The OBSERVER

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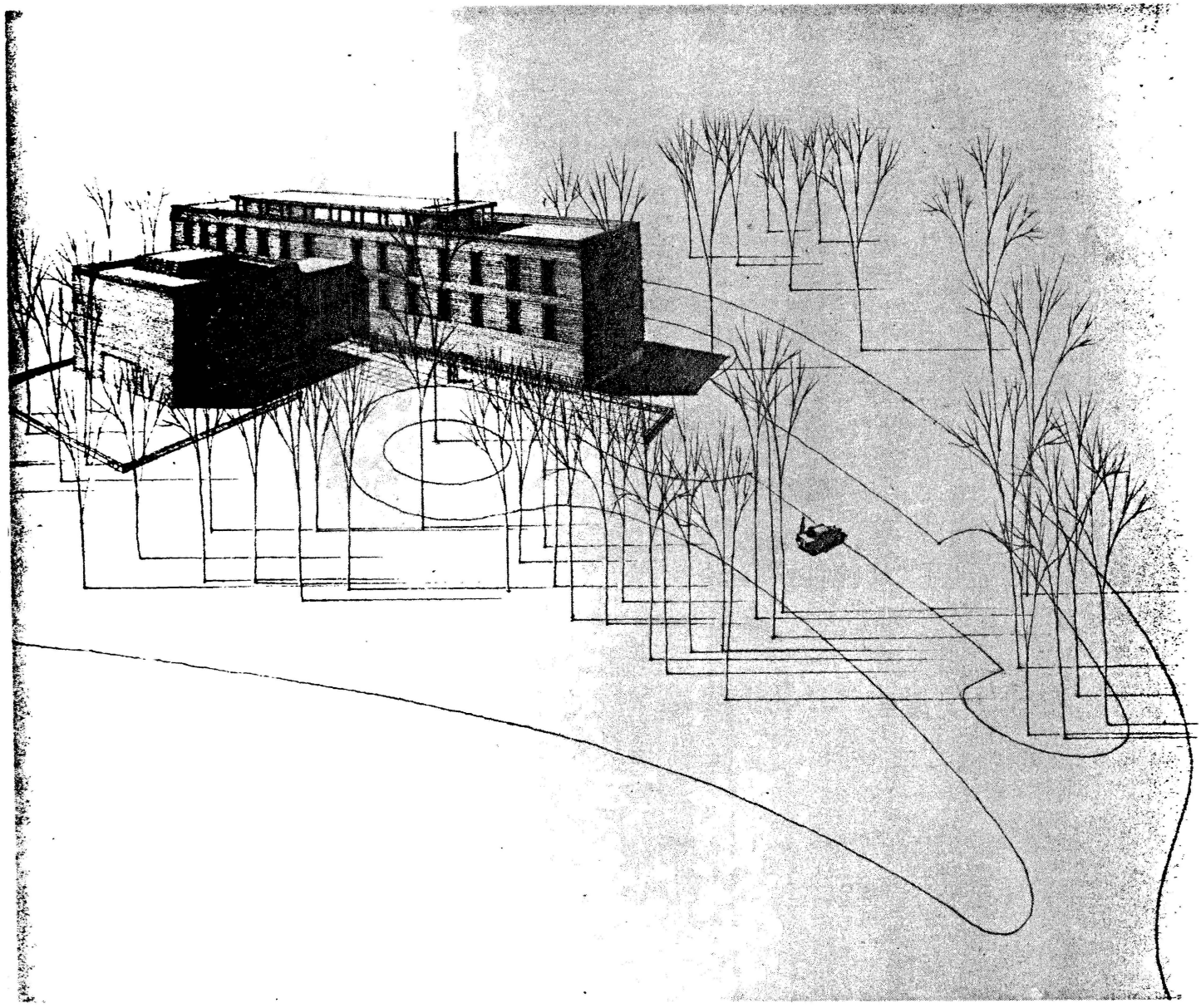

Artist's Conception of the New Lab

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Editorial Comment

As of this moment, September 23, I have not had much luck in finding a successor to my position. I have surveyed my viewpoints concerning the future of the Observer. It need support - from the Recreation Association, from the employees, from the administration. The situation is not bad. In fact, just a little effort in a positive direction could serve to perpetuate the fuel for the Observer's flickering flame. As I see it, the future of our paper is potentially very bright. In the area of employee - employer relations it remains a definite asset.

