Horizons

Volume 38
Issue 5

The Newsletter of AIAA Houston Section
The American Institute of Aeronautics and Astronautics

March / April 2013
www.aiaahouston.org

The 44th Lunar and Planetary Science Conference (LPSC)

Dr. Larry Jay Friesen, Wes Kelly and Shen Ge

Also, Continuing in this Issue! Part 5 of 8

Man Will Conquer Space Soon!

(Collier's 1952-54)

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March / April 2013
Horizons, Newsletter of AIAA Houston Section

Horizons is a bimonthly publication of the Houston Section of The American Institute of Aeronautics and Astronautics.
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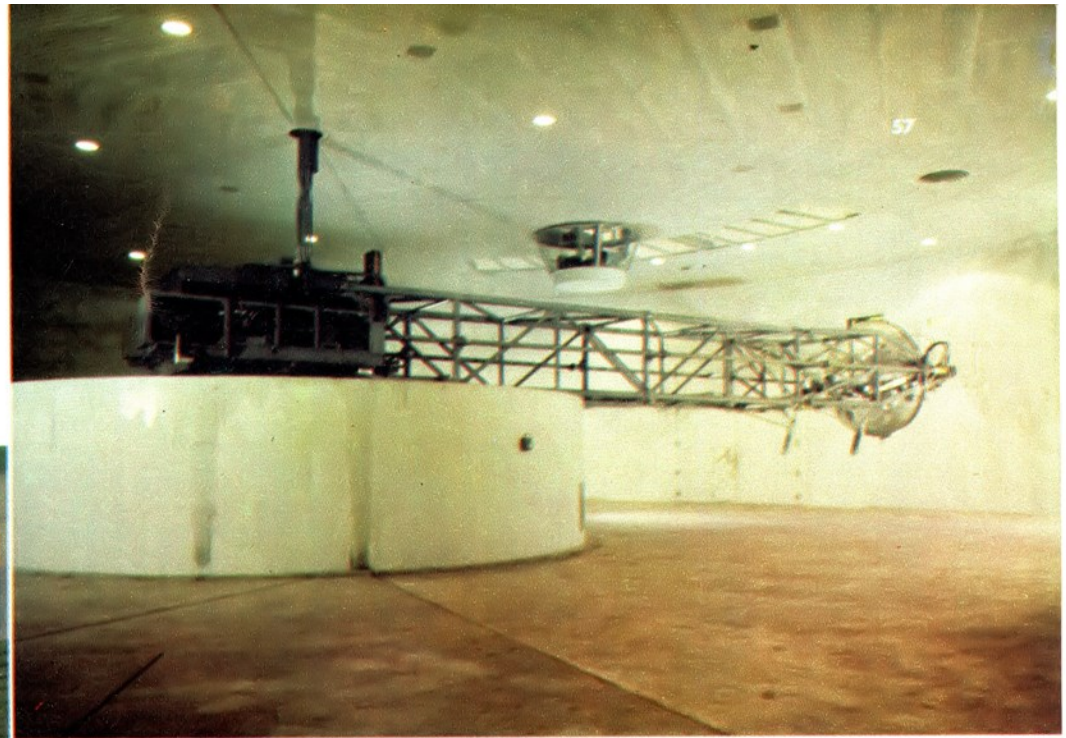
Cover: Two photographs of speakers at the 44th Lunar and Planetary Science Conference of March 18-22, 2013, at the Woodlands near Houston, Texas. Left: Dr. Lindy Elkins-Tanton delivering the Masursky lecture. Right: R. Aileen Yingst. Image credits: Douglas Yazell. Table of contents page: part of Vincent van Gogh’s 1889 painting The Starry Night.

Testing the Men

ROLF KLEP

Disaster is the penalty for an error in space. The pioneer rocket crews will practice for perfection on earth, aided by a gallery of wonderful machines



RALPH ROYLE

Navy centrifuge at Johnsville, Pa., one of several in use to simulate acceleration force

Eleven top experts contributed to the symposium, Man's Survival in Space. This part, the second of three, is based on papers done by Dr. Wernher von Braun, chief, Army Guided Missiles Laboratory; Dr. Hubertus Strughold, head, Air Force Dept. of Space Medicine; Dr. Fritz Haber of the same agency; Dr. Donald W. Hastings, national psychiatric consultant to the Air Force; Dr. James P. Henry, Air Force Aero Medical Laboratory; rocket expert Willy Ley. Collier's Cornelius Ryan assembled the material

HOW do you make a space man out of an earth man? The tests a human encounters in space, the tasks he is charged with in rocket flight, are like nothing he knew on solid ground: flattening acceleration pressures; brain-twisting navigational problems; nerve-racking confinement in cramped quarters; the problem of moving from one point to another when you're hovering 1,000 miles above the ground. No man experiences such difficulties on earth. How does he prepare to meet them in space?

He must prepare on the ground. When he actually gets into space, it will be too late to start learning. Massive, dramatic machines are the teachers—and they already are roughly blueprinted.

One machine (you can see it at the left) will whirl crews around at speeds that reproduce the breath-taking, body-crushing pressures imposed by a fast-rising rocket ship. As the trainer rotates, problems will be fed into the cabin requiring split-second, co-ordinated action from the nearly immobilized crew.

A second machine will teach man to move around in the weightlessness of space. He'll spin, cartwheel, fly violently backward, roll and twist until he gets the hang of self-locomotion.

Trainees also will be jammed together for days in a sealed, boilerlike chamber—working, sleeping, eating, relaxing in a confined space and in a pressurized, synthetic atmosphere.

Navigators dare not be wrong in space; a fractional error may put a speeding vehicle thousands of miles off course. So navigators will have the

Crew centrifuge would expose five persons at once to g pressures, while instructors sent in problems requiring immediate solution. In action, cabin nose would swing down, bringing it into line with centrifuge arm. Operators suspended beneath ceiling could rotate cabin to simulate realistic emergency at launching

Numbing acceleration pressures almost immobilize rocketeers at launching—yet they

most complicated—and most striking—trainer of all: a huge globe which will simulate the vastness and stark beauty of space; sitting inside, the navigator-trainee will get most of the errors out of his system before they can do any harm.

Five Years' Hard Study for Trainees

Besides training in these simulators, most of them designed by Dr. Wernher von Braun, the world's top rocket engineer, the crews will get a tough classroom schedule, taking courses in rocket and instrument design, physics, astronomy, navigation (for all personnel) and basic medicine. The training will take five years, and each of the crew members who graduates will have the equivalent of a master's degree in at least one specialty.

How many will graduate? About five out of every 60 who start the training course. But even those 60 will have been carefully selected; so the graduates will be the cream of a carefully chosen group that once numbered hundreds.

We know we can build superbly engineered rockets to carry man into space; in picking our crews we must aim for the same degree of perfection. Before an applicant is accepted, he must meet rigid physical, educational and age requirements (Collier's, February 28, 1953). He must be between the ages of twenty-eight and thirty-five; he must have a college education; he must be of medium weight, and between five feet five and five feet eleven inches tall. (Exceptionally tall or short people tend to have poor blood-circulation control, which hampers them in adjusting to the stresses of space travel.)

Of every 1,000 applicants who meet those standards, 940 are expected to wash out during the stringent medical and psychiatric examinations which precede training. And now, in the training phase, we'll find that 55 of the remaining 60 students can't cope with the physical, emotional and educational demands of rocket flight.

Perhaps the toughest test will be the trainee's ability to function swiftly and efficiently during acceleration.

Flight into space will be made in three-stage rocket ships: vehicles built in three sections, each with a bank of powerful rocket motors. The first stage, or tail section, provides the tremendous power needed to get the rocket ship off the ground; at an altitude of 25 miles, the first stage is cast loose and the rockets of the second stage, or center section, start firing. At 40 miles, the center section is dropped, and the third stage, which contains the crew compartment, continues on into space. All during the ascent, the rocket ship is guided by an automatic pilot. The pilot is operated electronically by a magnetic tape into which precise instructions have been fed beforehand.

