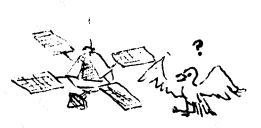


The OBSERVER

7, No. 4

December 1967

Page



Vol. 7 No. 4

July-December 1967

(Sorry About That)

STAFF

Editor:

H. Donald Logan

Editorial Assistants:

Sue Miller
Clarabell Folks

Contributions:

May Bates
Bill Kuhlken
Jack Gore
Omar Bowyer
et al

Special Effects:

Neil Albaugh
Shelton Reid
Peggy Weems

Printing and Publishing

Gene Crist
Ron Monk

Published (at last) by the National Radio Astronomy Observatory:

Green Bank, W. Va.

Charlottesville, Va.

Tucson, Ariz.

EDITORIAL COMMENT

Hi! Remember us? We're your friendly dodge boys. Yep, every time our Ace reporters look for contributions you all dodge us. The pages of the August-November issues are like the soap, not just clean and clear, they're white, all white.

One year ago, this issue, I uncorked my 36' crystal ball and ventured forth some spirited opinions! So let's see how we did. The 400 channel auto-correlation receiver is a reality. Art Shalloway tells me that they have turned the rig on and no smoke was apparent. Shortly afterwards they even went so far as to plug it in. Still no smoke, but then they still had no cards plugged in. At this point Art figured he'd inject some humor into the mounting tension and exclaimed, "O.K., Dennis, we're ready for the cards, you deal!" By the time Art returned from Millimeter Lab with a borrowed copy of "A.C. Extension Cord Engineering, for Fun and Profit", Dennis had shuffled off most of the Integrated Circuit packs from the P.C. cards, and Ray was grumbling something about a mis-deal.

Studies and planning are actively being conducted toward the design of an L.F.S.T. affectionately called Let's Finance Super Telescopes - actually it means Largest Feasible Steerable Telescope.

We have no word about Satellite-borne radiometers, but I'm sure that's because Dewey Ross is gone and we ran out of water-proofing devices and Helium gas.

We do have a semi-reliable data link capable of interconnecting all Telescopes to a central point. The computer people pushed hard for this and it's to their credit that we can mention this line. All one need do is dial 9 then 0 (see almost digital, too) and sure enough you're connected to a central point. Provided, of course, it isn't raining and you haven't got Laryngitis.

I don't think our two receptionists ever got to meet each other face to face, and the Shuttle service hasn't yet made a Firestone commercial, but anyway you can't expect a guy to call all his shots.

Finally, as far as old business goes, there is proof that the 36' telescope exists. It's either that or George Grove has been kidnapped.

Speaking of the 432" scope, it is now on the air (as we say in the trade) and has been observing at 31.4 GHz and now (since last phone call, anyway) at 85 GHz. It looks like we have a very nice instrument out there, and so, many people have been requesting time on it. In fact there have been enough requests for time that those of us in the group are calling George Grove Warden Grove. And ol' lonesome George asked me to tell you to "Keep them cards and letters comin' in." He and Donny read each and every one of them.

And what about the coming year? Would you believe 36 new 85' telescopes on a 225 square mile site in the desert maybe, with our own railroad tracks. There are those who call it a Very Large Araay. Others call it a lot of work. In any case the NRAO/VLA has reached the design stages, and like all projects, things are being ordered with ASAP deliveries and PDQ deadlines. We may not have it operational this year, but you can be sure we have a good start.

The 42' mobile rig is mobile and operating. Seems work on it began increasing at an exponential rate just prior to deer season. This project is called - are you ready for this one? - Variable Extended Baseline Interferometry Feasability Study and Measurement, or VEBIFSM which is derived from the old Transylvanian word Veeblervetzer meaning moveable, and Oxolotle being the Mal-arkian contraction for Radio Telescope. (SEE ALSO ARTICLE IN THE AUGUST-DEC., 1967 OBSERVER).

