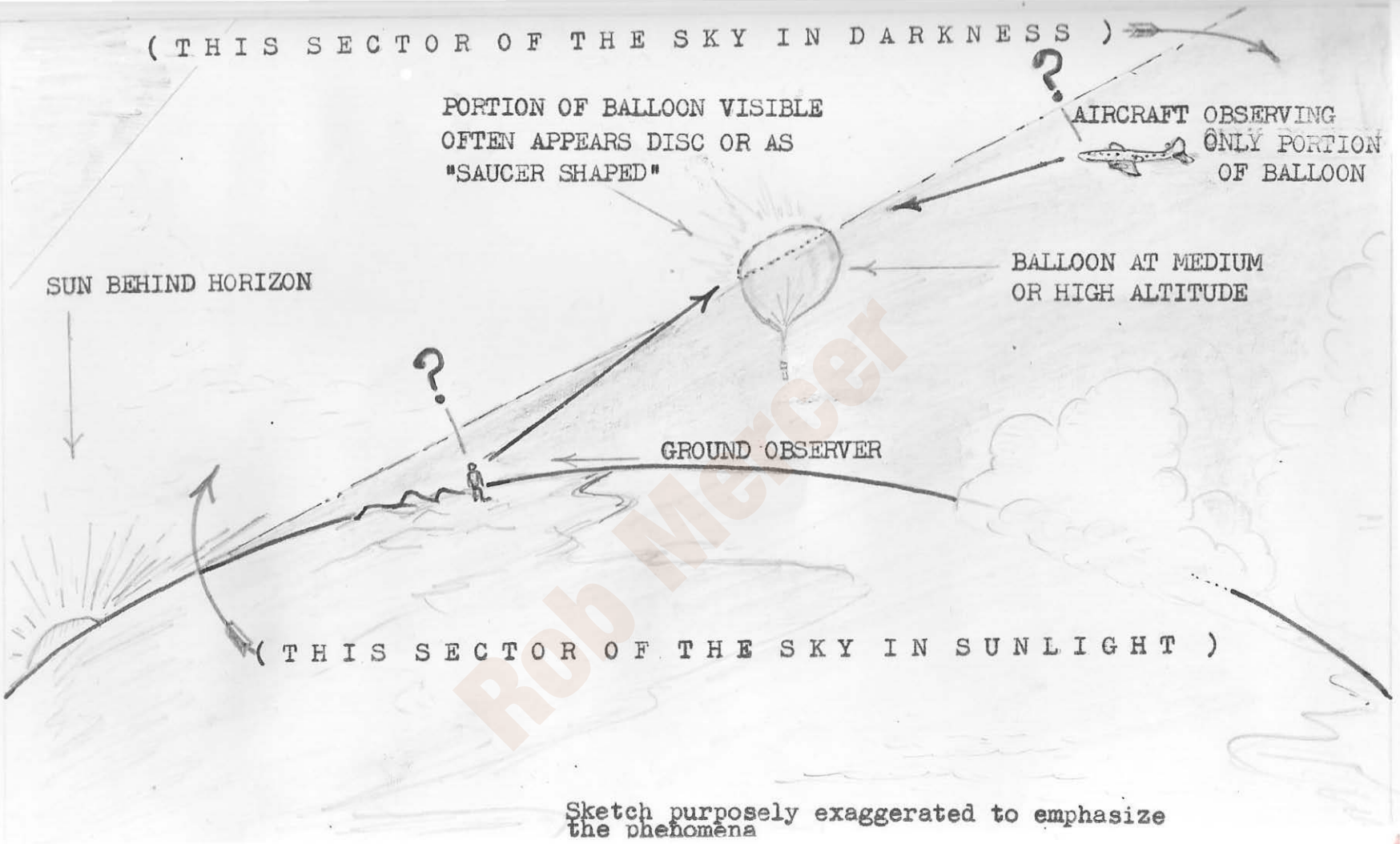


Sketch purposely exaggerated to emphasize the phenomena

43 3/4"

64

When sun sinks below horizon low enough
so sun no longer hits balloon, balloon seems
to disappear suddenly or "zoom away."

When sun sinks below horizon low enough

GARMENT BAG HOT AIR BALLOONS

Hot Air Balloons, made out of garment bags, usually appear as a red, orange, yellow or white light in the sky and may remain aloft as long as ten or fifteen minutes. If they are fairly close, they may appear as two objects, one on top of the other. The bottom object is the heat source and is quite bright; the upper dull glowing object is the garment bag. Usually the heat source is on a balsa wood platform. When the object is aloft it may move in an erratic manner or a straight trajectory, depending on the wind. The balloon also flashes and flickers as the wind blows the candles. When the candles burn down, the platform may catch fire and sometimes causes sparks and pieces of burning debris to fall; however, they usually burn out before they hit the earth. Shortly after the sparks stop falling, the object disappears.

