L’ERA SPAZIALE E GLI ASTROFILI

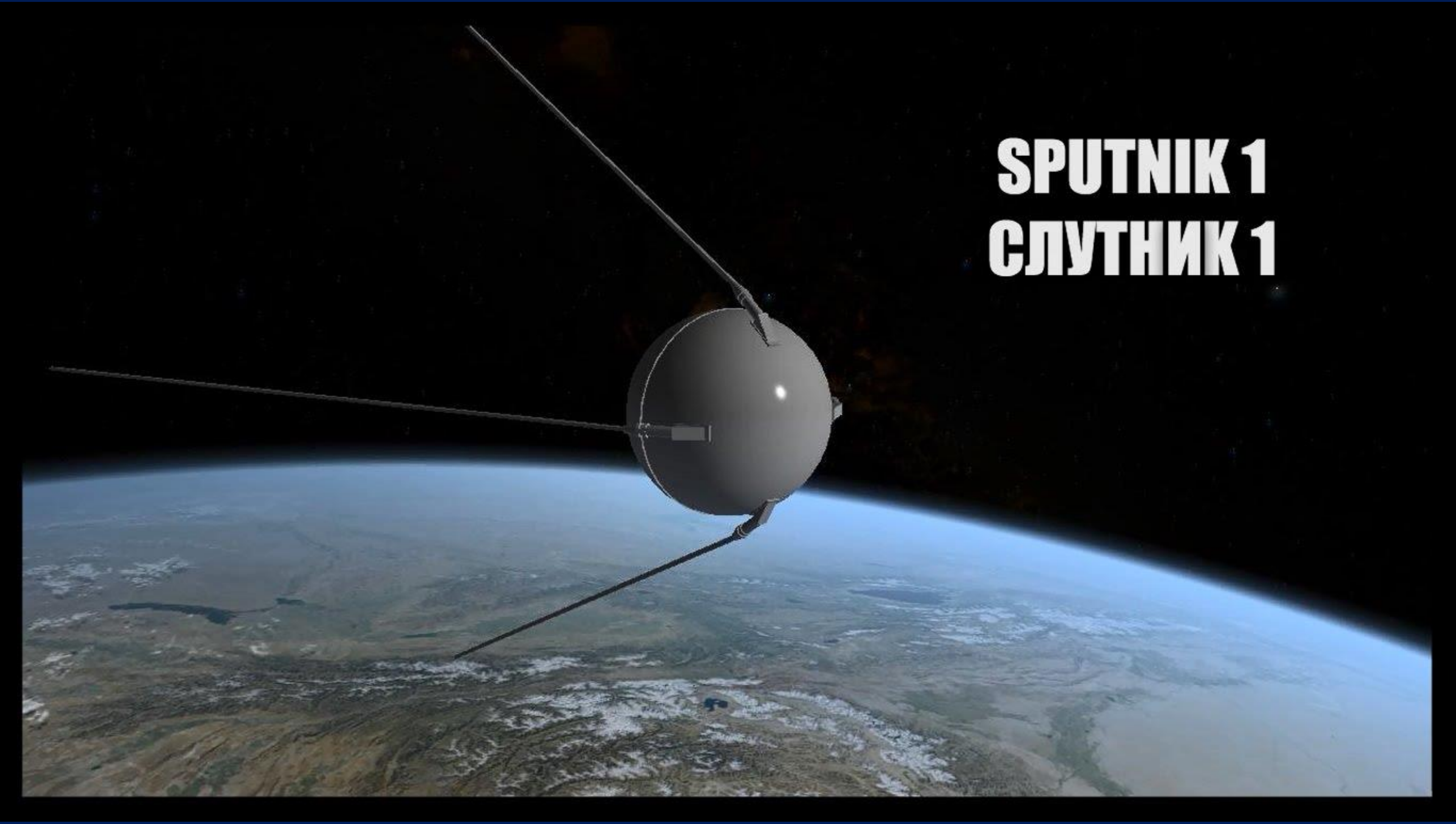
Paolo Morini

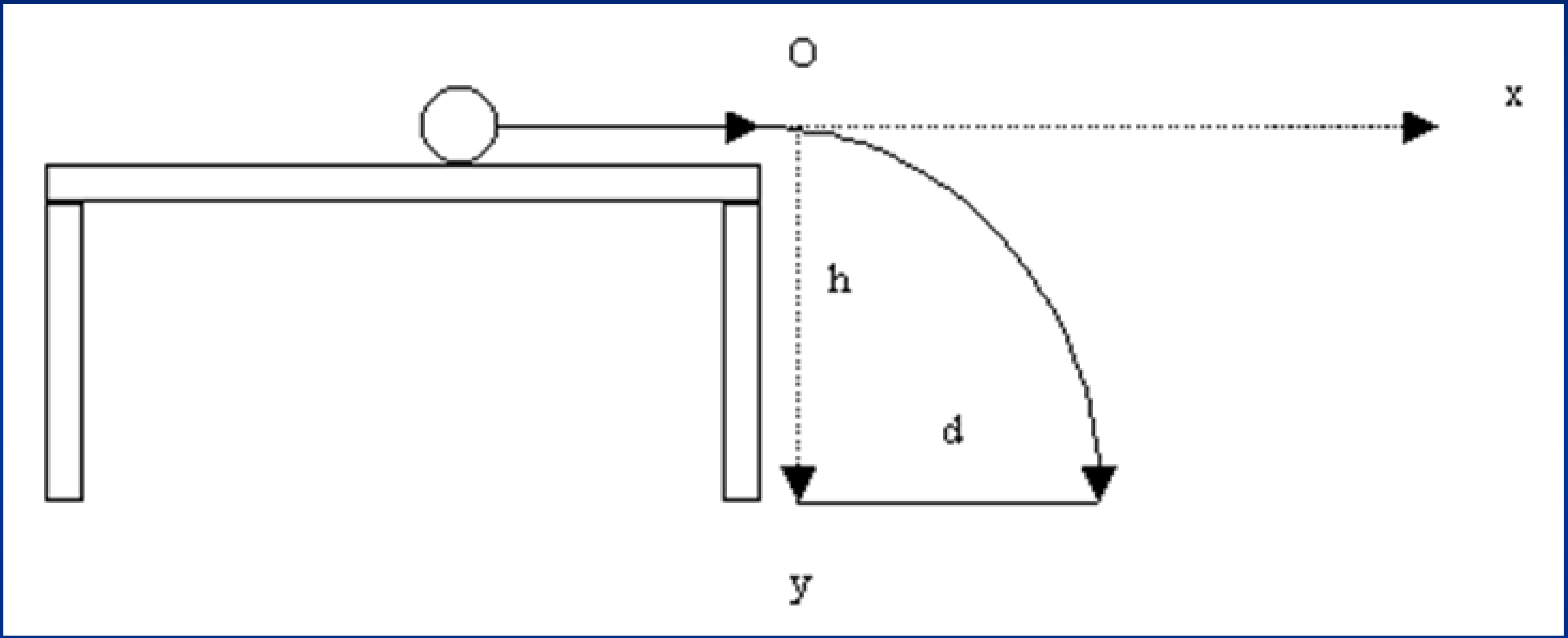
Associazione Astronomica del Rubicone

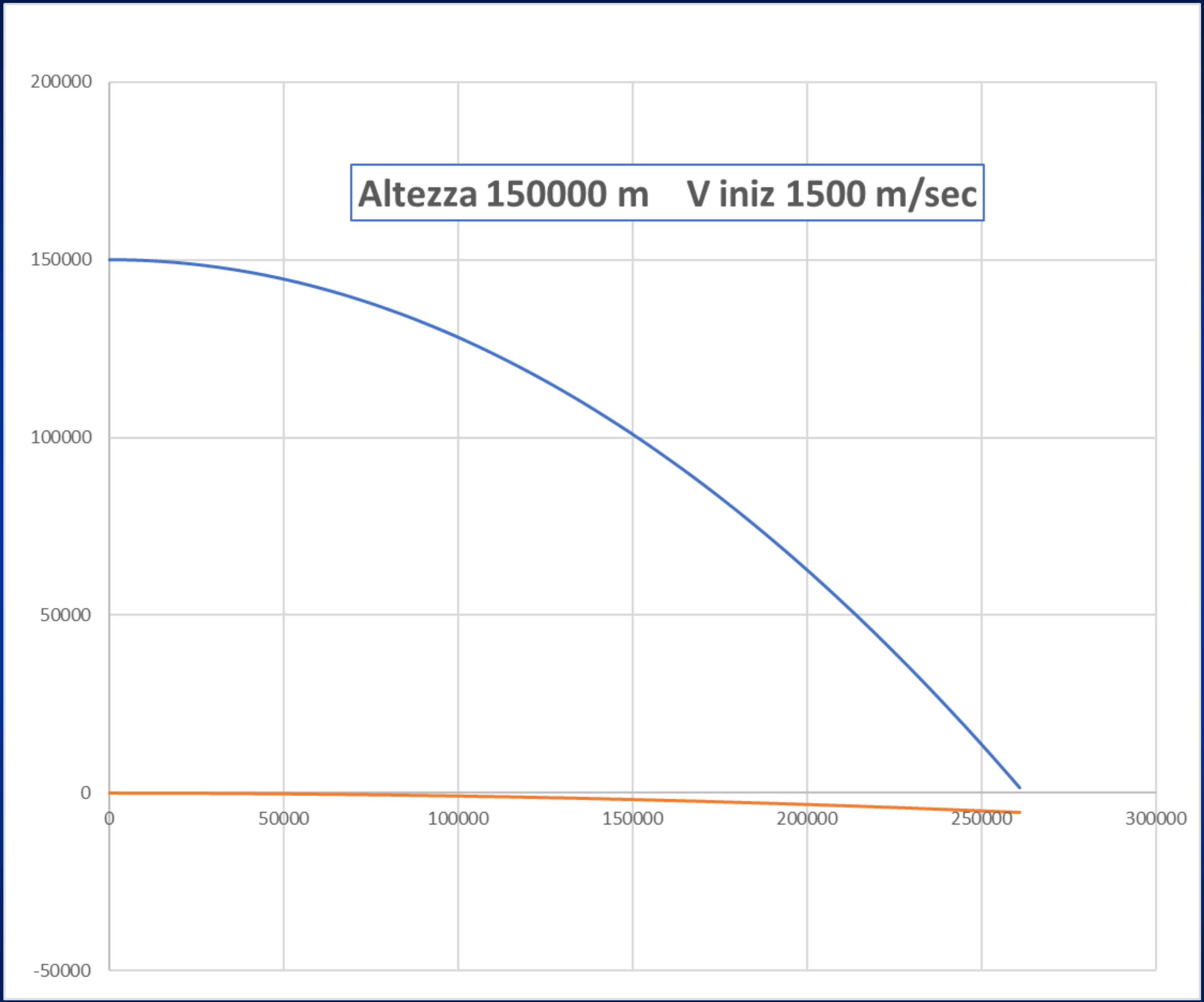
.....ma ora verranno le stelle, le tacite stelle....

ARAR

ASSOCIAZIONE RAVENNATE ASTROFILI "RHEYTA"


SPUTNIK 1
СЛУТНИК 1


O
x
h
d
y


Altezza 150000 m V iniz 1500 m/sec
200000
150000
100000
50000
0
-50000
0
50000
100000
150000
200000
250000
300000

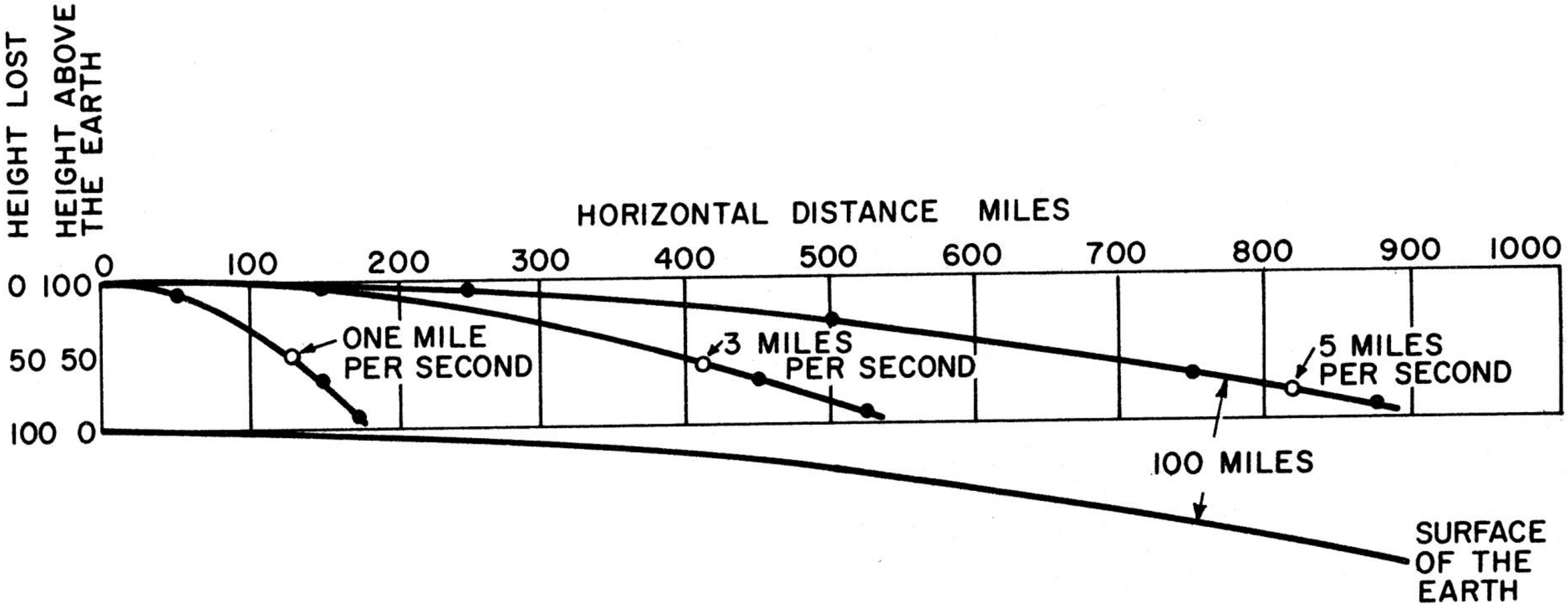
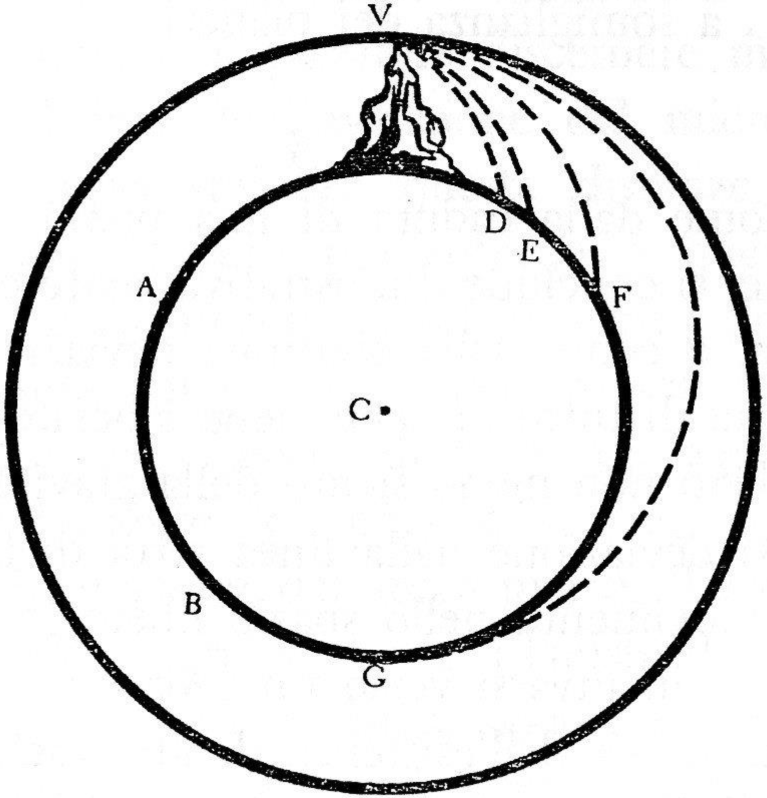


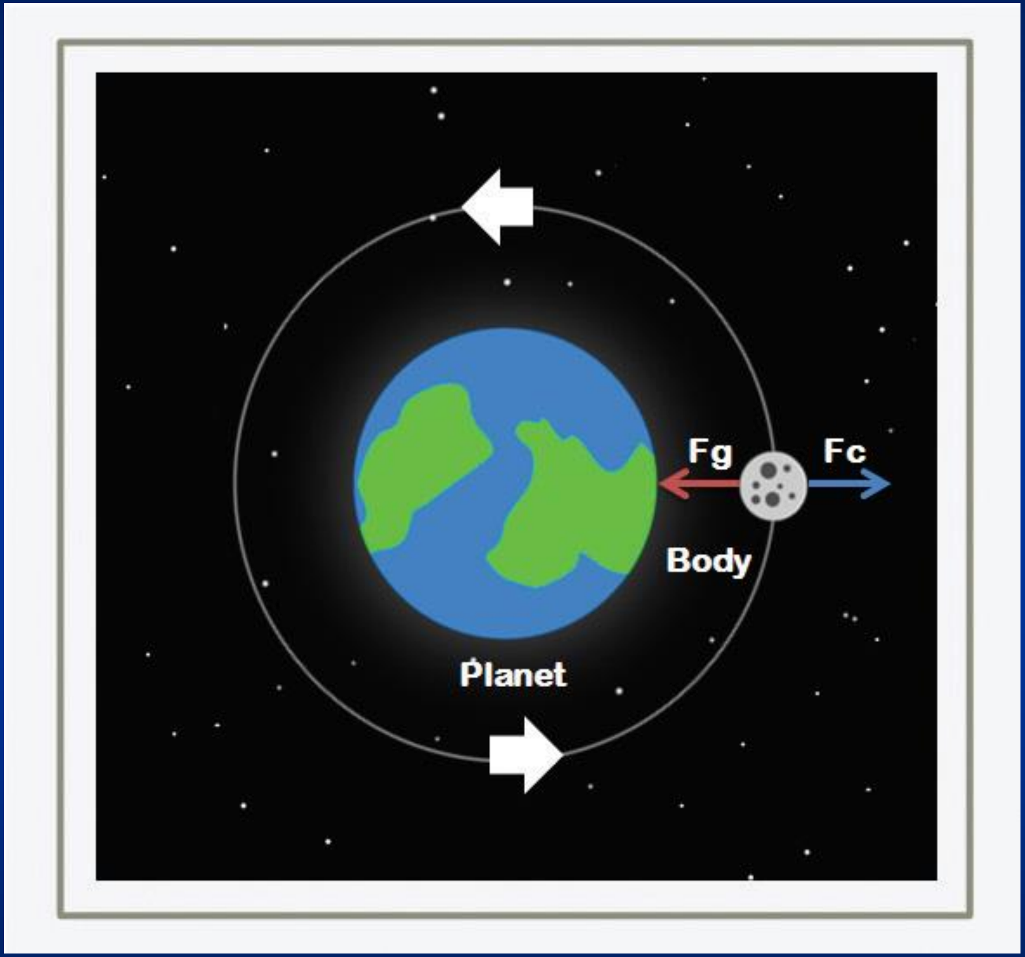
Fig. 2-3. The altitude and distance of a ball as a function of time, with an initial velocity of one, three and five miles per second.


V
D
E
A
F
C
B
G

trasmettitore della telemetria con il classico «bip bip», un po' il simbolo di questa nuova tecnologia, dell'attività spaziale appena nascente. Quando si esaurirono le batterie, e soprattutto quando si esaurì il combustibile necessario per mantenerlo in orbita, lo Sputnik 1 cominciò a deorbitare lentamente, finché terminò la sua breve vita disintegrandosi al rientro nell'atmosfera. Era il 3 gennaio del 1958: la Terra era di nuovo sola, ma non lo sarebbe rimasta a lungo.

Lo Sputnik 1 è stata la creatura più importante di Sergej Korolev, il padre del programma spaziale


Wile E. Coyote's
GRAVITY
LESSONS



Fg
Fc
Body
Planet

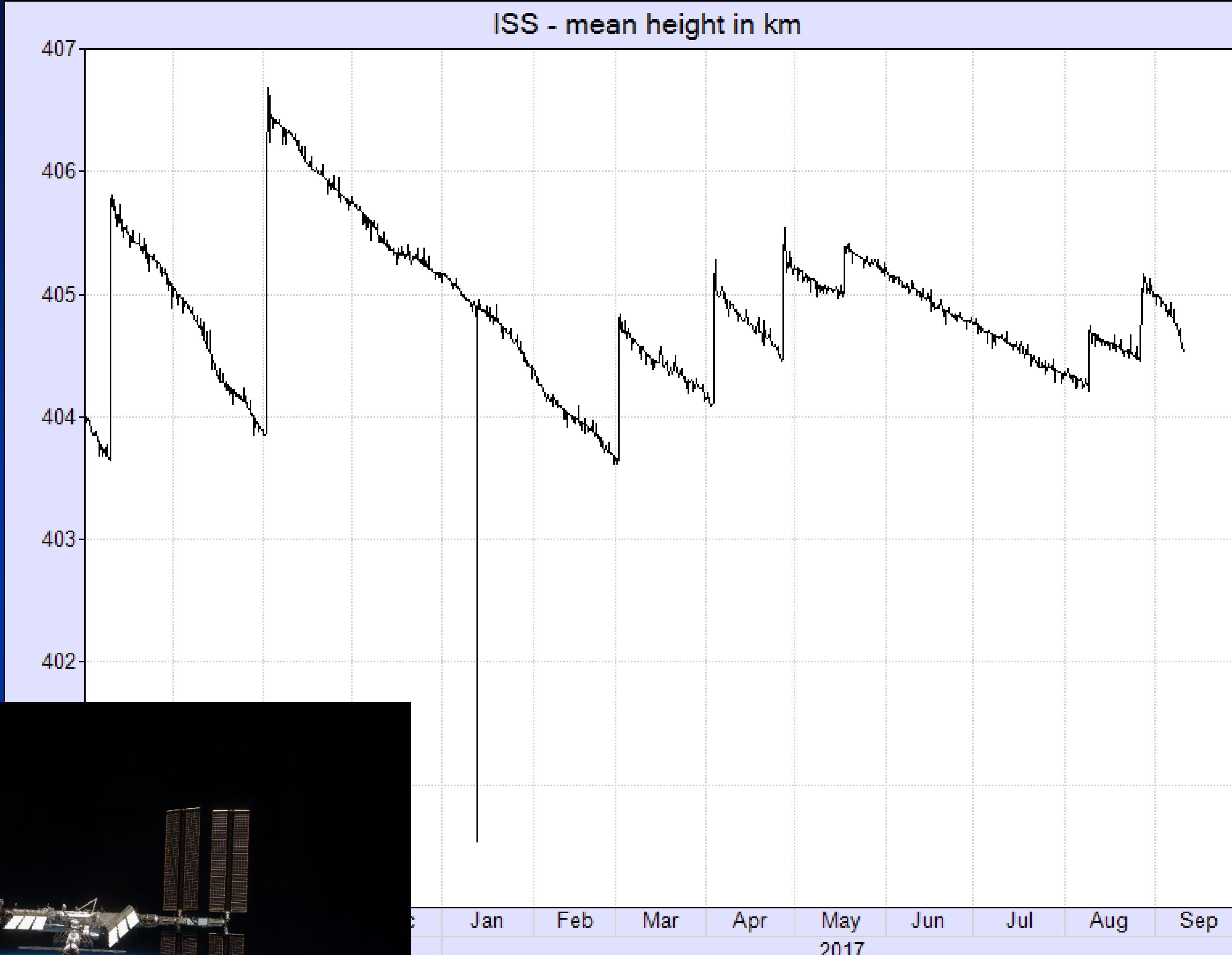
Vanguard 1
Il più antico oggetto in orbita

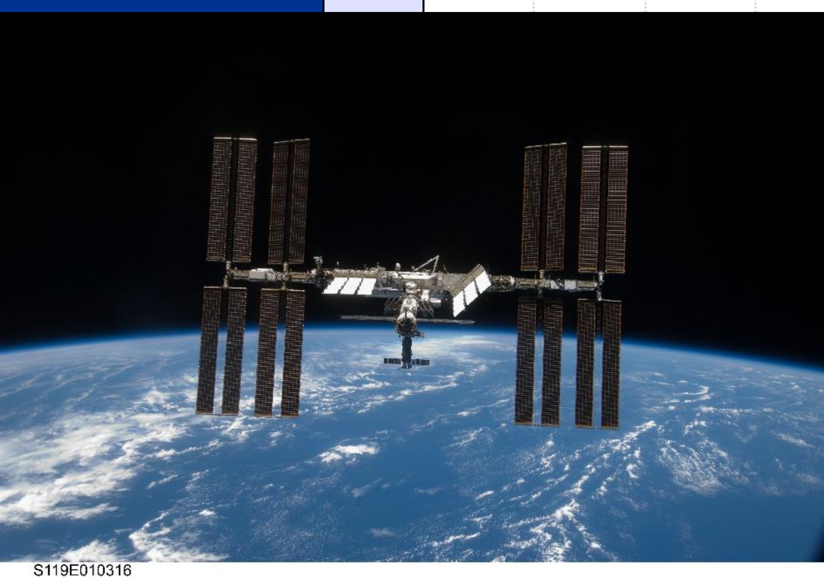
INPUT	
Data inizio	17/03/1958
Data fine	12/03/2021
Orbite/giorno	10,85
Raggio terra km	6367
Altezza min	652
Altezza max	3832

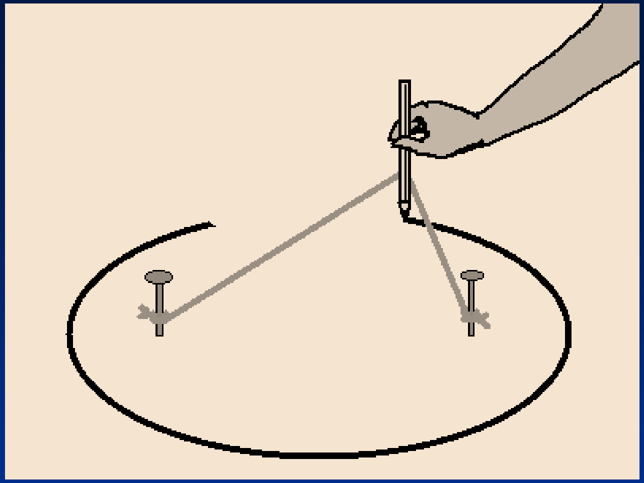
OUTPUT	
# giorni	23.006
# orbite	249.615
semiasse a km	8.609
semidist focale c km	1.590
e = c/a	0,185
semiasse b km	8.461
sviluppo orbita km	53.628
Percorrenza km	13.386.276.905
Orbite terrestri	14,2

Formula di Ramanujan

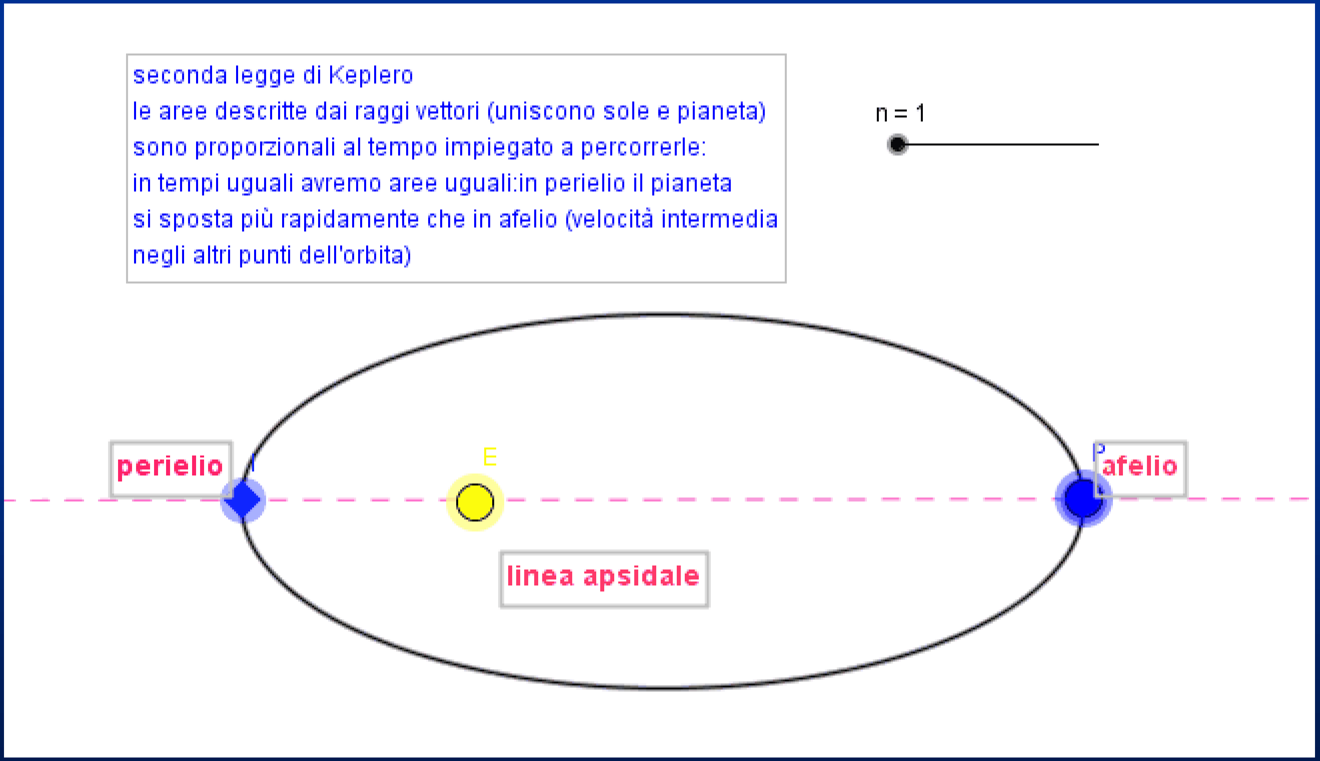
$$p \approx \pi \left(3(a+b) - \sqrt{(3a+b)(a+3b)}\right)$$


ISS - mean height in km
407
406
405
404
403
402
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
2017


S119E010316



I quadrati dei periodi di rivoluzione dei pianeti sono proporzionali ai cubi delle loro distanze medie dal Sole.