The Very Long Baseline Experiments have yielded some results, and I suppose we can consider that series of experiments a success, provided their clocks don't stop, the tapes don't break, and nobody forecloses the mortgage on the Baseline.

Predictions of things to come:

My crystal ball has developed some coherent optical noise, and its chart recorder quit again, but in the true spirit of science I shall muddle through anyhow.

NRAO will go Meteorological and measure the water vapor content in a cylinder of atmosphere. What's so great about it is the cylinder is 93,000,000 miles long. Let's just call it a spectral hygrometer. Good only in sunlight

Since I'm writing in connection with things about which I may be all wet, I also foresee a neat rig which will again measure water vapor in the atmosphere but as a function of its (the water's) emission of radiation at 22.2 GHz, day or night. That's 3db better than the other one.

Dave Buhl will observe a lunar eclipse using less than 10% of the entire NRAO manpower roster, and even without Emily.

Emily Kitchen will make fewer trips to Tucson.

Skip Thacker will build another standard back end.

The 42' mobile telescope and the 36' telescope will develop a common failure - flat tires.

And finally, Neil Albaugh will initiate a rescue involving many people in a great abyss - by contributing special effects to the OBSERVER ahead of time - thus helping to get me out of the journalistic hole that I've been in, and thereby returning joy and light to our many beloved readers.

CHRISTMAS PARTY

What comes to NRAO once a year in a red suit carrying a bag of presents? Ah--that was too easy. What is tall, wears a green suit and leotards, green shoes with turned-up toes and helps Santa Claus? You don't know, do you? Neil Albaugh didn't actually say he wouldn't be an elf for the Children's Party. He only laughed.

Seriously, the Charlottesville Christmas Party for the children promises to be a big hit. We are having a magician for a thirty-minute show. That's right, folks, a real, live magician! The party is from 6:00 p.m. to 8:00 p.m. on December 19th in the NRAO auditorium. As usual there will be abundant refreshments and gifts for the kiddies. Please mark the date on your calendar. Better yet, just tell the children. I'm sure they won't let you forget.

The annual Green Bank Party for the Children will take place on December 17th from 2:00 p.m. to 5:00 p.m. in the Conference Room of the Lab Building. They will also have gifts, entertainment, and refreshments. Both parties are certain to be a success.

LEE-JONG KING AND THE BAG

by Clarabell Folks, as told to Sue Miller

Linus has a security blanket, but Lee King has something better--a security bag. For some reason a large bag of plaster was put in the office formerly occupied by Lee, Abdur Rahim, and Jack Gore. The Bag always seemed to be a part of Lee's belongings since it was nearest his desk. Whenever anything was moved in or out of the office, the movers were always extremely careful to keep The Bag close to Lee.

Recently Lee and Jack were moved into other offices at the opposite end of the building. "Now," thought Lee, "is my chance. I can get away from that Bag once and for all!" Unfortunately, The Bag had other ideas. When Lee walked into the new office The Bag was right in its proper place beside his desk. "I think it is haunting me!" said Lee. Since it has been with him so long, he probably couldn't concentrate without it. Nothing makes one feel so secure as a bag of plaster beside the desk.

Off the Cuff

.....Observed.....Mary Ann Starr leaving two donuts on a saucer for Santa.
.....Observed.....J. Marymor erecting a sign - "Donuts 6¢ - EACH"

The Happy Time Luncheon Club was having its usually stimulating conversation under the direction of Frances Copper and Lew Snyder the other day in the Canteen. The subject for discussion was whether or not reincarnation is possible. Eminent astronomer, Campbell Wade, made the astute observation that "...anything is possible. In fact," he continued, "we could look out that window and see the Atlantic Ocean coming at us if a big enough meteor dropped into it." "Yes," replied Neil Albaugh, "and I'll be right out there ready with my surfboard!"

THE VEBIFSM STORY

OR: How I Learned to Live with Radio Astronomy

H.D.L.

