

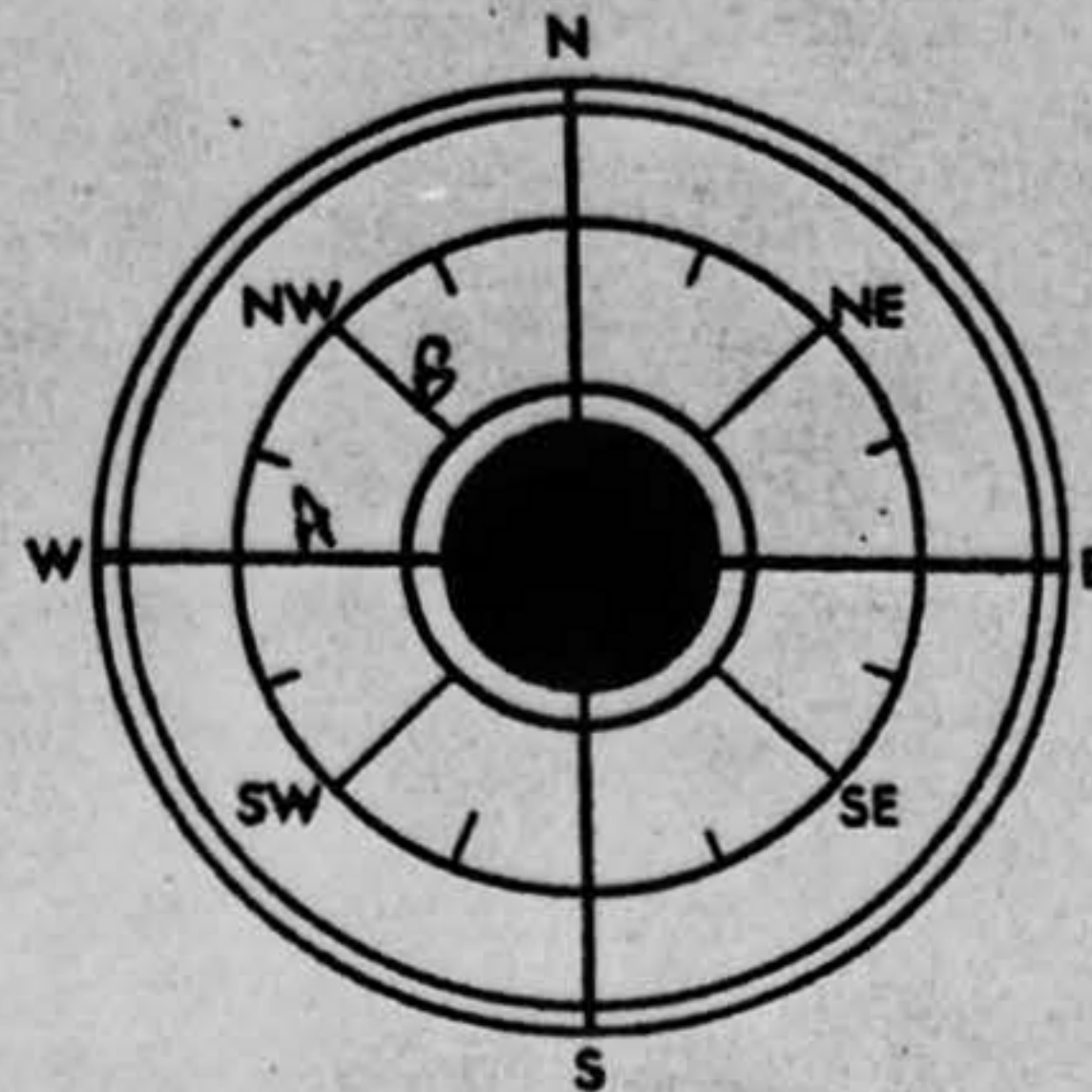
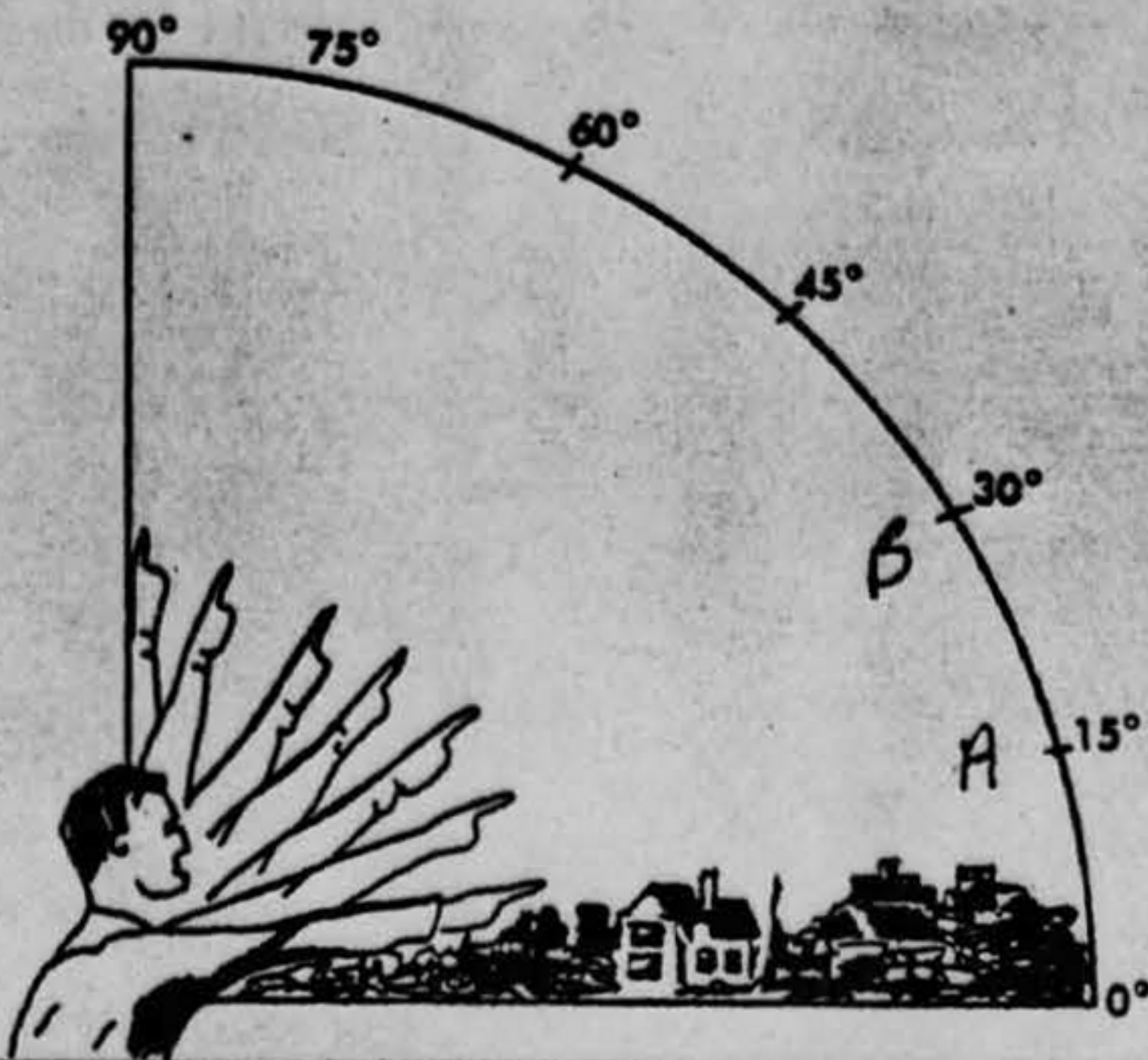
PROJECT 10073 RECORD CARD