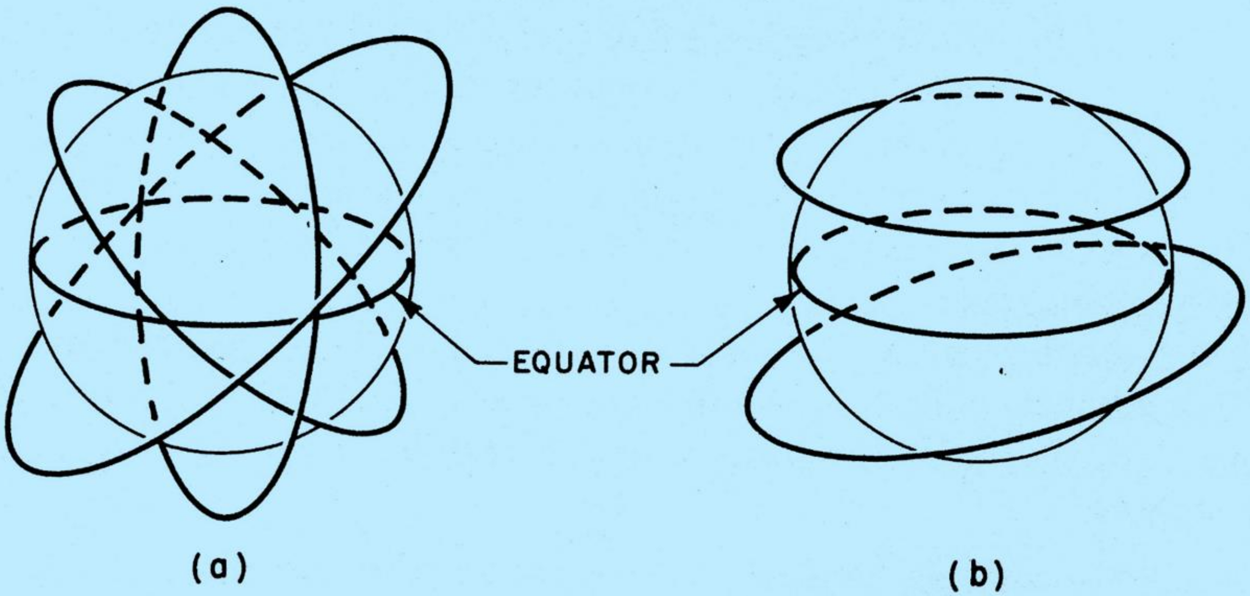


Fig. 2-5. (a) One of the focus points of the ellipse of all earth satellies must coincide with the center of the earth. (b) It is impossible for a satellite to orbit the earth as shown here where one of the focus points of the ellipse does not coincide with the earth's center.

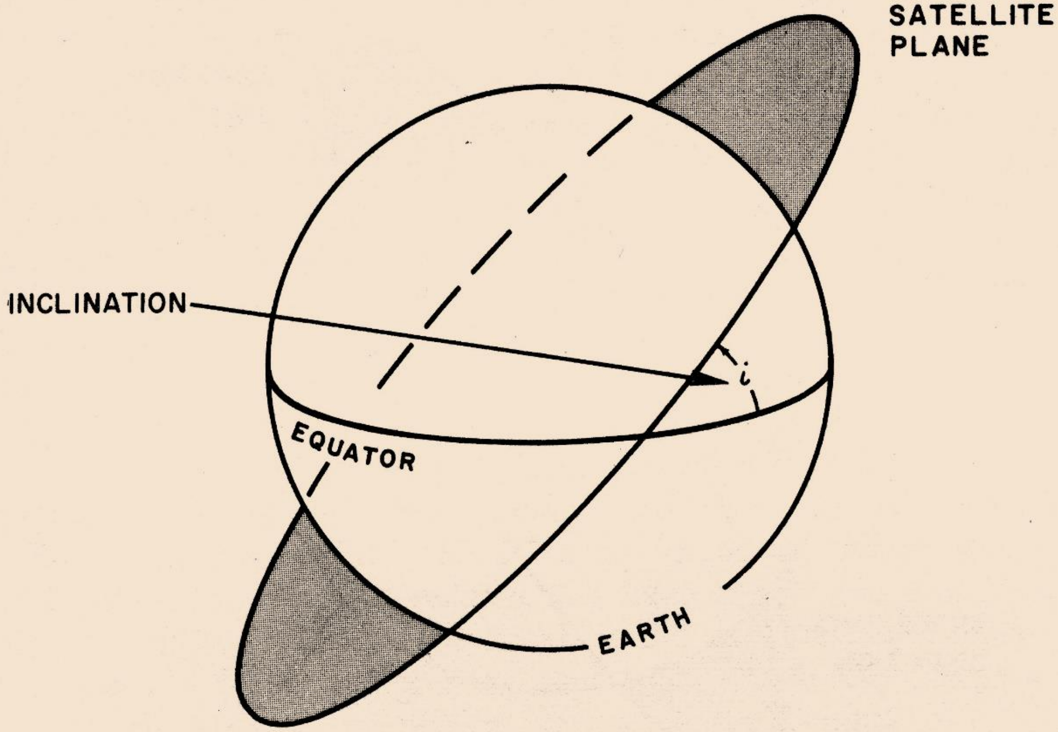


Fig. 4-1. The inclination is defined as the angle between the orbital plane and the equatorial plane.

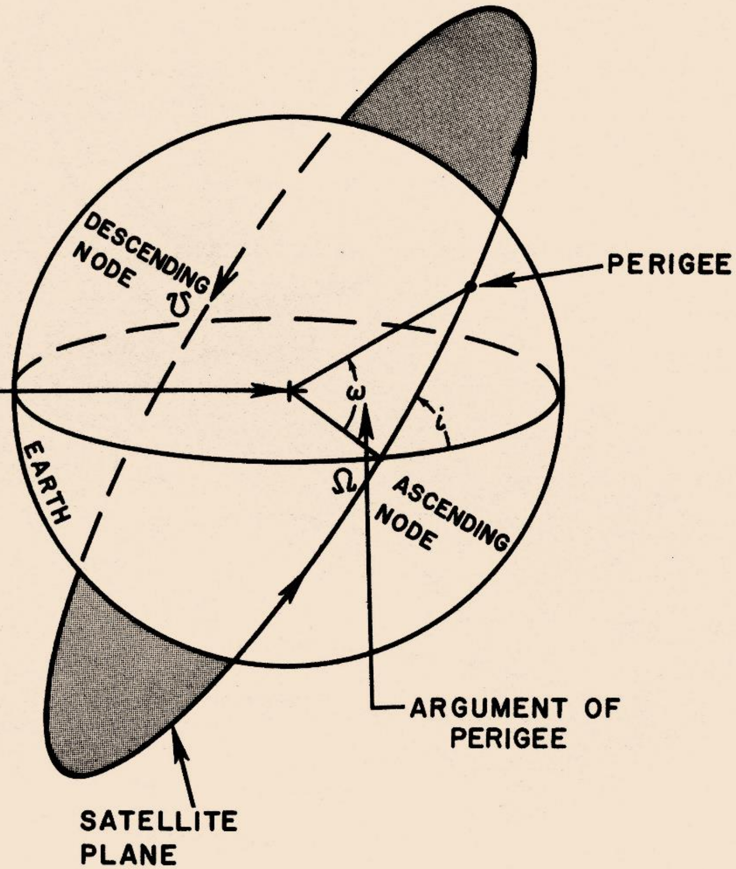


Fig. 4-15. The argument of perigee is the angle between the equator and the perigee point measured in the ascending direction.

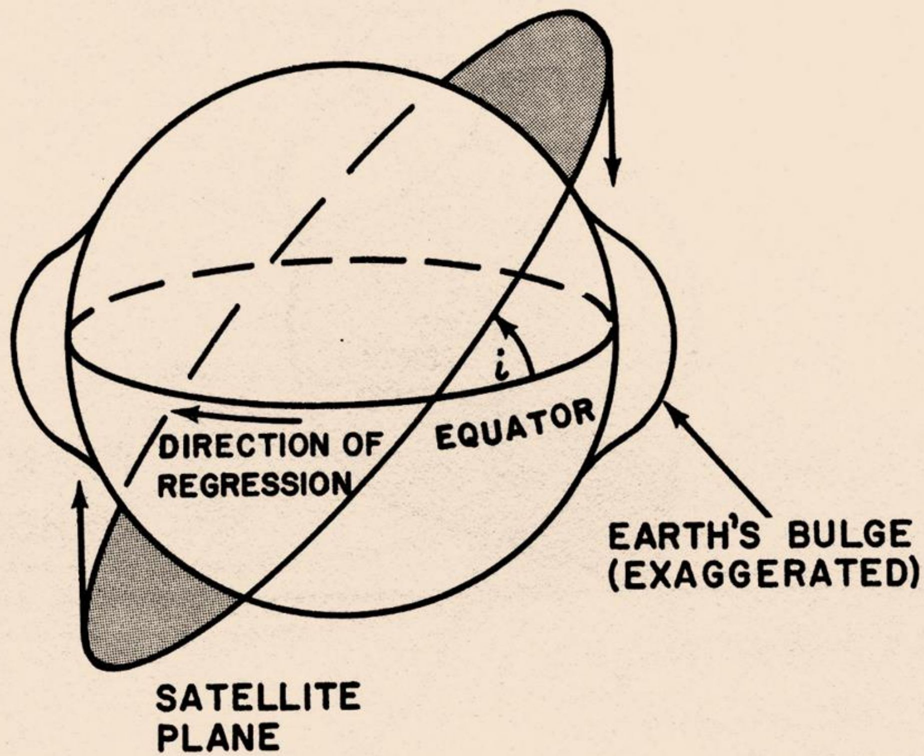
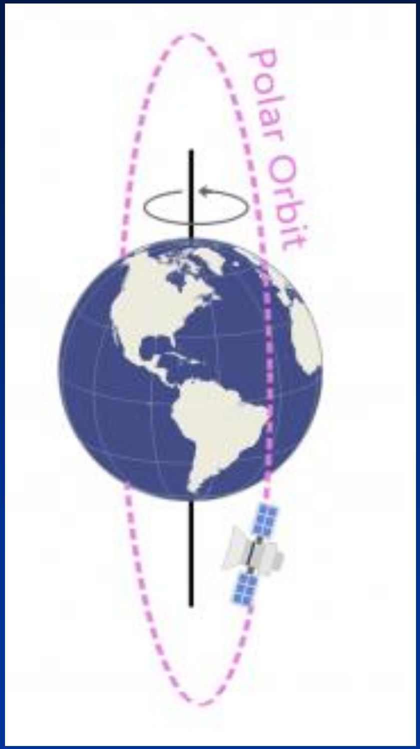
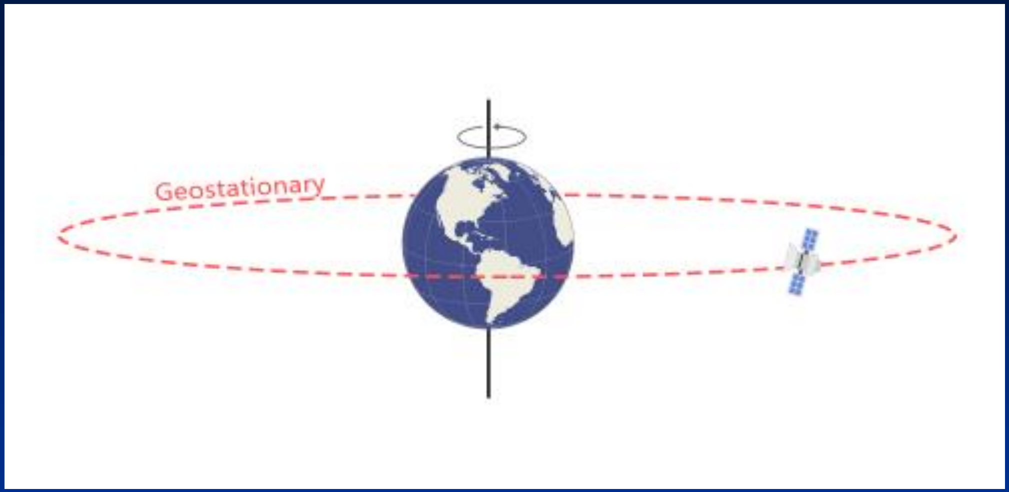
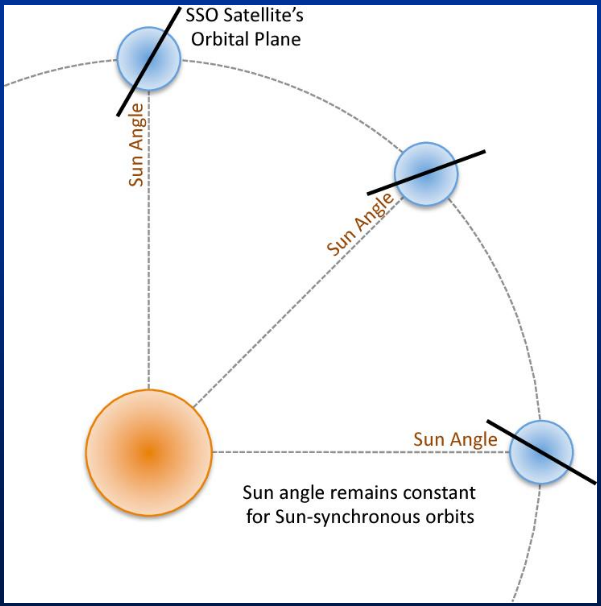
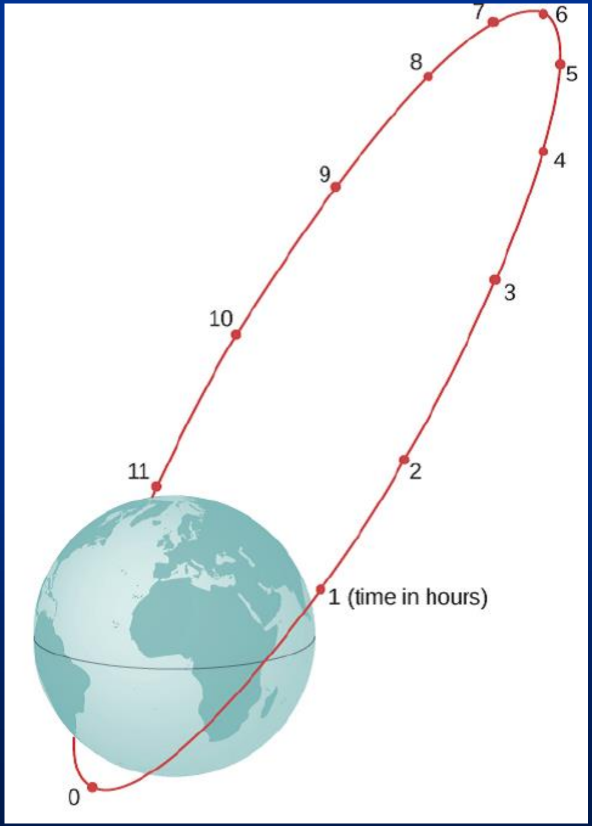


Fig. 4-12. The bulge at the equator produces a torque that causes the plane of the satellite to regress in a westerly direction.


Polar Orbit


Geostationary


SSO Satellite's
Orbital Plane
Sun Angle
Sun Angle
Sun Angle
Sun angle remains constant
for Sun-synchronous orbits


0
1 (time in hours)
2
3
4
5
6
7
8
9
10
11


Round the world in 90 minutes
UP GOES A MAN-MADE MOON
THE STAR
RED 'MOON' OVER LONDON
DAILY HERALD
USSIA WINS THE RACE INTO OUTER SPACE
RUSSIA LAUNCHE
SATELLITE HEARD BY
DAILY EXPRESS
Midnight—and London hears the first signals
SPACE AGE IS HERE
Man-made moon

"All the News That's Fit to Print"

The New York Times.

LATE CITY EDITION

NEW YORK, SATURDAY, OCTOBER 5, 1957.

SOVIET FIRES EARTH SATELLITE INTO SPACE; IT IS CIRCLING THE GLOBE AT 18,000 M. P. H.; SPHERE TRACKED IN 4 CROSSINGS OVER U. S.

HOFFA IS ELECTED TEAMSTERS' HEAD; WARNS OF BATTLE

COURSE RECORDED

Navy Picks Up Radio Signals—4 Report Sighting Device

560 MILES HIGH

Visible With Simple Binoculars, Moscow Statement Says

Device Is 8 Times Heavier Than One Planned by U.S.

FAUBUS COMPARES HIS STAND TO LEE'S

Flu Widens in City; 10% Rate Predicted; 200,000 Pupils Out

ARGENTINA TAKES EMERGENCY STEPS

SATELLITE SIGNAL BROADCAST HERE

Ex-Premier Mollet Accepts Bid To Form a New French Cabinet

City Sifts Charge That Schupler, Brooklyn Councilman, Sold a Job

Warsaw Crushes New Protest; Clubs, Tear Gas Rout Students

QUOTIDIANO INDIPENDENTE

TORINO Via Roma

LA STAMPA

SABATO 5 Ottobre 1957

Anno XIII - N. 237

Il lancio effettuato dall' URSS nel quadro dell'Anno Geofisico

Il primo satellite artificiale ruota da stanotte attorno alla Terra

E' una sfera di 58 centimetri di diametro; pesa 83 chili; vola alla quota di 900 chilometri ed alla velocità di 28.000 km. ora; compie un giro completo del globo in 95 minuti - Due potenti stazioni-radio trasmettono senza sosta, alternandosi, segnali captabili in tutti i Continenti - L'annuncio ufficiale di Radio Mosca aggiunge: "E' un passo verso i voli interplanetari,, - Gli astronomi ed i tecnici americani, che lanceranno fra qualche mese un altro satellite, collaborano alla raccolta dei dati scientifici

(Nostro servizio particolare) Mosca, 4 ottobre.

Henry Shapiro

Congratulazioni americane agli scienziati sovietici

Washington, 4 ottobre.

... a Washington

Gromiko ... accordo

...tale dei controlli ... un miglioramento

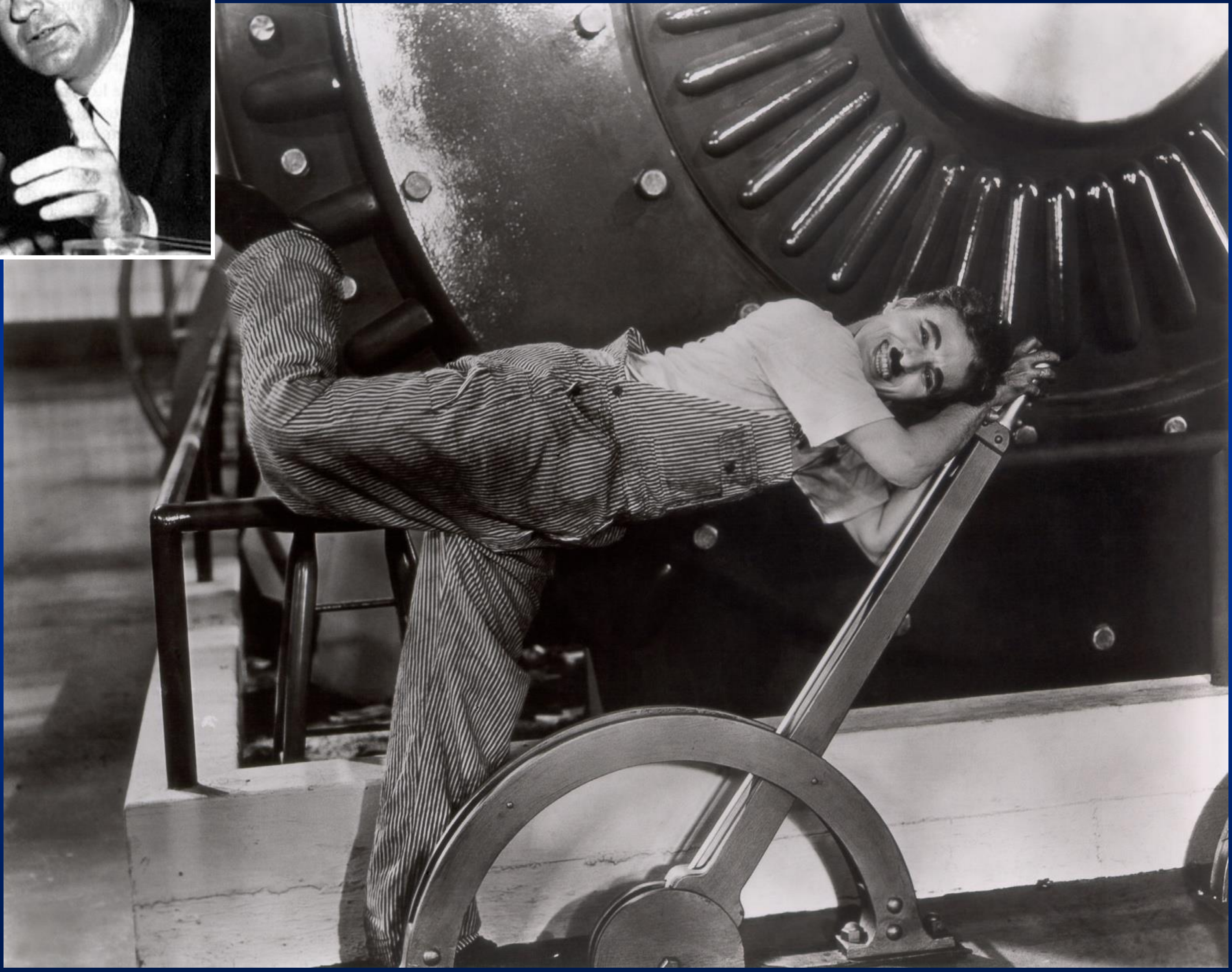
TERRA

Gli universitari polacchi reclamano un po' di libertà

Nuovi violenti scontri a Varsavia fra studenti e "milizia operaia,,

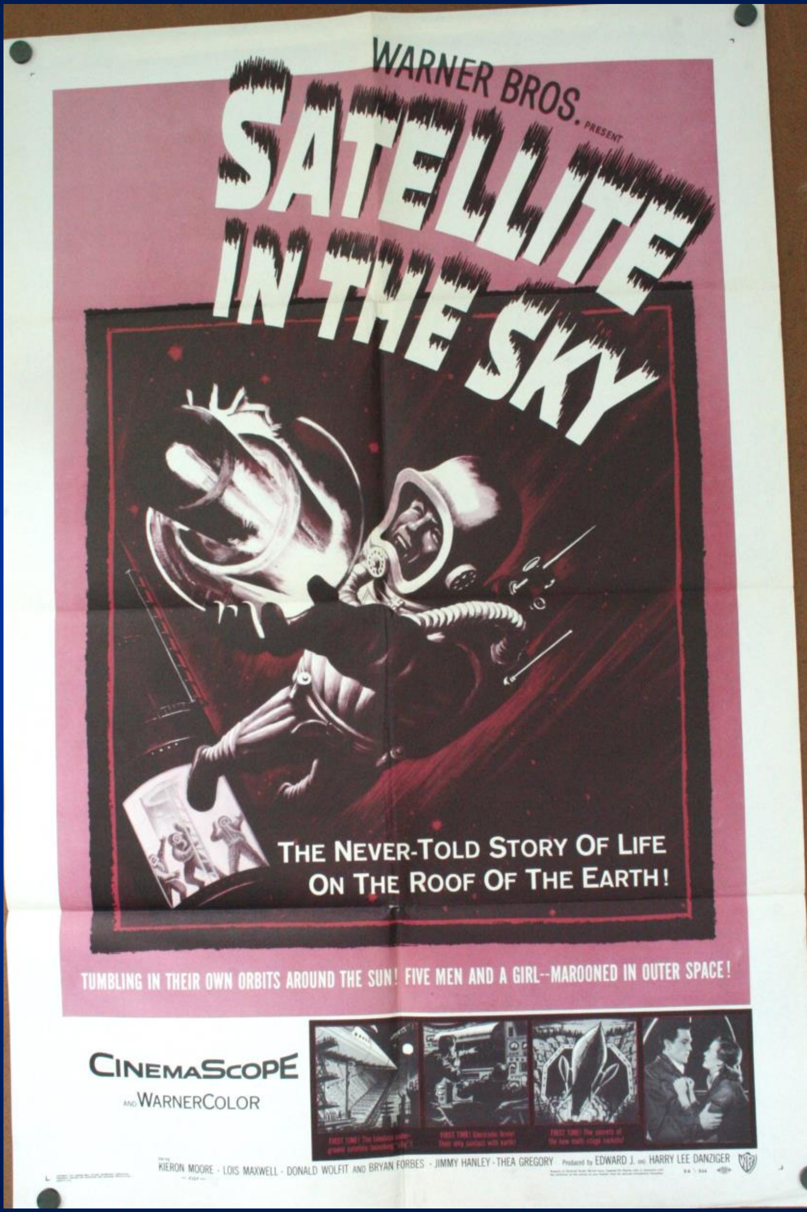
Un centinaio di feriti e contusi, fra cui il corrispondente de "l' Unità,, - Settemila uomini mobilitati per domare i tumulti - Il Politecnico chiuso per 48 ore


LIFE
THE SATELLITE
WHY REDS GOT IT FIRST,
WHAT HAPPENS NEXT
GOV. FURCOLO WRITES
TALE OF ZANY CAMPAIGN
U.S. SCIENTISTS
PLO ORBIT
OCTOBER 21, 1957
25 CENTS

—Dallas News Staff Photo.