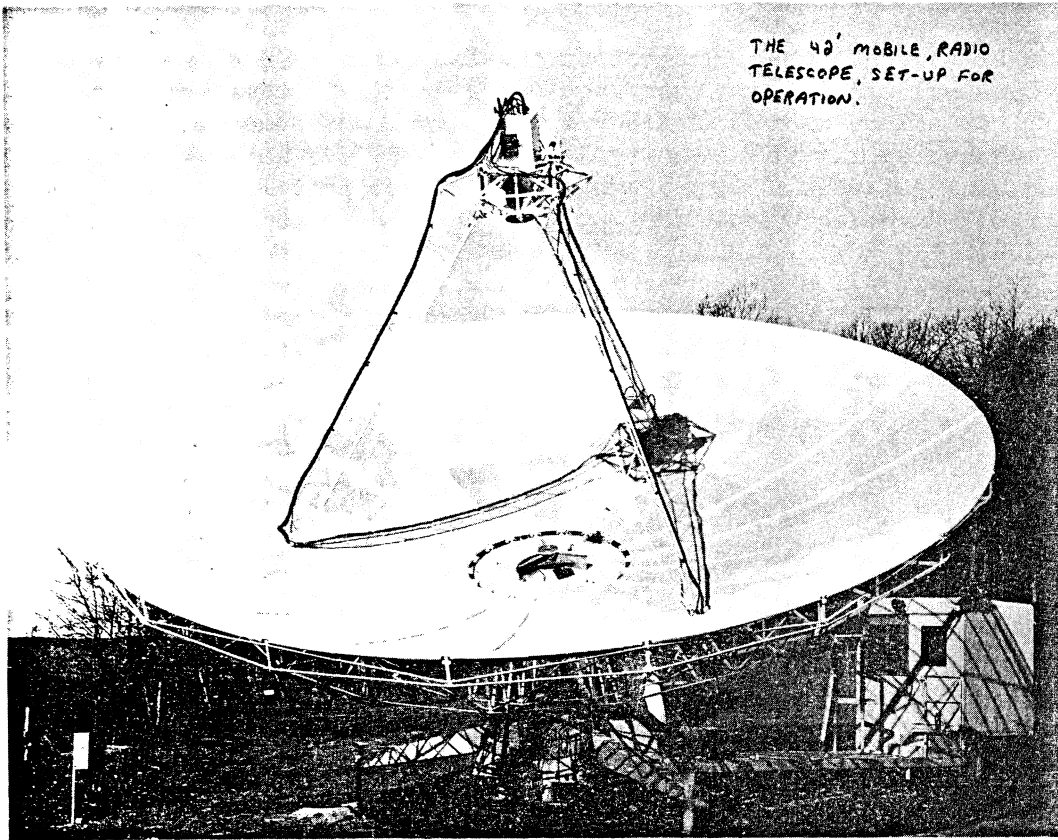
"Look, up on the hill! It's a bird...bath, no, it's a plane...old UFO, no, it's...it's...good grief it's them 'stronomy fellers with nuther one of them stronomy plants..."

And so we add yet another chapter to our story about the rustic realization of radio astronomy. The setting is Spencer Ridge Mountain about 7 miles distant from the writhing, unincorporated hamlet of Green Bank, W.Va. As the scene opens we find the peaceful countryside hosting the heterodyning throb of 2 15 Killowatt Diesel Generators, a refurbished truck trailer equipped for bachelor living, a small 10' "bird bath" harnessed to a larger, more ominous-looking 42'-trailer-mounted "UFO" and a truck. (UFO, of course, stands for Universal-Pointing Frequency Obtainer)