How Acceleration Affects the Crew

As each stage takes over the task of propulsion, there is a sharp drop in acceleration, followed by a sudden thrust forward as the new bank of rockets bursts into action. The crew members feel a numbing acceleration pressure, like the pressure you feel against your back when you step on the gas in an auto, but many, many times more powerful.

The first great acceleration shock comes shortly after launching: from a standing start, the rocket surges to a speed of 5,250 miles an hour in 84 seconds. The second stage propels the rocket for 124 seconds, building up to a speed of 14,364 miles an hour, and the third stage, which then takes over, requires another 84 seconds to hit top speed—18,468 miles an hour. At each spurt, the rocket passengers are crushed against their seats with enormous force.

At the two acceleration peaks (about 80 seconds and 300 seconds after launching), the pressure is equal to nine times a man's weight—that is, nine times the force normally exerted by gravity. Scientists call it nine gravities, or nine g's.

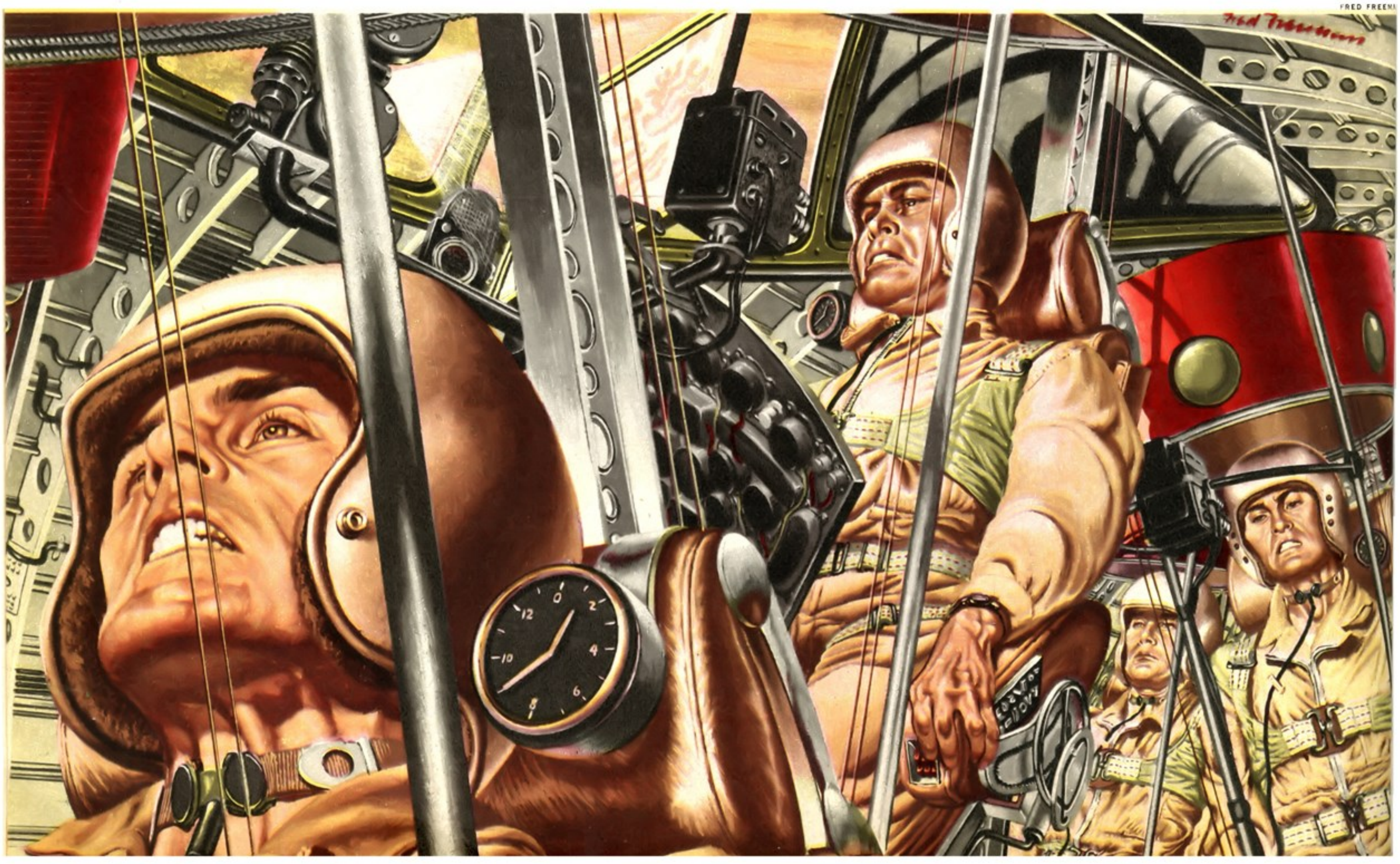
Position Governs Time of Blackout

Can a man operate under such pressure? Yes, if he's sitting in the proper position. If the direction of the pressure is from his head to his feet, the blood drains from his brain, and he blacks out at only four or five g's. If the direction is from foot to head, the blood rushes in the other direction, and he can take barely 2½ g's. But if the pressure is from chest to back, some men can withstand as many as 17 g's without difficulty. How do we know? We have a machine that exposes men to g-forces, a centrifuge consisting of a cage on the end of a long arm, which whirls around like a bucket on the end of a string. Just as a stone in such a bucket will be pinned to the bottom, so a man in the centrifuge is pinned back against his seat. The faster the cage goes around, the more g pressure the man experiences.

Dr. James Henry, one of the Air Force's top physiologists, has found that men spun in the centrifuge at the Wright-Patterson Air Base in Dayton, Ohio, can take up to 10 g's, chest-to-back, and still move their arms and legs.

That's important. It means that if something goes wrong during the first five minutes of rocket

Within cabin of swiftly rotating centrifuge, crew is subjected to terrific strain like that of rocket acceleration. Force sustained equals nine times a man's weight, or nine g's. Problems calling for group action are fed into trainer; crew responds by using fingers to strike armrest buttons



must act fast in emergencies

flight, the crew will be capable of taking emergency action, up to as many g's as they're likely to experience.

But emergency action in a rocket ship calls for split-second co-ordination among several people. So we'll train our crews in a bigger, more complicated centrifuge; the cage will be a near replica of the cabin of a rocket ship. The crew members will sit in contour seats so adjusted that the simulated acceleration pressure will strike them from chest to back, and during the test runs they will be fed emergency problems by instructors on the outside. The training probably will go something like this:

The captain and crew strap themselves into their chairs. Ahead of them, projected on the frosted glass of the cabin canopy, they see a color film showing a blue sky dotted with white clouds.

After a last-minute instrument check, the captain presses a button on the armrest of his chair. The rockets of the first stage begin to mutter; a muffled rumble emerges from hidden loud-speakers in the cabin.

The instructor at the remote-control board outside now gives the captain the launching signal. A light flashes in the cabin, and the captain pushes another button, turning the motors on full power.

The noise from the loud-speakers grows to a roar. The centrifuge begins to spin, simulating the lift of the rocket ship. The sudden surge throws the crew members back hard into their seats. As the white clouds on the canopy race toward the ship and disappear, the faces of the occupants begin to strain under the mounting pressure.

The sky darkens quickly to a jet black that is broken only by stars, glinting cold and sharp directly ahead. As the centrifuge picks up speed, the breath is driven from the bodies of the crew members, and their muscles become almost powerless against the g pressure; yet they watch the orange-red illuminated dials which register a multitude of performance signals. If anything goes wrong, they must be ready to act.

And suddenly, as the peak pressure of 9 g's approaches, something does go wrong.