SIGNALS FROM THE SATELLITE
Ham operator Roy Welch of Dallas, seated, plays a tape-recorded signal from the Russian space satellite for fellow hams at the State Fair of Texas. Welch recorded the signals on a receiver at his home.

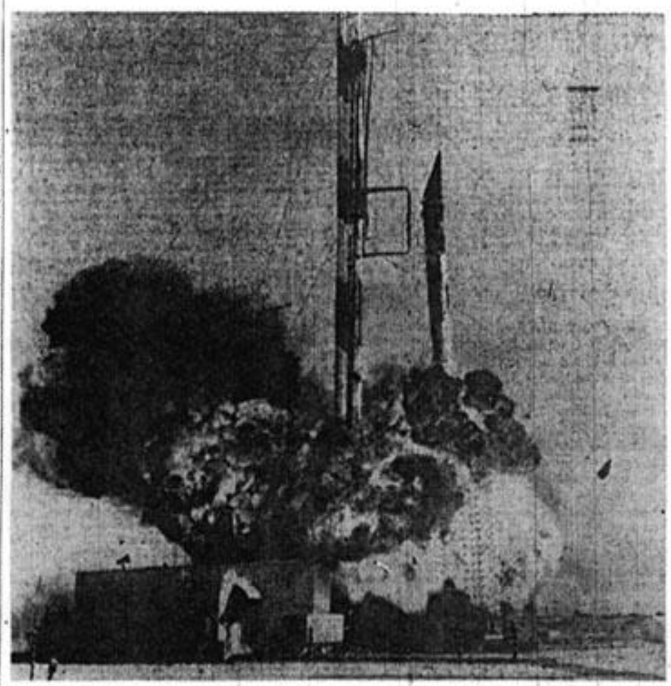

WARNER BROS. PRESENT
SATELLITE IN THE SKY
THE NEVER-TOLD STORY OF LIFE ON THE ROOF OF THE EARTH!
TUMBLING IN THEIR OWN ORBITS AROUND THE SUN! FIVE MEN AND A GIRL--MAROONED IN OUTER SPACE!
CINEMASCOPE
AND WARNERCOLOR
KIERON MOORE · LOIS MAXWELL · DONALD WOLFIT AND BRYAN FORBES · JIMMY HANLEY · THEA GREGORY
Produced by EDWARD J. AND HARRY LEE DANZIGER


EPA-4286
45 EP
ECONOMY PACKAGE
RCA VICTOR
A "NEW ORTHOPHONIC" HIGH FIDELITY RECORDING
SPUTNIK DANCE
A VISION
STAY A LITTLE LONGER
I'LL BE THE ONE
THE EQUADORS
©authentichistory.com
©RCA Printed in U.S.A.

Occasional rain today.
Mostly fair and colder tomorrow.
Temp. range: 52—42. Yesterday: 40.7—27.0

[SATU]RDAY, DECEMBER 7, 1957. 10c beyond 100-mile zone from New York City FIVE CENTS

VANGUARD ROCKET BURNS ON BEACH; FAILURE TO LAUNCH TEST SATELLITE ASSAILED AS BLOW TO U. S. PRESTIGE



Associated Press Wirephoto (U. S. Navy)

MISFIRE: Nose cone starts to fall to right as the rocket burns. Stand is at the left.

SPHERE SURVIVES

But Carrier Rises Only 2 to 4 Feet Before Flames Wreck It

Excerpts from transcript of news conference, Page 8.

By MILTON BRACKER
Special to The New York Times.

COCOA BEACH, Fla., Dec. 6—The rocket bearing the United States test satellite burst into flame and was almost consumed on Cape Canaveral beach this morning two seconds after firing. It had risen two to four feet.

The seventy-two-foot Vanguard vehicle—only forty-five inches in diameter at its widest point—was wrecked by a great fiery billow of flames nearly twice as high as the rocket itself.

Surprisingly, the satellite-bearing third stage, embedded in the nose of the second stage, survived the crash of the rocket. It was thrown clear.

However, it will not be usable, said J. Paul Walsh, deputy director of Project Vanguard.

Satellite Undamaged

Even more remarkably, the satellite itself—weighing barely four pounds, and about the size of a grapefruit or softball—was undamaged.

[In Washington, Dr. John P. Hagen, chief of Project Vanguard, said that the failure of the rocket was "undoubtedly a failure of some individual part" rather than one of design.]

Mr. Walsh said that the satellite had continued to send out its radio signals by its two transmitters. Technicians would

4 MISSILES BASES IN BRITAIN MAPPED

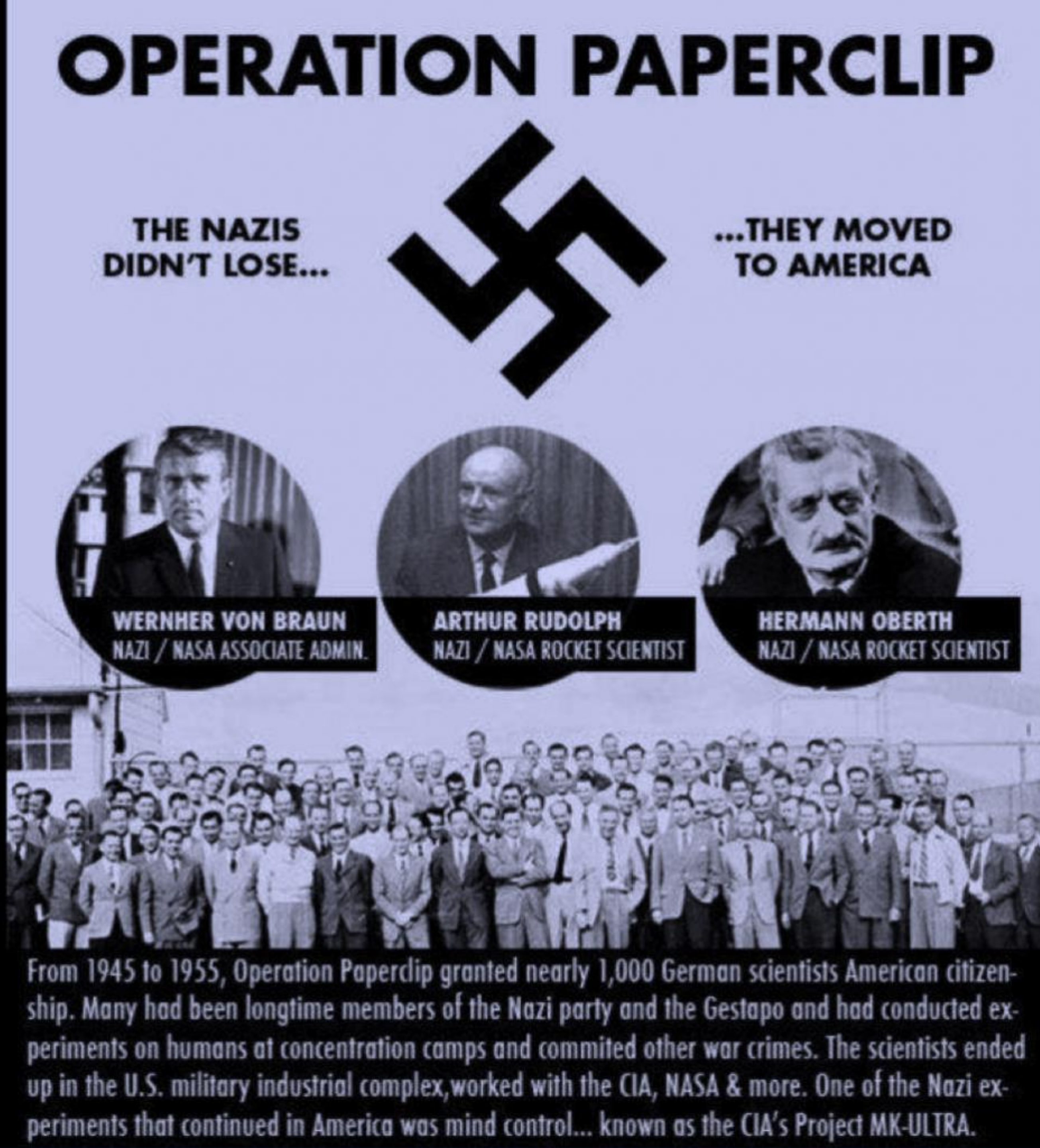
Pact With U. S. Revealed as McElroy Flies to London for Parleys on NATO

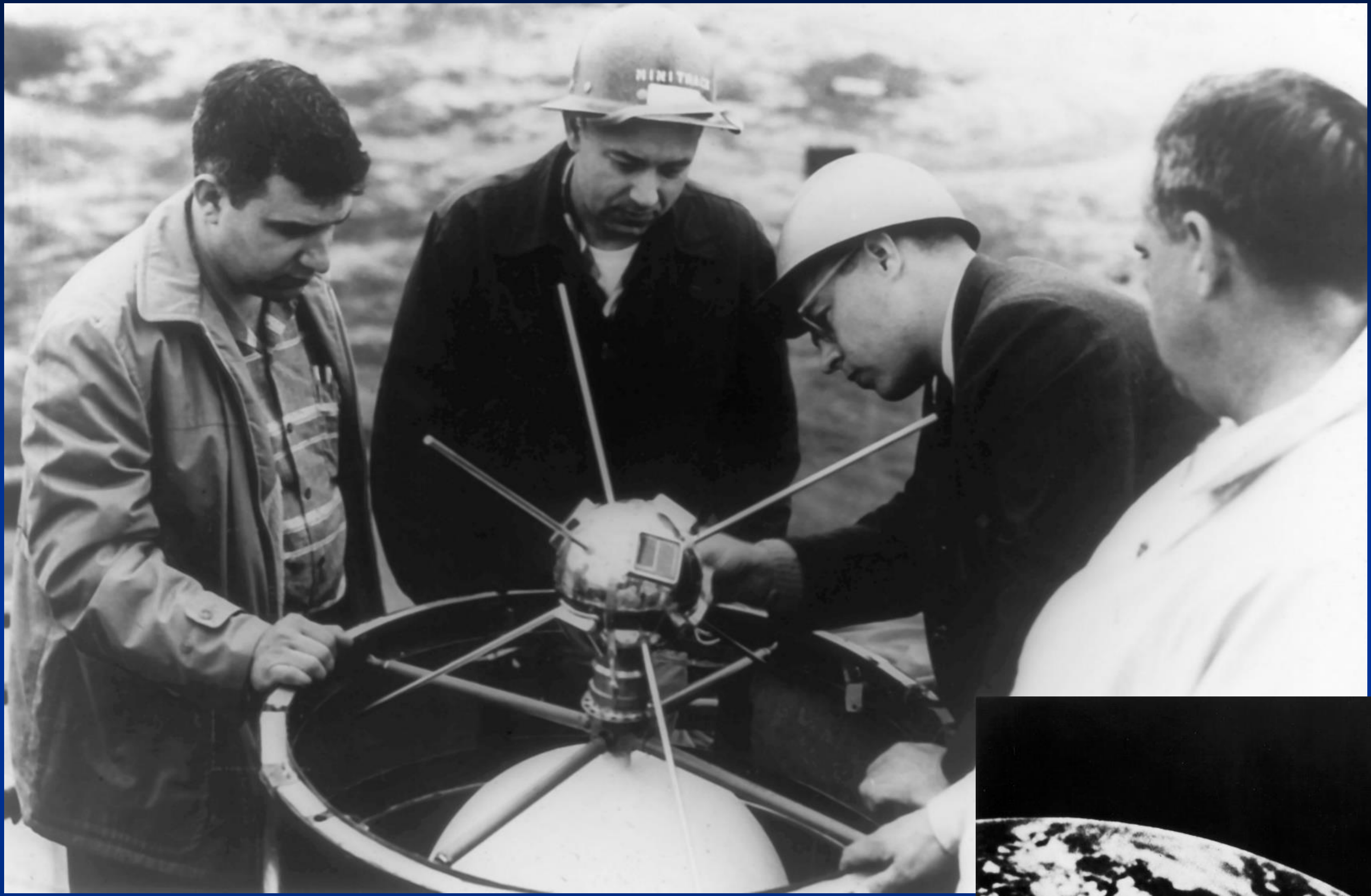
Khrushchev Says Rocket Of 1st Satellite Fell in U.S.

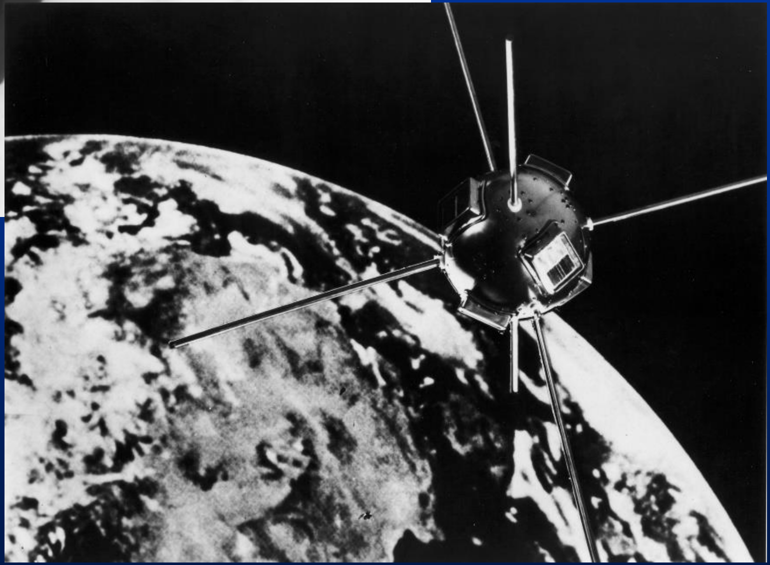
By WILLIAM J. JORDEN
Special to The New York Times.

MOSCOW, Dec. 6—Nikita S. Khrushchev asserted tonight that part of the carrier rocket that launched the first Soviet earth satellite had landed in the United States. The Communist party chief said:


S-IV
UNITED
UNITED


OPERATION PAPERCLIP
THE NAZIS DIDN'T LOSE...
...THEY MOVED TO AMERICA
WERNHER VON BRAUN
NAZI / NASA ASSOCIATE ADMIN.
ARTHUR RUDOLPH
NAZI / NASA ROCKET SCIENTIST
HERMANN OBERTH
NAZI / NASA ROCKET SCIENTIST
From 1945 to 1955, Operation Paperclip granted nearly 1,000 German scientists American citizenship. Many had been longtime members of the Nazi party and the Gestapo and had conducted experiments on humans at concentration camps and commited other war crimes. The scientists ended up in the U.S. military industrial complex,worked with the CIA, NASA & more. One of the Nazi experiments that continued in America was mind control... known as the CIA's Project MK-ULTRA.





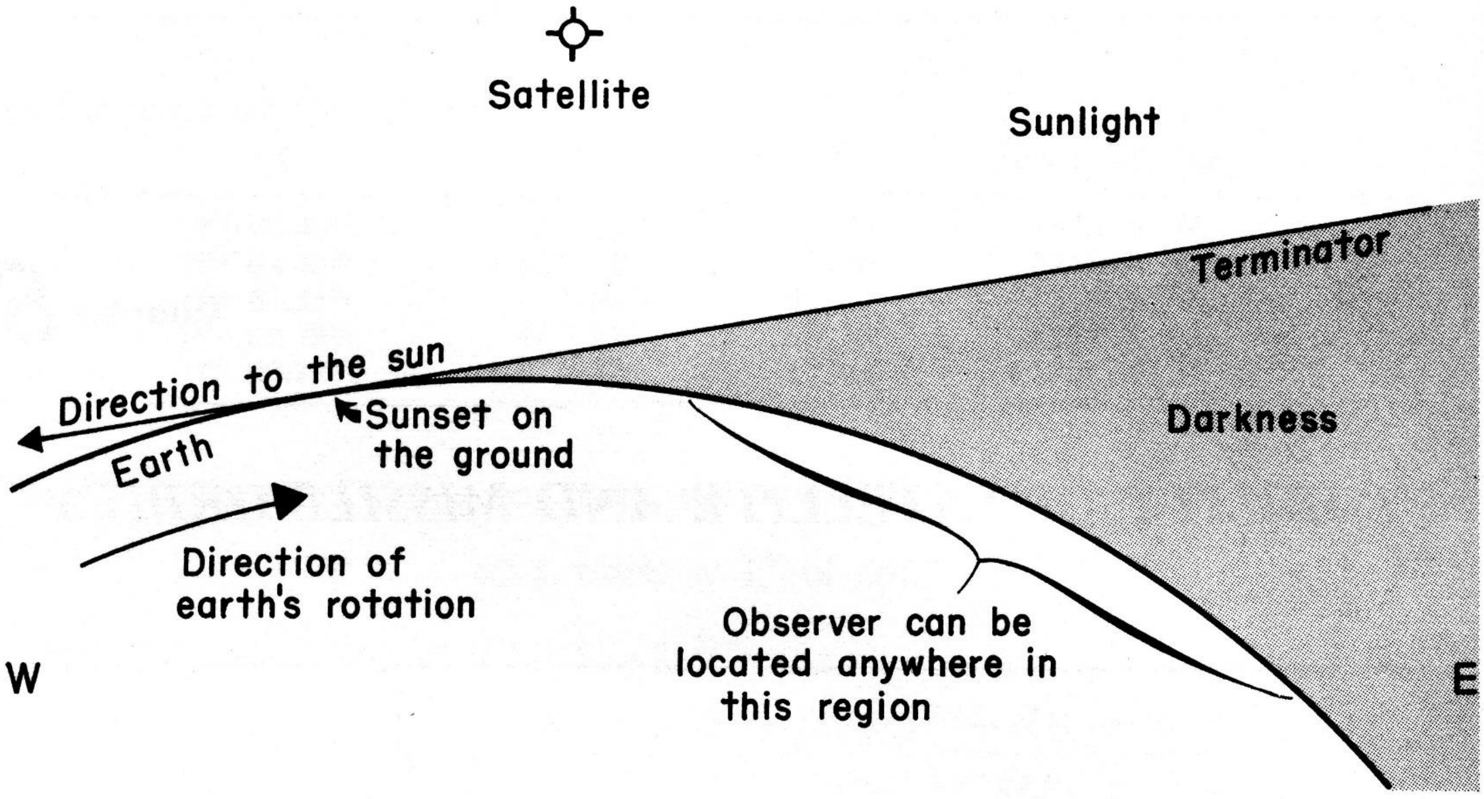
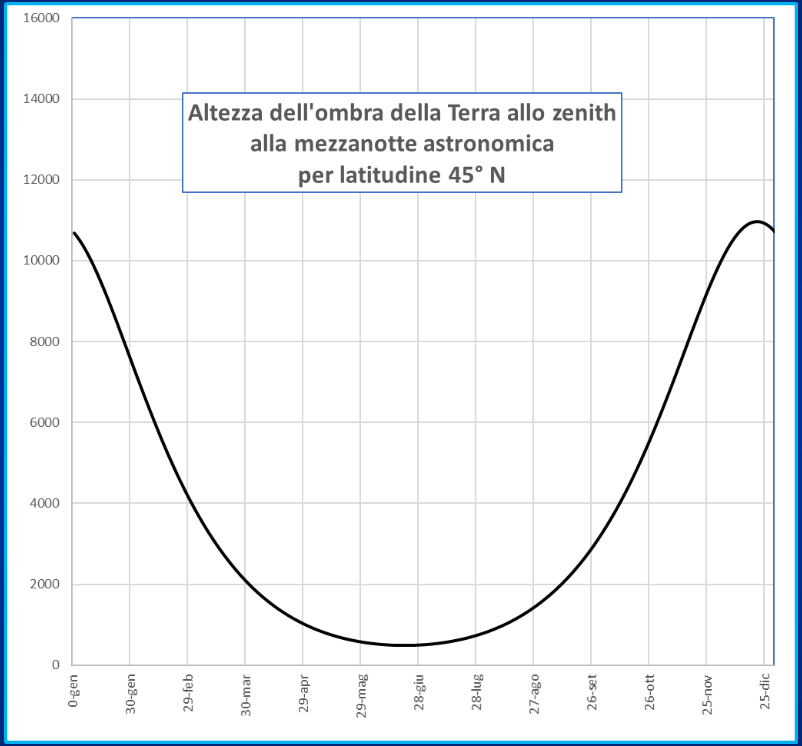
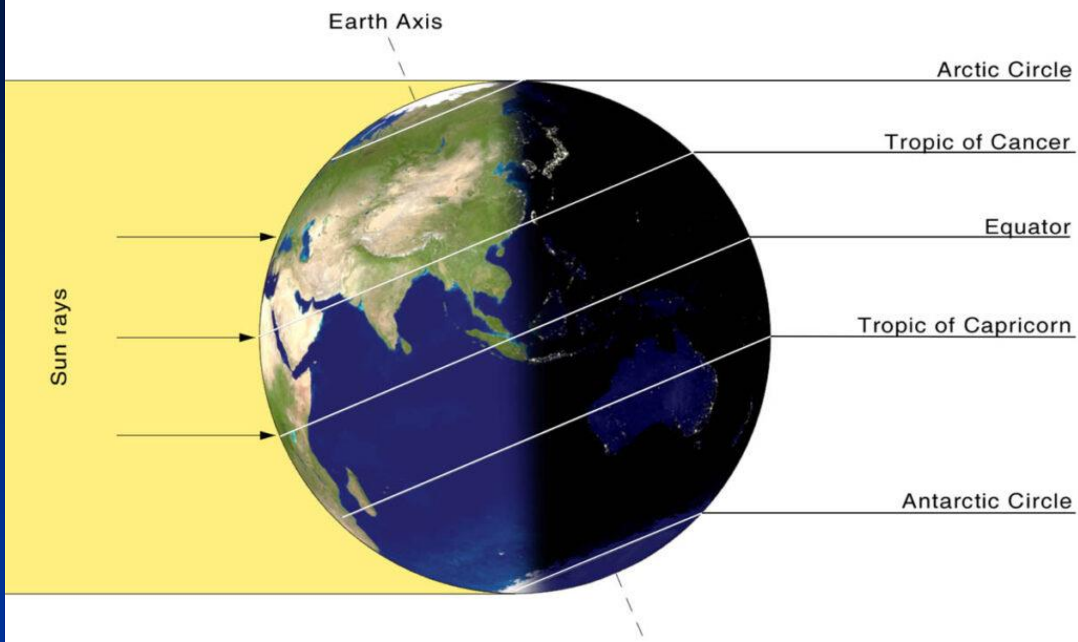


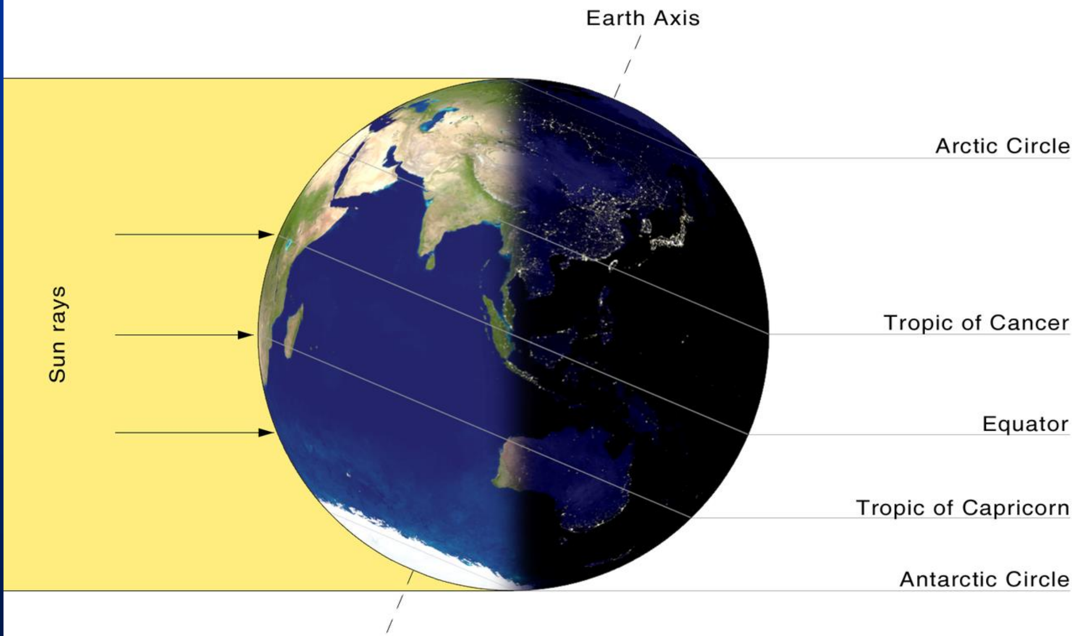
Fig. 8-1. The reason why a satellite can be seen optically. The satellite is in the sunlight and the observer is in the dark.