1. DATE 14 Jul 62		2. LOCATION Evanston, Illinois		12. CONCLUSIONS ☐ Was Balloon ☐ Probably Balloon ☐ Possibly Balloon ☒ Was Aircraft ☐ Probably Aircraft ☐ Possibly Aircraft ☐ Was Astronomical ☐ Probably Astronomical ☐ Possibly Astronomical ☐ Other _____ ☐ Insufficient Data for Evaluation ☐ Unknown	
3. DATE-TIME GROUP Local 2030DLS GMT 15/0130Z		4. TYPE OF OBSERVATION ☒ Ground-Visual ☐ Ground-Radar ☐ Air-Visual ☐ Air-Intercept Radar			
5. PHOTOS ☐ Yes ☒ No		6. SOURCE Civilian			
7. LENGTH OF OBSERVATION 5 min		8. NUMBER OF OBJECTS one		9. COURSE west	
10. BRIEF SUMMARY OF SIGHTING Obj size of 707 & like 707 w/lights on. Yellow lights. Estimated alt 3500-500, maneuvered. No flashing of lights.				11. COMMENTS All characteristics of a/c: maneuvers, speed etc. Nothing contradictory to analysis as a/c.	

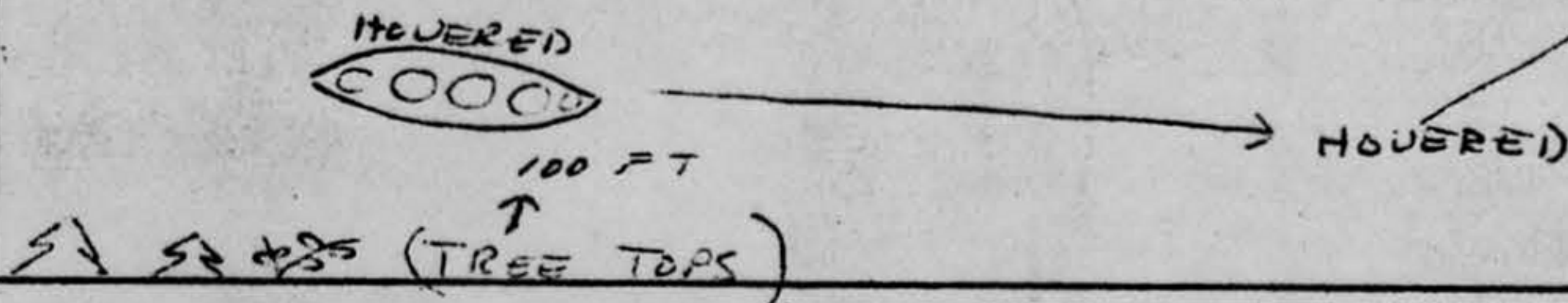
Official U.S. Air Force

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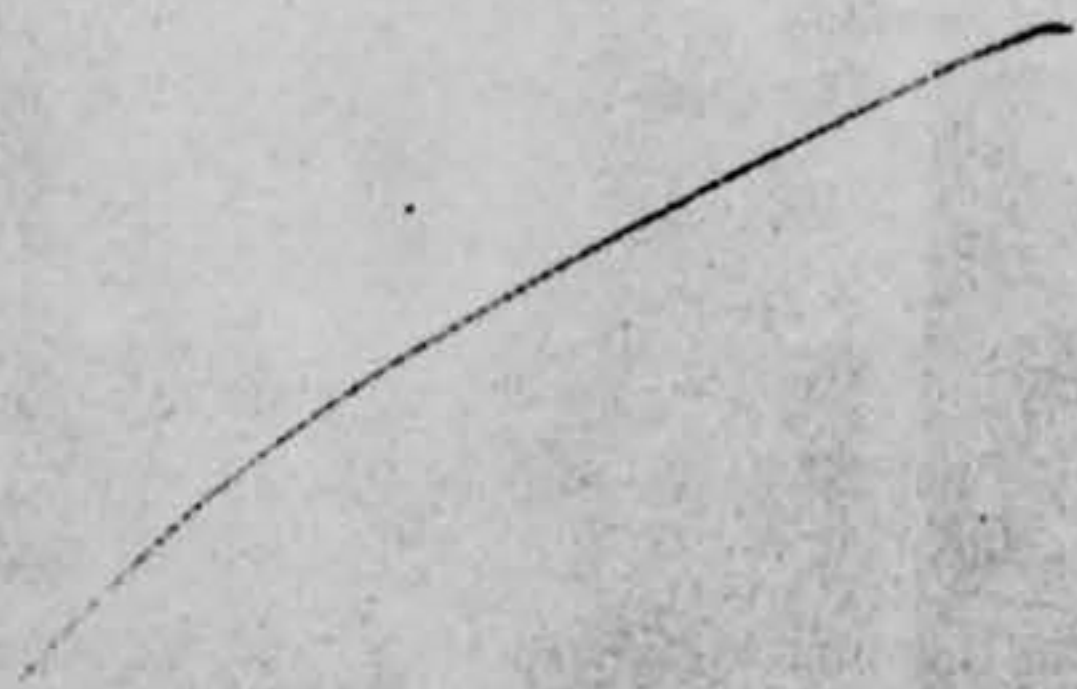
27. In the following sketch, imagine that you are at the point shown. Place an "A" on the curved line to show how high the object was above the horizon (skyline) when you first saw it. Place a "B" on the same curved line to show how high the object was above the horizon (skyline) when you last saw it. Place an "A" on the compass when you first saw it. Place a "B" on the compass when you last saw the object.



28. Draw a picture that will show the motion that the object or objects made. Place an "A" at the beginning of the path, a "B" at the end of the path, and show any changes in direction during the course.



29. IF there was MORE THAN ONE object, then how many were there? _____
Draw a picture of how they were arranged, and put an arrow to show the direction that they were traveling.



UFO form continued

Page 6

30. Have you ever seen this, or a similar object before. If so give date or dates and location.

NO

31. Was anyone else with you at the time you saw the object? (Circle One) ☒ Yes ☐ No

31.1 IF you answered YES, did they see the object too? (Circle One) ☒ Yes ☐ No

31.2 Please list their names and addresses
[REDACTED] M.D. (HUSBAND)

SAN FRANCISCO

(ALSO OTHERS AT CONCERT ALTHO NAMES AREN'T KNOWN)

32. Please give the following information about yourself:

NAME [REDACTED] Last Name First Name Middle Name

ADDRESS [REDACTED] City SE 74131 State CAL

TELEPHONE NUMBER [REDACTED] AGE 30 SEX F

Indicate any additional information about yourself, including any special experience, which might be pertinent.

I AM A MEDICAL WRITER & EDITOR, TRAINED
TO BE REALISTIC AND NOT GIVEN TO FANTASIES
OR IDLE IMAGININGS

MY HUSBAND IS A PHYSICIAN - AN EVEN
BETTER OBSERVER THAN I.

