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SCIENCE FICTION
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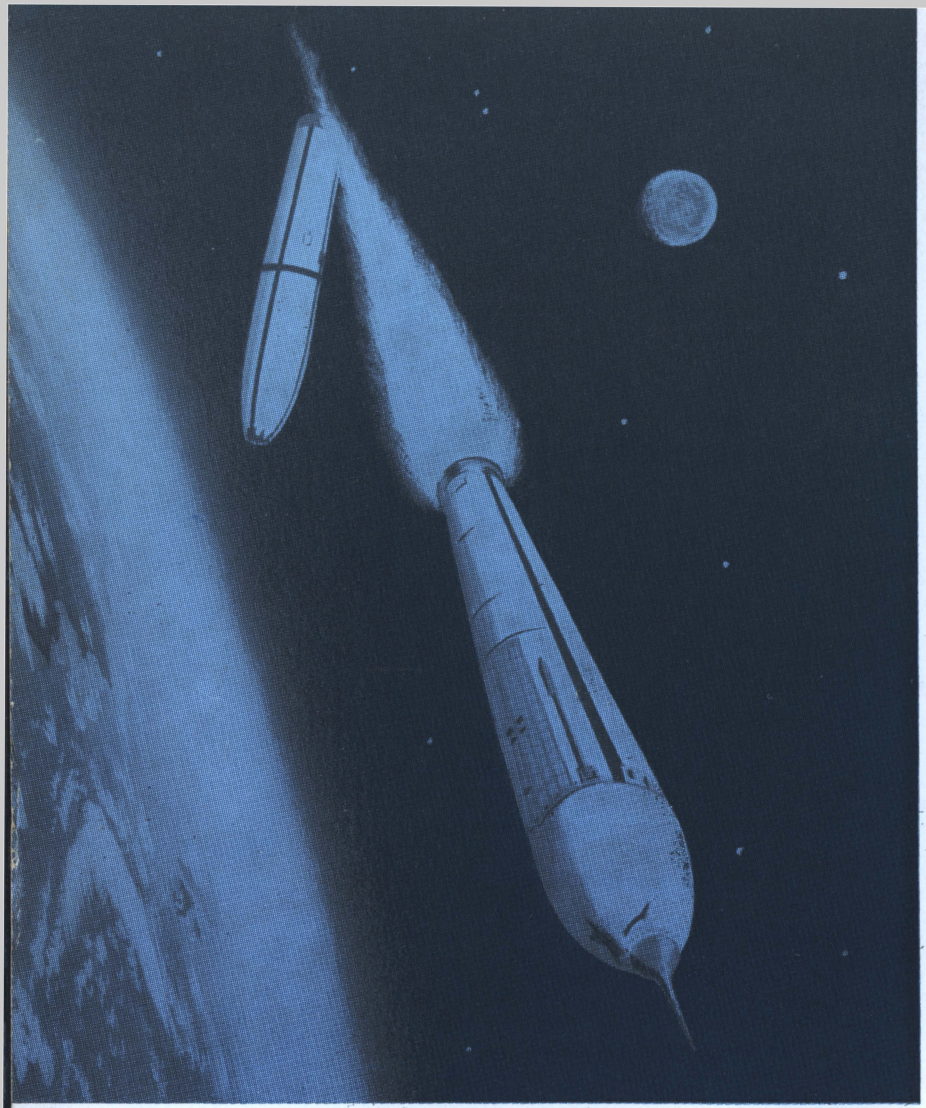
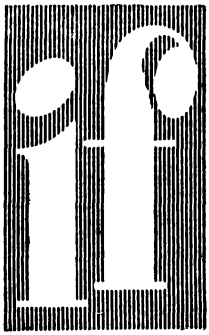
SPECIAL!
INSIDE THE
SATELLITE
Man's First Contact
With Outer Space!
mal hunter



DROPOFF OF STAGE TWO—At one hundred ninety miles, empty Stage Two booster is jettisoned, motor of Stage Three is ignited. Gimbal-mounted motor steers Satellite into orbit, three hundred miles up, at a speed of 17,400 m.p.h. At cut-off, small amount of fuel will remain in tanks to be used for intermittent firing to stabilize Satellite in orbit. After jettisoning, Stage Two will coast nearly all the way around Earth in slowly descending path before entering upper levels of denser atmosphere and burning away due to air friction. At that moment, it will appear as a brilliant meteor.



WORLDS of SCIENCE FICTION

AUGUST 1956

All Stories New and Complete

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SPECIAL!

SHORT NOVEL

SHORT STORIES

FEATURES

COVER:

"Satellite Over Europe" by Mel Hunter

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INSIDE THE SATELLITE!

Here is a workable "blue print" of the instrumentation of the Satellite—how it functions aloft for a year, how it tells Earth-bound Man what it's like up there!

The Satellite Vehicle

SECOND OF TWO PARTS

BY JAMES M. NUDING

Lead Research Engineer, Atomic Research Energy and Problems of Instrumentation, North American Aviation

WITH PAUL J. VANOUS

Microwave Senior Design Engineer, Missile Guidance Systems Division, Bendix Aviation

EDITOR'S NOTE: *During the months in which the material for these two articles was undergoing painstaking preparation, a continuous, trickle of news, from various sources, has described bit by bit the actual development of the first Temporary Satellite assemblies. Thus it becomes more and more clear, as each day passes, that almost* all *the vitally necessary advantages of the proposed Satellite vehicle, described by Mr. Nuding and Mr. Vanous, are*

being by-passed in the designs of the vehicles actually readied for the I.G.Y. program.

The prime reason seems to be one of fanatic haste to get something, anything, off the ground and into space by late 1957 or early 1958, as announced. The publicity and propaganda value of being first into space with any *kind of satellite is immense, and an open-handed gesture of peaceful intent. However, the satellites are supposed to have a purpose, namely: the gathering of technical data on conditions of many kinds in the volume of space immediately surrounding the Earth.*

The editors of IF have felt, almost from the opening announcement of Project Vanguard, that the very short time allowed for design, development and construction of the actual hardware to be fired precluded any chance for the accomplishment of the main purpose in anything more than a momentary fashion.

Therefore, as long ago as October, 1955, IF commissioned Mr. Nuding and Mr. Vanous to develop and describe a design for such a satellite assembly which would *satisfactorily perform the task of gathering a complex assortment of spatial data, and stay in orbit for a long enough time to provide information of maximum contribution to the I.G.Y.*

We feel that Messrs. Nuding and Vanous, have accomplished a remarkable feat. The construction of each of the three rocket stages which they propose presents no really great problem that has not already been under attack for a considerable time. Stage III, the actual Satellite, is a close adaptation of Aerobee. Stage II is a modified Viking chassis, and Stage I presents dimensions and performance that are not likely to be too far removed from the thoughts being considered for our Intercontinental Ballistics Missile, Atlas.

It is IF's conviction that—once scientific appetites are whetted by the intriguing, but inconclusive, results of the first hasty shots of the I.G.Y. satellites—it is inevitable that the design of a vehicle much more similar to the one we here propose will follow. For instance, it has been recently announced that the I.G.Y. "birds" will be fired into an elliptical orbit of very high eccentricity at an angle which belts the Earth more or less completely in its equatorial zone. This can only be, as Mr. Nuding and Mr. Vanous point out, because insufficient power is being utilized to provide that last thousand-miles-per-hour velocity necessary to overcome the Earth's rotational spin. Yet, the Equatorial orbit is a miserable compromise from a whole spectrum of viewpoints, and such an orbital elliptical eccentricity will allow only a scant few days of life for the "bird" before burnup at perigee, because of too deep re-entry into the upper atmosphere at that point every ninety minutes.

There will be a bigger, more high flying "bird" in a stable Polar orbit before too long, and the odds are excellent that it will be a substantial piece of respectable engineering —not a globule.

THE FIRST article on this subject (*June* IF) dealt briefly with Stages I and II of a desirable type of satellite vehicle for launching during the forthcoming Geophysical Year by the Defense Department of the United States. This article deals in detail with Stage III, and associated ground monitoring stations of the Satellite vehicle. It will also discuss the possible orbits into which the Satellite might be put and the effect of these orbits on the information obtainable.

Stages I and II, although they will be an engineering feat of prime importance, must be considered only as a means toward an end—a conveyance or elevator to raise the Satellite 300 miles above the surface of the Earth and accelerate it along the direction of its orbital path. Stage III, on the other hand, we see as a much more complicated device. It will be not only a rocket, complete with all the necessary fuel tanks, motor, guidance systems, etc., but it should also contain an electric power source, radio gear for sending and receiving information to and from the earth; a gyrostabilized platform, a navigation system, and a number of sensing instruments for the gathering of information of interest to I.G.Y. scientists.

We have tried to design a satellite that will give the maximum amount of information and justify the great expense of its manufacture and launching. It differs considerably from the current popular conception of what the satellite vehicle will be like. In fact, it differs from what the first few satellites may actually be like. In order to enclose the numerous devices mentioned in the preceding paragraph, it would have to be a rocket at least as large as the Aerobee. The Aerobee is 19 feet long and 15 inches in diameter.

Whereas the Aerobee was designed to carry a 150 lb. payload to an altitude of approximately 70 miles, the instrumented third stage of the proposed satellite would be carried by the second stage to near the altitude of the desired orbit, and have imparted to it by the second stage, nearly all of the 17,400 miles per hour velocity necessary to keep it there. All that would be required of the rocket propulsion system of the Satellite itself would be a sufficient number of short-duration impulses to make final and continuing corrections to the Satellite's orbit. This means that tankage and fuel load could be small, leaving room for the large bulk of desired instrumentation.

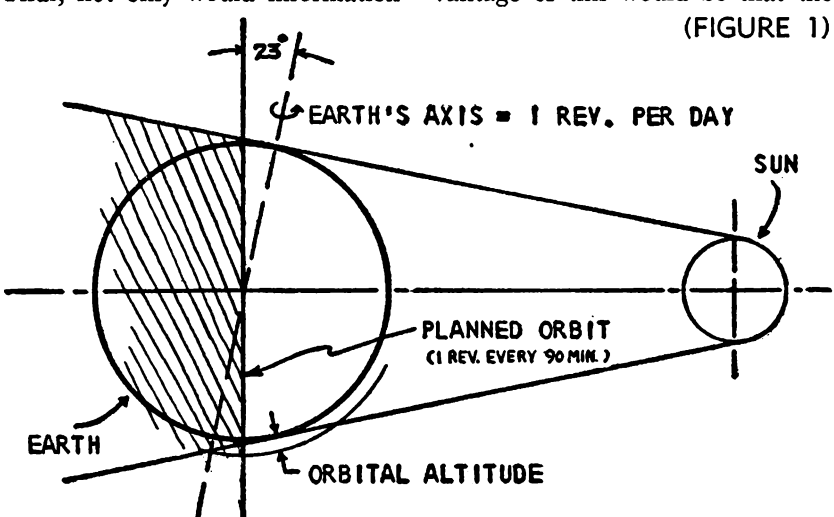
IN CHOOSING an orbit for a satellite, one must consider the economics of the situation. If the cost of the venture is to be the deciding factor, then the satellite should be launched at or near the equator, in the direction of the Earth's rotation. This allows one to take advantage of the 1000 miles per hour rotational velocity which the surface of the Earth has at the equator. This would considerably decrease the load of fuel necessary to bring the satellite to its orbital velocity, of approximately 17,400 mph. The size of both Stages I

and II would thus be reduced, making the whole project of a size more consistent with present day rocket technology.

Balanced against this gain, however, is the fact that such an orbit would probably give less information about the Earth and the upper atmosphere than any other orbit that could be chosen. Two of the most interesting bits of knowledge, which it is hoped the satellite will contribute, concern the magnetic field of the Earth and the Auroral lights. Both of these phenomena are concentrated at or near the poles. A satellite orbiting around the equator would not be able to get much if anything of value on either of these. A further argument against an Equatorial orbit is the fact that only a very narrow band of territory on each side of the equator, mostly jungle and water, would be scanned by the satellite. Thus, not only would information be scanty and inadequate, but observers on the ground would be working under great terrestrial difficulties.

The ideal orbit, informationwise, would be one that circles the Earth from pole to pole, which nullifies velocity imparted by the rotation of the Earth. In this way, the plane of the orbit would be fixed with respect to a point in space, and the Earth would rotate under the satellite while it moved along lines of equal longtitude with respect to the Earth. This would allow the satellite to scan every bit of the Earth's surface every 24 hours. Actually, for the purpose of the Satellite Vehicle we have in mind, it would be ideal if the orbit were inclined 23 degrees from the axis of the Earth's rotation. This would allow the satellite to follow the twilight zone of the Earth, in the greater part of a year, at least. The advantage of this would be that the

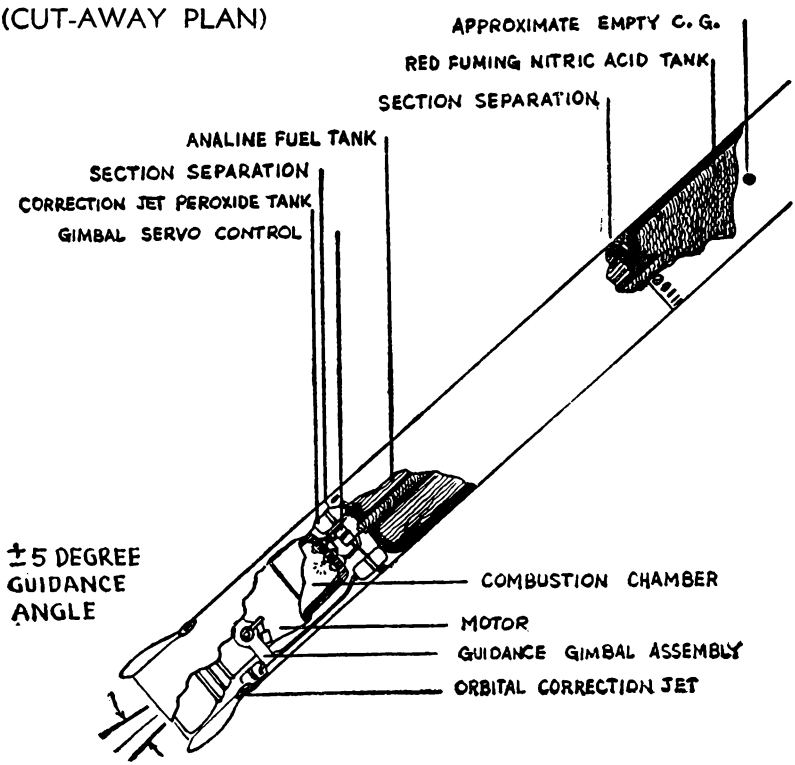
(FIGURE 1)

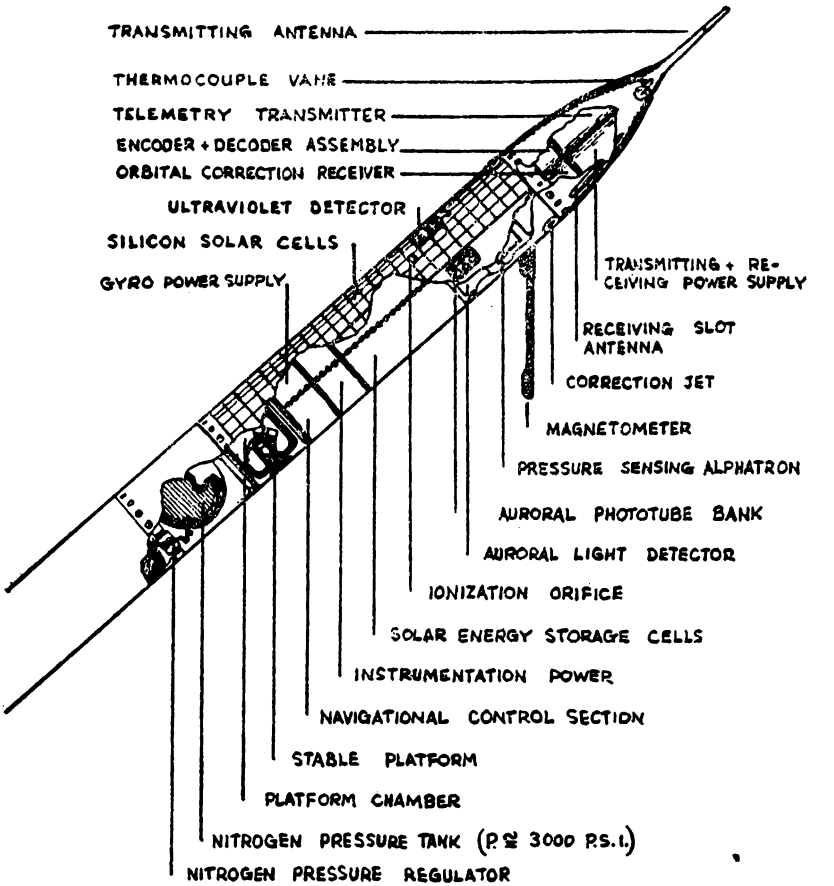


power for the instrumentation in the satellite has been provided by covering one side of the satellite with solar cells which would derive energy directly from the sun. It would, therefore, be necessary to keep one side of it always facing the sun, or as nearly so as possible. (Fig. 1)

The sequence of events necessary to put the satellite in its orbit, assuming that it will be the "ideal" orbit described above, is as follows:

The three stage assembly would be launched vertically from the government's launching facilities in Cocoa, Florida. As soon as it has passed through the densest portion of the atmosphere, (about 20 miles altitude), its flight would be inclined, by the flight programmer, 8 degrees toward the west. This is to start neutralization of the Earth's surface rotational velocity. At the same time, the programmer would command controls to incline the Satellite along a slowly curving path toward the north. If the launching is made in the summertime, the end of this curving path must be calculated to place the satellite over an area 23 degrees in-





clined from the North Pole in the direction *away* from the sun. Its heading must be such that, as it continues its flight, it will pass over an area 23 degrees inclined from the South Pole in the direction *toward* the sun. (Fig. 1)

At an altitude of just above 20 miles, the integrating accelerometer located in the third stage would terminate the firing of Stage I and start the firing of the motor in Stage II. Separation would occur and stages II and III would leave Stage I behind. Stage I would coast along to an altitude of perhaps 60-70 miles and then fall back to earth, either to crash or to be recovered, depending upon whether or not a recovery system has been provided. Stage I would have an initial weight of about 100 tons, including fuel, and would take off with stages II and III as payload,

with an initial acceleration of .3 gravities net. It would have a burning time of about 70 seconds and would reach a velocity of about 2900 miles per hour.

Seventy-five seconds after Stage II starts firing, the integrating accelerometer will signal the flight programmer to terminate the firing of Stage II and start the firing of Stage III. At this point Stage II will have reached an altitude of 190 miles and a velocity of approximately 15,000 miles per hour. Since the Satellite will still have about 110 miles of altitude to gain, its position along the flight curve has not yet placed it in a horizontal position, but is at approximately a 45 degree altitude angle to the horizontal. At this time, separation occurs between stages II and III, leaving Stage II behind. Stage III, continues accelerating along to the final flight curve attitude.

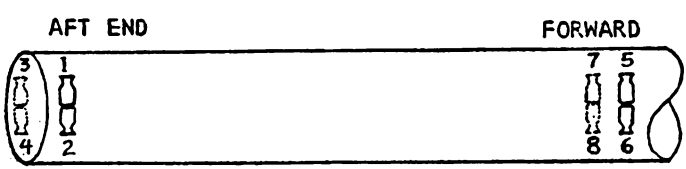
Stage II would have a weight of about 15 tons, including fuel, and would weigh approximately 5 tons empty. It would develop a thrust of 120,000 pounds for about 75 seconds and have an initial acceleration of 3.75 times the Earth's gravitational attraction. Due to the fact that during part of the flight Stage II was inclined at an angle toward the horizontal, gravity would not exert the normal drag. Therefore, the acceleration would increase more rapidly than if it were climbing vertically.

After 37 seconds of burnng, the integrating accelerometer in Stage III, would have experienced the required acceleration to achieve a velocity close to 18,000 miles per hour. At this time the accelerometer terminates the firing of Stage III's motor.

During the 37 seconds of burning, the flight programmer would have held the rocket to the predetermined curve which, at burnout, places the rocket in a horizontal attitude and in the "ideal" orbital path.

Stage III's motor is designed to develop a thrust of 4000 pounds, with a potential burning time of 60 seconds. The rocket would have a total weight load of 2000 pounds. The fuel would be red fuming nitric acid as oxidant and hydrazine as reductant. It is planned that nearly 50% of the fuel would remain in the tanks after the Satellite has reached its orbit, to be used later for the correction of the orbit after the residual atmosphere has begun to slow the Satellite down. This would greatly prolong the Satellite's stay in its orbit.

(FIGURE 2)



IN ORDER that the Satellite Vehicle may be held in its orbit for a year or longer, and during this period be able to transmit a maximum amount of useful information back to Earth, it would be necessary that provisions be made for the correction of the orbit and the attitude of the Satellite. This would be done by installing a command radio receiver in the instrument compartment, which, upon receiving certain coded impulses from the ground, would be able to turn on the rocket motor and regain lost velocity; or, on receipt of a different coded impulse, activate laterally mounted steering jets which could be used to correct the Satellite's attitude in pitch and roll.

The steering jets consist of eight tiny hydrogen peroxide rocket motors, mounted in groups of four at each end of the Satellite. The arrangement, as shown in Fig. 2, is such that they may be fired in couples to position the Satellite around its longitudinal or roll axis, or to overcome or introduce tumble around its lateral axis.

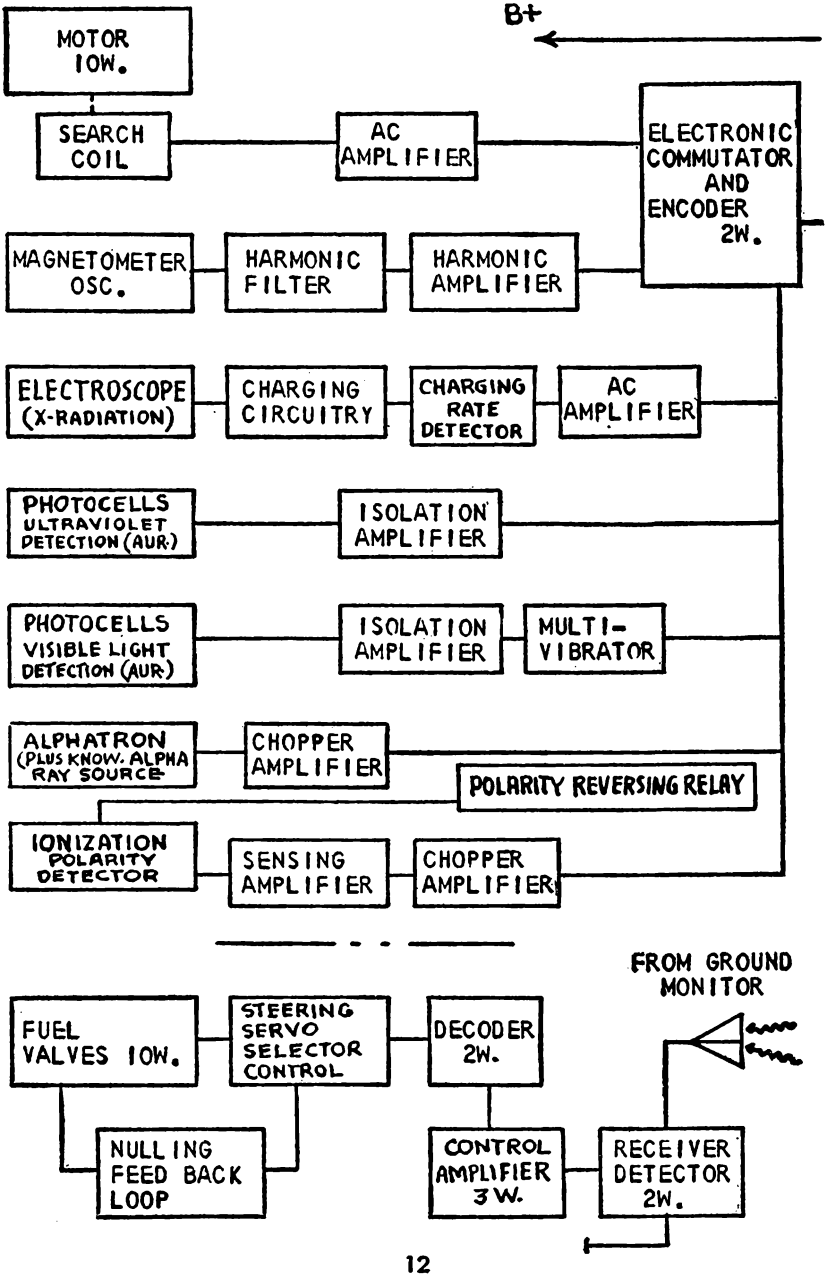
Since this satellite depends for its electrical energy upon solar cells located on its outer skin, it is important that these cells be always oriented toward the sun. If the Satellite should be spinning upon its axis after burnout (which it almost certainly will), the steering jets could be used to overcome this spin and position the Satellite with the solar cell side facing the sun. The Satellite would be painted externally with a design which would enable observers at the ground monitor stations to determine its roll position through telescopes.

Outside the Earth's atmosphere, the sun delivers about 1120 watts of thermal energy per square yard of irradiated surface.* The available area of one side of such a satellite would be 1.25 square feet per foot of length. The available length in our design is about 17 feet. This gives an irradiated area of 2.36 square yards, or a thermal input of 2630 watts.

The new solar energy cells now being developed by the Bell Telephone Laboratories will produce 90 watts of electrical energy for every square yard of illuminated area at sea level. Outside the atmosphere, the solar illumination is somewhat higher, providing approximately 10% more power per square yard. If the full 2.36 sq. yd. of available area on the Satellite were used for solar cells of this type, they would produce 212 watts of power, which could be used to charge the Satellite's batteries. This would be more than ample to supply all of the electronic equipment and instrumentation power requirements, even if the Satellite were only in the sunshine half of each 24 hour day. Figure 3 is a block diagram which shows the power demands of all the electrical components in the proposed Satellite.

THE INSTRUMENTATION of any practical satellite vehicle would, of necessity, make use of all of the latest techniques for

*(*Ref. Kimball, Proceedings Internat. Illumination Congress, 1928, p501)*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MOTOR 10W.
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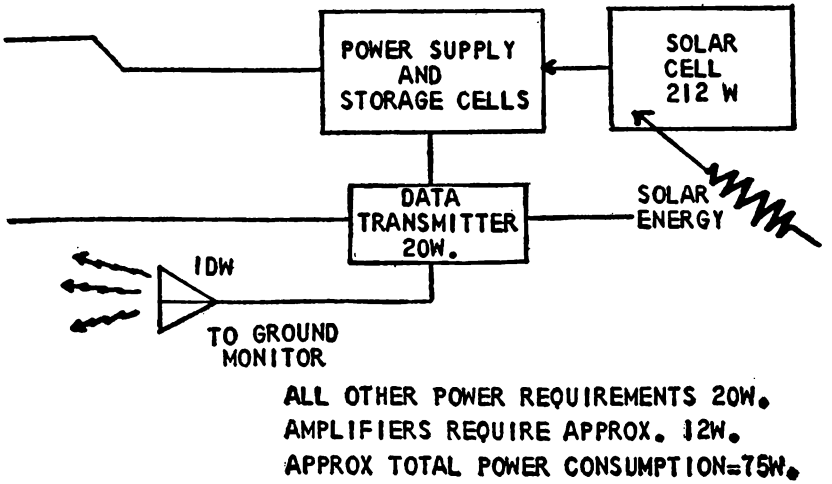
AC AMPLIFIER
ELECTRONIC COMMUTATOR AND ENCODER 2W.
MAGNETOMETER OSC.
HARMONIC FILTER
HARMONIC AMPLIFIER
ELECTROSCOPE (X-RADIATION)
CHARGING CIRCUITRY
CHARGING RATE DETECTOR
AC AMPLIFIER
PHOTOCELLS ULTRAVIOLET DETECTION (AUR.)
ISOLATION AMPLIFIER
PHOTOCELLS VISIBLE LIGHT DETECTION (AUR.)
ISOLATION AMPLIFIER
MULTI-VIBRATOR
ALPHATRON (PLUS KNOW. ALPHA RAY SOURCE
CHOPPER AMPLIFIER
POLARITY REVERSING RELAY
IONIZATION POLARITY DETECTOR
SENSING AMPLIFIER
CHOPPER AMPLIFIER
FROM GROUND MONITOR
FUEL VALVES 10W.
STEERING SERVO SELECTOR CONTROL
DECODER 2W.
NULLING FEED BACK LOOP
CONTROL AMPLIFIER 3W.
RECEIVER DETECTOR 2W.



(FIGURE 3)

miniaturization and sub-miniaturization of all components. Wherever possible, transistors would be used instead of vacuum tubes, not only because of their small size, but also because of their low electrical power drain.

The radio transmitter, which would be used for telemetry, would have a total power input of 20 watts with an output of approximately 10 watts. It would be pulse modulated by an encoding device which receives information from the various sensing instruments. The encoder converts the information into a data transmission code, which is transmitted back to Earth and recorded for study at a later date.

The Satellite would contain a small electric motor, and mounted on its shaft a little coil which rotates outside the skin of the Satellite. If the Satellite's orbit should pass through a region of large electric currents (as recently predicted and detected in the ionosphere), the magnetic field produced by these currents would induce a current in the rotating coil. This would appear as an A.C. signal, the amplitude of which would depend upon the magnitude of the current flowing in the ionosphere. This A.C. signal would be amplified and fed into the encoder.

It is well to mention that in our design all signals from the sensing instruments are sampled one at a time, in rotation, by an electronic commutating device. This prevents the encoder from receiving information from two or more sources simultaneously. Also provided is a radio command receiver, consisting of a detector and control amplifier, to receive coded orbital correction signals from transmitters at the monitor stations. The output of the receiver would be fed into

a decoder which converts the signals into command impulses for the opening and closing of the fuel valves furnishing impulse power to the steering jets and main propulsion motor. The power demand of the command receiver would be about 4 watts.

The "B plus" supply for the transmitter and receiver would be a relaxation oscillator transformer supply, similar to that used in many brands of Geiger counters. This produces high voltage D.C. without using high voltage batteries.

There would be a bank of photo cells looking through openings in the skin on the side of the Satellite facing the sun. These would have filters of graduated density in front of them to screen out all the visible rays and allow each photo cell to respond only to a narrow band of frequencies in the ultra-violet. The output of these cells would be amplified and fed into the encoder.

A similar bank of photo cells would be located on the dark side of the Satellite, focused in a horizontal direction parallel to the Earth's surface. Some of these cells would have ultra-violet filters. Some would be sensitive to visible light of all frequencies, while others would respond only to certain selected colors. This bank of cells is to collect information on spectrum and intensity of the "Auroral Lights" (or Northern Lights) from the very region in which they originate. The signals from the photo cell banks are amplified by one stage of D.C. amplification, providing cell isolation and building the signal to usable proportions. A multivibrator circuit is actuated by this amplified signal and the "flip-flop" frequency is then a function of the incident light intensity. The resultant A.C. signal is then fed into the encoder.

Located near the front end of the Satellite, on the side facing the Earth, is a socket containing a hinged arm. Mounted on the free end of this arm is the sensing element of a magnetometer. When the Satellite's propulsion motor ceases firing, an electronically operated catch releases the arm and a spring swings it out and away from the body. The magnetometer can be one of several types, the most sensitive of which is made in Germany. It operates on the principle that a change in the magnetic field of the Earth, as seen by the sensing coil, produces a harmonic in the frequency of an oscillator. The size of the harmonic is a function of the change in the magnetic field. This instrument is not only incredibly sensitive, but it will not be influenced by any magnetic fields arising from the Satellite itself. The output of the magnetometer would be amplified and fed into the encoder.

The density of the residual atmosphere in the region of the Satellite's orbit may be measured by an instrument called an Alphatron. This device contains a small capsule of radium which emits alpha rays. The atmosphere enters into the space surrounding the radium capsule and is ionized by the alpha rays. The ions are attracted to an electrically charged plate, where they cause a current to flow in the

circuit which is connected to the plate. The number of ions produced is determined by the number of air molecules present, thus the current flowing in the circuit is a function of the air density.