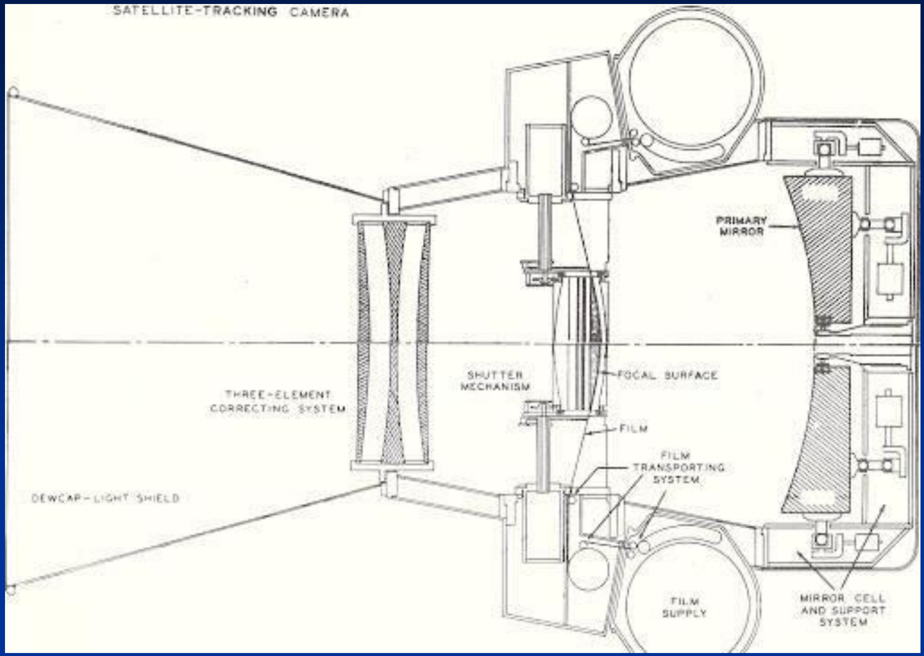
Altezza dell'ombra della Terra allo zenith
alla mezzanotte astronomica
per latitudine 45° N
16000
14000
12000
10000
8000
6000
4000
2000
0
0-gen
30-gen
29-feb
30-mar
29-apr
29-mag
28-giu
28-lug
27-ago
26-set
26-ott
25-nov
25-dic



Earth Axis
Arctic Circle
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
Sun rays

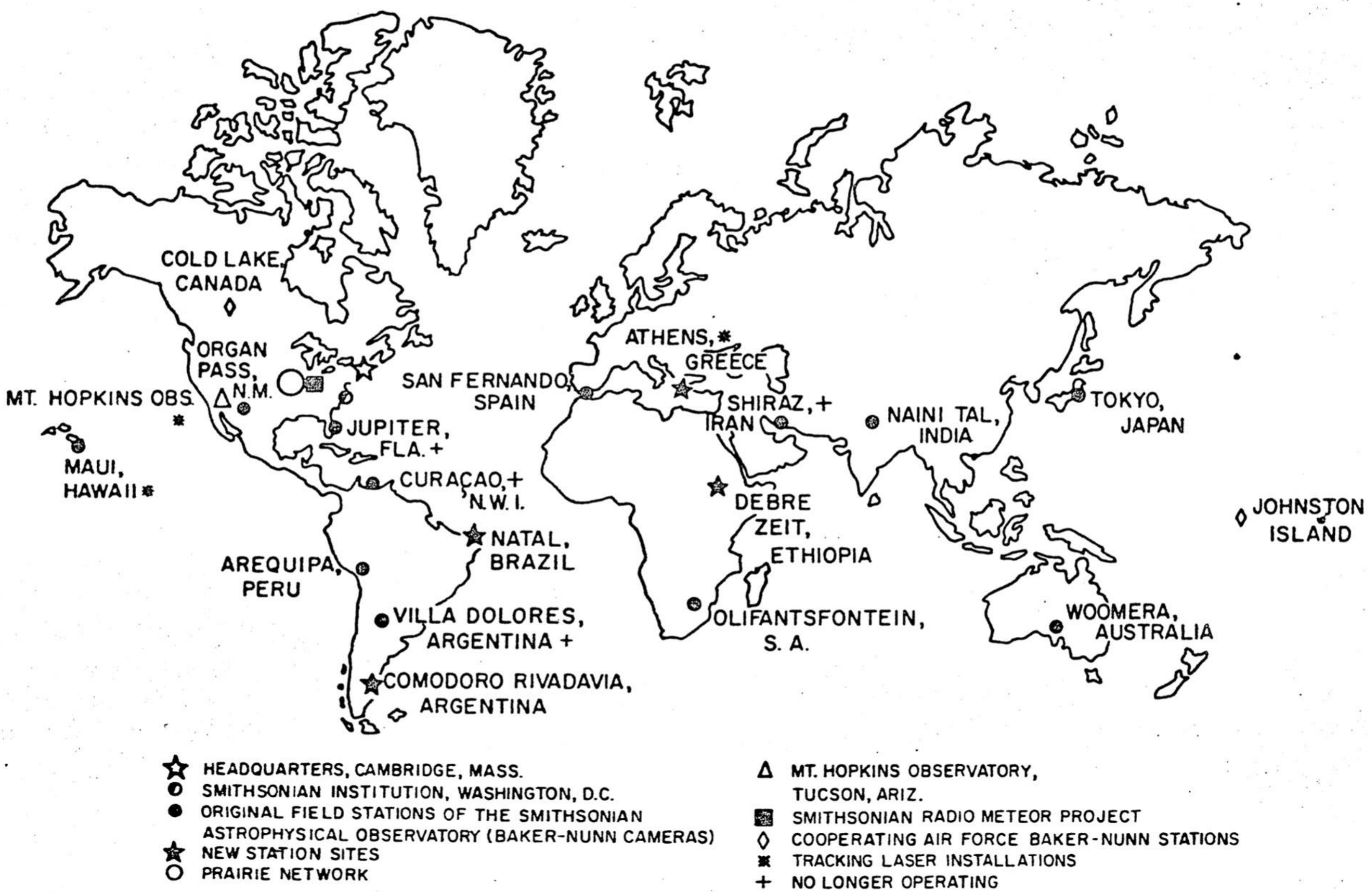


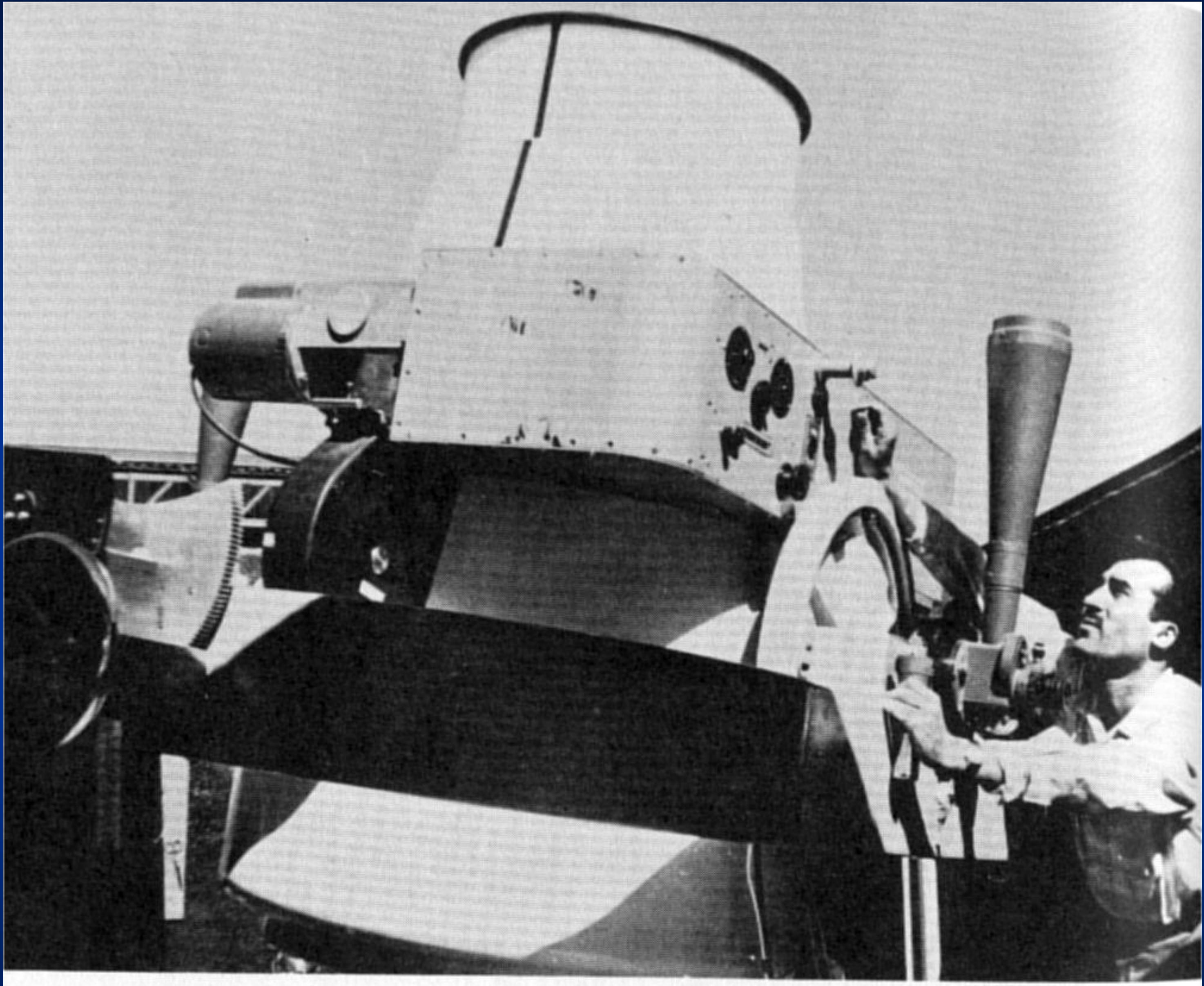
Earth Axis
Arctic Circle
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
Sun rays



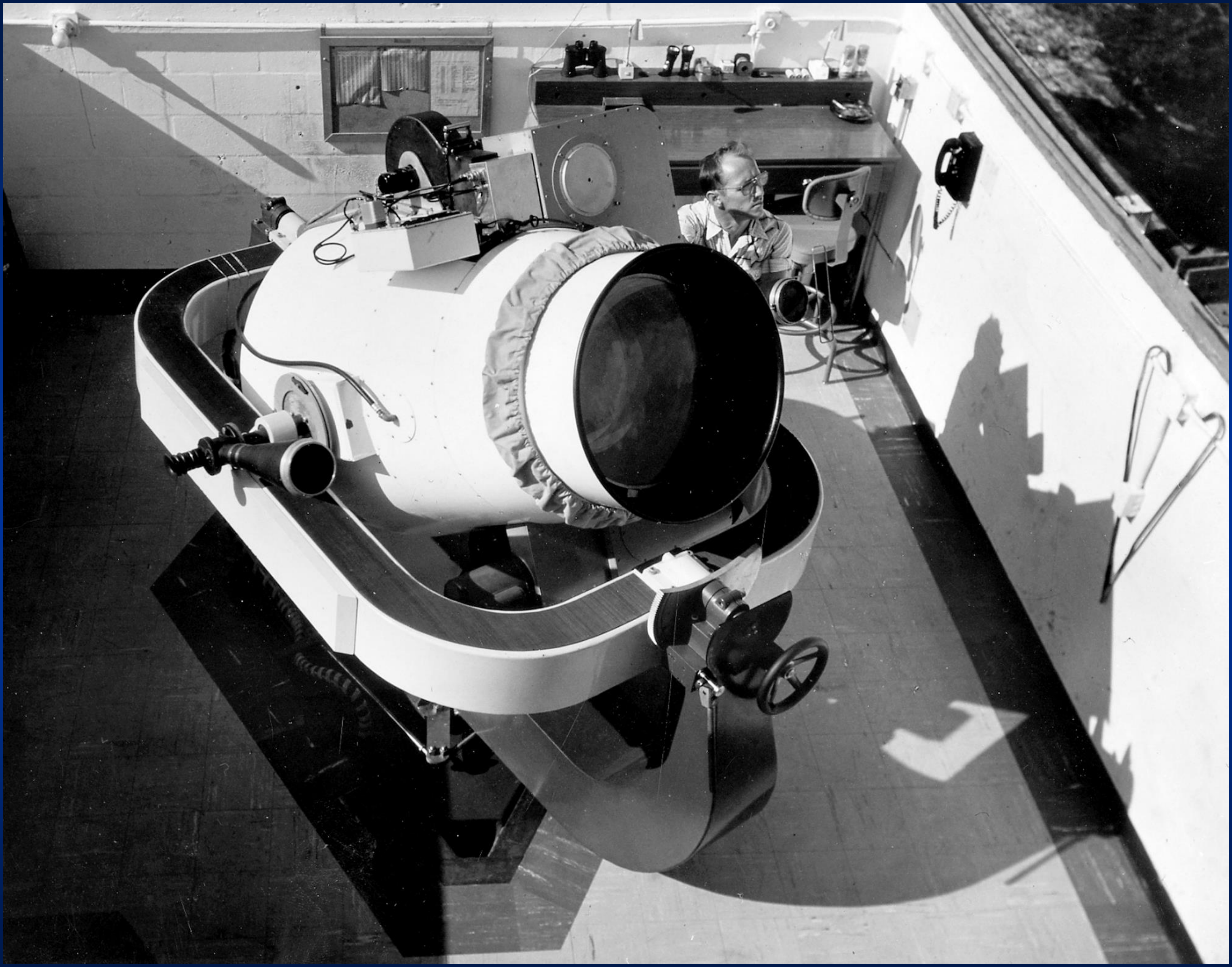
Apertura 500 mm
Diametro specchio primario 780 mm
Luminosità f/1
Film: pellicola Cinemascope 55 mm

FIELD STATIONS OF SMITHSONIAN ASTROPHYSICAL OBSERVATORY





Sky rangers at SAO station in Shiraz, Iran, often found themselves working twelve to sixteen hours a day at the beginning of the program.

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JOIN THE ARMY AIR FORCES
GROUND OBSERVER CORPS
FIRST FIGHTER COMMAND
Volunteer at your local Civilian Defense Office!

SMITHSONIAN ASTROPHYSICAL OBSERVATORY
BULLETIN FOR
Visual Observers of Satellites

NUMBER 1 60 GARDEN STREET, CAMBRIDGE 38, MASS. JULY, 1956

A Message to Volunteer Observers:

The satellite program of the International Geophysical Year offers a unique opportunity for the volunteer visual observer to make a significant scientific contribution. On him will rest the responsibility for obtaining the first and the last scientifically valuable visual observations of the satellites. Such observations will support the early radio tracking, and will probably be the only observations available of the dying satellite. The visual work will have particular importance for the calculation of the density of the upper layers of the atmosphere near the limit of measurements obtained with modern high-altitude rockets.


FRED L. WHIPPLE

The early satellite tracking is necessary for the calculation of preliminary satellite-finding ephemerides, essential to aiming the photographic Schmidt telescopes that will make the precision observations of the satellites. Should a satellite's radio fail or some satellites be launched without self-contained radios, the full weight of responsibility for the critical initial observations of the satellite will fall on the shoulders of the volunteer visual observers.

The earth satellite program has been developed by the U. S. National Committee for the International Geophysical Year. This Committee was established by the National Academy of Sciences to plan and direct the IGY program of the United States, and to coordinate our efforts with those of some 46 other nations, through a special international committee set up by the International Council of Scientific Unions. Thus the satellite program is part of an unprecedented study of the earth and its atmosphere, in which the principal scientific institutions and the leading geophysicists of the world are involved.

The National Academy of Sciences, through the National Science Foundation, has assigned to the Smithsonian Astrophysical Observatory the initiation of an optical tracking program for the earth satellites. A vital part of this program can be carried out only by a corps of qualified visual observers, who in organized groups will man selected strategic observing stations.

We hope that publication of this bulletin from time to time will act as an effective means of dissemination of authoritative information about the progress of the satellite program, methods and means of observing and reporting, and related topics.

We at the Smithsonian Astrophysical Observatory are grateful for your co-operation. The work required of the volunteer observer will be exacting and time consuming; but it will confer that most satisfying of all rewards to the person interested in science: the knowledge that he has contributed significantly to a unique international scientific effort of prime importance.

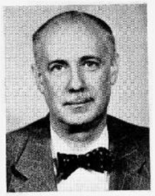
FRED L. WHIPPLE, Director
Smithsonian Astrophysical Observatory

J. ALLEN HYNEK, Associate Director
of the Satellite Tracking Program

A Note from the Coordinator:

The story of the satellites to be launched during the International Geophysical Year is in itself so dramatic that it requires no special promotion to awaken universal interest. Virtually every human being with ordinary curiosity and a spark of scientific imagination will want to see the satellites.

The *Bulletin for Visual Observers of Satellites*, addressed to the volunteers who have registered with the coordinator or with members of the advisory committee, will be issued from time to time. The information in the bulletins will be carefully checked for accuracy by Dr. Whipple, director, and by Dr. Hynek, associate director of the satellite tracking program.


ARMAND N. SPITZ

Even though this bulletin for visual observers will present the facts as exactly and precisely as possible, it cannot forsee all the problems that may arise; my office will undertake to answer necessary questions and to provide interpretation of difficult material. The bulletins may be kept in a spring binder or loose-leaf folder, together with supplementary information, so that the file, when complete, should contain the answers to practically all questions that may be raised about observing the satellite.

The code names MOONWATCH and SEESAW have both been suggested for the visual observing pro-

SMITHSONIAN ASTROPHYSICAL OBSERVATORY
BULLETIN FOR
Visual Observers of Satellites

NUMBER 2 60 GARDEN STREET, CAMBRIDGE 38, MASS. OCTOBER, 1956

NATIONWIDE MOONWATCH ALERT

The MOONWATCH program has now reached the stage at which a nationwide practice session is both desirable and necessary. The first such alert will probably be held between the latter part of November and Christmas, 1956. The exact date is to be announced about two weeks in advance. This will be a full-scale rehearsal, including a communications tryout. Each MOONWATCH station will be expected to report its "results" to Cambridge by radio or telephone.


J. ALLEN HYNEK

Concerning International Co-operation:

In this second bulletin for visual satellite observers, we send greetings to the delegates at the Barcelona conference of the International Geophysical Year (September 10-15, 1956), and through them to all citizens of their respective countries who wish to participate in the IGY artificial satellite program. We take this opportunity to invite amateur astronomers and other active watchers of the sky to share in the visual satellite observing program which was announced in *Bulletin* No. 1 (*Sky and Telescope*, July, 1956). Already, visual observers in the United States have begun the organization of stations for satellite observation.

The visual program has been termed MOONWATCH to distinguish it from the precision photographic satellite tracking, which has been described elsewhere and to which international participation has also been invited. Optical specifications for the precision Schmidt-type tracking cameras were calculated by Dr. James G. Baker, who, as most of you know, was the optical designer of the super-Schmidt meteor cameras used in the Harvard meteor program. The Baker design calls for a modified Schmidt system using a 31-inch spherical mirror and a triple corrector plate. The mechanical features of the tracking cameras, including shutter, timing, and film-transport mechanisms and the satellite tracking drive, have been designed by Joseph Nunn and Associates of Los Angeles. Manufacture of certain parts of these cameras has begun. Pyrex blanks for 12 such mirrors are in production at the Corning Glass Company.

MOONWATCH observers, though not directly participating in the photographic tracking of the satellite, will have much to do with the success of the precision program. The big cameras can go to work effectively only after a preliminary orbit of the artificial satellite has been obtained from visual or radio spottings. Also, in the last stages of the satellite's life, when the rapid changes in its orbit may give valuable information about upper atmosphere densities, the visual observations will be of paramount importance.

The wider and more extensive participation on the part of amateur astronomers and other nonprofessional observers everywhere is now possible because plans for the visual program have made important progress during the summer. All interested persons in other countries should make their desire to take part in this program known to the Smithsonian Astrophysical Observatory *through their respective IGY committees*. It is planned that an authorized coordinator of visual observers will be appointed by the IGY committee in each country.

Dr. Armand Spitz is the coordinator for the United States. He is advised by a national committee of experienced visual observers whose chairman is G. R. Wright. Subject to the discretion of the respective coordinators in other IGY countries, similar advisory committees may be created.

All requests for further information and other communications from foreign participants should be directed through their national coordinators and IGY committees. Essential information on observing procedures will, however, be contained in these bulletins, to be distributed to observers in other countries through these same channels.

As representatives of the secretariat of the International Geophysical Year, we welcome observers everywhere to assist in the satellite program, which offers an unparalleled opportunity for the capable nonprofessional astronomer to make a significant scientific contribution. May we hear from you through your local International Geophysical Year organization.

FRED L. WHIPPLE, Director
Smithsonian Astrophysical Observatory

J. ALLEN HYNEK, Associate Director
In Charge of Satellite Tracking Program

ASTRONOMY—EYEPIECES—ACCESSORIES

Wide Angle Kellner

28mm F.L.; Standard 1¼" Mount Big field lens & long eye relief. 2 achromatically corrected lenses of highest quality (field lens 30 mm, eye lens 28mm) in black anodized alum. cell. **No. 5223 $18.50 Ppd.**

A Super Buy! Complete M-17 Kellner Eyepiece

Probably the finest Kellner ever made for military use (M-17 elbow scope). We made a rare find and offer you this classic Kellner at a bargain price. They give very good definition and are suitable for almost any scope. 28mm F.L., 22 mm eye relief, 22 mm dia. eye lens, 29.5mm dia. field lens. Mount 33 mm x 37mm dia. Has diopter scale and focusing arrangement. Get 'em while they last. **No. 5205 $25.50 Ppd.**

Wide-Angle Erfle Eyepieces With 68° Field

Available Again After 7 Years
This war-surplus eyepiece contains 3 coated achromats (eye lens 39mm dia. 63mm E.F.L.; center lens 45mm dia. 78mm E.F.L.; field lens 45mm dia. 166mm E.F.L.) set in spiral thread focusing mount (3/8" focus travel). Exceptionally good image quality, 32mm F.L. Big wide field for Richest-Field scopes. **No. 5160 $39.95 Ppd.**
Adapter. Converts above to standard 1¼" O.D. Set screw locks in position. **No. 30,171 $8.25 Ppd.**

20mm F.L. ERFLE

- **Excellent spherical & chromatic correction**
- **Excellent eye relief • Coated lenses**

Extremely wide (65°) field of view & excellent correction of all aberrations. This precision-made imported Erfle gives you good power for use with refractors, reflectors, rich field telescopes, finder scopes, etc. Standard 1¼" O.D. Dia. of eye lens 22mm, field lens 26mm. Streamlined, modern design with handsome chrome & black finish. **No. 60,495 $46.50 Ppd.**

Ramsdens—Mounted in Aluminum Barrels

Standard 1¼" O.D.; 2 excellent plano-convex lenses in black anodized alum. Give barrels clear image. Directions incl. for using short F.L. eyepieces.
6mm F.L. **No. 30,204 $7.00 Ppd.**
12.7mm F.L. **No. 30,203 $8.75 Ppd.**
Above, but 0.917" O.D.
6mm F.L. **No. 30,195 $6.75 Ppd.**
12.7mm F.L. **No. 30,198 $7.75 Ppd.**
25.4mm F.L. **No. 30,194 $8.75 Ppd.**
25.4mm F.L. w/etched glass crossline reticle O.D. 0.917". **No. 30,334 $9.75 Ppd.**

19mm F.L. Symme[illegible]l E[illegible]ple[illegible]es

Fine eyepiece in stand[illegible], 1[illegible] dia. alu-minum mount. 2 co[illegible]ed achro[illegible]ats; 16mm clear dia. **No. 30[illegible]6 $11.[illegible] Ppd.**
In standard micros[illegible] s[illegible] mount. 0.917" dia. **No. 30,315 $10.95 Ppd.**

Eyepiece Mount
Rack & Pinion
Only $15.50

A rack and pinion focusing mount at an amazingly low price. Takes standard 1¼" eyepieces. Micrometer-smooth focusing action. 2¼" travel, 2 focusing knobs, variable tension; 4 mounting holes for greater rigidity, nuts and bolts included, cast aluminum; black wrinkle finish; chrome tube. Diagonal holder not incl. **No. 50,077 $15.50 Ppd.**

Blackened Brass Eyepiece Tubing

3 dia. give a slide fit when used together. Use as eyepiece, focusing tube, holder respectively.

Stock No.	Length	I.D.	O.D.	Price, Ppd.
117	3"	1-3/16"	1-1/4"	$1.80
118	2"	1-1/4"	1-5/16"	1.50
40,161	3"	1-5/16"	1-3/8"	1.80

Standard 1¼" Slide-Focus Eyepiece Holder

Economical, plastic unit has 3" focusing sleeve and locking screw for diagonal holder. **No. 60,067 $5.25 Ppd.**

Helical Gear Shaft and Knobs

Far superior to straight rack and pinion; smooth operation. One piece steel shaft and helical gear. Brass bushings. 14 teeth per in., face 236", pressure angle 14½", pitch 14, shaft .177" dia., length 2-3/8 ". Gear O.D. 275". **No. 40,197 $5.75 Ppd.**
Brass Helical Rack. Meshes with gear above.
Length 4" **No. 40,196 $3.00 Ppd.**
Length 11¾" **No. 40,195 $7.75 Ppd.**

Rack & Gear Focusing Mechanisms 1/8" face spur gears, pressure angle 14½°, pitch 48.

