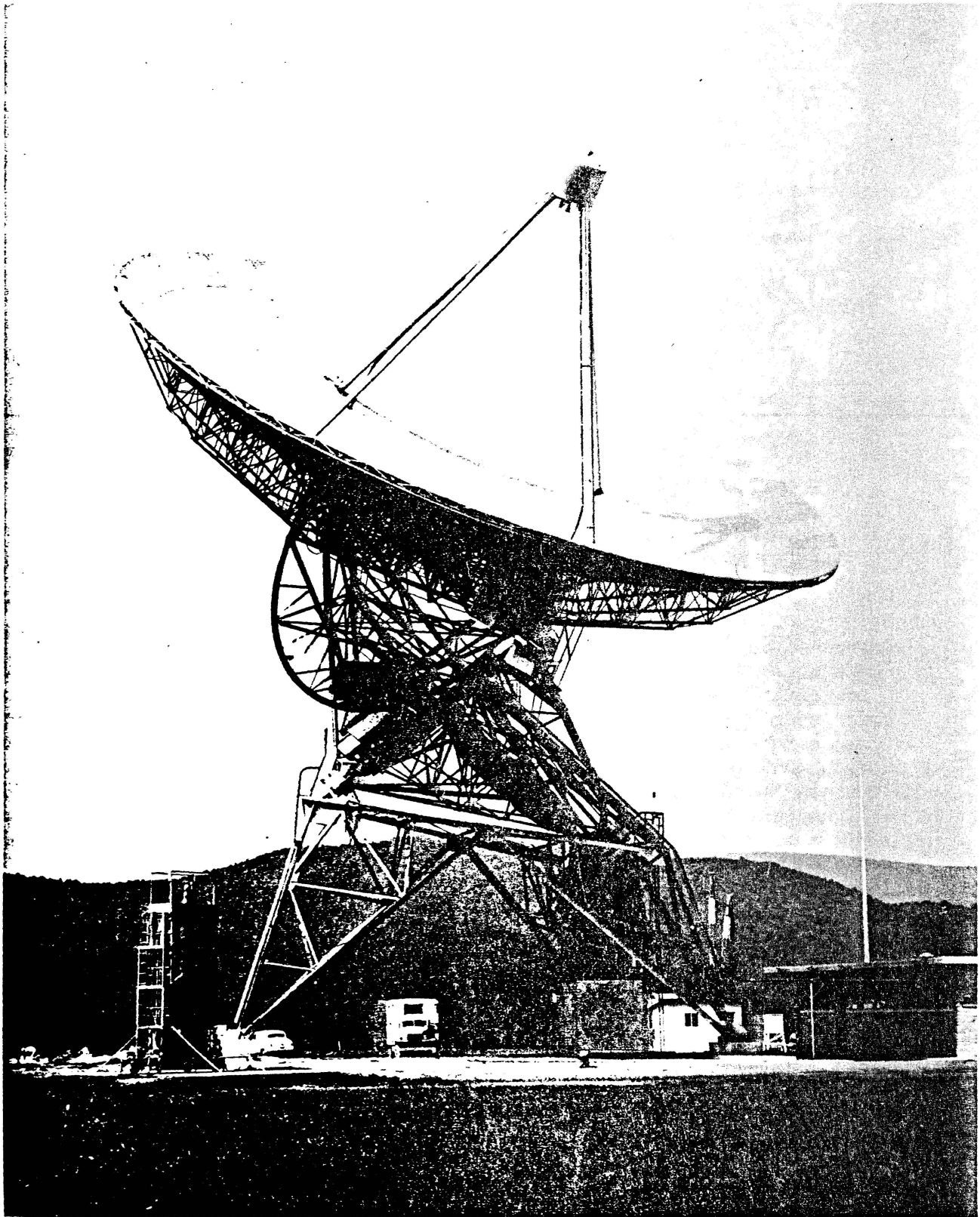


# *The* O B S E R V E R

Vol. 3, No. 5

March 31, 1964



THE 85' HOWARD TATEL RADIO TELESCOPE

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"THE 85' TATEL TELESCOPE"

by  
Fred Crews

Everyone will recognize the cover picture as being that of the Observatory's oldest telescope -- often referred to as "The Work Horse". It is more correctly known as the Howard Tatel 85' telescope.