An abundance of news is in the making for the next three months. Dedication of the 140' telescope, the completion of the 36-foot telescope, and the opening of our "sister" laboratory at Charlottesville could be developed into excellent feature articles (that's all you need for a solid framework). And then what? With the NRAO operating at Green Bank, Charlottesville, and Kitt Peak there will arise a most definite need for the Observer. More news will come available for the paper and the personnel will be interested more than ever in what is taking place at the separate facilities. However, more time and effort will be required to gather this information. If the Observer is to remain and essential publication, perhaps some monetary payment would provide added incentive for some prospective Editor.

My time as a Co-op student at the NRAO comes to an end as I am writing these words. Since I shall not be able to say, "So Long" to all personally, I take this opportunity to do so. I have enjoyed working for you and with you and also serving as your Editor. This being my last issue, I would especially like to thank those who contributed to the Observer. All employees are urged to SUPPORT THE OBSERVER.

Yours respectfully,

Ellis E. Remsberg
Editor

Progress At Charlottesville

The construction phase of the new laboratory on the University of Virginia campus is moving steadily toward the completion date. According the the contract, the building will be ready for occupancy the first of December, 1965.

An up-to-date description of the progress tells us that the outside masonry work, including the "penthouse" is virtually completed. All of the brick exterior, rough partitioning, flooring, and roofing has been finished. Special pictures of the structure, such as the computer area with elevated floor, storage facilities, and adjoining offices and the library, where the erection of the roof and installation of a skylight are in evidence, are currently shaping up very nicely. In conjunction with the library, the portion linking the two segments of the structure (see pictorial views, May issue and this page) will house a glassed in periodical reading room located directly above the similarly glass enclosed entrance lobby.

As of August 18 these major items have been accomplished: installation of mechanical equipment on the 1st floor; application of the white finish plaster throughout most of the lab; erection of the back entrance portico; air conditioning apparatus installed; and partial completion of some interior features of the 112 seat auditorium to be complete with raised projection recess, anteroom services, and a versatile stage area for film, lecture, or instructional purposes.

Now that the exterior walls have been cleaned and the coping, window frames, and windows are intact the outer touches seem to be reaching finality. Concerning the penthouse structure (and don't be misled by the term!), it will enclose the air conditioning equipment and storage rooms for subsequent roof work. It will be possible to carry out light-weight antenna experiments atop this region. The second floor electronics labs, the scientific and administrative offices on the third level and offices of associated personnel require mostly finished carpentry and painting. Arrangements are currently being made to bring office furniture to Charlottesville ahead of time. When the offices are ready, this equipment willbe moved in immediately.

How much can be said about the conditions of the adjacent grounds, except that until a later date the area probably will remain a mass (mess) of scrapes, allied machinery, and temporary buildings. Because of this and the fact that trees surround the lab in its entirety, a good photograph with an uncluttered view can not be obtained. However, the architect is at work. Some landscaping has been selected and the driveway curbing cement poured. A tree situated on a mound circumscribed by the driveway is not surviving too well, so University of Virginia grounds officials are taking constructive measures.

Continued --

Progress At Charlottesville (Continued)

Installation of the telephone equipment is to begin about October 1. Direct dialing facilities and two lines for direct communication between Green Bank and the new lab will be available.

The Final Construction Stage of Our New Charlottesville Building
(See similar view in May issue)

NRAORA ACTIVITIES

September 2 ended a very fine softball season with lots of fine action throughout the entire season. From June 29 through Sept. 2, twenty games were played. Jim Coe's team won four and lost nine games. Jim Simmons' team won seven and lost six games. Carl Davis' team won nine and lost four games. Since softball season is over and it's too early for basketball, we have touch football going to condition us for the hard game of basketball. Tuesday evenings will find a small group running up and down the recreation field looking for the pass that was never thrown. Anyway, it is fine to keep the unwanted pounds from gathering around the waist line.

Since activities have slowed down at the recreation area, the custodian Mr. Shears) will be on duty only Saturdays and Sundays. Mr. Shears has been very faithful and helpful to make our summer activities very pleasant. Hats off to Mr. Shears !!!

