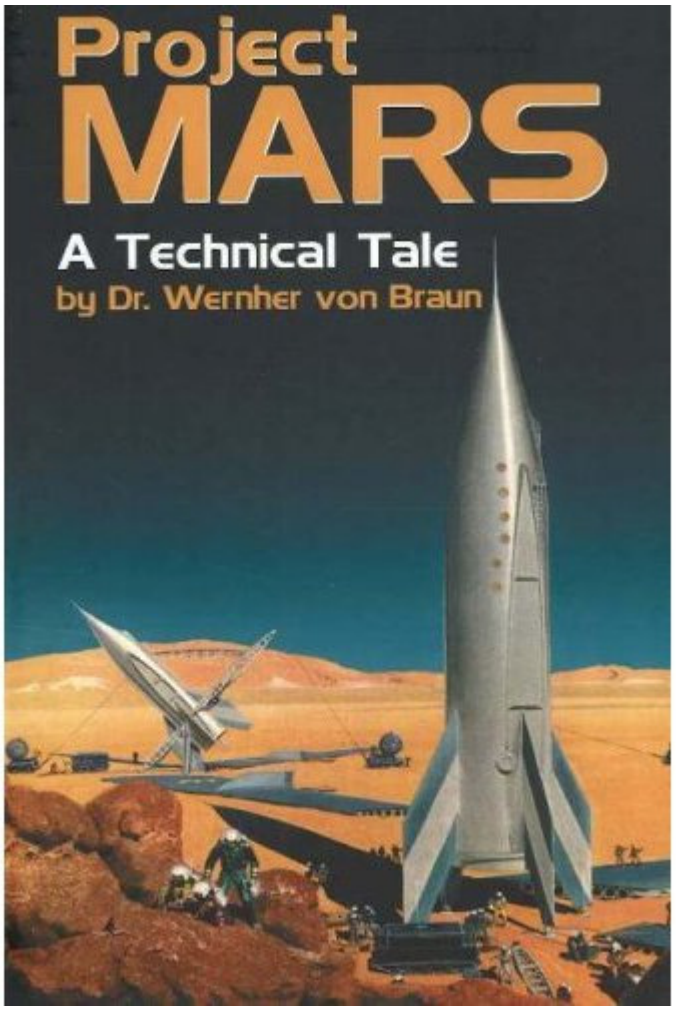

Project
MARS
A Technical Tale
by Dr. Wernher von Braun

Von Braun's 'Mars Team'

- Krafft Ehricke
- Hans Friedrick
- Josef Jenissen
- Jachim Mühlner
- Adolf Thiel
- Carl Wagner

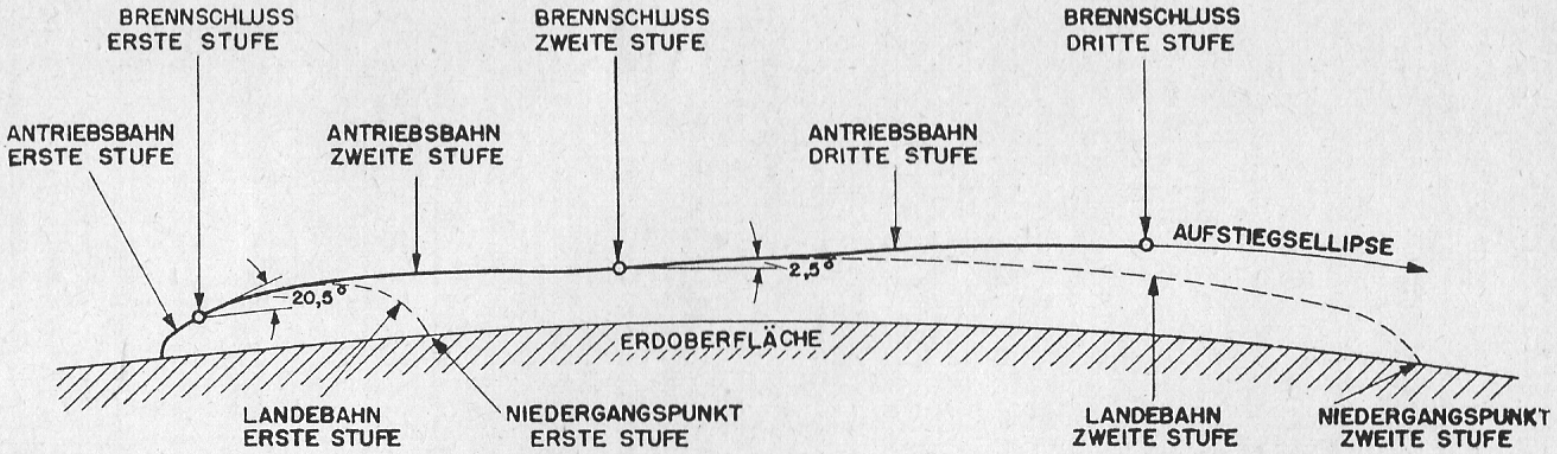
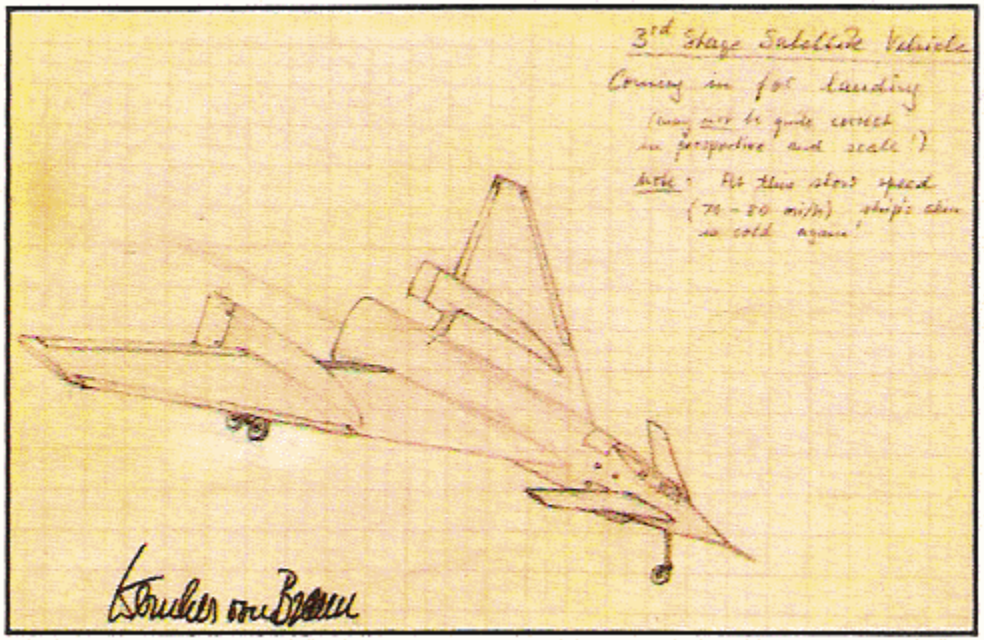
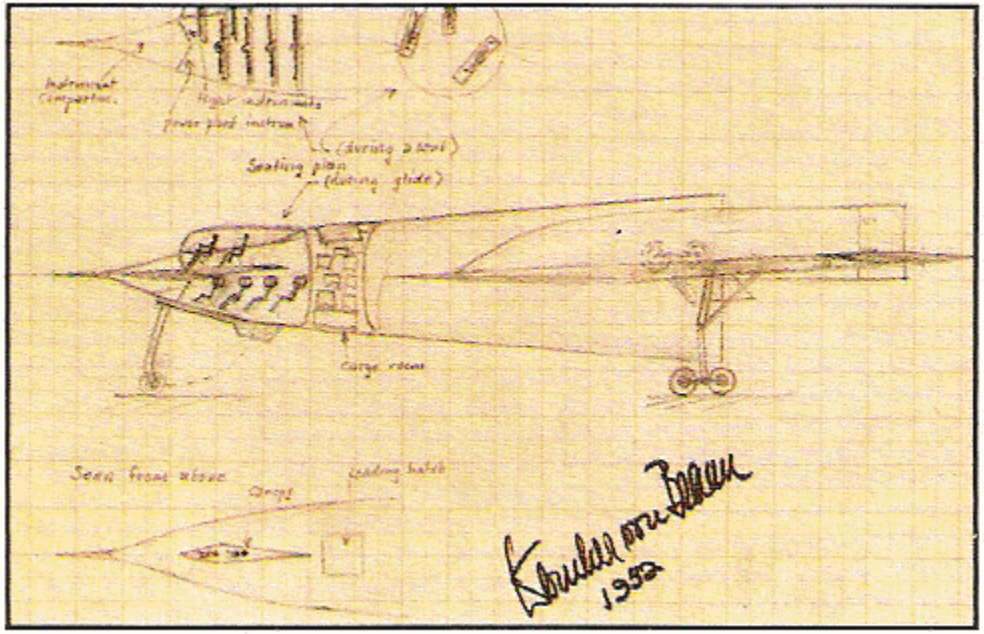
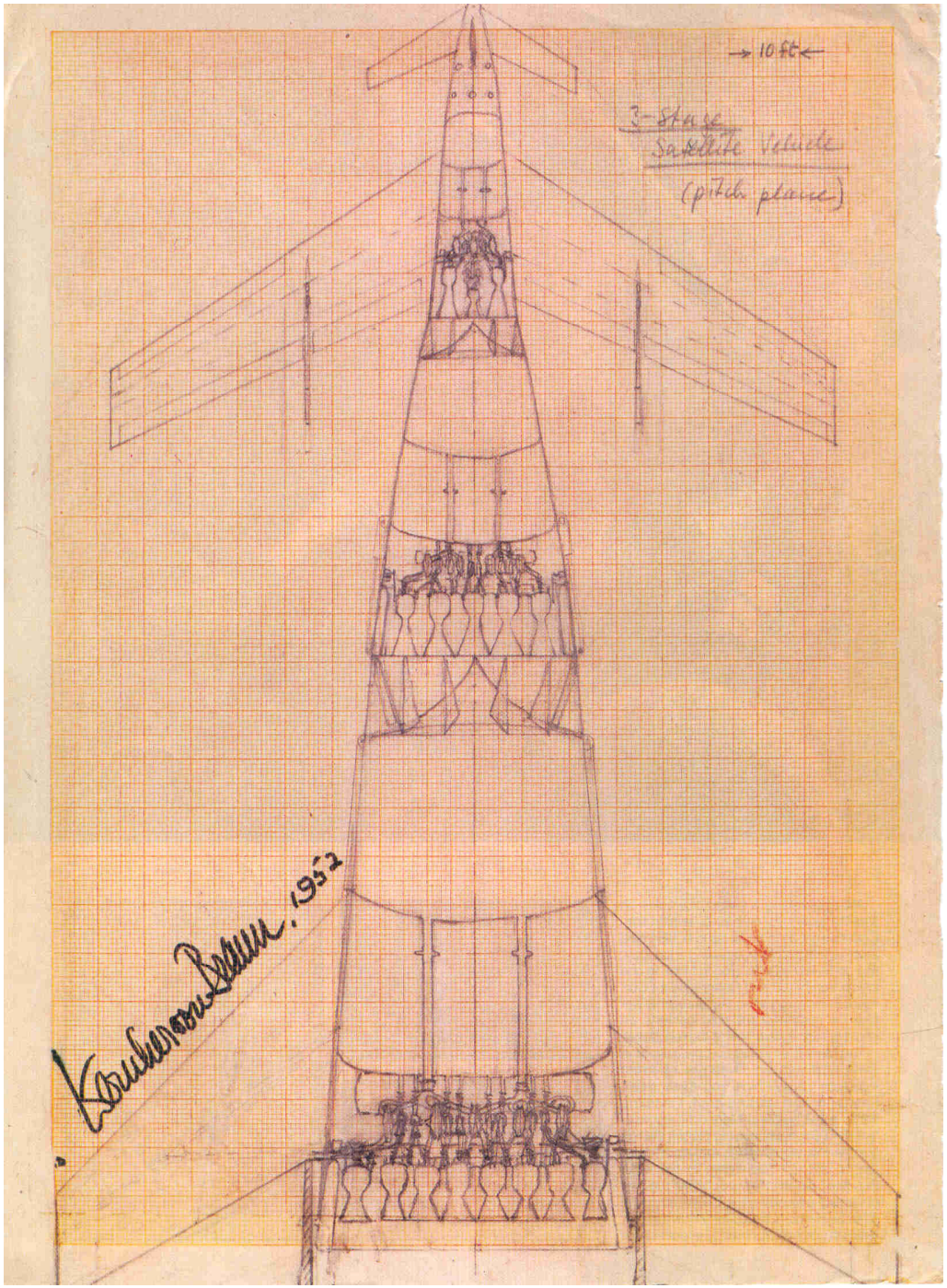
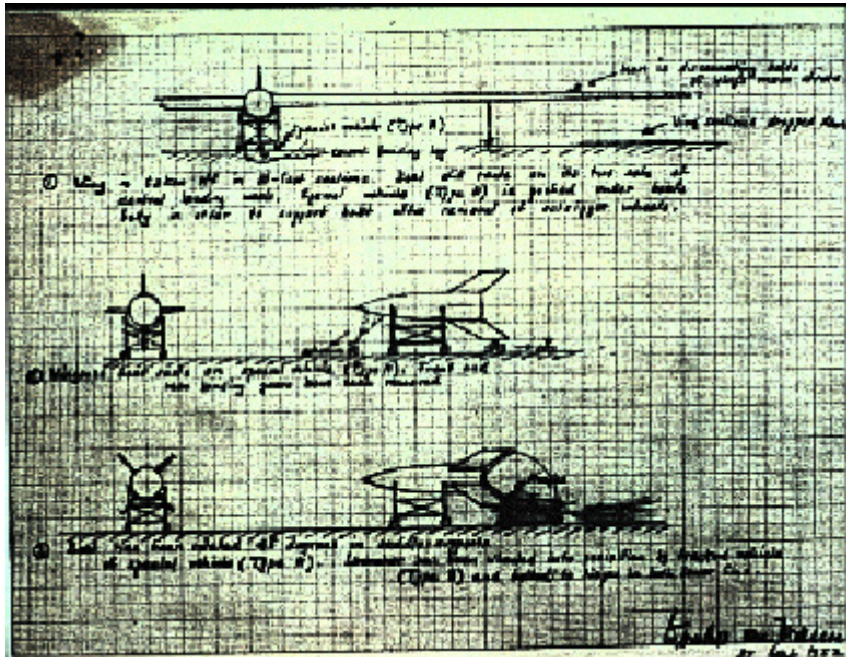