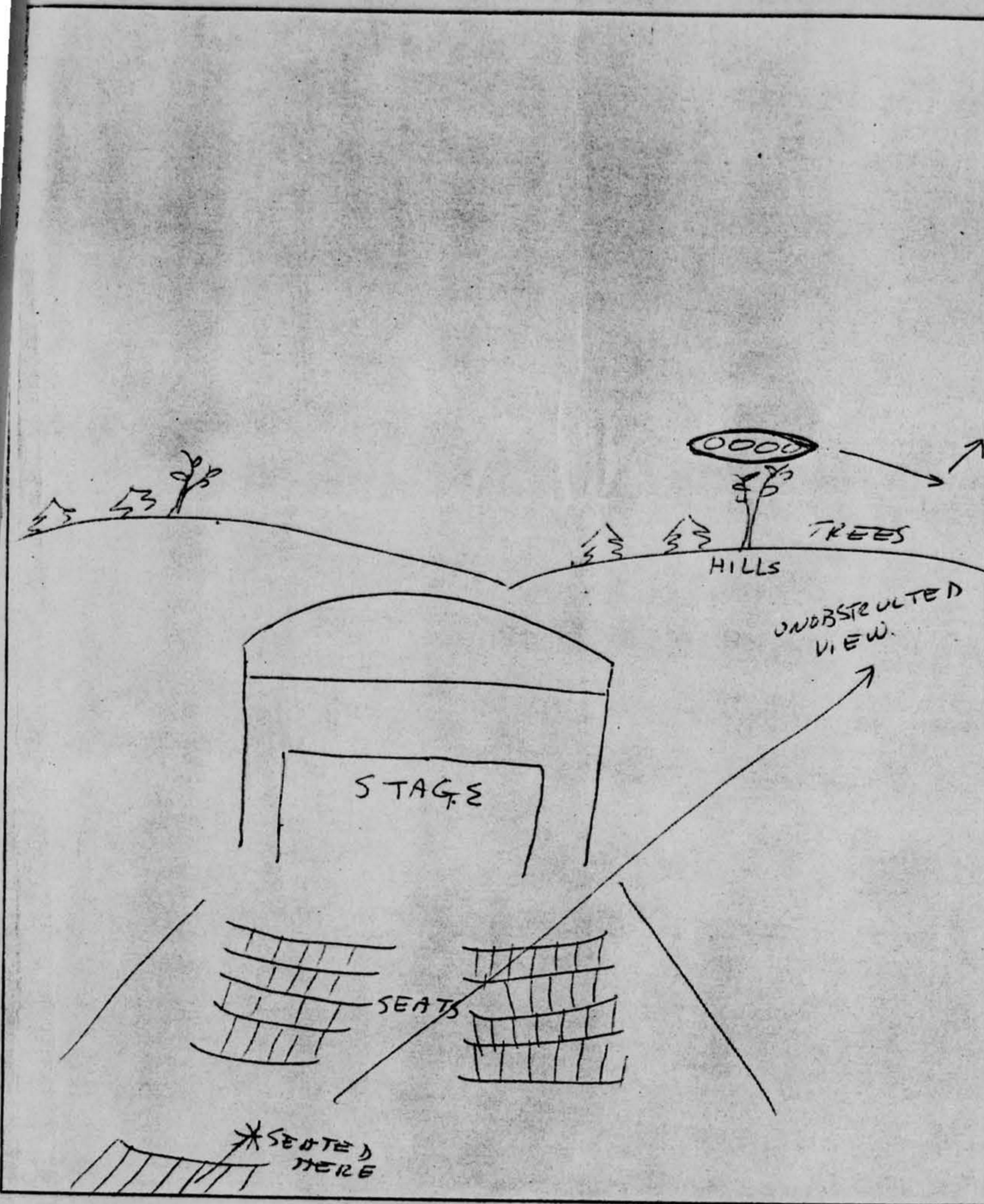
33. When and to whom did you report that you had seen the object?

Day

Month

Year

NOT PREVIOUSLY



Official U.S. Air Force

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34. Date you completed this questionnaire:

1 FEB 1967
Day Month Year

35. Information which you feel pertinent and which is not adequately covered in the specific points of the questionnaire or a narrative explanation of your sighting.

WE SAW THE OBJECT WHILE ATTENDING AN EVENING OUT-DOOR CONCERT IN PHILA'S FAIRMONT PARK.* THE EVENING WAS CLEAR & STILL. THE FACT THAT THE CRAFT MADE NO NOISE WAS OBVIOUS BECAUSE ONE IS AWARE OF EVERY EXTRANEIOUS SOUND AT A CONCERT & THE DISTANT RUMBLE OF TRAINS WAS CLEARLY AUDIBLE.

THE CRAFT APPEARED ABOVE THE TREES TO THE ~~LEFT~~ RIGHT OF THE STAGE, HOVERED, TOOK OFF TO THE RIGHT, " THERE, DISAPPEARED INTO THIS DISTANCE, REAPPEARED & HOVERED AGAIN FOR SEVERAL MINUTES.

(* OPERA WAS "TOSCA")

No Case Info Only

OFFICIAL U.S. AIR

Page 1

U.S. AIR FORCE TECHNICAL INFORMATION

This questionnaire has been prepared so that you can give the U.S. Air Force as much information as possible concerning the unidentified aerial phenomenon that you have observed. Please try to answer as many questions as you possibly can. The information that you give will be used for research purposes. Your name will not be used in connection with any statements, conclusions, or publications without your permission. We request this personal information so that if it is deemed necessary, we may contact you for further details.

1. When did you see the object?

July 1962
Day Month Year

2. Time of day:

9 30
Hours Minutes

(Circle One):

A.M.

or

P.M.

3. Time Zone:

(Circle One):

- a. Eastern
- b. Central
- c. Mountain
- d. Pacific
- e. Other _____

(Circle One): a. Daylight Saving
b. Standard

4. Where were you when you saw the object?

Nearest Postal Address

PHILADELPHIA

City or Town

PA
State or County

5. How long was object in sight? (Total Duration)

20
Hours Minutes Seconds

- a. Certain
- b. Fairly certain

- c. Not very sure
- d. Just a guess

5.1 How was time in sight determined?

WATCH

5.2 Was object in sight continuously?

Yes _____ No X

6. What was the condition of the sky?

- DAY
- a. Bright
 - b. Cloudy

- NIGHT
- a. Bright
 - b. Cloudy

7. IF you saw the object during DAYLIGHT, where was the SUN located as you looked at the object?

- (Circle One):
- a. In front of you
 - b. In back of you
 - c. To your right

- d. To your left
- e. Overhead
- f. Don't remember

FORCE UFO FORM

Page 2

8. IF you saw the object at NIGHT, what did you notice concerning the STARS and MOON?

8.1 STARS (Circle One):

- a. None
- b. A few
- c. Many
- d. Don't remember

8.2 MOON (Circle One):

- a. Bright moonlight
- b. Dull moonlight
- c. No moonlight—pitch dark
- d. Don't remember

9. What were the weather conditions at the time you saw the object?

CLOUDS (Circle One):

- a. Clear sky
- b. Hazy
- c. Scattered clouds
- d. Thick or heavy clouds

WEATHER (Circle One):

- a. Dry
- b. Fog, mist, or light rain
- c. Moderate or heavy rain
- d. Snow
- e. Don't remember

10. The object appeared: (Circle One):

- a. Solid lights
- b. Transparent
- c. Vapor
- d. As a light
- e. Don't remember

11. If it appeared as a light, was it brighter than the brightest stars? (Circle One):

- a. Brighter
- b. Dimmer
- c. About the same
- d. Don't know

11.1 Compare brightness to some common object:

THE OBJECT APPEARED TO HAVE SEVERAL EXTREMELY
BRILLIANT LIGHTS ALONG THE SIDE

12. The edges of the object were:

- (Circle One):
- a. Fuzzy or blurred
 - b. Like a bright star
 - c. Sharply outlined
 - d. Don't remember

e. Other THE EDGES WERE ABOUT
AS CLEARLY VISIBLE AS
THOSE OF A CAR ON THE
ROAD AT NIGHT

13. Did the object:

(Circle One for each question)

- | | | | |
|---|-----|----|------------|
| a. Appear to stand still at any time? | Yes | No | Don't know |
| b. Suddenly speed up and rush away at any time? | Yes | No | Don't know |
| c. Break up into parts or explode? | Yes | No | Don't know |
| d. Give off smoke? | Yes | No | Don't know |
| e. Change brightness? | Yes | No | Don't know |
| f. Change shape? | Yes | No | Don't know |
| g. Flash or flicker? | Yes | No | Don't know |
| h. Disappear and reappear? | Yes | No | Don't know |

Official U.S. Air Force

Page 3

14. Did the object disappear while you were watching it? If so, how? YES ; BY RECEEDING VERY QUICKLY INTO THE DISTANCE

15. Did the object move behind something at any time, particularly a cloud?

(Circle One):

Yes

No

Don't know.