Howard Tatel, in early 1950, working for the Department of Terrestrial Magnetism, Carnegie Institute of Washington, began looking at the problem of developing a Hydrogen Line receiver. Later he became involved in the procurement of a telescope for DIM. The telescopes available at that time used small high precision expensive gearing and Tatel, looking for a new, cheaper way to build a telescope mount was advised to see Blaw-Knox Co. of Pittsburgh. Tatel developed the concept of the 85' mount with large gearing with Blaw Knox doing the dish design itself. Collaborating, Tatel and Blaw-Knox produced the Blaw-Knox telescope with 60' and 85' diameters. Unfortunately, Tatel died on a field trip in 1957, about one year before his telescopes started rising not only on this continent, but on others as well.

Our 85' was started in the summer of 1958, but for several reasons was not completed until early February 1959. As a matter of fact, the writer remembers very well the date that the telescope was first used -- February 13, 1959 (Friday, no less).

At that time, the only scientists at the Observatory were D. Heeschen, J. W. Findlay, F. Drake, and a freshly arrived Norwegian (Swede?...who knows?) by the name of H. Hvatum.

Initially there were only two operators, who worked 12 hours keeping the telescope going 24 hours a day except for week-ends when the scientists did their own observing.

-----continued on next page-----

Later another operator was added, and then another, bringing the crew to a sufficient number to operate the telescope 24 hours a day, seven days a week, in 8 hour shifts.

Through the years, the telescope has observed from the lower frequency of 327 Mcs up to 14,500 Mcs which it is now doing. Many types of programs requiring many hours of time have been handled by the telescope.

In addition to our own staff of scientists, scientists from other institutions have utilized the telescope facility. Scientists have visited and observed from the University of California, Leiden Observatory in Holland, the University of Pennsylvania, the University of Wisconsin, Princeton University, Case Institute of Technology, Massachusetts Institute of Technology, California Institute of Technology, and the U. S. Naval Research Laboratory.

A listing of scientists using the telescope is quite impressive indeed and is as follows: D. Heeschen, F. Drake, M. Roberts, H. Hvatum, G. Westerhout, T. K. Menon, R. Stockhausen, J. W. Findlay, G. Field, G. Reber, R. Hobbs, R. Lynds, D. Hogg, C. Wade, J. Wanner, S. Weinreb, D. Harris, T. Orhaug, Y. Terzian, M. DeJong, B. Gary, I. Pauliny-Toth, and P. Mezger.

So much for what the telescope has done. What about its future? Due to the quality of the instrument no major changes have been made in it, nor are any anticipated. Immediate plans call for it being used as one element of the interferometer along with the new 85' telescope. Len Howell, who is chief operator, along with his people are currently revamping so that both telescopes can be controlled from the existing control room.

The 85' Tatel telescope has now been in operation for 5 years. Its life expectancy is 20 years. We are sure that its remaining 15 years will be as fruitful as the first 5.

#### THE SNODGRASS COLUMN

Communications and the universal aim of unreasonable living standard have produced a new and dangerous phenomenon: the great cab rebellion. In former times, cats were content to be stroked and admired. Now it is power they are after-----witness the cat population at Green Bank. They run all the private dwellings in the area, they do no work at all (unless sharpening ones claws on the human leg is termed "work"). But, most offensive of all, they have started military manouvers outside the Hall of Residence in the middle of the night. In retrospect, the good old days (when a cat knew its social position) look very good to us.

We were just a little disappointed at the attendance for the film "Roman Holiday", although we were also a little disappointed at the film. We are trying to find the real name of the film critic for whom

Yervant Terzian is a pseudonym.

#### BUT SERIOUSLY by Snodgrass

The war in Viet Nam raises the question posed to all nations with political business on the other side of the world: how to achieve a political victory by means of a military victory. Even presuming a military victory, the daily price (in terms of money and human suffering) is already enormous, and is likely to increase.

There are three reasons why the political victory is unattainable:

1. People of different languages, cultures and religious do not understand why these complete strangers would want to protect a freedom they have never had. It is as if the reason for opposing the Russian Revolution in 1917 were to preserve the individual freedom under the tsars!

.....continued on next page...

The military "strong men" are usually unpopular, even after they have established a monopoly of channels of communication. The present regime in Viet Nam is no exception.