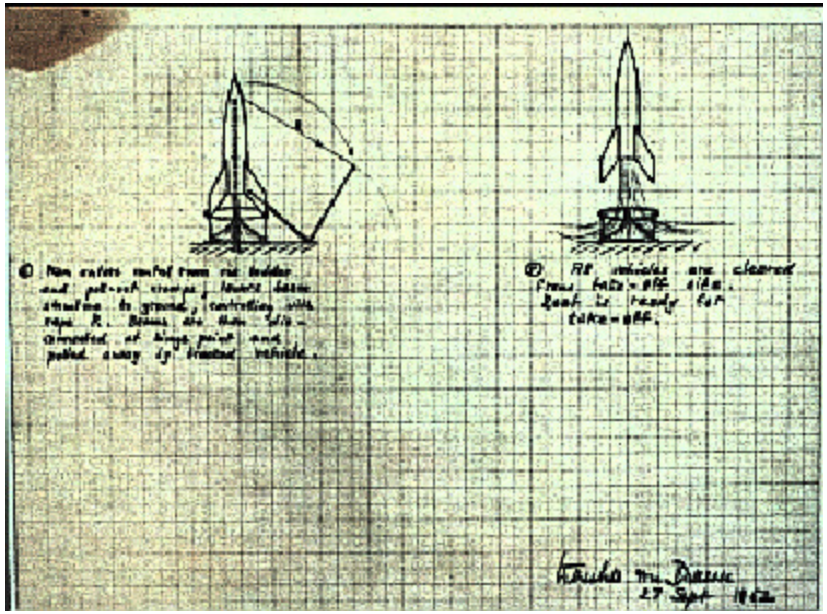
Fig. 2
ANTRIEBSBAHNEN DER DREI STUFEN DES ZUBRINGERSCHIFFES
SOWIE LANDEBAHNEN DER ERSTEN UND ZWEITEN STUFE


3rd Stage Satellite Vehicle
Coming in for landing
(may not be quite correct
in perspective and scale!)
Note: At these speed
(70 - 80 m/h) ship's skin
is cold again!
Wernher von Braun


Instrument
Compartment
Flight instruments
Power plant instrum.
(during glide)
Seating plan
Cargo room
Seen from above
Cargo
Loading hatch
Wernher von Braun
1952