Danger from Jamming of Fuel Pumps

A high-pitched klaxon horn blasts over the motor roar, and a light flickers near one of the dials on the engineer's panel: one bank of fuel pumps has jammed, and the lines providing the pumps with pressure may burst. Squeezed almost immobile between the chair backs and the tremendous pressure bearing down on their chests, the crew members must act—decisively and quickly.

The engineer's thumb gropes for the interphone switch on his chair arm. "Engineer to captain. Series five pumps are stuck!" The captain must make a hasty decision. The rocket trouble is sure to affect the ship's flight path; yet in a few moments the troublesome first stage is due to be jettisoned. Should he try to keep going? Or should he plan a forced landing or escape procedure? In the last, he can either gain more altitude for safety's sake, or get rid of both the first and second stages immediately and head back for the earth. He decides to continue.

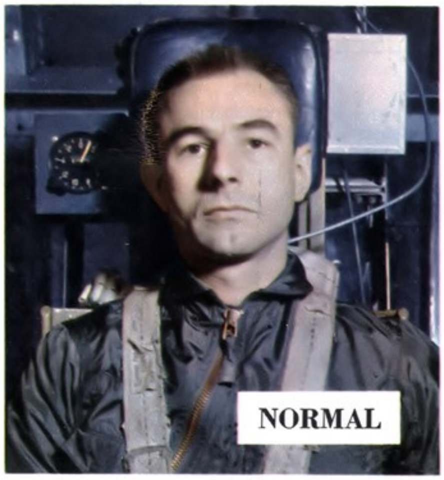
"Captain to navigator. Check flight path with ground station."

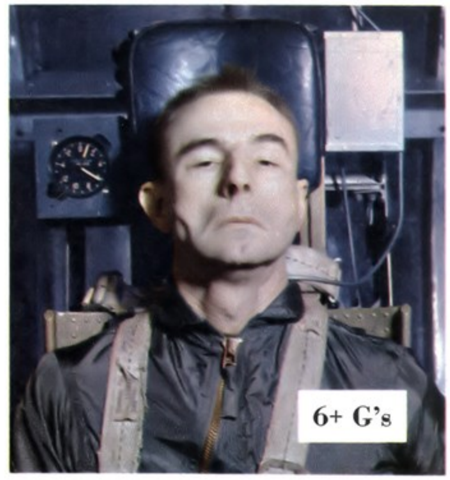
The radio operator, hearing the order, gives the navigator direct contact with the earth. The navigator speaks briefly, listens, then switches his set back to intercom with a movement of his finger. "Navigator to copilot. Tape 13."

The copilot turns his wrist until his hand is over a tape selector panel, then punches button 13.

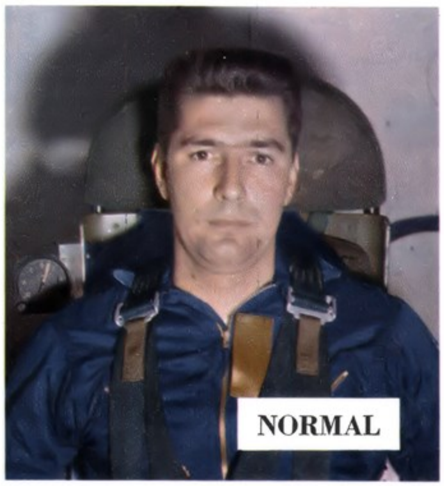
The engineer, meanwhile, has applied a partial corrective for the faulty rockets. "Increasing the speed of remaining pumps," he announces, as soon as the intercom is open.

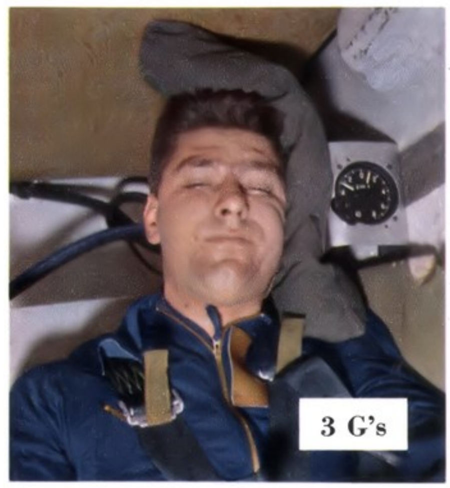
The navigator in turn prepares to call the ground for another heading, to compensate for the increased power put in by the engineer. The infor-



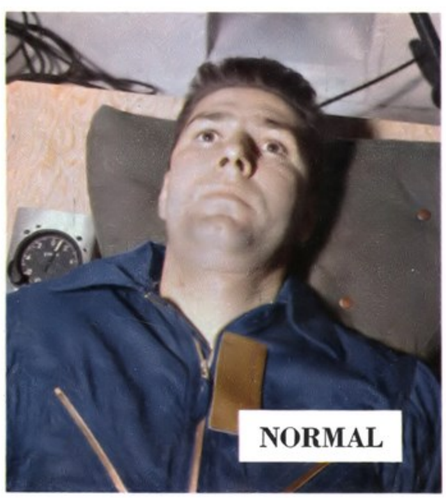


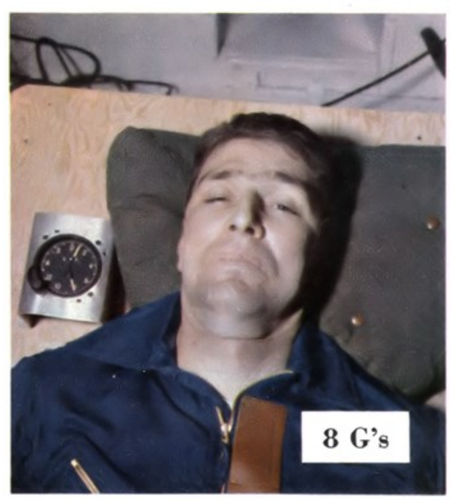
Here's what happens to a man subjected to head-to-foot g pressure, the kind an airplane pilot experiences in pull-out from a dive. Force drags facial muscles downward, drains blood from head, causing average man to black out at 5 g's. A rocket crew member would feel such force if he leaned forward during launching





Foot-to-head force pulls muscles upward, causes blood to rush to man's head. A normal man can take only about 2 g's in this direction before he experiences the condition called red-out. Aircraft pilots performing difficult outside loop know this feeling, as would a rocket crewman leaning too far back at acceleration peak





Problem of g force can be licked if direction of pressure is from chest to back. Men in centrifuge tests have endured up to 17 g's of this kind without blackout or red-out, and space vehicle crews will be seated so acceleration forces strike them this way. All of these photos were made in Navy and Air Force centrifuges

PHOTOGRAPHS FOR COLLIER'S BY RALPH ROYLE

Moving around in weightless space is tricky; you can spin, cartwheel, or tumble

mation he gets will affect the copilot, and the captain will have to take the actions of both into account in making further plans.

And all this time, the radio operator has been busy sending step-by-step reports back to the ground station, so the people there will know what happened in case the rocket ship crashes.

All this action has occurred in seconds. Inside the whirling cage, television cameras have caught the whole scene. Outside, instructors have watched TV screens and light panels, and have timed and recorded every move. By the time the first stage is cast loose, 84 seconds after launching, the emergency is over. Two more accelerations, as the second and then the third stage rockets open fire —and the centrifuge slows down and finally stops.

Many Wash Out in Centrifuge Training

There will be many centrifuge tests before a trainee steps into his first real rocket ship. Many of the students never will see the inside of a space vehicle, because they will wash out in centrifuge training.

Some people are more susceptible to g pressures than others; some will be able to take the pressures, but will falter when their judgment is tested in the spinning cage. They will be eliminated.

Still more will fail because they can't cope with the next machine, the personal-propulsion trainer.