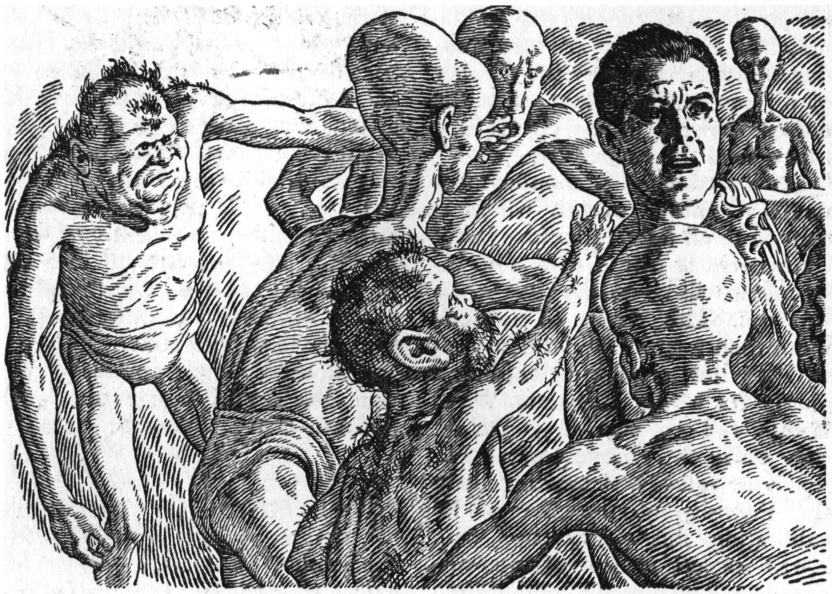
An electroscope is mounted beneath a suitable screen which is opaque to all light radiations but is transparent to soft X-rays. This instrument will be on the side facing the sun. This device is nothing more than a small, very high quality capacitor, capable of holding a charge for a very long time. When X-rays fall on such a capacitor, they cause the charge to leak off, slowly or quickly, depending upon the intensity of the X-rays. By calibrating this electroscope with X-ray sources of known intensity, one can measure by comparison X-ray sources of unknown intensity. An electronic circuit places a charge on the electroscope which immediately begins to leak off when exposed to the soft X-rays coming from the sun. As soon as the charge has decreased to a certain predetermined amount, the charge is replaced. The frequency of these recharging cycles, then, may be used as a measure of the X-ray intensity. This signal can be fed directly into the encoder.

Another bit of information on the upper atmosphere which is of interest to the scientists of the I.G.Y. concerns the degree and type of ionization of the upper air. A possible instrument which could be installed in the Satellite and would give information about these phenomena would consist of a metal plate which would be open to the outside but shielded from all light. This plate would be electrically insulated and connected to an electronic circuit which would alternately place a positive and negative bias on it. While the plate was positive it would attract negative ions; while negative it would attract positive ions. If there were positive ions present in the air, they would cause a current to flow in the circuit in one direction; if negative ions were present, the current would be in the opposite direction. The size of the current would indicate the ion density.

THE GROUND monitoring stations for the proposed satellite should be located geographically, so that it can be under observation as continuously as possible, especially when it is traversing regions of particular interest to the scientists. Obviously the areas of sky above the poles would be the most fruitful, informationwise, so that it is essential that there be several polar monitor stations.

At the equator, the area or strip of Earth, viewed by the Satellite as it makes its pole to pole circuits, is wide enough to give an overlap between strips. Due to the convergence of the lines of equal longitude, there would be a greater and greater overlap as the Satellite approaches the pole. Thus fewer monitor stations would be needed, until at the pole itself one station could observe every revolution. The number of stations located on other parts of the Earth depends upon

(Continued on page 105)



Project Hi-Psi

BY FRANK RILEY

The aliens were conducting an experiment under laboratory conditions. So, how could they guess that their guinea pigs held the ultimate weapon?

Illustrated by Virgil Finlay

DR. LUCIFER BRILL stepped briskly down the corridor of the Federal Building. The taps on his leather heels clicked a precise rhythm on the marble floor.

He ignored the door that offered "Information", passed up office after office until he came to the glass paneled door which informed him that behind it functioned the Director of FBI operations in the Los Angeles area.

The door was locked.

Lucifer Brill rubbed the knuckles of his left hand over the bristles of his sand-colored, neatly trimmed bit of mustache. It was a gesture known to all graduate students, Department of Parapsychology, Western University, as an indication of annoyance.

The possibility of this office being closed had definitely not been part of Lucifer Brill's prospectus.

A movement behind the opaque glass panel caught his attention. He rattled the knob. When this produced no results, he tapped with his immaculate fingernails on the glass.

A shadow moved inside the office. The lock clicked. The door opened.

An overweight young woman, obviously interrupted in the act of painting a lush mouth over thin lips, glared at him through a veneer of politeness.

"Yes?"

"I have an appointment with the Director." Lucifer Brill's voice still carried the twang of boyhood in Chelmsford, Mass.

The young woman's plucked eyebrows arched.

"This office is closed. If there is an emergency, you may . . ."

Lucifer handed her his card. The eyebrows arched still higher.

"Dr. Brill! Your appointment was for 3:45!"

"I am aware of that," he told her, severely, "but the other drivers were not, and there were an incredible number of them on the road. Now, if you please . . ."

"Would you care to make another appointment for tomorrow?"

"I would not. You may inform the Director that I have arrived, that I regret my tardiness and that the purpose of my visit involves a matter of extreme urgency."

Lucifer hadn't raised the level of his voice, but behind the rimless spectacles, his mild blue eyes became very cold and direct. The secretary unpursed her lips and flounced toward the inner office.

She was back in a moment, and said with disapproval,

"This way, please—Sir."

The Director greeted Lucifer Brill with a courtesy that was somewhat strained. His briefcase was on his desk. So was his hat.

Lucifer went peremptorily to the point.

"I must report a most serious case."

From long training, the Director ignored the tone and inquired with careful politeness.

"What sort of a case, Dr. Brill?"

"I believe you would call it a case of kidnapping—multiple kidnapping."

"Kid—kidnapping!"

The Director's large hands hit the desk top with a cracking sound. His knee touched a button to flip on the tape recorder.

"When?—Where?—Who "

Lucifer considered the questions, methodically organized his answers.

"As to when, I would say over the last eight years."

"What?"

"As to where, I would say all over the United States."

"Now, one moment . . . please!"

"As to who . . . Well, that would require a rather lengthy answer."

The Director's voice shook with an effort to keep calm.

"Dr. Brill, I would appreciate an answer to my question."

"Very well."

Lucifer took a small, brown leather notebook from the inside pocket of his beautifully pressed gabardine.

"It will take a little time. You see, I believe that over 3,000 persons have been kidnapped."

The Director's thick neck turned prime-rib red, and swelled over the collar of his shirt. Lucifer began to read:

"Anthell, Ruth . . . Atwater,

Horace . . . Borsook, George . . ."

"That's enough, Dr. Brill!"

"Thank you. Time really is of the essence, you know. I learned this morning that two of the missing persons disappeared as recently as four days ago."

The Director breathed heavily.

"Just who are these people, Dr. Brill?"

"They are all positives. Some of them are positive positives."

The Director made a small, strangling sound.

"If you don't mind, Dr. Brill—just what in the hell are positive positives?"

"Oh, I'm sorry. I had presumed you were familiar with my work."

"I'm a little vague about it."

"I see." Lucifer's expression showed intolerance for this cultural lag, but he condescended to explain. "For several years I have been re-evaluating psi card tests at Western University, with the project goal of answering criticism that Rhine and other researchers ended scoring runs at so-called convenient points. While one cannot approach the statistical ideal of infinity in any series, it is nevertheless mathematically possible, through multitudinous repetitions . . ."

There was an expression on the Director's face of a man trying to plod doggedly against a strong gale.

"Positives . . ." he reminded, a little desperately.

". . . to amass statistics that are conclusively beyond the bounds of chance. In this rechecking, I have received excellent cooperation from researchers at other universities, and consequently have compiled what may well be the largest list of psi cases on record, whereby . . ."

"Positives," grated the Director. "Kidnapping . . . remember, Dr. Brill . . . ?"

". . . I have been able to establish categories—in my own terminology—of non-positives, positives and positive-positives. Do you follow me, Sir?"

"Absolutely." The FBI Director removed sweat from his forehead with the back of his hand. "Now, shall we get on with this kidnapping . . ."

"I am convinced that my positives and positive positives are either being kidnapped, or otherwise caused to disappear involuntarily."

"3,000 of them?"

"3,116."

The Director, in this crisis, took refuge in routine. He picked up Lucifer's card.

"Do you have any other identification with you, Dr. Brill."

The routine was a mistake. Lucifer produced an expired driver's license, an unpaid gas bill, a membership card in the American Society for Psychic Research, a faculty football ticket, a credit slip from the May Company, six traffic citations . . .

The Director held up his hand in weary surrender.

"O.K.," he said. "Tell me all about it."

Lucifer told his story with an admirable lack of detail, and a certain intensity that compelled attention.

At a certain phase of his project, it was necessary to start re-evalu-

ating cases he had previously re-evaluated. That phase had been reached two months ago. He had selected five hundred names from his card file, and had sent them form letters preparatory to arranging for tests.

When 480 came back marked "Address Unknown", or "No Forwarding Address", he was disturbed, but not unduly so. In an era of great population shifts, people could be lost and forgotten.

He mailed out another 500 forms. Four hundred and sixty-three came back unopened.

A third mailing brought similar results. Subsequent mailings added up to the startling statistic that some 3,000 people apparently had vanished.

Lucifer personally checked a score of names in the greater Los Angeles area. Five could not be located; seven seemed to have moved without leaving a forwarding address; one was reported drowned in the surf off Point Fermin; six were listed with the Missing Persons Bureau. Of the latter, two had briefly made headlines. They had kissed their wives goodby, driven off to work and had never been seen again.

Against his will, the FBI Director was impressed by Lucifer Brill's calm recital of these facts.

"But 3,000 people," he demurred. "Isn't it simply incredible that 3,000 people could disappear without causing a commotion?"

"Do you know the number of missing persons listed annually by the Los Angeles Police Department?"

The Director admitted he did not.

"Nearly 4,000 juveniles and adults. The number in other cities is roughly proportionate to the population . . . New York, for example, had about eight . . ."

The FBI Director made his decision.

"Dr. Brill," he said, "Give me that list of names and addresses."

WITHIN twenty-four hours, teletypes began pouring in from the District Offices of the Federal Bureau of Investigation. Individually, the reports meant nothing. Obscure people who simply were missing. Many of them were not even missed enough to be listed as missing persons.

The final tabulation showed that 3,223 men and women were missing out of 4,775 people who had registered significantly above-chance in the psi re-evaluation tests conducted by Western University.

Lucifer Brill pointed out something else.

"The missing positives were my stronger positives. Most of those who have not disappeared were closer to borderline cases."

At this point, to the infinite relief of the Los Angeles office, prime responsibility for the case shifted to Washington, D.C.

A tight lid of security was clamped over the whole affair. FBI analysts went to work on the facts and figures. Mathematically, they proved that the percentage of missing psi test cases was fantas-

tically above the probability of coincidence.

One by one, the people had dropped from sight, lost in the swirling undercurrents of a vast, shifting population. A school teacher in Little Rock, a side-show freak in Chattanooga, a TV salesman in Milwaukee, an artist in Philadelphia—all had disappeared, obscurely but definitely.

And the disappearances were continuing.

Only two days before an inquiring FBI agent called on a pharmacist in Dubuque, the man had closed up the drugstore, started for home and had never been seen again. He was listed as an amnesia victim at the local police department. In his psi test, four years earlier, he had consistently averaged seventeen out of twenty-five calls. Remorselessly, the accrual of new facts added to the Bureau's bewilderment.

One of the FBI statisticians pointed out that almost an identical number of men and women were missing: 1,596 men; 1,627 women.

Another perceptive young researcher ran cards on the missing positives through an IBM machine, and came up with this statistic: The women were between the ages of 17 and 35; the men between 19 and 45. Eighty percent of both sexes were in their late twenties.

When all possible data had been assembled, the FBI gingerly submitted its report to a super-secret meeting of the Central Intelligence Agency.

The reaction was not flattering. Navy's slightly profane comment was that someone in the Bureau had flipped his wig.

Army looked disgusted.

State Department was pained.

White House was silent.

The Chairman smiled, and waited for someone else to laugh.

No one laughed.

Red-faced but unyielding, FBI insisted that its report merited serious consideration.

"We've kept this thing quiet," FBI said, "but you know what the reporters could do with it."

State looked less pained. Even Army and Navy gave reluctant attention. White House asked tentatively,

"What about the Russian angle? If even a fraction of this nonsense we hear about psi is true, these people might serve an espionage purpose. Could Soviet agents have smuggled them out of the country?"

"A few, maybe," admitted FBI. "But not 3,223. Not by any known method of transportation."

"Any subversives among them?" asked Army.

"One hard-shelled Commie, a few fuzzy-minded joiners . . . about par for the course."

"Then why in the hell is this important, anyway?" demanded Navy.

A large hassle ensued, but all eventually agreed that if more than 3,000 people actually had been caused to vanish, it was at least potentially a cause for security concern. Army pointed out:

"Next time, they might not waste the effort on these crackpots. They

might bag some important people."

White House asked:

"What are we going to do about it?"

There was an outburst of silence.

Finally, State spoke up:

"By all means, keep the matter quiet. It could be deucedly embarrassing."

But something, of course, had to be done.

And while something was being debated, at top level, in top secrecy, in eyes-only, Q-clearance sanctums, Lucifer Brill took matters into his own hands.

He felt a compelling personal responsibility to the missing people. Their names had been compiled together in his files; he had made no effort to protect the lists. Anyone who wanted to make the attempt could have found a way to copy the cards.

Lucifer also felt a sense of responsibility to science. And by science, he meant his own branch of parapsychology. All other science existed for him in a vague limbo into which no serious psychological student would venture. "Nuts and bolts," was the way Lucifer customarily dismissed the shadow-world of science outside his own laboratory.

But what use was it to go on confirming and re-confirming the existence of positives and positive positives if they just up and disappeared?

The answer was discouraging.

So Lucifer Brill took stock of himself.

He was forty-four years old. He had no dependents, and was dependent on no one. Except for chronic nearsightedness, and hay fever in the months of July and August, he was sound of limb and body.

Lucifer withdrew from the bank the balance of his inheritance and life savings. He placed the money in a trust fund to be given to Western University for continuance of psi research, five years after his death or disappearance. He drew up a holographic will bequeathing and bequesting his library and papers to the University. He prepared a sealed envelope containing three hundred dollars in cash and instructions for the care of his two parrots for the balance of their natural lives.

And then Lucifer Brill released to the profession the news that after testing thousands of people for the psi talent, he had finally tested himself—and had scored an average of 19 out of 25 in 4,000 PT tests, all conducted under strict laboratory conditions.

Parapsychological circles reacted with an affectionate blend of awe and amusement. Fellow professors wrote him congratulatory notes, some with postscripts that jibed at him goodnaturedly. The editors of two psychic journals called to ask for articles. One Eastern university wanted to test him for PC and PK, but Lucifer stalled for time, waiting for something or someone to cause him to vanish from the face of the earth.

On the evening of August 23, about eight-thirty, there was a knock on the screen door of his bachelor apartment. Lucifer called,

"Come in, please," but he continued to work at a statistical tabulation.

The door opened; footsteps approached his desk.

"Sit down," said Lucifer. He had been expecting a summer school graduate student to come by for a book. "I'll be through with this column in just a moment."

"There is no hurry, Dr. Brill."

The voice was strange. It had almost a metallic ring.

Lucifer's fingers turned white where they gripped the pencil. But he carefully totalled up the column and rechecked the answer, ferreting out an error in the addition of 29 plus 8.

Only then did he swivel around to face the tall, thin, dark-faced stranger. Lucifer said quietly,

"Good evening. I am sorry to have kept you waiting."

The stranger nodded, and took a small blue phial from his pocket. Long, lean-muscled fingers squeezed the phial.

Lucifer's apartment faded gently away in the sweet, cloying odor of hyacinth.

WHEN LUCIFER Brill opened his eyes, his face was half buried in a white pillow. A damp breeze blew across the back of his neck. The breeze was heavy with tropical odors. Yet there was something curious about them. Lucifer sniffed, and sniffed again. He discovered that his hay fever wasn't bothering him.

Through one probing eye, Lucifer could see his glasses on a nightstand. Beyond them was a window down which drops of rain were beginning to streak.

Memories of the blue phial and the strange visitor flooded back. His right arm was numb, but he decided he had been sleeping on it. He experimented with his toes and legs.

They moved.

His right knee bumped against an object on the other side of the bed. The object felt alien to anything in Lucifer Brill's previous experience. He pushed firmly with his knee, and felt something that was both firm and soft, yielding and unyielding, warm and slightly cold.

There was a sleepy murmur of protest, and the alien object moved away.

Lucifer Brill obeyed habit. He reached for his glasses. Then he raised himself on his tingling right elbow and peered cautiously toward the other side of the bed.

By many standards, Lucifer could have been adjudged a brave man. But what he saw had a curiously frightening effect on him.

He saw the back of a woman's head, and a tangle of dark hair, a bare, sun-brown arm, a bare shoulder.

Lucifer took off his glasses, breathed upon them, polished them thoughtfully on a corner of the sheet, and looked again.

The apparition was still there. Only now the head was turned. The eyes that were watching him were wide and startled. The lips moved in sort of a gasping sound. They framed the words:

"Get out of my bed!"

In spite of a certain paralysis, Lucifer bridled at the words. He was a rational man, and believed that words should originate in a context of rationality.

"I can assure you," he stated, "that I am not voluntarily in your bed, and that I have no intention of remaining here."

There was another gasping sound. The eyes widened still more. The lips exclaimed. "Dr. Brill! Dr. Lucifer Brill!"

Lucifer made a sound that was as close to a gurgle as he had come since infancy.

When he had collated his emotions, he asked in his customary tone,

"Have we met?"

The lips smiled wryly.

"It looks that way."

"Ah . . . Yes, of course. But, I mean . . . under social or professional circumstances?"

"You're the odd little man who gave me those card tests in San Diego last winter."

Lucifer Brill digested this information in dignified silence. He considered the woman gravely, then took the white sheet and covered her up to her chin.

She gasped again.

"There are certain proprieties," he reminded her severely.

He considered her again, trying to place her face and its personality among the thousands of people he had psi-tested. It was what he would term a Type III face, although he had never been able to establish any defineable connection between bone structure and psi positive characteristics. This was a strong face on the pillow beside him. Strong and at the same time possessed of certain female qualities, principally in the fullness of the rather large lips and in the throat lines. The cheek bones were fairly high. The skin texture indicated a chronological age of about thirty.

Having thus appraised and catalogued the woman, Lucifer asked, "May I have the privilege of making your acquaintance?"

"Wh . . . what?"

"Your name," he said impatiently. "Do you mind telling me your name?"

"Nina . . . Nina Poteil. They call me Nina . . . professionally."

"Professionally . . ." Lucifer rolled the word on his tongue as though he relished its flavor. "May I inquire as to the nature of your profession?"

"You don't remember? Oh, well, I guess you'd call me a psychologist."

"A psychologist!" Lucifer's eyes glowed with relief and approval. If he had to awake to find himself in these distressing circumstances, it was good to know that he was with a confrere.

"Really!" he said. "I had no idea! It astonishes me that I do not remember you. What is your specialization?"

"I'm called an entertainment psychologist."

"How extraordinary! Where do you practice?"

"At the Blue Grotto on Fifth Street. I'm billed for character readings. Cards are my medium,

but I don't need them, of course."

"Oh."

Lucifer adjusted his glasses. He said, "Now, if you will kindly face toward the opposite wall, I will get out of this bed.

As Lucifer climbed out of bed, he was painfully conscious of a short kimono that scarcely reached to his white, bony knees. Panic-stricken, he looked around for something else to wear, and found some neatly folded garments on a chair behind his side of the bed. With a shock, he realized this was exactly the way he had always left his own clothes overnight.

Only these were not his own clothes. They appeared to be made of a light, semi-transparent plastic material. There was a pair of trousers that fit rather like jodhpurs, a loose, practical tunic, and boots of the same thin material. When he had dressed, he still felt like a man in a goldfish bowl.

Looking out the window, he saw that they were near the center of a very large compound, comprising hundreds of small dwellings, all constructed of a slate-like grey metal. Each dwelling was surrounded with a neat area of what appeared at first glance to be a lawn. On closer observation, it was a lush, mossy growth, deep green in color. At one end of the compound was a much larger building, sprawling into many wings and substructures. Behind it rose a tremendous, yet somehow slender and graceful, silhouette of a shining projectile, aimed toward the clouds. Around the compound, at intervals of about two hundred yards, were tall guard towers. The compound itself seemed to be located in a vast, towering forest that rolled away in all directions until it disappeared in the low-hanging mists. Through a break in the clouds, Lucifer saw a giant, orange wheel, many times the size of the sun he had known all his life.

"Amazing," Lucifer murmured.

Averting his eyes from the bed, he walked across the room and opened a door. It led to a large, bright room, artificially lighted from a source he could not determine. At the far end of the room were a door and glass casement windows that opened on a small, mossy clearing. The forest curved in behind the clearing, and walled it off. In the room itself, a large screen occupied most of one wall. The furniture was extremely functional. Everything, even the cushions on a low couch, appeared to be made of a tinted metal. But when Lucifer touched one of the cushions, it yielded resiliently.

"Amazing," he repeated.

In his astonishment, Lucifer forgot himself and looked toward the bed.

"Miss Poteil, have you any idea where we are?"

"I woke up after you did," she reminded him.

"I see." He regarded her sternly. "What is your last recollection prior to awakening?"

"I don't know . . . Yes, I do!" She sat up, then sank back and covered herself again as he glared disapproval. "I was in the Blue Grotto —It was getting late, and I had just left my card—like I always do

—at a table where two men were drinking. One of them said, 'Sure, we want a reading.' Then I sat down, and that's all I remember."

"All?" he insisted, as if questioning a reluctant student.

"There was kind of a strange odor . . ."

"I know."

"You do!" She bolted upright, forgetting the sheet. She looked accusingly at him.

"Naturally, I recall the same odor. How else do you suppose I happened to wake up in this bed?"

"I wondered."

Lucifer turned back to the window in time to see two men, in the same plastic tunic and leggings he was wearing, approaching the front of their bungalow.

"We have visitors," he said. "Perhaps we shall also have some answers. While I greet them, I suggest that you make an effort to acquire some kind of apparel."

ONE OF THE visitors was a gaunt, heavy-boned man, exceedingly tall. Lucifer guessed his height at close to seven feet. The bone structure of his face was harsh and massive. His head was shaved; the flesh deeply bronzed. The second visitor was nearly as tall, but he was older, and his shoulders sagged. Bronze skin hung loosely over the bones of his face.

After a cautious glance over his shoulder indicated that Nina had stepped into the semi-transparent leggings and tunic that appeared to be standard garb, Lucifer opened the door and faced the men coming up the path.

The younger of the two nodded.

"Good morning, Dr. Brill."

His voice had the same metallic timbre that Lucifer had first heard from the tall visitor in his own study.

The older man stepped close to Lucifer and gazed intently into his eyes.

"He has emerged," he said.

"Good. In that case, we must introduce ourselves all over again." The large man bowed slightly, then drew himself stiffly erect. "Dr. Brill, in your language, my name would approximate the phonetic sounds: Huth Glaspac. You may call me Huth. I am the Administrative Director of this project." He indicated his older companion. "This is our medical director. For simplicity, you may call him Dr. Thame."

Lucifer studied them gravely.

"Come in, Gentlemen," he said.

Awkwardly, he went through the motions of introducing them to Nina. Dr. Thame examined Nina's eyes, and nodded.

"Our laboratory calculations were correct," he pronounced in a brittle voice that reflected satisfaction. To Nina and Lucifer he explained. "Due to the differing metabolisms of your bodies, it required a rather delicate calculation to bring you both out of the drug at the same time. It was estimated to occur about four cintros . . . that is, hours . . . ago, during your sleep . . ."

"Gentlemen," Lucifer interrupted impatiently, "do you mind telling us where we are and what

this is all about?"

Huth's massive bronze features lightened with the shadow of a smile.

"It is doubtful that the answer to either question will be helpful at this time. However, in response to the first, may I inquire: Have you studied astronomy?"

Lucifer drew himself up with dignity. "I am a Parapsychologist."

Again there was the shadow of a smile on Huth's bronze features.

"The extreme specialization of your science will never cease to amaze me. At any rate, you are on the planet Melus, one of the outer planets of the star which your Earth astronomers call Capella, and which they place in the constellation of Auriga."

Lucifer blinked rapidly and rubbed the bristles of his mustache with more than ordinary vigor. Some of his colleagues at Western University had worked on rocket projects. He had always suspected they were fools; now he was sure of it. Why else would they be wasting their time with rockets, while another race was running around the universe, kidnapping positives?

It was Nina who spoke up first, her dark, deep-set eyes burning with excitement.

"Capella . . . I know!" she exclaimed. "Sometimes I work with the medium of astrology. It doesn't mean anything, really, no more than the cards. I could do just as well without either. But the customers . . . Say, unless you're not telling the truth, Mr. Huth, we're quite a ways from San Diego!"

"The distance is not important," said Huth. "Melus is now your home, and will be for the rest of your lives."

As the import of his words reached them, Lucifer blinked again. Nina sat down on the edge of the steel-grey couch.

"For the rest of our lives," she repeated wonderingly. "That's a long time."

"It is to be hoped," said Dr. Thame.

Lucifer had to speak with more than usual severity in order to keep the tremor out of his voice. "I asked two questions," he reminded Huth.

Huth nodded.

"Your second question will be answered during your orientation period."

"And how long does that last?"

"It varies. For you, Dr. Brill, it could be much longer than for your wife."

"My—" This time, Lucifer's dry New England twang definitely broke.

"Oh, yes. We learned that by observing the rituals of your culture we can minimize emotional trauma and thereby hasten orientation." He turned to Nina. "I can assure you that the proper Earth rituals were performed in the prescribed manner. Since neither of you were married, we could dispense with the Earth divorce ritual and perform only the marriage ritual. Does that ease your mind?"

She stared at him without answering.

Lucifer's temper bristled.

"I refuse to recognize such mockery. It is immoral, illegal and defi-

nitely unethical."

Huth dismissed the matter with a slight shake of his massive head, and proceeded to explain some of the objective facts of their situation.

During orientation period, they would be required to remain on their own premises, except for their educational sessions at Center. They would be taken to Center once or twice each day, depending on their progress. Food preparation was handled at the Project commissary. Huth opened a small pantry. Meals, cooked by molecular agitation in the commissary, would be delivered to the pantry via the commissary tubicular. He showed them how to turn on the visagraph screen.

"This is used for communication, education and also entertainment. You will find it very pleasant to read micro-filmed books off the screen. We also have a rather complete repertory of Earth music. After orientation, you will be assigned duties, and, of course, can become acquainted with fellow members of this project."

Dr. Thame added briefly that Melus had been chosen for the project because it was a hydrogen-oxygen planet similar to Earth, although almost uniformly tropical. The inner planets of the system were not inhabitable, since Capella, with three times the mass of Sol, produced one hundred times more heat.

"You'll discover that members of your Project have given this planet another name," he concluded. "But don't let it disturb you."

Nina spoke up suddenly.

"The name is—It's Mendel's Planet!"

A muscle twitched in Huth's bronze cheek. "How did you know that?"

She shook her head.

"I never know how. Things just come to me. Sometimes I say—said things to my customers at the Blue Grotto, and they would ask me the same thing. How do I know?" She shrugged her strong shoulders. "How does anyone know they know anything?"

Huth and Dr. Thame exchanged quick glances.

"Very interesting," said Huth. He moved toward the door. "We will send for you in two hours for your basic family record test."

"Basic fam—." Lucifer choked on the word. He asked bleakly. "What might that be?"

"It will be elementary to you, Dr. Brill. Just a basic psi-card test. We have your record, of course, but for purposes of standardization, we always start a new family's record in this manner. You undoubtedly will score rather close to your high test score on Earth."

Lucifer hoped his apprehension did not show. He had not expected having to meet this challenge so soon.

Nina had been pursing her lips, frowning and thoughtful. Now she asked.

"Mr. Huth, how long have we, Dr. Brill and I, been here on Melus?"

A hint of humor flickered in Huth's somber eyes.

"Two Earth months."

FOR SEVERAL moments after their departure, Lucifer stalked silently around the room. Nina remained on the couch. Her eyes were closed; her hands folded on her legs. There was a click in the pantry. Nina got up and looked inside. Breakfast had arrived.

"We'd better eat something," she told Lucifer.

"I am not hungry, Miss Poteil."

She brought a plate, and stood resolutely before him.

"This is going to be a hard day. You will need the food."

He tried to stare her down, but couldn't. He accepted the plate, feeling like a chided school boy.

Lucifer ate in silence, and when he had finished, he wandered out into the mossy patio behind the bungalow. There was a milky opaqueness, without obvious form or solidity, that walled the area off from the bungalow on either side. The rear of the patio, facing the forest, was clear, but when he walked too far in that direction, an invisible force shocked him warningly, and he leaped back.

The trees were incredibly high; their canopy of branches and leaves was tightly interwoven. The rain had stopped momentarily, but water dripped unceasingly from the canopy to the mat of leaves on the forest floor. Spidery root tendrils crawled upward to mesh with tree boles and hanging vines. There was a smell of eternal dampness. Somewhere back in the shadows, an animal cried out. It sounded like a woman in pain.

Lucifer shivered. He wished forlornly that he had left matters up to the FBI and the Central Intelligence Agency. He reviewed his prospects, and did not find them good. In a narrow sense, he had succeeded. He had found his positives and positive positives, but he did not yet know why they had been kidnapped. Nor was it likely that the knowledge would do him much good. He was on a strange planet, in the system of a distant star, apparently destined to spend the rest of his life with a woman who had been a nightclub fortune teller.

As a doctor of parapsychology, Lucifer was appalled. As a confirmed bachelor, he was horrified.

But a more immediate problem clamored for consideration. What happened to non-positives on Melus?

He would soon know.

The two attendants who came to take them to Center were much younger than Huth. They carried themselves with military stiffness. Nina and Lucifer were led to what vaguely resembled a motorboat, covered with a transparent bubble. The conveyance hovered in the air, about two feet above a narrow pathway that was surfaced with a dark, burnished metal. Lucifer accepted the vehicle without surprise. Physical scientists had always reminded him of boys playing with erector sets, and their accomplishments bored him.

Center was a series of low slate-metal buildings scattered over several acres. Some were inter-connected; some were separated by mossy areas. The outer walls were broken by tall casement windows that extended from just above the

ground to just below the eaves.

As they circled among the buildings, the casement windows began to swing shut. Lucifer thought at first that this had something to do with their coming, but then he saw the thunder clouds tumbling in over the forest roof and heard the approaching rain.

The hot wind swept open a gate as they were rounding one of the opaquely enclosed areas. Lucifer caught a nerve-shocking glimpse of many grotesquely malformed creatures stumbling, sprawling and hopping into the building, under the supervision of several bronzed, statuesque attendants. One creature, with a huge bulging head that flopped uncontrollably from shoulder to shoulder, was bounding along on a single leg. Its twisted features were grimacing horribly.

Lucifer did not raise his eyes to Nina's face, but through the transparent sleeves of her tunic, he saw the muscles in her arms grow rigid.

The conveyance stopped in front of the entrance to one of the larger buildings. An attendant met them as they stepped out of the vehicle. He led them down a long, glass-roofed corridor. The rain was now drumming dismally against the glass

A blindfolded girl of about six passed them in the corridor. She stepped politely to one side, then continued surely and unconcernedly on her way.

Huth received them in a large room equipped with two rows of facing desks.

"As I told you," he explained to Lucifer, "these tests will be very elementary. Together with your Earth records, they will form part of your basic family file. And," he added, harshness edging into his voice, "it will be wise for you to give us your complete cooperation."

One of the attendants led Nina to a seat in front of a desk. The other attendant beckoned to Lucifer.

"If you please," Lucifer said to Huth, "I would like to observe your technique. Being a professional man, you know . . ."

Huth assented.

"May I compliment you on your attitude, Dr. Brill. Such an interest can shorten your period of orientation, and it raises my already considerable expectations for you. But we do not pretend to any originality of technique."

After watching the attendant run through twenty-five cards with Nina, Lucifer was quite ready to agree with Huth. The technique was crude, far below minimal laboratory standards.

Nina's attention wandered about the room, but she called off the cards without hesitation. The attendant took her through three runs, checked his file record and stood up with a shrug. He said something to Huth in a language that blurred and rasped.

"Dr. Brill," said Huth, "will you oblige us now?"

Lucifer stepped resolutely to the desk, but the palms of his hands were moist. Over the past two decades he had taken many tests, enough to know that he could never score above chance save for an occasional run of coincidence.

And this was not one of those runs. He saw it in the attendant's manner before five cards had been turned. Desperately, he fumbled ahead, guessing blindly.