→ 10 ft ←
3-Stage
satellite vehicle
(pitch plane)
Krafft A. Ehricke, 1952





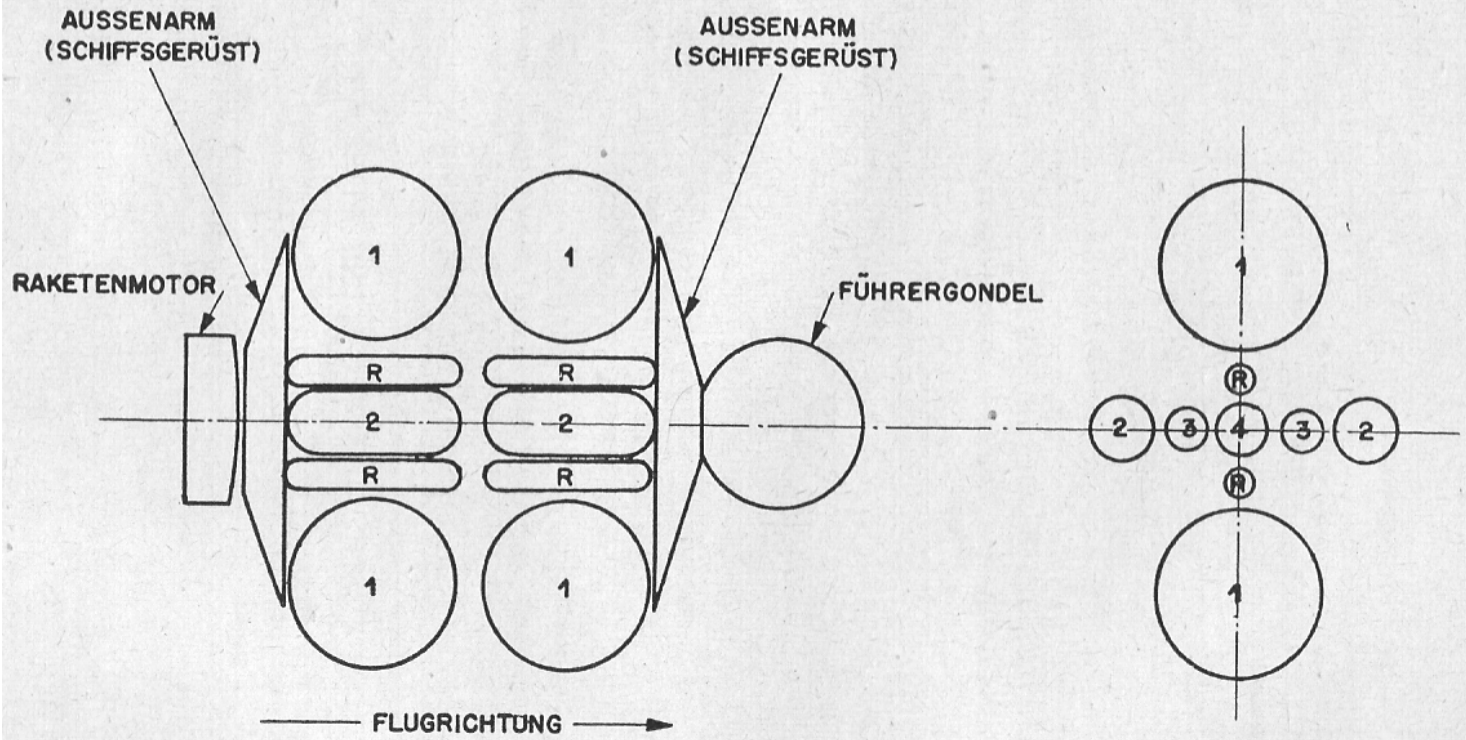


Fig.8

TANKANORDNUNG DER PASSAGIERSCHIFFE

DIE ZAHLEN DEUTEN DIE NUMMER DES MANÖVERS AN, FÜR DAS DER BETREFFENDE TANK DIENT.