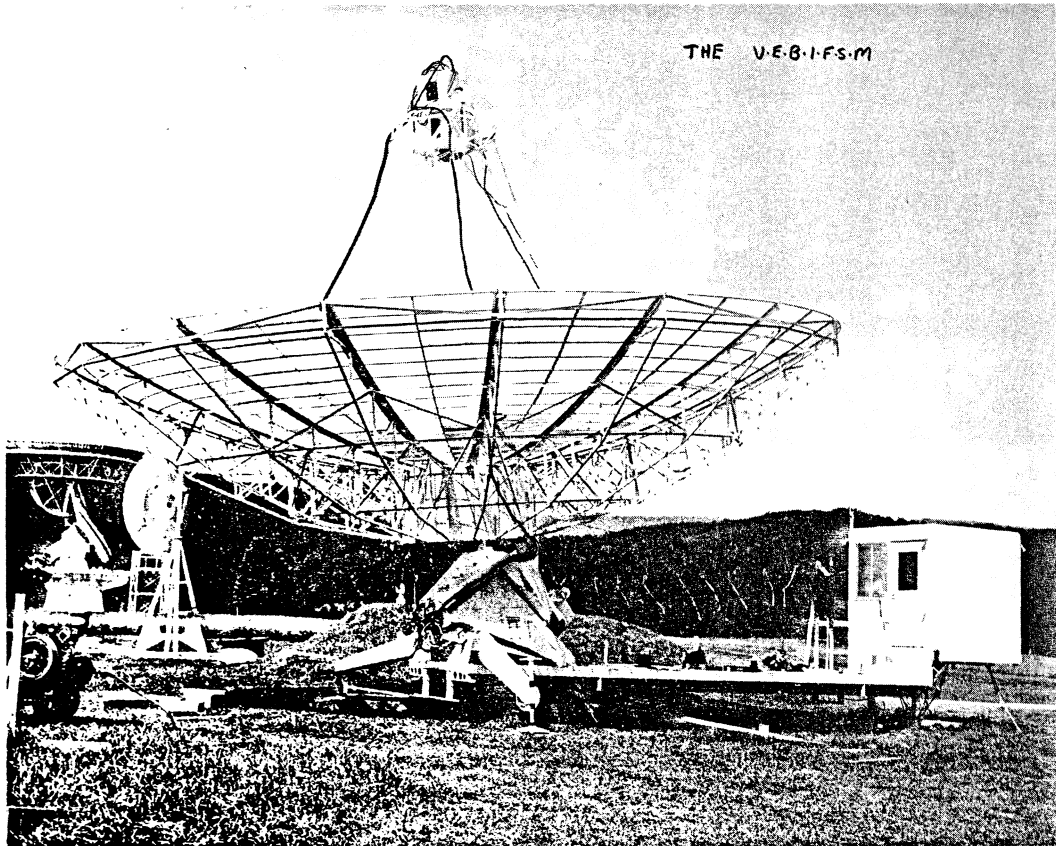
But seriously folks, we all know that it's really only the transportable 504 inch polar-mounted, synchronously-electric-driven NRAO Radio Telescope, which is being used in a feasibility study of extended baseline interferometry by Barry Clark and John Basart. And it's not because we're ashamed of the poor little 42 footer that we hide it off site, but rather to achieve a method of longer baselines than the present 3 element interferometer is capable of. The current study in remoteness has successfully yielded fringes (data) over a 7 mile separation, at an observing wavelength of 11 centimeters (2695 MHz). To avoid the expense of really long extension cords, and costly telephone bills, our rambling Reber dish is in constant contact with the Interferometer Command Building via a 4 frequency Microwave link. For those of you who'd like to monitor a phase-locked local oscillator system the frequencies are 1300 MHz, 1347.4 MHz, 1347.6 MHz and 2456 MHz. One of these is used for Voice Communication, enabling the operator to call for air support. Another channel in the link is used for data handling.

A far cry from the plush control room of Uncle Howard's 140' Scope, the 42' console is housed on an outbuilding-like structure right on the telescope trailer. Those of you who are elibible for the NRAO oldtimers club may recognize the elaborate camper as the historic Interferometer equipment van that used to be along the equally historic two element interferometer line.

