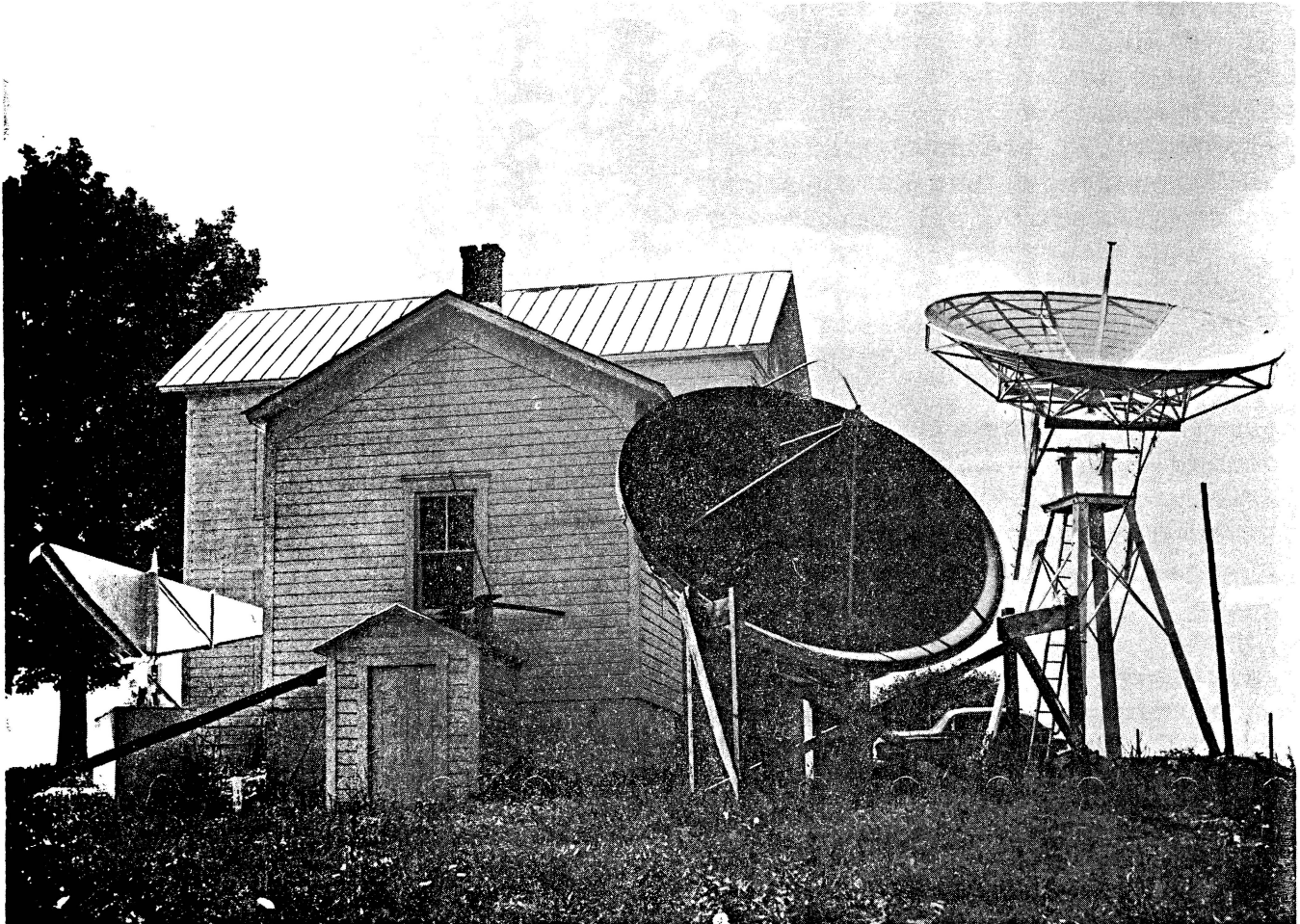


# The OBSERVER

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## The Atmospheric Projects

The picture above is the view of the Beard House which houses the equipment for studying the influence of the atmosphere on radio astronomy observations. The elevated dish on the right is the 20 foot parabolic antenna which has been installed recently and will receive radiation from water in the atmosphere vapor clouds and rain on a wavelength of about 6 cm. The tapering object on the left is the 4 foot parabolic horn reflector antenna which received similar radiation on a wave-