At the end of the first run, the attendant spoke rapidly to Huth.

Lucifer saw Nina watching him with surprise.

"This technique is incredible!" he snapped at Huth. "With all the distractions in this room, not to mention the emotional stress of our situation, a true score would have to depend on chance!"

"That is not necessarily so," Huth answered calmly. "The stronger a psi sense may be, the more easily it is brought into use, regardless of external circumstances. You Earth scientists go to incredible lengths to test under laboratory conditions an ability that does not belong in the laboratory."

"Ridiculous! Laboratory standards were necessary to prove the existence of psi."

"Therefore, Earth scientists will go on proving it to each other for the next hundred years."

"What are you proving by this inferior duplication of our psi tests?" Lucifer challenged, hoping to divert attention from another disastrous run of the cards.

"More than you suspect, Dr. Brill. For one thing, by checking this first test with your Earth record, and later with additional tests, we can obtain an indication of your response to orientation. This could be important to you, vitally important, I might add. Now, shall we proceed."

It was an order, not a question.

Lucifer saw Nina nod at him, and try to smile encouragingly. This fed his anger with the fuel of humiliation.

The attendant took a new deck of cards, began to turn them.

Brill felt his eyes drawn again to Nina. He called out his answer, unthinkingly. "Circle . . . circle . . . star . . . rectangle . . . circle . . ."

When the run was completed, the attendant instantly started another.

A third and a fourth run, then the attendant turned to Huth with a rapid burst of language.

"Excellent," said Huth. "Excellent, Dr. Brill. All you needed to do was relax! Excepting the first run, you averaged very close to your Earth score."

Since awakening that morning, Lucifer had found his professional equanimity tried sorely on several occasions. But never more so than at this moment. To have scored so significantly above chance on three consecutive card runs was a greater shock than awakening to find himself with a strange wife on a strange planet. The law of probability was the unchallengeable bastion of his private world.

He caught Nina's glance again. Her dark eyes were watching him in a way he could not understand.

Huth said, "This has been a most satisfactory prelude to orientation. We can proceed immediately." He touched a button. In a moment, Dr. Thame entered. "You will go with Dr. Thame," Huth told Nina. "Your husband will remain here."

Nina looked at Lucifer again, hesitated, then turned away with-

out comment and followed Dr. Thame out of the room. Huth led Lucifer into a smaller office.

"This procedure is somewhat unusual," Huth commented. "Ordinarily, new arrivals are assigned directly to units of the Orientation Staff. But we have special hopes and plans for both of you. In particular, Dr. Brill, you can be of great service to us."

It was difficult for Lucifer to be anything but forthright, but he tried. "Psi is my work," he said. "I suppose it matters little enough where I work at it. But it would help to know the purpose of all this."

"Undoubtedly. But it will not be easy for you."

"I am not a child."

"No, but you are an Earth scientist."

Lucifer felt his anger rising again.

"I'm afraid I don't follow you."

"I intended no invidious comparison, Dr. Brill. But, as orientation progresses, you will better understand what I mean. Have you ever thought how your science would appear to an extra-terrestrial mind?"

"The concept has never occurred to me," Lucifer snapped, thinking of the grotesque creatures running out of the rain, and the blindfolded child walking alone down the corridor. "We see your science as a great number of cubicles, all operating within one structure, with a minimum amount of inter-communication. Each cubicle is engrossed in a process of infinite abstraction from a body of potential knowledge self-doomed to be finite. It studies every new idea chiefly in terms of concepts fundamental to its own specialized body of knowledge."

Huth waved a large hand to cut off a protest from Lucifer.

"And what of the phenomena an individual scientist observes and evaluates? He shapes the facts into an hypothesis that may be valid only within his own cubicle. He does not venture outside. A most glaring example is that of your medical diagnostician. He uses the tools of his science brilliantly, then lays them down and becomes a therapeutic nihilist!"

"Specialization has meant progress," Lucifer protested.

"Progress, yes, but progress only to the frontiers of infinity. Will you dare venture into that frontier, Dr. Brill?"

"Of course."

"Be careful! The price of that venture is very high. Consider for a moment your Earth biologist: The very nature of the subject on which he has founded his science eventually dooms him to technological unemployment! If he follows the living cells to their ultimate sequence of interactions between ions and molecules, biology ends as it began—as applied chemistry and physics!"

Lucifer shifted uneasily.

"From another value judgement," Huth continued, "the orthodoxy of Earth science is a product of its fragmentation. Within each cubicle, isolated from the fertilization of new concepts, the unorthodox all too often and too soon can

become rigidly orthodox. This is the circle around which each science seems forever to travel!"

Lucifer felt himself being moved skillfully toward an unknown objective. It was like being a Knight on a chessboard in the hands of an expert player.

Huth moved in closer to his objective. "And so it is with psi, Dr. Brill. Or so it appears to an extra-terrestrial viewpoint, which is now necessarily your own! Parapsychology had to depart from the physiology of orthodox psychology in order to get a look at itself. It became unorthodox avant guarde! It established a scientific case for psi, and for two decades thereafter established little else. What have you proved that Rhine did not prove twenty years ago?"

"It is necess—"

"Already we see forming a dogma of psychic research, a cult of psychologizers that may match in exclusivity the cult of physiologizers —each declining to draw upon the resources of the other! We see a tendency to look backward instead of forward, a bemusement with the historical concepts of association theories, psychon systems and continuums of cosmic consciousness— all of which suggests a turning away from the frontiers of infinity to an interminable abstraction of possibilities from your own finite knowledge.

"Do you follow me, Dr. Brill?"

Lucifer removed his glasses, breathed on them, polished them carefully on the sleeve of his tunic. He looked beyond Huth to the window and the steaming tropical rain. When his thoughts were composed again, he answered, "I follow you —with reservations."

"Naturally. Now consider this question: Have you looked into other cubicles of science for answers to psi?"

"We welcome all viewpoints."

"Do you now? I wonder! From our extra-terrestrial viewpoint, it is evident that biology, chemistry and physics all have within their present finite bodies of knowledge the fragments of concepts that could propel psi, and hence all of science, into the very frontier of infinity."

Huth paused, looked searchingly at Lucifer.

"Dr. Brill, are you ready to share your primacy in psi research with the physicial scientist?"

"The physical scientist scoffs at us."

"He also is reluctant to leave his cubicle. However, by using the mathematical tools of logic to enclose psi research in a framework of anti-logic, built on the principle that man cannot know, your psychic theorist has alienated the handyman physical scientist who has so much to contribute—but who insists that man must know."

Huth raised himself to his magnificent seven feet of height.

"Let the thoughts germinate, Dr. Brill. This is only your first orientation session. On the whole, we have made good progress."

He handed Lucifer a printed card.

"This will instruct you how to tune in your visagraph to a closed circuit orientation program after the dinner hour. Do not fail to fol-

low instructions."

With the briefest of nods, Huth stalked toward the door, where he turned, as if in response to an afterthought.

"Your motivations to progress in orientation will be several, Dr. Brill, but it may be well for you to know that you already have a hostage to the future success of our program."

"Hostage?"

"Your first child, Dr. Brill. It will be born in approximately seven Earth months, according to the calculations of Dr. Thame.

"Meditate on this while you await the attendant who will return you to your quarters."

LUCIFER TRIED to square his thin shoulders against the straight-backed chair. He ran the tips of his fingers over his upper lip, and out of the numbness that gripped his brain came a vagrant thought: His mustache really did need trimming; it wouldn't do at all to let down about such things.

The door clicked open. He turned, expecting to see one of Huth's attendants, instead he faced Nina. Her cheekbones made two spots of white against her olive skin.

"Hello, Lucifer," she said. Her voice was even deeper, huskier than usual.

Her tone and the way she used his first name told him she knew about the child. But he pretended not to notice. He couldn't discuss the child until he had time to evaluate the meaning of it all.

"Miss Poteil," he began firmly. His voice shook a little, and he started again, "Miss Poteil, I trust your first orientation session was not too unhappy an experience."

Her dark eyes were thoughtful, troubled.

"What is unhappiness?" She shrugged in reply to her own question. "I am never sure about crossing the line between happiness and unhappiness. Are you?"

She sat down facing him.

"If your question philosophical or psychological, Miss Poteil?"

She smiled faintly, and shook her head.

There was silence between them. Finally she spoke again, "I saw the little girl as I came in."

"The girl with the blindfold?"

"Yes. She stepped right past me, and went into a room just down the corridor. The room seemed to be full of children."

Lucifer stood up with sudden decision. "I believe I will try to look around."

The white spots grew in her cheeks. Her full, expressive lips tightened.

"Be careful, Lucifer," she said quietly.

The long corridor was frighteningly deserted. With so many doors opening off it, the odds seemed overwhelming that someone would step out one of them at any moment and challenge his right to be there.

Lucifer's plastic boots scraped on the metallic composition floor.

A subdued tinkle of children's voices drew him to a door some thirty steps down the corridor. The door appeared to be of a glass-like

material, but it was opaqued. He pushed against it, and it moved. He drew a long breath, then inched the door open.

A tall, bronzed women of Huth's racial characteristics was grouping a dozen or so youngsters into an activity pattern. The children were all around five or six years old. Their fair skin and bone structure indicated they were offspring of Earth parents.

The woman blindfolded one of the youngsters, a square-shouldered, blond little fellow. The she tossed a ball to one of the other boys, and gave a short command in her own language.

The children scattered about the large room. The boy with the ball ran and stood against the window, which was blurred from the driving rain.

After chanting what appeared to be a number count, the blindfolded boy began to move around the room. As he approached one child after another, he would hesitate while still three or four steps away, shake his head and move on to someone else.

Finally, when still some ten feet from the window, he swerved abruptly toward the boy holding the ball. He ran directly to him, grabbed him by the arm, then fumbled for the ball and clutched it triumphantly.

The other children broke into an excited babble, and everyone seemed to be clamoring for the next chance to be blindfolded. The woman looked disconsolately at the rain-streaked window, and began to blindfold another child.

Lucifer eased the door shut. He moved on down the corridor, past room after room that seemed deserted. A tentative testing of several doors proved they were locked.

Near the end of the corridor, where it turned at right angles and headed down an equally long wing of the building, Lucifer found another room that sounded occupied.

Again he inched the door open.

This room was occupied by smaller children, mostly of prenursery school age. They were playing a version of a game Lucifer recognized from his own childhood: Tail on the donkey. Only this donkey was a sinister looking creature with tiny ears and formidable jaws.

One by one the children toddled up to pin a stubby tail on his derriere. Three of them hit the target with biological exactitude. The fourth missed badly. It was a little girl. When the others laughed, she tore off her blindfold, stamped her tiny foot.

A bench sailed across the room, thudded flatly against the opposite wall.

The children's derisive laugh changed to one of excitement, and the girl felt encouraged to expand her tantrum. The bench caromed from wall to wall to ceiling and off, with a crash, into a corner. The woman attendant picked up the child by the shoulders and shook her.

For an instant, wild defiance flared on the childish features. Then the girl pouted, and two tears trickled down her soft cheeks.

Lucifer didn't try to analyze his

impressions. There would be time for that later. Now it was important only to gather as many facts as possible before he was detected.

The second corridor contained many rooms. From the sound of the voices coming through the doors, and from spot-checking several rooms, Lucifer judged they were all occupied by children engaged in some form of play activity that required psionic ability.

At the end of the corridor, Lucifer opened a door and found himself staring out into the rain.

Urged on by a growing eagerness to learn as much as he could before he was stopped, he ducked outside and ran across a mossy stretch of courtyard toward a second building.

Rain plastered his hair, and trickled down his neck, but his tunic and leggings seemed waterproof.

The rain was hot and stinging, and the wind surged out of the forest with lashing force. Half-blinded, Lucifer stumbled over some unseen object. He sprawled to his knees. He got up, slipped again, and skidded into the partial shelter of a doorway.

The door couldn't be moved. Lucifer moved out into the rain again, and groped his way along the side of the building.

He stumbled over something else, fell heavily.

A hoarse outcry, lifting above the wind and the rain, brought him to his knees. Shielding his eyes, he saw that he had stumbled over a figure huddled in a corner of the building. The figure straightened above him. Its movements were jerky, like a carpenter's rule unfolding.

It was one of the grotesque, misshapen creatures Lucifer had glimpsed on first approaching Center. Through the slanting rain, Lucifer could make out a gigantic head that bulged sickeningly and was utterly devoid of hair. The head sagged forward, flopped back again until it struck the wall of the building, then snapped forward. It had two blank eyes, a flattened horror of a nose, a mouth that sagged and twitched.

The mouth was trying to say something, but the words dissolved in a bubble of red saliva and a merciful wash of rain.

The head flopped back and forth. The figure jerked toward Lucifer, lunged and fell on top of him.

For the first time in his adult life, Lucifer lost control of himself.

He screamed, and screamed again.

HANDS CLAWED him down, smashed his face into a choking puddle of water and wet moss. The hands and arms beat against his back and ribs. Each blow was a flailing, uncoordinated effort, but the impact was crushing.

Water bubbled into Lucifer's mouth and nostrils. He raised his head to breath, and a random blow smashed it back down. He gulped air and water together. He choked, strangled.

And then the weight was gone from his back. The hands and arms

stopped smashing against his flesh and bones. Lucifer raised himself on his elbows, retched chokingly.

A powerful pair of hands picked him up and half carried him out of the rain. Someone brushed back his hair, wiped his eyes. He opened them. A tall attendant held him up. Nina dried a trickle of water from his cheek. Her dark features showed shock and concern. Huth watched him sardonically.

"It was fortunate your wife sensed your danger and helped us find you," Huth said. "Your zeal for orientation is commendable, Dr. Brill, but I suggest you proceed less rigorously."

Lucifer took the handkerchief from Nina, wiped his mouth. It tasted salty. He attempted to stand with some measure of dignity.

"Who or what was that creature?" he demanded.

"I think you have had quite enough orientation for the time being," Huth replied.

The strange conveyance whisked them back to their bungalow. Lucifer soaked himself in a hot bath, and it was a long time before his trembling muscles relaxed. Dinner, via the tubicular, consisted of a meat dish, more strongly flavored than venison, two rather salty green vegetables and a flagon of warm, spicy amber liquid. They ate in silence.

Soon after dinner, Huth appeared on the visagraph screen, for what he called their second orientation session. This was largely a development of the first, and so were those that followed on succeeding days. Each left Lucifer feeling more unsure of himself, tense, mentally adrift. The distance between Melus and his safe, secure little laboratory at Western University was becoming greater than could be measured in light years.

Ranging from geology to biochemistry, from physio-psychical sources of neurosis to what he called the "molecular site of understanding", Huth hammered incessantly with semantics and logic against the carefully mortared bricks of Lucifer's own scientific cubicle. Sometimes he spoke with almost mystical fervor of a frontier beyond a frontier, a science beyond a science. One evening, during a visagraph session, Nina suddenly interrupted:

"Your words speak about the infinite," she murmured, "but your mind does not sing with the music of infinity."

Now, for the first time, Lucifer saw uncertainty on Huth's face.

Uncertainty, and a look of indescribable sadness.

Then the visagraphs screen went dark.

Nina was on the couch beside Lucifer. Her eyes were half-closed; her strong fingers were clasped around her knees and she rocked back and forth gently.

"What a strange man," she said. "What a strange and strong and lonely man. For a moment, I saw all the loneliness of the universe in his eyes . . ."

Lucifer regarded her uneasily. "You see many things, Miss Poteil."

"No, Lucifer, I see so very little. But what little I do see makes me feel like a blind person the rest of

the time. Isn't it terrible to look at shadows?"

"Really, Miss Poteil—"

"Hush!"

She put her finger to his lips.

He started.

"Wha—?"

"Please, Lucifer—Oh, be quiet—Please!"

Her breasts rose and fell sharply beneath the thin tunic. He saw the tendons stand out in her throat. Finally she whispered: "I think someone is coming to see us! Tonight. I'm not sure . . . Oh, this damned blindness!"

She beat her fists furiously on her knees.

Lucifer tried to speak casually: "If someone comes, we'll know about it soon enough. Meanwhile, I suggest we try to get some sleep."

There was a strange weariness in her as she got up from the couch and started toward the bedroom, which Lucifer had sternly assigned to her after the first morning of awakening. But after a few steps, she stopped and turned back to him.

"Lucifer, they say you are the father of my baby. If that is so, I am grateful."

It was the first time they had mentioned the child. Lucifer felt shocked, and very humble. This was another new feeling. He decided it would be wisest not to speak.

"You are a man, Lucifer," she went on, in her husky voice. "I knew it when you tried to take that test, knowing you would fail."

She brushed her lips across his forehead.

"Goodnight, Lucifer. I have known many males, but very few men. There is a great difference. . ."

He lay awake on the couch for a long time, his body aching for sleep, his mind spinning with strange thoughts, stranger concepts. He was just beginning to slip into the twilight zone between wakefulness and troubled sleep when a foreign sound in the room jarred him awake.

Forcing himself to lie completely still, to continue his even breathing, he strained to catch a repetition of the sound; his eyes turned toward the rear window. The latest rain squall had swept by, and the window was now a luminous rectangle against a brilliant, star-filled sky.

As his vision cleared and focused, he saw that the casement window was partly open. A fresh breeze, warm and fragrant with the odors of the rain forest, swept across the couch.

Lucifer heard a definite, sharp click from the visagraph. It was as though a switch had been snapped. But there was no shadow of a physical presence in the room.

The bedroom door opened suddenly. Nina stood there for an instant, silhouetted in her short, white nightgown. Then she moved quickly across the room, knelt beside his couch. Her lips, warm and dry, pressed close to his ear; her long hair tumbled over his cheek and throat. She whispered:

"Can I stay here a little while?"

He nodded, and felt her body crowd against him on the narrow couch.

They lay there together, breathing quietly, watching the open window.

And then there was a shadow there, a darker something against the darkness. Nina's body stiffened. With an unconscious gesture older than remembered time, Lucifer put his arm over her.

A voice spoke out quietly from the window.

"It's O.K. now, Dr. Brill."

A figure stepped through the window, stumbled over the hassock and sat on the edge of it.

"You both there?" a man's voice asked, then, without waiting for an answer, continued: ". . . Good! . . . Fetzer's my name. Albert Fetzer. Remember me, Dr. Brill?"

"I regret to say—"

"That's O.K. It was a long time ago—when I was GI-ing my way through electrical engineering at Western. You gave me a lot of card tests. I did pretty well, too—dammit!"

"I'm sorry."

"None of us blames you anymore. We were kind of bitter at first—now we're glad you're here."

"Glad?"

"Sure. We've got a lot of things figured out, but there's still a lot more we don't get. You could be a big help to us."

"I sincerely hope so, but—"

"But, nothing, Doc. It looks like they're really giving you the orientation business—like they need you and are going all the way this time!"

Lucifer's tongue felt dry, and difficult to maneuver. He was grateful that Fetzer didn't seem to expect an answer.

"They've been cozy with some of us before, but always cooled off. You just play it smart, learn all you can! But be careful, or you'll end up with the *Goolies.*"

Fetzer listened intently, then chuckled.

"I guess they're still kind of fouled up! We had to warp the force field behind your place—shorted their magnetic track, too! But before they get here there's something else I've got to warn you about—'specially you, Mrs. Brill."

He hesitated.

"What is it?" Nina prompted.

"Well, when you think you get a message from us don't bust out with it like you did a while ago. They pick up everything you say on that damn visagraph—I had to short the magnetic track in order to get at the control wire to block it off—"

"Just a moment, Albert," Lucifer interrupted. "How did you know what was said in this room?"

Fetzer sounded embarrassed:

"Well, it's a funny thing, Doc, but back on Earth we were all kind of ashamed of this psi thing. We tried to keep it hid from other people. Here, it's different. We're all the same way, more or less. So we try to use psi instead of hide it. Doesn't work on Huth's gang, though. They got minds like machines—It's like trying to psi into a quarter-horse motor!"

There was a pounding of footsteps outside the front door.

"Gotta go!" said Fetzer.

He twisted lithely through the window, closed it behind him and

vanished into the sultry night.

Nina slipped from the couch and hurried into the bedroom.

The front door banged open. The room light flared on, blinding Lucifer.

Huth was there, with two of his men. The men ranged about the place with giant strides, going through the living room, the bedroom and out into the rear enclosure. One of the men worked on the visagraph, trying to light it up. He had no success.

Huth stood over Lucifer's couch. "Has anyone been here?" he demanded sternly.

"If there was, he was more quiet and courteous than you have been," snapped Lucifer. "Need I remind you that this has been a most exhausting day, and that to be awakened in this manner—"

"Mrs. Brill received a message, and informed you of it."

"Miss Poteil talks a great deal of nonsense, which you must also have overheard. However, I assure you, Sir, that I am not interested in her hallucinations, and if you are, I suggest you discuss them with her in the morning."

"What happened to the visagraph."

"If I knew, I wouldn't care. Your electronic gadgets impress me as being rather juvenile."

Huth bowed.

"Perhaps because you do not understand them, Dr. Brill."

The warning in his voice was clear. He turned sharply on his heel, motioned his men out of the room and left, shutting the door quietly.

WITH BREAKFAST, the tubicular delivered a metal-backed manuscript that bore the scholarly title: "Genetics and Psi, with an Evaluation of Three Case Histories as Compiled from Earth Records."

Nina glanced at the title across the breakfast tray, then shifted her chair beside Lucifer's.

"I'd better read that, too," she said. "Maybe it will tell us something about our own genetics experiment."

Lucifer pursed his lips in disapproval at her frankness, but he held the manuscript so that both could study it. The introduction began:

"After studying the incidence of psi on Earth, we felt that the genetics approach should receive considerable concentration of effort. Our chemists, biochemists and physicists are naturally continuing their experimentation, but the geneticists seem to promise the maximum results in the minimum amount of time. If psi can be explained, understood and propagated through genetics, it can no longer be misnomered 'extra-sensory'. It will become no more 'extra-sensory' than sense of direction, sense of time and, in the case of musical aptitude, such component primary senses as sense of absolute pitch, sense of intensity, sense of harmony, sense of rhythm and sense of tonal memory. Thousands of tests have indicated that these musical senses may have an hereditary base."

"Physiologizers!" Lucifer exclaimed, contemptuously.

"Let's keep our windows clean,"

Nina murmured.

He stared at her in surprise.

"My father used to say that," she explained. "He told us to keep our windows clean—so truth can look in and out."

Lucifer turned back the manuscript. He felt somehow chastened.

After several paragraphs of further discussion on the hereditary aspects of the various senses, even including the inheritance through a dominant gene of the ability to taste, the manuscript went into a long analysis of the family trees of Arturo Toscanini, Kirsten Flagstad and the 19th century mystic, Daniel Dunglas Home.

"Please note," the manuscript emphasized, "that in all three family trees a favorable heredity and a favorable environment were perfectly blended."

Nina gasped excitedly.

"Oh, Lucifer—if this project can bring the right parents together . . ."

"Human beings are not white mice!" Lucifer snapped!

"They are on Mendel's Planet!" Nina seized his hand.

"Think, Lucifer! Our child may be able to see things we have never dreamed of seeing! We will teach him to use his eyes from the very moment of birth—even before!"

Deep anger and resentment stirred within Lucifer, but before he could answer her, a click from the visagraph screen told them they were not alone.

Huth's usually calm voice betrayed his excitement. His dark eyes glowed.

"Mrs. Brill—how would you propose to train a child so early?"

"By encouraging him to use his own true senses rather than his superficial senses for his very first needs! My father raised all six of us and he used to say I was a good baby, because I never cried to be fed or changed. But maybe it was because he knew what I wanted and took care of me before I cried!"

Huth insisted on sending for them immediately. There was a three-day-old Earth child at Center. Huth had the baby's records before him when they arrived. Nina, flushed with eagerness, asked:

"How is the baby fed?"

Huth consulted a chart.

"Both formula and breast. But it doesn't appear that the mother will be able to nurse much longer."

"When is the next feeding time?"

"In approximately one hour."

Huth took them to the nursery. Through the window, they could see that the baby was still asleep.

The young mother was sitting up in her room. A tiny, thin-faced woman, she looked at them with alarm.

"Is something wrong with my baby?"

Nina knelt beside her chair.

"Don't you know your baby is all right?" she asked gently.

"I—I thought so. But when you all walked in like this, I wasn't sure."

Lucifer didn't recognize this young woman; nor did she appear to recognize him. Her eyes, still dilated, roved apprehensively from face to face.

"You're not going to do something to my baby?"

Lucifer felt a great pity for this young woman, snatched away from Earth to bear a child with an unknown mate on this strange planet.

"I wouldn't harm your child," Nina told her. "I'm from San Diego —how about you?"

"Masselon, Ohio."

"Now tell me," Nina asked, "is your baby awake yet?"

The dilated eyes stared at Nina.

"I'm . . . I'm not sure, but I don't think so."

"That's fine. Now, please don't be scared. I want to help you and your baby. Do you trust me?"

The young mother studied Nina unblinkingly. After an instant of hesitation, she nodded.

"Thank you. Now, are you going to feed your baby yourself this next time?"

"I'll try again; but I haven't been doing so well."

"Can you tell when your baby is starting to wake up?"

"I thought I could the first day or so. But then I didn't try—I guess I got used to having my baby brought to me every four hours."

"Is the baby usually crying when it is brought into the room?"

The young mother smiled.

"Oh, yes! She's got a strong, healthy cry!"

"Will you try to feed her this time before she cries, when she first tells you that she is hungry?"

"What—what do you mean?"

Nina took the young mother's thin hand between her strong, brown fingers. "You know what I mean! Don't be afraid to use what God has given you! Let's stop talking now so you can keep your thoughts with your child!"

Under the dominance of Nina's personality, the woman settled back in her chair.

Outside, the first rain of the morning swept over the forest and steamed up the windows. Huth stood statuesquely by the door, arms folded. The tall nurse remained watchfully beside him.

Lucifer struggled with an unaccustomed inner turmoil. Dissecting the tangle of his emotions, he was astonished to realize that his pulse was thumping with excitement.

Abruptly, the young mother spoke up. "My baby is hungry. She wants to be fed."

"Go feed her then!" commanded Nina.

She helped the young woman from the chair. Together they led the way down the corridor. As they neared the nursery, Lucifer edged closer to them. He saw that the child was still asleep. The mother saw it, too.

"But she's still asleep!" she said, bewildered. "I thought—"

"Does a child have to be awake to tell of its hunger?" Nina asked gently.

The young mother went ahead of them into the nursery. She took the child from the crib and cradled it in her arms.

The baby stirred, grimaced. Its lips groped in small, sucking motions.

The young mother hesitated, then opened her robe and brought the baby's lips to her breast. The child began to feed contentedly.

At a gesture from Nina, the others left the mother and child alone in the nursery.

When they were well down the corridor, Nina burst out triumphantly,

"The first contact! Child has communicated to mother. Message received and answered. Child has used primary sense of communication, rather than learning to rely on secondary!" Nina squared her shoulders proudly. "My baby won't have to cry to tell me that it's hungry or cold or wet and miserable!"

Lucifer's New England conscience prodded him. If indeed there was anything to this psi heredity business, then he had again hurt someone else, unknowingly, but deeply. What would Nina say and feel when she learned that he had no psi talent to pass on to their child?

But this uneasy remorse conflicted with another emotion in Lucifer: The sense of excitement that he suddenly realized had been lost somewhere back in the early years of his psi testing. Somewhere, sometime along the way the sense of wonder had gone out of his work and his life. The constant repetition of the same basic testing technique had made a familiar backyard out of—what had Huth called it?—the very frontier of science.

Huth was speaking to him.

"What do you think now, Dr. Brill? Could it be possible after all that the unorthodoxy of Earth's parapsychology might have to be shaken from its own orthodoxy?"

Lucifer frowned.

"I do not want to split definitions with you. But it should be obvious to any scientific mind that Miss Poteil's experiment, although interesting, was painfully inadequate in methodology. In the first place, can we determine whether the child was communicating a need, or whether a psi-positive mother had some precognition of her child's need? In the second place, would a large number of children born of psi-positive parents react with significant difference from a similar number of children born of psi negatives?"

"A flash of lightning can be duplicated in the laboratory," said Huth, "but it is still a flash of lightning. We recognize lightning, we admit its existence, but we do not wish to go on proving forever in the laboratory that lightning is in fact lightning. If some of your earlier scientists had been content to do that, your cities would still be illuminated by oil lamps."

"A fallacious comparison!"

"Not entirely so! I merely wished to make a point. It is all a matter of objective. You have seen how older children are developing their psi talents in our classes. Your wife may have shown us how to begin training at a much earlier age, when training is most important."

"Still, I should think you would require more substantiation, some further testing, to support Miss Poteil's little experiment."

"Of course. Do you have any suggestions, Dr. Brill?"

Once more Lucifer found himself backed toward a corner. Only this time he did not try to escape.

The challenge intrigued him, in spite of his determination not to become involved with this nonsense. A controlled experiment was quite a different thing . . .

"I might have," he replied, with an effort to be casual. He plucked at his mustache. "But you must grant that a valid basis for experimentation cannot be improvised on the spur of the moment."

"Improvise at your leisure, Dr. Brill."

Nina was sent off to continue orientation work with Dr. Thame. Lucifer was given a small cubicle near Huth's office. It consisted of little more than a desk, a stool, three bare walls and a floor to ceiling window through which an orange rim of the planet's great sun was now shining mistily.

Lucifer scribbled notes, drew crude diagrams, tore them up and started all over again. Spots of color flushed his cheeks. Though he would not have made the admission, he hadn't enjoyed himself so much in fifteen years. He didn't even notice when a new squall rustled across the wet jungle, blotting out the sun and drumming against the window.

Huth came in with the attendant who brought lunch.

"How many children are there here now?" Lucifer asked crisply.

"I believe we have about thirty under the age of nine months."

"Do you have another nursery room, like the one we visited this morning?"

"We have three more in the Maternity Division."

Lucifer explained his immediate needs. Huth issued orders that three more babies be brought to the Maternity Division. Each was installed alone in a nursery. Two were placed in cribs, and soon fell asleep. The third, a boy of about eight months, refused to nap. He wasn't happy until allowed to crawl around the floor, exploring the strange wonders of the nursery. Lucifer made a quick procedural adjustment, and hoped the youngster would stay awake until feeding time.

He tried to tell himself, whenever he thought about it, that he was doing all this only to point up the absurdity of Huth's theories.

As feeding time neared, three bottles of heated formula were brought in warmers and placed at Lucifer's direction in rooms immediately adjacent to each of the nurseries. Two of the children were still asleep; the third had discovered a pack of disposable diapers and was systematically tearing it apart. Dr. Thame joined them to watch the experiment, and he brought Nina along. Her eyes sparkled with interest and understanding as she watched Lucifer's preparations. After one quick nod, he did not look her way again, and he stifled the thought that Nina would be watching the experiment with their own child in mind.

One of the babies stirred in its sleep, and whimpered a little.

"Normally," explained Dr. Thame, "a child of this age would awaken shortly and begin to cry."

The baby squirmed again, then turned toward the room in which one of the bottles had been placed.

Its tiny lips worked in a sucking motion.

"How wonderful!" whispered Nina.

Lucifer picked up the bottle, moved slowly into the corridor.

The child appeared confused. Its eyes screwed up tightly, and its face reddened. Then it jerked its head toward the new position of the bottle and repeated the sucking motion.

Nina, who had followed Lucifer, squeezed his arm in excitement. He gave her the bottle, and she hurried into the nursery to reward the child. Its lips groped eagerly for the nipple.

By this time, the second child was stirring. Its reactions were much slower, and more uncertain, than those of the first baby, but they followed the same pattern.

Nina went on to the third child, which had been left playing on the floor of the nursery.

"Lucifer! Come quickly!" she called.

The child had crept over to the wall nearest the room in which its bottle had been placed. It was pawing, bewildered, at the rough surface.

Ducking below the window edge, Lucifer picked up the bottle and moved it to the other side of the room.

For a moment the child looked like it was about to cry. But it hitched around on its knees, sprawled flat, raised up again and crawled across the floor. When it was midway to the other side of the nursery, Lucifer switched the bottle back to its original position.

The child continued its forward progress for a few feet, faltered and stopped. Its red button of a nose wrinkled, and two big tears squeezed down its round cheeks.

Nina rushed into the nursery, picked up the youngster, cooed over it and thrust the nipple of the bottle between its anxious lips.

"My compliments, Dr. Brill," said Huth. "Does this begin to satisfy your laws of probability?"

Lucifer was determined not to show his excitement. He shrugged. "Five thousand more tests might prove something—providing you counterposed 5,000 tests on children whose ancestry was psi negative."

"We're not interested in psi negative children, Dr. Brill."