What's so tricky about personal propulsion? The answer is almost everything—in space.

When a space vehicle circles the earth at the right distance and speed, it becomes a satellite, like the moon. A rocket ship 1,075 miles away, traveling 15,840 miles an hour, would circle the earth endlessly. Its speed at that distance would exactly counterbalance the earth's gravity. Once moving at the right speed, it wouldn't need power, because there's nothing in space to slow it down (as there is near the earth, where the atmosphere ultimately brakes the speed of any falling body). The ship would just stay up there, making one trip around the globe every two hours.

Suppose a man stepped out of the vehicle (protected by a space suit, of course). He, too, would be a satellite, spinning around the earth in the so-called two-hour orbit. He would remain in space, hovering near the rocket ship.

But suppose there were two rocket ships, and he wanted to move from one to the other. There's only one practical way for him to do it: each visitor to space will carry a small rocket motor in his hand. By firing it dead ahead, he'll make himself fly backward. When he wants to stop, he'll fire a short burst to one side. That will make him spin part way around. Two more pulls of the trigger—one to stop the spin, the other to halt his flight —and there he is.

It's complicated, and with a couple of hidden traps. What if he fires a trifle too high? He's apt to start tumbling end over end. If he holds his arm a little off to one side, he will spin like a top. If he fires sharply to the left or right, he may start cartwheeling. And it might be hard to stop.

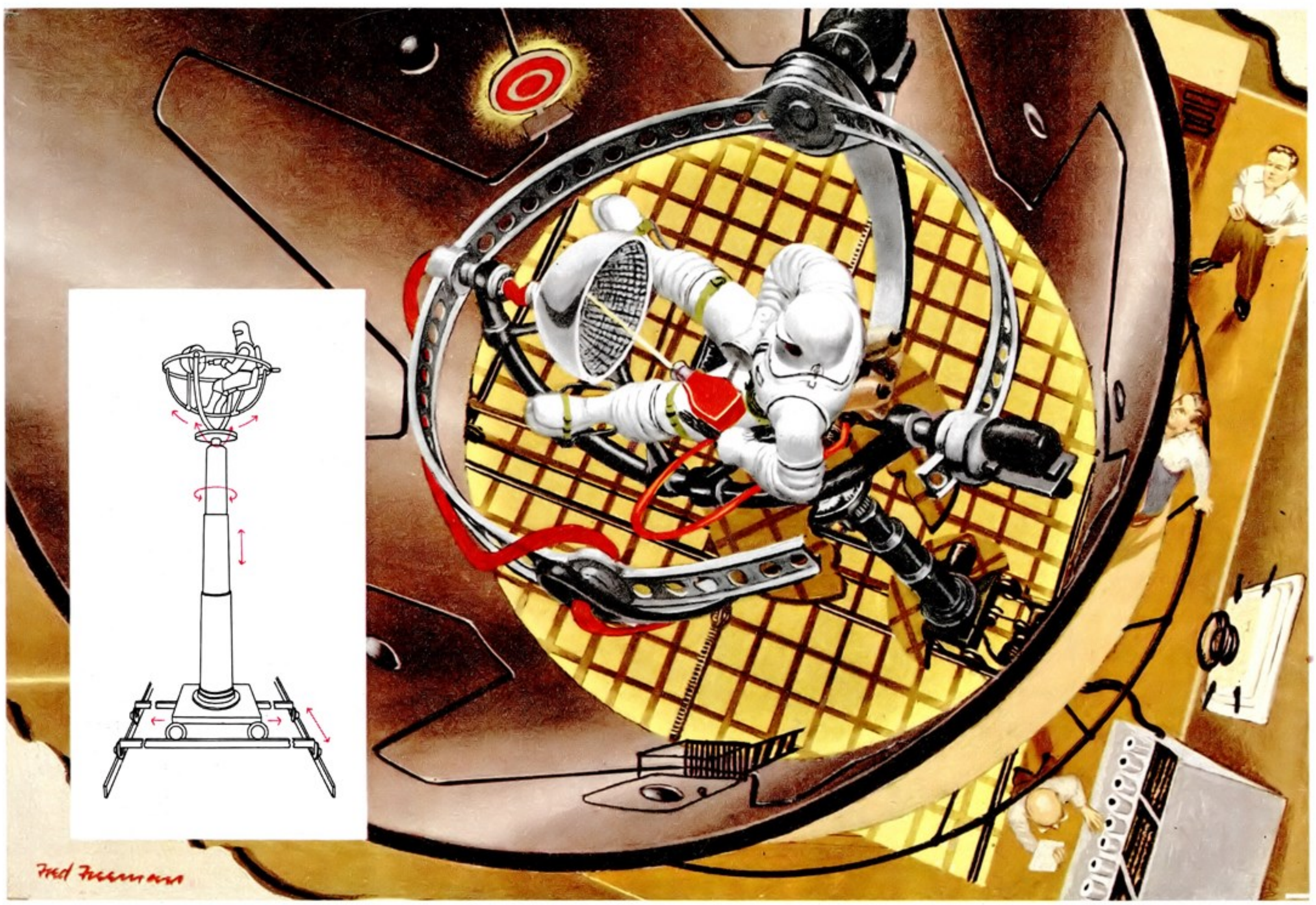
The way to prevent such mishaps is to train the crew members before they ever get into space. We can't duplicate the weightlessness man will experience as a satellite. But we can almost duplicate the spin, roll and pitch hazards of personal propulsion.

Instruction in Personal Propulsion

The student of personal-propulsion training, garbed in a bulky space suit, sits on a chair at the top of a slender telescoping pole. The chair is mounted within rings which enable it to roll sideways, or rock forward and backward. A system of rollers, elevators and gears also makes it possible to move directly backward and forward, or to either side; to go up and down, or to spin to right or left. In front of the student are concentric wire mesh screens studded with photoelectric cells which react to a light ray from the student's propulsion gun. The cells are connected to electric motors which set the chair in motion.