R BEDEUTET RESERVETANK

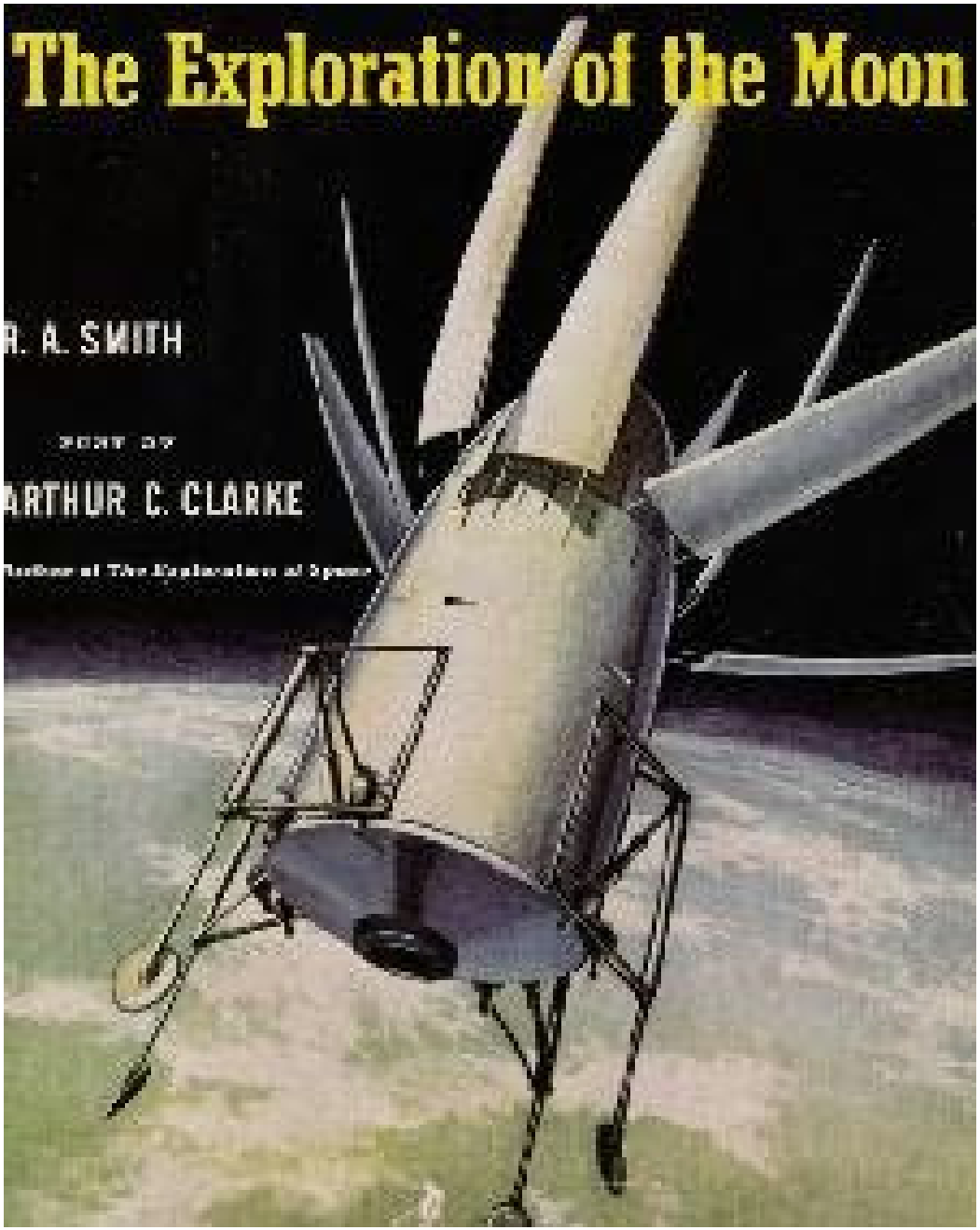
4F

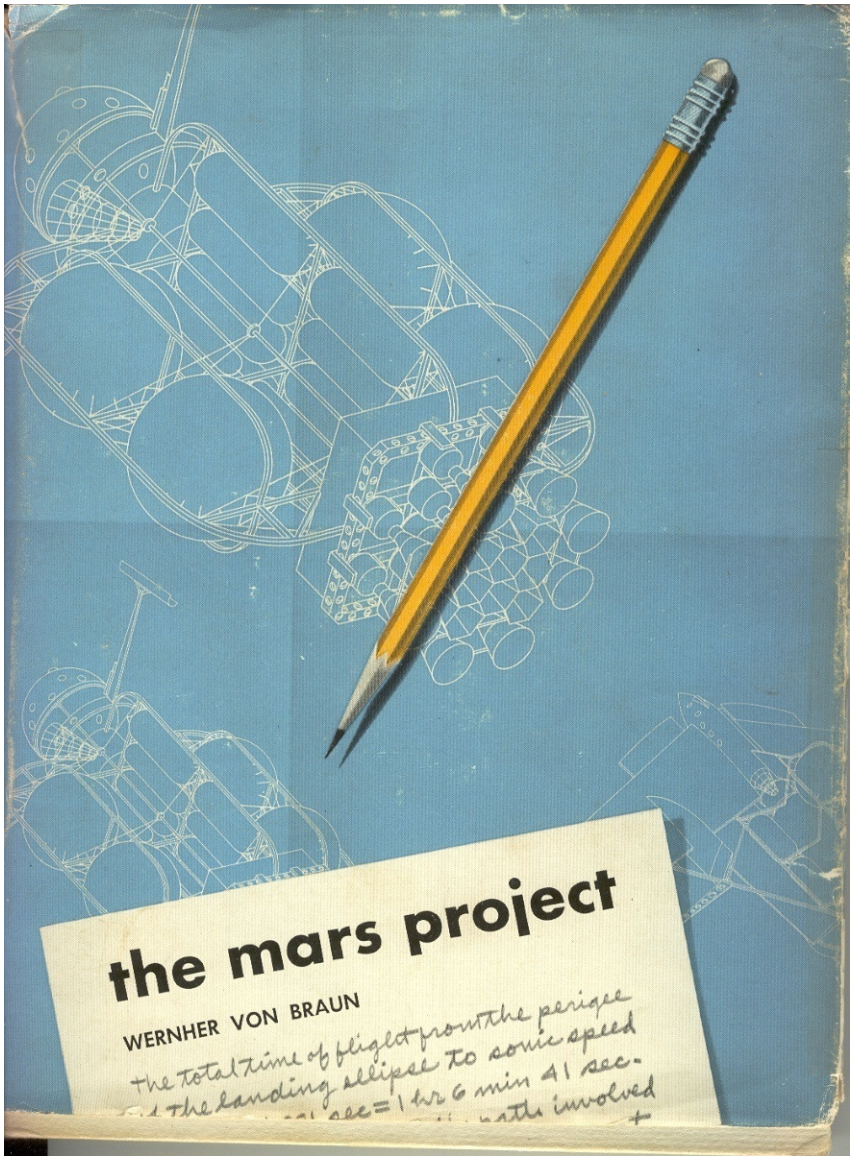
Wernher von Braun

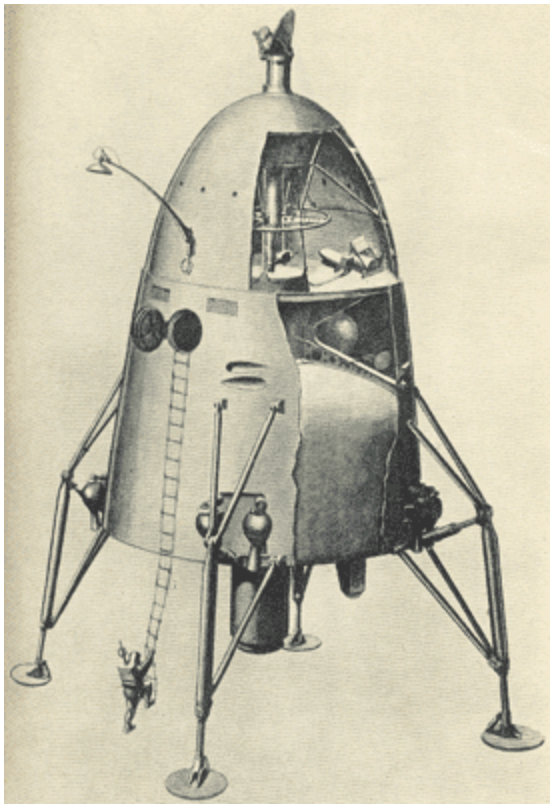
Das Marsprojekt

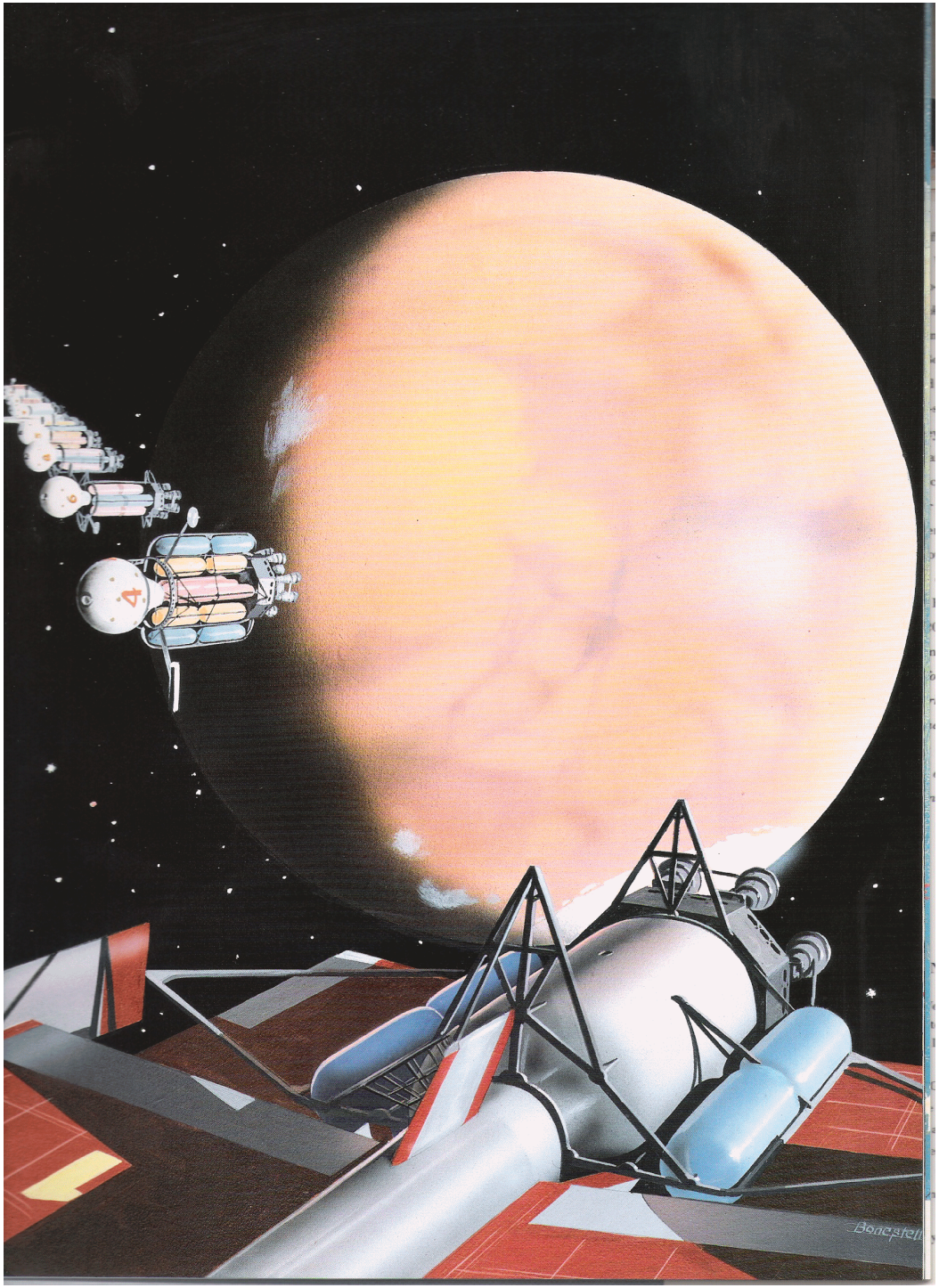
Studie einer interplanetarischen Expedition

Ein Sonderheft der Zeitschrift „WELTRAUMFAHRT"


The Exploration of the Moon
R. A. SMITH
ARTHUR C. CLARKE


the mars project
WERNHER VON BRAUN
The total time of flight from the perigee
the landing ellipse to sonic speed
sec = 1 hr 6 min 41 sec.
the involved