RESEARCH BALLOON ACTIVITIES

Air Force Cambridge Research Lab (Atmospheric Devices Lab)
L. G. Hanscom Field, Cambridge, Massachusetts
area code 617 274-6100 ext 3013 (Tom Kelly) ext 3005 (Mr. Tilton)

Balloon Control Center
Det 1 AFCRL, Holloman AFB, New Mexico (autovan 888-3350)
area code 505 GR 3-6511 ext 4421

Det 3 AFCRL, Chico, California
area code 916 343-5011 (Sgt Roland Smith)

Dewey & Almy Chemical Division (W. R. Grace & Company)
Cambridge, Massachusetts

John Hopkins University - Astro Physics Dept
Baltimore, Maryland, Wash, Pa

G. T. Schjeldahl Co., Northfield, Minnesota
area code 507 645-5633 (Mr. Curtis)

Litton Industries, Minneapolis - St. Paul, Minnesota
area code 612 331-4282 (Mr. Hines or Mr. Olsen Applied Sciences Division)

National Center for Atmospheric Research (NCAR)
Boulder, Colorado
Dr. Alvin Morris area code 303 443-1960 ext 502

Palestine, Texas
area code 214 729-6921 (Clint Hankins or Frank McCray)

NASA Operations (Wallops Island Station, Virginia
area code 703 824-3411 ext 2354

Office of Naval Research, Washington, D C
autovan 22 - 64723 home phone 538-5226

AV 867 xxxx
4421

6th Weather Group (Goodfellow AFB, Texas)
autovan 885-3451 ext 601

Winzen Research Corporation, Minneapolis, Minnesota
area code 612 881-5871 (Mr. Williams)

ALBrook AFB, Canal Zone

WESTERN TEST RANGE
Vandenberg AFB, California
~~Mr. Ramsey~~
autovan: ~~898-1450~~ 629-1500
commercial: ~~865-2082~~
CX 52082

Pacific Test Range
Pt. Magu
Mr. Zehmer CX 8412 7545
A.V. 598-1750
Comm. 805.982.8412

BARIUM CLOUD RELEASES
Public Information Officer
Wallops Station
Wallops Island, Virginia 23337
area code 703 824-3411

CHURCHILL RESEARCH RANGE (BARIUM CLOUD RELEASES)
phone 204 031 121
Ask for Ft. Churchill 123

Hot air balloon picked up in the vicinity of the Colorado School of Mines, Golden, Colorado by law enforcement authorities after a rash of UFO sightings had been reported in the Golden, Colorado area. Balloon was made of thin vinyl plastic and had an aluminum foil saucer-shaped platform where the candles were inserted.

info only

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS FOREIGN TECHNOLOGY DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

REPLY TO ATTN OF: TDETT-5/Lt Col Smith/72093

SUBJECT: Balloon - Parachutes

FEB 2 1967

TO: TDET/UFO

1. Reference conversation between Lt Col Smith and Lt Marley 26 January 1967. Attachment I is an article concerning the experimental balloon parachute drop tests being conducted at Goodyear's airdock in Akron, Ohio.

2. If further information is desired concerning the dates and time of these experimental drops, please contact Lt Col Smith.

for JOHN T. A. ELY, Colonel, USAF
Chief, Aerospace Technologies Division
Directorate of Technology and Subsystems

1 Atch,
Article (uncl)

Ballutes Will Undergo New Rigid Experiments

The Goodyear Aerospace Corporation, under contract to the Air Force Cambridge Research Laboratories (AFRCL), is currently developing a BALLoon-parachUTE, called "ballute", a stabilizing and deceleration system for the current ARCAS rocket configuration.

Although still in the experimental stage (200 drop tests were conducted at Goodyear's airdock in Akron, Ohio, and three successful flights completed at Cape Kennedy), the ballute is being carefully considered and studied by the Air Weather Service and AFRCL.

The reason AWS is interested in the ballute system is that the parachute, now used to stabilize a rocketsonde during its descent, is not a stable platform.