Brass Spur Gears No.	O.D.	Hole	Teeth	Price	Brass Racks No.	Size	Price
40,055	1/4"	3/32"	10	$1.95	40,060	4"	$1.90
40,056	19/64"	1/8"	12	1.95	40,054	6"	2.70
40,058	3/8"	1/8"	16	1.95	40,053	12"	4.75

Brass Gear Shaft With Knobs. ¼" dia., 10 teeth, 48 pitch, 2" long. Meshes with brass racks above, 7/8" dia. Knobs fit ends, set screw locked. **No. 40,164 $1.50 Ppd.**

Substandard Eyepiece Adapters

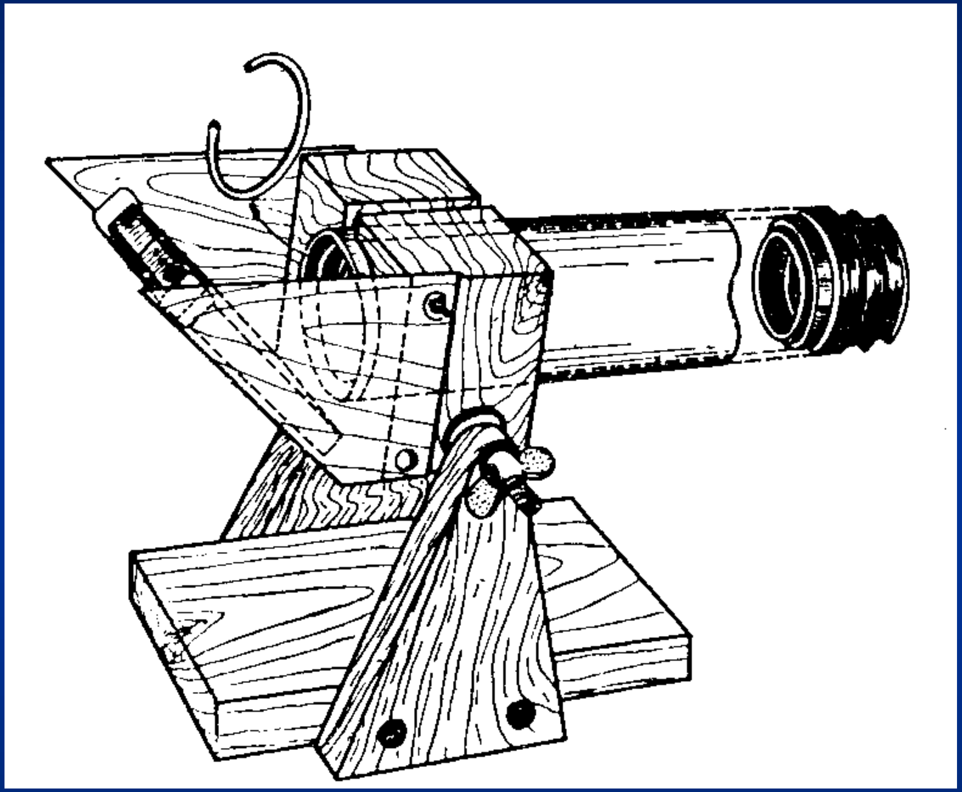
Change substandard eyepieces to standard 1¼" focusing mounts. Eyepiece fastened with small set screw. Black, anodized aluminum.
For 0.917" O.D. (microscope size eyepieces). **No. 30,199 $2.50 Ppd.**
[illegible] 0.96[illegible] O.D. (Japanese telescope standard eyepieces). **No. 41,615 $2.50 Ppd.**

[illegible]ubber [illegible]eguards

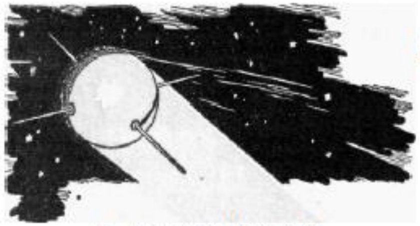
Excellent [illegible]r surplus. Will stretch slightly for fitting.
1½" hole [illegible], 2¼" ht. **No. 60,099 $1.25 Ppd.**
1-1/8" hole dia.; 1¼" ht. **No. 60,100 $1.25 Ppd.**

124 "WE HELP YOU REACH FOR THE SKY."

1974



Making and Using a $9 SATELLITE 'SCOPE

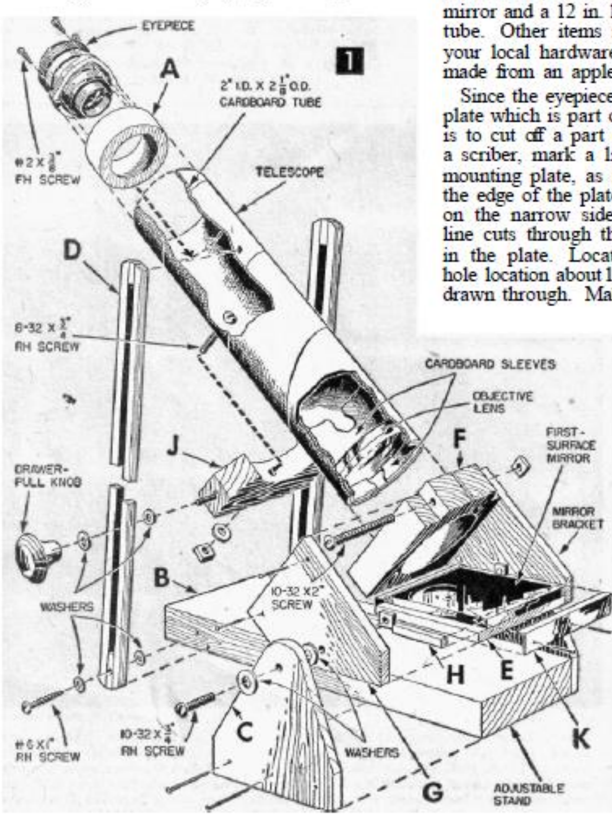


By ART YOUNGQUIST

POWERFUL enough to see the craters on the moon, this 7 power, 8° monocular, which is similar to the type used by Moonwatch teams, will enable you to see satellites far beyond the range of your naked eye. A first-surface mirror mounted at 45° to the telescope barrel reflects the object sighted into the telescope so that you can look down into the scope, while in a comfortable sitting position (Fig. 6), instead of straining your neck looking up.

The adjustable stand (Fig. 1) can be placed on a table or clamped to a camera tripod to steady the telescope; this is necessary when viewing an object at a great distance. A tilting arrangement that can be locked at any angle from 0° horizontal to 20° from vertical enables you to set the telescope at the exact angle called for when using the satellite finder method described later in this article.

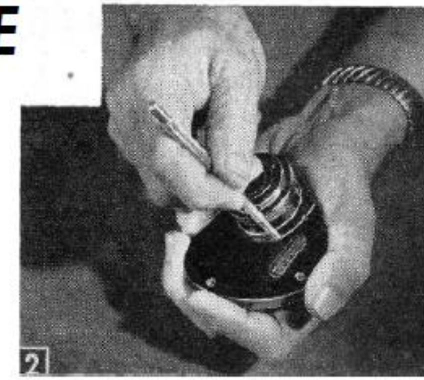
Availability of top quality war surplus lenses makes it possible for you to make this telescope for only $9. The lenses, listed below, may be purchased separately from surplus optical supply houses, or in a kit for $8.50 from American Lens and Photo Co., (Dept. S&M) 5700 North Northwest Highway, Chicago, Illinois. The lens kit consists of: a 7 x 50 focusing binocular eyepiece, a 51 millimeter achromat objective lens having a 180 millimeter focal length, a 2 x 3 in. first-surface mirror and a 12 in. length of 2 in. I.D. cardboard tube. Other items needed can be purchased at your local hardware store. Wooden parts were made from an apple box.



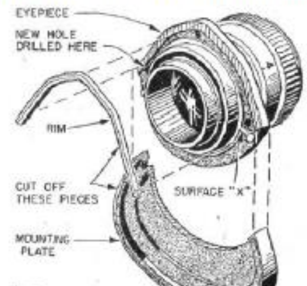
Since the eyepiece is mounted in an aluminum plate which is part of a binocular, your first step is to cut off a part of this plate (Fig. 3). With a scriber, mark a line on the wide side of the mounting plate, as in Fig. 2, the same distance the edge of the plate is from the eyepiece barrel on the narrow side. You will notice that this line cuts through the center of the drilled hole in the plate. Locate and counterpunch a new hole location about 1/4 in. from the hole you have drawn through. Make the new hole location the same distance from the eyepiece barrel as the two other holes you will find on the narrow side of the plate. Then curve the two ends of the scratched line outward to provide a lug of additional metal around the hole to be drilled and the existing hole diametrically opposite (Fig. 11). Drill and counterbore the hole the same size as the other two existing holes.

To cut the mounting plate, grip it in a vise as in Fig. 4, and saw along the scribed line with a fine-toothed blade in a coping saw. Then grip the cut edge of the mounting plate in the vise (Fig. 5) and saw off the projecting rim flush with surface X in Fig. 3. Smooth saw-cut edges with a file.

Making the telescope barrel from the cardboard tube is your next step. Because it is important that the eyepiece and objective lenses be installed parallel to one another, first check the ends of the tube for squareness as in Fig. 7 at two places 90° apart. If neither of the ends is square, cut 1/4 in. off one end for a starting or measuring end. To make a square cut, wrap the tube with a sheet of typing paper lining up the edges of the paper. Then, with a sharp knife or razor blade, score a line around the tube at the edge of the paper (Fig. 9). Continue by cutting the scored line deeper until the tube is severed.



Hold the scriber against the focusing ring for a guide when scribing line.



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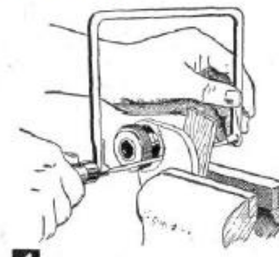
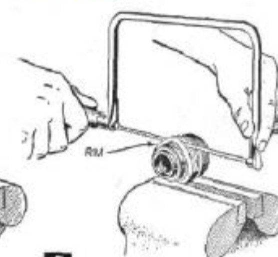


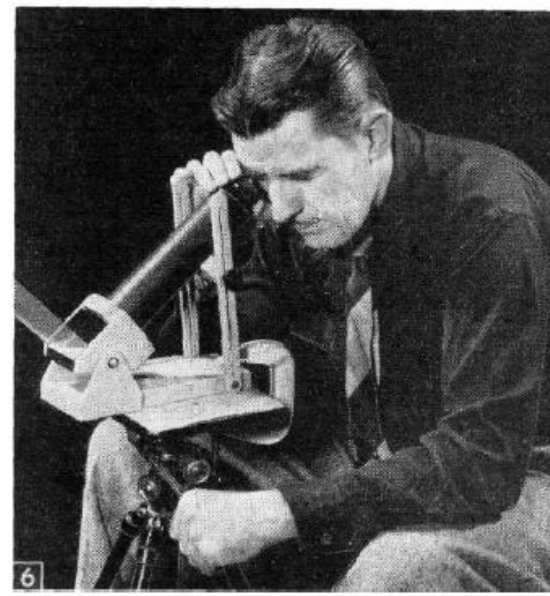
4 CUTTING OFF PART OF MOUNTING PLATE



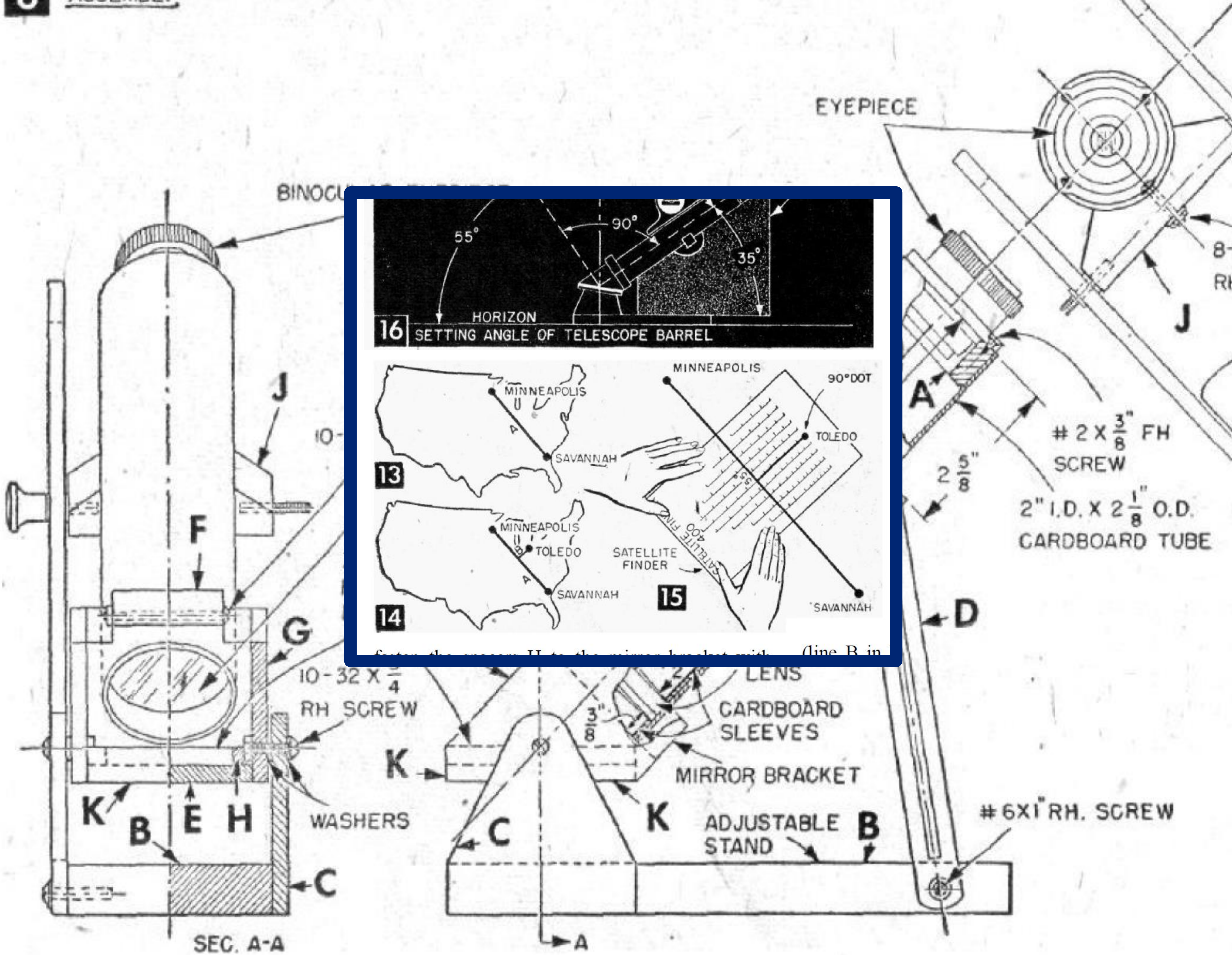
5 CUTTING OFF RIM

Measure and cut off a 3/8 and 1-1/2 in. ring or sleeve of the tubing first. Then cut the tubing for the telescope barrel 8-3/16 in. long.

The 1-1/2 in. piece of tubing must be glued inside the barrel (Fig. 11), to serve as a locating rim and stop for the objective lens. To fit it inside the barrel, first cut it lengthwise, then overlap the ends and insert into the tube. Cut off the overlapping end as in Fig. 10. Since the distance from the objective to the eyepiece is fairly critical, carefully measure and mark off the 7-13/32 in. distance inside the tube from one end. Mark it in three places equi-distant around the inside of the tube. Coat the outside of the 1-1/2 in. length of tubing with glue, insert it in the barrel tube so that the

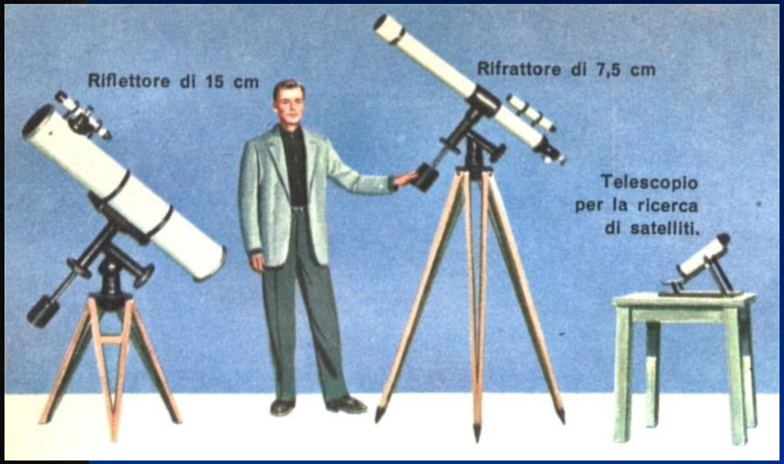


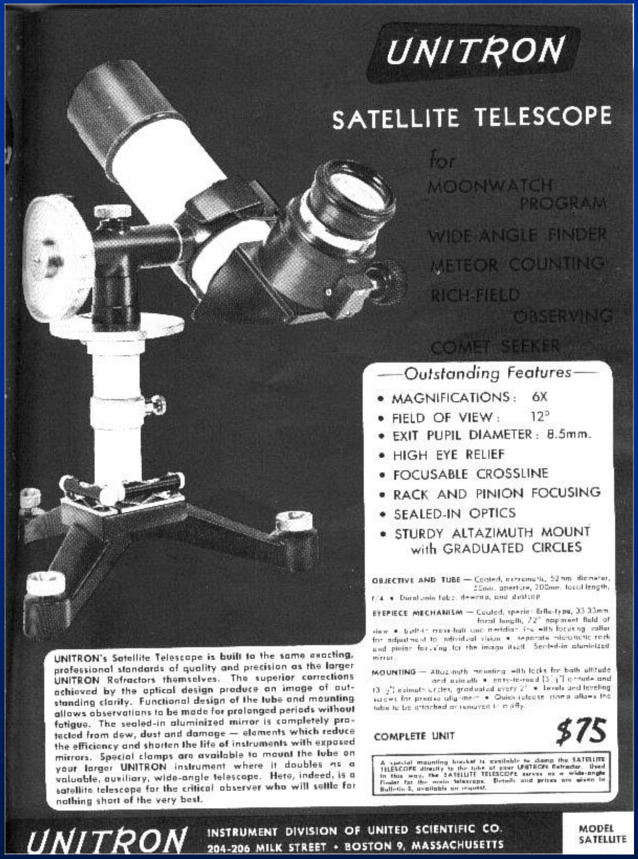
Camera tripod makes a convenient and steady mount for satellite scope. Clamp or bolt telescope to tripod head and adjust to lever position before setting angle of telescope barrel.

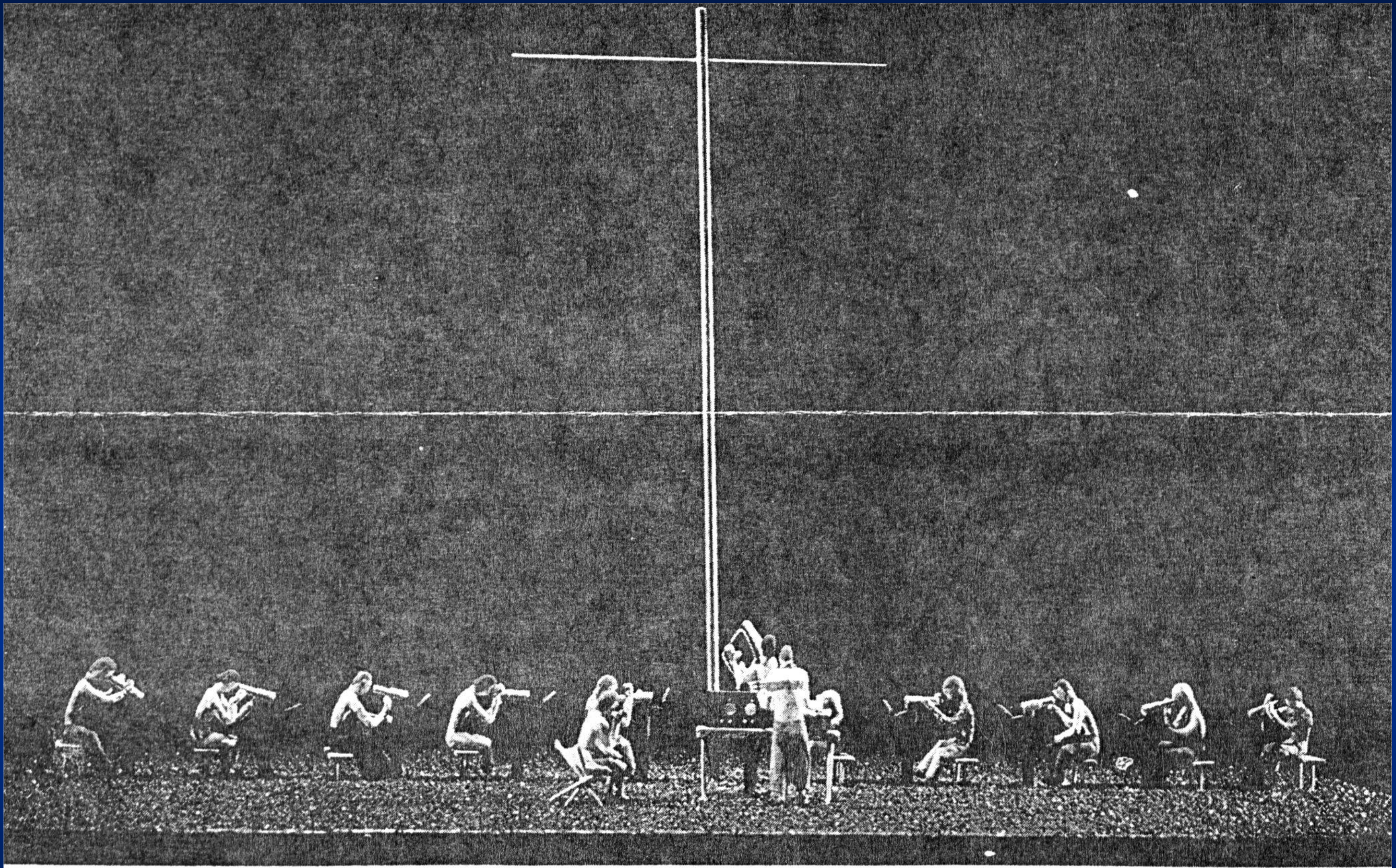


EYEPIECE
BINOCULAR EYEPIECE
J
A
2 X 3/8" FH SCREW
2 5/8"
2" I.D. X 2 1/8" O.D. CARDBOARD TUBE
D
F
G
10-32 X 3/4 RH SCREW
WASHERS
LENS
CARDBOARD SLEEVES
3/8"
MIRROR BRACKET
K
B
E
H
C
ADJUSTABLE STAND
6X1" RH. SCREW
SEC. A-A
A
55°
90°
35°
HORIZON
16 SETTING ANGLE OF TELESCOPE BARREL
MINNEAPOLIS
SAVANNAH
TOLEDO
90° DOT
SATELLITE FINDER
13
14
15


EDSCORP
SATELLITE SCOPE
EDMUND SCIENTIFIC CO.
BARRINGTON, N. J.

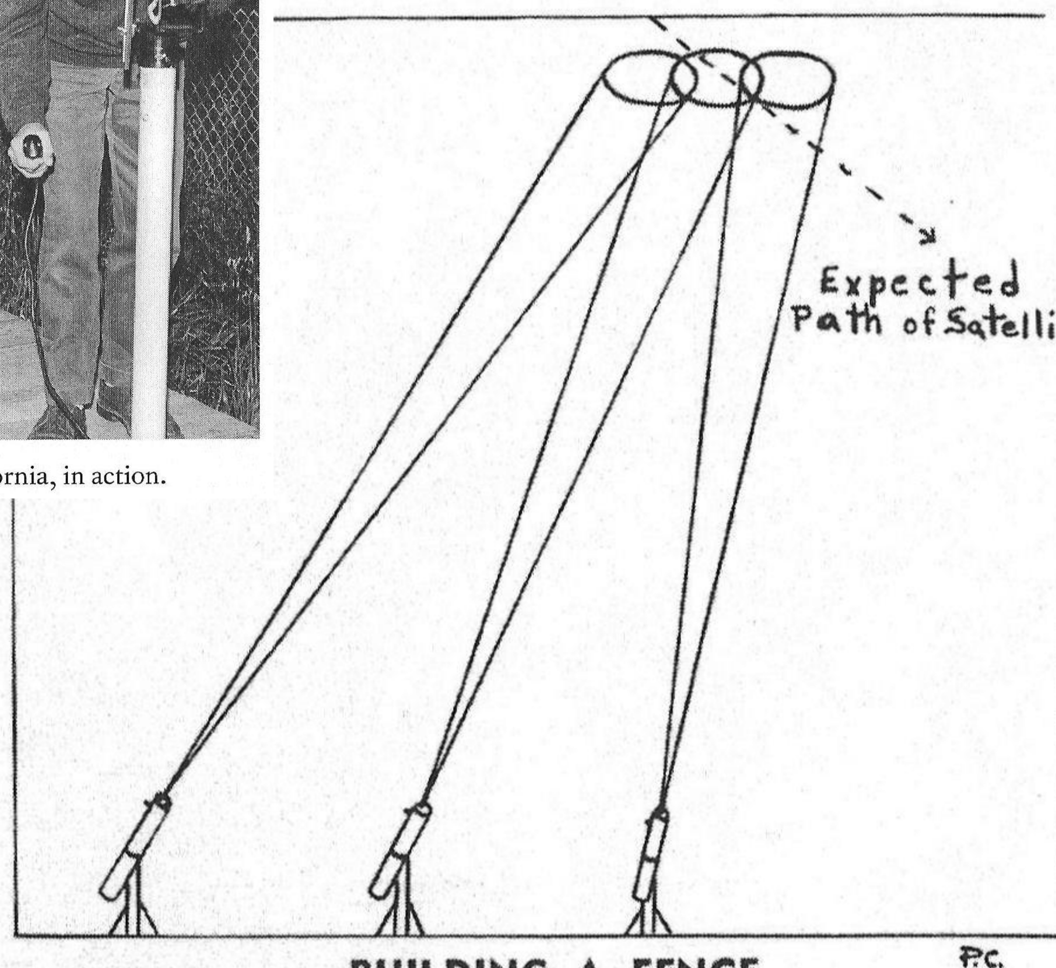

Riflettore di 15 cm
Rifrattore di 7,5 cm
Telescopio per la ricerca di satelliti.


UNITRON
SATELLITE TELESCOPE
for
MOONWATCH PROGRAM
WIDE-ANGLE FINDER
METEOR COUNTING
RICH-FIELD OBSERVING
COMET SEEKER
Outstanding Features
• MAGNIFICATIONS: 6X
• FIELD OF VIEW: 12°
• EXIT PUPIL DIAMETER: 8.5mm.
• HIGH EYE RELIEF
• FOCUSABLE CROSSLINE
• RACK AND PINION FOCUSING
• SEALED-IN OPTICS
• STURDY ALTAZIMUTH MOUNT with GRADUATED CIRCLES
UNITRON's Satellite Telescope is built to the same exacting, professional standards of quality and precision as the larger UNITRON Refractors themselves. The superior corrections achieved by the optical design produce an image of outstanding clarity. Functional design of the tube and mounting allows observations to be made for prolonged periods without fatigue. The sealed-in aluminized mirror is completely protected from dew, dust and damage — elements which reduce the efficiency and shorten the life of instruments with exposed mirrors. Special clamps are available to mount the tube on your larger UNITRON instrument where it doubles as a valuable, auxiliary, wide-angle telescope. Here, indeed, is a satellite telescope for the critical observer who will settle for nothing short of the very best.
OBJECTIVE AND TUBE — Coated, achromatic, 52mm. diameter, 50mm. aperture, 200mm. focal length, f/4 • Duralumin tube, dewcap, and dustcap
EYEPIECE MECHANISM — Coated, special Erfle-type, 33.33mm. focal length, 72° apparent field of view • built-in cross-hair and meridian line with focusing collar for adjustment to individual vision • separate micrometric rack and pinion focusing for the image itself. Sealed-in aluminized mirror.
MOUNTING — Altazimuth mounting with locks for both altitude and azimuth • easy-to-read altitude and azimuth circles, graduated every 2° • Levels and leveling screws for precise alignment • Quick-release clamp allows the tube to be attached or removed in a jiffy.
COMPLETE UNIT $75
A special mounting bracket is available to clamp the SATELLITE TELESCOPE directly to the tube of your UNITRON Refractor. Used in this way, the SATELLITE TELESCOPE serves as a wide-angle finder for the main telescope. Details and prices are given in Bulletin S, available on request.
UNITRON
INSTRUMENT DIVISION OF UNITED SCIENTIFIC CO.
204-206 MILK STREET • BOSTON 9, MASSACHUSETTS
MODEL SATELLITE



The general appearance of the line of observers, their instruments, and the central mast to mark the meridian, is seen in this model constructed by Frank McConnell.