Lucifer faced him squarely.

"Just what are you interested in? I think we are entitled to an explanation."

Huth hesitated, then nodded.

"Perhaps you are."

WHEN they were settled in Huth's office, he stood by the window and folded his huge, bronzed arms.

"My home planet," he began, "is also in the system of Capella. We are an old race, but neither decadent nor degenerative. Our physical sciences—as you can judge from your presence here—are at least 500 orbits beyond the outermost probings of science on Earth."

He paced across to the door, and back to the window again.

"But in our obsession and fascination with the ever new horizons

of physical science, we neglected that which was potentially of far greater significance. We ignored the possibilities of psionic evolution —we ignored them until it was almost too late!"

"Too late," breathed Nina. "Is that why your mind feels like a machine?"

Huth inclined his massive head in her direction.

"That could be why, Mrs. Brill. What society—or our bodies—neglect will eventually die. It is true even of psi, Dr. Brill."

"Can you be specific?" Lucifer challenged.

"I can. If you had taken your eyes out of the laboratory long enough to look at your world as it is and has been, you would have learned that psi manifestations were quite customary on Earth during the 13th and 14th centuries. But your industrial age did not have much room for psionics. With Daniel Dunglas Home went the last of your great psi talents!"

"Our card tests have discovered many psi positives," Lucifer interjected heatedly. "You ought to know—you have many of them here now!"

"Psi positives with thwarted, arrested or frustrated talents," replied Huth. "Psi positives who wanted to be 'normal', because that is what society demanded. . . . Psi positives who were ashamed of their talent and quite willing to have it overlooked! Yes, we have them here . . . and, what is more important, we have their less inhibited children!"

"Your logic escapes me."

"It wouldn't if you had emerged from your cubicle and looked around you among the physical sciences. Some of your more venturesome geneticists believe that man will soon be the master of his heredity and that the next five million years of evolution on Earth will be the controlled evolution of the human mind. That could mean controlled evolution toward psi, Dr. Brill—if Earth science can ever escape the terrible drag of orthodoxy and if the unorthodox can ever learn to avoid the trap of its own dogma."

Nina had been watching Huth with the unblinking intensity that was so characteristic of her in moments of total concentration.

"So we are your nursery!" she exclaimed. "We produce the plants that will bring life back to your own soil!"

Huth came close to one of his rare smiles. "You have admirably reduced the milleniums and mathematics of evolution to a single sentence!" He turned to Lucifer. "Is this a laboratory big enough to challenge you?"

Lucifer took refuge in a question of his own. "What about your *Goolies?*"

From the shadow on Huth's face, and the faint gasp from Nina's parted lips, Lucifer knew he had made a mistake.

"Where did you learn that name?" Huth asked him coldly.

Lucifer was not a good liar, but he tried. "I—I don't really know. Perhaps—from one of your nurses or drivers . . ."

"We will accept that explanation,

for the moment. Later, I trust you will volunteer another."

Huth's emphasis on "volunteer" was almost imperceptible, yet it had the effect of two pieces of steel striking together.

"You have already met one of these—*Goolies*. Let us go and meet some more.

Nina put out her hand. "Is this necessary?"

Huth regarded her thoughtfully.

"Yes, I believe it is. If we are going to work together, you should know everything."

"And if we're not?" Lucifer snapped. Huth shrugged. "Then it won't make any difference, I assure you."

Outside, the wet moss of the courtyard was springy underfoot. Lucifer flinched with the remembered horror of trying to breath through that moss and water.

Nina took his hand. Her fingers were strong and warm.

A tall attendant let them into the building. Lucifer looked down a long, sterile-white corridor, flanked by small, seemingly transparent doors.

"The doors are transparent only from this side, and then only when subjected to the proper wave frequency to make them so," Huth explained.

"Like the rooms we live in!" Nina burst out.

Huth blinked, and assented, "Like the rooms you live in."

Before Lucifer could assimilate this bit of information, Huth had stopped before the first door.

Inside was a shrunken monstrosity of a creature. It had the torso of a grown woman, but its legs were bone thin, twisted and scarcely eighteen inches long. It was hairless; its face was one ovular blob of flesh, in which the eyes, mouth and nostrils were knife-edge slits. It seemed to be watching the rain-streaked window.

There were two beings in the next room, apparently male and female. Both were naked, and seated cross-legged on a thick mat. They were playing a complicated game with marked and colored blocks. The woman's body was covered with a fine, brown hair. Her breasts were tiny for the dimensions of her body. Her head was also small out of all proportion, as was the male's. Lucifer saw that though both were eyeless they were playing their game rapidly and skillfully. Their hands were lumps of flesh, with just rudimentary fingers.

"They are quite sentient," Huth observed. And he added with pride, "You would classify them as definite psi positives—altogether our most successful experiment of this type!"

As they neared the next door, it suddenly became opaque. Huth led them past it without comment. Nina winced, and her fingers tightened convulsively.

They were led quickly down the rest of the corridor. Some of the doors were opaque. Through others, they caught glimpses of more grotesquely distorted creatures, some asleep, some lurching or crawling about their rooms.

The corridor ended in a large multi-purpose type of room in which semi-human creatures of all

shapes and sizes were milling about.

Huth opened the door. "Go on in," he said.

It took all of Lucifer's will to control his revulsion and trembling and step through that door. Nina followed. Her fingers rigid in his hand.

One of the creatures nearest them turned nimbly around on one leg and hopped closer. It reached out a long arm, touched Nina's forehead. A harsh, croaking sound came from its mouth. Nina's lips quivered, but she smiled and patted the leathery hand.

Others bounded and crept around them, jibbering, feeling their faces and hair, probing at their bodies with stumps of arms or with hands that seemed all fingers.

"All of these people show some traces of psi," Huth explained. Again there was quiet pride in his voice.

A wracking cry came from one corner of the room. A huge shape hurtled into the group around them, knocking others out of its way. Lucifer saw the wildly flopping head, then long arms reached for him and a crushing weight bore him to the floor. There was a choking odor of hot, oily flesh.

And then the weight was gone. Two attendants led the creature, still mouthing angry cries, out of the room.

Huth helped Lucifer to his feet. "You must forgive Tetla. He shows up well in some basic psi tests, but certain other faculties were lost in the manipulation of his chromosomes. We never quite know what he will do."

The other beings had fallen back in silence during the assault. Now they began to babble in wild disharmony, each gesticulating in its own way.

Lucifer's cheeks were grey, but his lips were compressed into a thin line under the stubble of his mustache. He took Nina's arm and strode out of the room. Huth followed, without comment.

Out in the corridor, Lucifer confronted him. A sweep of his arm encompassed the long corridor, the room they had just left.

"This—this is a monstrous inhumanity—a terrible perversion of science!"

His voice was flinty with rage. Deep within him, the conscience of his puritan ancestry was revolted.

Huth raised an admonishing hand. "Don't forget your scientific training, Dr. Brill. You can't impose the value judgements of one culture upon the framework of another."

"There must be certain principles basic to all cultures!"

"A true Aristotelian fallacy! Form is actual reality, matter is potential reality and the form is ever in the matter! Surely, Dr. Bill, you can rise above such ontology!"

"Can you justify what you have done to these people even from your own value judgement basis?"

"You treat justification as a valid entity, which leads you deeper into the morass of attempting to substantialize abstracta. We do not justify, we do! Let me clarify:

"With the future of our evolution in the balance, with the unbounded horizons of the universe

that will be opened by psi, we have taken certain measures. Once we postulated the genetic characteristics of psi, there was no limit to possible methodology. You have seen only two of many methods we are exploring: One, of course, is the Earth project; the second is an attempt to induce psi mutations in the offspring of certain of our own people. Naturally, since the external results of such experiments are often unpleasant, we bring the newly born infants directly to our laboratory on Melus.

Nina's eyes were still wide with horror.

"How do you do this thing?"

"Really, Mrs. Brill, it's nothing to be so shocked about. As a matter of fact, it's only a further step in what your own experimenters do by exposing Drosophilae to X-rays and plants to colchicine. We are endeavoring by many methods not only to mutate a gene by rearranging the atoms in its molecules, but also to increase the quota of chromosomes in certain cells. The difficulty, as yet, is to single out the right string of chromosomes or to hit the right gene and influence it toward the desired psi mutation. We are still groping in the dark, simply increasing the chances that one or another gene, at random, will psi mutate."

As Huth spoke, he had been leading them toward a side exit. A vehicle was waiting. Huth put his hand on Lucifer's shoulder.

"We did not bring you to Melus, Dr. Brill, merely to reproduce your own psi characteristics. We feel that your background will enable you to make many notable contributions, once you become oriented. Already you have justified this feeling. Your people will do things for you and Mrs. Brill that they would not willingly do for us."

"I want nothing more to do with this project."

"I am sure you will recognize your present reaction as purely emotional, and come quickly to realize that here you have the answer to a true scientist's dream—a laboratory on the scale of life itself! For twenty years you have taken timid steps around the periphery of your science. Now you are at the heart of it!"

WHAT should he think?
What should he believe?
What should he do?

Lucifer walked slowly around the small clearing behind their quarters. He stared, for the most part unseeingly, through the force field and into the shadows of the forest.

His shoulder brushed the invisible barricade, and the shock broke the rhythm of his stride.

What should he believe?

This question bubbled most frequently to the roiled surface of his thoughts. With belief would come the mental framework, the pattern for action. It was disturbing and confusing that credo should be so important to a scientific mind. Couldn't facts take form without credo? Did facts shape the framework, or were they molded to conform to it? Einstein made truth relative to its own framework, but

which came first—the framework or the truth? And if the answer was framework, could there be truth? Perhaps the childhood riddle of the chicken and the egg could have cosmic implications. A vagrant phrase from a long-ago literature class came back to prod him now: To an egg the chicken is merely the means of producing another egg. Samuel Butler.

A shaft of sunlight speared down through the whispering canopy of branches high above him. It kindled to life a spot of riotous color in the perpetual shadow world at the base of the great trees. Blossoms of delicate blue, petals flecked with orange and gold. Leaves so green they brought an ache of loneliness for a forgotten spring morning of youth.

What should he believe?

With sudden percipience, Lucifer knew that he had moved in the shadows for a long time. The riotous dreams of youth, the exciting sense of being a pioneer among pioneers, had become like a bit of stop-motion film. It preserved the form, without the life or action. A dream cannot be framed and kept behind glass. It cannot be static. To remain, it must change.

Parapsychology had been the high road. The glorious adventure. It had made the son of a New England minister an explorer on a new frontier. But does a frontier of science have purpose other than to lead to an infinite succession of new frontiers? Had he remained too long on one frontier?

The unorthodox becomes the orthodox. The theory crustifies into the dogma. The method becomes methodology. Was this forever to be the entrapment of science? There were an infinite number of exploratory possibilities on this frontier of today; and, for all their challenge, they could be a soporific. The frontier itself was finite. But what about the next frontier? And the next? And the next?

Huth could be right, in this at least: Perhaps parapsychology had been too long exploring the unknown of its present frontier. Some must remain behind to develop and consolidate. But others must keep moving on!

To look forever beyond the next horizon! There was the challenge. There was the dream forever bright.

Lucifer thought of his crude experiment with the psi positive children, and he admitted now what he had denied at the time: Not for a decade had he been so excited by any experiment; it had brought back the wonder of the moment when an aimless undergraduate had first come upon the Rhine card tests. Lord, that was more than twenty years ago! For twenty years he had been walking in Rhine's shadow. And his personal, private dreams had never lived to see sunlight.

When would science learn to use genius without being smothered by it? Freud and Einstein had left a vision to their sciences, not a citadel. They had tried to cast a light, not a shadow. Rhine had brought psi into his laboratory to demonstrate its scientific validity. Now, the physicist, the biochemist, the

mathematician and, yes, the geneticist—all of them, must take this validity into their own laboratories. The parapsychologist must become the physical scientist; the physical scientist must become the parapsychologist. Only from the total crucible of science could psi emerge in a useful form.

But what of Huth, and Mendel's Planet?

However it had been brought together, whatever one thought of it, this living laboratory was now a fact. Psi was being mated to psi; children were being born, children with a psi potential that could be trained into a power of unknown magnitude. Huth had described it well: A laboratory on the scale of life itself!

Huth knew his semantics, all right. The barbs of his words got under the skin, hooked and held fast. How pallid an Earth laboratory would seem after Mendel's Planet. The symbol cards seemed to have lost their meaning.

A dozen projects clamored to reach the surface of Lucifer's thinking. Each cried out its siren challenge; each demanded experimentation. How much there was to do here on Mendel's Planet!

Now, Nina was at his side, and she said gently, "It's raining again, Lucifer. Won't you come in?"

The rain had returned, and the big, splashing drops hadn't fallen into his thoughts. But they were coursing in streams down his cheeks, dripping from his eyebrows. He brushed them away, and stared at the forest. The shadows had merged. The flowering beauty was like a mirage that had never been, and never could be. There was only the wash of the rain on the forest roof, the drip-drop-drip on the molding carpet of dead leaves.

ALBERT FETZER came back that night. The click in the visagraph, the deeper blackness of the walls, the silent opening of the casement window—these were the now recognizable signs of his coming.

Lucifer hadn't been able to sleep. Nina had already gone to bed, after pressing her lips to his cheek in a swift gesture that left him more unsettled than ever.

When he realized that Fetzer was coming, Lucifer sat up on the couch and drew the sheet around his shoulders. In a moment the stocky figure squeezed through the window.

"Hi, there," Fetzer called softly. "You awake, Dr. Brill?"

"I haven't slept."

"How'd things go today?"

How had things gone?

"I'm not sure," Lucifer evaded.

"You got it all figured out?"

"Well—not exactly."

Lucifer was stunned at his own reluctance to discuss matters with Fetzer. Anything less than total frankness was a new facet of himself. It was one he didn't like. But how could he share his indecision?

"We had an organization meeting after I left here last night," Fetzer said. "All the section leaders made it this time. We're set to pull the plug any time you say?"

"Pull . . . Oh, I hadn't realized

. . . What do you think you can do?"

"Plenty. We've learned to short-circuit the force fields in a hurry, and we can spring over a thousand men inside of two minutes. Within five minutes more, we'd be able to hit Center and the landing field."

Lucifer felt himself withdrawing even more. He could see the whole psi project swept away in turmoil. Then he thought of Huth's men, so towering in their stature, so well organized, so completely equipped by a fantastically advanced technology. The revolt would be brutally crushed.

"You can't do it!" he told Fetzer.

"Huh?" The stocky figure tensed. "Spell it out, Doc."

"You wouldn't have a chance!"

"We've got a few tricks. There's a lot of vets in this bunch."

"It would be suicide."

Fetzer hunched closer to the couch.

"Maybe it would, maybe it wouldn't. But a man can't always stop to think of things like that. You do what you got to do."

The words triggered a release, and Lucifer started to talk.

With an eloquence that would have astounded his graduate students at Western University, Lucifer drew a word picture of the psi project and the theory behind it. As he talked, Nina came in quietly and sat on the couch beside him, drawing up her knees inside her short gown.

Lucifer spoke of their own experiments with the babies, and of the sweep of five million years of evolution foreshortened through understanding and application of Hardy's Law. Only when he came to the radiation and chemical phases of the psi project, to the pitiable *Goolies,* did his flow of words falter. He tried to pick up quickly with analysis of what training would do for their own children. But the nagging awareness of this second dishonesty, the knowledge that Nina knew what he had done and was watching him in the darkness, broke the flow of thought and his explanation trailed off into awkward silence.

Albert Fetzer didn't say anything. He squatted on his heels, a humped blur in the darkness of the room. Lucifer could feel the probe of his eyes and darting mind.

"So that's it," Fetzer said at last. "We guessed some of it, but we couldn't fill in the missing pieces. You learned a lot, Doc."

"There's so much I haven't yet learned."

"You learned enough."

"Enough for what?"

"We're going to pull that plug, remember?"

"No!" Lucifer stood up in his agitation. "There must be another way—a better way."

"You name it."

"Well—naturally I'd have to think more about it. Everything here is so new to me."

Fetzer stepped closer to him. His shadow was shorter even than Lucifer's, but it bulked with unseen strength.

"Anything else, Doc?"

"I don't understand."

"You've gone for this stuff, haven't you."

Lucifer recoiled from the bluntness of the question.

"I am a scientist," he replied. "Or at least I have always assumed that. These ideas are as strange to me as they are to you, but I'm trying to understand and evaluate them. Isn't that important?"

"Not to me it isn't—not right now. I think the other boys will feel the same."

"You don't care what all this may mean?"

"Nope. Not yet, anyway. I'm not a scientist, Dr. Brill. Maybe I'm not even a very smart guy and maybe I'm just as glad of it, because my feet are on the ground and I know where I want them to go. Sure, this psi stuff could be big, mighty big. Our kids could go a long way with it. I can see that. But I'm a man, not a guinea pig. I happen to go for the woman they teamed me up with, and she feels the same way about me. That's true of most of the folks here. But we're not breeding kids for someone else. We'd rather run our own show. Guess you professors have been away from ordinary people too long to realize that. You should listen to some of our boys who fought with the underground in the last war. Makes you feel kind of good about people."

"Don't you realize that Huth can destroy all of you?"

"I'm not the hero type, Dr. Brill. In the war, I always kept my head down and squeezed as deep in the mud as I could. But there's some things you have to do, no matter how cold your stomach feels about it."

"When do you plan to do this?"

From the forest came a wild, plaintive cry. Fetzer took a quick step toward the window, then paused.

"You better come with me—both of you."

Lucifer drew back.

"Where? Why?"

"I don't like to do this, Doc. But I don't like the way you sound, either. We can't take any chances."

"You don't think . . ."

"I don't know. I'm sorry, but I don't know enough about your kind. Hurry up, now."

Lucifer still held back, but Nina stood up and moved wordlessly toward the window. Fetzer's voice toughened.

"Make it easy on yourself, Doc. You're coming along, one way or the other."

His legs shaking, Lucifer followed Nina through the window.

THE WARP in the force field was at the far corner of the enclosure. At a command from Fetzer, they dropped to their knees and crawled through. A voice whispered a challenge. Fetzer answered, and they proceeded, single file, deeper into the forest. The leader guided them with a pinpoint of light escaping from his cupped hand.

They followed a winding course around the root structures of the trees. Lucifer tripped once and fell sprawling into the wet, leathery leaves. As he got up, the spider loop of a vine caught him around the throat and flipped him again.

"Pick up your feet and keep your head down," Fetzer warned impatiently.

Their direction took them to a shallow stream, and they splashed up the middle of it for a hundred yards. The cacophony of night sounds retreated before them, closed in behind them. The rooftop of intermeshed branches and leaves dripped endlessly. Some alien creature followed them through the branches, yapping in a strident monotone.

They emerged from the stream to crawl into a semi-cave formed by the enjoining roots of two great trees. Vegetation had webbed over the roots until even the dropping of water was cut off.

The light of a guttering torch showed several men waiting for them. A few carried strange weapons stolen from Huth's men. Others were armed with vicious looking clubs, and long, needle-pointed stakes.

It's fantastic, thought Lucifer. Cavemen prepared to challenge a mechanized force. Cavemen forty light years from home.

When they saw Nina, the men stood up, surprised, uneasy. Fetzer went into some detail on what Lucifer had told him. One of the men swore, and smashed the head of his club on the sodden floor of the cave.

A balding man seated Nina on a hummock in one corner of the cave. Ignoring Lucifer, they plunged into discussion of their plans. None could see any reason for further delay. The supply ship had been gone for some time, and might return soon. Its crew would add strength to Huth's base force, which numbered around eight hundred, including nurses, doctors and various technical personnel.

To Lucifer, the plan sounded bold. Pathetically bold. A sizeable group would break out of their quarters and flee into the forest, drawing a portion of Huth's men in pursuit. Another group would attack Center, making it appear that this was the chief point of concentration. After delaying as long as possible, the main force would hit the landing field and try to capture the auxiliary spaceship. The men knew they couldn't handle the ship, but their work around the field had taught them enough about it to know that its armament could give them control of the base.

As Lucifer listened, a sense of familiarity kept tugging at him. It was a strange sensation that he had been through something like this before. But that was ridiculous. He'd never been any closer to military action than rejection by his draftboard, which had stupidly considered parapsychology non-essential.

The feeling persisted, and suddenly he identified it: Hempstead House, New London, Conn. The stories he had been told in childhood about the underground railroad and the abolitionist meetings held by the few who believed men should be free and were willing to do something about it!

The memory came to him across thirty-five years of his life, and half the span of the galaxy. It came

with an impact that snapped something inside him, to bring the entity, the changing personality that was himself, into focus again. But it wasn't the same focus as before. It would never be. Yet he felt more a whole person than ever before, and within him there was a surging current that could not be held back.

Hempstead House had been a verity that could not be fitted into any neat cubicle of orthodoxy. New England ministers and spinsters, businessmen and farmers—all of them motivated by a life force that couldn't be duplicated in any laboratory. The same life force was in this tree cave tonight, far away from Earth. It would go with men forever, through all space and time.

It would go with Lucifer Brill, too—to the end of this experience, to whatever new frontiers of science he might live to reach. It would prevent the vision from becoming the still-life picture, the theory from crystalizing into dogma. As long as the force lived in any man, it had the potential of leading all men to freedom. Psi was an unknown part of that life force. It could not always remain in the laboratory. It must bring freedom from blindness, freedom from the cubicles that restricted each man, each science. It was a weapon . . .

A weapon!

Good Lord, why not?

Lucifer stepped into the center of the group before he knew what he was going to say. But the words came: "Wait . . . there may be a better way—if you have the courage to try it!"

Fetzer eyed him sceptically.

"We don't have much time, Doc."

"Then you must make time! It's your only chance—our only chance!"

The men were silent, uncertain.

"Go ahead," Fetzer said. "But make it fast."

"Would you fight with a knife if you had a machine gun? Would you attack on horseback if you had a jet loaded with atom bombs?"

"Keep talking," said Fetzer.

"The answer is obvious. You would use the best weapon available. Yet here you sit with clubs and wooden spears, ignoring a weapon so potentially powerful that it makes our H-Bomb, or some undoubtedly greater weapon of Huth's, seem like an old crossbow!"

He had their attention now. He felt the force of concentration on his words. He sensed the awareness in Nina, though her eyes were hidden in the shadows beyond the wavering circle of torchlight.

"Think of what I learned from Huth—what Albert Fetzer has told you. Every person was brought here because they were psi positives, because they possessed some individual psi talent. Some of you have been ashamed of that talent. Perhaps you tried to hide it back on Earth—because it made you different from other people. But you know something about it. You may have learned more about it—even experimented with it—during your months and years on this planet. You may know what even limited talents have done in perception, clairvoyance and the moving of objects through telekinesis.

"These things were done by individual people, operating, as we might say, on single generators.

"But now for the first time in history we have more than three thousand psi talents grouped together in one small area.

"What if all the psi power here could be focused on one objective? All the men and women of Mendel's Planet—all the children—especially the children! . . . focusing their combined power!

"Wouldn't that give us the force of three thousand generators—fused into one unit? Instead of moving a chair across the room, making a table jump, levitating a person—why couldn't a building be moved? A spaceship crushed? An attacking force cut down like grass under an invisible mower?

"Gentlemen, is there any limit to the power of a psi focus?

"If a psi focus is possible, we have our own world to win—the frontiers of infinity to explore . . .

"Are you willing to try?"

The silence within the tree-cave lasted for an eternity.

Even the breathing of the men was hushed as each struggled with this new concept.

His emotional fire spent in the greatest effort of his life, Lucifer stood limp and awkward in the center of the circle, looking around at the set faces. Their eyes were fixed on the humus beneath their crossed legs.

Faintly, high above the tree-cave, the wind moaned over the forest canopy, and a new wash of rain approached. It was a cold sound, though the night was steaming hot.

There was a stir in the shadows, and Nina stepped between two men to join him in the circle. Her fists were clenched.

"What's the matter," she cried, "don't you have faith in yourselves? Are you afraid to fight with a new weapon?"

The faces turned up toward her.

"Look at that torch!" she commanded. "Now, put it out! All of us together put it out!"

She turned toward the torch, which had been thrust into a fibrous root structure. She half-closed her eyes. Her lips stretched taut; her fingers knotted and unknotted in an agony of concentration.

The flame flickered violently in the still air of the cave, but it did not go out.

"You're not helping me!" Nina cried. "I'm not strong enough alone—none of us are! Please!"

Abruptly, the torch twisted in its base, the wood snapped with the crack of a rifle shot.

The tree-cave was dark.

Nina's voice was spent, triumphant.

"See! Now do you have faith in yourselves? Didn't you feel what Dr. Brill meant by a psi focus? Think of what it will be like to be in a focus of three thousand minds! Are you still afraid?"

A man groped his way to the broken remnant of the torch. He re-lit the upper portion.

"I'm thinking of my own kid," he said. "I've seen what he can do all by himself."

Fetzer spoke up.

"I've tried it myself. I can't do it always, but sometimes it happens. I don't know why, but it happens."

One after another the men spoke out, digging into hidden memories for some personal or observed experience.

"My wife was a kick," recalled a scrawny little man with a huge nose. "Not the woman I got me now, but the one I had back in Portland. She never would read no cards, but when she got mad, all hell would bust loose! Once we both got mad the same time, and you never saw so much stuff zinging around! The neighbors called the cops."

They fell silent again, thinking.

Nina slipped her hand into Lucifer's. It was icy cold.

"You'd better sit down," he told her.

She shook her head.

Then Fetzer spoke up.

"How could we try this thing, Doc?"

It was the question Lucifer had been hoping for, and fearing. The problems ahead were piling up. He was a teacher, a scientist, not a leader. But he couldn't let his doubts show now.

"We can test it tomorrow night —if you can get word to all the people by that time."

"We can."

Once committed, the men plunged quickly into new plans. The guard tower on the hill behind the compound was picked for the first target. Almost everyone could see it from their own quarters. And it was large enough to provide a valid test for Lucifer's psi focus theory. The searchlight that always blazed on with the coming of dusk would be the signal.

"If it works," said Fetzer, "we've got to be ready to go all the way. They might not know what happened exactly, but you can be sure they'll move in and clamp down fast."

It was decided that a modified version of the original attack plan would be followed if the experiment succeeded. Only this time the diversionary forces would hit the Center and the small spaceport, while the main effort would be concentrated on getting the rest of the people into a clearing just outside the compound. From there they would try to function as a psi unit.

The wail of a forest animal drifted through the night.

"The boys are getting ready to short the field again," Fetzer explained. "We'd better get back."

He held out his hand to Lucifer. "Sorry, Doc."

They made good time back to the compound, and the group split up as they approached it. Fetzer took Nina and Lucifer to their quarters and showed them how to locate the warp.

"So long," he said. "Good luck to us all."

Nina and Lucifer ducked through the warp, but did not go immediately inside. They watched the clouds shred apart, and the incredibly brilliant stars light up the night.

"I wonder where Earth is?" Nina whispered.

"We couldn't see it if we knew."

"Do you think we'll ever get

back, Lucifer?"

"I don't know."

She slipped her arm through his.

"Maybe I shouldn't say this, but I have a feeling that we won't. That we will never see our own sun rise again."

He was silent, feeling the weight of her words, the unknown to come, the burden of his responsibility.

"It was hard for me to say that," she continued quietly. "I loved Earth. I loved its beauty and its ugliness. I loved its poor blind people. I loved them all, for I was part of them, and my eyes belonged to them. I could never hate anyone."

She put her cheek against his, and her breath was warmer than the warmth of the night.

Lucifer did not draw away. He asked, "Do you have a sense of what may happen tomorrow?"

"Only a sense of much pain. Beyond that, I can't see. It may be just as well. Are you afraid, Lucifer?"

"A little."

"It is good to be a little afraid, always."

"What about you—are you ever afraid, Nina?"

It was the first time he had spoken the name of this strange woman who bore his child.

"I am afraid, but I am at peace, too. If we do not come through this, there will be nothing more to the end of time. But if we do, we will have a child who can see, and its life will belong to us. Isn't that a wonderful thought?"

Lucifer trembled under the added burden, but he thrust it from his mind, lest she perceive it there. Time enough for her to know the truth when they knew the future.

"We'd better go in," he said.

Her cheek turned. Her mouth found his.

WHEN HUTH called them shortly after breakfast, Lucifer was already at work in front of the visagraph screen. He held up a sheet of scribbling, and forced himself to speak with animation.

"Here are some further possibilities based on our findings of yesterday. Can we work on them here today?"

Huth looked interested. "Along what lines are you proceeding, Dr. Brill?"

"All the primary needs and functions of a child could be related to psi, just as well as the feeding. I am intrigued by the possibility of stimulus and response in the prenatal stage. Mrs. Brill believes she has heard or read that thumb-sucking begins within the womb. Could you verify this with Dr. Thame? If it is indeed the case, the need expressed by the foetus in sucking its thumb might be answered psionically by a perceptive mother, thus strengthening the psi sense and building reliance on it at an even earlier stage of development."

"Splendid, Dr. Brill!"

Lucifer pointed to the stack of books beside him on the couch.

"Earlier this morning, I asked for some works on the infant brain, and several books on electroencephalography were delivered by the tubicular. In scanning them, I find several items that may be fruitful

for future research. For example, electrodes attached to the belly of a pregnant woman in the eighth month of gestation record an irregular pattern of delta waves. It also appears that both delta and theta are typically infantile rhythms, and that theta activity is early associated with such non-visual stimulation as pleasure, pain and frustration. The pathways on this frontier go in many directions."

"Follow them where you will!" There was deep satisfaction in Huth's voice. "May I say, Dr. Brill, that I have misjudged the potential adaptability of the Earth scientific mind, when it is given proper stimulus and motivation. Your progress has been remarkable, truly remarkable! Would you be content to return to your old cubicle?"

"No," Lucifer answered steadily. "I would not."

The day dragged endlessly, even with the research to occupy his attention. It might have been easier if he could have talked with Nina about what lay ahead, but he dared not risk a chance word being monitored. They could only try to talk casually about themselves and the research.

As the minutes crawled by, new doubts tormented him. Would Fetzer and his men be able to contact everyone? Would the people believe enough in their own power to make a serious attempt at focusing it on the guard tower? If the test failed, he had no doubts that the men would go ahead with their original plan.

Nina smiled whenever their eyes met, but for all its strength her dark face showed the strain of waiting. Near the end of the day, she sat beside him, brushed her lips against the edge of his mustache, and let them creep up to his ear.

"I love you," she whispered. "I want to say it now, and then think only of what we must try to do."

Rain came with the first of dusk. It had been holding back since mid-day, building up rolling black thunderheads. Now it came with such fury that it blotted out the view of the compound and the guard tower. Nina looked stricken.

"The signal!" she whispered. "What will we do?"

Lucifer could only stare through the rain-washed window and repeat to himself the fragment of a prayer he had learned from his father.

With deepening of dusk, the rain lifted a little, but they still couldn't know whether the light would be visible. A sudden gust could blot it out.

Huth called on the visagraph. "I will send a car for you," he said." I thought it might be pleasant to dine together and pass this miserable evening in stimulating conversation!"

"Thank you," said Lucifer. He hoped his concern didn't show. From the corner of his eye he could see Nina by the window, straining to catch the first glimpse of the signal light.

He must delay Huth in sending for them!

Lucifer picked up a book.

"I will bring this along," he said. "This afternoon I encountered another concept that may help . . ."

As he had hoped, Huth could not resist the bait.

"That's most interesting, Dr. Brill."

"It has to do with what might be called the relationship between the anatomical maturing of the brain and the changing of rhythm patterns as the child grows older. This has not been applied to psi patterns—"

"By all means, let's discuss it, Dr. Brill! Now—"

"Another factor," Lucifer continued desperately, "may be the alpha rhythm patterns in a child. While these emerge very infrequently below the age of three, and do not appear with regularity until around the age of eleven, there is evidence to indicate that alpha rhythm characteristics are hereditary, and that . . ."

As Lucifer talked, he saw that Nina's body had become rigid, that her fingers were extended and shaking, with the frenzy of a drowning person trying to reach something just beyond his grasp.

". . . and that environmental factors may affect the frequency of alpha rhythms during the period of childhood. For example, two uniovular twins—"

A cry of pain escaped from Nina's lips. Huth showed he had heard it.

"Is something wrong, Dr. Brill?"

"Mrs. Brill may have fallen—I will—"

And then it came, more a rending than an explosion. It was like a gigantic steel beam snapping apart from an irresistible pressure within its molecules.

Their dwelling and the ground beneath it shuddered.

Nina cried out again, a cry in which agony and triumph were one.

Huth leaped back from the screen. A terrible rage was stamped on his bronze features.

"Dr. Brill, if you are responsible for whatever has happened . . ."