The woodland archery range is now completed. The range consists of one warm-up target and fourteen other different targets. Tom Carpenter, Dave Williams, Leroy Webb, Ben Gragg and others have done a fine job on this range.

Anyone for a game of hand ball??????? Challenge - call ext. 229 (CD).

300' News, Shep Sutton

Since the last issue of the Observer the variable speed control system has been perfected. Initially it would run too fast or not fast enough. After adding a reduction gear we were able to control the telescope speed properly for Dr. Westerhout's program of galaxy mesurements. By reversing the direction of the variable speed mechanism, and by being able to control the speed, we were able to zigzag across the galaxy. From current evidence it was a successful endeavor.

The 300' is currently being utilized to continue Dr. Westerhout's mapping program with Kurt Riegal as "Field Commander-in-Charge", for Dr. Goldstein's Narrow Emission Line Program, and for Dr. Hogg's SCO X-Ray program (whatever that is).

In September, we begin a program for the Naval Research Lab.

Dave Van Horn is back with his 2X4 groundhog exterminator. We haven't seen a whistlepig around since his return.

The DNLY fish story we have is that now Ralph High won't have to fish for his trout. The well-liked operator resigned and according to an article in the Monterey, Virginia, Highland Recorder, he has been appointed Director of Marketing for the Virginia Trout Company, Inc. and will coordinate the marketing activities of the company's 96 Eastern Seaboard distributors. It seems a far cry from operating a telescope.

No other fish stories, no babies, no falls from ladders, no new cars so.... El rey lo deseo!

Lab Gab

The lab would like to say goodby and good luck to the students that are leaving for school and welcome to the students returning to work. The returning students, who will work at various places in the lab are: David n, Jeff Dunbar, Jim West, Bill Lowman, and Skip Thacker.

The lab is anxiously waiting and waiting for its new Carryall.

Dr. Shalloway announced in the Electronics Division meeting last week that Dr. Sander Weinreb is scheduled to become the head of the division on October 20.

Front End Group

The new engineer for the low noise lab is Claude Bare, who will be no longer with the digital lab. Other new faces are Tom Dunbrack, a new technician recently discharged from the Navy, and Skip Thacker, a co-op transfer from the digital lab. (Looks like Coach Bare is taking part of his staff with him.) The projected completion date for the autocorrelator continuum front end (known affectionately as "The Bare") is Oct. 4. Rumor has it that some of the ambitious front end technicians have started re- bling the focal point of the 300-ft. Maybe they just want to see if it is still there. Last but not least is George Behrens' new $32,000 coffee pot -- he claims it is actually a nitrogen cooled ramp in disguise.

Millimeter Lab

Dr. Mezger is back from Germany. The -channel back end is off the 140-ft. and in the lab for modification by C. Bare and G. Ertell. The 6 cm front end is in storage after the line experiments on the 140-ft. A 9 mm narrow-band receiver is being packaged for the 36-ft. and 140-ft. telescopes. Also in the works is a 9 mm broad-band receiver which, except for the frequency, is identical to the previously built 3 mm receiver that is undergoing modification of the mixer at Advanced Technology Corp. in Timonium, Md. Rama Menon has been working on design studies for a millimeter wave crystal video detector. Although the noise temperature of the detector is computed to be enormously high, its tremendously wide bandwidth may make it practical for some applications.

Back End Group

Jim Dolan recently attended the IEEE Wescon Convention on the West Coast. He also visited Aertech, who are making the tunnel diode amplifiers for the 2 cm and 6 cm systems. The group is finishing up the back end for the tunnel diode receiver.

Digital Group

Bill Vrable has an infected kidney removed the last of August. He is recovering rapidly and is expected to be back to work before long. John Parker left and is now with Hewlett-Packard in Huntsville, Ala. Andy Roger says that he is running around like a chicken with its head cut off trying to do the work of three men.

Claude Bare is leaving the digital group to head up the front end group. Glen Ertell, formerly with G.E. (ha, same initials), is taking over the digital group (which has officially been renamed the output group). The 100-channel autocorrelation receiver is to be moved from the 300-ft. to the 140-ft. The lab is preparing the

Continued on next page...

Digital Group (Continued)

Digital for NRL's use on the 300-ft.