FIGURE 4.13. Moonwatch team from Walnut Creek, California, in action.



BUILDING A FENCE

Basic Moonwatch Procedure.

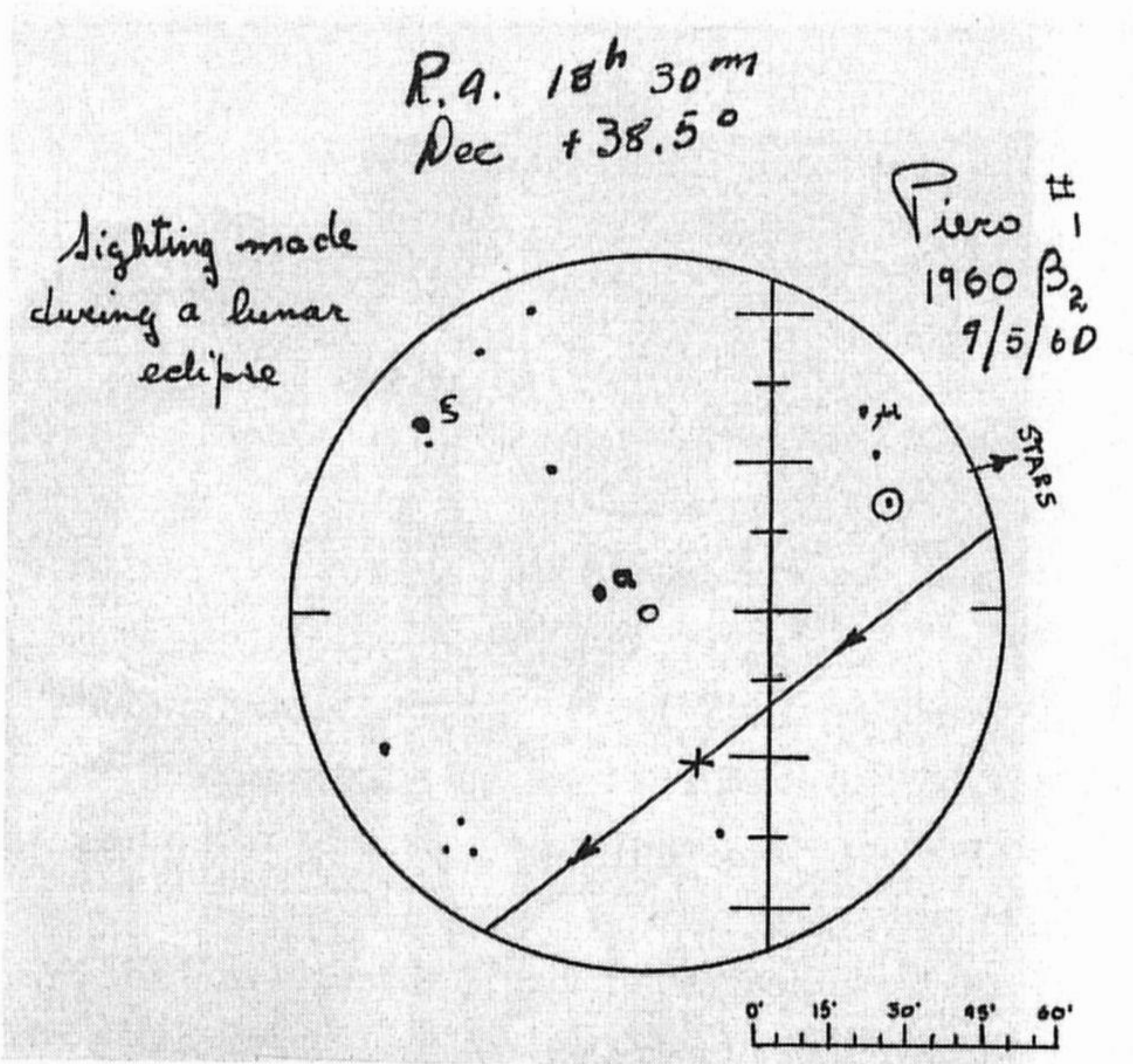
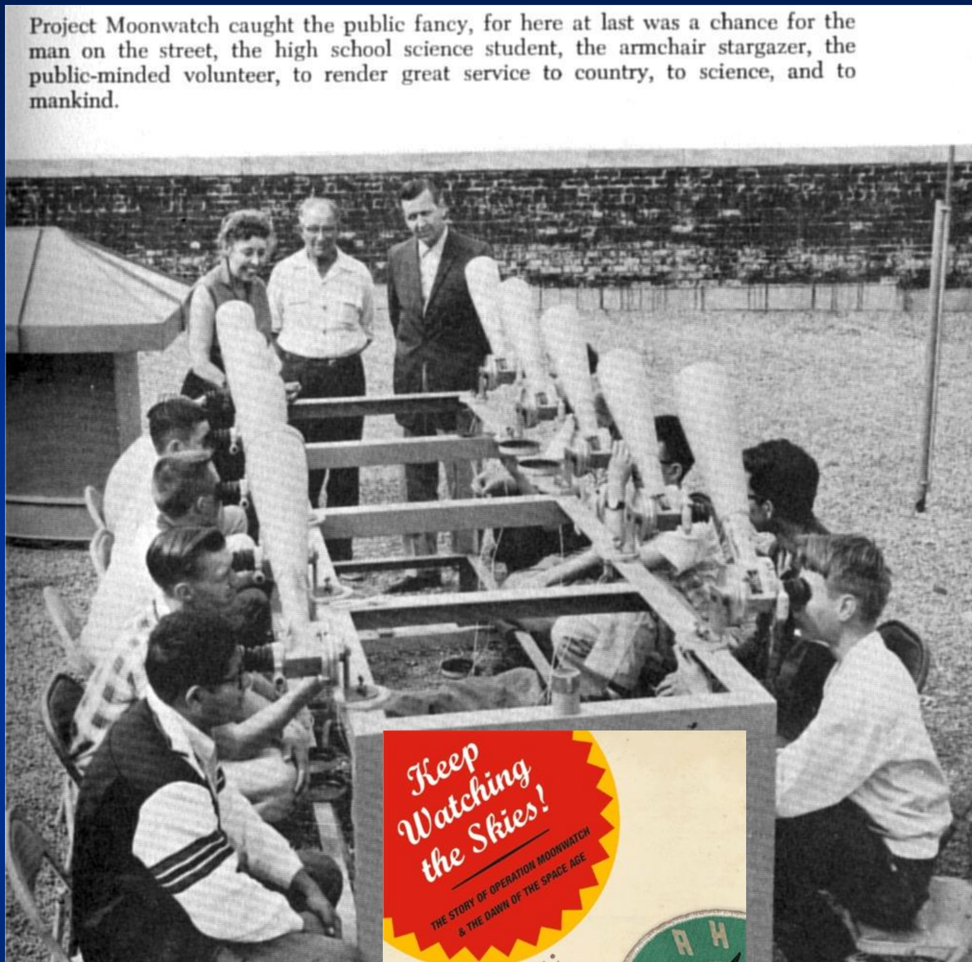
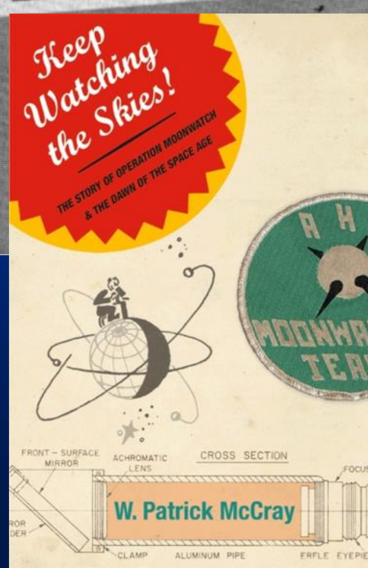
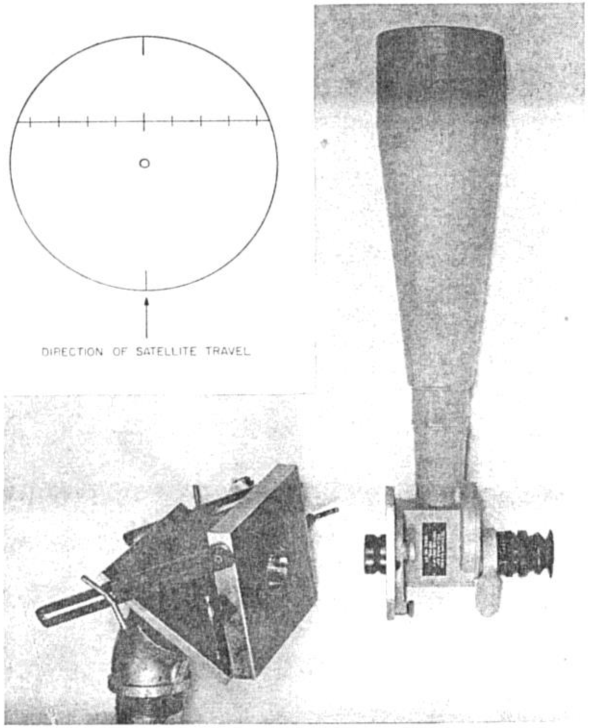


FIGURE 4.10. Example of a Moonwatcher's report sheet giving information on a satellite sighting.



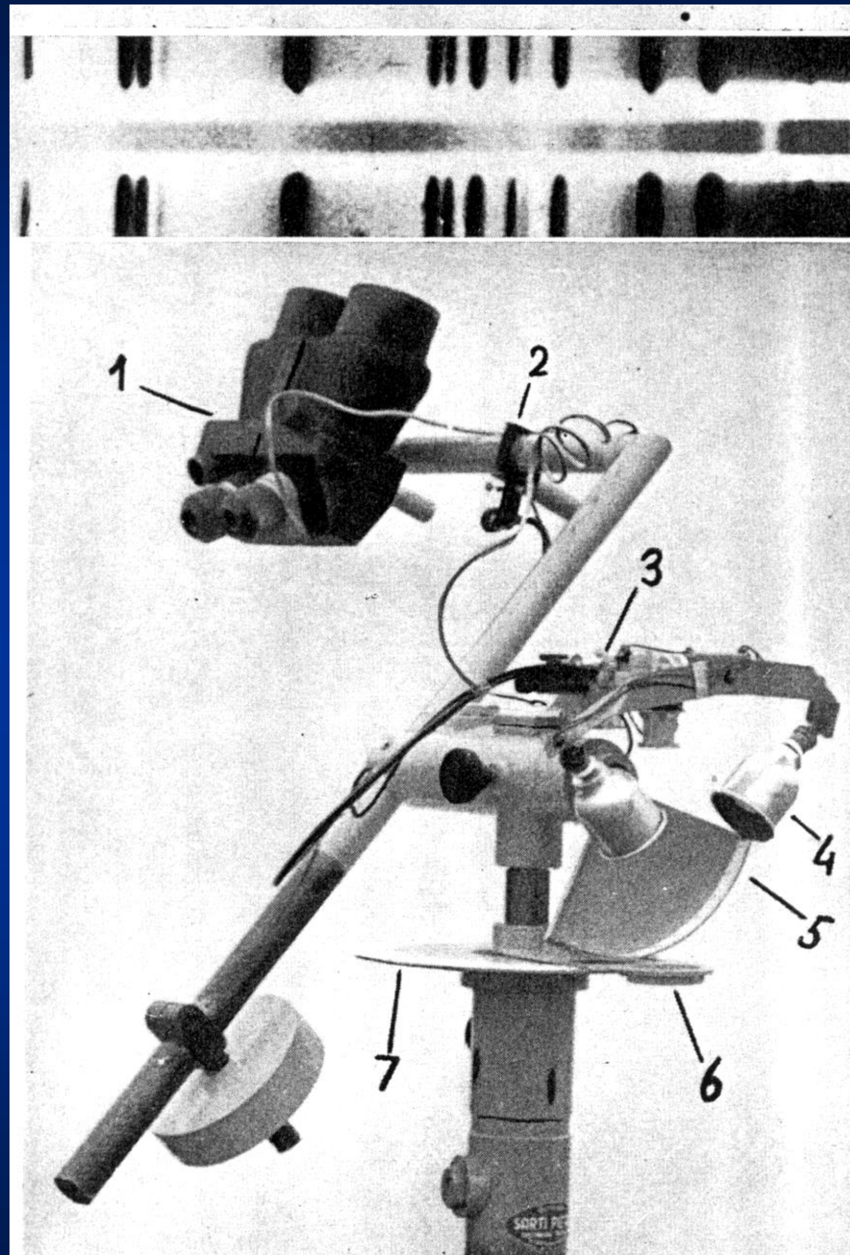
Project Moonwatch caught the public fancy, for here at last was a chance for the man on the street, the high school science student, the armchair stargazer, the public-minded volunteer, to render great service to country, to science, and to mankind.





Special MOONWATCH stations established for observing distant and faint satellites use this high-power telescope designed at the Naval Research Laboratory. The inset diagram shows how the reticle has a reference line that is offset to give the observer more time to recognize a very faint object. The 21½-power instrument can be easily removed from its simple mounting and replaced by an M-17 elbow telescope when low, bright satellites are to be observed. Naval Research Laboratory pictures.

Some of the Moonwatch crew with their telescopes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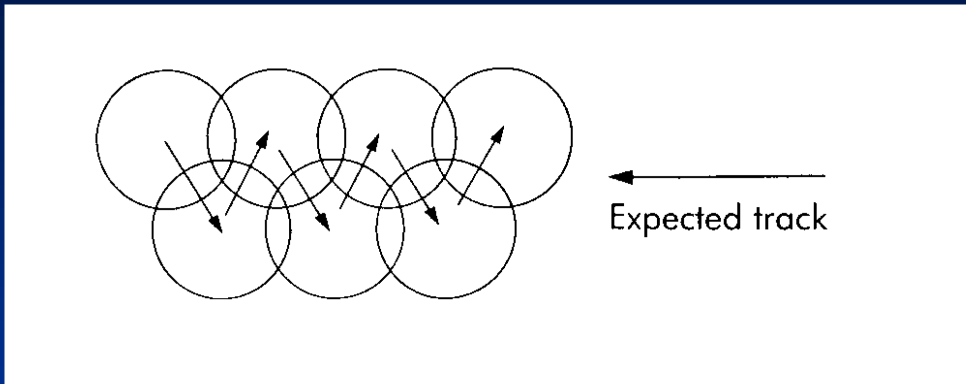
Expected track


Observing
EARTH
SATELLITES
WAUKESHA PUBLIC LIBRARY
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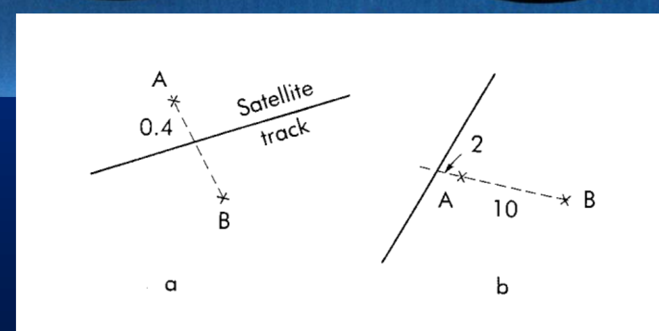
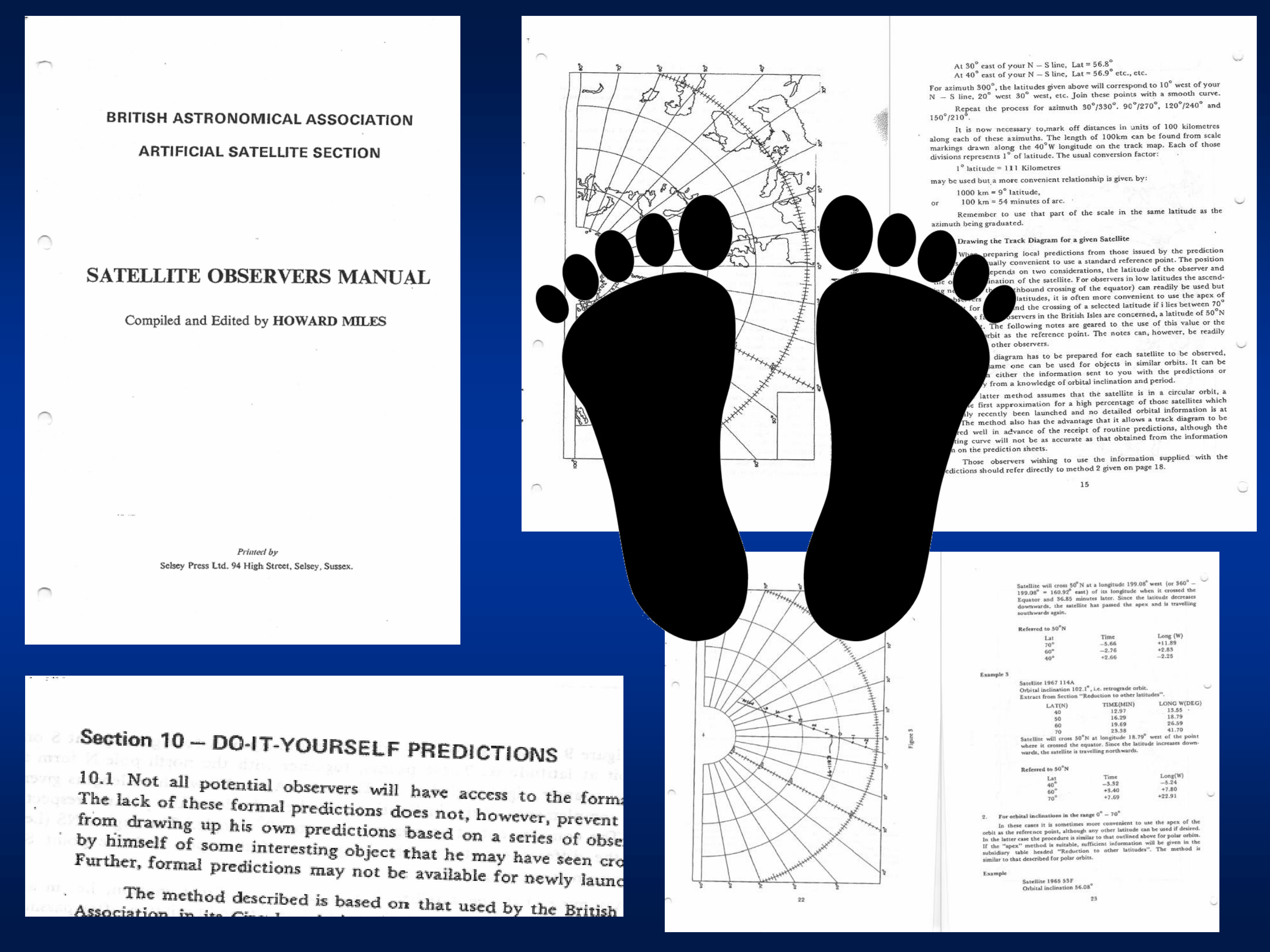
USA


A
0.4
Satellite
track
B
a
2
A
10
B
b



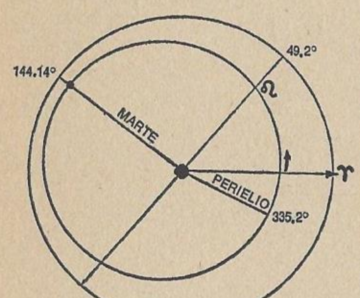
BRITISH ASTRONOMICAL ASSOCIATION
ARTIFICIAL SATELLITE SECTION
SATELLITE OBSERVERS MANUAL
Compiled and Edited by HOWARD MILES
Printed by
Selsey Press Ltd. 94 High Street, Selsey, Sussex.
At 30° east of your N – S line, Lat = 56.8°
At 40° east of your N – S line, Lat = 56.9° etc., etc.
For azimuth 300°, the latitudes given above will correspond to 10° west of your N – S line, 20° west 30° west, etc. Join these points with a smooth curve.
Repeat the process for azimuth 30°/330°. 90°/270°, 120°/240° and 150°/210°.
It is now necessary to,mark off distances in units of 100 kilometres along each of these azimuths. The length of 100km can be found from scale markings drawn along the 40°W longitude on the track map. Each of those divisions represents 1° of latitude. The usual conversion factor:
1° latitude = 111 Kilometres
may be used but a more convenient relationship is given by:
1000 km = 9° latitude,
or 100 km = 54 minutes of arc.
Remember to use that part of the scale in the same latitude as the azimuth being graduated.
Drawing the Track Diagram for a given Satellite
preparing local predictions from those issued by the prediction
ually convenient to use a standard reference point. The position
epends on two considerations, the latitude of the observer and
ination of the satellite. For observers in low latitudes the ascend-
hbound crossing of the equator) can readily be used but
latitudes, it is often more convenient to use the apex of
nd the crossing of a selected latitude if i lies between 70°
bservers in the British Isles are concerned, a latitude of 50°N
. The following notes are geared to the use of this value or the
rbit as the reference point. The notes can, however, be readily
other observers.
diagram has to be prepared for each satellite to be observed,
same one can be used for objects in similar orbits. It can be
either the information sent to you with the predictions or
from a knowledge of orbital inclination and period.
latter method assumes that the satellite is in a circular orbit, a
first approximation for a high percentage of those satellites which
recently been launched and no detailed orbital information is at
The method also has the advantage that it allows a track diagram to be
well in advance of the receipt of routine predictions, although the
curve will not be as accurate as that obtained from the information
on the prediction sheets.
Those observers wishing to use the information supplied with the
edictions should refer directly to method 2 given on page 18.
15
Section 10 – DO-IT-YOURSELF PREDICTIONS
10.1 Not all potential observers will have access to the form
The lack of these formal predictions does not, however, prevent
from drawing up his own predictions based on a series of obse
by himself of some interesting object that he may have seen cro
Further, formal predictions may not be available for newly launc
The method described is based on that used by the British
Satellite will cross 50°N at a longitude 199.08° west (or 360° – 199.08° = 160.92° east) of its longitude when it crossed the Equator and 36.85 minutes later. Since the latitude decreases downwards, the satellite has passed the apex and is travelling southwards again.
Referred to 50°N
Lat Time Long (W)
70° –5.66 +11.89
60° –2.76 +2.83
40° +2.66 –2.25
Example 3
Satellite 1967 114A
Orbital inclination 102.1°, i.e. retrograde orbit.
Extract from Section "Reduction to other latitudes".
LAT(N) TIME(MIN) LONG W(DEG)
40 12.97 13.55
50 16.29 18.79
60 19.69 26.59
70 23.38 41.70
Satellite will cross 50°N at longitude 18.79° west of the point where it crossed the equator. Since the latitude increases downwards, the satellite is travelling northwards.
Referred to 50°N
Lat Time Long(W)
40° –3.32 –5.24
60° +3.40 +7.80
70° +7.69 +22.91
2. For orbital inclinations in the range 0° – 70°
In these cases it is sometimes more convenient to use the apex of the orbit as the reference point, although any other latitude can be used if desired. In the latter case the procedure is similar to that outlined above for polar orbits. If the "apex" method is suitable, sufficient information will be given in the subsidiary table headed "Reduction to other latitudes". The method is similar to that described for polar orbits.
Example
Satellite 1965 53F
Orbital inclination 56.08°
22
23
Figure 3

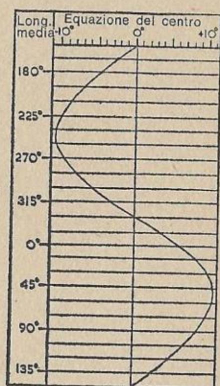
MARTE

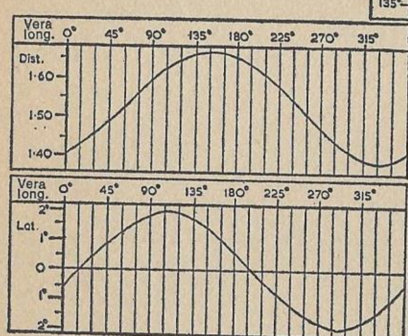
Epoca: 1950, Genn. 0, 0 ore T.M.G.	
Moto diurno:	0.5240°
2 giorni:	1.05
3	1.57
4	2.10
5	2.62
6	3.14
7	3.67
8	4.19
9	4.72
10	5.24

Aggiungere per		*Aggiungere per*	
1 anno:	191.27°	Gennaio	0.00°
2 anni:	22.54	Febbraio	16.26
3	213.82	Marzo	30.92
4	45.09	Aprile	47.17
5	236.36	Maggio	62.89
10	112.72	Giugno	79.14
20	225.44	Luglio	94.86
30	338.16	Agosto	111.11
40	90.88	Settembre	127.36
50	203.60	Ottobre	143.07
Aggiungere un giorno per ogni anno bisestile a partire dal 1950		Novembre	159.32
		Dicembre	175.04

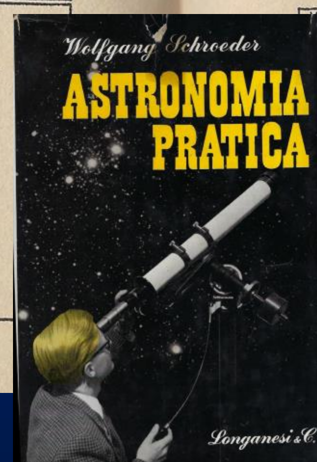
Fig. 48.