By now some of you (all) may be wondering how a structure 42' in diameter can be carted up narrow mountain roads (?). Very simple - it can't. But, the dish can be disassembled, and stored during transit on the trailer, and later reassembled on location. (Point of information: you disassemble when you are at least 80% certain of reassembly; you take apart when you really don't know.) The enclosed trailer has electric heat and cooking, bathroom fixtures, bed, furniture, and an emergency locker containing spotlight, rifle, chapstick, Paul Devlin's unlisted phone number, rabbit's foot (in case the light and rifle are unsuccessful), several piTons, copy of the "Journal of the National Speleological Society", a dye marker, and an ample supply of Playboy. The two 15KW generators provide all the electrical power required to operate, which probably annoys the Monongahela Power people. At this writing we understand it requires about 5 days to relocate and get back into operation, barring technological set-backs, like flat tires for instance.



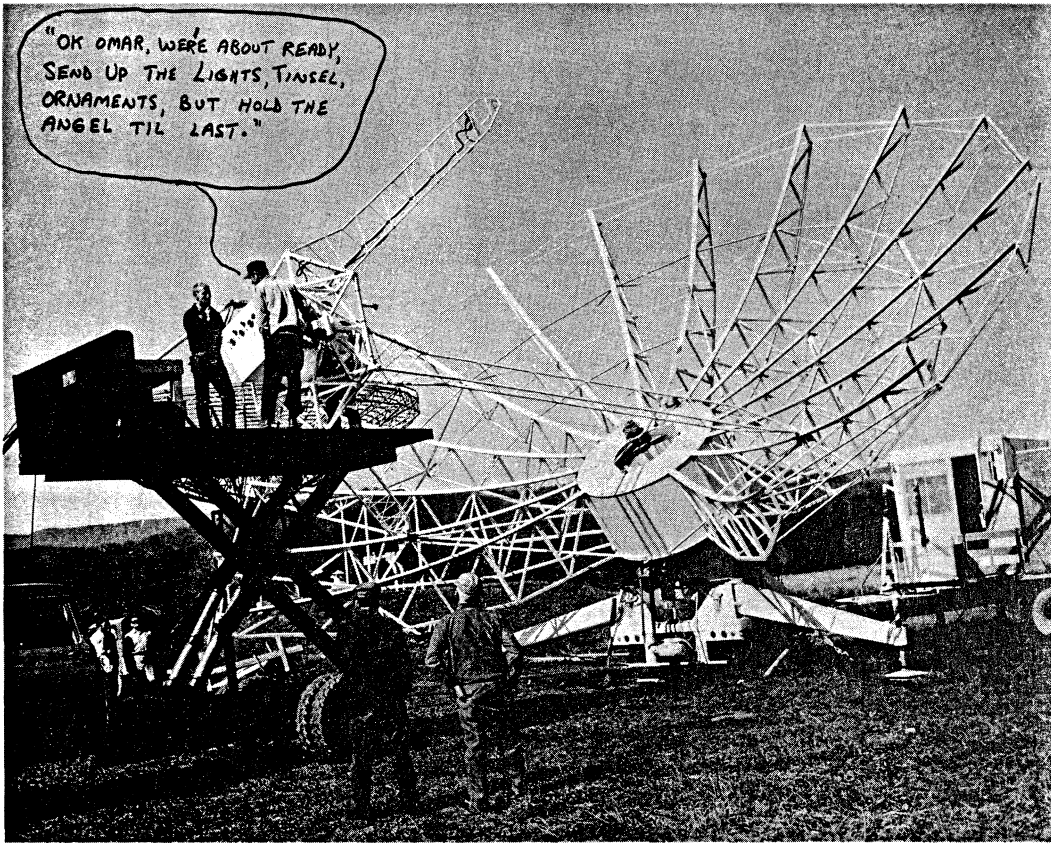
THE 40' MOBILE, RADIO
TELESCOPE, SET-UP FOR
OPERATION.