Fix-It-Shop

Things are o.k. here - confused and rushed at times but things are getting smoothed out. The P.M. (preventitive maintenance) program is getting into full swing. The Electro International will be dragging in test equipment regularly (every 6 months) for a periodic checkup. It is hoped that this will keep the equipment always in best working order. Walt, Ken, and Steve are taking their bowling seriously. As of late they have been giving the fellows at Elkins some stiff competition (well, they won one of their games). Good luck fellows.

The Co-Operative Student Program

Many persons at NRAO have asked me and other co-op students about the nature of our work-study program. The Observatory employs at the moment about 12-15 co-op students from 4 schools, Cincinnati, Drexel, Georgia Tech, and Virginia Tech. normally the students alternates in school and industry on a 3-month or 6-month schedule. This type of training is continued until the senior year (some colleges have graduate co-op programs) and the entire time spent in both school and industry is roughly five years or one more year than as required for regular students.

The program itself was begun in 1906 at the University of Cincinnati. Today many colleges participate in the program, e.g., VPI and about 900 co-ops employed by more than companies and government agencies. Students in engineering curricula blend especially well into this program but courses such as mathematics, physics, business administration, etc., are also included. In order to enroll in the co-op program the prospective student must attain a fairly good scholastic average and maintain those grades for the remainder of the time. If he fails to show evidence, through academic and industry performance, of his ability to complete the requirements for a degree in his chosen field of study and to perform satisfactorily the work required of a professional in this field, he may be eventually dropped from the program.

To actually understand the co-op student program and its function the major objectives must always be kept in sight.

Major Objectives

As our society becomes more and more complex, greater pressures to understand and cope with these complexities are placed upon those who are to assume positions of leadership. At the time, our technology and all areas of knowledge continue to expand. Fields of study which were virtually unexplored ten years ago are now major areas of specialization. The training and development of students, who are ably trained in a field of specialization and, at the same time, are keenly aware of the many factors outside of their sphere of study which affect and mold the course of local and world events as well as their own lives, is the challenge now faced by our engineering colleges and universities. The Co-operative Program attempts to meet this challenge for students of high scholastic ability.

Continued on next page ....

Major Objectives (Continued)

The co-op student is placed in a position which gives him an opportunity to actually work in his chosen field with experienced engineers and scientists. In addition to gaining technical experience related to some of the courses which will be taken in school, he becomes aware of many of the practical problems which must be considered by the present-day engineer and scientist in reaching the solutions of the technical programs of our space age society.

Perhaps of even greater long range significance is the opportunity to learn, through experiences, the importance of human relations in industry. As a full-fledged member of a working team, he quickly becomes aware that he can make his greatest contribution in a group which works together harmoniously. The co-op then recognizes the importance of developing a sincere respect for the experience and opinions of others and appreciates receiving a similar response from his co-workers.

Also he will learn the value of an education and how it will contribute to his development in the social and technical spheres of his life.

Though not a major objective of Co-operative Education, an inevitable by-product is the financial assistance available to him. Most employers pay salaries which enable students to have enough to pay a large part of their expenses. He, thus, receives excellent training in the management of his personal finances. It must be recognized, however, that financial factors are not given primary consideration in the placement of Co-operative students in industry.

Student Status

Placement is handled very carefully with the educational needs of the student as the primary factor considered. In order to provide sequential development of his abilities it is desirable that the co-op will remain with the same employer throughout his co-op experience unless extenuating circumstances force a change. This is an advantage to the employer particularly. Many students just graduated from college seeking jobs in industry (especially true for engineers) must be entirely trained in their new job status at the employer's expense and often the graduate learns that his "book knowledge" is not at all practical if even applicable. The co-op student has already completed this orientation procedure and usually he is ready to jump into that new project or phase of work with a minimum of supervision and adjustment.

Concerning the status of the co-op during industrial periods, he is considered to be a full time employee of the company or agency for which he works. As such, he is subject to all of the employer's rules and regulations covering employees in his catagory. In some instances, co-operative students are placed in a separate classification and in others are worked into the regular job classifications used for employees doing the same type of work. He is expected to live up to these conditions explicitly.

With few exceptions the co-op student program at NRAO has followed this general pattern. Students are under the auspices of Dr. William Howard and are assigned to certain staff menbers or a particular section in the Electronics Lab.

