

★ *Scientilla*
★ SCIENCE FICTION ART

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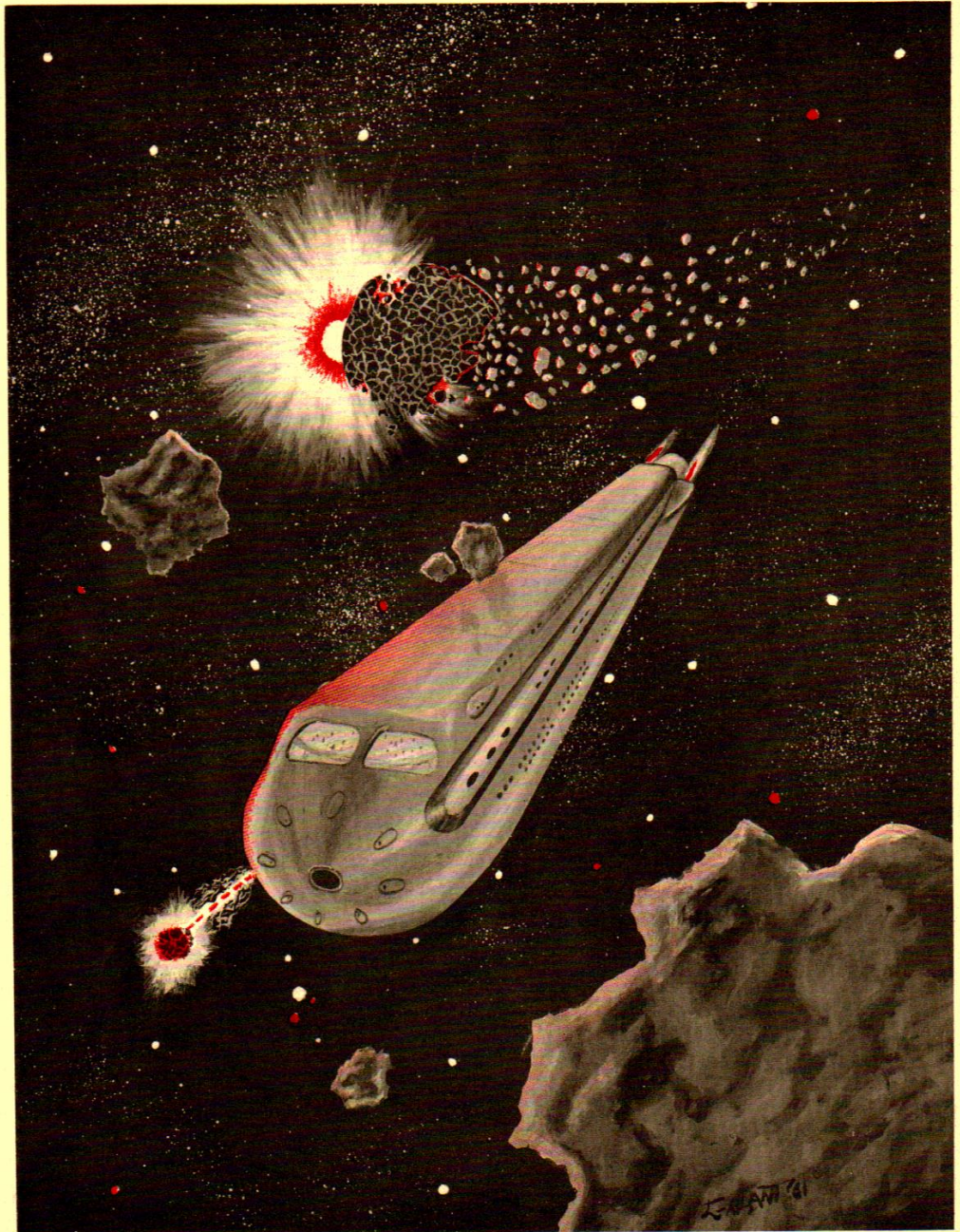
Winter 1961

ART LISTINGS

Short Stories:

THE ETERNAL CIRCLE
by—Willy don Rawn

THE HORRIBLE EARTHLING
by—Tom Arness



PREVIEW OF THE FUTURE
in art, fact, and fiction

SCIENTILLO

SCIENCE FICTION

VOLUME 1

NUMBER 1

Winter 1961

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IN THE BEGINNING...

