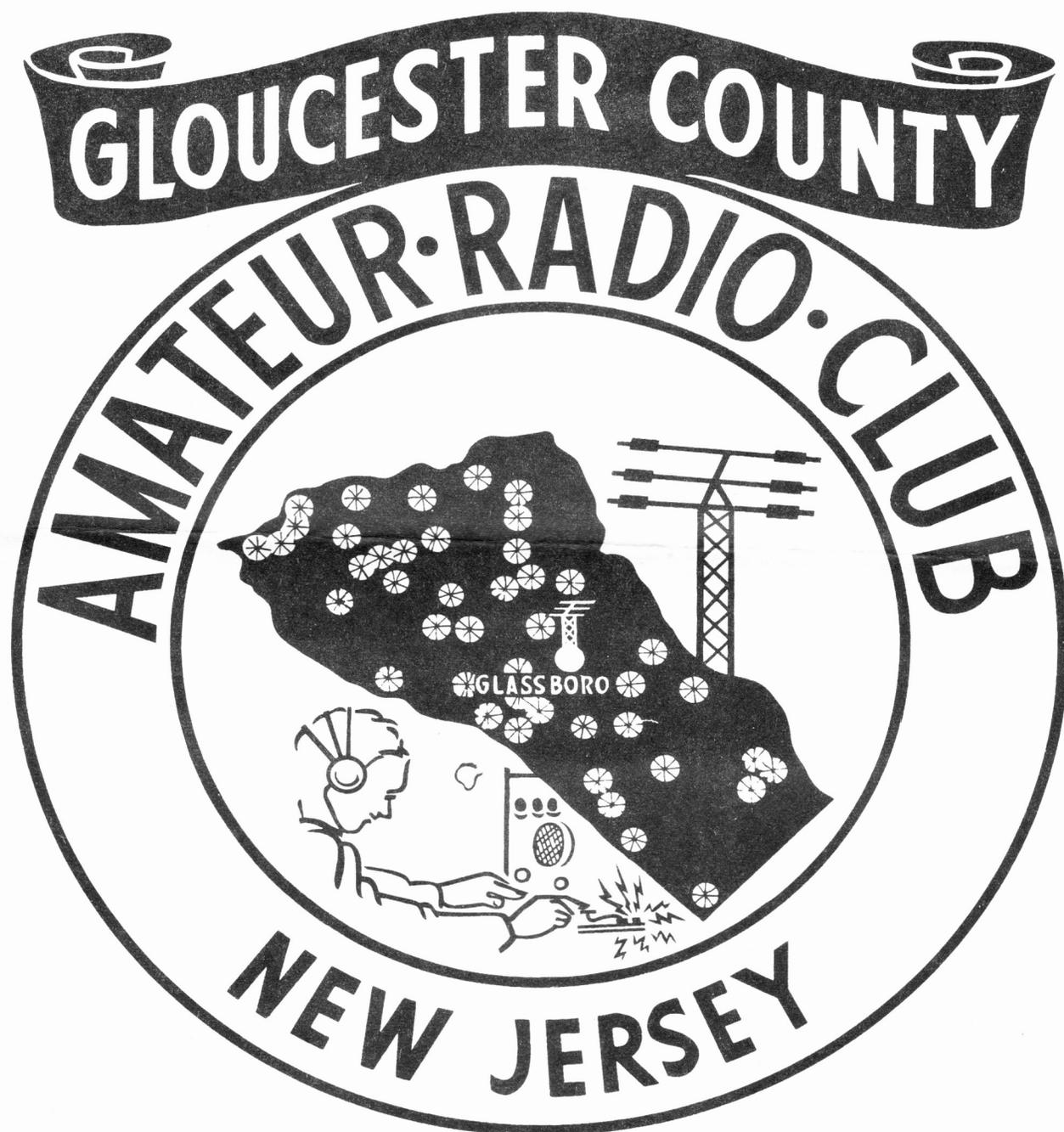


CROSSTALK



THE OFFICIAL PUBLICATION

THE OFFICIAL PUBLICATION OF THE GLOUCESTER COUNTY AMATEUR RADIO CLUB

Volume 1 : Number 6

September 1959

Where: Owens-Illinois Onized Club House, Glassboro, NJ

When: September 2, 1959 @ 2000 Hours Sharp

Who: All members and interested parties

What: Regular meeting of the Gloucester County Amateur Radio Club

de K2JKA

Well another month is past. It seems as though I start out with the same four words every month, but I guess that they are just as good as any to start out with. By the way how did those of you who finally received the club paper announcing the August 2 meeting about two weeks late enjoy it. It was unfortunate that the issue was late, but honestly this thing was mailed a week before the meeting date. Let's hope that this issue meets the deadline date or before our next meeting.

I've been kidding Gert, K2HHJ's XYL, who incidentally mailed that issue, that she forgot them and mailed it from Maine where they were recently on vacation.

To those of you who attended the last meeting, we had the privilege of reliving field day thru the modern method of electronics known as movies. All present I am sure enjoyed them.