THE V.E.B.-IFS-M

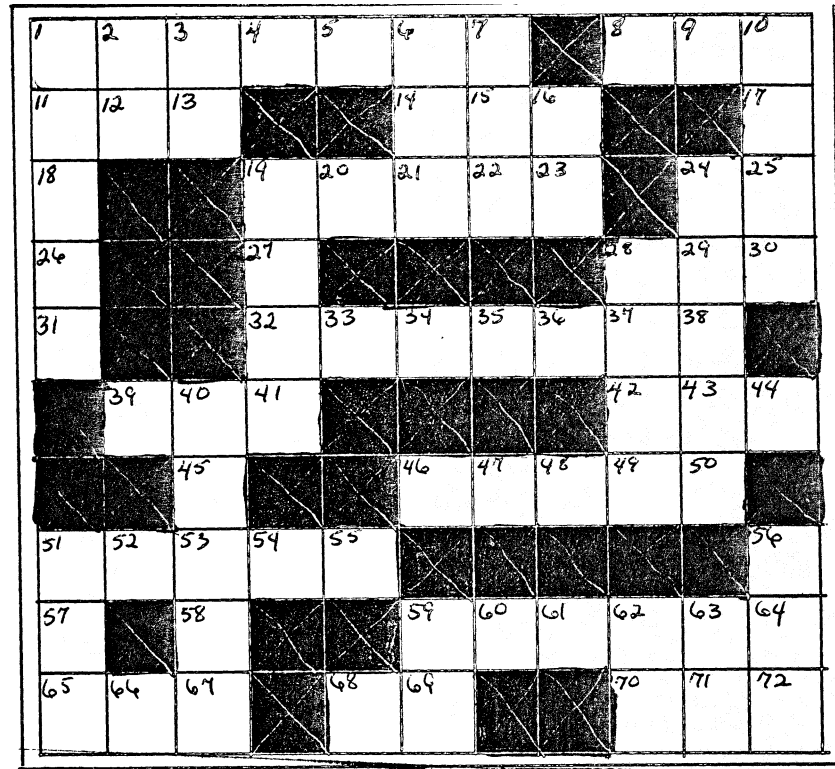
Anyone who has ever installed a radiometer on a telescope is probably familiar with the sensitivity of scope operators about Radio frequency interference. Well, through the grape vine I understand that on the day after initial testing of the VEBIFSM, on site, one of the larger telescopes registered emotional complaints about the microwave link clobbering some observations. ...Ring, Ring..."VEE BIFF SUM _____ Kuhlken speaking." (Bandpass limited, piercing squall of irate man)..."But....but....why y____. Hold it. Hold it....why you.....it can't be us, is not....Yeah, well same to you, buddy..now listen, listen I tell ya.....WE'RE NOT EVEN TURNED ON TODAY! I said...that's right.....I'm sure.....Everybody is off celebrating yesterday's success. I'm only here cause I locked all my keys in my tool box, and can't start the car or get into my house.....wise guy!"

And so forth and so on. So now you know.



HOW TO LOOK
 BUSY WITHOUT
 EVEN TRYING

by Sue Miller



ACROSS

1. Our own film star
8. Heads OBSERVER Staff
11. Thinking Machines
14. We're operated by them
19. Answers and rings for Green Bank
24. Logan's partner (initials)
28. When Janet is away, she saves the day (initials)
32. Where does Altenhoff buy his do-nuts?
39. Leading lady of The Kitt Peak Story (initials)
42. In drinks it's fine, but on telescopes and highways....
46. Though Ph.D. is handy, his friends call him _____ (rhymes with handy)
51. You can usually find his bike parked beside the ivy in CV
59. Man on the mountain (Ariz.)
65. A radio telescope is just a big ____
68. Leave out the "Yin" and you have his initials
70. With two g's he belongs to us, but with only one, just a big pig

DOWN

1. His signature appears on very important papers
2. Ward which Ellen Dillon will visit soon
3. Can be reached at G.B. 271. (initials)
6. What you get in Tucson sun
7. Sits in CV lobby
10. What we are most frequently called
16. Pronoun
19. Real name is Lester, but he's better known as _____
24. C'ville's week-end operator
28. When he isn't drawing, he's projecting
40. When it has one r we observe it; but with two, we ask it to cash checks
51. First name is James, found in G.B. lab
56. Draws pictures for the Observer
59. Dr. Roberts' British helper
62. Can be found in CV digital lab (initials)
63. What we all want to do by 5