length of 3 cm. The other dish by the side of the 20 foot dish is the 12 foot parabolic antenna which was used earlier for investigations on 3.75 cm. Main attention is directed to short term variation only. The results of these investigations are expected to influence the choice of suitable frequency for the proposed very large antenna. This project was started in late 1961 by Dr. T. Orhaug, and is now being continued by Dr. V. R. Venugopal.

### The Mad Ann Meteor

Over the last month, the Observatory has been conducting research aimed at finding fragments of a bright fireball which passed near Neola on September 1, about 11:12 P.M. We became aware of this through Jim Dolan, who saw the fireball while fishing in the Greenbrier River near Renick. The fireball streaked across the sky from west to east; its size and brightness being more than the full moon. A few minutes later a sonic boom reverberated through the hills near the site of the meteor, a result of the sonic boom or shock wave caused by the entry of the meteor into the atmosphere. The meteor was seen from Richmond to Charleston, and created the sonic boom from at least White Sulphur Springs to Marlinton. All these features, we know from experience, suggest that this fireball was the kind which deposits large fragments on the ground.

The study of meteorites has become very important recently. The most common meteorites, the iron meteorites, are of interest because they lock within themselves the isotopes of certain elements that have been created by the action of cosmic rays in space. By measuring the amounts of these isotopes, we can tell something of the history and age of the meteorite, which tells us of the history of the solar system. In the other common form of meteorite, the stony meteorite, organic chemicals similar to those in living things, and per-

haps even remains of living things, have been found. The study of these objects in meteorites is much better done with newly landed meteorites, since they have not been contaminated by terrestrial material over the course of time. Therefore, it is very important to find a meteorite soon after it falls, if possible. Furthermore, there is a great shortage of meteorites for scientific study at present. All these things made it important to find any fragments that reached earth from the September 1 fireball.

To do this, it was first necessary to locate as many witnesses as possible, and to interview them right on the spot where they saw the meteorite. Ads were placed in all the newspapers where witnesses might be located. This brought about 100 replies. The best of these were interviewed by W. Oref and F. D. Drake. They took a special compass and made accurate measurements of the direction in which the witnesses had seen the meteor. Sometimes this was not easy. One witness was in a canoe in the middle of the Greenbrier River. Another was standing in the middle of the river fishing. Since it was necessary to take bearings and elevations from the exact positions of these witnesses the interviewers had to go out in a boat in one instance, and wade out into the middle of the river for the other.

Information derived from the interviews was evaluated and

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calculations made. The data indicated that the fireball was 33 miles high when first sighted and, seconds later, 4 miles high when it burned out. The fireball was moving at a velocity of 10 miles per second in a west-east direction. Its angle of descent was about 25°.

Because fireballs spray debris in an elliptical pattern and because information derived from eye-witnesses is not always precise, a 20 square mile area will be searched. The indicated impact area -- Mad Ann Ridge.

The first search for the meteor will be by helicopter. The Smithsonian Institution of Washington will provide the helicopter for the search.

#### Life Magazine Here

On September 5, 6, and 7 two representatives of Life Magazine visited the Observatory to cover a story for Life. Dave Boehm, science writer, handled the writing assignment, and Flip Shulkey, free lance photographer, handled the photographing assignment. No definite date was given as to when the article will appear in Life.

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Shirley Carpenter will be leaving us Friday the 28th. We all extend to her our good wishes. She has been employed by the NRAO since March 20, 1961. BEST WISHES, SHIRLEY.

#### Science Youth Camp

The West Virginia Centennial Commission, NRAO officials, newspaper men, and photographers met at a press conference at the Observatory on September 13, 1962, and discussed plans for a Science Youth Camp to be held at Thornwood, West Virginia. Hopefully, the Camp will begin during the centennial year.