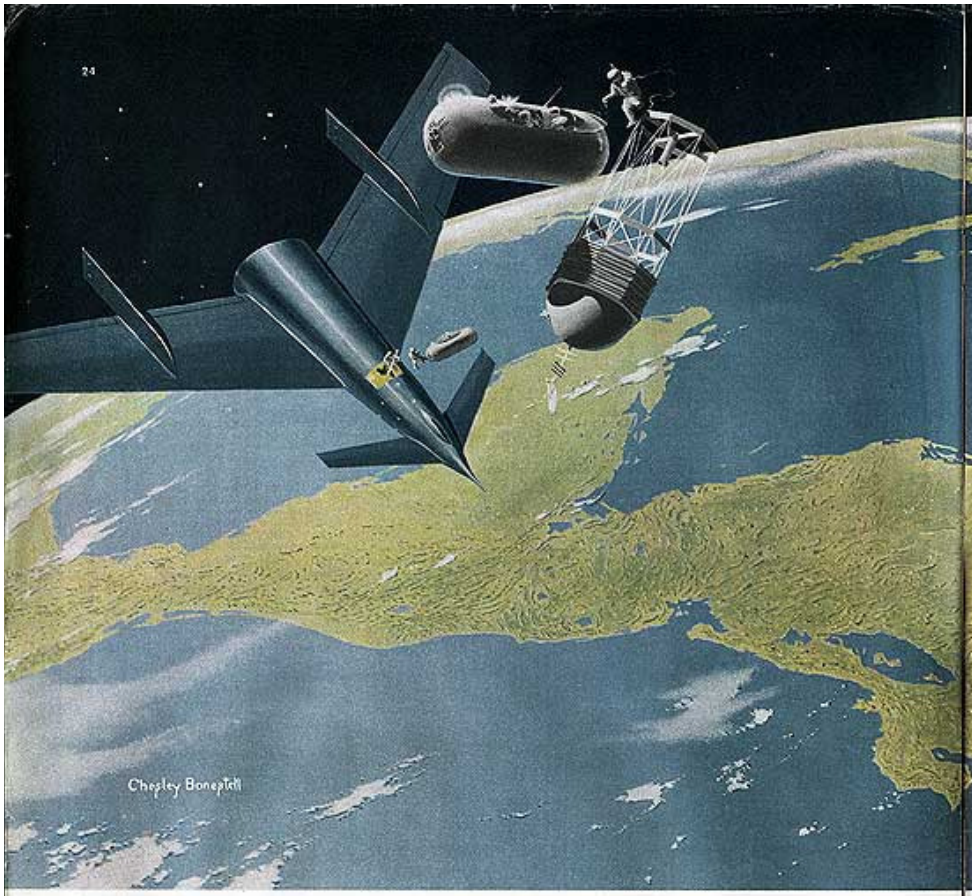



4

- *LEO Payload*: 25,000 kg (55,000 lb). *to*: 1,730 km Orbit. *at*: 23.50 degrees. *Liftoff Thrust*: 119,300.000 kN (26,819,700 lbf). *Total Mass*: 6,400,000 kg (14,100,000 lb). *Core Diameter*: 20.00 m (65.00 ft). *Total Length*: 97.00 m (318.00 ft).
- **Stage Data -** *Stage Number*: 1. 1 x *Stage*:. *Gross Mass*: 5,500,000 kg (12,100,000 lb). *Empty Mass*: 700,000 kg (1,540,000 lb). *Thrust (vac)*: 141,286.300 kN (31,762,424 lbf). *Isp*: 257 sec. *Burn time*: 84 sec. *Isp(sl)*: 217 sec. *Diameter*: 20.00 m (65.00 ft). *Span*: 37.00 m (121.00 ft). *Length*: 36.50 m (119.70 ft). *Propellants*: Nitric acid/Hydrazine. *No Engines*: 51.
- *Stage Number*: 2. 1 x *Stage*: *Gross Mass*: 770,000 kg (1,690,000 lb). *Empty Mass*: 70,000 kg (154,000 lb). *Thrust (vac)*: 16,271.100 kN (3,657,889 lbf). *Isp*: 298 sec. *Burn time*: 124 sec. *Diameter*: 13.50 m (44.20 ft). *Span*: 13.50 m (44.20 ft). *Length*: 20.70 m (67.90 ft). *Propellants*: Nitric acid/Hydrazine. *No Engines*: 34..
- *Stage Number*: 3. 1 x *Stage*: *Gross Mass*: 105,000 kg (231,000 lb). *Empty Mass*: 22,000 kg (48,000 lb). *Thrust (vac)*: 2,033.800 kN (457,216 lbf). *Isp*: 296 sec. *Bu;rn time*: 105 sec. *Diameter*: 5.80 m (19.00 ft). *Span*: 48.00 m (157.00 ft). *Length*: 23.40 m (76.70 ft). *Propellants*: Nitric acid/Hydrazine. *No Engines*: 5.

- *Orbiter:*

  LEO Payload: 24,400 kg (53000 lb). *Liftoff Thrust*: 25 751.600 kN (5 789 190 lbf). *Total Mass*: 2 029 633 kg (4 474 574 lb). *Core Diameter*: 8.70 m (28.50 ft). *Total Length*: 56.00 m (183.00 ft).



Men and materials arrive in the winged rocket and take "space taxis" to wheel-shaped space station at right. Men wear pressurized suits

CROSSING THE LAST FRONTIER

By DR. WERNHER von BRAUN

Technical Director, Army Ordnance Guided Missiles Development Group, Huntsville, Alabama

Scientists and engineers now know how to build a station in space that would circle the earth 1,075 miles up. The job would take 10 years, and cost twice as much as the atom bomb. If we do it, we can not only preserve the peace but we can take a long step toward uniting mankind

Collier's for March 22, 1952

Three "space taxis" can be seen—one leaving rocket, another reaching satellite, a third near the already-built astronomical observatory

WITHIN the next 10 or 15 years, the earth will have a new companion in the skies, a man-made satellite that could be either the greatest force for peace ever devised, or one of the most terrible weapons of war—depending on who makes and controls it. Inhabited by humans, and visible from the ground as a fast-moving star, it will sweep around the earth at an incredible rate of speed in that dark void beyond the atmosphere which is known as "space."

In the opinion of many top experts, this artificial moon—which will be carried into space, piece by piece, by rocket ships—will travel along a celestial route 1,075 miles above the earth, completing a trip around the globe every two hours. Nature will provide the motive power; a neat balance between its speed and the earth's gravitational pull will keep it on course (just as the moon is fixed in its orbit by the same two factors). The speed at which the 250-foot-wide, "wheel"-shaped satellite will move will be an almost unbelievable 4.4 miles per second, or 15,840 miles per hour—20 times the speed of sound. However, this terrific velocity will not be apparent to its occupants. To them, the space station will appear to be a perfectly steady platform.

From this platform, a trip to the moon itself will be just a step, as scientists reckon distance in space.

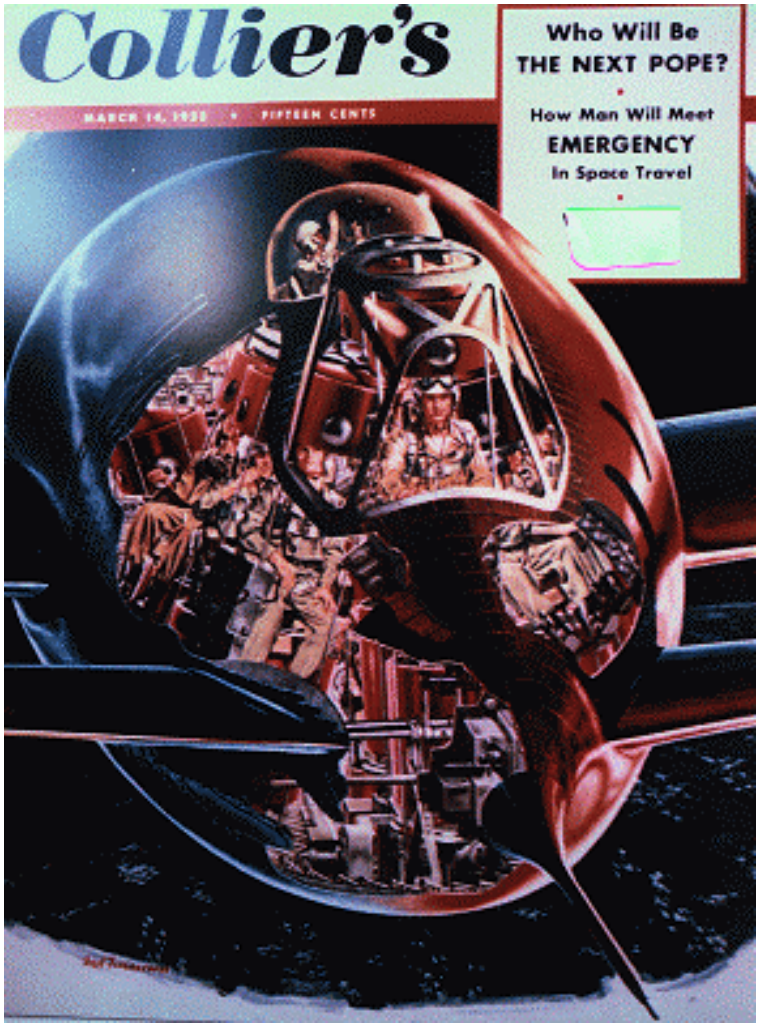
The choice of the so-called "two-hour" orbit—in preference to a faster one, closer to the earth, or a slower one like the 29-day orbit of the moon—has one major advantage: although far enough up to avoid the hazards of the earth's atmosphere, it is close enough to afford a superb observation post.