APTITUDE TEST

Give yourself 15 minutes for the following test and grade yourself as follows:

18 - Genius 14 - Normal 10 - Sub-Normal 8 - Idiot

1. If you went to bed at 8:00 at night and set the alarm to get up at 9:00 in the morning, how many hours of sleep would that permit you to have?
2. Do they have a 4th of July in England?
3. How many birthdays does the average man have?
4. If you had only one match and entered a room in which there was a kerosene lamp, an oil heater, and a candle, which would you light first?
5. Why can't a man living in Winston-Salem, N.C., be buried west of the Mississippi?
6. Some months have 30 days, some have 31. How many months have 28 days?
7. If a doctor gives you 3 pills and tells you to take 1 every half hour, how long would they last?
8. A man builds a house with 4 sides to it, and it is rectangular in shape. Each side has a southern exposure. A large bear comes wandering by. What color is the bear?
9. How far can a dog run into the woods?
10. What four words appear on every denomination of U.S. coin?
11. In baseball or softball, how many outs in each inning?
12. I have in my hand 2 U.S. coins which total 55¢. One is not a nickel. What are the coins?
13. A farmer has 17 sheep. All but 9 die. How many were left?
14. A rooster, facing north, lays an egg on a pointed roof. Which side would it roll down?
15. How many four cent stamps are in a dozen?
16. Take 2 apples from 3 apples. What would you have?
17. An archeologist claims he found some Roman gold coins dated 46 B.C. Is this possible?
18. A woman gave a beggar 50¢. The woman is the beggar's sister, but the beggar is not the woman's brother. How can this be?
19. How many animals of each species did Moses take on the Ark with him?
20. Is it legal in the U.S. for a man to marry his widow's sister?

ANSWERS TO APTITUDE TEST

1. 1 hour
2. Yes, July 4th is a calendar date.
3. 1 per day
4. The Match
5. Because a living man would object to being buried anywhere
6. All months have at least 28 days.
7. 1 1/2 hours
8. White-the only place a rectangular house could have a southern exposure on all sides is at the North Pole since everything is south there-thus a polar bear.
9. All the way United States of America
10. 6, 3 per team
11. 50¢ & 5 ¢. It says only one is not 5¢ but the other can be.
12. 9
13. Roosters don't lay eggs, hens do.
14. 12
15. 2
16. No. B.C. means Before Christ and was only used when the new calendar system was adopted AD or after Christ. They didn't know about Christ in "B.C."
17. They are sisters.
18. None-Noah had the Ark
19. Impossible. His widow means he is deceased-refer again to question 5.
- 20.

ANSWERS

ANSWERS TO CROSSWORD PUZZLE

- ACROSS
1. Roberts
 8. Don
 11. IBM
 14. AUI
 19. Janet
 24. N.A.
 28. R.A.O.
 32. Canteen
 39. E.S.K.
 42. Ice
 46. Sandy
 51. Clark
 59. George
 65. ear
 68. W.W.
 70. Hogg
- DOWN
1. Riffe
 2. OB
 3. B.M.
 6. Tan
 7. Sue
 10. NRAO
 16. It
 19. Jack
 24. Nancy
 28. Reid
 40. Starr
 51. Coe
 56. Peg
 59. G.W.
 62. R.H.
 63. go

THE STAFF OF THE OBSERVER HOPES THAT
WE MAY OBSERVE FOR EACH OF YOU

A VERY
COOL YULE ETC.

AND A
FRANTIC FIRST



AND, IN CASE WE DON'T PUBLISH AGAIN, BY THEN...
TO HAVE A JOYOUS FOURTH, PICK-UP A FIFTH ON THE THIRD.