All sane people have discarded the philosophy (if one can so discredit the word "philosophy") of a holy war. To force nine million Viet Nameese to move into fortified villages is to create a dangeroud political situation. But to force many of these people to destroy their own homes and their unharvested crops is unspeakable. So in order to combat communism, the people have to live the unnatural existence which will make communism seem the Utopia it always claims for itself. The compensation for a destroyed home is \$10; the average cost for such a home is \$56. What are the Viet Nameese supposed to purchase with the compensation?

The United States, whose economic generosity towards the United Nations organization contrasts sharply with the unpaid communist debts, would do well to contain her impulsive generals; this is a situation where a stalemate under the U.S.A. and U.N.O. might give the calming effect so necessary in this area. The Goldwater doctrine of "holy war" plays right into the hands of China. The choice between the complicated process of survival and the simple dogma of "righteous radioactive rubble" is clear. The U.S.A. must therefore combine flexibility in political action with the military preparedness which makes her the chief guardian of our western way of life. And the United States has no meaning if it is merely the wealthiest or most powerful nation the world has ever known. Her message to the world is that freedom is man's sacred birth right, even if man should be so misguided as freely to choose communism!

### GET YOUR THINKING CAP ON

- 1) A problem in addition. Each of the following letters stand for a number. Be careful thinking, it is easy to solve this simple addition problem.

S E N D  
  M O R E    
M O N E Y

- 2) Two fathers and two sons walk into a bar. One orders a scotch; one a whiskey; and one a borbon. All men are served. How is this????
- 3) Make a walking man out of 1 1 0 3 0 by adding two straight lines.

(answers page 8)

### A SHORT STORY WITH NO MEANING

Photographer on weekend journey -

He got stuck -

Called for 4-wheel drive truck -

He got stuck -

Both need help! help! help!

Help being given - state road driven -

Chain broke - windshield smote -

Cuss words said! said! said!

Photographer should have stayed in bed.

### CERAMICS

Bad luck seems to be the story of ceramics for the month of March. The regular Tuesday night workshops were discontinued for three weeks. This concellation was due to the fact that the automatic cut off on the kiln did not work, which completely destroyed it and its contents.

....continued on next page....

The heat from the kiln was so intense that the floor of the Arbogast house caught on fire.

Recognition should be given to the Girl Scouts (under the supervision of Mrs. William Powell) for their efficient reporting of the fire; and to Ben Gragg, one of the NRAO guards, for his courageous services in limiting the damages to a minimum

A new kiln has been ordered and shipment is expected immediately. The workshop will resume Tuesday night, March 31st.

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IT'S THE WORKS

What did spring bring but the announcement of the engagement of Neil Horner and Ruth Wilfong on March 20th.

For Sale: 1954 Pontiac  
See Basil Gumm

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LAB GAB

Dewey Ross is making tests at Micro Wave Physics in Dallas, Texas.

Bill Kuhlken, Carl Davis, and Omar Bowyer are in New York at the IEEE show.

Hein Hvatum is with John Findlay in Australia visiting CSIRO.

The Occulation receiver is nearing completion.

Student David Sun from VPI is assigned to the Low Noise Lab.

Hermann von Hoerner has left for his home in Heidelberg.

Claude Bare and Dr. Low are leaving for NJ in New Jersey.

Jim West is back from VPI and is working in the Low Noise Lab.

Alan Roth from Georgia Tech is presently working on an ignition noise receiver which will be installed in the Guard House.

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IT'S ONLY MONKEY BUSINESS

Has everyone noticed Dell Cassell's new car???? Ask him how Becky is getting along driving without automatic transmission. It's a F O R D !?/-.=!!

George Behrens has joined the Electronics group. He says he thinks he is going to like Green Bank fine. He says he knows one thing for sure - that with all the trouble he had getting his house trailer here he will never be able to get out.

-----  
ENGINEERING ESSENSE

Interferometer:

1. The control building was completed and made ready for occupancy by March 6.
2. The new bulldozer was received and will be available for towing the new interferometer telescope from one observing station to another.
3. The control cabling installation under contract to New River Electrical is now about 90% completed.
4. Plans are now being formulated to start installation of coaxial cable for underground electronic system about April 15th by the NRAO engineering crew.