Trying to think up a name for a fanzine is no simple matter. The name should represent the main purpose of the publication and still retain a valid meaning for the fans. As this is primarily a fanzine to promote the field of science-fiction art, the title should mean just that, "science fiction art."

SCIENCE FICTION ART, as a title, would not be acceptable as this is not to be an all-artzine like some previously issued by other fans. In connection with the title; I first had the idea of SCIENCE FICTION ILLUSTRATED but unfortunately this gave the impression of a professional publication chuck-full of illos. It was then that SCIENTILLO came to mind. It was short and to the point, with the direct meaning of our cause.

As you may already have figured out, SCIENTILLO is a rather complicated short for "science fiction illustration." It came about from the established fan word "illo" and all we had to do was add the Gernsback "Scienti" on the front—hence our result. Of course we omitted one "i" as this would render the title too confusing, i.e., Scientiillo.

Now to touch upon another matter. We, as may be expected, have a policy concerning our fictional content—oh yes, we have some of this too. In fact we may boast of being Scientifiction's last stand. A rather odd and incorrect statement, you may think. And you may be right—it is all a matter of definition.

By the term "scientifiction" I do not mean science fiction, or to be more exact—I do not mean modern science fiction. I am sure you will agree with me when I say there is a difference—not only in the spelling—but in the meaning as well. I will explain:

Science in the form of fiction prior to 1926 was limited to the few books by Jules Verne, H.G. Wells, and others. Hugo Gernsback, many years before the coming of the first true S F magazine, had featured many scientific fictional stories in his MODERN ELECTRONICS, later retitled ELECTRICAL EXPERIMENTER. A few of the other magazines devoted to weird, fantastic, and even general fiction had one or two stories of this type appearing in them. But science fiction as a field of literature was yet to be born.

In 1926 the dream came true. Uncle Hugo came out with his surprise package under the title of AMAZING STORIES, subtitled "the magazine of scientifiction." The policies of this magazine were those of its editor in chief, and that of course was Mr. Gernsback. The requirements were simple:

Give the interested public science in the form of fiction so that in a way they can have their cake and eat it too. I mean to say, fiction that has both the enjoyment of romance and adventure and still

-continued on page 11-

THE BIG, THE LITTLE, AND RELATIVE TIME

the first in a series of "time travel" articles by Willy don Rawn

Since the very dawn of science fiction in magazine form, one thought has prevailed: This is the possibility that our world is composed of atoms which, in reality, might be minute universes themselves. If this is so, it would of course render our insignificant planet as a single building block in a "greater atom" of some "greater universe."

The very first issue of Amazing Stories (April 1926) featured such a story. Under the title "The Man from the Atom" by G. Peyton Wertebaker, we find such a hypothetical situation:

A scientist invents a machine which is able to shrink or enlarge any atomic structure to any desired proportion. It does this, the author writes, by halving, in the case of reduction, or doubling in the case of enlargement, the atoms making up our bodies. The reader realizes that in halving anything—no matter how many times—the point will never be reached where "nothing" is left. Likewise, in enlarging, the limit is infinity, and infinity has no limit.

A friend of the Professor's is persuaded to try-out this wonderful invention to find that it works exactly as expected. The young gent pushes the "enlarge" button and he grows to gigantic proportions; soon becoming larger than the entire solar system. But as he grows, so does time, with the result that he sees the solar system as a series of concentric circles; the planets revolving about the central star far too fast to fully comprehend. For while a year may have elapsed on Earth, only a second has elapsed for our time-size traveler.