The screen went dark.

Lucifer rushed to the window, tore Nina away from it. He caught a glimpse of white flames in the darkness.

"Hurry! Through the warp!" he shouted.

She followed woodenly, in a state of psychic shock. Her head struck the edge of the warp. Lucifer had to make her bend in order to get through.

The drenching rain revived her a little.

"Oh, Lucifer . . . It hurt me so . . . I tried so hard . . ."

She was sobbing, and her tears became part of the rain on her cheeks.

"It was like trying to swim against the tide of all the oceans in the universe. And the tide was pushing me back—and then, all of a sudden, the tide was with me—and I was tumbled and choked—in breakers as high as the stars."

She pressed hard against him, her strong body contorting in a spasm that was more than muscular. Words tore themselves from lips that quivered and twisted:

"Dear God! We've never lived before! A new world, and we're not strong enough to live there, Lucifer —Not strong enough yet! I can't go

back to it—but I want to—I want to so much."

THEY SKIRTED the compound, just within the fringe of the forest. As they ran, other shadow forms joined them in the scramble toward the meeting place. Children, awed momentarily to silence, ran nimbly ahead of their parents. A baby wailed.

Seachlights probed through the rain, thrusting at the forest. Blocks of light and shadow flickered between the trees. It was like a film running wild in its projector.

The light in the bow of the spaceship blazed on, and the misty twilight became a phosphorescent glow, a great dome of brilliance that arched up to the churning black clouds.

A shouting came from the direction of Center. The first attack group had struck.

Sounds of the second attack came from the area of the spaceship. The dome of light shimmered, then steadied, with eye-aching brightness. The second diversionary group, the one led by the little man with the huge nose, was now engaged.

The clearing opened ahead. It already teemed with activity. Fetzer and his sector leaders were channeling all comers into groups of about fifty, each under one of the leaders. The groups were fanned out along the edge of the clearing, facing toward the compound. Except for the muted crying of the very young, and the low-voiced commands from the sector leaders, the groups were quiet.

Fetzer ran to Lucifer.

"Better stay with me. This is your show from now on! Just tell me what you want us to do, and I'll pass the signal along. My God! Did you see what happened to the guard tower?"

"Some of it."

"Do you think we can do anything like that again?"

Lucifer looked over the nearest group. Many of the adults showed the same shock he had seen in Nina The children were no longer so awed, and their eyes were strangely bright.

"I don't know what we can do again," he answered. "And I'm not sure I want to know."

The clearing filled rapidly. Each sector leader's group was separated by about ten yards from the next, and all formed an uneven, convex line some four hundred yards from end to end.

"All set, Doc," said Fetzer. He fired a cylindrical weapon, and a streak of orange light curved over the compound.

"That's to give our boys a chance to get back into the woods—those that still can. They'll be ready to hit again—if this other thing doesn't work."

He waited for orders.

Lucifer stared across the compound. The fear in his stomach made him feel like retching. These people were waiting for him to lead! Incredible.

"You have to go on now," Nina said.

His stomach was still sick, but he managed to smile at her. Through

the slackening downpour he saw the bare walls and flat roof of Center.

"The Center," he told Fetzer.

Word leaped from group to group. Center. Center. Children picked it up excitedly.

"Now," said Lucifer.

Fetzer brought his arm down sharply. Lucifer saw the people around him pull themselves together for another effort. Nina looked faint.

Nothing happened.

Most of the children were bouncing with excitement. They still hadn't joined the psi focus. Lucifer ran up to a freckle-faced boy of about five.

"Let's have some fun," he said. "Blow up Center just like you did the guard tower!"

The words rippled from child to child, spoken and unspoken. Now it was a game instead of an awesome duty. Hey, Tommy, this is going to be neat. Blow up Center! Wow! Watch me. Aw, you aren't so hot! Quit shovin', will ya'? I can't see. Center. Blow up Center! Oh, boy!

Lucifer gripped the freckled boy by the shoulders.

"All right," he said, "you show them all . . . Now!"

The boy's eyes glowed brighter. He'd show 'em. Right here in front of Mom and Dad. You bet he would! Just watch.

As child after child joined the psi focus, each grew quiet.

In some deep center of his being, Lucifer had the sense of a dark, rushing wind, a nightmare sense of falling into a void, and screaming, though you knew you would never reach the bottom.

Once again came that rending crack. Center disintegrated. There were no flying fragments. Just disintegration. A white light that was whiter than light.

The children buzzed ecstatically. Their parents were numb and silent.

Lucifer knew that if Huth still lived, he must be reorganizing his concept of what had originally happened. His reasoning would soon bring him to the truth.

There was a period of quiet. It strengthened in Lucifer the belief that Huth was alive and calmly directing the operation. He found himself hoping that Huth, indeed, was alive. He had a respect for the man that bordered on a sense of kinship.

The quiet was broken as Huth's men fanned in small groups through the compound. They moved with great, leaping strides. One squad probed toward the clearing. When its leader realized how many Earth people were assembled there, he signalled for a quick retreat toward the spaceship.

Again there was stillness.

"What now, Doc?" asked Fetzer. He looked five years older. "Shall we blast that ship before it opens up on us?"

Lucifer shook his head.

"I don't think it will open up—not just yet. This project means too much to Huth. He'll try to save as much of it as possible."

Once more groups of Huth's men scattered through the compound. This time the groups were larger. They followed converging

courses that would end at the clearing.

"They're rushing us!" cried Fetzer.

"Stop them!"

The command leaped from sector leader to sector leader. Lucifer picked up the freckled boy so that he could see across the compound.

"Now we'll have some more fun," he said. "Those men are trying to get here. Let's see if you can stop them."

"Betcha we can!"

Stop 'em! Stop 'em!

Word of the new game spread psionically from child to child, and was repeated vocally. One tiny girl bounced up and down in glee, dancing first on one foot and then the other, as if she were skipping rope.

A shrill whistle launched the attack. Five squads converged on the clearing. The bronze faces of Huth's men were impassive. Their long legs covered nearly three yards at a stride. Each man carried a short, silver-colored tube.

Once again the adults were first to project themselves into psi focus. But this time the children were not so slow to join and reinforce them.

The rain had stopped. The hot, humid air was motionless.

And it was a motionless wind that seemed to strike Huth's men. They were swept off their feet and spun around as if caught in a tornado. The huge leader of the squad bearing down on Lucifer's sector shot backward in a rising trajectory that cleared the compound. He screamed once. A hoarse, wild scream.

The freckled boy in Lucifer's arms clapped his chubby hands.

Some of Huth's men smashed into dwellings and fell in broken heaps. Others landed in open spaces and rolled like tumbleweeds. The survivors crawled or ran, screaming and sobbing, toward the spaceship.

"We'd better get that ship now!" Fetzer urged.

"Perhaps Huth will try to talk to us first."

Five minutes passed. No sign came from Huth.

"They're up to something," said Fetzer. "Let's not wait anymore."

The gates of one of the administration training buildings swung open, and the *Goolies* poured out, driven and prodded by their attendants. They came straight toward the clearing, running in weird, disjointed strides or bounding along on footless stumps of legs. Monstrous heads rolled loosely, snapping from shoulder to shoulder, from chest to back. Tiny, hairless, eyeless heads were fixed and rigid. Slack mouths gaped and drooled. Lipless mouths bared perpetual smiles. Dwarfed, naked creatures bumped against the knees of eight-foot giants.

It was an unbelievable synthesis of every nightmare since time began.

The freckled boy wrapped his arms around Lucifer's neck. His small body shuddered.

Lucifer felt his own stomach twist with the remembered horror, but he held fast to reason. The *Goolies* were in themselves no danger. It was only their psychological

effect. Huth was shrewd. He knew well the Earth framework of prejudice. If they could break up the psi focus, his own men could crash in behind them.

Confirming this line of reason, Huth's men were forming again on the outskirts of the compound.

"Don't let them reach the clearing!" he told Fetzer.

Fetzer waved his signal. Though shaken, the adults, too, responded to reason. They tried to focus. Children pressed against their legs, sobbing.

A focus seemed to form, but weakly. It was like an exhausted, distraught athlete trying to pull himself together.

The *Goolies* faltered, appeared to lose some momentum and balance. The attendants drove them forward again. They came on as though wading against a strong current.

"Don't be afraid," Lucifer told the boy. "They really can't hurt you."

The small body continued to tremble.

"Try to stop them . . . try!"

"I want my Mommy . . ."

Nina took the boy into her own arms. She cradled his face against her breasts, pressed her lips to his cheek.

"Just keep your eyes closed," she cooed gently. "Everything is all right now."

She stroked the wiry red hair, and murmured.

"You don't have to look to stop them, do you? Why, you can stop them any time you want to! Let's tell all the other boys and girls to keep their eyes closed—and stop those people so they can't hurt Mommy and Daddy! Here, I'll help you—we'll do it together."

Nina pressed her cheek tightly to the child's, and closed her eyes. The boy stopped trembling.

The *Goolies* slowed. It became harder and harder for them to move against the invisible current. An attendant picked up one of the smaller creatures and hurled it forward. In midair, the *Goolie* rebounded and knocked the attendant off his feet.

The psi current broke loose. Clusters of bodies flew in all directions, like the exploding fragments of a grenade, crashing in and through the metal walls of the compound buildings.

And then all was still, except for a few broken moans. They were the loneliest sounds Lucifer had ever heard.

He saw Huth, palms outstretched, walking steadily toward the clearing.

"Let him come," said Lucifer. "I will talk to him."

They met about thirty yards in front of the clearing. Huth's bronze features were chiseled deep with new lines.

"Dr. Brill," he said, "I am shocked and disappointed. I thought you had come to believe in this great experiment."

"There is no longer a question of belief—its success to this point is very obvious."

"Then why do you destroy it?"

"I am trying to save it."

"I don't understand," said Huth. But there was hope in his eyes.

"You have learned much about Earth and its people, but there is one thing you failed to learn: Man may be blind, warped and prejudiced, but his frameworks can be changed, and he must—above all—he must control his own destiny. This law has been proved so often through our history that I am surprised you missed it."

Huth bowed his head to acknowledge the rebuke.

"Then what do you see in the future of this project?"

"I see great problems, almost insurmountable obstacles; and the threshold of a vast unknown. I see our people slowly approaching that threshold—to find their own future."

Huth looked silently over the compound, over the shell of the project to which he had dedicated his life, and not even his tremendous will could keep his shoulders from sagging.

"I cannot say that I truly disagree with you, Dr. Brill. But my own culture views this project from its own framework. I, too, had to fight with prejudice to keep it going. We are a mighty race, in control of a great section of the galaxy, and I doubt that you could hold out against our full power, as you have done tonight against a fragment of it on this isolated outpost."

"There seems to be a new power on this tiny planet. A power greater than any of us can yet conceive," Lucifer answered calmly.

"That may be; but there is the extreme likelihood of its total destruction before you can find out how to use it. I could not prevent this destruction if I tried—once it is known what happened here tonight. My people, too, have a destiny, and they are determined to pursue it."

A great rumble, a mighty rush of air, swept them off their feet. The spaceship rose in a straight vertical line and leveled off some five hundred feet above the clearing. Its prow swung toward the Earth people. A finger of blue flame probed downward.

Huth heaved himself to his feet.

"No! No!" he shouted. "Oh, you fools . . ."

The blue flame broadened at its extremity, until it resembled a long, inverted funnel. When it touched the ground, it reduced to grey ash a fifty foot area of buildings and trees. There was no burning, no odor, no smoke. Just a sifting of ashes that fell like snowflakes.

Huth cried out in agony at this destruction of his dream. He ran toward the path of the flame, waving his arms.

In the instant before the flame reached him, Huth stood motionless, arms outstretched, face straining upward, the great muscles of his neck standing out in rigid cords.

And then his statuesque body was a sifting handful of grey ash, falling gently to the damp ground. The flame leaped forward.

Lucifer got to his feet. He could think only one thought: That he must try to stand upright with as much dignity as possible.

He heard Nina's voice, but couldn't make out the words.

They were followed by a shrill, whistling sound. Surprisingly, the

sound grew fainter, like a siren fading into the distance.

Lucifer realized he had closed his eyes. He opened them and saw the spaceship streaking upward. It tumbled end over end, out of control. The blue funnel of flame whipped in wild circles, hissing against the clouds. The ship disappeared momentarily behind a cloud bank, then could be seen again, glowing with an incandescent brilliance.

Suddenly it burst into a shower of sparks that flared like a dying meteor, and fell away into nothingness.

In the clearing behind Lucifer, children chattered gleefully.

LUCIFER stood by the window and listened in silence as Albert Fetzer made his report.

The Earth people had returned to their quarters. Those whose dwellings had been destroyed or badly damaged were sheltered with friends for the night. Fifty-three of Huth's men and thirty of the women had survived. A score of *Goolies* had come crawling and whimpering out of the forest. All were put under guard in one of the training buildings. Dr. Thame, his own shoulder smashed, was helping with the injured.

A twenty-four hour guard was set up to watch for return of the supply ship, or any other that might come.

"What about the children?" Lucifer asked.

"Mostly asleep. Some of them got a little frisky and started knocking over things—until their mothers marched them off to bed."

Lucifer shivered, and he was not cold.

"You'd better get some sleep," he told Fetzer. "We'll meet with the section leaders early in the morning."

When Fetzer was gone, Lucifer remained by the window. Nina came out of the bedroom to join him. Together they watched the clouds close out the stars, listened to the sweep of the rising wind and the drumbeat of the returning rain. The eternal rain.

"Our world," said Nina. "Our new world."

Lucifer started to answer, then could not speak. The weight of his thoughts was too great a burden to ease with words.

Nina put her arm around him.

"A frontier must always be like this," she said.

But what a frontier! There were the physical problems of existence, with Huth's administration and most of his technology gone. There was the moment when the supply ship would return, when a great fleet of ships might come to see what had happened to the project.

Yet those problems seemed like foothills to the towering peaks ahead, rising in range after range, beyond the outermost perimeter of thought.

As Lucifer stared into this unknown, he felt his mental stature shrivel to microscopic size. How could he, or any combination of men, offer leadership into such a future? If the project could survive against the return of Huth's

people, what would keep it from disintegrating and destroying itself? How could a psi focus be channeled and used constructively? How could a professor of parapsychology, a professor who knew less about his subject than the youngest child on this planet, assail such peaks?

And the children! A freckled boy whimpering in his arms. A boy with a potential power that was as yet beyond the imagination. Lucifer thought of a tiny child behind the wheel of a great diesel truck, speeding through the crowded streets of a city. Or a child toying with the fuse of a hydrogen bomb. Raise that capacity for destruction to the nth power, and then . . .

God!

Tonight, for the first time, the children had glimpsed how great their power could be. Tomorrow they would begin to play new games. Quickly they would realize that they were stronger than their parents and other adult authorities. How could such children be controlled, educated, guided to maturity? If there were problem adolescents on Earth, what problems lay ahead with adolescents who could hotrod among the stars?

"But there are more than problems," Nina said, in a hushed voice. "A frontier means so much more!"

His thoughts, so recently liberated from their cubicle, drew back with conditioned reluctance, then leaped toward those towering peaks. A free thought could surmount any pinnacle, and look beyond the problems to the grandeur of the infinite.

The view was of a magnitude and beauty beyond his capacity to absorb. But small, incredibly wonderful details focused before him.

Now he saw knowledge and knowing from all the universe pour into this steaming jungle planet through communication channels opened by a psi focus that could leap time and space.

He saw knowledge and love and understanding transmitted outward again to fall like rain wherever there was parched earth.

His mind drew back from the summit. It was enough to see, for an evanescent moment of wonder, just a fragment of what lay beyond the wild mountains. It was madness to look too long.

The future receded; the present returned.

"I was there with you," Nina said, breathlessly.

He buried his face in the softness of her hair and the warm curve of her throat and shoulder.

He told her about himself, and their child.

She was silent and still for a long time.

"I must have known," she said. "I must have known all the time, without admitting it to myself."

"I'm sorry, Nina."

Her strong arm tightened around him. Her answer was steady:

"We must have hope, because there is so much to learn. But if our child cannot see . . ."

Her voice shook a little, then went on firmly,

". . . If our child cannot see, we must find a Braille for the psi-blind! And we will walk together . . . as long as we can . . . on our frontier . . . of infinity." • • •

Illustrated by Ed Emsh

sales

BY HENRY STILL

When Consumption means prosperity, when the Pulitzer Prize is awarded to advertising copy, when the Salesman is the most respected citizen in the land . . . What chance has a non-consumer?

resistance

ON HIS WAY home from the concert, Perry Mansfield whistled a pleasant melody from an old Stravinsky classic. But then, troubled by his conscience and that of his psychiatrist, he stopped to study the program again.

What was that modern symphony? Oh yes, "The Flivver". The music was supposed to have its roots in antiquity when someone started converting the metal wealth of the earth on an assembly line. Those screeching noises were drill presses and lathes and automatic hammers. The syrupy melody was the saintly salesman who disbursed the wealth of gadget and machine like melted butter across the bread of the land.

Perry tried to like it. But he didn't. And that disturbed him. It meant his psychotherapy wasn't working. Dr. Stone would run him

through the mechanical analyzer again and scold over the results.

His simple act of walking home instead of riding an anti-gravity putterseat labeled him as a misfit. But it seemed silly to rent a flying stool just to travel two blocks.

The fact was, he liked to walk.

Perry sighed, discouraged, as he waited for the fluorescent scanner to identify his insides and open his front door.

It opened. The lights came on. Recorded music, somewhat tuned to his mood, poured from concealed amplifiers.

And then he noticed the note clipped to the door.

His hand trembled as he took it down. The beautiful pastel gray of the enclosing envelope was an anachronism itself, and therefore marked unmistakably its almost priestly origin.

The platinum engraved card inside said simply:

A Master Salesman has chosen you for his next call.

Perry placed the note carefully on a plastic table. He inhaled deeply and held it for a moment to steady his nerves.

A *Master* salesman. No one of that stature had ever called upon him before. It was an honor like—like a mayor or a bishop. It meant he had attained top level on the universal measuring stick—an A-number-1-plus-plus credit rating.

The prospect should have saturated him with pleasure. But, like the sharp new music, it didn't.

This card also meant he was expected to buy something. Something big and expensive. And he didn't want or need something big and expensive.

He wished they'd leave him alone.

Perry clapped his hand to his mouth as though someone might have heard the thought.

What was wrong with him anyway? He wasn't a recluse. He *wanted* to indulge and enjoy the polished luxury of his world. He *wanted* to be conventional. He was young and handsome and tall and dark. He had a good job. He had a pleasant and comfortable legal arrangement with a girl in the next block.

But truly, what he had was all he wanted.

He glanced at the card on the table. He could always say *no*. It wouldn't be easy, but he could say *no*.

Perry thumbed through the Pulitzer prize winning work for 2087 which had been delivered yesterday as part of his book club subscription. He had seen it already, of course, in a dozen magazines and a hundred copies of his facsimile newspaper. It was the advertising copy for Cor-T-Zan foundation garments. But he didn't need a corset and the spartan simplicity of the fragile, lovely words bored him.

He switched on television. A phrenetic band was hammering out the new top jingle on the Hit Parade:

Tootsie gum, tootsie gum
Ooh yum-yum, it's touched with rum;
Love that girl with eyes so hot,
TOOTSIE GUM hits the spot.

Perry switched off the set.

He was alone. He could be honest with himself. The whole damned business irritated him. If he was out of step with the times, to hell with the times.

Mr. Master Salesman didn't even say *when* he would call. You were expected to sit on the edge of your chair, waiting for the great man to appear.

Finally Perry decided what he'd do. He'd simply not open the door when the MS came knocking.

Upon that decision, he slept well.

Sometime later he dreamed of frying bacon over an open fire in the woods, although he hadn't been out to the park in three years.

When he opened his eyes, the sun was up. He still smelled bacon frying.

Perry crawled out of bed, fumbled into his robe and followed his nose to the kitchen-bar.

There, in his favorite chair, sat a handsomely-dressed, distinguished man with florid complexion, iron gray hair and a fashionable paunch.

Strips of bacon were frying on the bright, spotless steel of the cooking shield.

"How did you get in here?" Perry asked crossly.

"Serve-All does all," his visitor said cryptically and smiled the smile that's known around the world. Perry would have no opportunity to shut out the Master Salesman. He was in.

"You are Mr. Mansfield?"

"Yes sir," Perry said, uncertain of decorum.

"My name is Marlboro," the MS said in melodius tones. "Master is the proper term used in addressing us. Please sit down."

"Yes, Master," Perry said. He felt like a fool and sat down.

"Breakfast will be served in a few moments," Marlboro said. "I hope you don't mind, I examined your excellent library before you came in." He pulled a volume off the shelf. "This is a beautiful old first edition. Wherever did you find it?"

It was Perry's copy of "Basic Sales Techniques" with Burton footnotes on vacuum cleaner sales charts for the last half of the 20th century.

"I've read it, of course," Marlboro continued, "but I've never owned a copy." He caressed the dogeared cardboard cover. "Isn't it fantastic? In that barbaric century the customers sometimes refused to buy from our predecessors in the Guild. It seems impossible that anyone could have been so crude as to turn away one of those sturdy pioneers at the door."

Perry shifted uncomfortably. He had been prepared to turn away one of the Great Men at *his* door.

"Ah!" Marlboro exclaimed. "Your bacon is ready, young man."

At a flick of the salesman's finger, the golden strips of meat lifted into the air and floated to an absorbent mat on the table. Perry stared. Not a bubble of fat had fallen to the floor in passage.

"How did you do that?"

"Serve-All does all," the MS said coyly.

"Mine doesn't," Perry said.

"Of course not!" Marlboro moved deftly into the opening. "You need a new one."

So he had tumbled for the first trap. Perry blushed and ate a piece of bacon.

The Master hefted an object to the table top. It was a hemisphere about 18 inches in diameter, smooth and featureless except for a handle on the curved top. It was painted psychological green.

"This is the *new* Serve-All," Marlboro said glibly. "Notice its smooth unobtrusive shape. No working parts exposed, but inside is a mass of circuits and servos around a baby reactor ready to do everything for you."

"The bacon," Perry persisted. "How?"

He was aware that the first step in successful selling is to arouse curiosity. But he was confident he could refuse to buy, though it be contrary to convention and good taste.

"Fingers of energy," the MS said. "Invisible, sensitive fingers of energy reach out of here—" He tapped the Serve-All dome. "—and they'll do anything that needs doing, at your mental command. Right now this one's tuned to me, but a minor adjustment will fit it to your personal needs. Here, let me show you something else."

Perry felt a gentle, firm pressure on his left cheekbone. It moved down his cheeks, across his upper lip and up the other side. Then under his chin.

Marlboro whipped out a pocket mirror.

Perry had just been shaved.

"See?" the Master beamed. "Wonderful isn't it?" Perry nodded. That was calculated to put him in a yes mood.

While they talked the Serve-All cleared the breakfast clutter and cleaned the cooking shield without visible remains or waste. Marlboro pulled a contract pad out of his pocket.

"I presume I can put you down for one of these."

"I don't need it," Perry said. "My old one is good enough."

"Ridiculous!" Marlboro said indignantly and then chuckled goodhumoredly. "Oh, I see what you're doing. You're trying some of the old tricks from the 20th century. Well, I like a game of wits, too. Look what else this model will do."

While Perry watched, the Serve-All repaired a broken knob on a plastic chest, cleaned the rug and etched a mural of a voluptuous nude on one blank wall.

"If you'll excuse me," Perry murmured, "it's time for me to go to work."

"Of course, of course," the Master laughed jovially.

In rapid succession a comb dressed Perry's hair, his robe and pajamas were whisked off and his street clothes came floating out of the closet on more invisible fingers of energy.

Before he knew it, he was ready for work.

"I really must be going, too," Marlboro said, "if you'll just sign here."

"How much is it?"

The Master Salesman sighed.

"You're really very difficult. It's

$9,785, plus tax."

"I can't afford it."

"Now, Mr. Mansfield. A joke's a joke. If your credit rating wasn't the finest, I wouldn't be here. I know, and you know, your income is mortgaged for only 15 more years and your life expectancy is at least 50."

Perry moved uneasily toward the bathroom. An invisible finger of energy opened the door for him.

"If you don't mind," he said angrily, "this is something I'm quite capable of doing for myself." He slammed the door.

But the Serve-All flushed the toilet for him.

When he emerged, Marlboro's patience also was gone.

"Sign," he said firmly.

"I don't want it."

"Young man," the Master said thinly. "You don't realize what dangerous ground you're on. If you do not cease this rudeness at once, I'll report you to the council."

"Report and be damned! I don't need your gadget and I'm not going to buy it. Now get out!"

Marlboro was blue with rage. He backed uncertainly toward the door and stopped.

"This borders on sacrilege," he whispered. "You'll hear from me again. Soon."

Perry slammed that door, too, and walked jauntily to work.

HE HEARD from the Master Salesman again—exactly two hours later. The message tube delivered a summons ordering him into City Court. That afternoon.

Perry went. He had never been in court before. He was frightened and regretful that he had been so abrupt with Marlboro. But he resented the invasion of his privacy and to bolster his courage, he built that anger into a fair rage by the time he reached the courtroom.

Marlboro was there. A judge was there. And on each of two tables squatted a metal box with voice tubes. A bailiff guided him to his table and placed the voice tube in his hand.

"You're late Mr. Mansfield," the judge snapped. "Justice must be swift and you're impeding it." He lifted a printed card and scanned it near-sightedly for a moment. "You're here charged with violating the public interest by failing to purchase an item which you are able to consume and which you can afford to buy."

"There's no law against—" Perry began indignantly.

"Don't tell me your troubles, young man," the judge interrupted. "That's what your lawyer's for." His gesture indicated the metal box. Perry held the voice tube dumbly. The bailiff leaned over his shoulder.

"You tell your side of the story in there," he whispered.

Marlboro was muttering rapidly and at great length into his "lawyer." Perry did likewise, relating all he could remember of the morning fiasco. When he finished, the machine whirred, whistled and harrumphed twice before spewing out several yards of perforated tape.

The plaintiff's counsel did the same, except the tape was longer.

"Now Mr. Bailiff," the judge said, "you may bring in the jury."

Perry was no longer surprised when the jury was rolled in. It was a large gray analog computor mounted on wheels. The judge stepped down from the bench and fed in the two conflicting tapes.

The jury digested the information noisily.

"It's an old model," the judge apologized, but just then a white card popped out on a small metal tray. The bailiff delivered it to the judge.

He studied the card. Perry's heart thumped painfully during the calculated period of suspense.

"As you attempted to inform the court earlier, Mr. Mansfield," the judge said somberly, "there is no law in the land which forces you to buy any item from our distinguished colleagues of distribution." Perry's heart brightened and he slid back from the edge of the chair.

"However," the judge peered down, "it has been held by many courts that when the public interest is to be served by the individual purchase of a piece of merchandise which that individual can consume and which that individual is able to buy without financial hardship, then that individual *must* sacrifice his emotional reluctance to the good of society."

The jurist paused thoughtfully.

"I think, Mr. Mansfield, that you should relearn the basic tenets of our society and economy. First, Consumption is Prosperity and that derives from the ancient law of Supply and Demand. S & D means, in simple terms, that when there is a supply of something, a demand must be created to consume it. That is why we have Master Salesmen. That is why they are the staunchest and most highly-respected citizens in our land.

He bowed to Marlboro who assumed a benevolent smile.

"This court decrees," the judge said sternly, "that you are to purchase an item known as the 2087 Serve-All from Master Salesman Marlboro and customary steps will be taken to attach your future salary to satisfy the stipulated payment schedule. Court dismissed."

Perry was too stunned to move. His petty rebellion had collapsed into a pot of embarrassment. He was vaguely aware of Marlboro shaking his hand with a moist, jovial palm.

"No hard feelings, young man," the MS said. "It was really quite interesting. I haven't had a case like this in five years."

The condescension stirred Perry's anger again.

"I demand an appeal!"

The judge was leaving the bench, but he turned back.

"Appeal bond is $2000."

"No appeal," Perry said glumly.

He walked home. The 2087 Serve-All was there waiting for him, in the middle of his living room floor.

Marlboro had tied a gay red ribbon around it to cheer him.

He wasn't cheered. The thing must have been delivered even while he was in court. There had never been a doubt that he would lose the case. Rage began to crawl

its acid path through his stomach again.

The Serve-All was tuned to him now. It removed his hat and coat and put them in the closet. It loosened his tie, patted a sofa cushion to his shape and brought him a drink.

Perry might just possibly have adjusted to the situation, but the Serve-All was over anxious.

He liked to sip a drink. But when he lifted the glass to his lips, an invisible finger of energy pushed helpfully on the bottom.

Perry strangled.

When he recovered, his rage had crystallized in a definite course of action.

He looked at the Serve-All and he looked at his hands. Not enough. He needed something much more. His memory of history recalled such items as an axe and a sledge hammer, but such no longer existed.

But the plastic table had legs of substantial heft. A low growl rose in his throat as he grabbed the table and ripped it to pieces.

The dismayed Serve-All scuttled across the room to repair the damage.

Perry fended it off with his new club and then smashed downward, again and again, delighting in the screech of crushed metal and the tinkling death of transistors, vacuum tubes and servos.

At the center was the tiny reactor box, but that was of solid lead and steel, that, fortunately, was virtually impervious for radiation safety. But he didn't care. It was also inert and needn't be destroyed.

So Perry was free; as free as an aging husband who has just dispatched his jaded wife. He sang a little and danced around the shattered scraps of plastic and wire and metal.

Then he heard the plaintive bleating beep of sound issuing from the central core of the Serve-All. He bent over it and read engraved lettering on the steel: "Central Registry No. C187-D69."

Good God! Any idiot would know that every piece of equipment was centrally registered and carried a built-in signal to summon repair machinery.

And destruction of mortgaged property was a criminal offense.

So what now?

Escape?

Escape! He must be out of the house when the repair machine arrived. He must run and keep running, from the law and the Master Salesman and Serve-All, Inc.

How much time did he have? Not more than a few minutes for the smooth central machinery to reach across the city to him; machinery which even now was on its way to rescue a damaged brother.

Perry snatched his coat from the closet and ran to the door.

Food. If he would hide from the methodical meat grinder of society, he must have food to live. He raced to the kitchen bar.

There was food there, but he didn't know how to get at it. He had never before needed to do more than dial up portions for a meal, but he must have food in containers, food that would not spoil while he conserved his life on its dwindling supply.

He ripped open a locked panel on the wall. There was food. But the large containers were locked in place. He clawed at the metal, but only tore his flesh and dripped blood on the immaculate counter top.

The club he had used on the Serve-All! He recovered the plastic bludgeon and went to work.

Five minutes later he had dislodged two of the large tins. One said *beans;* the other said *meat.*

Beans dripped a trail of juice across the floor as he ran to the door.

He threw it open.

A repair robot scuttled in and knocked him sprawling on the living room floor.

Perry stared wildly at the mechanical beast. It hummed anxiously, retrieving bits of wreckage like a mother bird repairing a broken egg.

Mansfield belly-crawled stealthily back toward the door. He might make it yet. The robot probably wasn't geared for cop duty.

But the door was blocked.

Perry looked up past the knees and the belted paunch to the face. It was Master Marlboro.

Perry rose wearily to his feet and dropped the tins of food to the floor.

"All right," he said, "I give up."

"Really, Mr. Mansfield," Marlboro's lips curled with delicate disgust. "Isn't this a childish way to treat a beautiful machine?"

"What will you do with me?"

The MS didn't answer. He pulled a contract pad out of his pocket and started writing.

"You mean you're going to sell me another one?"

Marlboro shoved the pad in his hand.

"I'm quite sure you'll sign this one," he said firmly.

Perry read the sales contract:

For standard consideration, this entitles one Perry Mansfield to all required services and exclusive use of private quarters in Airy Hills Sanatarium.

Perry signed. • • •

REJECT

The officials had been napping the day Donnie passed inspection . . . How else could you explain such an error in his emotional conditioning?

BY JOHN JOHNSON

DONNIE CLENCHED his small fists and tried not to cry, but two elliptical tears ran slowly down his cheeks. The sight of them made Mr. Ames even madder.

"Look at him," he stormed, turning to Martha. "Just look at him. Every damn time I try to reason with him, he starts to snivel like an animal, instead of acting like a normal human being." Mr. Ames flicked his cigar ashes toward a vacuum cup on the wall and looked down at the boy. "Now stop that stupid crying and tell me what this is all about."

Donnie sniffled a couple of times and wiped his nose on the back of one of his blue uniform sleeves.

"Well," Mr. Ames said, coldly.