IF you answered YES, then tell what

it moved behind: _____

16. Did the object move in front of something at any time, particularly a cloud?

(Circle One):

Yes

No

Don't know.

IF you answered YES, then tell what

in front of: _____

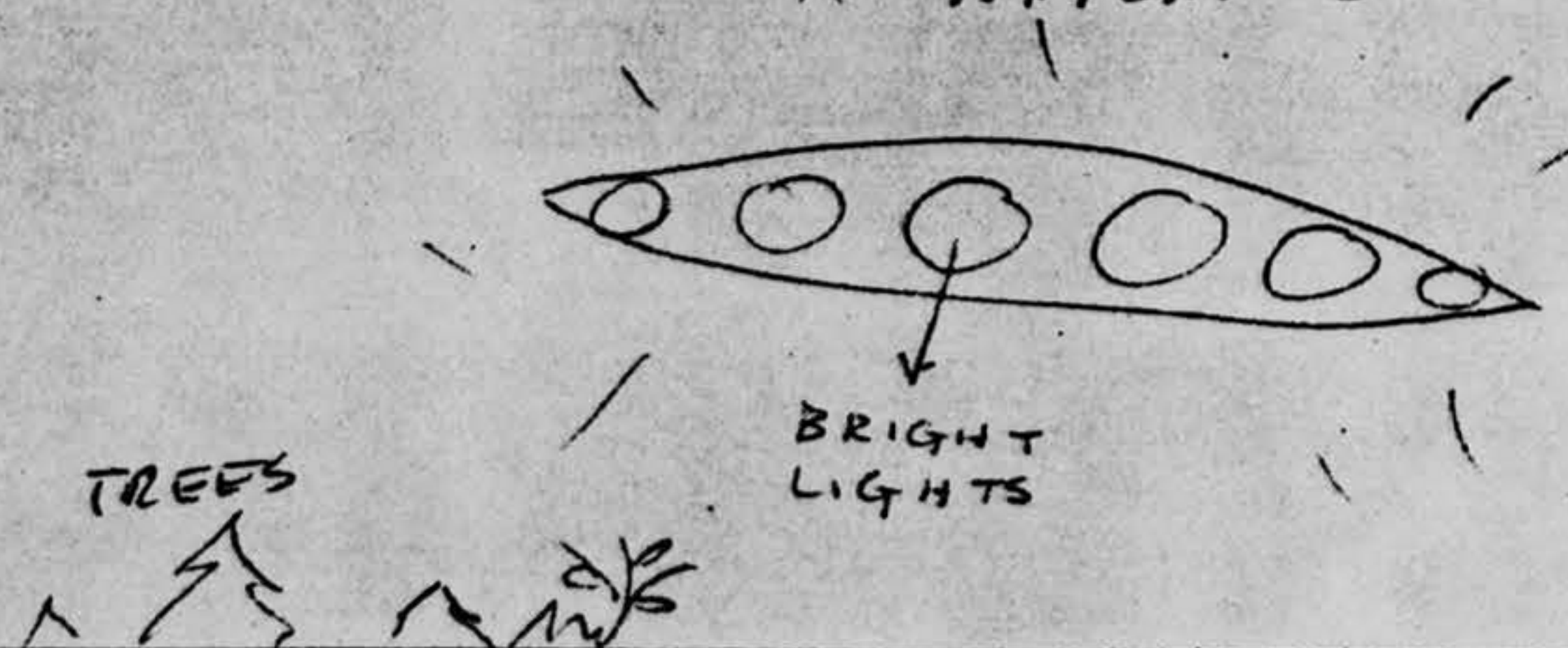
17. Tell in a few words the following things about the object:

a. Sound NONE AT ALL

b. Color THE LIGHTS WERE BRILLIANTLY WHITE (IE, CLEAR)

18. We wish to know the angular size. Hold a match stick at arm's length in line with a known object and note how much of the object is covered by the head of the match. If you had performed this experiment at the time of the sighting, how much of the object would have been covered by the match head?

19. Draw a picture that will show the shape of the object or objects. Label and include in your sketch any details of the object that you saw such as wings, protrusions, etc., and especially exhaust trails or vapor trails. Place an arrow beside the drawing to show the direction the object was moving. IT APPEARED CIGAR-SHAPED.



UFO form continued

Page 4

20. Do you think you can estimate the speed of the object?

(Circle One)

Yes

No

EXCEPT EXTREMELY FAST

IF you answered YES, then what speed would you estimate? _____

21. Do you think you can estimate how far away from you the object was?

(Circle One)

Yes

No

IF you answered YES, then how far away would you say it was? 500 - 700 FT

22. Where were you located when you saw the object?

(Circle One):

a. Inside a building

b. In a car

c. Outdoors

d. In an airplane (type)

e. At sea

Other AT AN OUTDOOR
CONCERT

23. Were you (Circle One)

a. In the business section of a city?

b. In the residential section of a city?

PARK
SECTION

c. In open countryside?

d. Near an airfield?

e. Flying over a city?

f. Flying over open country?

g. Other _____

24. IF you were MOVING IN AN AUTOMOBILE or other vehicle at the time, then complete the following questions:

24.1 What direction were you moving? (Circle One)

a. North

c. East

e. South

g. West

b. Northeast

d. Southeast

f. Southwest

h. Northwest

24.2 How fast were you moving? _____ miles per hour.

24.3 Did you stop at any time while you were looking at the object?

(Circle One)

Yes

No

NO

25. Did you observe the object through any of the following?

a. Eyeglasses

Yes

No

e. Binoculars

Yes

No

b. Sun glasses

Yes

No

f. Telescope

Yes

No

c. Windshield

Yes

No

g. Theodolite

Yes

No

d. Window glass

Yes

No

h. Other _____

26. In order that you can give as clear a picture as possible of what you saw, describe in your own words a common object or objects which, when placed up in the sky, would give the same appearance as the object which you saw.

A BRILLIANTLY ILLUMINATED, ENORMOUS
CIGAR OR PEA-POD.

Source: APRO Bulletin July 1963

Antarctica Sightings Corroborated

Thirteen-year-old newspaper boy, Mark Channing of Dalrymple Street, Invercargill, N. Z., reported seeing a cluster of three lights at 7:05 p.m. on 7 July 1962. (See APRO Bulletin for May 1962, Page 3, and correct sighting date to 7 July instead of 9 as stated). The boy reported that he and a friend were standing outside on a street when the object traversed the northern sector of the sky, from west to east. It traveled fast, being in sight no more than 3 minutes and appeared to be losing altitude as it traveled eastward. Mark said the object appeared to be three separate white lights that flashed on and off, the center light being brighter than the others.