Note
e = 0·0934
i = 1·85°
a = 1·5237

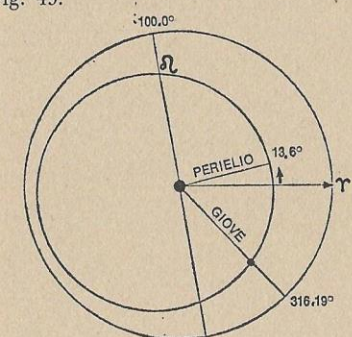


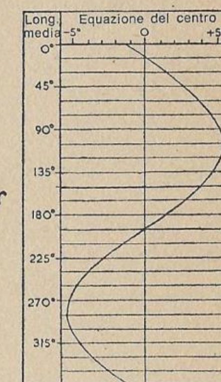
GIOVE

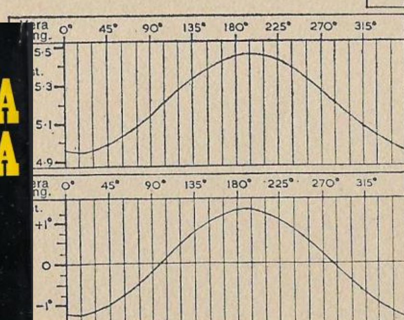
Epoca: 1950, Genn. 0, 0 ore T.M.G.	
Moto diurno:	0.0831°
2 giorni:	0.17
3	0.25
4	0.33
5	0.42
6	0.50
7	0.58
8	0.66
9	0.75
10	0.83

Aggiungere per		*Aggiungere per*	
1 anno:	30.33°	Gennaio	0.00°
2 anni:	60.66	Febbraio	2.42
3	90.98	Marzo	4.91
4	121.31	Aprile	7.49
5	151.64	Maggio	9.99
10	303.28	Giugno	12.36
20	246.56	Luglio	15.06
30	189.85	Agosto	17.62
40	133.13	Settembre	20.21
50	76.41	Ottobre	22.71
Aggiungere un giorno per ogni anno bisestile a partire dal 1950		Novembre	25.27
		Dicembre	27.72

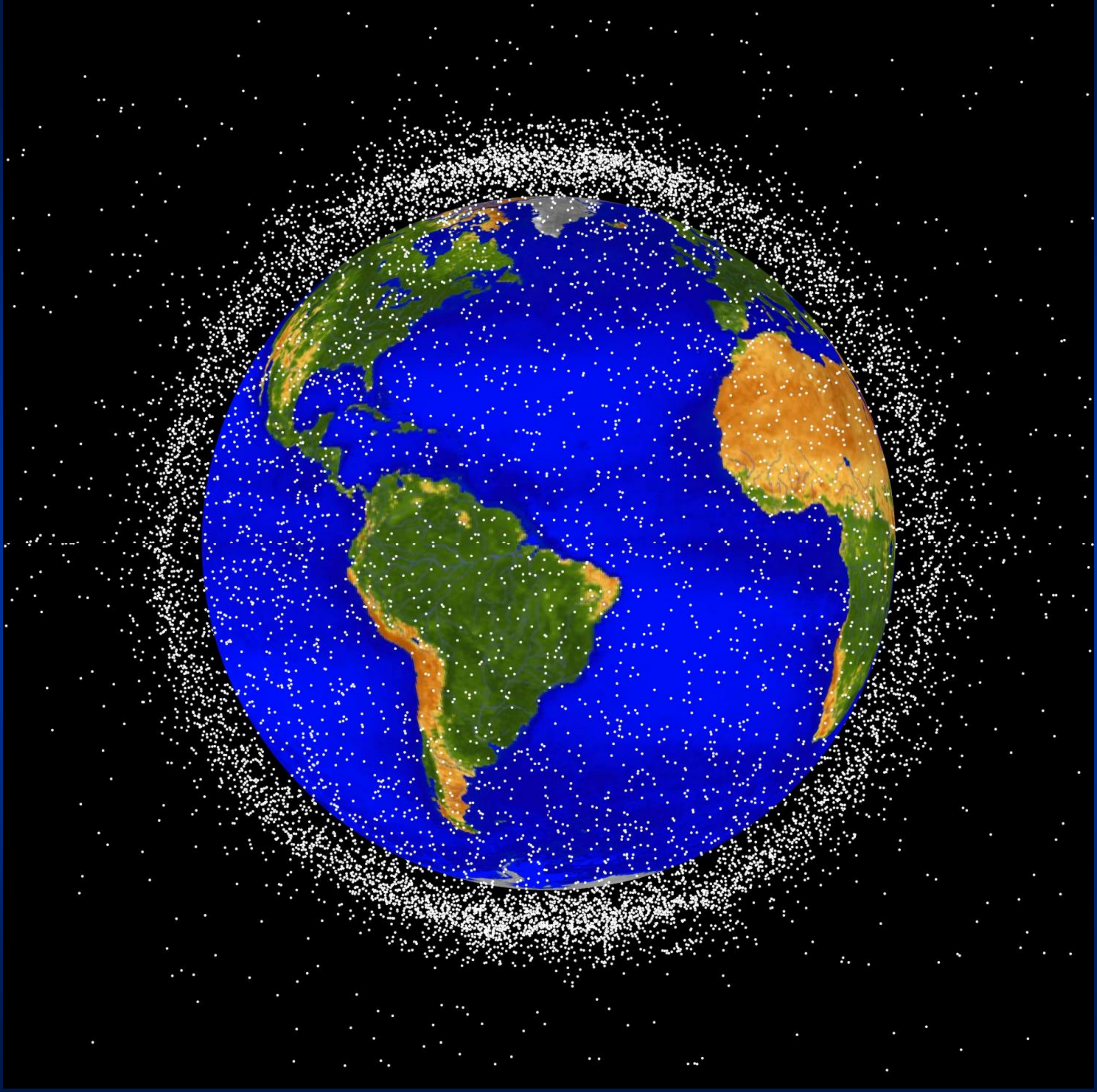
Fig. 49.

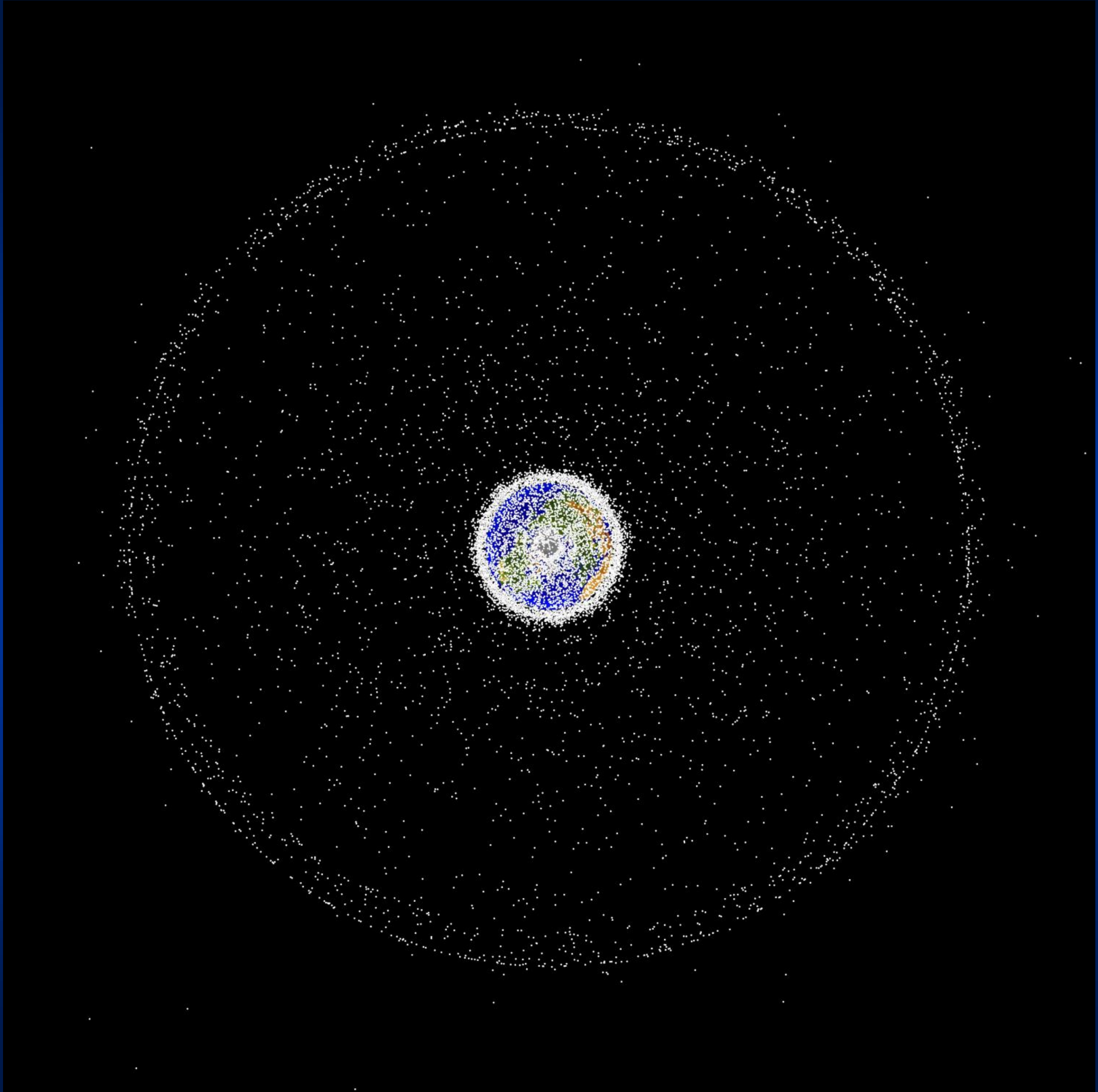


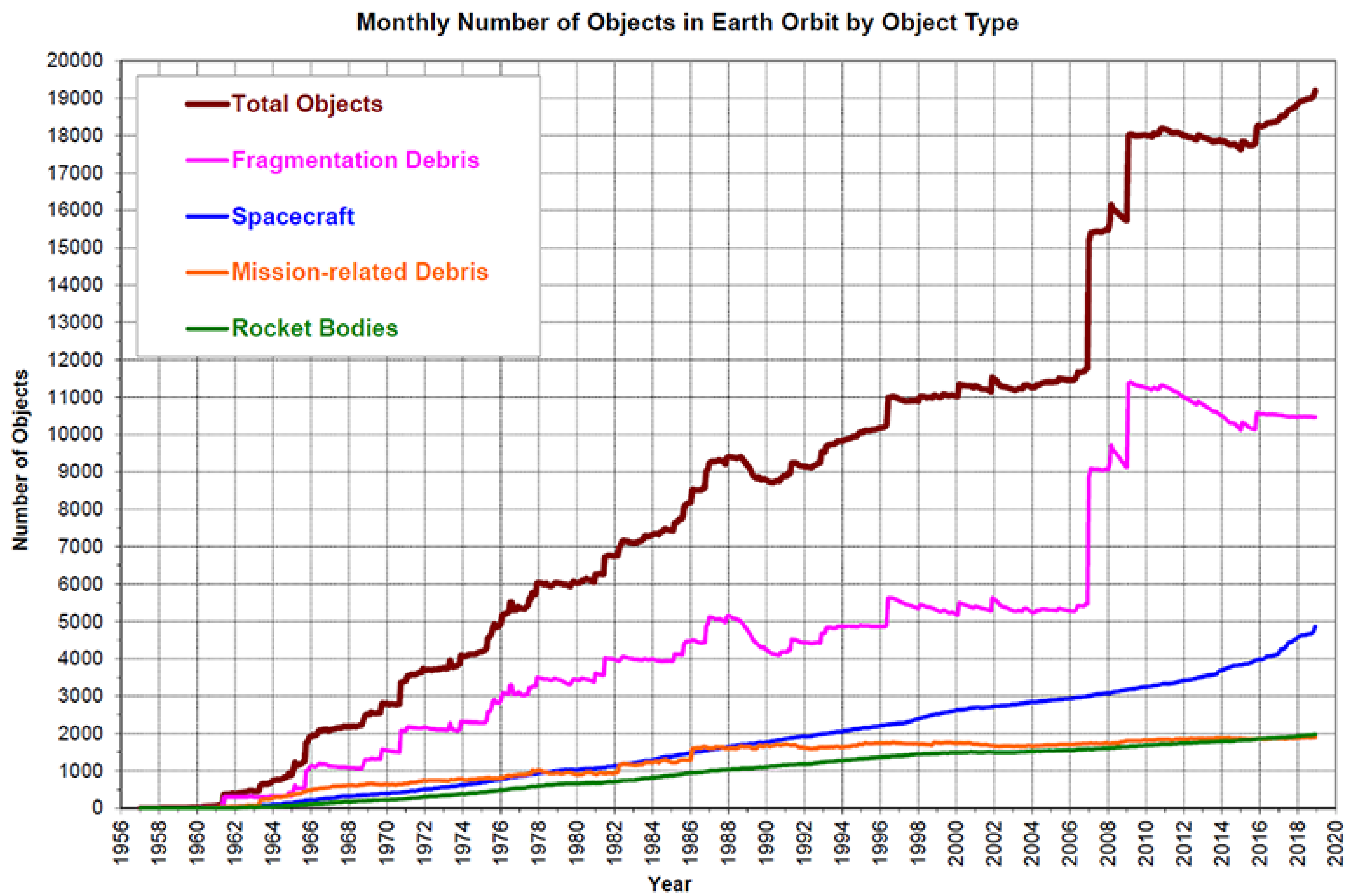




Note
e = 0·0484
i = 1 31
a = 5 2028

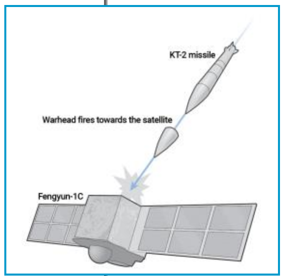


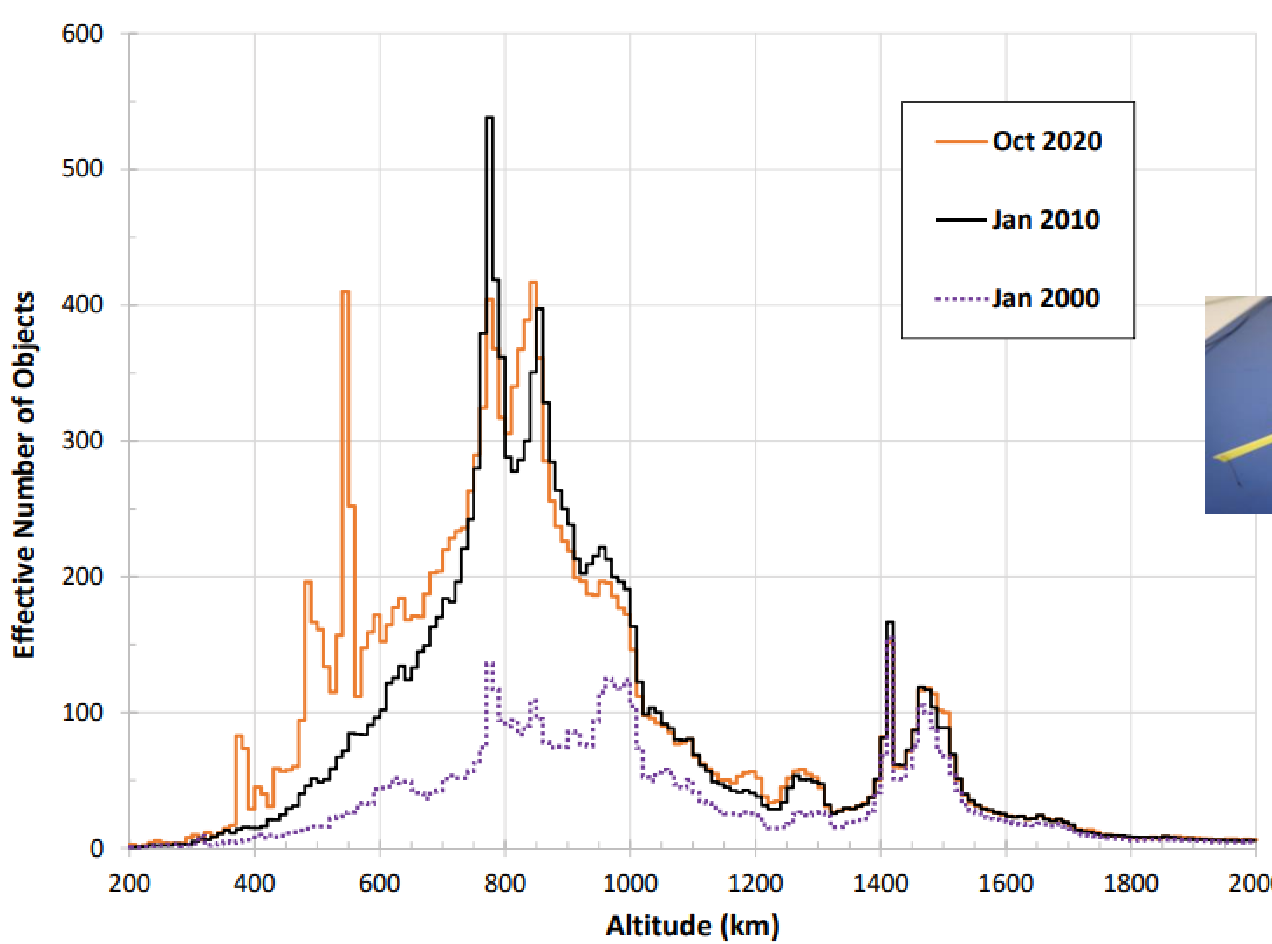


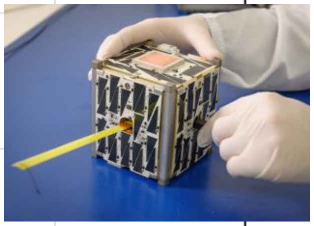


Monthly Number of Objects in Earth Orbit by Object Type
Total Objects
Fragmentation Debris
Spacecraft
Mission-related Debris
Rocket Bodies
Number of Objects
Year
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
18000
19000
20000
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

The Tracked Objects in Low Earth Orbit: 2000–2020







Effective numbers of objects per 10 km altitude bin between 200 and 2000 km altitude at three different epochs. These are objects, approximately 10 cm and larger, tracked by the Space Surveillance Network. The increase from 2000 to 2010 was dominated by fragments generated from the Fengyun-1C antisatellite test conducted by China in 2007 and the accidental collision between Cosmos 2251 and the operational Iridium 33 spacecraft in 2009. The increase from 2010 to October 2020 was driven by the on-going build-up of the Starlink large constellation and the proliferation of CubeSats below about 650 km altitude.

Eglin AFB Site C-6 radar (Florida)

Può seguire 200 oggetti contemporaneamente

Monta 5928 trasmettitori radar da 10 kW cadauno

National Aeronautics and Space Administration

Orbital Debris
Quarterly News

Volume 24, Issue 3
August 2020

Inside...

International Space Station Maneuvers to Avoid Debris

NASA HANDBOOK National Aeronautics and Space Administration Washington, DC 20546	NASA-HANDBOOK 8719.14 Approved: 2008-07-30

HANDBOOK FOR LIMITING ORBITAL DEBRIS

heavens-above.com

ASTRONOMIA BINO COVID GARIBALDI HILAL INGEGNERIA MAGNETI METEO MO

HEAVENS ABOVE

PayPal €25.00 Facili modalità pe ricevere pagament

Starlink L15 lanciato con successo
Predizioni per i nuovi oggetti

Impostazioni

- Esci
- Cambia le tue impostazioni personali

Satelliti

- Vista dinamica del cielo UPDATED
- Visualizzazione dinamica di tutti gli oggetti di un singolo lancio Starlink
- Visualizzazione ISS interattiva 3D
- Animazione interattiva della traiettoria della Tesla Roadster
- Previsioni di 10 giorni per satelliti interessanti
  - ISS
  - Passaggi Starlink per tutti gli oggetti di un lancio
  - X-37B
  - Satellite nord coreano
  - HST
  - Envisat
- Previsioni giornaliere per satelliti piu' luminosi
- Database satelliti
- Sonde che abbandonano il Sistema Solare
- Satelliti per Radio-amatori - Tutti i passaggi
- Quota della ISS

Astronomia

- Eclissi Solari
- Carta del cielo interattiva (ora con l'opzione stampa PDF)
- Carta del cielo
- Sole
- Luna
- Pianeti
- Carta del Sistema Solare
- Comete
- Asteroidi
- Costellazioni

Cielo del mese UAI

2 L'ASTROFOTO DEL MESE
3 PER PRIMA COSA IL CIELO SERENO
4 SOLE
5 LUNA
6 OSSERVIAMO IL FALCETTO DI LUNA CRESCENTE
7 LE MAREE
8 PIANETI
9 CONGIUNZIONI
10 OSSERVIAMO LE STELLE DOPPIE AL TELESCOPIO
11 OSSERVARE LA STAZIONE SPAZIALE
12 COSTELLAZIONI
13 CARTE DEL CIELO
14 METEORE

Pagine più visitate

Di seguito vengono presentati al massimo **50** risultati a partire dal numero **1**.

Vedi (precedenti 50 | successivi 50) (20 | 50 | 100 | 250 | 500).

1. Come osservare la Stazione Spaziale Internazionale (931.654 visite)

Utente:	anonymous	Login
Riferimento::	Pordenone (45,9640°N, 12,6580°E)	
ora:	10:19:07 (UTC+01:00)	
Lingua:	Italiano	
	English	

ISS - Passaggi visibili

Home

Inizio periodo ricerca: sabato 2 gennaio 2021 00:00
Fine periodo ricerca: martedì 12 gennaio 2021 00:00
Orbita: 418 x 419 km, 51,6° (Epoca: 02 gennaio)

< >

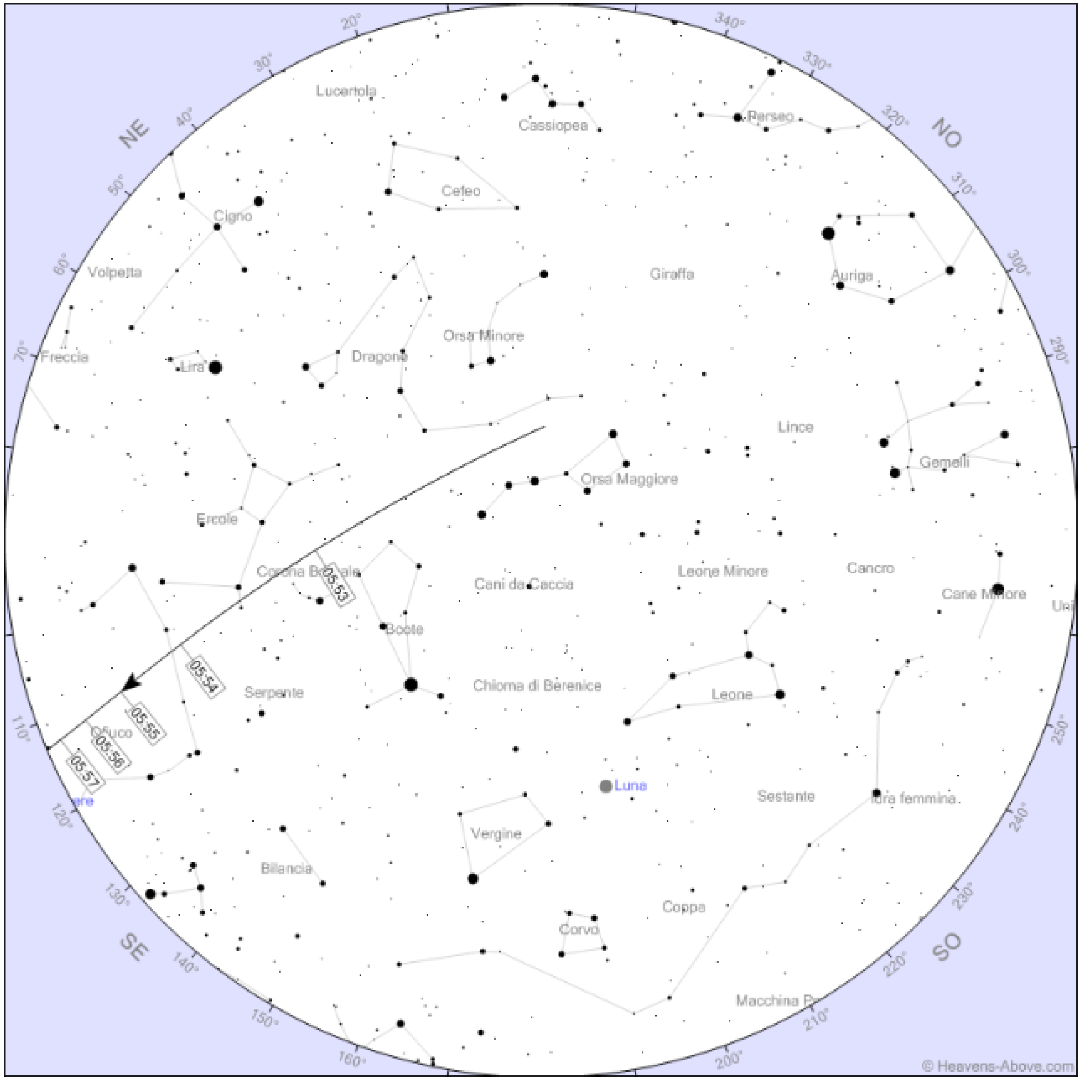
Includi i passaggi: Solo i visibili tutti

Clicca sulla data per avere una mappa stellare ed altri dettagli sul passaggio

Data	Magnitudine	Inizio			Altezza massima			Fine			Tipo di passaggio
	(mag.)	ora	Alt.	Azim.	ora	Alt.	Azim.	ora	Alt.	Azim.	
02 gen	-0,8	05:03:33	15°	ENE	05:03:33	15°	ENE	05:04:21	10°	ENE	visibile
02 gen	-3,3	06:36:30	20°	NO	06:38:35	52°	NNE	06:41:53	10°	E	visibile
03 gen	-3,0	05:50:43	40°	NNE	05:50:49	41°	NNE	05:54:02	10°	E	visibile
04 gen	-1,0	05:04:57	18°	ENE	05:04:57	18°	ENE	05:06:07	10°	ENE	visibile
04 gen	-3,8	06:37:54	21°	ONO	06:40:01	77°	SSO	06:43:23	10°	SE	visibile
05 gen	-3,8	05:52:10	71°	N	05:52:19	73°	NNE	05:55:40	10°	ESE	visibile
06 gen	-1,2	05:06:27	22°	E	05:06:27	22°	E	05:07:51	10°	E	visibile
06 gen	-2,6	06:39:25	18°	O	06:41:14	31°	SO	06:44:15	10°	SSE	visibile
07 gen	-3,3	05:53:45	49°	SSO	05:53:45	49°	SSO	05:56:52	10°	SE	visibile
08 gen	-1,2	05:08:09	19°	SE	05:08:09	19°	SE	05:09:15	10°	SE	visibile
08 gen	-1,5	06:41:06	11°	OSO	06:42:12	13°	SO	06:43:48	10°	SSO	visibile
09 gen	-1,8	05:55:34	18°	SSO	05:55:34	18°	SSO	05:57:12	10°	S	visibile