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Student Status (Continued)

The Co-op Student Program should not be confused with the Summer Student Program. They are composed of entirely different breeds of students. Participants in the Co-op Program, as a rule, noted more for their efforts to learn through their work, whereas the summer students apply only what they have learned through a formal education. Then, too, the status of the co-op as an undergraduate cannot be compared with that of a graduate student. The co-op's academic excellence (or lack of it) differs possibly from that only of the summer student in that it has not been developed as fully.

Better educational working opportunities for the co-op student is a point that may need to be emphasized at the Observatory.

However, the co-op who can complete the job, whether dull or fascinating, with accuracy, a fair amount of speed, and a good humor is definitely an asset. Often, too, a little self-initiative beyond and above the call of duty can lead to greater and a more rewarding co-op experience for the student.

I for one am wholeheartedly in support of the Co-op Program.

7040 News, Jackie Plyler

Well it looks like someone else is sporting a ring on that special third finger on the left hand. Congradulations Sandy se and Al Braun! We're all sorry to see Al Braun leave this time because he won't be back. Lots of luck in the future.

It looks like we're getting a new member in our family. Jim West said he would like to try his charms on the computer.

Oh yes, Bill Ogden is on his way back to the old grind at Carnegie Tech.

The 7040 said something about Joe Greenhalgh taking Bill Ogden's place. We think Joe will work out just great.

At last !!!! We got our radio going again. It sure is nice to listen to music when you're working the graveyard shift!

I think Joe has a little bit of bad luck Saturday when he wrecked his car. I bet he's glad he's getting a new one.

The 7040 sighs for relief since all the summer students left. It doesn't have to clobber its memory around the clock.

Fiscal

"Snookie" took her vacation but didn't do anything exciting except perhaps "learn to cook".

Carl Kuehnert - people with 2 cars are a rarity but even fewer persons have 2 homes.

Don Hovatter has moved to the house formerly occupied by Hein Hvatum.

The Observatory has two "new" used vehicles for official transportation.

Students

Wade Poteet, Al Braun, Ellis Remsberg, all from VPI and Jim Pensinger of Georgia Tech have completed their terms as Co-op students at NRAO. Gary Bream, Drexel, and Mike Byorick, Ga. Tech, (both spelunkers) have returned to their respective schools.

Bill Lowman and Jeff Dunbar of Ga. Tech. are here for three months as are Jim

Continued on next page .....

Students (Continued)

West, Dave Sun, and Bob Swensson, VPI. Skip Thacker from U. of Cincinnati has returned to Electronics Lab.

Kathy Moyd and Amar Maheshwari, the last of the summer students are now at U. of Maryland and U. of Chicago, respectively, engaged in graduate work.

Monitors

ss Tacy and Brown Cassell went to see Baltimore - Cleveland baseball game over Labor day.

Bob Hall attended the fair at Monterey and ended up wearing dark glasses.

Points of Interest

Dr. Bertil Hoglund has concluded his stay with us at NRAO. His many interest and characteristic congeniality, as well as his scientific competence have left a fand impression in the memories of his co-workers. He joins his family in Sweden and bids farewell to a region he liked so much.

Wade Poteet wishes to announce "I could not discover any evidence of tool theft on the part of Omar Bowyer. I apologize mer".

The Cass Liquor Store is a stupormarket. Don't drink while you drive, you might spill it.

Harold Crist, part time scope operator and local school teacher, is in charge of the High School's Drivers Training Program. On Tuesday morning, Sept. 7, he and his pupils observed 100 traffic violations in a period of one hour. Speed, lack of turn signaling, failure to stop, and four people in the front seat were several they observed. Some of these violations involved Observatory personnel. "This is twice the number observed in a similar period last year."

Heifer heisting is a serious offense in this state.

Concerning A.U.I. Trustees Scholarships, a memorandum was issued last month containing detailed information. If you have a son or daughter in high school who is contemplating college, this scholarship could cover a large portion of the financial burden. Copies of this memorandum can be obtained from Dr. Howard, room 206, lab.

Observatory Wives' Tea Cancelled for October

There will be no Observatory Wives' Tea scheduled for the month of October due to the fact that both the Trustees' Meeting and 140-ft. Dedication will necessitate the use of the Residence Hall. The November meeting will be published in the next Observer.