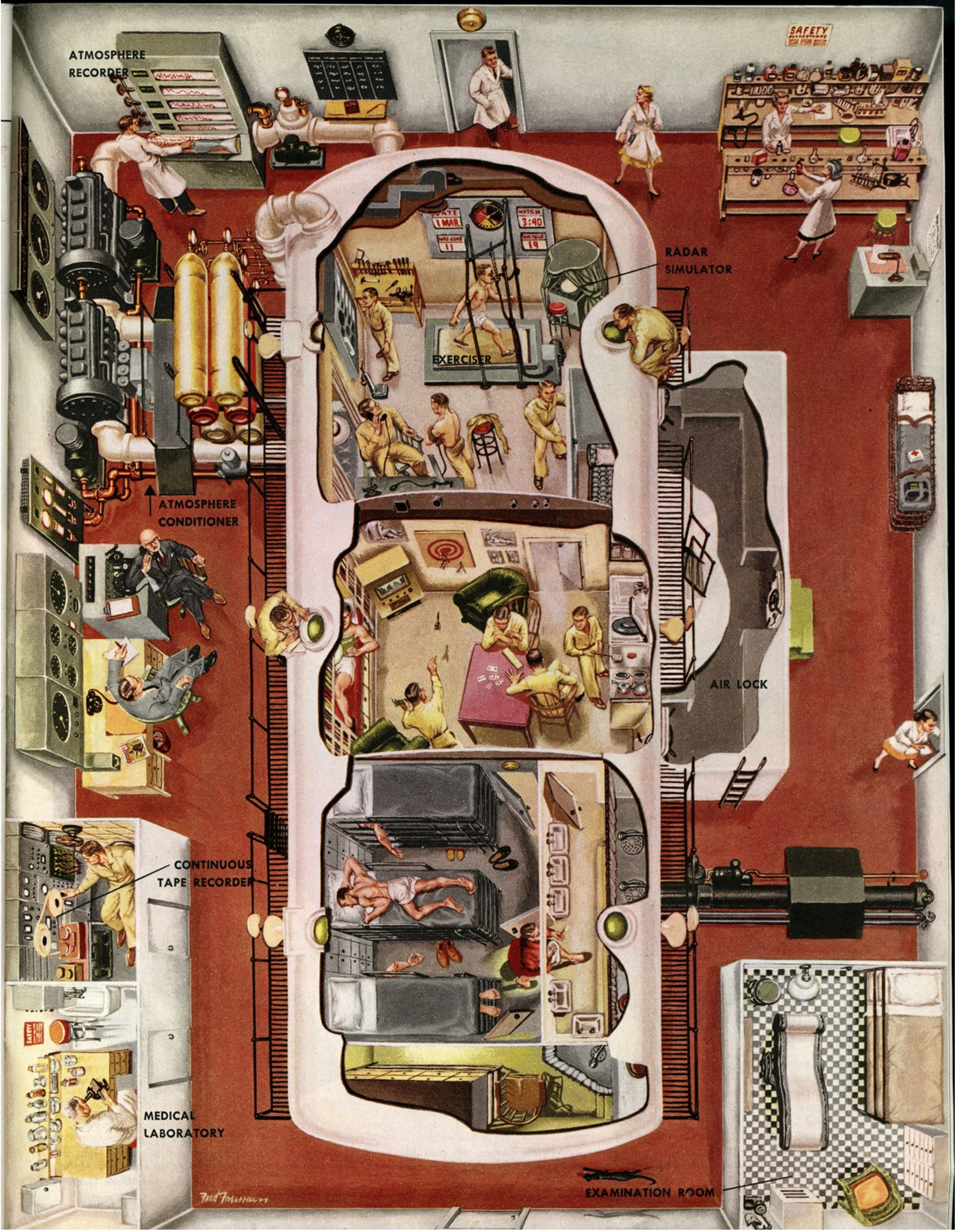
By firing directly in front of him, the student will propel himself backward. Any slight error in his

Crew trainees will stay for weeks on end in this sealed tank. Experts will observe how students react to each other—and to an air mixture of 40 per cent oxygen and 60 per cent helium (on earth, it's 20 oxygen, 80 nitrogen) ▶



Man wanting to go from one rocket ship to another in space will propel himself with rocket gun. This trainer teaches him to aim properly, avoid gyrations. To reach target, trainee shoots light ray—instead of rocket gun—at electric-eye dish. Bad aim makes him spin and roll

DRAWINGS BY FRED FREEMAN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SAFETY
DATE 1 MAR.
WATCH 3:40
DAYS GONE 11
19
RADAR SIMULATOR
EXERCISER
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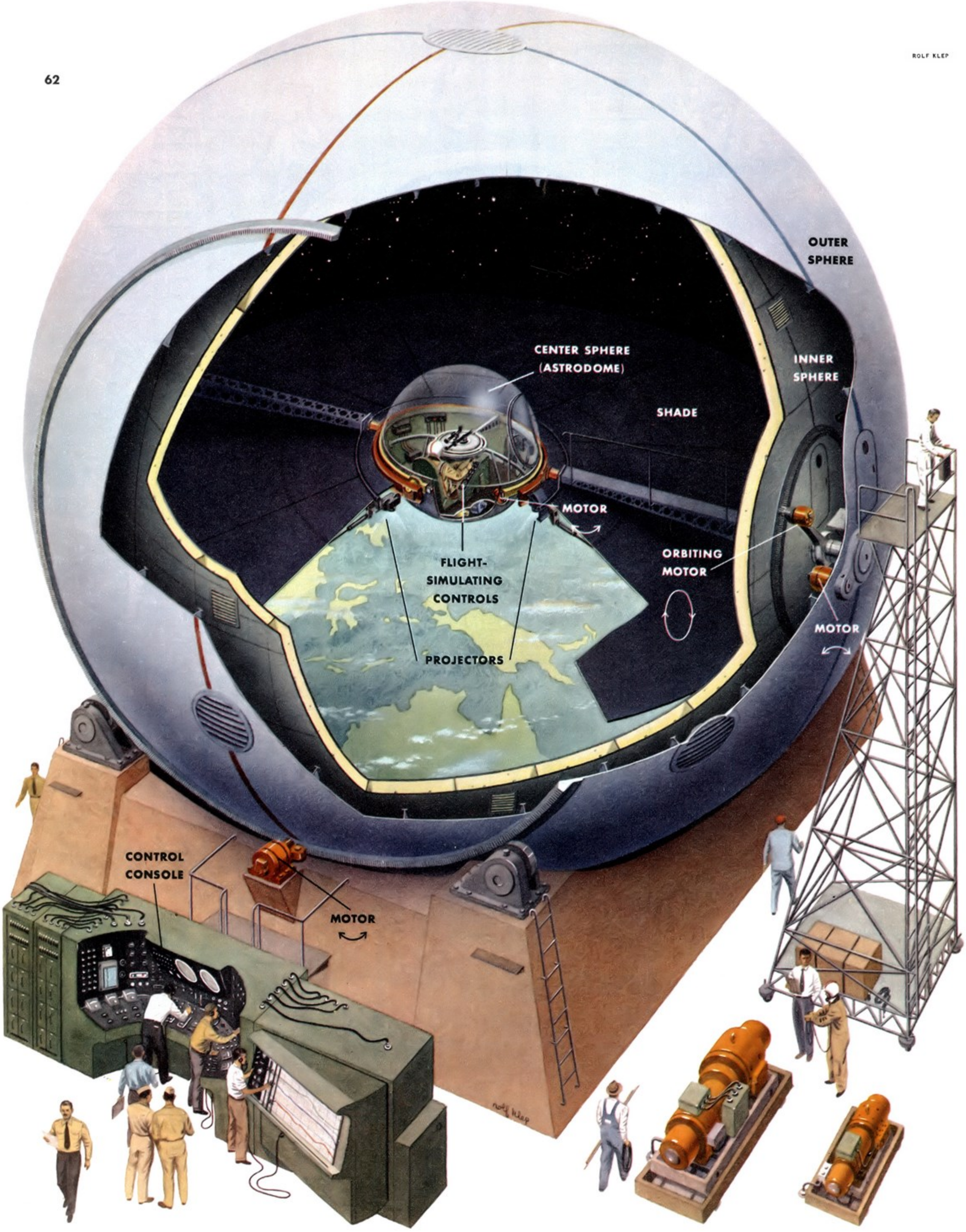
SAFETY
MEDICAL LABORATORY
EXAMINATION ROOM

ROLF KLEP



Navigator students will use this trainer—three concentric globes, all movable to simulate space flight. Trainee sits in center sphere, takes sights on stars and earth, which are depicted on inner sphere. Shade keeps light from the filmed earth picture from reflecting above aim will have the same effect as a comparable error in space: he'll spin, cartwheel or tumble.

There's one more aspect of personal propulsion which the simulator can't duplicate exactly. Suppose a man blasts himself backward and suddenly finds his gun is jammed or out of fuel. Unless other men become aware of the danger in time to rescue him, won't he go plummeting off into space with nothing to stop him? No, he'll wear a protective life line, tied to the rocket ship. Not only will it keep him from becoming lost; it also will extend his range, because he can use up the fuel in his gun, then float back to the ship with one tug on the line.

Personal propulsion is a problem space men and women encounter outside the rocket ship. They'll also have to adjust to life *inside* the vehicle, and another trainer will help prepare them for that.

What difficulties will they face? A much lower atmospheric pressure than they're used to; personality conflicts resulting from long periods spent in close quarters with the same few people; psychological reactions to a monotonous existence in a small area. Those are the main problems; there are also a few minor ones.