The story ends with our adventurer finally reaching the "next universe"; the solar system, galaxy, and all known galaxies comprising one single atom in the mighty oceans of this planet. When the traveler tries to return to his original lifewhen, he finds that the sun has aged into the last stages of stellar evolution and Earth is but a forgotten planet which once supported the thriving race of Man.

Another story quite similar is "Out of the Sub-Universe" by R.F. Starzl (Amazing Stories Quarterly, Summer 1928). In this one we find a scientist has created a machine capable of shrinking via the mysterious cosmic rays. When Shirley, the scientist's daughter, and Hale McLaren consent to try-out the machine, the old professor declines but later on agrees to their proposition. When the switch is activated, the youngsters shrink out of sight onto a single granule of carbon provided for exploration. The professor had promised to bring them back to size in half an hour, which he did. But to his surprise, a group of hymn-singing strangers emerged. Near the end of this most interesting story we find that in the sub-universe time moves much faster in relation to ourselves, though to Shirley and Hale, time elapsed at a normal, constant pace. What returned to the cosmic-ray machine were the descendants of Shirley and Hale.

In the postscript of the latter story, Editor Hugo Gernsback points out that "everything in this world is relative, with or without Einstein." This is extremely evident in the case of time flow to the big and the little.

The Ephemerid fly lives only twenty-four hours; yet leads a normal existence. To these minute creatures the few brief hours given them are as 60 or 70 years of lifetime given humans. Even the microscopic and sub-microscopic life which have normal lifespans of minutes lead long and useful lives.

ASTRONOMICAL ARTWORK

appearing in the NATIONAL GEOGRAPHIC MAGAZINE

As you are probably aware, the National Geographic Society has had many astronomical scenes reproduced in both full color and black and white, in their magazine. Here, if nowhere else, we find reproductions printed to their true color values and tones. An example of this would be the November, 1947 issue. In this issue many beautiful color renderings of auroras by William Crowder are featured. By placing a 25-watt lamp 35 feet behind the viewer, the plates will have the exact color and brightness of the original scene. This is truly a difficult task when using the four color process.

I originally planned to have a small photo-offset reproduction of every item listed here with accompanying description. The reason for the illustrations would be to identify each artwork as it is quite a job to give an adequate description in a few brief sentences. The National Geographic Society felt, however, that such drastic reduction could hardly do the illustrations justice. I agree with them 100%. Inadequate as it may be, you will have to be content with my brief outline. I can say this tho; all are extremely beautiful and show evidence of careful attention to detail.

All, or most of the magazines listed here may be ordered from the: Back Issue Dept., National Geographic Society, Sixteenth and M Streets, Washington 6, D.C. (Prices will be given upon request.)

LISTING SYSTEM:

Page No. - Description of painting. (Name of artist, B/W or color, size of reproduction)

B/W - Used anywhere in the listings means "black & white" or monotone.

COLOR - This can mean both 3 or 4 color reproduction. The first 3 colors are yellow, magenta (red) and cyan (blue). The 4th color, if any, is black. Both 3 and 4 color reproductions are usually referred to as "full color".

--- July, 1939. - NEWS OF THE UNIVERSE by F. Barrows Colton - 100 pages
-10 paintings in full color

Page 17 - A blue globe hanging in space--the Earth as seen from the Moon. (Charles Bittering, N.A., color, $7\frac{1}{2}$ x $5\frac{3}{4}$ ")

Page 18 - Saturn, with its strange revolving rings, as seen from an asteroid 500,000 miles away. (Charles Bittering, N.A., color, $5\frac{3}{4}$ x $8\frac{1}{2}$ ")

Page 19 - Roaring in from outer space, a huge meteorite or small comet craters Arizona. (Charles Bittering, N.A., color, $5\frac{3}{4}$ x $8\frac{1}{2}$ ")

Page 20 - Mars as seen from Phobos, the nearer of its two moons. (Charles Bittering, N.A., color, $7\frac{1}{2}$ x $5\frac{3}{4}$ ")