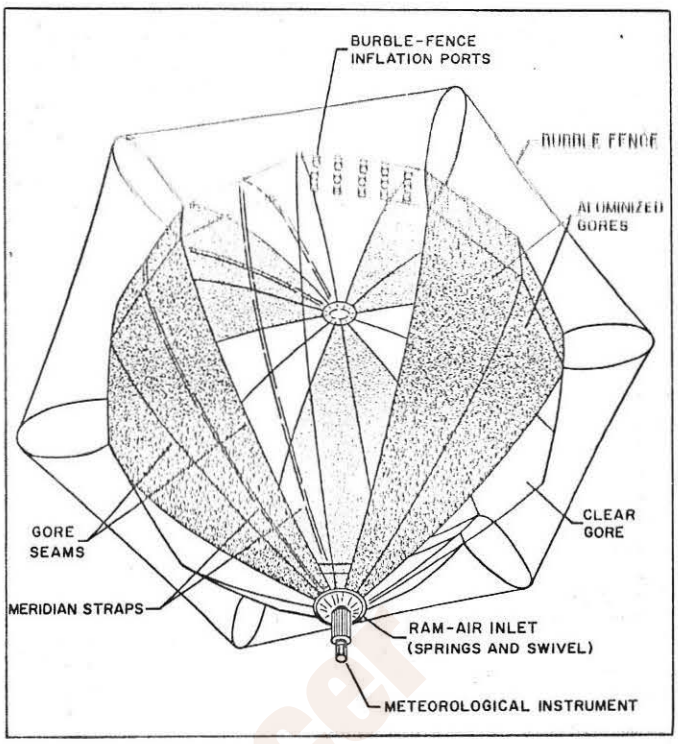
The weather rocket carrying the rocketsonde soars up to 200,000 feet and because the air is so thin at that altitude, a parachute tends to lose air, vacillates and turns the payload, the rocketsonde, into an erratic pendulum.

The ballute, on the other hand, is a much more stable platform for the rocketsonde. It is a ram-air-inflated, deployable, areodynamic stabilizing and decelerating device.

Like the parachute, the ballute requires a dynamic pressure to inflate and maintain its shape; unlike the parachute, the ballute is constructed of a nonporous material (½-mil polyester tape) and is designed so that the internal pressure is greater than the external pressure regardless of velocity or density.

On the other hand, a parachute requires flow through the canopy to insure stability. Good parachute design requires that the porosity of the canopy be compatible with the mission environment.

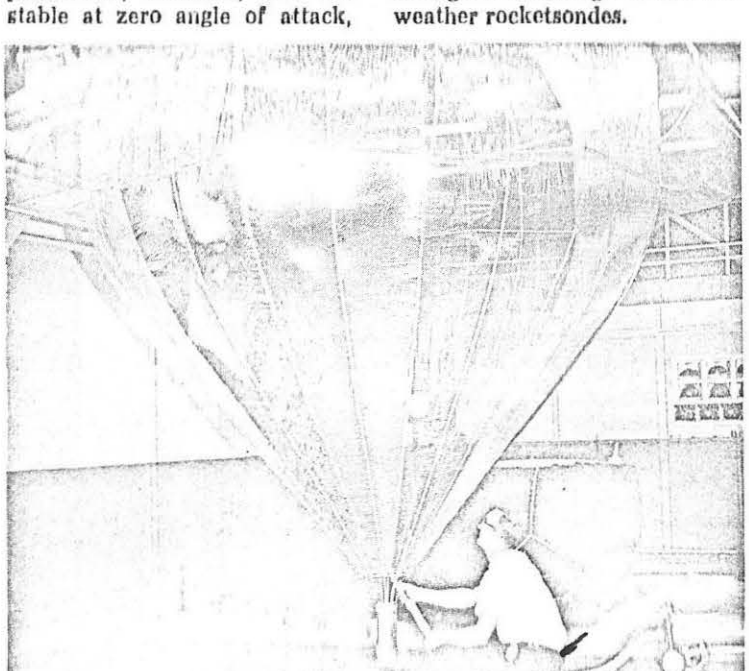
The resistance of the canopy to the air flow must be adequate to cause the parachute to take shape while allowing sufficient flow through the canopy to maintain stable flight. Most parachutes, however, are not stable at zero angle of attack, resulting in either a gliding or oscillating flight.



Another consideration in favor of the ballute is that, in the event of a sudden gust, the parachute may dump the greater portion of the trapped air mass while the air in the ballute must be forced out through a small orifice, thus permitting reorientation of the system into the relative wind before deflation can occur.

The ballute is also equipped with radar reflector panels which help weathermen obtain wind directions.

And so, if the ballute tests are successful, it will eventually replace the parachute and will insure more accurate meteorological soundings from the weather rocketsondes.



An experimental ballute is being tested at AFRCL. The ballute might eventually replace the weather parachute so that more reliable soundings might be obtained from weather rocketsondes.