Charlottesville:

The contract with TAMS for design of the new laboratory building was signed this month.

....continued on next page....

Airstrip:

Work on a new improved airstrip will commence this summer. The staff approved the plan and engineering work has started in preparation for going out for bids.

Jansky Antenna:

Wood forms are now being fabricated in the shop in preparation for pouring concrete foundation for this antenna.

Guard Station:

A new guard station has been constructed on the east side of the Hosterman road; just north of the high school. It will be used for monitoring ignition noise and for control of visitors as soon as technical and legal problems can be worked out.

Cryogenics Storage:

Work has been resumed on the cryogenics storage building now that the weather has improved. Concrete blocks have been laid up to the roof level in some places.

Talks in Greensboro:

At the request of the Bell Telephone Laboratories, Mr. Pleasants visited Greensboro on March 17 and gave a talk to the Observatory to about 200 technical employees. The following day a talk was also given to about 40 persons of the Junior Science Museum at Bell Laboratories' request.

Thursday April 2 and Friday April 3.

Some of the highlights of play during March, in addition to the deciding of the seasonal title were the two overtime games the night of March 5th; the record 102 points scored by the Yellow on March 19th; and Chester Cassell's individual performance of 38 points tops for the year. The overtime games saw the Yellow outlast the Green 72 to 71 in the opener while in the night-cap the Blue and Red fought it out with the Blue winning 56 to 54.

The Yellow team's 102 point onslaught is the most points scored in any game in the past three seasons. Chester Cassell's individual performance was at the expense of the Red team in their meeting of March 12th.

Pairings for this year's tournament will be decided by a drawing conducted by Dick Bird, who heads the basketball activities. If the past two tournaments can be used as any criteria, this year's promises to be a wide open affair, since in the two preceding years the tournament champion has been a team other than the League Champion. The closeness of many of this year's games seem to indicate a wild finish to another highly successful season.

During the season, support of the basketball activities in the form of attendance has primarily been from other than NRAORA members. It is hoped that more representatives of the NRAORA will lend their support by attending this year's tournament and cheering for their favorite team.

Seasonal Standings  
Games through March 19

<u>Team</u>	<u>Won</u>	<u>Lost</u>	<u>Games Back</u>
Blue	11	3	--
Yellow	8	6	3
Green	6	8	5
Red	3	11	8

....continued on next page....

NRAORA BASKETBALL by John Gallagher

The 1963-1964 NRAORA basketball season is nearing its completion. The League championship has already been decided. This year's honor goes to Gene Crist's Blue team who sewed up the seasonal title on March 12th with a come from behind victory over the second place Yellow team -- 64 to 53. Regular season play ends on Thursday March 26th with the year-end tournament scheduled for

Scores of Games Played in March:

March 5	Yellow	72	(over time)
	Green	71	
	Blue	56	(over time)
	Red	54	
March 12	Blue	64	
	Yellow	53	
	Green	81	
	Red	54	
March 19	Yellow	102	
	Red	63	
	Blue	55	
	Green	54	

Don't forget!!! You have a date to attend the tournament, Thursday (April 2) and Friday (April 3).

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BIOGRAPHY OF THE MONTH

F. J. Callender was appointed Business Manager of the National Radio Astronomy Observatory, Green Bank, West Virginia, in November 1957. Prior to his service with the NRAO, Mr. Callender was a Management Analyst at the Naval Research Laboratory, Washington, D. C., 1947-1948; Assistant to Administrative Director - U. S. Navy Special Devices Center, Sands Point, L. I., New York, 1948; Assistant to the Administrative Officer - Office of Naval Research, 1948-1950; Research Program Budget Analyst - Office of Naval Research, 1950-1951; Assistant to the Deputy Chief and Chief Scientist - Office of Naval Research, 1951-1953; Executive Secretary - Naval Research Advisory Committee, 1951-1953; Grants Administrator - National Science Foundation, 1953-1957; Acting Assistant Director for Administration - National Science Foundation, 1954-1956.

During his government service, Mr. Callender was chosen to participate in the United States Navy's Executive

Development Program, 1951-1952, was nominated by the National Science Foundation as its candidate for the William Jump Award in 1954, given annually to outstanding young administrators under 35 in the Federal Government, and was guest lecturer on "Management of Research and Development" at George Washington University in 1956. As a result of his current outside interests, he is Chairman, Pocahontas County Economic Planning and Development Committee, Member, Citizens Committee for Better Schools, Lay Reader, Protestant Episcopal Church and Lay Preacher, Presbyterian Church.