Proposed plans call for inviting two outstanding science students from each state to attend the Science Youth Camp for approximately three weeks during the summer.

Observatory scientists will take part in the program as lecturers in science.

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It looks as though we are going to have to put DO NOT DRIVE ON THE GRASS signs along our super highways. New grass is trying desperately to grow, but due to the cars taking detours the grass isn't coming along very well. Let's improve by staying on the road and take more pride in our Observatory site.

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Mr. Plunkett made a personal trip to Buckhannon the weekend of September 21.

On September 18, Estella Lambert rejoined our personnel staff as telephone operator, replacing Shirley. Welcome back, Estella.

Latest on the 300-foot

On Thursday, September 20, the telescope operators and the electronics division installed the 2 frontends at the focal point of the 300-foot telescope. These frontends work at frequencies of 750 Mc (wavelength 40 cm) and 1400 Mc (wavelength 22 cm). The feed was placed at the point where, it had been calculated, the reflected energy from the dish would be focused.

On Thursday evening the first sources were observed with the telescope. The installation was a little late for the transits of Cygnus A, which occurred at about 8:30 pm, and Cassiopeia A, and so the first identified source that was seen was the remnant of Tycho's supernova shortly after midnight. About a dozen sources were observed between midnight and 4:00 am.

The beam width of the telescope on both frequencies appeared to be about right, and the gain of the instrument also appeared to be correct. This was regarded by everyone as a sufficiently remarkable achievement to justify some champagne provided by the Observatory.

These early results have been confirmed the last few days, and the knowledge that the instrument is working and is being tested and calibrated has been told to the Trustees of Associated Universities and to the National Science Foundation. Reports have already appeared in the New York Times on Sunday September 23, and the

Washington Post on Tuesday, September 25.

Visitors at NRAO

Daily tours ended on September 8, but weekend tours were given the rest of the month. About 300 visitors took the tour in September.

The Observatory will be closed to the general public until about June 15, 1963, but special group tours can be arranged through the public education office.

Over 10,000 people visited the Observatory up to October 1. Visitors registering at the reception desk represented 28 states and 10 foreign countries. 66% of these visitors were from Virginia, Maryland, Ohio and Pennsylvania. 23 states accounted for this remaining 15%.

The season ended with people still confusing the NRAO with the defunct Sugar Grove installation. Even after the difference was explained, they wanted to know why the NRAO wasn't obsolete too. Ah, people, the sweet mystery of life.

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On September 6 and 7, J. R. Plunkett and F. J. Callender joined Fred Hohmann at the National Science Foundation, and attended a meeting concerning Property Management at the NRAO.

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Ceramics

The Wednesday night (7-10:30 pm) workshop for ceramics has been well attended. The Saturday (2-5 pm) session was cancelled for several weeks due to the lack of chairs, but recently the NRAORA bought their own chairs, and all classes are now on regular schedule.

The supply of greenware is getting rather low, but a large order has been placed with Jim Ellis. Mr. Ellis reports that he expects our kiln to be shipped within the next two weeks. At the time he delivers the kiln, he will also deliver the greenware. He also promised to give a couple classes of advanced instruction. This will also be a good opportunity to ask questions. When the exact delivery date is known, all interested in ceramics will be advised so that they can attend these special sessions.

If you have not attended a workshop, you should do so, and get started on your ceramic Christmas gifts. Some beautiful gift items have already been produced. Before you know it Christmas will be here (less than 3 months).

So far "Toots" St.Clair holds the record for breaking greenware, and Susie Dolan is running a close second.

Talent isn't everything. Ceramic classes give the wives a "night out" and a chance to socialize with other Observatory wives and other employees. And too, the ladies

have been serving cookies and coffee for the Wednesday night group.

NRAORA Annual Meeting

The Annual Meeting of the General Membership of the NRAORA was held on October 31, in the laboratory conference room, at 4:45 pm.