A South Island farmer who declines to be identified, reported seeing a strange sky object at 4:55 p.m. on the same day. The object he reported was traveling into the southeast, was egg-shaped and bright green in color. It appeared to be at low altitude and released a shower of sparks of orange and green as it passed over the Wyndam district. The observer did not believe he saw the same object as seen at Antarctica but did forward his information to Mr. Taylor of Hallett Station.

4

APR 30 1962

"Mystery Satellite" Sighted

Hong Kong, 9 July 1962. Local resident R. I. Hobson reported that he had seen an object which gave off a bright white light, twice in two hours on the evening of 8 July. The "Bangkok World" from which this information is taken, reported that Hobson said the object traveled from south to north over the colony and took about 15 minutes to cross the sky. (Russian and American satellites take roughly 20 plus minutes for transit).

HONG KONG

COMBAT READINESS TRAINING OPERATIONS
64TH TROOP CARRIER SQUADRON, MEDIUM (RESERVE)
UNITED STATES AIR FORCE
O'HARE INTERNATIONAL AIRPORT
Chicago 66, Illinois

REPLT TO
ATTN OF: CRT

SUBJECT: Unidentified Flying Objects

TO: Air Technical Intelligence Center
United States Air Force
Wright-Patterson Air Force Base, Ohio

1. The following information as outlined in Paragraph 15, AFR 200-2 is submitted for your information.

a. Description of the Object(s):

1. Like 707 with lights on
2. Size of 707
3. Lights were yellow (very bright)
4. One
5. Unknown
6. Unknown
7. Unknown
8. None
9. When he went through clouds the lights did not black out.

b. Description of Course of Object(s):

1. So many lights on object
2. 3500-5000
3. Went over O'Hare, then S&E
- 4.
5. Unknown
6. 5 min

c. Manner of Observation:

1. Ground visual
2. Low power
- 3.

d. Time and Date of Sighting:

1. 2030 DLS 14 July 1962
2. Darkness

e. Location of Observer(s):

f. Identifying Info on Observer(s):

1. [REDACTED]
2. Collection & office man. JH
was Lt. in army in ballons

g. Weather and Winds

1. Over cast
2. Unknown
3. Unknown
4. Unknown
5. Unknown
6. Unknown
7. Unknown

h. Unknown

i. Unknown

j. Unknown

k. Unknown

l. Unknown

(Could see clearly)

THOMAS A. HILQUIST
Base Operations Officer

No Case (Information Only)

11 July 1962
Dunedin, New Zealand

NEW ZEALAND: The Otago Daily Times carried the following account on 7-12-62. "A many colored ball of light which flashed over Dunedin and appeared to hover over the sea to the South. This happened on 7-11-62 at 11:10 PM. The usual fireball explanation was made by an astronomer, Mr. B. Sessink, described it as a 'blue ball preceded by a bright flash'. Mr. R. Clark, was in his car near the beach at St. Clair. 'The sand and water were lit up by a strange green light. The object changed to red and then to blue at regular intervals and was still there after a few minutes.'"

FSIC

12 July 1962
Camp Lakota, Illinois

Boy Scouts Report Sightings —Others See UFO's

An object which changed direction faster than would be possible with a regular aircraft, was sighted by four boy scouts and three staff members of Camp Lakota in Illinois on 12 July 1962. In a letter addressed to Professor Charles Maney, Physics Professor at Defiance College, the J. C. Holley family of Defiance gave this description:

The first object sighted was like a cigar with a pointed tail. The next objects seen were shaped the same, but were smaller and appeared to come from the larger one.

The names of the scouts who sighted the object at 8:30 p.m. on the 12th were Charles Nelson, Robert Anderson, Ronnie Boweman and LeRoy Hodapp. They were walking along the Power Dam road when they saw the objects.

The sightings were reported to Professor Maney, and the following is additional detail: The boys first thought the object was a jet, when first seen at about 30 degrees elevation, but it proved to be too "globular" in appearance. It

started to move at a slight angle down and to their left and grew in size from a dot to "cigar-shaped." Shortly a very bright speck appeared to the right of the object and stayed stationary while the first object remained in motion. A third object suddenly "fired" from slightly below the second object as if it possibly dropped from object number two. The third object left a bright, clear contrail which hung in the air like a jet trail. It then disappeared behind or into a cloud and never reappeared.

Shortly thereafter, the first (cigar-shaped) object changed directions and began to drop over the horizon, and the second object also vanished from sight.

AFRO BULLETIN.....March.....1963
ILLINOIS....An object which changed direction faster than would be possible with a regular aircraft, was sighted by four boy scouts and three staff members of Camp Lakota in Illinois on 12 July 1962. In a letter addressed to Prof C. Maney, Physics Professor at Defiance College, the J C Holley family of Defiance gave this description:

The first object sighted was like a cigar with a pointed tail. The next objects seen were shaped the same, but were smaller and appeared to come from the larger one.

1962

16 - 31 JULY (SIGHTINGS)

<u>DATE</u>	<u>LOCATION</u>	<u>OBSERVER</u>	<u>EVALUATION</u>
17	Dayton, Ohio	[REDACTED]	SATELLITE
18	00.49S 170.24W (Pacific)	Military	SATELLITE
18	Toledo, Spain	[REDACTED]	SATELLITE
18	Centerville, Ohio	[REDACTED]	AIRCRAFT
18	Dayton, Ohio	Multiple	Astro (JUPITER)
18	Dunbar, Pennsylvania	[REDACTED]	AIRCRAFT
18	Blind River, Canada	[REDACTED]	Astro (CAPELLA)
18-19	Houtydale, Pennsylvania (CASE MISSING)	West	SATELLITE
19	Southern France	[REDACTED]	INSUFFICIENT DATA
19	Metuchen, New Jersey	[REDACTED]	UNIDENTIFIED
19	Meriden, Connecticut	[REDACTED]	SATELLITE
20	Westville, Indiana	[REDACTED]	INSUFFICIENT DATA
22	Kansas City, Missouri	[REDACTED]	INSUFFICIENT DATA
23	Bremerton, Washington	[REDACTED]	Astro (METEOR)
24	Culebra Island, Caribbean	Military	INSUFFICIENT DATA
25	Silver Grove, Kentucky	[REDACTED]	AIRCRAFT
25	Langley AFB, Virginia	Military	Astro (METEOR)
26	Fairborn, Ohio	[REDACTED]	Astro (VENUS)
26	Duluth, Minnesota	[REDACTED]	BALLOON
29	34.42N 163.40E (Pacific)	Military	INSUFFICIENT DATA
29	31.06N 32.18E (Atlantic)	[REDACTED]	SATELLITE
29	Edgerton, Wisconsin	[REDACTED]	SATELLITE
30	34.15N 153.28E (Pacific)	Military	SATELLITE
30	Ocean Springs, Mississippi	[REDACTED]	UNIDENTIFIED
31	34.00N 163.50E (Pacific)	Military	SATELLITE

ADDITIONAL REPORTED SIGHTINGS (NOT CASES)

<u>DATE</u>	<u>LOCATION</u>	<u>SOURCE</u>	<u>EVALUATION</u>
16	Loerie, South Africa	News Clipping	
17	Illinois	" "	
18	Cleveland, Ohio	" "	
19	Asheboro, N. C.	" "	
21	Newport, Rhode Island	" "	
26	Weymouth, Mass.	" "	
26	Parana, Argentina	" "	
28	Northampton, Ohio	" "	
29	Northampton, Ohio	" "	
29	Lincoln, Wisconsin	" "	
30	Illinois	" "	
30	Cruz Alta, Brazil	" "	
31	Western Washington	" "	

1. Too many lights (no flashing lights)
2. Black patten passing across the object & had rhythm (front to rear)
3. No sound

Son [REDACTED] Age 14

Says in glasses black out pattern went from rear to front.