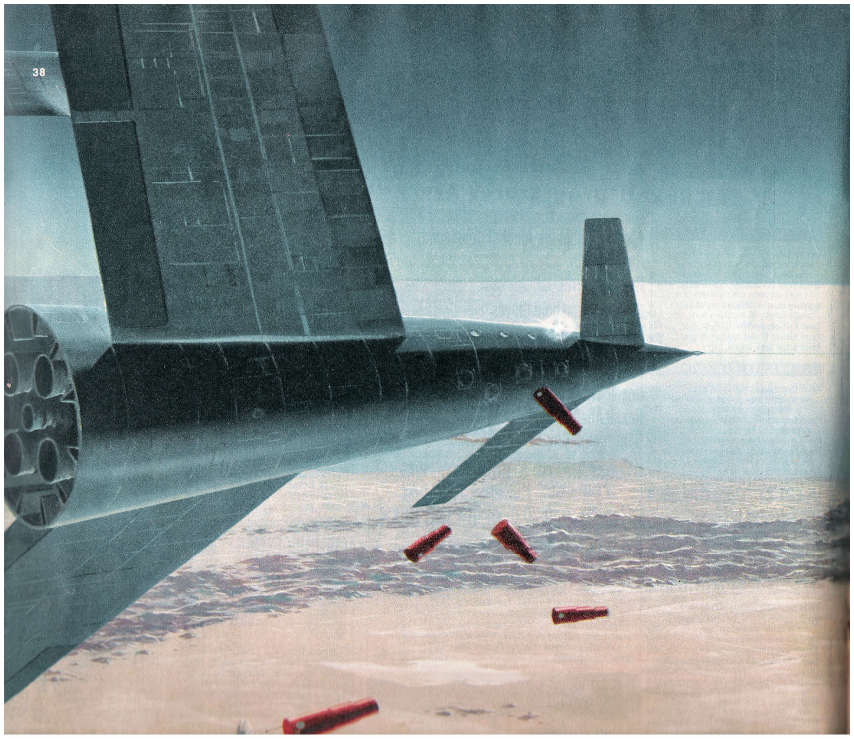
Technicians in this space station—using specially designed, powerful telescopes attached to large optical screens, radarscopes and cameras—will keep under constant inspection every ocean, continent, country and city. Even small towns will be clearly visible through optical instruments that will give the watchers in space the same vantage point enjoyed by a man in an observation plane only 5,000 feet off the ground.

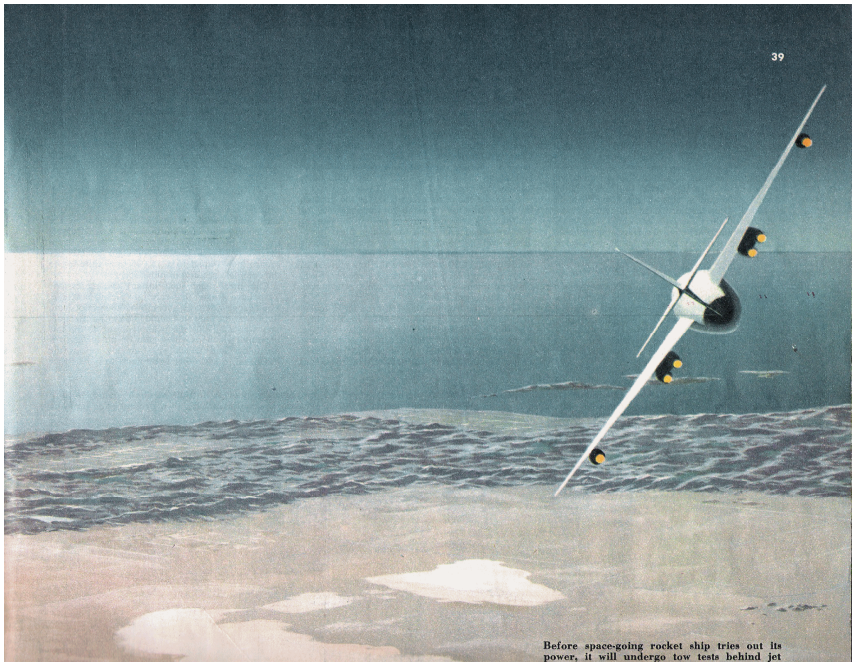
Nothing will go unobserved. Within each two-hour period, as the earth revolves inside the satellite's orbit, one twelfth of the globe's territory will pass into the view of the space station's occupants; within each 24-hour period, the entire surface of the earth will have been visible.

Over North America, for example, the space station might pass over the East Coast at, say 10:00 A.M., and, after having completed a full revolution around the earth, would—because the