At this meeting a new Board of Directors was elected for the coming year. They are: Harry Wooddell, Omar Bowyer, Bill Meredith, Phyllis Jackson, Arnold Davidson, Carl Davis, Sidney Smith, Bill Kuhlken, Fred Crews, Dewey Ross, and Marvin Wimer. The new Board will take office and assume their duties on November 1. On November 13, they will meet to elect officers and appoint committees.

It was unanimously voted at the meeting to change Article IV, Dues, to read as follows:

Section 1. Dues for monthly membership in the Association shall be \$1.00.

a) Employees may pay \$12 at December 31 for the entire forthcoming year or \$1 on the first day of each month during the year or sign a payroll deduction card authorizing the payroll department to deduct \$1 from the last pay period of each month during the fiscal year.

b) Employees who fail to join the Association immediately after being employed by AUI must apply to the Board of Directors for membership in the Association.

### Guy Derricks Tested and Approved at 140-foot Telescope

The two giant red and white guy derricks, landmarks of the 140-foot telescope site, are now a tested and approved part of the facilities for building of the 140-foot steerable telescope. Hoist foundations and anchor blocks held fast last week as each derrick lifted a 250 ton test load and boomed it out in a 50' radius while the other derrick was loaded with 90 tons and boomed out to a 130-foot radius. These monsters are held in position by 18, 1-3/4" guy wires anchored in cement blocks weighing about 22 tons each. Opposing anchor blocks are about a quarter of a mile apart.

Each derrick boom measures 160 feet and is powered by a large diesel engine. These guy derricks and hoists were built by the American Hoist and Derrick Company and had been erected at the site 3 years ago, but were not tested until last week. They are required to handle the heavy lifts involved in the erection of telescope components.

One of these lifts, an assembly consisting of the polar axis shaft, the spherical bearing and the tail bearing, will weigh about 390 tons. This weight does not include the weight of the rigging gear. This shaft is 12 feet in diameter and approximately 50 feet long. Spherical bearing diameter is 17 feet. The yoke and hub lift will be about 405

tons raised approximately 60 feet from the ground level. The assembled superstructure will be a 210 ton lift.

The tests were conducted under the watchful eyes of "Spence" Greenwood, AUI's Assistant Project Manager for the 140 foot telescope, and Riley Herrington, Superintendent of Construction for Stone & Webster Engineering Corp., managing engineers for AUI. Tests were performed by the Pacific Crane & Rigging Co. of Paramount, California, who recently moved to the site to begin work on their contract for erection of the polar axis shaft, bearing supports, yoke, counterweight and superstructure. Over the past few weeks this company has also set up unloading gear at the Bartow railroad siding and are underway on the job of shoring up bridges between Bartow and Green Bank to accommodate the heavy loads which will be transported for the 140 foot telescope. The yoke is due to arrive at Bartow in early November. In charge for Pacific Crane & Rigging Company are Project Manager Robert T. Marvin, and Project Engineer, Robert L. Butters.

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A new employee in the Fiscal Division is "Becky" Blackhurst. She resides in Cass with her parents, Mr. and Mrs. T. L. Blackhurst.

### NRAO Visiting Committee

Members of the NRAO Visiting Committee met at the Observatory on Monday and Tuesday, Sept. 10 and 11. The following members were in attendance: Dr. Cecilia Payne-Gaposchkin, Harvard University; Dr. George Swenson, University of Illinois; Dr. Cornell H. Mayer, U.S. Naval Research Laboratory; Dr. Gordon Stanley, California Institute of Technology; Dr. John W. Firor, Jr., High Altitude Observatory, Boulder, Colorado; and Dr. Donald E. Osterbrock, Washburn Observatory, University of Wisconsin.

The terms of Drs. C. Gaposchkin, G. Swenson, and H. Friedman (absent from meeting) expire in October 1962. The new members who have been elected are Dr. Paul Green, Massachusetts Institute of Technology, and Dr. Alan R. Sandage, Mt. Wilson and Palomar Observatories.