The boy took a deep breath and raised his head. "I want you to spend some time with me," he said. "I want you to—" he searched the elusive shadows of memory until he found the word he wanted—"I want you to *play* with me. That's it. I want you to play with me once in a while."

Mr. Ames blinked his eyes and stepped back. "Play," he repeated. "What do you mean *play?*"

Donnie hesitated. "You know," he said, finally, "take me on long walks and sit down and play games and tell me stories once in a while."

"But you've got all the stories you need," Mr. Ames said, waving his hand at the banks of audiotapes stacked neatly on the wall shelves. "And your audio-prompter can tell them better than I can."

"Yes," Donnie said, "but that's a machine and I want—"

"What's wrong with a machine," Mr. Ames said, his face getting red. "Some of our best things come from machines. Didn't they teach you that at the Incubator?"

"Yes," the boy said, "but isn't there anything besides machines? I can't play with machines, I want to play with you!" He began to sob again.

Mr. Ames dashed his cigar to the floor. "I give up," he said. "By the Red Balls of Jupiter, I give up!"

"Now, Henry," his wife said. "Remember, the boy's only seven."

"Don't 'Henry' me," Mr. Ames said, "And besides, what does being seven have to do with it. When I was his age, I was an honor student in physics. *He* can't even pass algebra."

Donnie stared at the toes of his boots.

"I've given this kid everything," Mr. Ames went on. "He's going to the best pre-nuclear school in the whole hemisphere. He's got his own rocket kit. Why, he's even been on a study cruise to the moon! How many kids his age have been to the moon already? I bet no other kid in our project has been there. And what do I get as a reward." Mr. Ames didn't wait for an answer. "Trouble. That's what I get, trouble. Why in Galaxy he can't leave me alone like a normal child is more than I can understand." He stopped for breath and lit a fresh cigar.

"Maybe the boy's sick," Martha said timidly.

Mr. Ames ignored her. "I've tried to be a good father to him," he said, his voice self-righteous. "I'm giving him a chance to make something out of himself. All I ask is that he be of service to the world, and make me proud of him some day. But what does he do? Does he concentrate on his career, like the rest of the kids? Hell, no, he wants to hang around me, always underfoot, always asking stupid questions. Play!" Mr. Ames snorted.

"It's not just play."

"Heh, what's that?" Mr. Ames jumped.

"I said it's not just play," Donnie repeated, bravely brushing away his tears. "You don't give me any—" he searched again for the right word—"any *companionship.* A boy needs companionship. Don't you understand?"

"No, I don't," Mr. Ames said.

Illustrated by Paul Orban

"And I'm sure they didn't teach you that in the Incubator either. Don't you realize you should be fully coordinated by now. Instead, you want me to take time from my work—Why it's preposterous. It's, it's—unscientific!"

"But, all I want—"

Mr. Ames held up his hand. "Enough of this," he said. "I refuse to discuss it anymore. Now go to your room and get ready for your study period."

The boy burst out crying again and ran out of the room.

Mr. Ames shook his head. "Definite neurotic tendencies," he muttered to himself.

"What dear?" his wife said.

"Nothing, Martha," he answered. "Just talking to myself." He sat down heavily on the couch and sighed. What was wrong with Donnie, anyway? Where did he get those archaic ideas from? Surely he had been taught that the whole purpose of the incubator system was to speed up learning and growth processes so children wouldn't have to waste precious years growing up, like they did in the old days. Why their new technological age simply had no time to fool around with infantile desires. There were too many things to do, too many knotty scientific problems to solve. Emotions, Mr. Ames mumbled to himself, you never could trust your damn emotions.

That night, after Donnie was in bed, Mr. Ames went to his study and pulled out the boy's file. It explained what he was fitted for, what abilities he had inherited, and what his primary training included. Mr.

Ames noted sadly that the boy's Scientific Quotient was 142, well above normal, and that he would stand six feet tall and weigh close to 195 pounds when fully developed.

Mr. Ames, who was incubator-born himself, was completely sold on the ingenious system the Federation of World Councils had devised. No more hit-and-miss mass reproduction, where morons were gradually out-breeding intelligent beings, but instead, selective artificial insemination through which only the best strains were permitted to reproduce. Each generation, the human race got healthier and smarter. Insanity and inherited diseases were a thing of the past and nature's primitive law—only the fittest shall survive—was now a glittering reality. Why the Federated Incubators even took over the burden of educating the children for the first five years. Parents no longer had to be bothered caring for helpless, bawling brats. By the time Incubates were placed on the available list, they were completely self-sufficient and emotionally conditioned to fit into any family group. Parents simply picked what they wanted. Mr. Ames, of course, had selected a future nuclear-chemist.

It was a beautiful system, Mr. Ames told himself, and even more important, it worked. But somehow, some way, there was something radically wrong with their child.

"Definite neurotic symptoms," Mr. Ames murmured, half aloud. By Jupiter, there was only one thing to do. He shut the folder firmly and spun around to the trans-audio. A green light appeared on the panel almost immediately.

"Your connection, please?" the automon said.

"Give me the local Incubator."

There was a pause, then a click. "Federated Health and Service, coordinator speaking. May I help you?"

"Yes. This is Mr. Henry Ames, over at the Amarillo Group Project. I have a complaint to make."

"Yes?" The coordinator, a woman, was carefully polite.

"It's about the child you sent us."

"Specimen please?"

"What? Oh, it's a boy, Class Triple A, breed, nuclear chemistry. We got him about 18 months ago and—"

"What is your number please?"

"It's . . . just a minute." Mr. Ames consulted the folder. "My number is 34-72-oh-41. And we've got a three-year guarantee," he added pointedly.

"Yes, sir. Just a minute sir." There was a whirring sound at the other end of the circuit. After a short wait, the coordinator's voice came through again.

"Well, sir," she said. "You have the select model in our scientific line of seven-year-olds. According to our records, he checked out perfectly on all phases of learning and aptitude. Have you tried memory teaching?"

"Yes, I've tried memory teaching. He learns fine." Mr. Ames stopped. "Look, you don't seem to understand. He's okay as far as performance goes. He does everything we tell him and all that, but he's

still a real pain in the—I mean, he's developing very annoying characteristics."

"Please go on, Mr. Ames." The coordinator's voice was warm and sympathetic. "How does he annoy you?"

"Well, for one thing, he's getting pronounced possessive tendencies. He almost seems to resent being left alone. Why, just this evening he told me he wants us to *play* with him!"

"Did you say *play* with him?"

"That's right," Mr. Ames said, triumphantly. "And he says he needs companionship, or something like that."

"Companionship," the coordinator repeated. "Oh, dear. This is more serious than I thought. I'm afraid you definitely have a reject, Mr. Ames. If he shows these tendencies at this early age, then the situation will be intolerable later on."

"It's intolerable right now," Henry insisted. "Anyway, I thought you people were supposed to clear up all this emotional unbalance in the primary psych indoctrination."

"We usually do," the coordinator agreed, "but every once in a while, one slips through inspection with faulty communal-perception. The one you've got is obviously a throwback." The coordinator coughed apologetically. "It's really not the boy's fault, of course, but I'm afraid we'll have to reclaim him."

"The sooner the better," Mr. Ames said. "This mess is upsetting my work at the lab. When can I get a replacement?"

"We'll send a new model over when we pick up the reject. Will tomorrow morning be convenient?"

"Sure. Fine. Just make sure this one is normal. You better check our physio records too. I hear the people down the circle got one that didn't look like them at all."

"Don't worry," the coordinator assured him. "You'll get a boy you can be proud of this time. Will there be anything more now?"

"No, no, I guess not." An uneasy feeling slipped into Mr. Ames's consciousness. "I just wondered," he said, suddenly. "What will happen to Don—I mean, the reject you sent us. Will he be—uh—destroyed?"

The coordinator laughed. "Heavens, no, Mr. Ames," she said, lightly. "He'll be sent to the Biological Reservation and allowed to live out his life span with other rejects. He'll be much happier there. We're not savages, you know."

"That's right," Mr. Ames said, his tone matching her brightness. "We're not savages. Well, we'll be expecting the new one tomorrow, and thanks for all your trouble."

"No trouble at all," the coordinator said, smoothly. "Feel free to call on us any time." • • •

'Tain't the things we don't know what makes us so ignorant, it's the things we know ain't so. —*Josh Billings*

WRONG ANALOGY

The Pied Piper who had promised them Paradise

and led them across half the universe had changed his tune.

But this time it was the Piper who had to pay . . .

BY JOSEPH SHALLIT

RUTH WAS standing at the vast window of the spaceport, her body taut and eager, the luggage piled high around her. When Harvey Flanders came out of the ship carrying the last two suitcases, she darted to him.

"Harvey, it's a dream—it's heavenly!" she cried, catching hold of his arm. "Did you imagine—did you possibly ever imagine it would be like this?"

Harvey's eyes followed the sweep of his wife's hand, out at the dazzling expanse of fields and orchards, green and gold under this magnificent sun. The fantastic vegetation stretched in lush undulations to a distant purple horizon, the sweep broken only by the brown streaks of roads, the winding ribbons of sapphire-tinted water, and, here and there, the pastel pink and blue roofs of the settlers' houses.

Illustrated by Paul Orban

Exultation filled his chest. He fought it down, deliberately, grimly. "There were places on Earth that were like this before the blight came. California . . . Florida . . . looked like this."

"Like this?" Ruth exclaimed. "Harvey! Look at those giant fruit trees. Look at them."

Harvey caught her shoulder in a tight grip. "Honey, we just can't let ourselves go overboard till we're sure everything's okay," he said quietly. "We've had our hopes built up and slapped down so many times." He looked down into her brown eyes. "Kitten, do you remember the time old man Reeber came climbing over the fence, yelling that the blight was going, it was moving off his cornfield, and we believed, we actually believed some miracle had happened, and we went chasing after him and found it was just a sunbeam breaking through a cloud bank. What a mirage that was!"

"Harvey," Ruth said softly, "do you really think that this"—her hand traced the horizon—"is a mirage?"

"I want to get a closer look, honey—I want to feel it and taste it before I believe it," he said. But when he glanced again at the landscape, his breath quickened and a tingle rode over his skin. "No, honey," he said quickly, "I don't think it's a mirage. I think it's what we've been dreaming about a long, long time."

Ruth gave a relieved cry and flung her arms around him. He held her, patting her gently. "Now take it easy," he said.

She looked up abruptly, her eyes wet. "The first thing, you've got to get some color back," she said fiercely. "You've gotten so awfully pale!"

"And you're lovelier than ever," he said, running a hand along her cheek. "Now let's get moving before they put us back on the ship and send us home for being slowpokes."

She pounced down on a big, leather-thonged trunk. He pushed her aside. "Half pint, you take the little ones."

Together they loaded their baggage on the red four-wheeled cart. Most of the other immigrants had already loaded their luggage and now stood beside the carts, each couple a little island of chatter and excitement. Next to Harvey and Ruth were Dr. Norbert Lurie and his wife Edna, both spectacled, scholarly, and too thin; both earnest, conscientious, and eager to help; rather boring company on a ten-month space voyage, but very comforting to have as neighbors in a strange land. After them came the Schweitzer twins, husky, blond, pink-faced youths, each with his little china-doll wife. Beyond them stood big, redheaded Jim Brace and his slim brunette wife, Nancy. Brace was heaving the last of his trunks onto his cart, his biceps bulging awesomely.

"Real pioneer stock, this Red Brace," Harvey said. "Shame there are no Indians around—he'd have been a good man to have around in a scrap."

Ruth's eyes crinkled in puzzled thought. "Harvey, weren't there

any people here at all?"

"Nope. Not a soul. Not till the good gray colonel stepped out of his ship onto one of these golden hills, about fifteen years ago."

"It seems incredible," Ruth whispered.

"Hey, fellows," came the booming voice of big Red Brace, but it was promptly lost in the roar of a loudspeaker:

"Attention! Everyone will please assemble in the main reception room. Follow the red arrows down the ramp to the green doors. Please fill up all the front seats. Colonel Baker will address you. Leave your baggage where it is. Everybody now —follow the red arrows."

Excited, high-hearted talk frothed up from the immigrants as they moved down the ramp. After being confined for ten months in the narrow, dreadfully soundproofed rooms and corridors of the spaceship, every sound, every bit of motion was an intense delight.

Green doors opened on a long, low-ceilinged room with paneled wooden walls painted in mottled green and gold. Large windows threw shafts of light across the rows of rough-hewn benches. The babble of voices swelled around them, grew louder and more excited as the minutes passed. Then abruptly the voices in the front of the auditorium quieted, and silence flooded backward. Heads began to turn to the right side of the stage where something seemed to be happening in the wing—and then, at last, Colonel Martin E. Baker came into sight and walked slowly to the center of the stage.

He stood there smiling, a middle-sized man in a light brown suit, with a friendly bulge in the abdomen, and small, neat feet. His cheeks were round and sunburned; his hair was brilliantly white, though thinning at the temples and the back of his skull. He held a lemon-colored cane in front of him and leaned on it slightly.

"Well," he said, a concealed microphone carrying his voice through the auditorium, "what do you think?"

The immigrants seated before him answered with delighted laughter which merged into a wave of handclapping. When the noise died down, Colonel Baker said, in a low voice, "That's all I want to hear."

He nodded, looking thoughtful. "This is the moment I always wait for—the moment when the settlers get off the ship and verify for themselves all the things I told them. You see, my friends, when I go on my lecture tours around the Earth, the scepticism I run into makes me feel like a very lonely man. I tell my story—about a place where things grow five to seven times as big as anything Earth ever saw in her best days, a place where one gets three or four harvests in what would be a single growing season on Earth—I tell the story and find that quite a lot of people don't believe it. But fortunately, here and there I meet people who can respond to a vision—people brave enough to rip up their stakes and take a journey across the oceans of space. And what I wait for is to see

their faces and hear their voices when they reach these shores and learn that everything is true—everything—just as I told it."

There was another burst of hand-clapping. Red Brace put two fingers to his lips and produced a deafening whistle, prolonging it until his wife yanked his hand away from his mouth.

"You can imagine," Colonel Baker went on in his mellow, vibrant voice—"you can imagine, my friends, what my feelings were when I stepped out of the spaceship Explorer and set foot on this incredible planet for the first time." His eyes fixed themselves on a distant point above the heads of his audience. "Here, I said to myself—here is Paradise. The blight on Earth was already becoming acute—and here suddenly I was in a land richer than anything man has ever seen since he left the Garden of Eden. I still remember the thrill I felt when I squeezed this magic loam between my fingers. I could scarcely wait out the return trip to Earth so I could bring back here the seeds and cuttings of our edible plants. What happened after that is history. Peaches, pears, apples, all producing abundantly in their first season. Oranges the size of melons. Vegetables big enough for giants . . . Of course, it wasn't economically feasible to send this produce to Earth—although one of these days I think it will be. As the blight gets worse people will get so sick of subsisting on dehydrated plankton they will be willing to pay the enormous transportation costs to get our fruits and vegetables. But meanwhile, by the greatest good fortune, an economic base for our agriculture did develop with the discovery of radioactive minerals on our neighboring planet. It's a perfect arrangement: we feed the miners, and they pay us with the earnings from their mines. Two planets, floating side by side in space, each supplying what the other needs—it seems too perfect to be a mere coincidence. You feel there must be some providence, some mysterious intellect that planned it this way." He paused. A smile softened his face. "I guess I've talked long enough. I'm delighted to see you all here, safe and happy. You are the twenty-third group to arrive since we opened this planet. Soon the ship will leave for the long voyage to Earth to pick up the twenty-fourth contingent, most of whom are already signed up. My associate, Mr. Carsing, will take over now and fill you in on some of the things you'll want to know. Meanwhile, I want to say: Welcome to Paradise. If you ever have any problems of any kind, let me hear from you. Good luck!"

Applause rolled after him as he walked slowly off stage. Almost immediately, a tall, thin man in a gray suit walked to the center of the stage. He carried a sheaf of papers. His movements were quick and nervous. His scalp was naked except for ragged patches of hair above his ears. His skin shone sallowly in the light from the windows. "I will now read the assignment of subdivisions," he said. "Please listen carefully and make a

note of your location." His voice had a harsh edge of shrillness.

Ruth looked at Harvey and wrinkled her nose. "I don't like him as much as Colonel Baker," she said.

Carsing read off the names, designating a number and letter for each. Harvey and Ruth Flanders were assigned to area 189D. The numbers for the Luries and the Schweitzers followed closely, but the Braces weren't reached until the 200's. "Hey," growled Red Brace, "don't take me away from my buddies."

"All marketing of crops will be handled by our central office," Carsing said. "All your shipments will be listed in a credit account, against which all your charges will be debited. For bookkeeping convenience, settlement will be made once a year." His papers moved restlessly in his hands. "The guides are waiting to take you to your homesteads. You will now return to your luggage and finish loading it on the carts. After that, you are to go to the main door, where you will receive your oxygen packs, and then you are to assemble outside. Are there any questions?"

"Yeh!" called out Red Brace, jumping to his feet. "I don't like the location you gave me. How do I get it changed?"

Carsing scowled. "How do you know you don't like it before you have even seen it?"

"I know. It's not near my friends."

"Write an application for a change. If there are no further questions—"

"Question!" Harvey was on his feet. "What's this you said about oxygen packs?"

"I said they'd be issued at the main door. Anything else?"

"Why—why do we need oxygen packs?"

"To breathe," Carsing said sourly. "I should think that would be obvious."

"You mean . . ." Harvey's heart pounded. "You mean there's no oxygen out there?"

"The oxygen content of our atmosphere is seven percent," Carsing said, his voice falling to a weary monotone. "Seven percent is equivalent to the oxygen content you find when you travel 27,000 feet above Earth. You know you can't exist at 27,000 feet unless you have an artificial supply of oxygen. Very well. The same condition applies here—on the ground. You will wear your oxygen packs at all times. The only exception is this building. We have oxygen pumped into it."

"What's this all about?" shouted Red Brace. "Are you kidding us or something?"

Carsing's mouth formed a crumpled smile. "If you think I'm joking you can take a walk outside and see." He turned his eyes away from Brace. "The packs are small and light. The outlet cup covers only the nose. There is no interference with speech. You can thank Colonel Baker for sponsoring the research that produced these lightweight packs."

"Thank him for what?" said Harvey hoarsely. "Why didn't he tell us before he signed us up?"

A clamor of supporting voices rose around him. Other immigrants leaped to their feet, trying to make themselves heard. Red Brace was bellowing something unintelligible. His wife added her indignant contralto. Carsing shouted, "Quiet!" and then gave up and stood there, scowling.

OUT IN THE wing, on a small straight-backed chair, sat Colonel Martin E. Baker, his eyes half closed, his hands folded against his belly, as he listened to the angry tumult. This always happened. It was an unpleasantness he could count on with the arrival of every new group of homesteaders. In an instant everybody had forgotten that he had rescued them from a miserable existence on a blighted Earth. There was no thought of gratitude to him for finding this fabulous place and developing it and bringing them here. No—the only thing in their grubby minds was the thought of the oxygen pack they would have to wear, to save themselves from quick death. Of course, they gave no thought to the money and effort he had expended to develop this pack, this neat little lightweight marvel. By the time he had this perfected and had worked out all the other details involved in colonizing this place, he had spent a fortune, he was practically broke. Sometimes he found it hard to maintain a feeling of calm and good will. If he wanted to let himself go, it would be so easy to become a bitter, misanthropic old man. But there would be no sense in that. These people were young and thoughtless, the victims of their own impulsiveness, and what the situation called for was patience, understanding, and forgiveness.

Martin Baker let out a long sigh and heaved his round body out of his chair. He walked slowly toward the confused jumble of voices. He knew, even without distinguishing the sounds, that they were demanding that he appear. Baker ran a hand over his clothes to make sure they were in order, put on a broad and gentle smile, and stepped out on the stage.

He waited until the clamor quieted, and then he said, "I'm here to answer any questions."

Half a dozen of the homesteaders tried to talk at once. Baker smiled understandingly and held up his hand. "One at a time, please —every one will have his chance."

"What kind of a deal is this?" a voice bellowed from the rear. Baker recognized the big red-headed man, Brace. A bold, adventuresome man, handsome and powerfully built, but, alas, so very stupid. He would make a lot of noise, Baker knew, but actually he wouldn't be any real trouble.

"And what, may I ask, is the cause of your dissatisfaction?" Baker inquired.

"How come we travel all the way out here and find out we've got to wear oxygen masks?"

Baker shook his head, smiling gently. "Not really masks, my friend. They cover only the end of your nose. They're marvelously comfortable, as you'll soon see. In

a few days you won't even be aware you're wearing them."

"Like hell," Brace growled. *"I'll* know I'm wearing it."

Baker shrugged affably, and then gestured invitingly to the long, thin, somber looking man who stood with his hand up, not far from Brace. This was Lurie, the biology professor, a nice, harmless Ph.D.

"What's wrong with the atmosphere?" Lurie said. "Why is an artificial supply of oxygen necessary?"

"The answer is very simple," Baker said. "This is a young planet, as planets go. The conditions here are just about what they were on Earth eons ago. The carbon dioxide exhaled from the interior of the planet and saturating the atmosphere is gradually being converted by the plant life—broken down, I should say, releasing free oxygen. At the present time, our oxygen content is about seven percent. Eventually, the oxygen will probably reach the level you find on the surface of the Earth—about twenty-one percent. But that should take a long time; I'm afraid none of us will be around when that point is reached. Meanwhile, our plants luxuriate in an atmosphere rich in carbon dioxide. Plants, as you know, use carbon dioxide for their most essential life process—photosynthesis. But I'm sure Professor Lurie can tell you much more about that than I can."

Lurie blinked embarrassedly, and looked aside at his wife, and smiled shyly.

"Mr. Baker!" another voice broke in.

This speaker, Baker recognized, was Harvey Flanders, definitely a dangerous type. He was a brooder; he had a slow, relentless fire in his eyes. Baker had been doubtful about him from the start; he'd had half a mind to reject his application. But as things happened, the passenger list was one couple short and so, at the last moment, he had taken Flanders and his wife. Was he going to have reason to regret what he'd done?

"How do you propose to make up for this fraud you've put over on us?" Flanders was saying.

"I'm sorry," Baker said. "Did you say fraud?"

"Fraud," Harvey repeated bitterly.

"That's a harsh word, my friend. What are you referring to?"

"Dammit, those glowing talks you gave us—"

"And isn't everything I told you true? Go out, I beg of you, and point out to me a single instance where I've exaggerated."

"But the oxygen—"

"I made no statement about oxygen," Baker said firmly. "I'm sure everyone here will corroborate that. Did I make any false claims about the atmosphere? Did I, now? No, my friend, if you will think back you will find that I said nothing about the atmosphere."

"But that's what I mean," Harvey said, his voice rising in exasperation.

"My good friend," Baker said gently, "if you were describing a beautiful woman, would you bother to mention that she had a mole on the sole of her foot?"

"But this is something basic."

"What seems basic to one person may seem merely incidental to another. Every man to his own opinion—and I assure you, my friend, you have a perfect right to yours. If you feel you were misled, then I am deeply and humbly sorry. If you don't like it here, if you think you can find something better—"

"You goddamned phony, you know once you've got us here, we're at your mercy!"

Baker smiled forgivingly. "Mercy. There, my friend, is a word I much prefer to that other one you used a while ago. Mercy, charity, forbearance . . . My friends, we are all here together—let us try to live in true fellowship and to make the most of what has been given us. I can think of nothing more tragic than to start this great adventure on a note of strife and suspicion. I hope rather that we all go forward with hearts full of trust—trust in the future, and trust in each other." His voice rose—his eyes again fixed themselves on a point above the heads of his audience. "If we work together, if we keep our eyes on the distant horizon, and ignore the advocates of spite, the petty minds that spin their miserable webs in the dark, I am sure we can all look forward to a bright and glowing future. We stand, my friends, on the threshold of a brave new world. Let us all go forward with hope and faith. Under such banners, I know we cannot fail."

Slowly, Martin Baker walked off the stage. Harvey looked around helplessly at the faces of his fellow-voyagers who were staring at the stage in half-dazed fascination. "Look, we're not going to let him get away with this," he pleaded. "This is exactly the way he talked us into signing up."

Harvey got some irritated looks in return. "Hell, we're here, ain't we?" somebody growled.

"Harvey," Dr. Lurie said, "I'd suggest we avoid conclusions until we've given this a fair trial."

A murmured chorus of approval rose around him. At that moment, Carsing reappeared on the stage. "All right, everybody," he said briskly, "go back and finish loading up, and pick up your oxygen packs. Everybody's eager to see their homesteads, so let's not anybody hold us up. Let's go." With a surge of relief, the homesteaders flowed down the aisles to the exits.

THE OXYGEN packs turned out to be, in fact, wonderfully comfortable. A small outlet cup fitted over the nose with no more pressure than a pair of spectacles. Two narrow tubes curved over the shoulders and ended in a small pack weighing about two pounds, most of that being the weight of a replaceable metal capsule. There was no interference with speech. "You see," Ruth laughed tremulously—"you see, it actually improves your appearance." She grimaced at Harvey. "All right, sourpuss, you can smile, can't you?"

The air outside was soft and golden, laced with a cool, gentle wind. The excited voices of the homesteaders rang with startling clarity. They looked with delight

at each other, and called out at each other, and laughed, not knowing exactly why.

"Don't seem anything wrong with this air," said Red Brace. "Feels like any other air. I wonder if the old bird was kidding us."

One of the Schweitzer twins gave a laugh. "There's one way to find out," he said, and yanked the outlet cup off his nose. He inhaled deeply, smiling. "Look, Ma, I'm breathing," he laughed. He took deep, gulping breaths. He did a somersault. He pounded his chest. "It's all a matter of lungs," he said. "If you don't have lungs, well, you just can't manage it, that's all . . ."

He chattered on—and then, abruptly, his eyes took on a startled look. He began to breathe more rapidly. His breathing became labored. He fumbled for the outlet cup. He raised it to his nose—it slipped out of his now frantic hands—

Harvey and Dr. Lurie grabbed him as he wavered, and fitted the outlet cup back over his nose. The youth stood there with trembling knees. "Sit down, kid," Harvey said. "Relax—you'll be all right."

The settlers stood in a stricken silence. They had been fully informed of the situation, they knew precisely what would happen, yet seeing it demonstrated this way was an appalling thing. They could see now, graphically, the precarious condition of their existence.

There was no more shouting. There was little they had to say to each other now.

Carsing came out of the building. He was instantly recognizable, despite the cup over his nose. With his nervous, jerky steps, he walked to a low platform and held up his hand. With him were two men, both gray-haired and darkly tanned.

"These are your guides," Carsing announced. "Go get your carts and move out."

"Hey!" shouted Red Brace. "What pulls these carts?"

"You do," Carsing said coldly.

"You mean there aren't any horses—or trucks?"

Carsing's mouth twisted. "No—no horses or trucks. Or tractors or washing machines. You'd better make up your minds to that right now. Transporting any large mechanical equipment all the way out here would be impossibly expensive. Outside of the few small devices we absolutely had to have, we've imported nothing. So please don't come complaining to me. From now on, you'll have to learn to improvise with native materials. All right"—he gestured to the two men who stood drooping behind him, as if leaning on invisible poles—"get them out and get going."

Carsing left the platform and went back into the building. For a moment, there was no motion among the settlers. Then several started maneuvering the heavily loaded carts, the men embarrassedly accepting the assistance of their wives.

The two guides waited, still leaning on their phantom supports, talking softly, hardly looking at the settlers. When all the carts were lined up in a straggling column, the two guides ambled to the road that

led away from the spaceport. They paused and looked back briefly with worn eyes. Then with a motion that was more a shrug than a gesture, they started up the brown dirt road.

Harvey looked at Ruth. Her face was taut. All around him the settlers were silent, except for labored breathing or a hurried warning as the wagon wheels reached a rut or a rock. Reality had flooded over them with abrupt and dismaying force. The sky was still bright, the fields were still gloriously golden but the radiance seemed to have gone out of their paradise.

Harvey put an arm around Ruth's slim shoulders. Strangely, as spirits sank around him, his rose. Now his vague forebodings had become clarified; now he knew what the reality was, he knew what he had to cope with.

"They get a ship here from Earth every two years," he said to her. "We'll work hard and save our money, and if we find we can't stand it, we'll just pack up and go home."

She looked at him miserably. "How awful. After all our hopes . . ."

"Maybe it'll work out," he said lightly. "I hate to think of living in a place run by these guys, but I'm willing to give it an honest try. Keep your chin up, kitten."

The road became steeper, and the settlers slipped and grunted and struggled behind the carts. Near the crest, in a field to the right of the road, four people were working, apparently cutting and binding grain. As the column of settlers approached, the workers glanced up, said something to each other, and bent to their work again.

"Look at that," growled Red Brace. "We come across practically half the universe to reach this place, and all we get is a cockeyed glance out of the corner of their eyes."

"Well, you aren't exactly a pretty sight," Harvey said.

But it *was* strange, he thought—this indifference, this lack of curiosity. Here, for the first time in two years, were newcomers from distant Earth. Didn't they want to hear the news, hear about the blight, ask questions about relatives and friends? Could anybody be that uninterested?

At the crest of the rise, the guides paused, and the settlers leaned against their carts or sat on the ground to rest. In the valley below were little clumps of houses, long, low buildings, arranged in groups of three and four, with a hundred yards or so between each group. Off to the right, a hill, steep and lofty, stood alone in the rolling plain. Almost at the summit, in a cleft in the rock, was a building shaped like a semicircle, topped with a slim spire. Its walls seemed mostly windows. They glinted golden in the warm light.

"And who lives up there, I wonder," said Red Brace.

"I could make a guess," Harvey said.

"Mr. Big. A nice, cozy spot where he can sit all day and spit down everybody else's throat."

"I'm sure," Harvey said, "the gentleman never does anything as

inelegant as that."

The clusters of buildings had looked close. It took fully an hour before the settlers reached them. By that time, they were hot and thirsty and dispirited. As they went up the village street, the guides pointed out the numbered houses, and the settlers assigned to them left the column and carried their luggage inside. Most of them were inside only a few minutes before they came to the doorways to stare unhappily at each other. They had found that the houses, made of wood and plaster, each consisted of three boxy rooms containing a few sticks of crudely made furniture. Nothing was painted. There was no glass in the windows. The beds consisted of four posts with mattresses of woven vines.

"What did you expect—innersprings?" Harvey said. "Remember—Colonel Baker never said you'd get innersprings on this planet. The man never told you a lie."

The toilets were tiny out-houses, a hundred yards away in the field. "Oh, dear," Ruth said.

"Well, you can't expect the man to transport sewer pipe to Paradise," Harvey said grimly.

He stood in the doorway and waited until the guides had deposited the last of the settlers and were started on their return trip. Harvey called to them as they came by. They glanced at him blankly, said something to each other, and kept on walking. Harvey leaped to the street, raced after them, grabbed them by the shoulders and spun them both around. "When I talk to somebody, I expect an answer," he said savagely.

The two guides looked at him with worn, emotionless eyes. They stood there, shoulders drooping slightly in a weirdly identical posture.

"What's this all about?" Harvey said, subduing his voice with difficulty. He waited. Nothing came out of them. "Do you work for Baker? Don't you have farms like the rest of us?"

The stocky one's mouth twisted slightly. Then he spoke. "We have farms," he said in a low, sullen voice. "We are also guides. We couldn't work our farms all the way. We had to do extra work to meet our payments."

Harvey stared at them. "Payments for what? Didn't you pay for the farms before you came here?"

"Payments for the oxygen," said the stocky man.

"What do you mean?"

A weak, sardonic smile edged across their faces. "They weren't told," the tall man said.

Harvey boiled over. He grabbed one man by the throat. "Told what, goddamn you? Talk!"

The pale eyes stared into his. The sardonic smile stayed on the man's lips. "Told that you'll have to work all day, every day, dawn to dark"—his voice hardened viciously—"to pay for the oxygen you breathe." His smile widened as he saw the alarm in Harvey's face. Harvey loosened his grip, but the man kept his face close to his. "You see that tube of oxygen on your back? That will last you one day. When you get a new one, you will owe a hundred credits. Do you un-

derstand now? You'll never be able to stop working, because you can't get ahead of that hundred credits a day, you just about make it if you work all day—and you have to make it, do you understand, you fool?—you have to, if you want your oxygen tomorrow, if you want to breathe."

Harvey watched dazedly as the two guides turned and started away down the road, and then, abruptly, the stocky one looked back and yelled back, "You're slaves! All of you! You're the same as us! You're slaves!"

Ruth, wide-eyed, was waiting at the doorway for him, when he came back. "You heard them?" Harvey said shakily.

"I heard," Ruth said in a quiet voice.

"Lord, what did I get you into?"