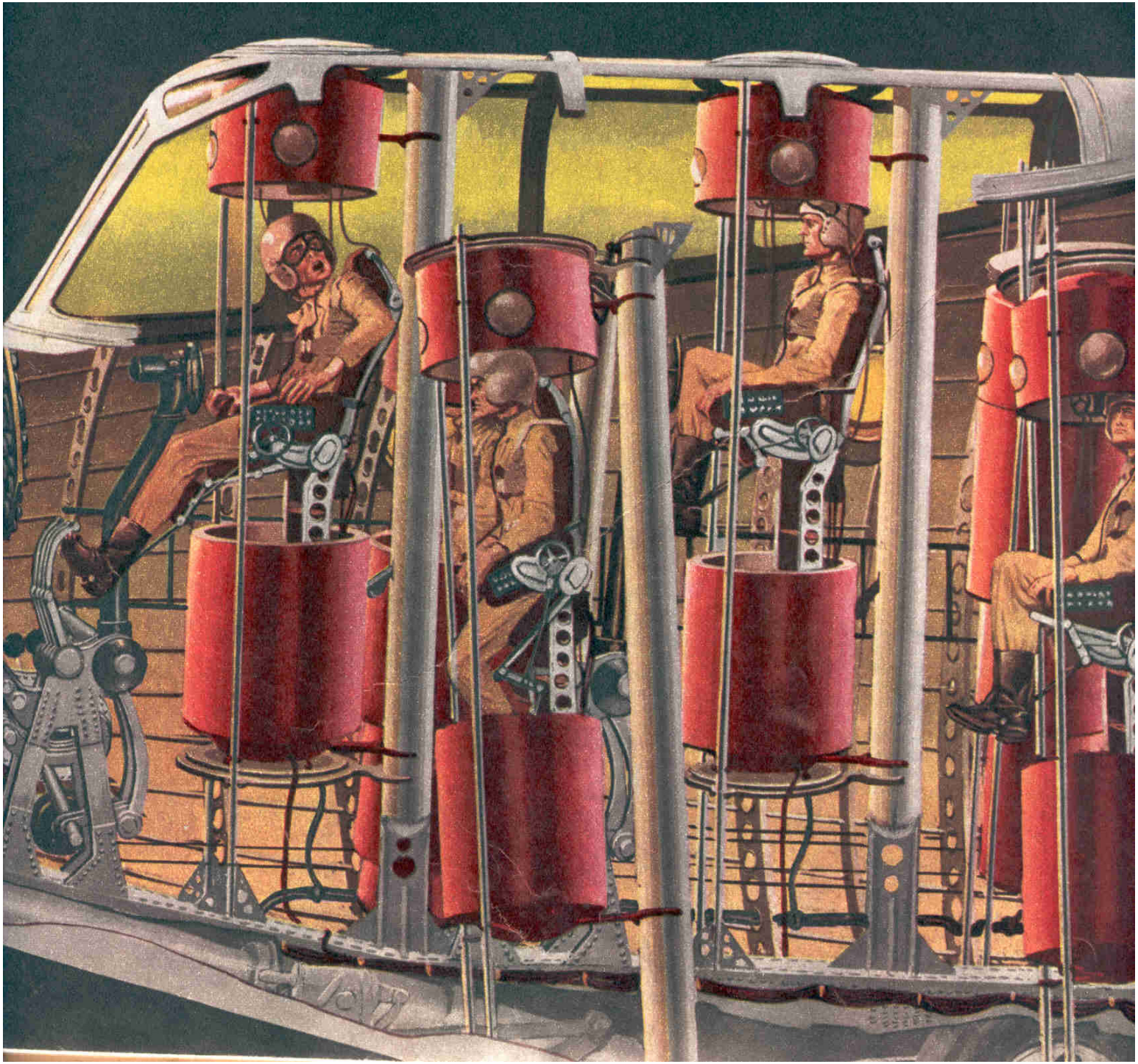
PAINTING BY CHESLEY BONESTELL

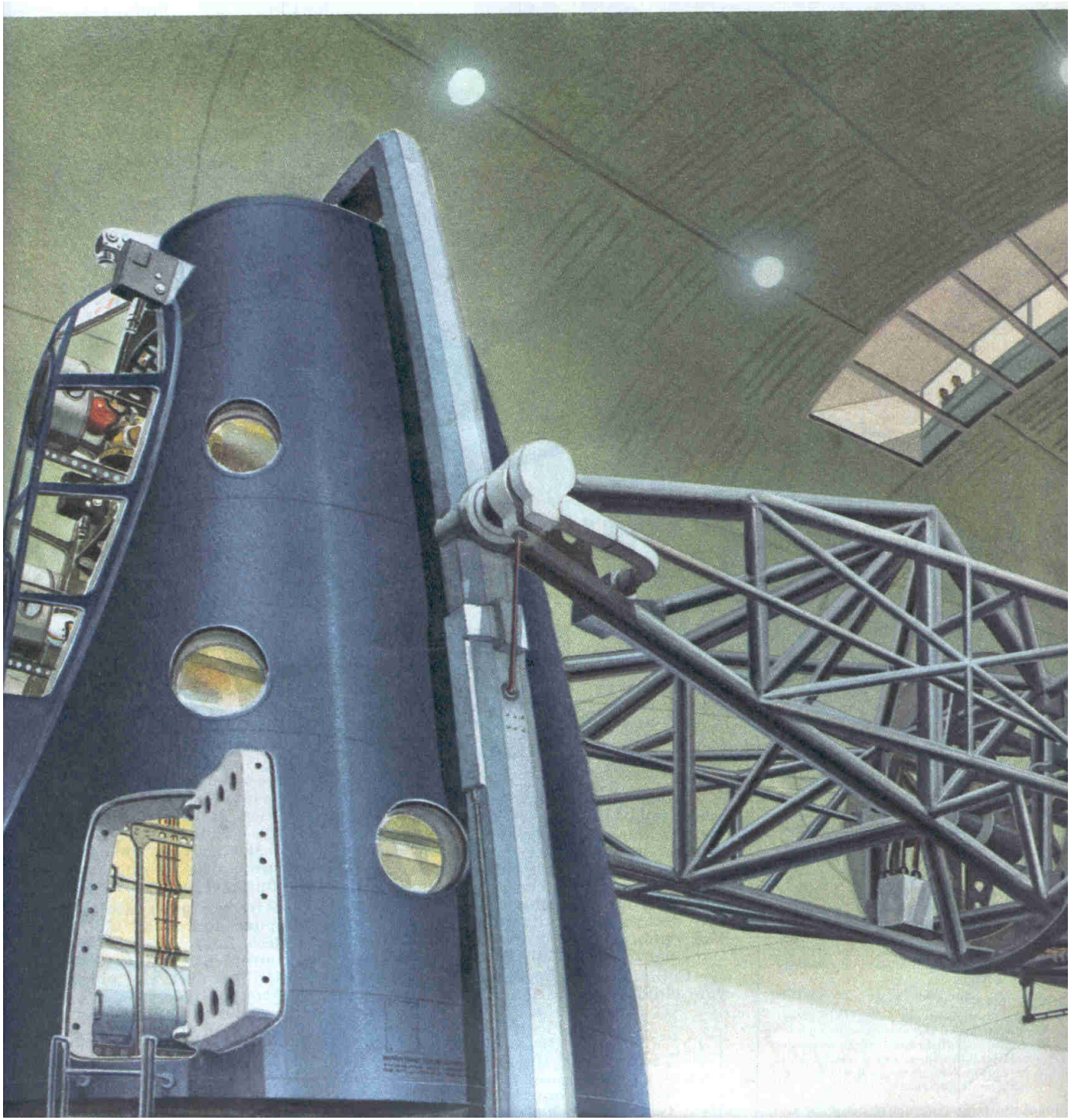

Collier's
MARCH 14, 1953 • FIFTEEN CENTS
Who Will Be
THE NEXT POPE?
How Man Will Meet
EMERGENCY
In Space Travel