### Astronomy Department

Dr. C. M. Wade attended a meeting in St. Louis, Missouri on September 12, for the purpose of examining electronic and optical distance measuring equipment.

Dr. Heeschen will travel to Bloomington, Indiana, on October 8 to participate in a conference on Graduate Education in Astronomy, which will be held at Indiana University. The purpose of the conference is to discuss the many problems and pressures confronting those concerned with the preparation of astronomers.

Dr. Crampin spent a week-end in September in Athens, Ohio, visiting a friend who is attending the Ohio University there.

Dr. David Hogg spent several days in Toronto, Canada during September.

Miss Lillian Ness is spending a month's vacation in New York City.

### Electronics Division

Amos Barkley and Kenneth McLaughlin both began work in September in the electronic's machine shop.

Mr. James O. Ware has been employed as a technician in the electronics division, and will begin work October 1. His duties will be equipment repair.

Mr. John Bringe has been employed as an engineer, and will begin work on October 15.

Joe Carter returned for another quarter of work, arriving on September 24.

Bill Lowman, a co-op student from Georgia Tech, arrived at the Observatory on September 24 to begin his first quarters work. Bill will work in the low noise division.

Bill Kuhlken, Carl Davis, and Paul Devlin visited Brookhaven National Laboratory to see how "smoothly" it was operated. Fred Hohman was tour leader. Comment overheard there was, "NRAO A-OK".

Mr. Callender and Dewey Ross have returned to work after a siege of the flu.

After 2½ years at the NRAO, Bill Waltman leaves September 20 for two years with the Army. He expects to spend most of this time in Germany. Good Luck, Bill.

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The responsibilities for the operation and use of the 300-foot telescope have now been handed over to the Telescope Operations Division. Dr. Drake has asked Fred Crews to control all operations at the telescope.

Employees with work to do at the telescope site should check with Fred Crews and co-ordinate their work with him.

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Richard E. Grabe, Field Accountant for the 140' telescope, reported to Fiscal Officer Riffe on September 10. Grabe's last job was with the civilian staff of the Navy at the Sugar Grove Radio Telescope Project.

Dick "batches" in his trailer at Bob Elliott's trailer part during the week and commutes weekends to his home in Pittsburgh.

Howard Lambert reported to work for AUI on September 17, 1962. He is working in the field office of the 140' telescope as a clerk-typist.

Howard is a native of Franklin, W. Va. and prior to his employment

here, worked three years and nine months with the Navy at the Sugar Grove site.

He is married and the father of two sons and a daughter, and is commuting daily from Franklin. He has made no definite plans to move his family here.

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"Sis" Michael took her daughter, Jane Kay, to Morgantown on September 13, where she enrolled as a Sophomore at West Virginia University. "Sis" will attend the W. Va. Grand Chapter Session of the Order of the Eastern Star to be held in Wheeling, W. Va., on October 3, 4, 5, and 6.

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John MacLeod has been appointed a Research Assistant for one year, beginning October 1. He will be working on research to prepare his thesis.

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Congratulations to:

Dr. Drake upon his being selected as one of the 100 outstanding members of Life Magazine's "Take-Over" Generation. Story and photographs appear in the September 14 issue of Life.

Dr. Findlay and his able crew for the successful completion of the 300 foot transit radio telescope.



Minor Congratulations to:

Jim Dolan for the first official report on the "Mad Ann" fireball.

Wally Oref for being the first Observatory "fireball" hunter.

The owner of Virginia license plate 86657 for being the first automobile to test the clay berm on both sides of the main Observatory road.

Dr. Hvatum for his charter membership in the Playboy Key Club.

Dr. Heeschen for acquiring the "second horse" for his stable.

For Sale

One pair of men's hockey shoe skates, size 7½. In excellent condition. Will sell at sacrifice price.