All of them (with the exception of weightlessness, which can't be reproduced on the ground) will be simulated in the next trainer, a crew pressure chamber. Ten to 15 men at a time will spend several consecutive weeks in the chamber, getting used to the cramped quarters—and to one another.

Why so long? A trip to the two-hour orbit, where we someday hope to build a permanent station, will take only about an hour. Why force the trainees to spend weeks together?

Because they probably will be the crews which—after the space station is built—will pioneer in interplanetary flight. A trip to Mars will take eight months, one way. The men of a crew will be under severe stress during such a trip, and we must know *now* which ones are able to take it.

Reasons for Ban on Women

Women, who may beat out men for certain crew jobs, won't go along on interplanetary journeys, where privacy will be lacking for long periods. So they'll take the chamber tests separately, and briefly, in preparation for the shorter flights that they will make.

The chamber will be like the interior of a rocket ship—functional, pressurized and cramped. Most of the pressure problems have been worked out by the physiologist-engineer team of Drs. Hubertus Strughold and Fritz Haber. The chamber's interior pressure will not be that of the earth at sea level, which is about 14½ pounds per square inch, because such pressure would impose too much of a strain on the junctions where pipes and tubes pass through the sides of a rocket-ship cabin. A pressure of about eight pounds will be used, equivalent to an altitude of 15,000 feet.

After a short adjustment period, most men can breathe comfortably at that altitude. Increasing the percentage of oxygen in our artificial atmosphere, from the 20 per cent a man is accustomed to on the ground to about 40 per cent, will make it easier.

There will be another change in the atmosphere, suggested by Willy Ley, noted rocket expert and writer. Instead of nitrogen, which makes up about 80 per cent of the earth's air, helium will be pumped in. Nitrogen in the blood tends to form bubbles when there is a rapid change in pressure (which might occur by accident in space), producing the painful—and possibly fatal—affliction known as the bends. Helium does not form bubbles in the blood as easily as nitrogen does, so it poses no problems.

The psychological problems of the sealed cabin are even more interesting than the physical. Men working under strain for long periods tend to become irritable and less efficient; in long-distance aircraft they generally start growling at one another after about eight hours, and show a marked loss of efficiency after about 15 hours. Some do better than others, and tests in the pressure chamber will enable us to pick the top men.

How about those who show signs of early strain, those who start sulking and finally lapse into an unsociable silence? Are they finished?

No, but special efforts will be required to match them to the proper crewmates. Psychologists have found that they can almost eliminate friction on aircraft crews by choosing men with like interests, background and education.

Cases of Claustrophobia Are Rare

Besides indicating their ability to work as a team, the trainees may display other psychological reactions to the chamber tests. A few rare cases of claustrophobia may develop, for example, although Dr. Donald W. Hastings, the Air Force's chief psychiatric consultant, expects such fear of confined space to be rare. The ability of the men to act in crisis situations may be tested again; if a man becomes sick, his fellow trainees will care for him (unless an emergency develops, of course). Temperature and atmosphere changes will be fed into the room to test the physical—and emotional—responses of the students. Routine flight problems will be passed to the trainees to keep them busy, and exercise machines will be available inside the chamber to keep them fit.

GEORGE WISLER

Air Force officers with model of new navigator-training plant, Wright Air Development Center, Dayton, O. Huge trainer is latest step in direction of navigation simulator on facing page

But no problems that a navigator solves in a pressure chamber will prepare him for those he encounters in flight. The fourth simulator is aimed primarily at him, although other crew members will use it.

The navigation simulator consists of three spheres: a large globe, 30 feet in diameter, with two concentric spheres inside. The smaller of the two inner spheres, measuring about six feet across, is the navigator's compartment, or astrodome. The larger, which fits just inside the exterior globe, is, in effect, a great picture of the universe, with the earth looming large below.

The inside of this middle sphere is pitted with small holes through which light shines, to simulate the constellations. The earth is depicted by color movie film, projected against the inner skin of the sphere.

The big picture-sphere makes a complete rotation every two hours, so that the student navigator gets the illusion of starting in the two-hour orbit.

For the navigator, rocket flight will differ from aircraft flight in several important respects.

First, he won't have the usual landmarks and radio aids; his only points of reference will be the earth below and the stars above.

Second, during the outward flight, the normal navigational problems have been solved in advance and worked into the automatic pilot; so almost all the navigator's work will occur just before and during the rocket ship's return earthward from space.

The homeward journey is begun by cutting the speed of the rocket ship, so it no longer is moving fast enough to continue as a weightless satellite; it then starts to fall out of the orbit, toward the earth. The speed is reduced by turning the vehicle tail-end-to, so that the rocket motors point in the direction of movement, and employing a short burst of power. The strength and duration of the rocket thrust—if properly aimed and timed—will put the vehicle precisely on course for its destination on the earth.

The navigator's main job is to make the aiming and timing as nearly accurate as possible; if that's done correctly, the rest of the homeward navigation will virtually take care of itself. If his initial calculations are wrong, there may be trouble, for the rocket carries very little fuel on the return trip and it may prove difficult to correct the course. Obviously, the departure timing depends on what part of the earth is opposite the vehicle; under certain conditions, the problem is so complicated that the navigator must wait for a better moment.

A Test in the Astrodrome

In training, the student navigator will take his seat within the astrodome, and instructors outside will set up a problem by moving the stars to a certain position and by selecting a specific picture of the earth to be screened below him.

From then on, the trainee operates the simulator. He determines his present attitude (*attitude*, not altitude) by taking sights on the stars and the earth. Then he decides on his desired attitude for time of departure, and aligns the ship properly, by pressing buttons on a control panel at his right. In a real rocket ship, the buttons would cause the ship to tilt to the desired position; in the simulator, the pictures of the stars and earth shift instead.

The navigator then checks his exact location in space by radioing to the ground, confirms his timing calculations—and is ready to go.

Every move that he makes will be charted on the panel outside. New problems and emergency situations may be posed by the instructors, and careful measurements will be kept of his position, to determine the degree of error in his calculations.

For most of the crew members, the navigation trainer will be an interesting machine whose main purpose will be to familiarize them with the kind of scenery they'll see in space. For the navigator trainee, fighting to keep from being eliminated, it will be a major obstacle. Some navigator students will wash out.

By the time all the trainees have passed through all the simulators, only five will be left of the 60 who started the course (and of the 1,000 who originally applied for it).

Now comes flight training.

Next Week **Disaster can strike in space, as it can anywhere else. How does a rocket crew save itself when its vehicle starts blowing up at a speed of 15,000 miles an hour, 1,000 miles from solid ground? Scientists tell the answers**

Collier's 1952-54

Picture OF THE MONTH

Bogart and Allyson!!!

The years to come will have to go some to top this twosome! Here's TNT teaming of the kind that is reminiscent of those Gable-Gardner and Taylor-Turner combos. And if memory knows a bigger or better showcase for their torrid talents than M-G-M's bold and beautiful "Battle Circus"—memory just isn't telling this excited previewer.

Excited? "Scorched" is closer! Without a doubt, "Battle Circus" is the warmest, most wonderful story of desire-under-fire to come out of the war and into the heart. In it Humphrey Bogart really meets his match ...and she's terrific! A new June Allyson—still winsome (and then some!) but with a smoldering hint of volcanoes to come. And June *does* bust out all over, while all Bogart's breaking loose in this story of a half-naive, half-knowing nurse who comes to Korea to help win the war and can't help winning a one-man war called Bogart.

Last year's Academy-Award winner is in there power-pitching again as an Army major, a surgeon with a first-class touch, a scalpel-sharp temper, and the bedside manners of a marine on leave. Out of gentlemanly respect for June's tender years and inexperienced ears, Bogart waits a full thirty seconds or so after meeting her before inviting her to see the sights, starting with the inside of a tent.