Answer to "Riddle of the Sphinx

Man. The correct interpretation follows man childhood (on all fours, before learning to walk) to maturity (two sturdy legs) to old age (getting about with the aid of a cane). Fortunately the riddle was solved, and the city of Athens saved.

To Read The Clock In The Sky

It is apparent that television hasn't kept everyone indoors at night. A considerable number of people still spend enough time in the open to be able to read the stars. We learned this after mentioning in the April Dodge News Magazine that we had tried, and failed, to recall a way to tell time by the Big Dipper. Star-watchers from all over have flocked to our assistance with their favorite formulas for reckoning the time.

Here's a method suggested by Dick van Dyke of San Pedro, California. There are three steps:

(1) Find the North Star and imagine a huge clock face in the sky with the star as its center. Find the Big Dipper and the two stars of its bowl that point to the North Star. Consider them the hour hand of the clock. Subtract the time indicated by the pointers from 12. Multiply the difference by 2 and add 11. Remember the result.

(2) Calculate the number of months from March 21 to the current date. (Don't be afraid of fractions. The finer you figure it, the more accurate you'll be.) Multiply the months by 2.

(3) Subtract (b) from (a). The difference is the approximate Standard Time. Taking the illustration as the position of the stars and the date as August 1 the calculation is:

(a) 12 - 7:30 = 4 1/2 hours x 2 = 9 + 11 = 20

(b) March 21 to August 1 = 4 1/3 months x 2 = 8 2/3

(c) 20 - 8 2/3 = 11 1/3 or 11:20 p.m.

At certain times of night at certain season, (C) will seem to make no sense, yielding numbers like 13 or 26. When that happens, subtract 12 or 24, to get conventional clock time.

H. W. Gore, of Richfield, Utah, uses a different calculation. "Take the time indicated by the Dipper's pointers," he writes. "Add the number of months since the first of January, to the nearest 1/4 month. Multiply by 2 and subtract from 16 1/4. If the number is larger than 16 1/4, subtract from 40 1/4. The answer is in the number of hours after noon."

Continued on next page .....

To Read The Clock In The Sky (Continued)

Applying Mr. Gore's method to the illustration, the arithmetic is:

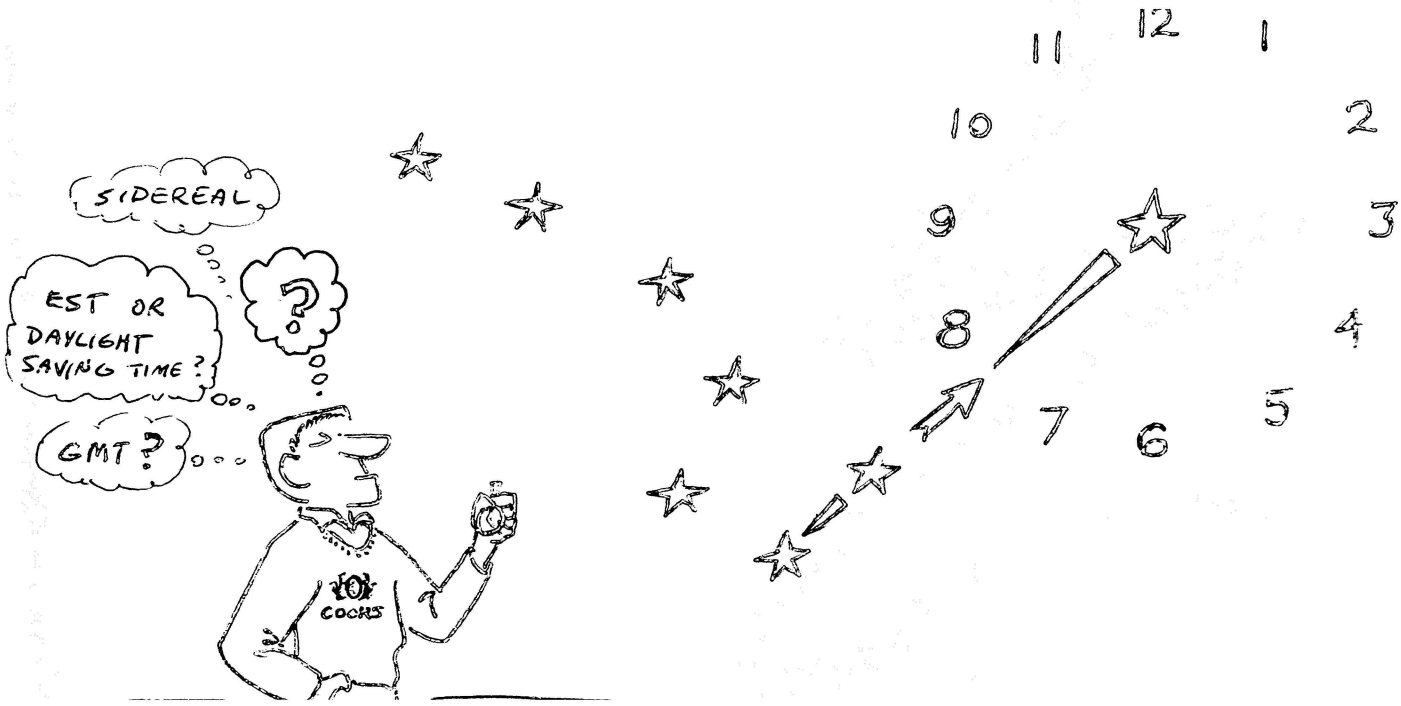
7: + 7 (months) = 14 1/2 x 2 = 29
40 1/4 - 29 = 11 1/4 or 11:15 p.m.