Mr. Callender was graduated from Syracuse University in 1946 with a major in political science (constitutional law and the history of American political thought). He spent a year's graduate study in administrative law, public budgeting, and labor-management relations.

At the present time, Mr. and Mrs. Callender and their three children, Marcia 13, Anita 12, and Franklin 7, reside in Green Bank, West Virginia.

BIRTHDAYS FOR MONTH OF APRIL

Cleo Harper	4
Troy Lusk	5
Merritt Gum	5
Claude St. Clair	8
Bob Vance	8
Bill Kuhlken	10
S. von Hoerner	15
Isabelle "Sis" Michael	17
Hein Hvatum	17
Delbert Cassell	17
Peter Good	24
Madge White	25
Maxine Foe	27
Richard Spurlock	29

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WEATHERING HEIGHTS

Low	18th March.....	+14° F
High	9th March.....	+66° F

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140' TELESCOPE

Work on hydraulic system and electrical system installations in progressing well. A 1,400 gallon oil storage tank, oil cooling and precharging pumps, filters, and various other hydraulic system components have been installed. Installation of the 16 pumps on the second floor and the 16 accumulators in the south passageway is completed and piping for these components is underway.

Deliveries of components from vendors during the month included all polar gear segments, polar and declination gear reduction units, polar and declination brake units and gear reducer brakes. Receipt of these components completes delivery under our purchase orders with Philadelphia Gear Corp. and the Goodyear Tire and Rubber Co.

The tail bearing housing was shipped from Bethlehem Steel Co. on March 13 and arrival at Bartow is expected during the last week of March.

Machining of the spherical bearing is complete. Hydropads are being fitted to the spherical surface. When fitting of the hydropads is completed the spherical bearing will be prepared for shipment. It is expected that it will be shipped by mid April. This has been the most critical component of the 140' Telescope and it will be a most welcome arrival on the job site.

PC&R is working a crew of approximately 50 men at the present time - 10 hours per day.

L. L. Cowan, Millwright Supt. for PC&R arrived on the job site March 23. He will supervise work of millwrights.

Mr. Small and Mr. Greenwood visited Philadelphia Gear Corp., Westinghouse and Bethlehem Steel Co. during the month of March. Also, during the last two weeks of March, Mr. Small traveled to Kennedy Antenna Division in Cohasset, Massachusetts to witness panel testing and to review work under our purchase order with them.

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300' TELESCOPE

March has been a quiet month here at the west forty. We're so far out in the woods that it's a wonder it isn't a toll call from the front office. The proverbial March wind has necessitated stowing the telescope a few times, but even Mother Nature has been relatively good to us.

The six receiver systems, as reported last month, have compounded the maintenance and operating problems. Dewey Ross, and especially Frank Perry have received a real work out as a result of a variety of maintenance troubles. Work has ranged from loose, and bad cables, to the major job of removing two front ends and returning them to the lab for repairs. On one occasion, there was several inches of water in one of the pill boxes, and on another Perry had to borrow Dr. Hogg's 750 Mc tunnel diode, previously used for polarization observations at the 85' and install it in place of a defective 750 Mc (ceramic tube) front end. Perry has done so much climbing during the month of March that his wife is packing bananas in his lunch.

The 300' observers Marvin DeJong, and Yervant Terzian received a much needed stay of execution when installation of the correlator receiver, previously programmed for installation on 16 March, was postponed. DeJong and Terzian working on their doctrates, are putting this time to good use as much of their data was bad or marginal due to equipment malfunctions.

DeJong and Terzian have been splitting time on the telescope with Dr. Bertil Høglund and his Northern sky survey, giving us a full observing schedule. This program requires four of the six receivers 1400 Mc center, 1400 east, 1400 west, and 750 Mc. Dr. Høglund reports preliminary results are satisfactory.

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FOR SALE

Home - 4 bedrooms  
2 baths  
living room with fireplace  
dining room  
kitchen and dinette  
  
Complete finished basement with fire-  
place and family room, outside entrance  
and 1/2 bath.