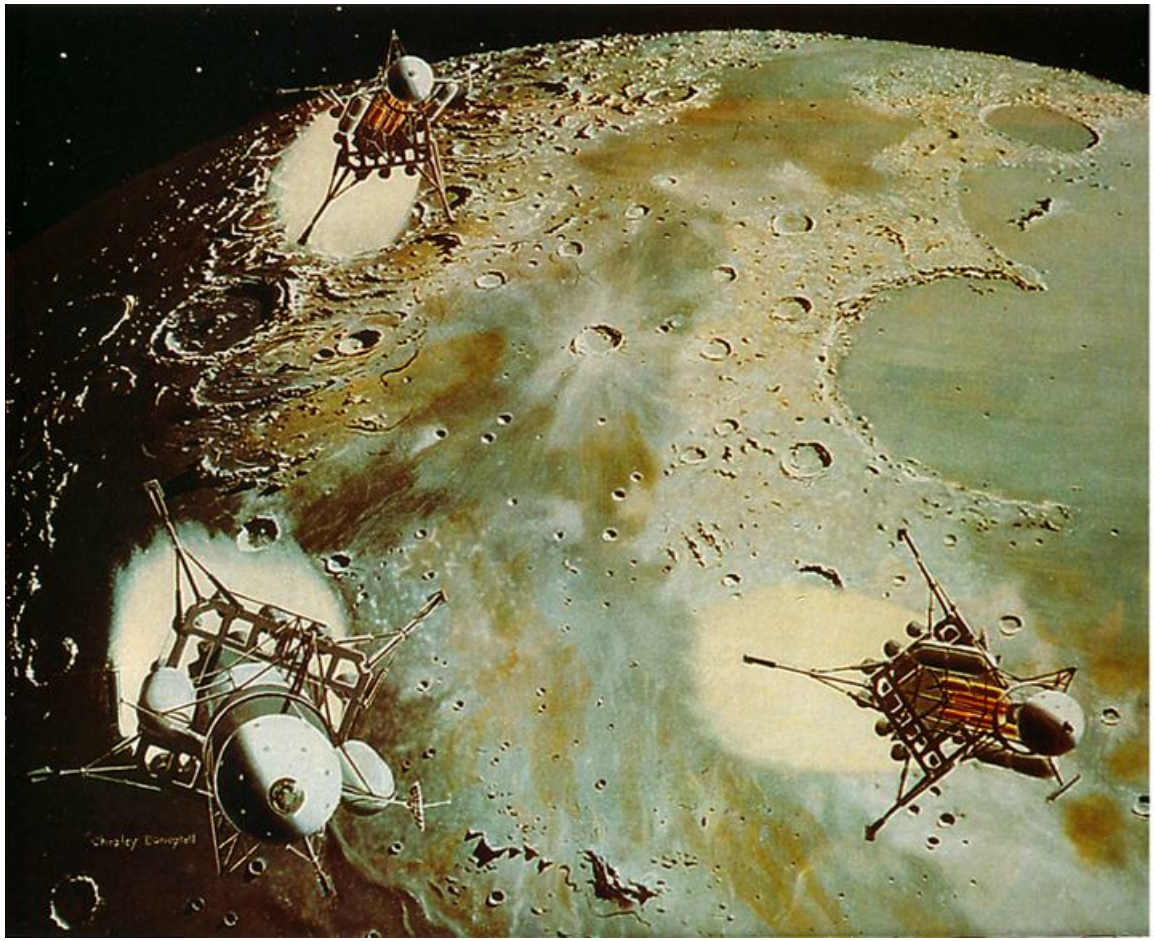


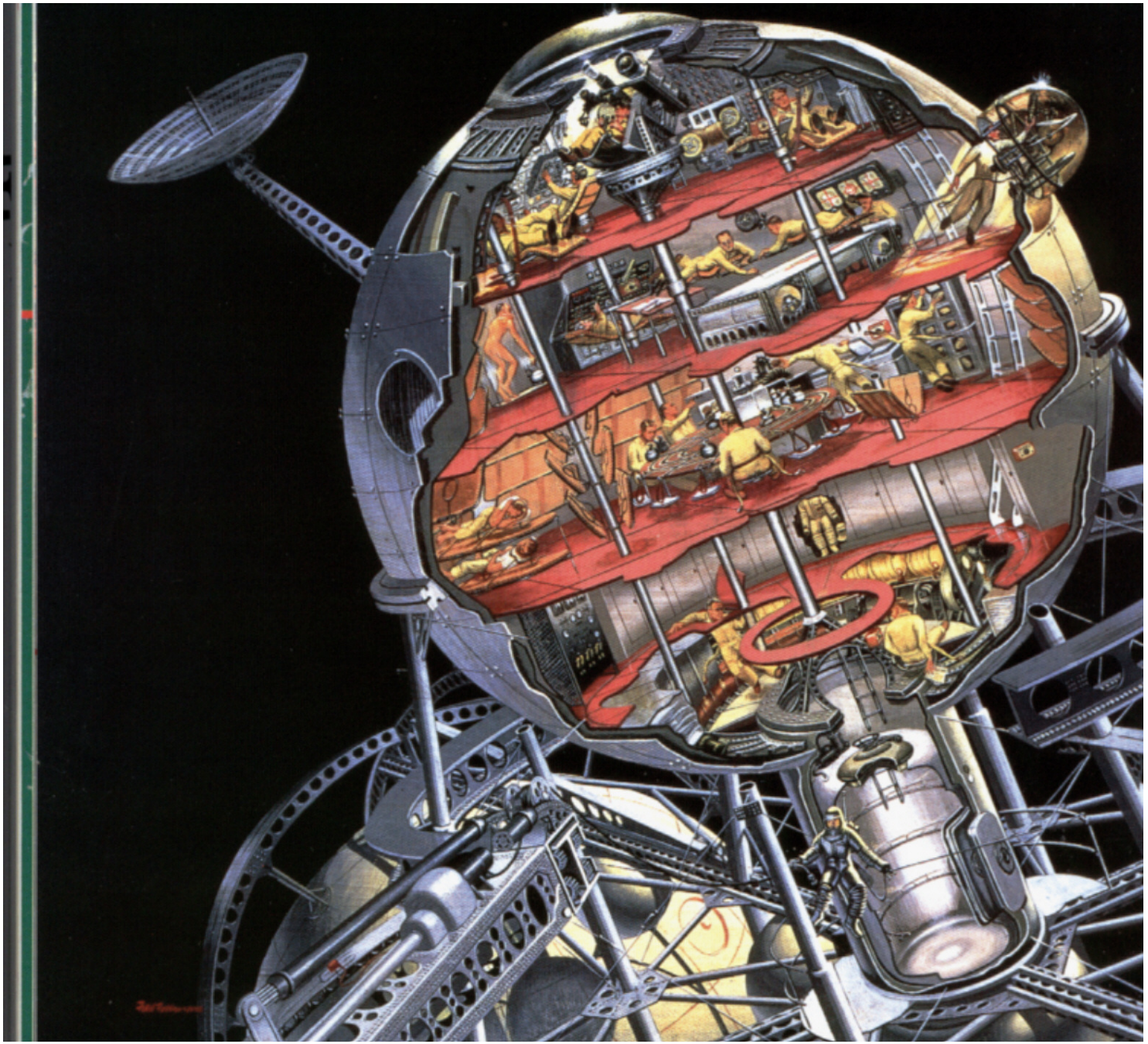


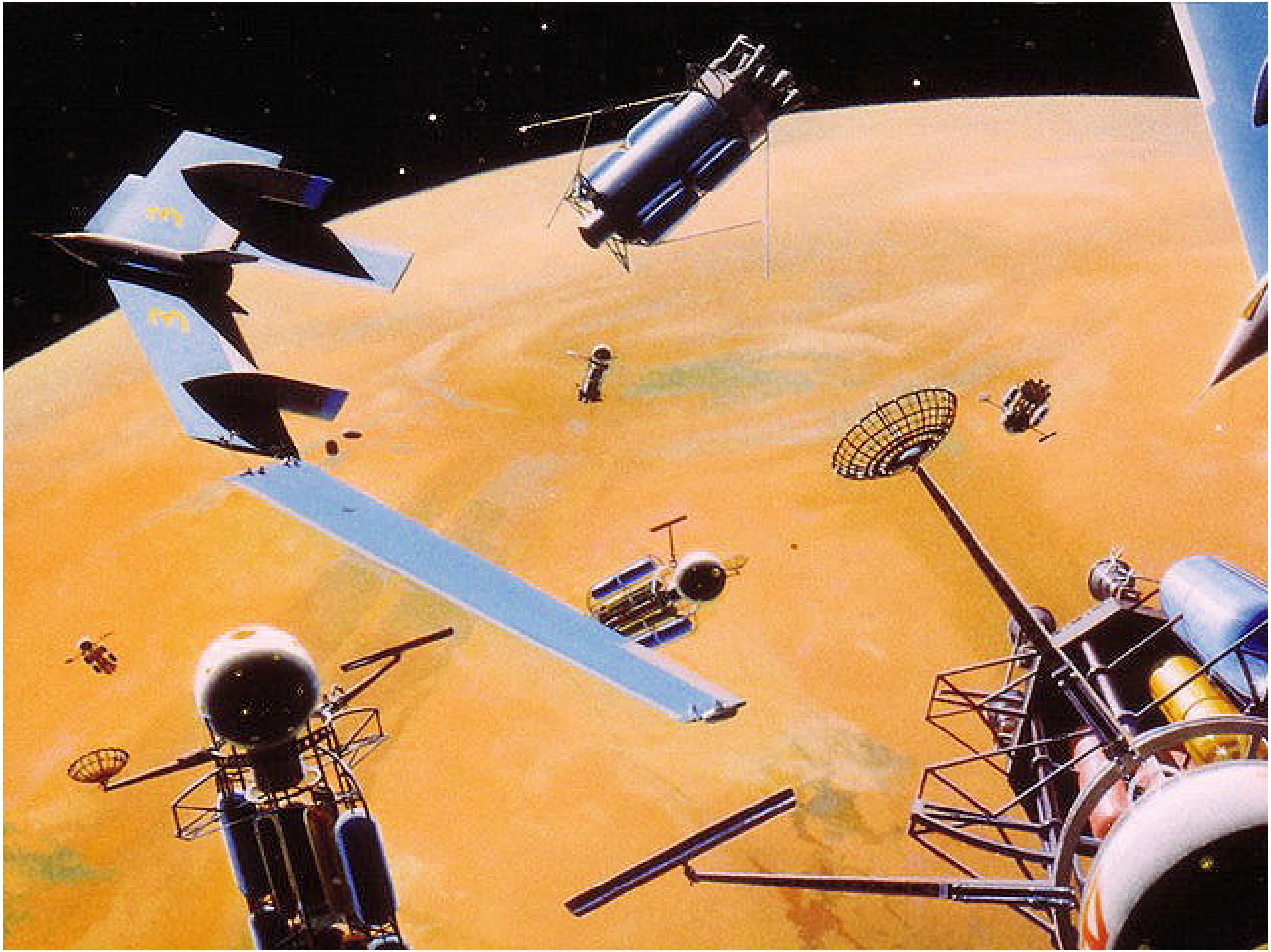
Before space-going rocket ship tries out its power, it will undergo tow tests behind jet







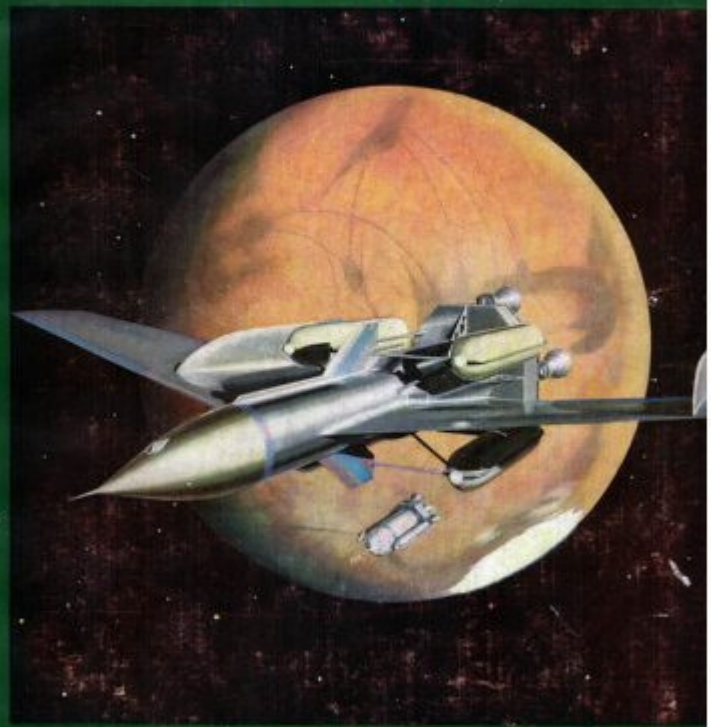




Zahlentafel XXXI: Gesamtunternehmung und Gesamtaufwand

Zahl der Expeditionsteilnehmer	70
Gesamtdauer der Reise	2 Jahre 239 Tage
Hinreisezeit Erde—Mars	260 Tage
Wartezeit in Mars-Mondbahn	449 Tage
Hiervon Aufenthalt auf Marsoberfläche (ca. 50 Mann)	ca. 400 Tage
Rückreisezeit Mars—Erde	260 Tage
Verfügbare Gesamtnutzlast in Mars-Mondbahn	ca. 600 t
Hiervon verfügbare Gesamtnutzlast auf Marsoberfläche	149 t
Verfügbare Zahl der Raumschiffe	10
Verfügbare Zahl der Landungsboote	3
Erforderliche Zahl der Zubringerschiffe	ca. 46
Erforderliche Zahl der Zubringerflüge	950
Zeitbedarf für die vorbereitende Zubringeraktion	ca. 8 Monate
Treibstoffkosten für die Zubringeraktion	ca. 500 Mill. Dollar
Treibstoffkosten für die Marsexpedition	ca. 3,5 Mill. Dollar

THE EXPLORATION OF MARS



WILLY LEY & WERNHER VON BRAUN

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