To sample you a sample of the crackling love-talk writer-director Richard Brooks has them tossing at one another: "Please, major, stop creeping up on me," says June. "Stop talking like a vice squad," says Bogart. "Aren't you too old for this kind of thing?" says she, retreating. "When I'm too old for it I'll be dead," says he, advancing.

But all the time he's declaring war on her defenses, she's invading his heart. Then D-Day for the real thing can't come too soon for him.

The screen's top topkick, Keenan Wynn, is just about perfect as an ex-circus roustabout bringing Barnum & Bailey techniques to these Army tactics. In tempo, temperature, and between-the-bombs tenderness, "Battle Circus", is surefire, sheer flame and sure fun!

* * *

M-G-M presents HUMPHREY BOGART, JUNE ALLYSON in "BATTLE CIRCUS" with Keenan Wynn and Robert Keith. Screen play by Richard Brooks. Based on a story by Allen Rivkin and Laura Kerr. Directed by Richard Brooks. Produced by Pandro S. Berman.

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March 7, 1953

ARTICLES

FICTION

The characters in all stories and serials in this magazine are purely imaginary. No reference or allusion to any living person is intended.

Subscription Department, 204 W. High Street, Springfield, Ohio
Editorial and Executive Offices, 640 Fifth Avenue, New York 19, N. Y.

COLLIER'S THE NATIONAL WEEKLY, Vol. 131, No. 10. PUBLISHED WEEKLY by The Crowell-Collier Publishing Company, Springfield, Ohio, U.S.A., Publishers of Collier's, Woman's Home Companion, The American Magazine. Executive and Editorial Offices, 640 Fifth Ave., New York 19, N. Y. Albert E. Winger, Chairman of the Board; Clarence E. Stouch, President; E. A. Schirmer, Executive Vice-President; T. L. Brantly, Peter J. Denerlein, Edward Anthony, E. P. Seymour, Ralph G. Smith, John W. McPherrin, Wm. A. Sittig, Vice-Presidents; Denis O'Sullivan, Secretary; C. F. Norsworthy, Treasurer.

SUBSCRIPTION PRICES: United States and Possessions, Canada and Philippine Islands, 1 year $5.00; 2 years $8.00; 2½ years (130 issues) $9.00; 3 years $10.00; 4 years $12.00. Pan-American countries in the Postal Union, 1 year $6.00. All other countries, 1 year $9.00. Payments from foreign countries, except Canada, must be in United States funds, and addressed to The Crowell-Collier Publishing Company, Springfield, Ohio.

ENTERED as second-class matter at the Post Office, Springfield, Ohio, under Act of March 3, 1879. Authorized as second-class mail, Post Office Department, Ottawa, Canada.

MANUSCRIPTS or art submitted to Collier's, The National Weekly, should be accompanied by addressed envelopes and return postage. The Publisher assumes no responsibility for return of unsolicited manuscripts or art.

CHANGES OF ADDRESS should reach us five weeks in advance of the next issue date. Give both the old and new addresses.

The Cover

Although spring is only a stone's throw away, it's still blustery, and sloppy enough underfoot to make the retrieving of a runaway Sunday paper an uncomfortable business. Artist Tom Lovell, of Westport, Connecticut, posed Miss Penny Peterson, daughter of Ridgefield artist Perry Peterson, and achieved this realistic circumstance without the benefit of a Hollywood wind machine.

Week's Mail

The Cutter and the Cop

EDITOR: I just can't stand these smart dopes who are always picking your articles to pieces, and finding little errors in some of your pictures.

By the way, where's the sleigh bells on your very fine cover for the Jan. 24th issue? ALLAN J. WYLIE, Tampa, Fla.

... The Jan. 24th cover is splendid, but evidently Bill Randall is just a young fellow who never drove a cutter. Being an old-timer who has driven many, I never saw a rig of this kind without chimes on the shafts and frequently on the harness.

Also, how is Randall going to stop this rig? No breeching shown.
J. F. DAVIS, Barton, Wis.

Collier's · Bishop Sheen Answers His Fan Mail · SKIN DIVERS Between the Devilfish And the Deep Blue Sea

... Your cover shows a fine-looking horse, but what is he doing? Trotting? Pacing? Galloping? Looks like maybe his owner wished he had been a dog instead and trained him as a pointer.
PETE WARD, Washington, D.C.

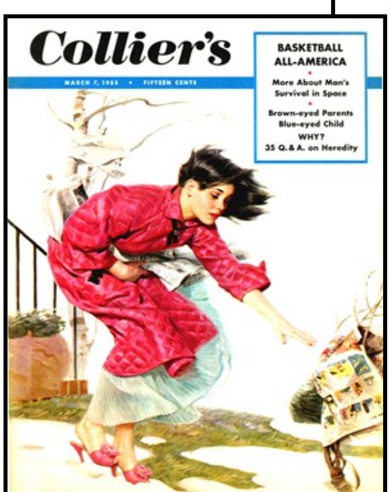
We figure that he's neither pointer nor pacer, but a trotter who's having a little trouble getting that left hind foot up, due to a slow track.

Training to Defend Alaska

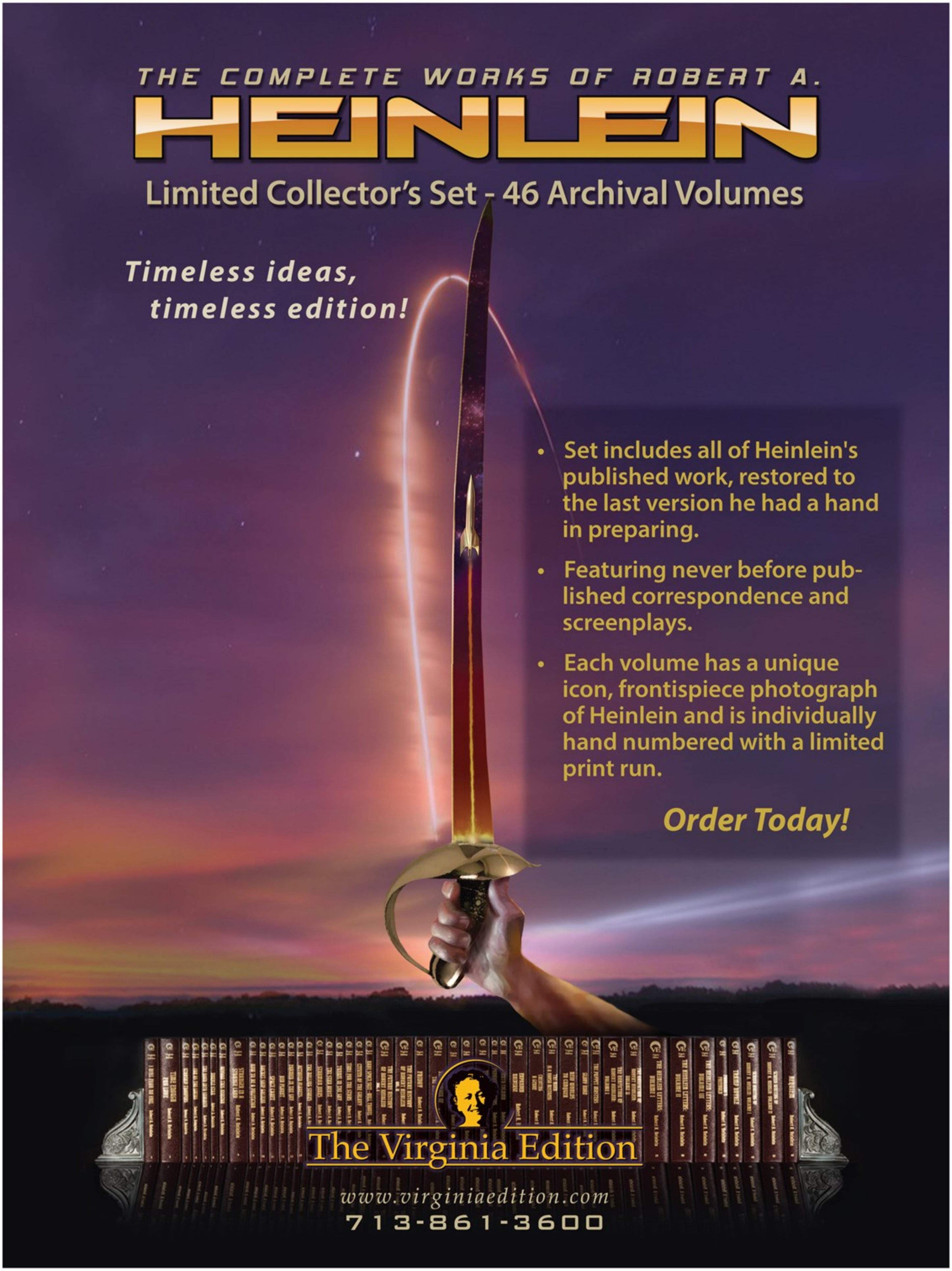
EDITOR: In Big Drop in Alaska (Jan. 24th), your magazine stated that "our best hopes to dim the Alaskan gleam in Stalin's eye are pinned on the men who wear Airborne on their sleeves. Exercise Warmwind more than proved it is a wise decision."