Colonial style brick, good location,  
large wooded lot, within walking  
distance of large shopping center.

Contact: William McCann  
128 Woodstock Drive  
Charlottesville, Va.

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TRADE

Would like to trade a Winchester  
Model 12, 20 gauge, single shot  
shotgun for a good fly rod.

See: Marvin DeJong  
Room 216(Lab)  
Ext. 222

FOR SALE

Tube Tester - Model 71  
"Professional"  
National Radio Institute

"Like New" - will sell very reasonable

See: Jerry C. Shears  
Room 114  
Lab Building  
Ext. 227

(Answers)

9 5 6 7  
1 0 8 5  
1 0 6 5 2

There are only three men -- a father and  
his son and his son's son. (father, son,  
and grandfather)

11 0, 3 0  
1

SMART PARTS FROM GRAPHIC ARTS

Quote of the month:

Peter B. Good talking to Scottie:

"Scottie, what color was your hair when  
you were a boy?"

"What age are you referring to, Pete?"

"You know Scottie, like me - my age."

Now we know that "B" in Peter B. Good means  
"boy"!!

Quib

Jose' at first baseball game could not  
get a seat  
Therefore, he climbed the flag pole in  
order to see  
After game at home he bragged to a friend  
That everyone at the game was so interested  
in him  
At the beginning of the game everyone stood  
up and asked - JOSE' CAN YOU SEE

An "Ode" to Abode

Little news have we  
But I impart the following to thee

We welcome all work and ne'er do we shirk  
Quantity and quality must always be  
Cause the ship we sail  
"S.S. Graphic" (scientific services)  
Will never fail

With Scottie at our helm  
We've unlimited "scope and realm"  
Our first mate - Gene Crist  
Keeps the ship from "list"  
Ronnie Monk - Technician Chief  
Soothes our sorrows and grief  
With Tony and Bob  
On the Drafting job  
And humbly it be said  
NONE OF US GOT THE BIG HEAD!!!!

*Yours Truly*  
*Tony Mono*

## SPELUNKING TOUR

The Explorer Scouts of Kootaga Area Council have extended an invitation to Observatory employees to tour Propts and Thorn Mountain Cave on Saturday April 18th. The tour will begin at 8:45 AM.

Lecturing geologists on the tour will include: Tom Arkel of the State Geological Survey, Dr. Fisher of Ohio University, Dr. Sams of Ohio University, and several members of the U. S. Geological Survey.

Lunch during the tour will be provided by the Scouts at a small cost. Each person should have a hard hat, hand light, protective clothing, and non-skid shoes.

If you wish to attend this cave tour, please contact Wally Oref by April 3, 1964.

NRAOPA

CINEMA  
SCHEDULE....

for APRIL

PAUL MUNI

(The great actor of the 30's,  
now in his finest performance  
of the 50's...)

IN

"The LAST ANGRY MAN"