We Are Still Looking For Articles

Crosstalk Staff for September

Editor: Jack Layton, K2JKA

Co-Editor: Al Roche, K2HHJ

Contributor: Ray Gianchetti, WA2CUB

Stamp licker: Tim Downey, WV2CDA

Club Officers

President: Frank Van Turner, W2KE

Vice President: Elwood "Woody" Frantz, K2AQL

Treasurer: Horace Simpson, W2JOZ

Recording Secretary: Edwin Stetser, K2JJC

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The Second In A Series Of Articles

The Radio Observation of Artificial Satellites **By S. D. Gross, ex-W2HMP** **Paulsboro, NJ**

The Characteristics of Satellite Orbits

One of the biggest problems in the radio observation of satellites is knowing when to listen. For example, when Explorer 1 was radiating its two signals, it could be heard for about 15 minutes per period for about 5 periods per day. It will greatly assist one in determining when to turn on the receiver and gluing an ear to the speaker if some of the satellite orbital characteristics are understood.

The motion of the satellite around the earth is governed by the same laws of motion as are the planets about the sun. These laws are known as Kepler's Laws and when written for the case of the satellites are as follows:

- A. The orbit of each satellite is an ellipse with the earth as one of its foci.
- B. Each satellite revolves so that the line joining it to the center of the earth sweeps over equal areas in equal intervals of time.
- C. The squares of the periods of any two satellites are in the same proportion as the cubes of the major axis of their orbits.

Kepler's First Law tells us that the altitude of a satellite may vary considerably since an ellipse may be much longer than it is wide. When a satellite is at its lowest altitude it is said to be at perigee and when it is at its highest altitude it is said to be at apogee. For example, Vanguard 1 had a perigee of 406.2 statute miles and an apogee of 2460.6 statute miles on August 12, 1958.

Kepler's Second Law tells us that a satellite is moving faster at perigee than at apogee. This is because the line of joining a satellite to the center of the earth is shorter at perigee than at apogee and as a consequence, the satellite must be moving faster at perigee than at apogee in order for this line to sweep out equal areas in equal intervals of time. In other words, a satellite orbit is similar to a roller coaster in that the apogee corresponds to the valleys. As a satellite moves from perigee to apogee it loses speed in the same manner as a roller coaster loses speed as it climbs to the top of the hill from a valley.

Kepler's Third Law tells us that the period of a satellite is determined by its perigee and apogee altitudes. It also tells us that as the apogee altitude of a satellite decreases, as is caused by air resistance, the period of a satellite must decrease.

There are two other orbital characteristics that we should discuss, these are orbit inertia and precession. If as a child, the reader ever had a gyroscope top, it was noticed that if the top was set rapidly spinning the top tended to stand erect due to the rotational inertia of the rotating wheel. The plane of the wheel resisted changes as one might expect when gravity pulls on it. A satellite revolving around the earth acts in the same manner in that the plane of its orbit and the other orbital characteristics resist changes. In fact the orbital plane tends to remain fixed in what is called inertia space. The earth will rotate while the orbital plane of a satellite remains essentially fixed so that once a day an observer is brought under the orbit point at about the same time.

To be continued in next issue

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SPLATTER:

Al Roche, K2HHJ, just returned from a week of camping in Maine. He got some real nice fish. One measured all of 5 inches, that is between the eyes.

It is with deep regret that we record the passing of **George Giles, W2CYI** of Ventnor. Those of you who are members of the New Jersey Phone Net will remember George as a very active member.

Horace Simpson, W2JOZ, did a swell job of running the club meeting last month in the absence of our president, Frank Van Turner, W2KE, who was enjoying a well earned vacation in Cape May.

Larry Scarpa, WA2CVV, is getting started on Teletype with a Model 26 printer and an IF type converter. Welcome to the ranks, Larry.

Your comments, criticism, and help, (and mostly help) would be most appreciated by the staff of Crosstalk. If we seem to be harping, remember this is your paper. Euff Sed?

Did you hear the one about the ham who was camping (in Maine?) who was awakened by a CW signal being tapped out on a log at 30 WPM early one morning. After about 15 minutes of solid copy, he decided to trace down the unidentified transmitter. After a half hour of searching, the sterling culprit turned out to be a woodpecker.

There's been talk of **Larry Scarpa, WA2CVV**, and **Denny Murray, K2RRT**, taking over the code practice class and running on-the-air practice. If you are interested, see either one of these two gentlemen at the meeting.

Swap and Shop

de WA2CUB

FOR SALE:

NC-188 Good condition with Heathkit Q multiplier - \$55.00

NC-125 Needs work on it, basically good receiver - \$75.00

See Jack Layton, K2JKA

Set of W3DZZ traps for all band antenna - \$6.000

See Ray Gianchetti, WA2CUB

Globe Hi-Bander 2 and 6 Meter transmitter

HQ-110 Receiver

Viking 6N2 VFO

(2) Three element Telrex Beams for 6 Meters

CDR rotator

See Larry Archut, K2LMN, Woodbury, NJ

WANTED: Prop pitch motor - See Al Roche, K2HHJ

We can only sell, swap, or trade what you fellows send in. Anybody that has anything please send it in.