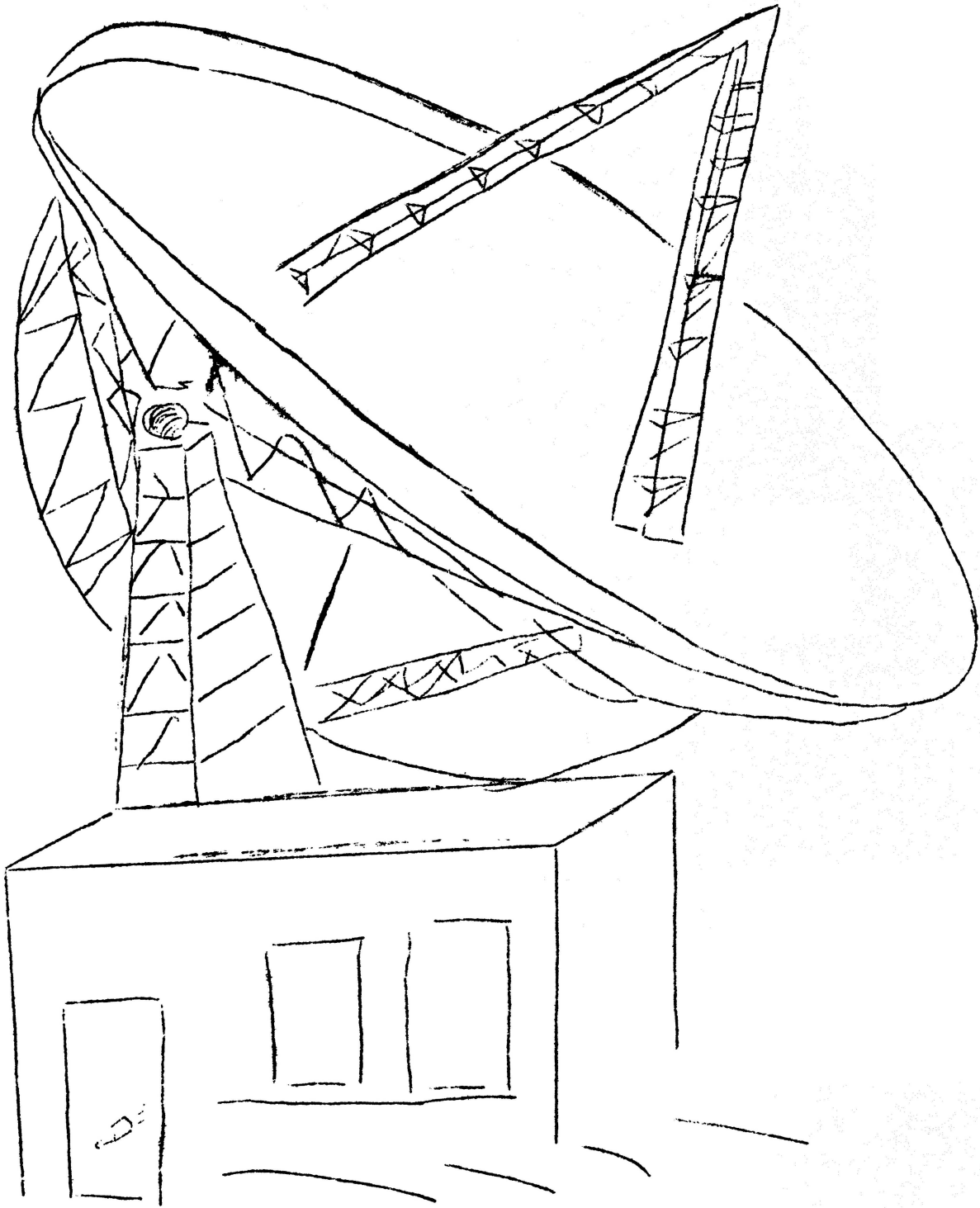
"Sis" Michael

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A very small boy came home almost in tears from his first day at school, "Ain't goin' tomorra," he spluttered.

"And why not, son?" his mother asked.

"Well, I can't write and I can't read, an' they won't let me talk, so what's the use?"



☞☞☞ "DR. FINDLEY, it works, it works!!"