Carl M. Murphy, Santa Rosa, California, dispenses with the mathematics suggests instead that the outdoorsman study the stars until he can read the time at a glance. "A quarter turn of the stellar clock tells you how the stars will group 6 hours hence, or at this same hour three months from now. A complete turn can represent either 24 hours or 12 months.

The sportsman will be helped if he studies the positions of the constellations in his own locality and at the season he camps or hunts so he can instatly determine the direction of north from Polaris and roughly estimeate by the position of the Dipper the time," Mr. Murphy says.

L. J. Chapman, Franklinville, New York, referred us to a book "The Stars -- A new way to see them", by H. A. Rey (Houghton Miffin). On pages 124 and 125, there is a chart which shows how to find star time. The arithmetic is done for you and printed in a table. It can give results within a minute or two of the right time. We can't reproduce it here, so we recommend you directly to the book, not only for time-keeping advice, but for other fascinating information about the stars.

The accuracy of any star-time method is affected by where you are in your Standard Time Zone. If you live toward to the eastern edge of a time zone, the stars are few minutes ahead of the clock. Near the western edge, they are behind. These differences never vary; with a little practice you will soon learn to allow for them.



Movies for October

October 4 - Seven Brides for Seven Brothers

Starring: Jane Powell
Howard Keel in color

When the eldest of seven uncouth brothers in the Oregon Territory brings a wife home to their farm, the others get restless; so he helps them steal themselves some women ..... A triumph of musical comedy written directly for the screen, with bright songs and hilarious foot-stompin dancing neatly integrated into the story.

October 18 - Bridge on River Kwai

Starring: William Holden
Alec Guinness
Jack Hawkins
Sessue Hayakawa in color

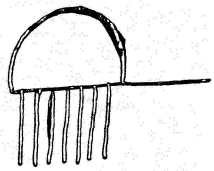
This is a gripping and highly entertaining film. It contains several superb performances, and certainly is not wanting for action. Winner of Academy Awards for Best Picture, Best Actor (Guinness), Director, Cinematography, Screenplay, Musical Score, and Editing.

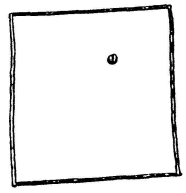
Ads

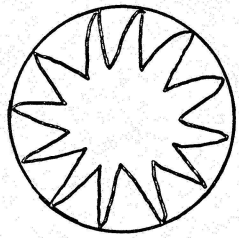
For Sale
52 lb. Fibre glass bow with 3 target arrows
Fibre glass fishing arrows and fishing reel.

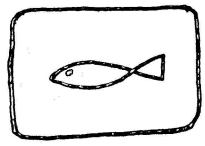
See J. Dolan - Lab.

Droodles

a) 

b) 

c) 

d) 

a) Octopus signaling for left turn.
b) Picture of a ghost with cider in its eye.
c) Vicious circle.
d) A rich sardine.

Problem

Arrange three 7's so that they equal 20.

Need a place to stay?

Try the Harris House in Green Bank. Food is good and there is plenty of it.