PROJECT 10073 RECORD CARD

1. DATE 15 July 1962		2. LOCATION Evanston, Illinois		12. CONCLUSION.	
3. DATE-TIME GROUP Local _____ GMT 16/0230Z		4. TYPE OF OBSERVATION ☒ Ground-Visual ☐ Ground-Radar ☐ Air-Visual ☐ Air-Intercept Radar		☐ Was Balloon ☐ Probably Balloon ☐ Possibly Balloon ☐ Was Aircraft ☐ Probably Aircraft ☐ Possibly Aircraft ☐ Was Astronomical ☐ Probably Astronomical ☐ Possibly Astronomical ☐ Other _____ ☒ Insufficient Data for Evaluation ☐ Unknown	
5. PHOTOS ☐ Yes ☒ No		6. SOURCE Civilian			
7. LENGTH OF OBSERVATION not rptd		8. NUMBER OF OBJECTS one		9. COURSE not rptd	
10. BRIEF SUMMARY OF SIGHTING Orange disc, spinning & hovering. Disappeared 15 seconds later.				11. COMMENTS Insufficient data for evaluation given in rpt.	

COMBAT READINESS TRAINING OPERATIONS
64TH TROOP CARRIER SQUADRON, MEDIUM (RESERVE)
UNITED STATES AIR FORCE
O'HARE INTERNATIONAL AIRPORT
Chicago 66, Illinois

REPLY TO
ATTN OF: CRT

SUBJECT: Unidentified Flying Objects

TO:
Air Technical Intelligence Center
United States Air Force
Wright-Patterson Air Force Base, Ohio

1. The following information as outlined in Paragraph 15, AFR 200-2 is submitted for your information.

a. Description of the Object(s):

1. Disk
2. Unknown
3. Orange
4. One
5. Unknown
6. Spinning
7. Hovering
8. Unknown
9. Unknown

b. Description of Course of Object(s):

1. Unknown
2. Hovering above trees
3. Unknown
4. Disappeared at high speed
5. Unknown
6. 15 sec, later

c. Manner of Observation:

1. Visual
2. Unknown
3. Unknown

d. Time and Date of Sighting:

1. 0230 ZULU 16 July 62, 0300 ZULU 16 July 62
2. Night

e. Location of Observer(s):

Evanston

f. Identifying Info on Observer(s):

[REDACTED]
2. [REDACTED]

g. Weather and Winds, Chicago

1. Unknown
2. Unknown
3. Unknown
4. Unknown
5. Unknown
6. Unknown
7. Unknown

h. Unknown

i. Unknown

j. Unknown

k. Unknown

l. Unknown

for *Malcolm S. Murphy*
THOMAS A. HILQUIST
Base Operations Officer

of outstanding living scientists who are exploring new frontiers in various fields.

RECENT PROGRESS IN HORMONE RESEARCH: The Proceedings of the 1961 Laurentian Hormone Conference—Gregory Pincus, Ed.—*Academic Press*, 535 p., illus., \$15.00. Deals mainly with hormonal polypeptides and their functional activities, and thyroid, parathyroid and steroid hormones.

THE SCIENTIFIC BASIS OF ILLUMINATING ENGINEERING—Parry Moon—*Dover*, rev. ed., 605 p., illus., paper, \$2.85. Deals mainly with basic principles.

SOLID-STATE COMPUTER CIRCUITS: Computer Basics, Vol. 6—Technical Education and Management, Inc.—*Sams*, 224 p., illus., paper, \$4.95. Practical treatment of transistorized logic arithmetic circuits and magnetic-core devices.

SOME ASPECTS OF NEUROANATOMY—V. N. Ternovskii, Ed., transl. from Russian—*Consultants*, 181 p., illus., \$15.00. Collection of articles devoted to the study of the anatomy of the central and peripheral nervous system.

TAKE SHAPES, LINES AND LETTERS: New Horizons in Mathematics—Jeanne Bendick and Marcia Levin—*Whittlesey House*, 79 p., illus. by Jeanne Bendick, \$2.75. Introduces youngsters to mathematics, without numbers, and to shapes, lines, angles and letters.

TECHNOLOGICAL PLANNING ON THE CORPORATE LEVEL—James R. Bright, Ed.—*Harvard Univ. Grad. School of Business*, 253 p., paper, \$3.50. Proceedings of 1961 conference which evaluated the effects of technological innovation on industrial management.

TELEVISION SIMPLIFIED—Milton S. Kiver—*Van Nostrand*, 6th ed., 637 p., illus., \$9.95. Completely revised to incorporate the important advances in TV receivers since 1955, including new chapter on remote-control systems.

TRANSISTOR MANUAL—J. E. Cleary, Ed.—*General Electric, Syracuse*, 6th ed., 440 p., illus., paper, \$2. Comprehensive handbook, includes signal diodes, covers basic semiconductor theory, applications, circuits and specifications.

USES OF INFINITY—Leo Zippin—*Random House*, 151 p., diagrams, paper, \$1.95. Written by a mathematician for high school student and layman, emphasizing the process of thinking through and solving problems.

WATER-SOLUBLE RESINS—Robert L. Davidson and Marshall Sittig, Eds.—*Reinhold*, 209 p., \$7.50. Essential data and information on the many diverse polymeric materials having the common property of water solubility.

THE WAYS OF THE AIR—Roger Pilkington—*Criterion Bks.*, 192 p., photographs, diagrams, \$3.95. Readable account of the scientific concepts of the atmosphere and weather phenomena, for the general reader.

WHAT RUSSIAN SCIENTISTS SAY ABOUT FALLOUT—A. V. Lebedinsky, Ed., transl. from Russian, new introd. by James F. Crow—*Collier Bks.*, 124 p., paper, 95¢. Includes technical papers as well as opinions of Soviet scientists.

WORKSHOPS FOR THE WORLD: The United Nations Family of Agencies—Graham Beckel with Felice Lee—*Abelard-Schuman*, rev. ed., 285 p.,

umbra and a penumbra. The former has the shape of a cone; it tapers to a point at about the distance of the earth from the moon. At the phase of new moon, it is always in the same direction from earth as the sun, but generally the shadow, both umbra and penumbra, passes either north or south of our planet and there is no eclipse.

But even when the point of the conical umbra is aimed directly toward the earth, there may not be a total solar eclipse. However, sometimes the tip of the shadow does reach our globe. Then it traces out a band, perhaps a hundred miles wide and several thousand miles long, where the total eclipse is visible. Around it is a much larger region, where the penumbra touches earth, in which people can see a partial eclipse of the sun.

But at other times—such as July 31—the tip of the inner shadow is pointed toward the earth but does not reach us. In other words, the moon is far enough away that its apparent disc is smaller than the sun's. And even though the moon may come in front of the sun, that body is not completely hidden. A ring of the solar surface remains visible around the lunar disc. The Latin for ring is "annulus," so this is called an annular (not annual) eclipse.

On July 31, the path of the annular eclipse starts as the sun is rising in the interior of Venezuela. It passes eastward, over Brazil and the Guianas, the Atlantic Ocean and Central Africa, ending just east of Madagascar at sunset. A larger area will experience a partial eclipse. This includes northern South America, Florida (where the sun will rise eclipsed), the Atlantic Ocean, all of Africa, the Mediterranean Sea, Spain, Sicily, part of Arabia, and the western Indian Ocean.