She put a hand on his arm. "There's nothing to grieve about. If we find that things just don't work out, we'll stick it out for two years and save up enough for our return passage."

Harvey looked at her brokenly. "If what they say is true, how can you save anything?"

OF COURSE, Harvey reflected afterward, the guide could have been talking nonsense, he could have been some sort of nut. So Harvey said nothing about his encounter to the other settlers. But after three days, everybody knew the true conditions of their existence. The story was made explicit by the little debit-and-credit book that each settler was given. Every evening a caravan of Baker's men, pulling carts, came down the road, collected what the settlers had harvested during the day, and marked the credits in their books. Those who worked from dawn to dusk usually managed to achieve 100 credits. A few went over 100—three, four, or five credits over—and were told that if they kept this rate up, why, in six months or so, they'd have enough credits to buy some clothes at the central commissary. Several settlers fell short each day. They got particular attention from the man who collected the depleted oxygen tanks from the settlers and handed each a new one.

"We're not cutting anybody's oxygen off—not right away," he said. "But if I were you, I'd get working—fast. The Colonel looks these accounts over every night. He doesn't like anybody getting far in arrears."

Dr. Lurie, who, with his wife, had averaged only 96 credits on each of the first three days, spoke up puzzledly. "Do you mean—do you mean you actually let people—asphyxiate?"

The leader gave a nasty grin. "I didn't say that—I just said we don't give them any more oxygen. What they do after that is *their* business."

"Is that right?" growled Red Brace. He moved slowly through to the front of the crowd and then, with a lunge, grabbed the leader by the throat. "I'm just going to squeeze, and squeeze," he gritted, "and what happens to you is *your* business."

Harvey leaped forward and

grabbed Brace's arms. "Let go, Red!" he yelled. "Let go!"

Brace jammed him aside with a jerk of his big shoulders. Harvey leaped at him again. "For God's sake, Red, this isn't the one—it's not his fault!" He yanked at Brace's arms. It was like yanking an oak. Harvey stepped back, his mouth grim, and slammed his fist into Brace's jaw.

Red Brace staggered. The caravan leader slipped from his hands and oozed down on the ground, gasping weakly. Red Brace's fists tightened and he turned on Harvey. "Goddam you, you want to get yourself killed?"

They stood there, glowering at each other, breathing hard. "The guy is only one of Baker's slaves," Harvey said. "Why were you taking it out on him?"

The caravan leader was on his feet now. "That's what I was trying to tell him," he said weakly. "I'm only carrying out orders. I've got to work my place and work for Baker, too, to make up my credits. You know how long I'd last if I didn't carry out orders."

"Okay, okay," Harvey said, suddenly sick of the whole thing. "We've got our oxygen, we've got our lecture. Now take off."

The settlers watched Baker's men move to their wagons, like a troop of horses, and slowly set out up the road.

"All right," Red Brace growled abruptly, "I'm sorry. But you didn't have any call to take a poke at me."

"You were about to kill the guy," Harvey snapped.

"All right, all right, I said I'm sorry. It was the wrong guy. Now let's go after the right one."

In the center of the settlement, at the side of the road, was a yellow wooden booth, marked COM, for communications. A loudspeaker on the roof brought messages from the central office. Inside the booth was a microphone and other electronic apparatus. Dr. Lurie sat down before the microphone and pressed the Call button. He cleared his throat. "I—we want to talk to Colonel Baker personally," he said.

IN A large circular room, with a huge curving window overlooking the golden valley, sat Colonel Martin E. Baker, sipping a Scotch highball. It was a weak highball; Colonel Baker really didn't enjoy drinking. But his doctor had told him, on the periodic physical he had taken during his last visit to Earth, that a mild drink before dinner might help overcome his dyspepsia. "Tenseness," the doctor had said. "You've got to relax more." This seemed preposterous to Colonel Baker, who always thought himself to be a very relaxed person, but there was no denying the dyspepsia—it was there all the time—and he was willing to try anything that might ameliorate it.

When the gentle buzzer sounded and the red light glowed on the communications set, Colonel Baker went over to it, flipped the switch and leaned back in his reclining chair.

"Yes?" said Baker pleasantly. He was rather tickled with the arrangement that permitted him to watch

the faces of people who were unaware of the television camera focused on them.

"Sir," said Dr. Lurie in a strained voice, "there has been—there is—a good deal of dissatisfaction in our group. This system of credits doesn't seem equitable. Some of us find it extremely difficult to amass a hundred credits a day, and yet that is the amount we are charged for our daily tube of oxygen. Now, sir, we believe it would be fair if you reduced the charge for the oxygen, to, shall we say, eighty credits?"

Baker took another sip of his highball. "Impossible," he said. "I'm sorry, but it's impossible."

He watched Dr. Lurie's face go through some nervous gyrations. "Why, sir?"

"The economy of this entire settlement was carefully worked out with the counsel of economists," Colonel Baker said. "You realize that we just can't step in and change one part without upsetting the entire pattern. We can't tinker—it's too hazardous."

"But, sir, we find that we're just working for our respiratory needs, so to speak. That, plus the little food we consume ourselves from what we harvest. Oxygen and food—isn't there any possibility of our earning anything more?

"There have been settlers who have amassed enough credits to import some things from Earth. It's all a matter of the rate of work. Incidentally, I've noticed your production figures, Dr. Lurie. I wouldn't keep on this way, if I were you. Deficits pile up. The situation can become dangerous faster than you imagine."

Even over the televiewer, Baker could see Dr. Lurie's face pale. A hand suddenly appeared, pushing Dr. Lurie aside. The big face of the redhead, Brace, appeared on the screen.

"Listen, Baker," he roared, "if we don't get a better deal, we'll strike. You won't get a damn thing out of us. And what the hell're you going to do about that?"

Baker sipped his Scotch and smiled. "You're all free agents," he said gently. "Far be it for me to attempt to dictate your behavior. You're at liberty to do as you please."

Dr. Lurie's voice came over in a tense whisper. "He'll cut off our oxygen!"

"He wouldn't dare," Brace snarled. "Nobody goes and kills a couple of hundred people."

Baker chuckled loud enough for the settlers to hear. "If that is all, gentlemen, good day," he said, and flicked a switch. But it was only a one-way switch, shutting off sound from his direction but permitting him to see and hear the settlers. Their talk didn't go on very long before Baker could see that Brace had lost—the thought of not seeing the oxygen wagons come along in the evening was too frightening.

"All right, you jerks," Red Brace shouted, "I'll go after him myself." He strode off up the road. Harvey Flanders ran after him. Baker could see, but not hear, the heated colloquy as the two men walked on, and then, finally, Brace turned around and came back, and the

two men disappeared inside Flanders' house.

Baker flicked a switch. Carsing's face appeared on the screen, with a brisk, "Yes, sir?"

"Might be some trouble the next couple of days—perhaps even tonight," Baker said. "Double-check the infrared warning system, will you?"

"Yes, sir."

Baker went back to his highball, feeling rather pleasant.

Late that night, in Harvey Flanders' house, a long discussion went on among Harvey, Brace, Dr. Lurie, and the Schweitzer twins.

"I went over it in detail with some of the old-timers here," Harvey said. "I also did some personal scouting, and everything they said seems to be true. Here's the setup:

"Our idea of raiding the commissary for a lot of oxygen tanks is out. They don't keep any stock; there's never more than a single day's supply for the settlement. Of course. we can't make off with that, unless we want to kill off everybody else.

"The oxygen plant itself is right up there on the hill, next to Baker's house. That's the key to his control, and he keeps it right under his thumb. Nobody—I mean nobody—except Carsing ever goes up there. They've got an endless belt system for taking up the empty tanks and sending back the full ones to the commissary."

"That makes the whole thing simple," Red Brace said impatiently. "We go up there, knock off Baker and Carsing, and take over the oxygen factory."

"It's not that simple," Harvey said. "I imagine the old boy has a way of keeping strangers out. The story I get is that he's got some sort of electronic telescope, and he sits up there all day watching everything that's going on. You're not going to sneak up on him, exactly."

Brace stood up. "The longer we sit and talk, the more time he has to get set for us. Anybody coming with me?" He looked around. "Frankly, I don't give a damn if anybody comes or not. You'd only be in the way, anyway."

He headed for the doorway.

"Red, you can't go off half-cocked like this," Harvey pleaded.

"So long," said Brace and went out into the cloudy night.

Harvey looked around desperately. "We've got to stop him."

"I say let him go," said Dr. Lurie. "He might find out something of value."

"Get himself killed, more likely." Harvey went to the doorway. "Red!" he shouted. He got no answer. The road was empty as far as he could see in the clotted darkness.

He raced around to the rear of the house and stood still. Faintly he heard the crunch and crackle of steps in the grain field. Red was hitting across country. Harvey raced into the field. "Red!" he shouted.

Harvey found him by the sounds. Brace was coldly angry. "Either you pipe down and come along, or you go on back. Nobody's stopping me. If you try any monkey business, I'll

kill you, and I'm not kidding."

Harvey fell in alongside him. "You're the craziest jerk I ever saw."

"Pipe down before you give us away," Brace growled.

The hill loomed ahead of them like a giant blot against the sky. On their left were the thick woods where the settlers gathered timber for fencing and bridging. Straight ahead was a deep stream, traversed by a single bridge.

"That bridge is a likely place for a burglar alarm," Harvey said. "We'd better swim."

They took off their clothes and left them on the bank. They let themselves carefully down into the water and set out, using the breast stroke to keep the oxygen apparatus out of the water. They clambered up on the other side, chilled and shivering, and continued, naked, toward the hill.

The ground roughened underfoot; the rise began. There was no apparent road. Here and there stood small blighted trees, devoid of foliage, standing like posts—They weren't trees at all! Harvey gripped Brace's arm. "Keep away from those posts," he whispered.

They continued upward slowly. Harvey heard a faint click. He stopped. "Hear that?" he whispered, "that click?"

Brace shook his head. They stood still, listening. There was no other sound. Brace took a step forward, and stopped. "I heard it," he whispered. They sank to the ground, and stretched out on their bellies, and waited tensely.

Not a sound came out of the surrounding darkness.

Far ahead, high in the sky, the windows of Baker's castle dimly glowed with a yellow light. There was still a long way to go.

Brace sat up and jerked a hand impatiently at Harvey. They got to their feet and moved forward. They were moving through trees now. Harvey followed Brace reluctantly. There was something funny. Some sound he was hearing —or wasn't hearing—

"Red!" It was the oxygen pack. The soft, bubbling murmur it always made was gone. "My oxygen is off! Yours, too! We've got to get back—fast!"

Brace's eyes flared white in the darkness. "Come on," Harvey shouted, and rushed back through the trees. Brace came lumbering after him, protesting loudly. They raced across an open space—there were the posts again—they passed them—

Click!

And now Harvey knew where the click came from. It came from inside his oxygen pack.

Almost instantly, he felt the soft flow of the oxygen through the tubes. He sat down. Brace sat down heavily beside him. "Those posts," Harvey said. "He must have them all around the hill. They throw out a radio wave that shuts these things off when you go past them." He shook his head ruefully. "I should have guessed it. When I first took a look inside this oxygen pack, I noticed something that looked like a transistor, but I couldn't imagine what that could have to do with oxygen."

Brace let out a long breath. "We should have kept going," he said bitterly.

"There was a good two hours of climbing ahead of us. We'd have been dead a long time before we got there."

"Okay," Brace said. "Let's go wreck these radio posts."

"I'm afraid he has that all figured out," Harvey said sadly. "You notice the posts shut you off when you're going one way, and turn you on again when you're going back. If you go over there and wreck them, there'll be nothing to turn you on again."

Red cursed long and loud. "There must be *some* way to beat this oxygen racket."

"We'll think of something," Harvey said determinedly.

But the echo of his confident words rapidly faded as they moved through the grain fields. He was tired and chilled. Think of something? That white-haired devil in that eagle's nest had been thinking of the same subject for a decade. Could there be any angles he had overlooked?

Long after Ruth was asleep that night, Harvey lay in bed thinking. He reviewed, item by item, everything he could remember about electricity, radiation, the laws of gases, atmospheric constituents, the mechanics of partial pressures—all the tag-end memories of his college science courses. He felt that if there was a solution, it had to be something elementary, something that matched the simplicity of Baker's own idea.

The thoughts went around and around in his brain, an intricate and dizzying dance, forming a pattern that grew fuzzier and fuzzier and fuzzier . . .

He sat up with a start. His brain was tingling with something . . . something that seemed to be . . .

He struggled into his clothes, and dashed out of the house. He ran up the dark road and burst into Dr. Lurie's house. "Doc, Doc, wake up!" he yelled. "I need some scientific advice!"

Shortly after sunrise, when most of the settlers were heading for the fields, Harvey and Dr. Lurie went to the COM booth. "Better let me do the talking," Harvey said.

"I'd prefer it that way," Dr. Lurie said.

BAKER, SITTING before the electronic telescope, was enjoying the sight of the great phalanx of settlers swarming into the fields, when the buzzer sounded on his communication set. In a moment, two faces appeared—Dr. Lurie and Harvey Flanders. They weren't wearing their oxygen packs.

"Good morning, gentlemen," Baker said affably.

"Hiya," said Harvey Flanders.

"Well!" said Baker. "I'm certainly glad to see you in such good spirits after last night's expedition."

"Thanks," Harvey said. "All we want to tell you is that you don't have to send us any oxygen any more."

Baker chuckled. "I see. You are going on strike, eh?"

"No," Harvey said, "we're going

to keep working—but for ourselves, not for you, Colonel. You see, Dr. Lurie here has put his scientific brain to work and come up with a substitute for your oxygen pack."

"How incredible," Baker said pleasantly. "And what is the substitute, if I may ask? Alcohol?"

"No, it's still oxygen, Colonel, but not the way your pack handles it. You see, Dr. Lurie has figured out a way to use atomic, not molecular, oxygen—O instead of O_2, if you follow me—and to give it by injection in a highly concentrated form. As you see, we're not wearing oxygen packs any more."

"So I noticed. But I'm afraid your little hoax can't go on very long. In another two minutes, my friends, you'll be gasping like fish and running frantically home to get those pesky oxygen packs."

"Why don't you time us?"

Baker sipped his coffee. "I *am* timing you, my friends. There are certain principles of physiology that can't be contravened. We're at the oxygen equivalent of a 27,000-foot elevation. The average duration of useful consciousness is two and a half minutes."

Baker sipped his coffee, watching the faces of the two men. The clock on his desk moved past two minutes. Two and a half minutes. Baker shrugged. He knew there were some exceptions. Some persons in superior physiological condition had proved in aeronautical tests on Earth to be able to go on for as long as four minutes in as rarefied oxygen as existed here. But no more than four minutes.

The clock hand reached four minutes. The men still sat there.

He had timed them wrong. He had missed a minute. Certainly. They were going to start sagging now. Now.

Another minute went by. Another minute. The men sat there, looking straight at him through the tele-screen. There was a cynical smile on their faces, as if they knew the camera was on them—as if they could actually see him.

Another minute passed.

Another minute.

Baker leaped to his feet. "Die, damn you!" he screamed.

The two men burst into laughter that exploded all over the screen. With a curse, Baker switched off the set and stood there, breathing hard. A moment later, he flicked it on again. The two men were leaving the booth. "Come back," he yelled.

They turned, part way. Their indifference was maddening.

"Come up here," Baker commanded. "I want to see your invention. I want to buy it."

"Not interested."

"Damn you, you must!" Baker shouted, his heart beating furiously. His hypnotized eyes kept swinging back to the clock. At least eleven minutes had passed!

"We're not walking into any trap, Colonel," Harvey Flanders said. "If you want to do any dickering, you'll have to come see us. You know where to get us if you want us."

The two men started up the road. Baker watched them with sick eyes as they went with firm steps to Harvey Flanders' house,

and disappeared inside the doorway.

Inside Harvey Flanders' doorway, Dr. Lurie staggered. Harvey caught him, but didn't have the strength to hold him, and both sagged to the floor. "Quick, Ruth," Harvey said, gasping.

She was waiting with the oxygen packs. Red Brace was with her. They fitted the masks quickly over the faces of the two men on the floor, and anxiously watched their rapid, intense breathing.

In a little while, Harvey and Dr. Lurie were breathing at a normal rate. They got up and sat at the table, where Ruth had breakfast ready.

"Do you think he'll come?" Dr. Lurie said.

"He has to," Harvey said. "He can't afford to let anybody spread a new gospel among his people."

"Would you guys mind explaining what this is all about?" growled Red Brace.

Harvey laughed. "Sure, Red. It's nothing complicated; not very, anyway. Baker keeps plugging away at the fact that this is the same as living at a 27,000-foot altitude. It struck me suddenly that if that were really the case, some of us would be suffering from nose bleeds and other symptoms you get when you go up to a thin atmosphere, where the outside pressure is less than the body's blood pressure. But nothing like that has happened. So obviously, the atmospheric pressure must be about normal—the same pressure we have on Earth. There's less oxygen, but there's more carbon dioxide and there must be more of other gases, like nitrogen, to make up the full amount of pressure.

"So you see where Baker figured wrong. He figured that if the amount of oxygen here is the equivalent of what exists at 27,000 feet, on Earth, then the survival time here ought to be the same as at 27,000 feet. But the analogy is wrong. At 27,000 feet above Earth, the atmospheric pressure is so light that whatever oxygen is in your blood bubbles out pretty fast. But here, where we have normal pressure, the atmosphere is pushing in on us a lot harder and keeps the oxygen in the blood longer. You follow me?

"Anyway, I put all this to Doc Lurie last night and he said I must be right. So he got out some of his books and did some figuring, and what he came up with was this: If we rested—didn't move—while we breathed from our packs, getting our blood a hundred percent saturated, then we could take off the packs and go as long as fourteen or fifteen minutes before we keeled over. Long enough to convince that old buzzard that we've invented a new gimmick for giving oxygen by injection. He's up there in his palace now tearing out his hair—or more probably hotfooting this way."

Red Brace leaned against the doorpost and grunted contentedly. "Boy, when I get my mitts on him."

"Red," Harvey said, "this time you can get as rough as you like. I don't care what happens to him. You keep a lookout at the window. Soon as Baker gets close, everybody take off your oxygen mask and

stow it out of sight. We don't want him getting suspicious about the Lurie invention. Another thing: We'll need something for him to see when he walks in the door—a box that looks as if it contains some sort of instruments."

"I've got some boxes," Ruth said, going back into the bedroom.

"Okay. Now, Doc, you'll do the talking, and Red and I will do the grabbing. But look casual as hell when he walks in."

Ruth placed a covered box on the table. "Impressive," Harvey said. "Now, everybody, sit down and relax. It might be a long wait."

"Not so long," said Red Brace a little while later. "They're coming over the crest right now."

"Who's with him?"

"Looks like Carsing."

"I might have guessed that." Harvey watched a while at the window, then turned back. "Okay, everybody, masks out of sight."

There was a pause; a sound on the outside step. Then into the doorway walked Carsing. His hand made a swift motion inside his coat and out again.

The squat, ugly barrel of an explosive scatter-gun glinted at them.

"Everybody back against the wall," Carsing said. "Colonel Baker doesn't want to be crowded."

Slowly, tensely, staring at each other, they moved to the wall opposite the doorway. Baker walked in. His eyes made a quick circuit of the room, stopped briefly at the box, then turned to them.

"What's the gun for?" Harvey said bitterly.

Baker smiled. "You didn't trust me, hence I didn't trust you. Mistrust begets mistrust. Now, gentlemen," he said briskly, "explain this invention you told me about."

"Before we do any explaining, we want you to know what we want."

"Go right ahead." Baker pulled a chair to the doorway and sat down. "Name your price."

"We'll take the gun."

Baker's eyebrows rose. "Impossible. This is the only weapon on the planet."

"That's all right with us. Hand it over and we'll tell you all about our invention."

"I'm sorry, this weapon must remain in our hands. We're responsible for maintaining order and stability—it wouldn't make sense for anyone else to have custody of it. Now let's get on with the business. This box, I presume—"

"Not a word until we get the gun," Harvey said.

Baker's eyes narrowed. "Young man, you'd better hold your tongue. Dr. Lurie, I'm talking to you. I want the facts—immediately. And I must tell you, you're in no position to negotiate. Now speak up."

"I, sir—I—" Dr. Lurie's voice broke—he began again—"I'll do what Mr. Flanders says—"

"We'll see about that," Baker said grimly. He stood up. "You're coming with me. Carsing, take the box."

Carsing, holding the gun out warily in front of him, moved to the table.

"Don't you dare open it!" Ruth cried out.

Carsing stared at her. Then, holding the gun against his armpit with one hand, a finger on the trigger, he reached with his free hand and unhooked the lid—

Something sprang out of the box at his face—

"Watch out, Carsing!" Baker shouted—but Harvey was already halfway across the room. He dove across the table, one hand aimed at Carsing's chest, the other slamming against the moving weapon, knocking it upward, backward—

Shot spattered through and around the doorway.

Baker had leaped aside as he saw the muzzle swinging in his direction. Now he made a quick move toward Harvey and Carsing, tangled and struggling on the floor—but a blow from Brace's fist caught him on the cheekbone and sent him crashing back against the wall.

Brace darted down at the struggling men. He stood up a moment later, holding the gun. Carsing struggled upward, out of Harvey's grasp and reached for the gun. Brace's foot shot out and crashed with ferocious impact against his jaw. Carsing's head slammed backward against the floor. His body arched a moment, and then went limp all over.

Harvey sat up, breathing hard. Ruth already had her oxygen pack on and quickly adjusted his.

"Get mine," Red Brace said. He was standing in the middle of the floor, the gun trained on Baker, who stood half-slumped against the wall, watching them dazedly.

There was a hissing in the air. A soft, persistent hissing.

"Somebody has a leak!" Dr. Lurie shouted. Harvey, Ruth, Brace frantically felt their oxygen packs—and then their hands stopped, and they stared at Baker.

A jagged hole, caused by a small bit of shot, was visible on the side of his oxygen pack.

"Give the orders, Flanders," Brace said. "Do I blast him?"

"Won't be necessary, Red," Harvey said quietly.

Baker looked from one to the other with puzzled eyes. Then he muttered, "I must be going," and swung away from the wall, and out the door.

He stopped. He felt his pack. He came rushing back, his eyes wide with terror. "A leak!" he shrilled. "I need another pack!"

"Sorry, we've only one apiece," Harvey said. "You know that."

Baker's lips trembled. His face was white. "Your invention! Your invention! I'll make any deal you want. Hurry!"

"There's no invention," Harvey said gently. "Don't you know that by now?"

Suddenly Baker leaped forward, his hands flying. He had the oxygen mask half off Harvey's face before Harvey could untwist his hands and wrench free.

Baker stood there, breathing hard. Abruptly he turned and rushed out to the road. "Somebody!" he yelled. "Somebody give me a pack! I'll pay anything!"

Homesteaders peered at him in amazement from their doorways—then shut their doors as he rushed at them.

"I'll pay anything!" Baker

screamed at the pitilessly closed doors.

"This is what he was leading up to for ten years," said Brace.

Harvey looked at the purple box. "A jack-in-the-box," he said softly. "Ruth where in the world did this thing ever come from?"

"I brought it with me," Ruth said defiantly. "I thought maybe it might be hard to get toys here—and maybe we might want toys someday . . . for somebody."

Carsing stirred and groaned. "That's a relief—we're going to need the man to show us how to run the oxygen works," Harvey said. "Okay, kids, let's go to work. There's a lot to be done."

"Going to try to get a ship for the trip back home?" asked Brace.

"I don't know," said Harvey. "Maybe we can make a go of it after all," he went on dreamily, "we might be able to pump oxygen into the houses so you don't have to wear a mask when you're home relaxing . . . or making love." He put an arm around Ruth's shoulders. "Who knows?—maybe one of these days we might find use for those toys you brought." • • •

What Is Your Science I. Q.?

ONLY 12 questions this time, but watch out—they're not easy! Count 10 for each correct answer: 80 is good, 100 excellent! Answers on page 118.

1. The weight of a cubic centimeter of water at 4° C. is used as the unit of weight in the _____ system.
2. What is another name for a thermionic valve?
3. Meteors composed of metal and stone are called _____.
4. Do the molecules of a liquid have greater or lesser cohesion than those of a gas?
5. A body with an excess of electrons is _____ charged.
6. The belt of low atmospheric pressure found around the equator is called the _____.
7. What unit of measurement describes electromotive force?
8. The Dewar Flask is a container for _____.
9. About how much of the weight of protoplasm consists of proteins?
10. The dark lines on the solar spectrum are called _____ lines.
11. What do we call the involuntary response of an organism to the effects of gravity?
12. The Fitzgerald effect postulates that the length of a body _____ as its speed increases.

THE SATELLITE VEHICLE

(Continued from page 15)

the elaborateness of the study program and the degree of importance the scientists attach to any particular area.

The ground stations themselves can be largely automatic in operation. They can consist of a radio receiver and recording device which can be turned on by the signal from the Satellite. After the signal has faded out, a time delay device can turn off the station receiver.

Certain of the stations should be manned, however. These should contain scientific personnel equipped with powerful telescopes, theodolites and radio transmitters to be used for monitoring the flight of the Satellite and making any corrections in its attitude or its orbit that may be necessary. For this purpose a computer could be used to calculate the actual orbit and compute the correction required to regain the desired orbital position. The orbit will require correction to compensate for loss in altitude due to the residual atmosphere even at three hundred miles altitude. These stations need not be in remote areas, since the Satellite will pass over any area of the Earth every 24 hours.

The purpose of this article has been to propose an orbital satellite which would provide a *maximum* amount of data on the phenomena connected with the Earth and the upper atmosphere surrounding it. The information gained from such a satellite would also remove many of the obstacles in the path of man's next great conquest—outer space. Satellites of the future will undoubtedly be larger and more elaborate, leading up to the final goal, the manned space platform. From it we will be able to keep watch on our weather, look out for potential infractors of peace and, finally, use it as a spring board for the long dive into the vast ocean of space, with destination, who knows?

(We wish to express thanks to Dr. R. S. Richardson, of Mount Wilson and Palomar Observatories, for information and help on the subject of possible orbits for this satellite vehicle.)

• • •

The goals that science seeks are not merely more food, more products, more gadgets. The goal in the last analysis is a moral goal—more happiness for human beings, expressed in whatever terms their own philosophy dictates. —*L.A. Du Bridge*

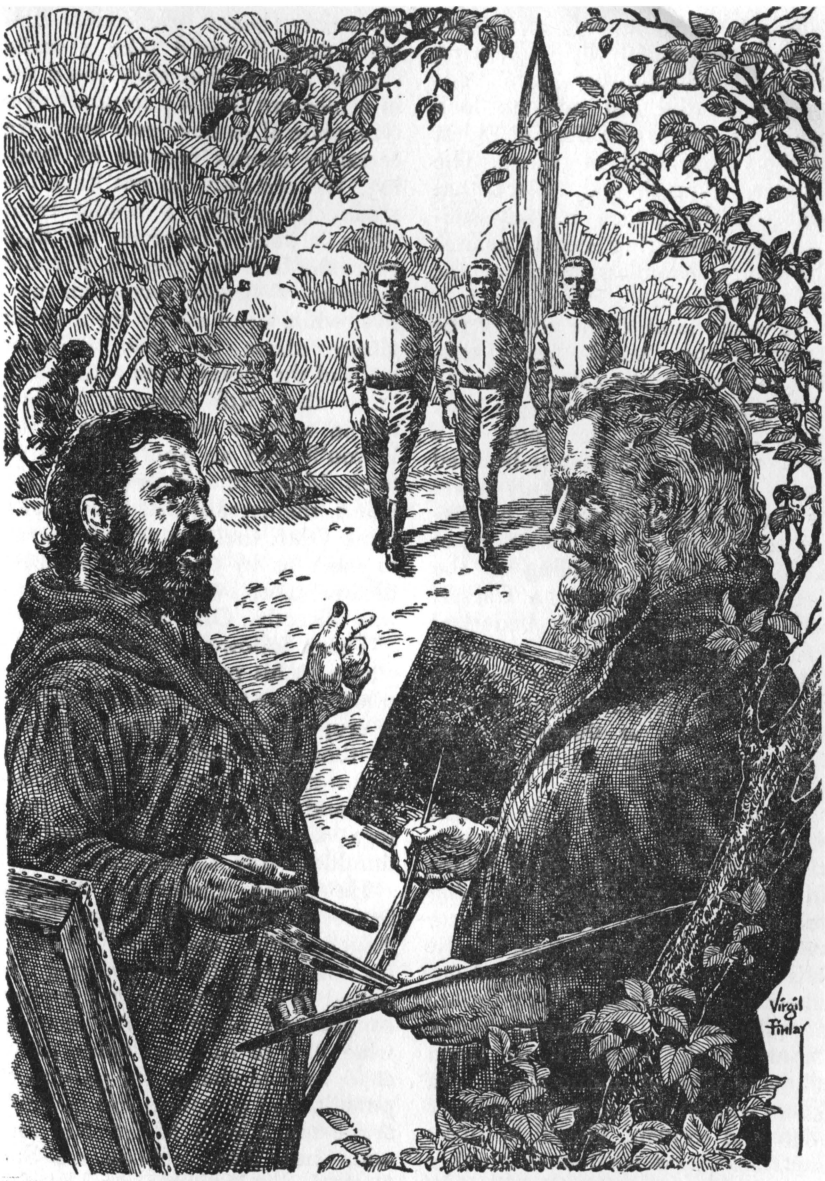
Balance is a fundamental law of order. How, then, can integrity cancel such a principle even though the future of Mankind demands it?

A MATTER OF ORDER

BY FOX B. HOLDEN

"I DON'T like it at all," the tall thin man said. His name was Tharn, and he was known throughout the sprawling colony for the high-strung nervousness that was understandable enough in a youth of fifty, but hardly normal for a man of his years. You had to be careful how you talked to Tharn, even if you were Angelo, Dean of Masters, himself. "I don't like it," Tharn reiterated, with another dramatic sweep of his long bony arm, "one bit, Angelo. Look at them, circling up there."

The thin, lined face turned squarely to Angelo's own, and the large, almost protruding black eyes snapped with all the vibrant fire of the fine artistic mind that boiled constantly behind them.



Illustrated by Virgil Finlay

Angelo turned his own eyes upward, momentarily following Tharn's still-upthrust arm. Although he did not need to look again. It was as the Second-Eldest of the colony said, of course. The slender, stylus-shaped object that reflected the golden midday sunlight in splintering shards against the almost cloudless cobalt of the sky still circled.

It would land at the edge of the great colony. Angelo knew this, Tharn knew it, the colony knew it.

Angelo turned his old eyes back upon Tharn, and the ghost of a smile plucked at his white-bearded lips. Tharn colored, suddenly aware of the incongruous picture he presented. Poised with all the drama of a Mark Antony pleading to the populace to sorrow for a Caesar, while rather mundanely bedecked in his paint-spattered working-smock! The high color in his seamed face remained, but he pursued his point as though Angelo had never smiled at all. "They won't be satisfied—"

Angelo got up from the canvas stool before his easel, and the motion itself was enough to halt Tharn in mid-sentence. There was going to be some sort of action, anyway.

"Now look," Angelo said slowly. His voice carried the measured deliberation that its rich, deep timbre complemented so harmoniously. "First of all, Tharn, if we begin showing signs of undue alarm, you know what it will do to our younger men and women. They'll be upset for weeks, and we'll have another one of those terrible Realist periods." Angelo grimaced with his incredibly bushy eyebrows. "Besides that, if you'd take a really careful look at that ship, you'd see in a moment that it's certainly of a type none of us have ever seen. We certainly cannot prevent its landing. We certainly do not have the means to present a hostile front when it does. Therefore, we shall go to the Dell and greet it. I would estimate—" Angelo turned his massive, white head slowly for another glance above the low, alabaster walls of the mosaic-tiled court-yard, "that they will effect a landing within another ten minutes or so. If you'll send an apprentice to go fetch Maler, the Philosopher, and Ghezi, the Semanticist, and—and I think Ojar, the Orator, with word to meet us by the Lesser Amphitheater there, we can be on our way directly. Oh—and Tharn—"

Tharn followed the First-Elder's glance to his paint-smeared smock, colored once more, and immediately erupted into a volcano of action, as though rounding up a young jack-a-napes apprentice and locating and donning a suitable street toga were things that could be simultaneously accomplished.

He exited, mumbling heatedly between cries of "Boy! *Boy!*" and Angelo smiled again, and prepared his own person for the meeting. He mused that Maler, the Philosopher, commented often in his evening wine that to run was never to escape, only to change the pattern of pursuit, and of course you couldn't argue much with Maler. Not and win,—but then, nobody on Ste. Catherine very often argued to win. Where was the pleasure in that?"