ISS - Dettagli passaggio

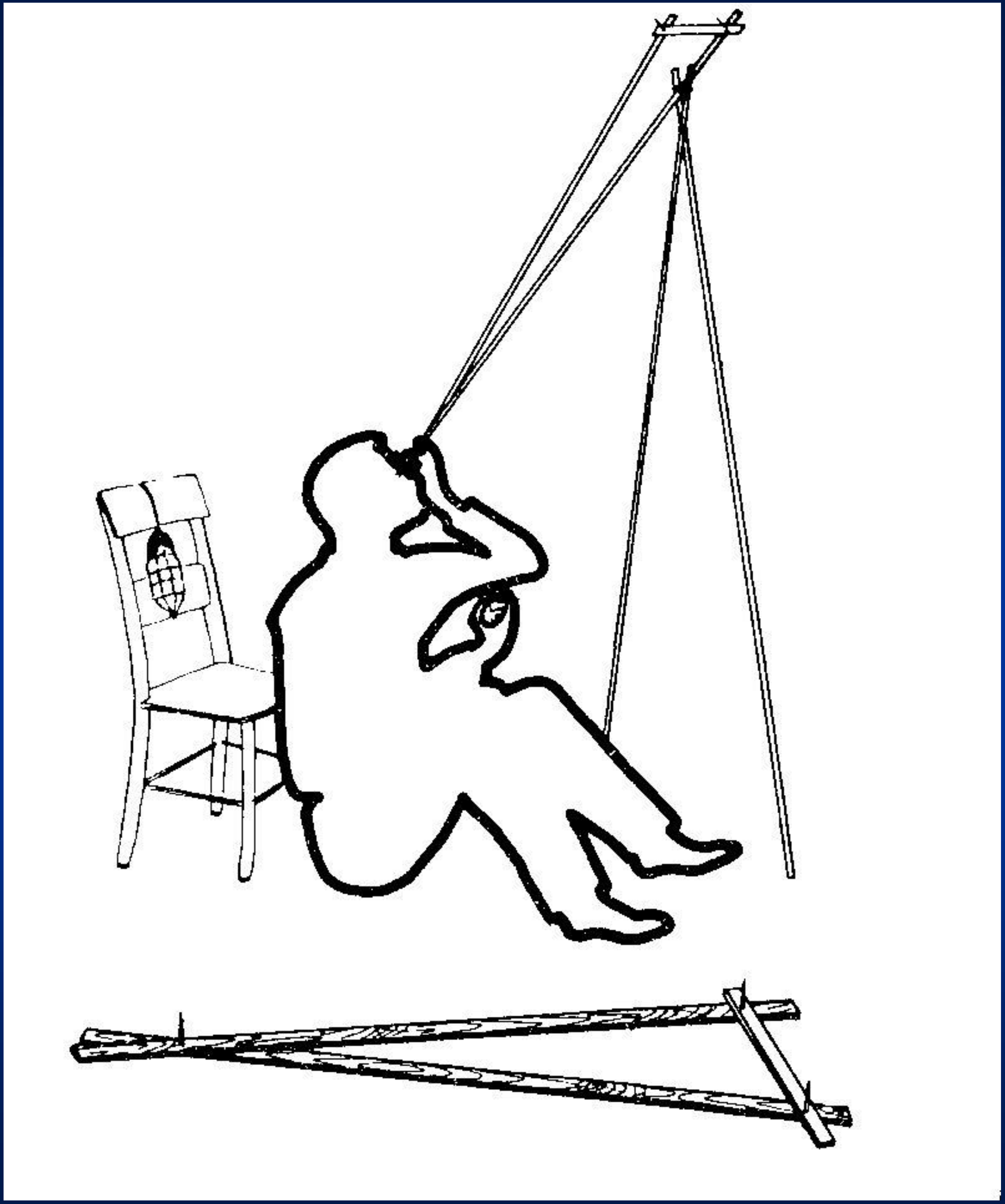
Clicca sulla carta per ingrandire quella parte di cielo

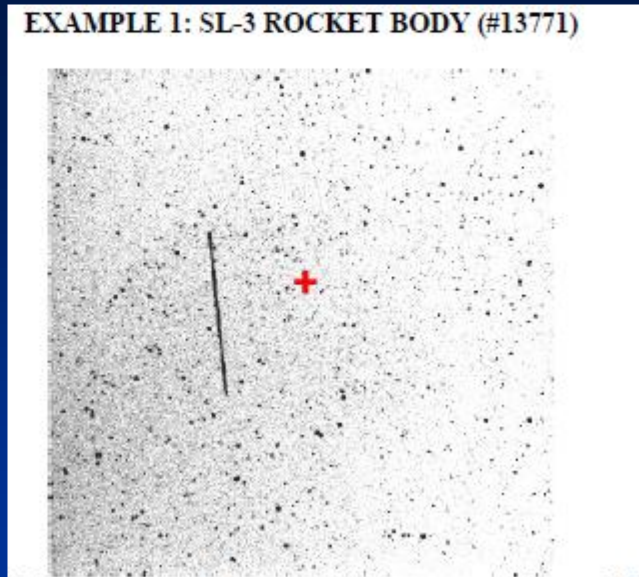


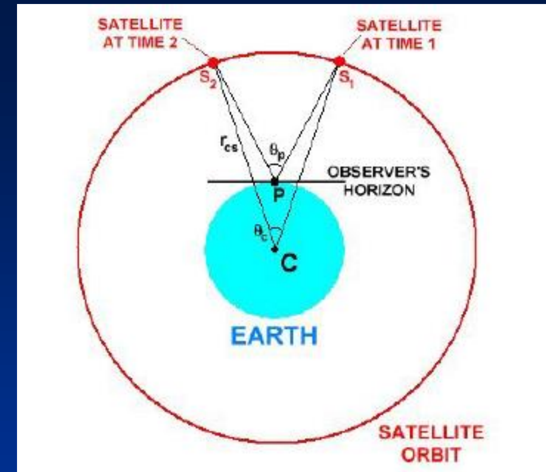
Dimensioni carta 800 (500 - 1600)

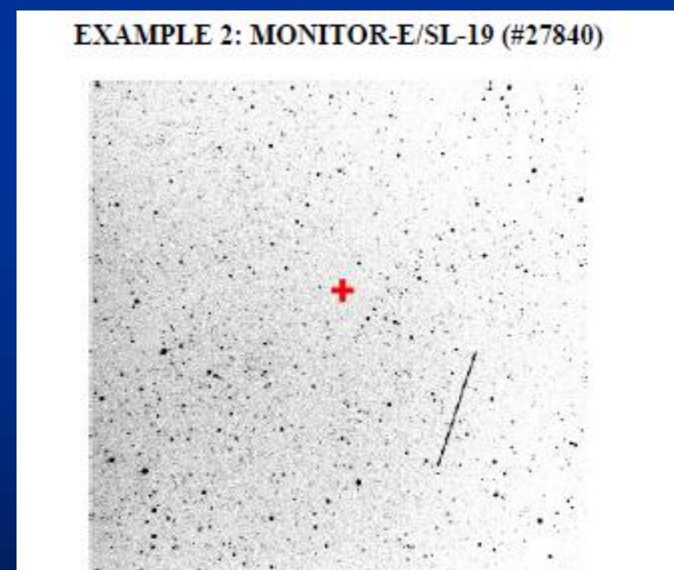
Data: martedì 5 gennaio 2021
Orbita: 418 x 419 km, 51,6° (Epoca: 02 gennaio)

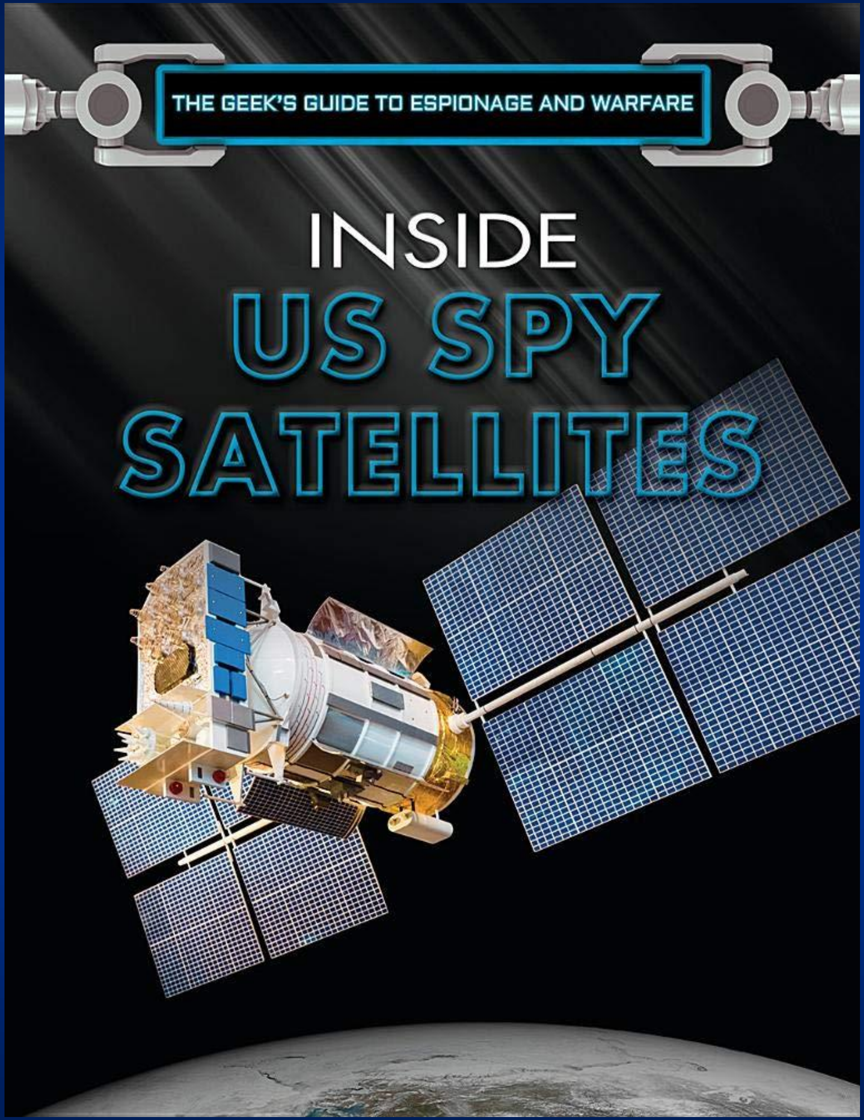
Evento	ora	Altezza	Azimut	Distanza (km)	Magnitudine	Altezza Sole
Esce dall'ombra	05:52:10	71°	360° (N)	447	-3,8	-19,8°
Culmina	05:52:19	73°	26° (NNE)	443	-3,7	-19,8°
Cala sotto l'altezza di 10°	05:55:40	10°	111° (ESE)	1.495	0,3	-19,2°
Tramonta	05:57:45	0°	114° (ESE)	2.356	1,6	-18,9°

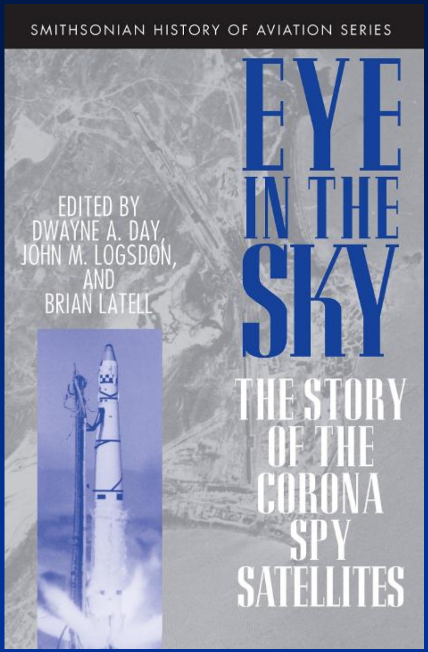



EXAMPLE 1: SL-3 ROCKET BODY (#13771)


SATELLITE
AT TIME 2
SATELLITE
AT TIME 1
S2
S1
rcs
θp
OBSERVER'S
HORIZON
P
θc
C
EARTH
SATELLITE
ORBIT


EXAMPLE 2: MONITOR-E/SL-19 (#27840)


THE GEEK'S GUIDE TO ESPIONAGE AND WARFARE
INSIDE
US SPY
SATELLITES


SMITHSONIAN HISTORY OF AVIATION SERIES
EYE
IN THE
SKY
EDITED BY
DWAYNE A. DAY,
JOHN M. LOGSDON,
AND
BRIAN LATELL
THE STORY
OF THE
CORONA
SPY
SATELLITES


CENTRAL INTELLIGENCE AGENCY
UNITED STATES OF AMERICA

Sputnik IV spot is marked

Russia's first satellite disintegrated over city

BY DENNIS HERNET
Herald-Times-Reporter
Staff WRiter

MANITOWOC — At approximately 5:45 a'm. on Wednesday, Sept. 6, 1962, Manitowoc Police Officers Marvin Bauch and Ronald Rusboldt noticed an object in the middle of N. Eighth St., near the intersection with Park St.

Dismissing it as a piece of cardboard, they passed by.

But on another patrol, this at 6:45 a.m., they noted the object was metal and stopped to move it.

It was literally too hot to handle, so they shoved it with their feet to the curbing.

They concluded it was some foundry droppings which had apparently fallen from a truck transporting it to a dump.

However, at about 8 a.m., passing the point again, they stopped to look at the metal. It was still warm.

Little did they know that the piece of metal they had noted so lightly would put the city of Manitowoc on the map worldwide, in the field of space exploration at that. And it would also create local, national and international controversy.

The metal they had so haphazardly pushed around was finally determined to have been part of the Soviet Union Sputnik IV space satellite which had re-entered the earth's atmosphere and burned.

The path of the satellite carried through the Lakeshore Area and pieces of the space object which did not burn during re-entry scattered through the city and the area.

The object weighed slightly more than 20 pounds and measured 10 inches in diameter. After much testing and controversy, a replica of the item was returned to Manitowoc and is on display at the Rahr-West Civic Center and Public Museum on N. Eighth and Park streets.

The re-entry of this item and the recovery of the pieces of burned debris were probably two of the highlights and most publicized incidents with area ties in space history.

Tne noting of this incident comes on the heels of the now famous re-entry of another piece of Soviet Union space material, the satellite with nuclear components which burned over Canada on Tuesday.

The recollections of the Sputnik incidents which followed the discovery of the piece of space memorbilia brought a lot of conversation in Manitowoc, the area and around the nation.

Here is a recap of the incidents, as they appeared in The Manitowoc Herald-Times and The Two Rivers Reporter. The dates are the dates of publication.

Sept. 6, 1962 — Metal discovered on N. Eighth St. in Manitowoc has a very low, if any, radio active content, as noted by Manitowoc Fire Department Geiger counter checks. Members of the Milwaukee Astronomical Society, watching the Russian Sputnik IV, saw it break up at about 4:49 a.m. Law enforcement officials at Eagle River reported seeing 24 flaming pieces flash across the sky. The Air Force also reported sightings. Mr. and Mrs. Joseph Wisner of Kellnersville reported to be the only Manitowoc County people to have actually seen the "death plunge." When launched, the Soviet space craft was to have been weighed 3,250 pounds.

Sept. 7— The Smithsonian Instittion called relative to the findings and other pieces of the Sputnik craft found in the area. Police have barracaded the area where the pieces were

(Continued on Page 2)

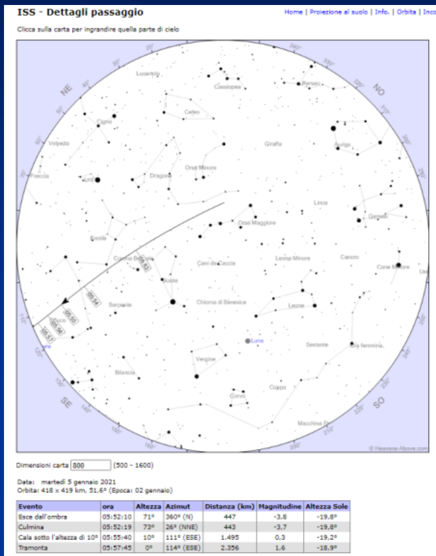
STREET MARKED — Earl Peters of the Rahr-West Civic Center and Public Museum, cleared off the spot on N. Eighth St., just north of the intersection with Park St., where the Sputnik IV landed.

Costellazioni di satelliti per telecomunicazioni

- Starlink 12000 (42000 in fase finale)
- Amazon 3236 satelliti

Totale dei satelliti lanciati (in data 25 novembre 2020):	955
Totale dei satelliti decaduti (in data 14 ottobre 2020):	54
Totale dei satelliti attualmente in orbita (in data 25 novembre 2020):	901

Che cosa serve


ISS - Dettagli passaggio

Home | Proiezione al suolo | Info. | Orbita | Inco

Clicca sulla carta per ingrandire quella parte di cielo

Dimensioni carta 800 (500 - 1600)

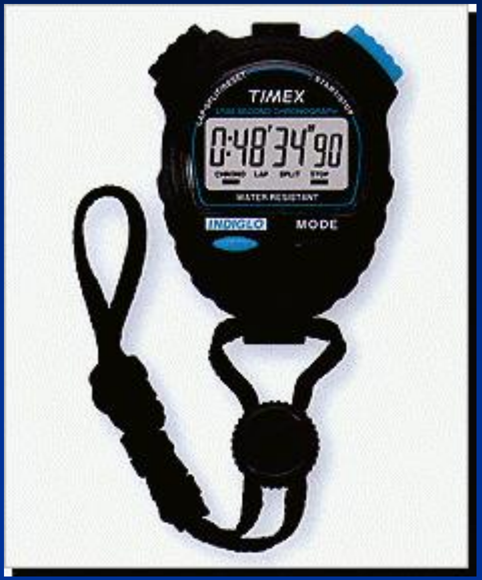
Data: martedì 5 gennaio 2021

Orbita: 418 x 419 km, 51,6° (Epoca: 02 gennaio)

Evento	ora	Altezza	Azimut	Distanza (km)	Magnitudine	Altezza Sole
Esce dall'ombra	05:52:10	71°	360° (N)	447	-3,8	-19,8°
Culmina	05:52:19	73°	26° (NNE)	443	-3,7	-19,8°
Cala sotto l'altezza di 10°	05:55:40	10°	111° (ESE)	1.495	0,3	-19,2°
Tramonta	05:57:45	0°	114° (ESE)	2.356	1,6	-18,9°

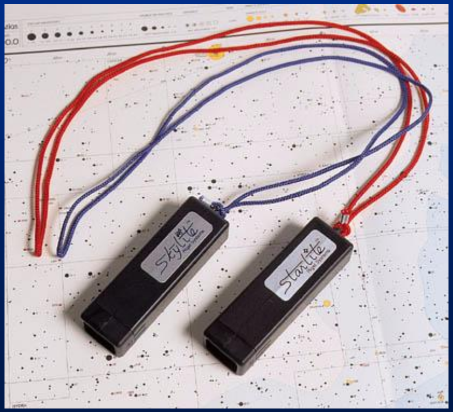
Previsione

Binocolo
8x40-10x50



Cronometro
o orologio

Astrolabio



Luce
rossa

Per allenamento

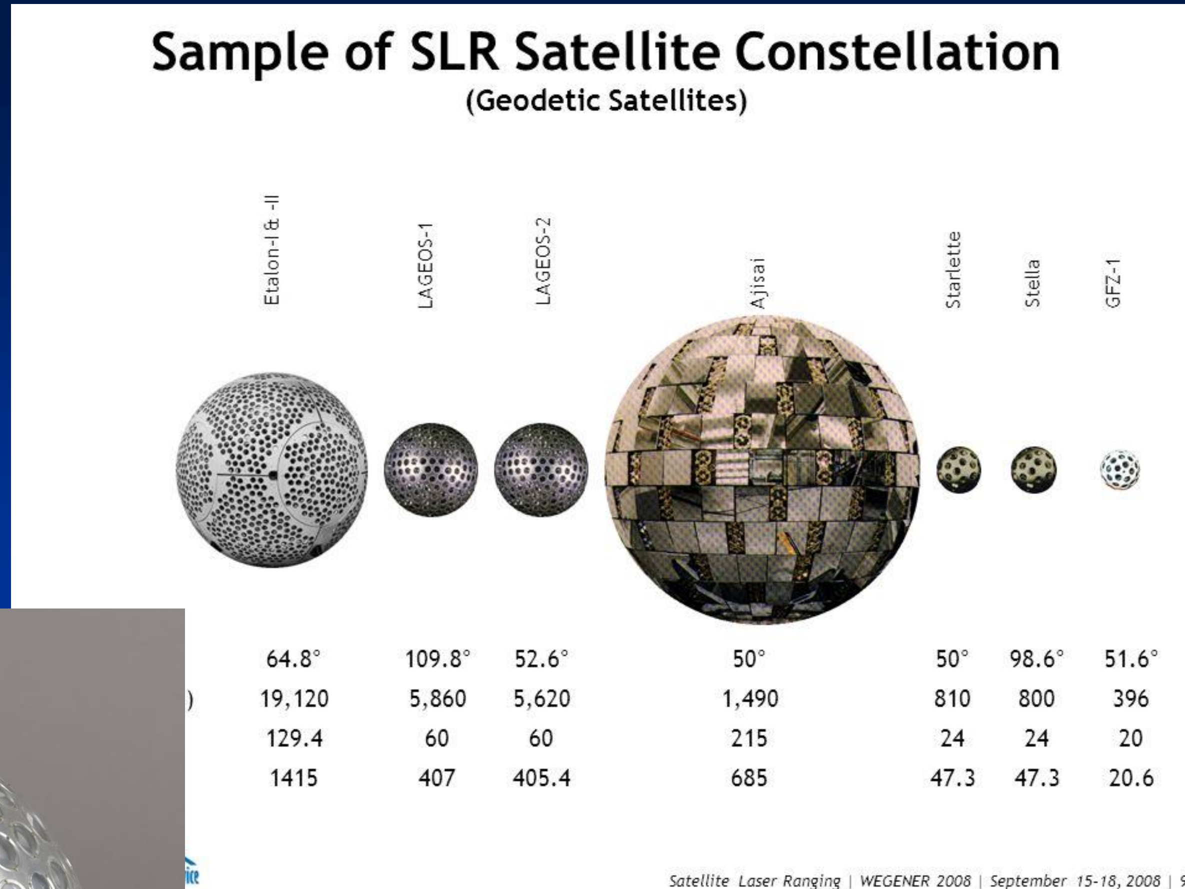
ISS

La stazione spaziale cinese
TIANGONG 2

LACROSSE
Vecchi satelliti spia
"declassificati"

AJISAI un satellite giapponese
coperto di specchi

I satelliti COSMOS, una
famiglia di satelliti molto
ampia, alcuni dei quali grandi
come un autobus

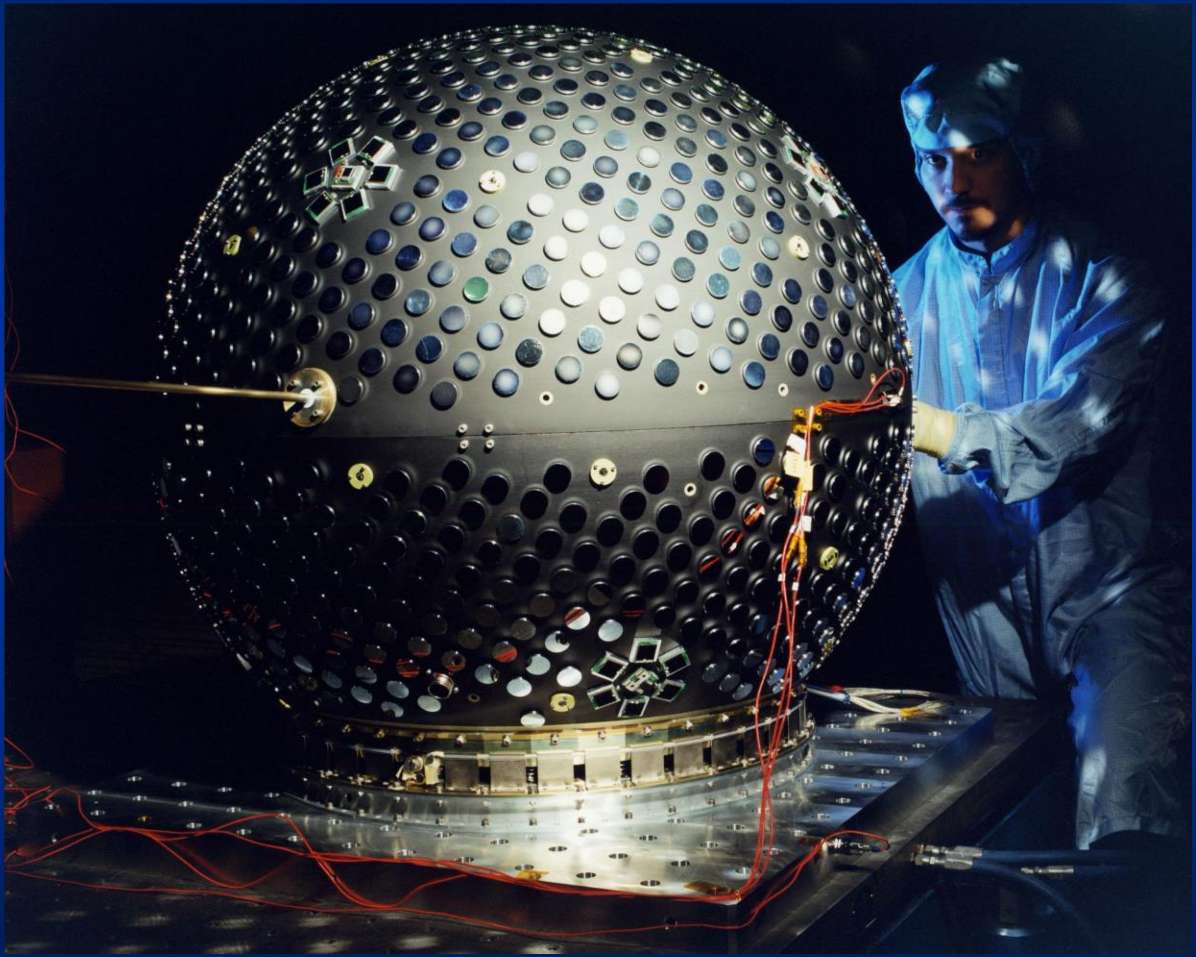


Sample of SLR Satellite Constellation

(Geodetic Satellites)

	Etalon-I & -II	LAGEOS-1	LAGEOS-2	Ajisai	Starlette	Stella	GFZ-1
	64.8°	109.8°	52.6°	50°	50°	98.6°	51.6°
)	19,120	5,860	5,620	1,490	810	800	396
	129.4	60	60	215	24	24	20
	1415	407	405.4	685	47.3	47.3	20.6

Starshine



Osservare i satelliti

Da Popular Science e patriottismo
a
Big Science
a
Difesa dell’ambiente spaziale e
Citizen Science

Grazie per l’attenzione

Associazione Astronomica del Rubicone
.....ma ora verranno le stelle, le tacite stelle....

ASSOCIAZIONE RAVENNATE ASTROFILI "RHEYTA"