Celestial Time Table for July

July	EST	
1	7:00 a.m.	Mercury farthest west of sun
	6:53 p.m.	New moon
4		Earth farthest from sun, distance 94,453,000 miles
5	2:00 a.m.	Moon passes Venus
8	7:00 a.m.	Moon farthest, distance 251,300 miles
9	6:40 p.m.	Moon in first quarter
17	6:41 a.m.	Full moon (penumbral eclipse)
20	5:00 a.m.	Moon nearest, distance 227,000 miles
	1:00 p.m.	Moon passes Jupiter
23	11:19 p.m.	Moon in last quarter
26	11:00 p.m.	Moon passes Mars
29	early a.m.	Meteors visible radiating from constellation of Aquarius
31	7:24 a.m.	New moon (annular eclipse)
	2:00 p.m.	Neptune nearest earth, distance 830,700,000 miles

Subtract one hour for CST, two hours for MST, and three hours for PST.

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ASTRONOMY

Three Planets Now on View

Three planets, Venus in the west, Jupiter in the east and Saturn higher and farther to the south will appear in the July evening sky, James Stokley reports.

► FOLLOWING the early part of 1962, when no planets were on view in the evening sky, we now have three that are easily visible. These are shown on the accompanying maps, which give the appearance of the skies at about 10 p.m., your own kind of standard time, an hour earlier at the middle of the month and two hours earlier at the end. (Add one hour for daylight saving time.)

The brightest of the trio is Venus, which remains visible low in the west for about two hours after sunset. Venus is now so brilliant (magnitude minus 3.6 on the astronomical scale) that it appears long before any other star or planet.

Later in the evening, as Venus is about to descend below the western horizon, Jupiter appears above the eastern. It is about a quarter as bright as Venus, which still makes it many times brighter than any of the other planets. Later during the night Jupiter will be more easily seen as it climbs higher in the sky, in the constellation of Aquarius, the water carrier.

A little higher than Jupiter and farther south—across the border in the next-door constellation of Capricornus, the sea-goat—the third planet of July evenings is visible. This is Saturn, now about a fiftieth as bright as Venus. Even so it equals a bright first-magnitude star.

Antares Appears in South

As for the stars, which shine by their own light (unlike the planets which are visible because of the sunlight they reflect to us), one that is very characteristic of evenings in summer appears low in the south. This is Antares, in the group called Scorpius, the scorpion. The red color of the star makes it easy to identify. To the right of this group is a rather faint constellation—Libra, the scales—and to the right of it is Virgo, the Virgin. Here there is another bright star, also first magnitude, called Spica. And above Virgo, in Bootes, the herdsman, is still another: Arcturus.

High in the eastern sky—nearly overhead, in fact—is brilliant Vega, in Lyra, the lyre. Below it, and a little to the right, is Deneb, in Cygnus, the swan. Both of these stars are shown on the map of the northern sky. But near them, to the left of Deneb, and shown on the southern map, is Altair, in Aquila, the eagle. Vega, Altair and Deneb form a large and conspicuous triangle in the eastern sky these evenings.

Look to the northwest to see the familiar group of seven stars in Ursa Major, the great bear, called the great dipper in the United States and Charles's Wain in England. Alkaid, Mizar and Alioth (none as bright as the first magnitude) form the

handle of the dipper. Dubhe and Merak form the bowl. They are called the pointers, because they indicate the direction of Polaris, the pole star, which is in Ursa Minor, the little bear.

On July 1 Mercury is farthest west of the sun, and can be seen above the eastern horizon for a few mornings around this time just before sunrise.

Mars is now approaching earth and has reached first magnitude brightness. It is in Taurus, the bull, and rises in the east about three hours ahead of the sun.

Neptune is closest in July, at a distance of 830,700,000 miles on the 31st, when it will be directly opposite the sun. But although it is in Libra, its magnitude is 7.7, too faint to be seen with the naked eye.

And on July 4 the earth is at "aphelion," or farthest from the sun for the year, at a distance of 94,453,000 miles. Despite this we are now having summer in the Northern Hemisphere, because the sun now climbs high into our sky and its rays fall more directly on the ground than they do in winter. And it takes longer from sunrise to sunset, which also increases its heating effect.

Although July brings two eclipses, prob-

ably few of our readers will see either of them. The first, on July 17, is a "penumbral" eclipse of the moon. The second comes July 31, when there is an "annular" eclipse of the sun.

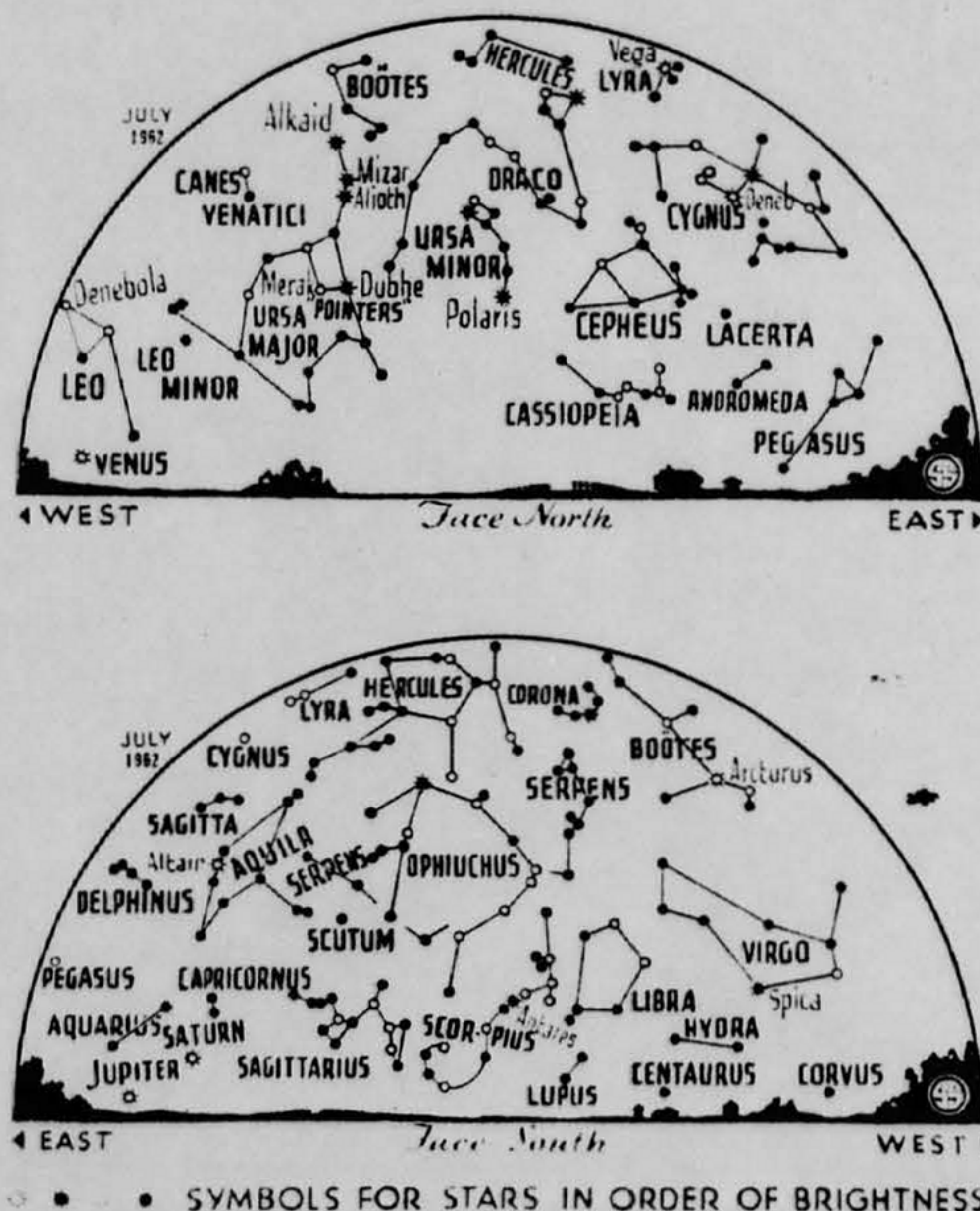
The shadow of the earth, and the moon as well, is in two parts. In the center is the dark "umbra," where the earth would completely block the sun's light on the moon. Around this is the "penumbra," where the planet blocks out only part of the sun's light.