APRIL 13th

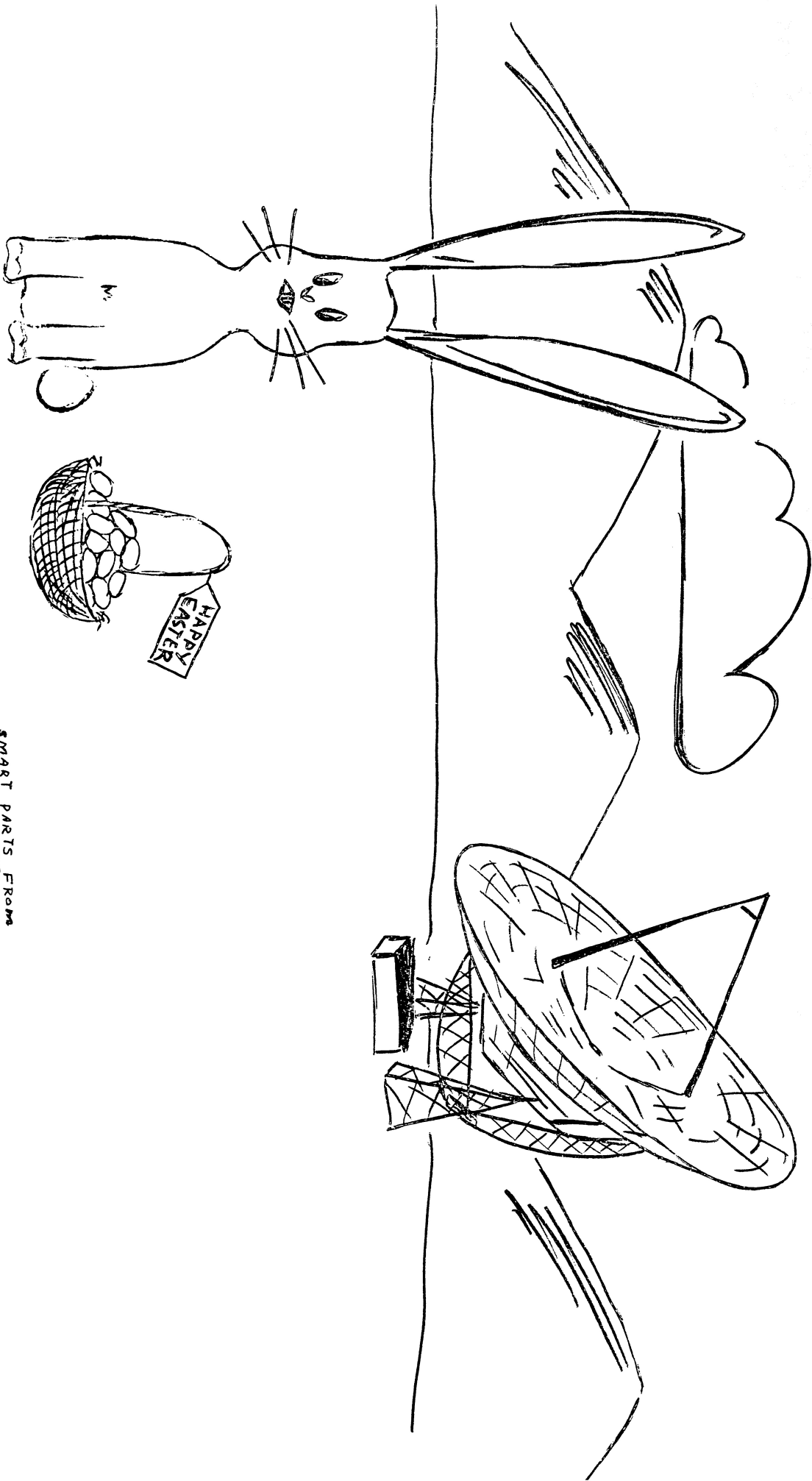
CARY GRANT  
RAYMOND MASSEY  
PETER LORRE

IN

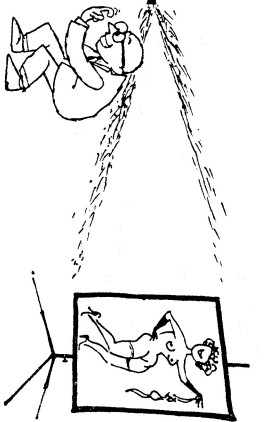
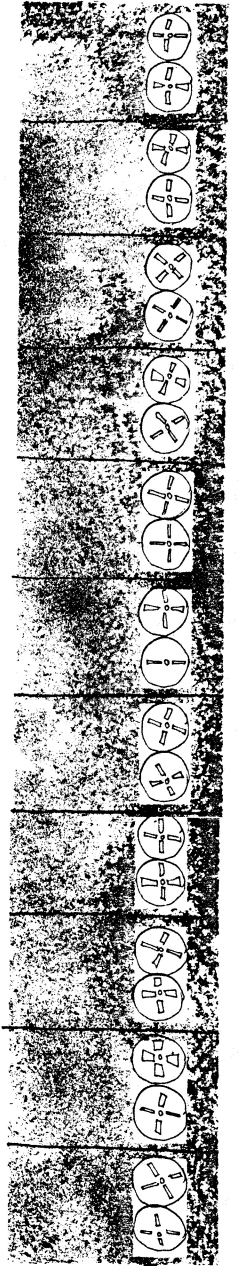
ARSENIC and OLD LACE

A BLOODY FUNNY MOVIE... PG

"Huh! What's New About Big Ears"



SMART PARTS FROM  
GRAPHIC ARTS



# AUTO-MATING CALLS