It seems to us of the 196th Regimental Combat Team that we have been slighted by your article because of the major role we of the 196th and 4th RCTs would play in the defense of Alaska.

The 196th RCT is continually con-



Above: Scanned images from the cover and table of contents page from the weekly magazine Colliers, May 7, 1953.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Exerpt from "Ray Guns and Rocketships"
first published in 1952

It was suggested that I comment on the writing of science fiction for children. I am not sure just how to do this as I am not sure that I have written any sciene fiction for children. It is true that I have a group of books which are catalogued as being intended for "boys of ten and older"—but I have found that this list is read by adults as well as by boys (and girls!) and that my books intended for adults are read by my younger readers as well as by adults. Science fiction is quite ambivalent in this respect. A book so juvenile that it will insult the intelligence of adults is quite likely to insult the intelligence of the kids.

When I was a child myself I used to get quite annoyed at authors who "wrote down." When I was first asked to do a book intended for kids I swore a solemn oath that I would never "write down"—it is better by far that a child should fail to grasp some portion of a story than it is to patronize him. So I believe and my experience seems to bear me out. In my own work I make just two minor distinctions between copy intended nominally for adults and copy intended nominally for not-yet-adults. In the boys' list I place a little less emphasis on boy-meets-girl and a little more emphasis on unadulterated science—but these are matters of slight emphasis only. On the first point I am obeying a taboo set up by adults, it being my own recollection that kids get interested in boy-meets-girl at a very tender age. On my second point it is my recollection and my more recent observation that kids are more interested in "how" and "why" than their parents usually are. The kids really want to know how the spaceship operates; the adults frequently don't care—so I try to give the kids enough detail in matters technological to satisfy them without giving so much that it will bore an adult. In any case a science fiction story should be a story first of all; it is not intended to replace science text books.

But most especially in writing for kids the science in it should be valid. When they spot an error they are not likely to forgive it.

In many ways science fiction belongs to the kids. They know that "it hasn't happened yet"—but they believe that it will happen. They expect to grow up to build space ships, to pilot them. They still believe in change and they are undismayed by the wonderful and terrifying future we have in front of us. If an adult enjoys science fiction, it is almost a guarantee that he has managed to carry over a youthful point of view, a mind not yet calcified, a belief in change and the future. It is for the youngster and for this adult who still has something of youth about him that we write.

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Exerpt from "All You Zombies"
First published in The Magazine of Fantasy and Science Fiction (March 1959)

2217 TIME ZONE V (EST) 7 Nov 1970 NYC—"Pop's Place": I was polishing a brandy snifter when the Unmarried Mother came in. I noted the time—10.17 p.m. zone five or eastern time November 7th, 1970. Temporal agents always notice time & date; we must.

The Unmarried Mother was a man twenty-five years old, no taller than I am, immature features and a touchy temper. I didn't like his looks—I never had—but he was a lad I was here to recruit, he was my boy. I gave him my best barkeep's smile.

Maybe I'm too critical. He wasn't swish; his nickname came from what he always said when some nosy type asked him his line: "I'm an unmarried mother." If he felt less than murderous he would add: "—at four cents a word. I write confession stories."

If he felt nasty, he would wait for somebody to make something of it. He had a lethal style of in-fighting, like a female cop—one reason I wanted him. Not the only one.

He had a load on and his face showed that he despised people more than usual. Silently I poured a double shot of Old Underwear and left the bottle. He drank, poured another.

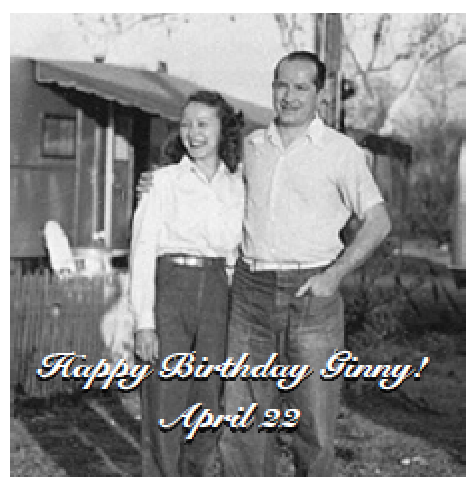
I wiped the bar top. "How's the 'Unmarried Mother' racket?"

His fingers tightened on the glass and he seemed about to throw it at me; I felt for the sap under the bar. In temporal manipulation you try to figure everything, but there are so many factors that you never take needless risks.

Continued on page 4.

The Virginia Edition

The Virginia Edition represents authoritative texts for all of Robert Heinlein's published fiction and nonfiction, newly typeset, whenever possible from the editions put in final form by Heinlein's own hand. In other cases, the definitive texts are represented by editions restored to their intended state, in publications overseen directly by Virginia Heinlein after her husband's passing. Mrs. Heinlein's role in perpetuating her husband's work and legacy was at all times crucial, both during and after the writing. It is truly fitting that her name be remembered in close connection with his.



Robert Heinlein and Virginia Gerstenfeld late fall 1947. Permission by Robert A. and Virginia Heinlein Prize Trust.

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I saw him relax that tiny amount they teach you to watch for in the Bureau's training school. "Sorry," I said. "Just asking, 'How's business?' Make it 'How's the weather?' "

He looked sour. "Business is okay. I write 'em, they print 'em, I eat."

I poured myself one, leaned toward him. "Matter of fact," I said, "you write a nice stick—I've sampled a few. You have an amazingly sure touch with the woman's angle."

It was a slip I had to risk; he never admitted what pen-names he used. But he was boiled enough to pick up only the last. " 'Woman's angle!' " he repeated with a snort. "Yeah, I know the woman's angle. I should."

"So?" I said doubtfully. "Sisters?"

"No. You wouldn't believe me if I told you."

"Now, now," I answered mildly, "bartenders and psychiatrists learn that nothing is stranger than the truth. Why, son, if you heard the stories I do-well, you'd make yourself rich. Incredible."

"You don't know what 'incredible' means!"

"So? Nothing astonishes me. I've always heard worse."

He snorted again. "Want to bet the rest of the bottle?"

"I'll bet a full bottle." I placed one on the bar.

"Well—" I signaled my other bartender to handle the trade. We were at the far end, a single-stool space that I kept private by loading the bar top by it with jars of pickled eggs and other clutter. A few were at the other end watching the fights and somebody was playing the juke box—private as a bed where we were. "Okay," he began, "to start with, I'm a bastard."

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