Full Moon Opposite Sun

Every time the moon is full, it is in the opposite part of the sky from the sun. Then its entire sunlit half is visible to us. Generally, however, it passes completely above or below the shadow. Sometimes, however, as it does in July and August, it enters the penumbra, but not the umbra, and this is a penumbral eclipse.

On other occasions, part of the moon enters the umbra, which causes a partial lunar eclipse. And sometimes there is a total eclipse, when it is completely immersed in the umbra. With an umbral eclipse, either partial or total, the shaded part of the moon is noticeably darkened. But when it enters the penumbra, as it will on July 17, there is still so much sunlight falling upon it that it shines almost as usual. Only a keen eye can detect that it is somewhat dimmed.

The moon's shadow, too, has both an



THE FIELDS

NUTRITION

Location of Milk In Store Changes Taste

► THE TASTE of milk bought in grocery stores can depend on where the carton is located on the display shelf, three University of California food scientists have found.

Light from white fluorescent lamps, the kind commonly used in grocery display cases, can change the taste of milk even in cardboard cartons. However, the unpleasant flavor develops only in the outside cartons close to the lamp, and sometimes does not develop at all.

"Some types of cartons and some lamps are worse than others," Walter Dunkley told the Institute of Food Technologists meeting in Miami Beach, Fla. The effects are hard to pin down, he reported, and the flavor change can be confused with others.

Temperature, length of exposure, freshness of the milk, the cow's diet and many other factors also can affect development of light flavor, which occurs under commercial conditions often enough to create an occasional milk quality problem.

The flavor changes created by fluorescent lamps are similar to those caused by sunlight, which have been known for years. Nutrient value of the milk is also reduced by prolonged exposure to high-intensity fluorescent light.

J. D. Franklin and R. M. Pangborn, also of the University of California, cooperated with Mr. Dunkley in the milk-flavor studies.

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SOCIOLOGY

Fla., Calif., Great Lakes Rival E. Coast in 1980

► THREE WIDESPREAD urban areas will challenge the Atlantic Seaboard region in population within 20 years.

The Great Lakes region extending from Green Bay, Wis., to Rochester, N. Y., with an estimated 37,000,000 persons in 1980; the Florida area from Miami to Tampa-St. Petersburg, with 10,000,000 and California, from the Mexican border to San Francisco, with 27,000,000 persons, will approach the size of the East Coast strip.

The Atlantic Seaboard, sometimes called "the city 500 miles long," extends from Portland, Me., to Washington, D. C. This area now contains more than 36,000,000 persons and by 1980 the population should reach nearly 50,000,000. The area is not growing as fast as the other three areas, however.

While the East Coast area is growing 15% each 10 years, other urban communities are climbing more than 40% during the same time, according to Dr. Jerome L. Pickard, research director of the Urban

Land Institute, Washington, who has looked into the future of America's population.

There are now 21 regions in the country with a total population of 97,600,000; or 55% of the nation's population is living on six percent of the nation's land area, he said. By 1980 these areas will have 170,000,000 persons.

None of the urban regions in the country are experiencing a population decline, he pointed out. Thus a new level of thinking will be required to plan for increased transportation, air and water pollution and many other necessary items associated with such an expanding population.

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EDUCATION

Method Is Not at Fault When Johnny Can't Read

► IF IT IS TRUE that American Johnny cannot read, it is not because American schools teach reading primarily by the "look-say" method to the neglect of the widely advocated "phonics" method.

This is the conclusion of a conference of 28 reading specialists supported by the Carnegie Corporation of New York and under the chairmanship of Dr. James B. Conant, well known educator. The report of the conference, entitled "Learning to Read," was issued by the Educational Testing Service at Princeton, N. J.

It is not true, the report declares, that our schools, in general, use primarily a "sight-word" method. It is not true that our schools, in general, do not teach phonics.

The teaching of reading in our schools is not all uniformly good, the report indicates. Some is excellent, much is good, and some is poor. But it is not so bad as pictured by critics who present exceptions as typical examples.

When reading instruction is not good, the main reason is not the method. It is the shortage of good teachers—a plague that affects all educational institutions from school to university.

Other reasons are large classes, meager libraries, inadequate equipment, insufficient books and supplies, and poor public support—both moral and financial.

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HORTICULTURE

Flowers Fooled With Flashing Lights

► FLASHING LIGHTS have been used to prevent flowers from blooming too soon.

The plants were exposed to artificial flashing lights during one-tenth of the night but reacted as though it were full daylight.

Dr. Thomas J. Sheehan, ornamental horticulturist at the Florida Agricultural Experiment Stations, has been working with this system to find out whether flower producers can keep the flowers from blooming more economically. The process now requires the lights full-time to keep from blooming until time of greatest market demand.

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AUTOMATION

Russia Hopes to Surpass U.S. via Automation

► THE SOVIET UNION'S main hope of surpassing U.S. industrial production lies with the development of adaptive control or "think" automation, a professor at Purdue University, Lafayette, Ind., believes.

This most advanced type of automation, with machinery which can "look over" a situation and teach itself to improve, is gaining impetus both in the United States and Russia, Dr. John E. Gibson, electrical engineer who visited the Soviet's major automation research center, said. But the Russians are necessarily putting more emphasis on it.

"Russia today has very few Detroit-type assembly lines and plants," he explained. "And the plan is to go from a peasant, job-shop economy directly into a highly automated factory economy."

There are six institutes being set up to automate each of the six leading industries in Russia. With huge numbers of engineers being turned out of the universities every year, they expect to completely skip the mass production system on which the present American economy is based.

Can they do it? Dr. Gibson believes they can, just as they jumped from behind in the air to develop the intercontinental ballistic missile. He reported these beliefs in Backgrounder from Purdue.

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ASTRONOMY

Test Seen for Einstein's Theory of Gravity Waves

► A CHANCE TO TEST the part of Einstein's theory of general relativity that predicts the existence of gravitational waves is seen in a mysterious flaring star 900 trillion miles from the sun's system.

The object is Nova Sagittae, which consists of two stars and has the shortest known period of orbital motion—only 81 minutes are required for one revolution of the eclipsing system. One is a dense white dwarf star, the other is not observable optically.

The stars are believed to be rotating around a common center so fast—1,500,000 miles an hour—that energy is radiated as gravitational waves. Nova Sagittae is very faint and astronomers have not been able to determine whether the second object of the pair is another dwarf star, or a comet-like mass of gas circling the dwarf, or a ring with a lump in it rotating around the white dwarf. The entire system is much smaller than the sun.

Drs. Robert P. Kraft and Jesse L. Greenstein of Mt. Wilson and Palomar Observatories, Pasadena, Calif., with Dr. Jon Matthews, California Institute of Technology physicist, collaborated in pointing out the significance of Nova Sagittae in proving part of the general relativity theory. The star is known as a recurrent nova that flared nearly to naked eye visibility in 1913 and 1946.

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