THERE WAS a great, scorched spot in the soft greenness of the gently-rolling earth, and it widened like an undammed, muddy pool as the thundering, cylinder of steel lowered itself on a pillar of flame.

They kept a respectable distance; Angelo, Tharn, Maler, Ghezi, Ojar, and the several hundred curious and apprehensive of the colony who had followed. Angelo had decided the closest possible spot for waiting, stopped there, and then made no move save to shield his eyes from the terrible glare of the ship's landing-jets as it made its cautious descent. As he had predicted, the chosen landing-spot was at the extreme northern edge of the Dell, near the Lesser Amphitheater. And they had all just arrived in time.

The ship settled; its thunder ceased.

Masters, Students, and apprentices alike unshielded their eyes, and then all were turned in unbroken silence toward Angelo himself. He was Dean. He could deal with this.

Angelo hesitated for perhaps a full minute. In that time he ordered the scene in his mind; the ship from Space, thrust upward toward the heavens like some weapon of challenge, surrounded by the gentle undulations of the low Renoir range to the far west; the rugged, ice-capped Alps of Cezanne to the south and further distant still; the low, wind-tossed and wild Van Gogh Plain that stretched endlessly to the east, and finally to the north, the fertile richness of the Valleys of Rembrandt which reached as far as the eye could see.

All this, and the warmth of the clear atmosphere that embraced it all was seen and felt in that minute —by Angelo, and by the rest, as he intended they should. *This,* the minute seemed to say, *is yours. Do not betray it.*

And then he was walking with the dignified deliberation of his office toward the ship, the pure white of his full toga billowing gently in the soft breezes of the Dell.

There was a clanging sound. A round section of the ship, near the wide fins of its stern, swung open; men came through it, started down a series of metal rungs to the ground. As he walked, Angelo counted them—one; two; three. Three men.

Three men from Earth, of course.

And he knew what they wanted.

They met halfway; three men from Earth in their blue-and-silver uniforms, their heads close-shaven, their boots polished as though fashioned of metal . . . and Angelo, inches shorter than they, far greater in girth than they, with his feet in hide sandals, and his long white hair falling free to merge with the rolling folds of his single garment.

The man in the middle of the uniformed trio spoke; the obvious leader.

"This is the—the Colony of Artists, Planet of Ste. Catherine?" The heavy sound of his voice seemed to balk at the words ever so slightly. "You are their leader?"

"I am Angelo, Dean of Masters here," Angelo replied. "I do not lead, but guide, instead. I am at your service, gentlemen of Earth."

"You seem certain of where we are from."

"But of course—do I not immediately recognize and speak your tongue?"

"You would, of course," the leader said, and Angelo did not miss the hint of grudging acknowledgement in his voice as he said it. In face he was little different than the other two, although perhaps a year or two older. But for all practical purposes they were the same—the high foreheads, the too-closely-spaced blue eyes, the sharp, disciplined features, the lack of any genuine character at all. They were as much of the same bolt of cloth as the uniforms they wore.

"Of course," Angelo smiled. "Our memories here on Ste. Catherine are fortunately long, and our libraries are well-filled—and well-used! And of course we have been expecting you."

"*Expecting* us?"

"Naturally," and again Angelo smiled. "It is a philosophical truth after all—Man is a social creature by nature, and as such, must continually seek the company of his own kind. And of course," and there was the hint of a repressed glitter in the old man's eyes, "the people of Earth have always known, and have—have never forgotten where we of Ste. Catherine were to be found."

The leader reddened and seemed on the point of explosive speech, and the muscles of his jaw hardened as he controlled his impulse. Angelo waited.

"You are of course—correct," he said after a moment's pause. "And it will perhaps be best for all that we understand each other clearly from the beginning. We come to you in some embarrassment. we come to you asking a favor." The last word the leader uttered with a distaste that the best of his self-discipline could not control, and Angelo chuckled inwardly. A favor, was it? Embarrassed, were they? He could quite imagine!

"Perhaps," Angelo said, "it would be more comfortable to discuss your mission in my studio. Will you gentlemen follow me, please?"

He turned and began walking back to where the others waited, and the three men from Earth followed him. At first they balked for the briefest moment, but they followed him.

THE STUDIO of Angelo, Dean of Masters, was open to the sky like his court-yard, for this was the fair season on Ste. Catherine in this latitude, and not yet time to draw the transparent tarpaulin skylight across the tops of the studio walls. Angelo had seated himself near the center of the superbly-muraled room, on one of the low, colorful cushions so widely preferred in the colony to the more formal furniture that was still to be found, to some extent, in the shops and homes of the artisans. Artists in their own way, of course—and some practical work had to be put up with to satisfy the more mundane requirements of existence. As long as they took true pride in the beauty of their work, the artisans would always be very welcome

members of the colony—as well, to be sure, as necessary.

And seated in a semi-circle behind Angelo were the other Elders, and two or three advanced Students to cater to whatever needs might arise during the conference. There would be no apprentices here! Before Angelo, taking to their cushions rather awkwardly (his beard, fortunately, was of sufficient luxuriance to cloak the tiny smile of satisfaction at his lips!) were the three Earthmen; their leader, of course, in the center and facing Angelo directly.

"We may begin at any time," Angelo said in his most courtly fashion. Those behind him nodded —Tharn for once a little absently, because he had become involved in a rather difficult line-sketch on the tablet supplied him for note-taking. He didn't approve of these strangers, but there were more important things than interstellar visitors, especially since they were only Earthmen, and Angelo was insisting on taking full charge. He, Tharn, was through arguing. Walking multiplication-tables! Pah! Angelo could have them, then!

"It is possible you are not aware, here on Ste. Catherine," the leader began with the slightest tinge of sarcasm, "that on Earth there is, at present, a rather regrettable difference of thinking on policy."

"Another political slaughter, that is," Angelo countered not too lightly for the obvious allusion to Ste. Catherine's complete lack of any kind of electrical or electronic communications. "A major war, in other words."

The leader flushed slightly. "Well, yes. As a matter of fact, it has gotten somewhat out of control." His teeth were almost clenched as he made the admission, and Angelo easily sensed the pain in the man at having to make it to the Artists of Ste. Catherine, of all people in the universe. "Out of control," the leader was continuing, "to the point where, in fact, and according to the unimpeachable findings of our actuarial computers, human life on Earth is threatened with complete extinction." The leader hesitated, interpreted the looks in the eyes of the men whom he faced, and found himself not quite able to meet them with his own. But he continued; best to get it said once and for all.

"We are now, of course, well aware that predictions which were once thought the mere rantings of alarmists—religious and philosophical cranks—were tragically accurate. Both sides are perfectly matched from the technological aspect, of course. The so-called 'secrets' of science cannot be kept 'secret' at all, at least not by men. They exist everywhere in the universe, for any man to seek and to exploit as he sees fit." He paused, at last found the timerity to meet the gazes of the others.

"Go on," Angelo said.

"Both sides have come to absolute stalemate. But not, regrettably, the kind of stalemate that means cessation of activity. In a conflict to the death, stalemate simply means battle without victory; battle until neither side has a living man left to fight.

"So, in short, we are desperate. There *must* be a victor, or Earth is lost entirely. One more mass strato-attack with L-bombs and . . . Well, at any rate—there must, as you can readily understand, be a victor, and soon. Obviously, the Others must be defeated."

Yes of course, thought Maler, the Philosopher. *It is the* Others, *always, who must be defeated . . .*

"And so we have," the leader was saying, "come to you for help."

He stopped speaking then, for a moment, waiting for Angelo's reply. Waiting simply for him to ask "what kind of help could we Artists possibly give *you* . . ."—waiting for, and prepared to take unflinchingly, the searing taunt that could not help but be in the question . . . "—you who can fly ships through Space, who have at your computer-tips the hard-won miracles of science and engineering?" But wordlessly, the leader waited.

And in the brief moment before he spoke, the history of it all flashed through Angelo's mind; the history that began with the Revolt. Three centuries ago, with the Ancestors of them all on Ste. Catherine. The artists, the philosophers, the writers, the orators, the dramatists, the poets—all of them, who had, when at last they could no longer stomach their civilization's arrested adolescence and its refusal to be weaned from its electronic and atomic toys, remembered the first Fundamental Law of Order in art, and put it to devastating use. Unity.

In Unity, they rebelled.

They warned, first, in fairness. They took pains to point out carefully that it is a healthy sign for the developing child to become intrigued with movement, sound, and color—that it was normal for a child to spend hours observing, examining, operating, even building a new mechanical toy. But when his new books gathered dust and fell into disuse—when he could quote all of Faraday and none of Swinburne—when this happened, his development as a human being of full depth and breadth was at an end.

When he became hypnotized by his toys—

When motion and force became an obsession—

When the means became an end in itself; when the tool became the *raison-d'etre,* rather than the structure it had been fashioned only to help build, then the point of civlization had been hopelessly lost, and thinking men had but one alternative: leave, and start over.

And so, banded together, they had left.

It had not been so difficult. For to the Ancestors, a tool was always that and nothing more. They could not build spaceships, but they could buy them, and so they had.

They could not navigate Space nor pilot their craft, so they hired the technicians and engineers who could.

And when the Ancestors had arrived at a planet of their choice (the scientists had been duly proud of their superior accomplishment in being able to find just such a planet—and of course were paid more than the engineers and tech-

nicians) the Ancestors gave them all sizable bonuses and sent them packing back to Earth where there were so many fine Things to spend their money on.

The Ancestors had, of course, been called dreamers, ivory-towerists, alarmists, fools. They had been called madmen who lived in the unenlightened past, believers in some foolishness called artistic integrity; schizoids who were afraid to face Reality. Posh, polish, and good riddance muttered the sane ones over their charts and oscilloscopes as the last of the Ancestors' ships blasted free of Earth. Muttered, of course, because there was, somehow, a vague awareness that the Culture-Vultures hadn't left in fear of the bright, quick Machines, but in—well, *they* said, in *disgust!*

Good riddance to childish rubbish.

But now, apparently, the men of Earth had gotten themselves into something so peculiarly impossible that they were desperate enough to face the cutting wit of the fat-bottomed Artists on Ste. Catherine, who wouldn't be able to say "I told you so" in a straightforward, matter-of-fact way and let it go at that. Oh, no. But it would be better to have their damned articulate tongues tear you apart than an S-field.

The moment of reflection was spent, and Angelo asked the question.

"And how can we help you?" was all he said.

The leader took a deep breath.

"One moment," Angelo said as he was about to speak. "Just a word of warning if you please. If you want anything of us at all, simply state your case in plain language. Don't try to 'sell' us anything—we can beat you roundly at that! And if we agree to your request, you will accept *exactly* what we give you; beggars, no matter how expert in *some* things, are still not in the position of choosers! A matter, after all, of—shall we say, artistic integrity?"

The leader's eyes flashed: *Damn you and your infernal artistic integrity!* but it was his mouth which, fortunately for him under the circumstances, did the talking.

"Very well. As I said, both Sides are in perfect technological and therefore military balance—"

"Balance *is* so important," interrupted Angelo. Behind him, Ojar, the Orator was having a difficult time repressing a yelp of pure mirth. It was unfair, of course, to bait these stumble-witted fellows like this, but it *was* amusing—especially when Angelo did it, who, though a Painter, was well up on his word-play. ". . . Perhaps you have already noticed," Angelo was going on, quite oblivious to the perspiration on the leader's high forehead, and exactly as Ojar had expected, "how well we of Ste. Catherine observe the Fundamental Laws of Order. The Rhythm of our very way of life, for example—but excuse me! You were outlining your request . . ."

The leader had reddened helplessly, and his subordinates had both stolen quick glances at him. It was as though images of the man

himself, reflected from mirrors at either side, had suddenly taken on a volition of movement of their own. But quite quickly they became well-behaved images again.

"Both sides have equally effective weapons and defenses," the leader went on, "and so it has become a disastrous war of attrition. To win, we must have something they do not have, obviously."

"To bring your Side into Dominance, of course," said Angelo sagely. "To prevent your Subordination, as it were . . ." Ojar had a sudden, violent fit of coughing.

"Yes," the leader said. There was a momentary blankness in his eyes, and Angelo decided that enough was enough. Unfairness was unfairness, after all. They must hear the man out.

"We have looked back over history," the leader said. "It was an unprecedented step, to be sure, but we *were* desperate! At any rate, we discovered that one time, it was possible to make an enemy believe he was wrong, and that you, *his* enemy, were *right,* through a rather obscure verbal art called, I believe it was, propaganda?"

"Yes," said Angelo. "The province in Art of writers and orators. As a painter or sculptor will create illusion with paints or stone, just so did the writer create illusion with letters."

"So we came to understand," the leader said, trying a little note of sarcasm of his own. "Our present difficulty is this: we of course have no such peop—er, Artists—at our disposal. We of course tried our own hand at it but nobody ever seemed quite able to agree on just what it was we were trying to talk about, so—well—We have come to you. Will you do this for us? A few words, for the sake of humanity?"

Clever, thought Maler, at that. An intended appeal to the philosophical side of the artistic mind. Maybe the poor wretch really meant it, even if he wasn't aware that "humanity" meant *both* Sides.

"To answer you," Angelo was replying, "I'll of course have to summon our Master of Letters. It may not be easy to win his assent, I warn you. He can trace his own ancestry all the way back to newspaper reporters, advertising copywriters and trade-journal writers—and so has naturally inherited their bitterness toward all such prostitutions of the Art of Writing, and artistic integrity in general. And you will admit that hacking out propaganda to order is of course just that, to say nothing of the moral aspects involved! However—"

Magnanimously, Angelo lifted his right arm and beckoned, and a Student was at once at his side.

"Fetch Master Forsyth at once. And tell him I said to leave his new Quarto behind; this is urgent."

The young woman left, and they waited.

"A cigarette?" Angelo proffered the leader.

There was surprise on the man's face. "You mean you can make—"

"Just crude paper and tobacco grown in the soil," Angelo said apologetically. "Untouched by any rays but the sun's, I'm afraid, and our few medicine-men—we have

all kinds of hobbies here of course —just won't comment. Here . . . and a light . . ."

The leader had almost finished his cigarette when the Master of Letters arrived.

"Angelo, you churl, sir! Do you know how long I've been working on that line? You know how difficult it is for me to get a decent trochee when I'm—oh, company? Capital! 'Come fill the Cup, and in the Fire of Spring—' "

"Please, Forsyth. These men are here on business. They want you to do them a favor."

Resignedly, Forsyth kept quiet. And listened for good measure.

He listened for ten minutes. And then the leader was finished and Forsyth said "A pox on't!"

"Please, Forsyth—"

"He's *right!*" came Tharn's voice. "I told you I didn't like it, and I *don't,* and—"

"*He* doesn't like it?" bellowed Forsyth. "Then by Heav'n, I'll *do* it! Teach you, sire, to make charcoal caricatures of *me* on a day when I'm not lampooning *you!* Very well, but I don't think I've got too many apprentices that aren't engaged right at the moment. Nonetheless, if—"

The leader was beyond control. "*Apprentices,* did you say?" he croaked hoarsely. "Why, you—"

"What in Dante did you think, man-child?" shot back Forsyth. "You don't suppose I'd give you finished, creative *writers* for the job of a trained ape, do you? *Some* apprentices I've got, and *some* apprentices you'll get—and only because Dean Angelo here says so."

THE THREE MEN from Earth strode with military precision back toward their ship. The leader was in the center, and his subordinates, each with bulging briefcases in both hands, were on either side. A large group from the colony walked at a slower pace behind. Angelo, as usual, was at their head, and flanking him were Tharn and Forsyth.

"Another whole *week* wasted!" lamented Forsyth. "Not that the time means anything, but those sensitive young boys and girls of mine will never be the same! One of them, just this morning, told me she was thinking of taking up *politics* as a hobby! The tortures I go through for you, Angelo—"

"I *still* don't like it!" Tharn cut him off. "And I don't like them! And, Forsyth, I saw what you had your precious little apprentices doing! You had them writing *exactly* the same tripe they wrote for that *other* crowd that landed two weeks ago!"

"Tharn, you certainly aren't the only one who has no use for that barbaric breed. So—as long as they remain equally matched, they'll eventually, uh—"

"*But that means*—"

"A Fundamental Law of Order, of course, my dear Tharn. *Balance,* as I think I may already have pointed out . . ."

Forsyth quoted something from on obscure source about the importance of artistic integrity, and then they watched together as the ship from Earth blasted homeward.

• • •

EDITOR'S REPORT

(Continued from page 3)

subject entitled *Freedom of the American Road,* and it is filled with remarkable photography, diagrams, drawings and maps. Scores of well-known authors, reporters and experts have contributed articles and reports that are as exciting to read as they are informative. It was published—not as a commercial book venture—but as a promotion by The Ford Motor Company.

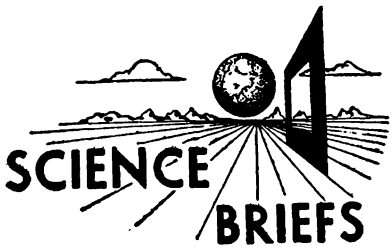
Henry Ford II, in the foreword, says: "We do not attempt to give any one answer—no master plan that will solve all our highway problems. Here, instead, are many ideas, many new approaches, all of them proved in action.

"We hope that you, too, will find them inspiring, challenging, and useful—right in your own community."

If you have a traffic problem in your community, write for a copy—for here is the graphic, fascinating story of counties, cities and villages all over America and what they have done to obtain better traffic conditions and safer roads.

Poul Anderson's new novel is *not* science fiction but a historical novel entitled *Taller Than Other Men* which deals with the 11th Century Norwegian King Harald Hardrede . . . Alan E. Nourse, now in the final stages of his internship at a Seattle Washington, hospital, hopes to practice in a small town. Object: fewer patients and more time for science fiction writing . . . Hollywood reported vying for *Out of The Deeps* by John Wyndham . . . Frederic Brown, whose last sf book success was *Martians, Go Home,* is now working on two novels—one a straight novel, the other a "picaresque" sort of sf tale . . . Jack Vance is putting the final touches to a non-sf novel entitled *Clarges* for forthcoming Ballantine publication . . . Robert Sheckley, whose latest book was *Citizen in Space,* is considering taking his typewriter to Guatemala . . . Lester del Ray now at work on a novel based on his famous novelette *Nerves* . . . Mack Reynolds, when last heard of, was in Tangiers. Seems like he'd signed up for a trek with a desert caravan, with overnight stops at French Foreign Legion posts and destination Timbuktu . . . Dick Matheson back in California again where he is working on the movie adaptation of his book, *The Shrinking Man.* Both are scheduled for summer release . . . Mike Shaara, (who has an ideal name for a cop!) did a year's turn as a Florida policeman but has turned in his badge to return to science fiction writing . . . Mel Hunter, who did such an outstanding job with our satellite covers, coming up with a two page spread in *Life* . . . And Tom Godwin, Robert Young, Bryce Walton and Poul Anderson have some really top-notch yarns in the next IF . . . Don't miss them! —jlq

If research is to be intelligent and far-sighted it cannot mathematically follow the ups and downs of the short-range sales curve.—*Dow*



Rip Van Winkles may be real in 50 years if the success that has been achieved in restoring frozen hamsters can be transferred to humans. Tests at the Medical Research Center in London have proved that the hamsters can be put to sleep, packed in ice for a few hours, then gently thawed without damage to the brain or other internal organs. By treating certain organs with glycerine before freezing, scientists hope animals can be stored in a completely frozen state indefinitely. If so, they would be alive and no older when thawed out. The researchers also believe that airmen and seamen, who have been in accidents in frozen areas, should not be given up for dead, that resuscitation such as is used on the hamsters should be attempted.

A skin "garden" in which living human skin will be grown is being set up at Duke University. If successful it is expected to provide the means for saving thousands of lives now lost each year as a result of burns. A bit of the burned victim's own skin would be set to growing in the garden. In two weeks such a piece of growing skin may be multiplied to ten times its original size, as experiments have shown, and would be an excellent size for grafting. Since a skin graft from a donor lasts only ten to thirty days and the victim's own skin is necessary for a permanent graft, the skin garden would be an excellent source. The Duke project is believed to be the world's first attempt to reproduce the patient's whole skin, consisting of both outer layer and true skin for grafting.

Cattle of the future may get an entire bale of hay in the form of a shovel full of pellets. Research experiments have shown that most feeds can be pelleted by subjecting them to certain tremendous pressures. A machine has been developed which can produce the 4,000 to 6,000 pound per square inch which is necessary. For the future farmer who owns such a "pelleting" machine it will reduce labor, the need for maintaining a quality feed and it will cut the cost of storage space, feed handling equipment and transportation.

Scientists have predicted that seven more heavy elements, 102 through 108, will be created in the next 15 years. The most likely production method will be an atom smasher such as the heavy ion linear reactor which will speed up very heavy nuclei, like neon. By hurling relatively large nuclei into the hearts of heavy atoms like uranium it should be possible to build up the heavier elements. Predictions also state that elements 102 through 105 should be stable enough to identify chem-

ically. Those from 106 through 108 probably will decay so rapidly that they can be analyzed only from their radioactivity.

Buying and selling of stocks may some day really become the "sure thing" that investors dream of. Researchers have found that an electronic computer, when properly directed, can make the calculations necessary to indicate future trends on the market. The program is still so new that its success or failure is yet to be determined, but the experimenters are convinced that the correct formula can be found. They know that the chartists who plot the daily curves on opening and closing quotations have noted that a daily geometric pattern forms which seems to indicate future trends. If this pattern can be properly calculated by the computer, short range fluctuations should definitely be predictable.

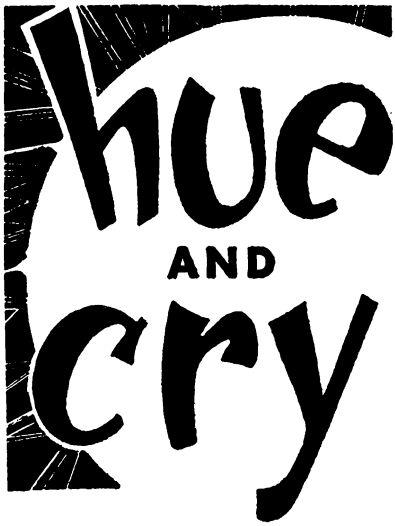
The armed services may in the future employ totally deaf individuals to work at jet air fields. Science knows that to the human ear noise above 140 decibles is intolerable, and modern jets already create sound levels around 130 decibles. Others in production will produce 160 to 170 decibles, or noise levels greater than humans can stand. In such an instance the man who is totally deaf has an advantage that is incalculable, and may well be the only individual who can bear the brunt of such noise levels.

Safe and successful bone transplants using radiation-sterilized bones will soon be normal hospital procedure. The bones which can be taken from dead bodies, are cut into various sizes and shapes with a heavy duty band saw, then they are freeze-dried and sealed in glass tubes under vacuum. To sterilize them, the glass tubes are placed within a concrete cave containing cobalt rods. At the end of a 20 hour period, the bone is removed and stored at room temperature. The treatment kills any bacteria and viruses that may have been in the bones, but there is no residual radioactivity and the character of the bone and its capacity for further growth are not changed.

Parents may soon be able to know in advance whether the nursery ought to be pink for a girl or blue for a boy. A discovery by Canadian scientists has made it possible to determine the sex of an unborn infant about one month before it is born. From the amniotic fluid which surrounds the baby in the womb, doctors are able to determine whether the cell component known as chromatin, found only in female cells, is present.

WHAT IS YOUR SCIENCE I.Q.?

ANSWERS: 1—Metric. 2—Vacuum tube. 3—Siderolites. 4—Greater. 5—Negatively. 6—Doldrums. 7—Volt. 8—Liquid air. 9—15%. 10—Frauenhofer. 11—Geotropism. 12—Contracts.



Dear Editor:

J. C. Hickman in "Hue and Cry" of April brings up the subject of interstellar civilizations and asks what others think about the subject. I cannot entertain the notion that we might be the first and most highly civilized race, as the editor states in his footnote to Mr. Hickman's letter. That idea would seem to be the height of conceit on man's part. I believe there may be people on our moon now, and so on and on in space there is life after life in some form. We may be very surprised at what we find "out there" when we begin to travel the stars.

As I read between the lines of science fiction it seems to me the authors are aware of much that isn't published in the newspapers. And the truth we may someday find, may be much stranger than the fiction we read now.

—H. Conrad
Port Orchard, Wash.

Dear Mr. Quinn:

I think it's a damn shame that a mag such as "If" should be running on a bimonthly schedule. The material you print is on a level with the best and far above that printed in some of the monthlies.

In the April issue, I can say that I enjoyed every story. Jones' "Human Error" was written in the same style with which he appears in the "top" mags. It was a good story and well thought out. The drawing that accompanied was quite mediocre though. "Chrome Pastures" was another excellent job, except that I thought the epilogue was tacked on and should have been worked out in the story itself.

Having met Harlan Ellison at a recent meeting of the Eastern Science Fiction Association, I enjoyed his story all the more. He's an up and coming talent and it's good to see him rise from the mass of fandom.

—Allan Cheuse
Perth Amboy, N. J.

Did you see Ellison's "The Crackpots" in the June issue?

Dear Editor:

Aren't there any kind aliens? It seems to me that stories always depict them as so far above us that we are beneath contempt or that they are so monstrous they want to kill us all off and take over Earth for themselves. The general idea in

S.F. seems to be to prepare man for what may be an inevitable meeting with such creatures; and to tell man that he's not ready for it; but when the aliens are constantly painted in such evil lights how will man ever be ready? How can you expect an alien to be acceptable unless some form of writing is used that will convince Mankind that those we might meet are not the monsters drawn in S-F?

—K. J. Ashton
Gardiner, Me.

A good point and well taken. . . also one to which we wish we knew the answer. Anybody got any ideas?

Gentlemen:

I'm a reader of "If" because my son is a subscriber. I agree with W. C. Cantrell of Bryan, Texas, about the sexy covers. The April cover is an example of what I mean. I also disapprove of the story illustrated by the cover. Such wanton and barbarous killing cannot be excused in a representation of our future world. The other stories are on a much higher level. I especially enjoyed "Human Error" and "Chrome Pastures".

—J. Schofield
Chesterhill, Ohio

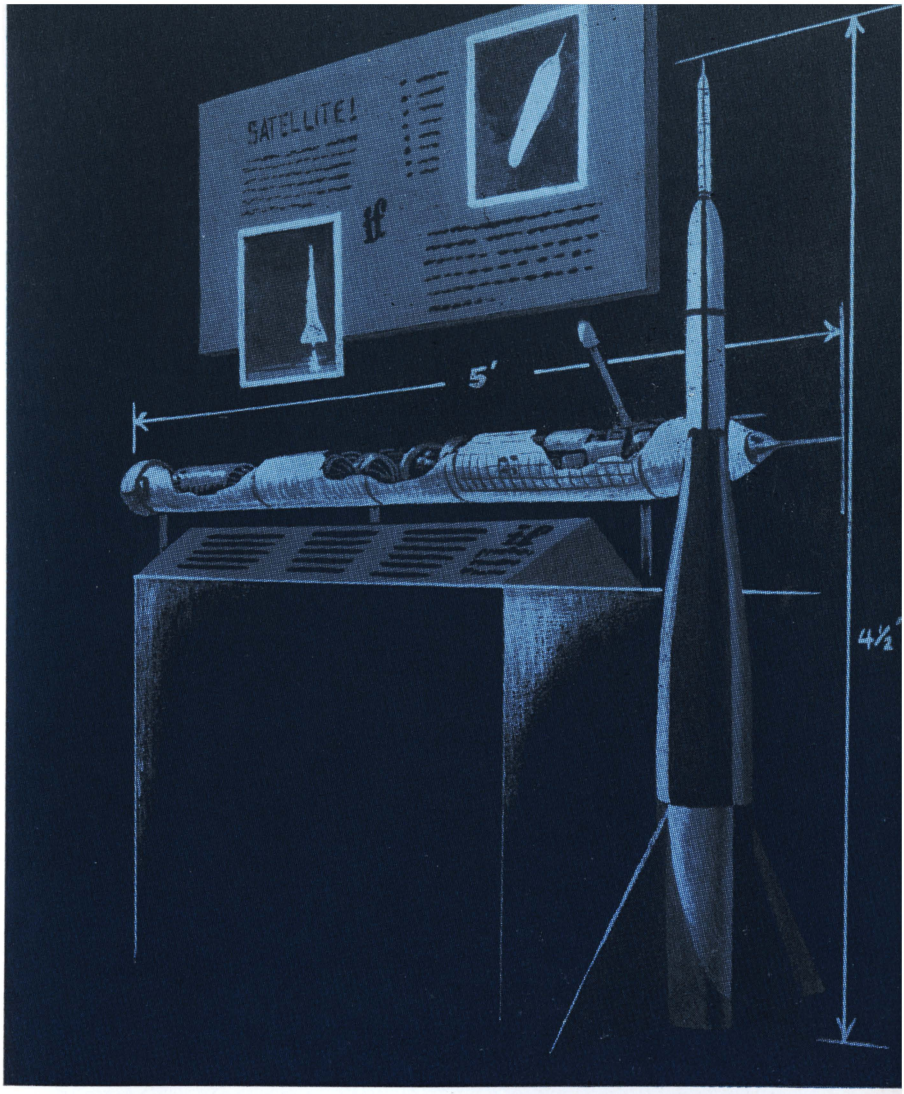
Sirs:

Why so much speculation on what "other" worlds are like in science fiction magazines? Seems to me we should do a little more worrying about the mess we have right here and straighten out a few thousand things before we start spreading ourselves too thin over the galaxy. About the only advantage I can see to finding another world that's liveable is that it would enable some of us to get away from this badly mismanaged one.

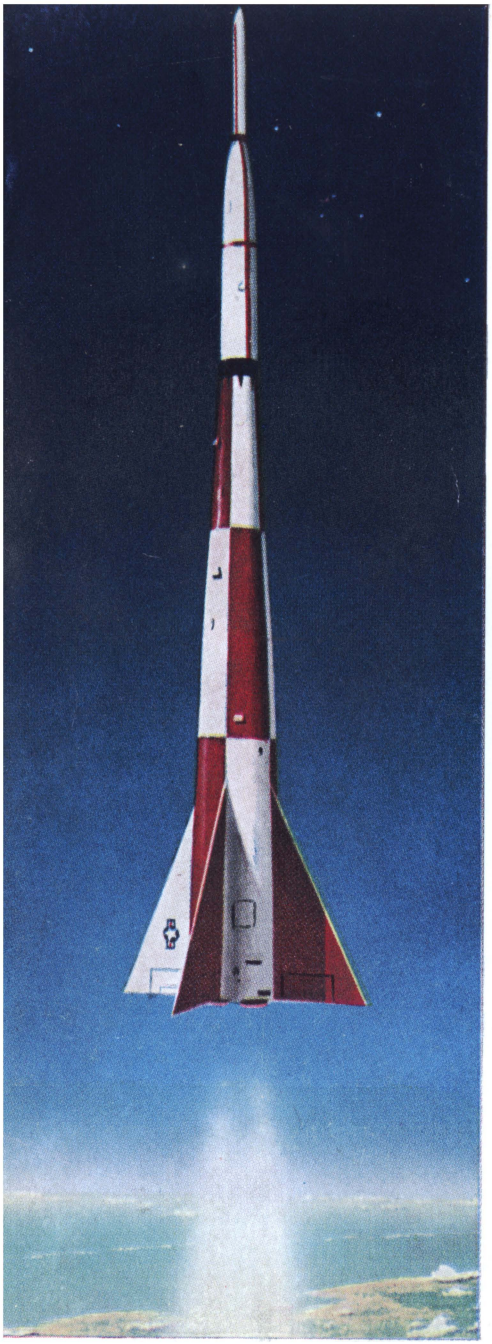
On second thought what's to prevent men from making that one just as bad. Seems to me Mankind is just dreaming about Utopias and is at least intelligent enough to realize he's messed up his own world so badly that Utopia is impossible here. But how many realize that just because the place is fresh and new and perfect it doesn't necessarily follow that it will stay that way once man gets his hands on it.

—C. H. Bellows
Atlanta, Georgia

Reader Bellows has grabbed a tiger by the tail. Hope he's got more than personal opinions to back up his stand.



THREE-STAGE MODEL—Above is a suggested plan for displaying a model of the Three-Stage Satellite proposal as developed by Mr. Nuding and Mr. Vanous. Their proposal is much more comprehensive than the first few Project Vanguard Satellites which must be necessarily rushed to enter the International Geophysical Year. IF has commissioned the building of this large, detailed, cut-away model of the beautifully designed engineering proposal which, together with supplementary material, will be displayed at various places across the nation. *(Drawings by Mel Hunter)*



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