transmitter power to about 6 watts (RF), and used a fixed tuned (crystal) receiver, super-het, with loud-speaker output. Another requirement was that the car rig be non-fixed, easily transferable to any car with a 12 volt supply.

It is certainly possible to use two of the small transceivers for this job, but I feel that beefing-up the ground end has added considerably to the range and utility of the set-up, at very little added cost and effort. The glider signal blasts from the car receiver at a distance of 7 miles, (furthest we have actually tested it air-to-ground so far) and I feel sure the added 5 watts are helping to put a better signal to the glider than could otherwise be had.

License for this composite rig is not hard to secure. Write your FCC Radio District Headquarters, or FCC Washington for forms 401. See SOARING for Jan.-Feb., 1952 for further details.

Technical Details

Note carefully the parts list, as these parts are chosen both for cheapness and performance. To fit the transceiver into a 5" x 7" box is a problem, so avoid larger components than you need. I actually substituted disc ceramic condensers for the micas Mr. Sterner specifies, because of the crowding, with no apparent ill effects. In particular I found the tubular trimmers (Erie 532-10) most suitable for the job, and urge you use them. I could not get them locally, so got them from Newark, Chicago.

You will experience great difficulty

without using a grid-dip meter. If you can borrow one, or better yet, borrow the ham who owns one, you have it made. It would pay to buy one (Kit \$20) for yourself or in payment to the ham who helps you, unless you have time and patience like it takes to build an Olympia from matches. If you *must*, follow my instructions on the coils and then experiment from there.



Here young Battle is shown with the ground station described in this article.

Glider Rig

See Sketch 1. This is built with all components, plugs, connectors, jacks and switches on 5" x 7" aluminum sheet, so as to house into a 5" x 7" x 3" aluminum chassis, where it is held by PK screws (4). Thus the transceiver may be removed from its box and the 1-26 in one minute, for checking and trailering.

The box is mounted to the ship by two small shock mounts. I arranged for final tune-up to be done with the rig installed, with all tuning controls available. I find this is not necessary as the tuning is not changed by insertion of the unit in its shield. The receiver main tuning could be the only tuning element exposed. The tube sockets were mounted on short