Page 21 - Birth of the solar system. (3 paintings by Charles Bittering, N.A., color, each $2\frac{1}{4}$ x $5\frac{3}{4}$ ")

Page 22 - An eclipse of the sun by Earth as seen from the Moon. (Charles Bittering, N.A., color, $5\frac{1}{2}$ x $8\frac{1}{2}$ ")

Page 23 - White light is broken into a spectrum. (Charles Bittering, N.A., color, $8\frac{1}{2}$ x $5\frac{3}{4}$ ")

Page 24 - A comet as seen from behind the Washington Monument, D.C. (Charles Bittering, N.A., color, $7\frac{1}{2}$ x $5\frac{3}{4}$ ")

--- November, 1947 - UNLOCKING SECRETS OF THE NORTHERN LIGHTS
by Carl W. Gartlein
-8 paintings in full color

Page 685 - Homogeneous band aurora observed over the ice floes of Norway. (William Crowder, color, 9 x 6")

Page 686 - Draperies formed by aurora australis near Wilkes Land, Antarctica. (William Crowder, color, 9 x $6\frac{3}{4}$ ")

Page 687 - Two rayed arcs form another Antarctic aurora, with the Southern Cross above it. (William Crowder, color, 9 x $6\frac{3}{4}$ ")

Page 688 - Corona aurora as observed from Ithaca, New York. (William Crowder, color, 10 x 6")

Page 689 - Aurora with rayed band above and homogenous band below as seen from Hamilton, New York. (William Crowder, color, 10 x 6")

Page 690 - Seen from Norway, double drapery forming partial corona. (William Crowder, color, $9\frac{1}{4}$ x $6\frac{1}{2}$ ")

Page 691 - Masses of rays formed when rayed band breaks up—Norway.
(William Crowder, color, $9\frac{1}{4}$ x $6\frac{1}{2}$ ")

Page 692 - Serpentine rayed band in snakelike motion. Constellation
Pleides in center—Norway. (William Crowder, color, $9\frac{1}{2}$ x 6")

-- April, 1956 SPACE SATELLITES, TOOLS OF EARTH RESEARCH
by Heinz Haber
-4 paintings in full color

Pages 486 & 487 - The space satellite in orbit 300 miles above the
eastern seaboard of the United States. (William N. Palm-
strom, color, 10 x 13")

Page 489 - Kodachrome showing Mr. Palmstrom working on the painting
appearing on pages 486 & 487. Checking technical aspects
of the painting are Dr. Heinz Haber and Dr. S. Fred Singer

Pages 492 & 493 - Second stage of satellite vehicle drops spent first
stage over the predawn sky above Florida. (William Palm-
strom, color, 9 x 19")

Page 496 - The canopy of air from sea level to satellite orbit.
(William N. Palmstrom, color, 10 x $6\frac{1}{2}$ ")

Pages 498 & 499 - A view of the Earth from 4,000 miles out in space.
(William N. Palmstrom, color, 10 x $9\frac{3}{4}$ ")

-- December, 1957 HOW MAN-MADE SATELLITES CAN AFFECT OUR LIVES
by Joseph Kaplan
-5 paintings in full color

Page 790 - Vanguard rocket leaves launching pad at Patrick Air Force
Missile Test Center, Cape Canaveral, Florida.
(John Lothers, color, 10 x $6\frac{1}{2}$ ")

Pages 792 & 793 - As dawn breaks over the Caribbean, the last of
three rocket stages reaches the 300-mile orbit with ant-
enna pronged satellite. (William Palmstrom, color, 10x13")

Page 798 - The space satellite passing over India and Ceylon.
(Gilbert Emerson, color, 10 x $6\frac{1}{2}$ ")

Page 800 - Camera-laden satellite 2,000 miles up detects a typhoon
on the Earth below. (Gilbert Emerson, color, 5 x $6\frac{1}{2}$ ")

Page 801 - An Earth-scanning satellite passes over Sicily and the
Italian boot. (Gilbert Emerson, color, 9 x $6\frac{1}{2}$ ")

-- February, 1958 EXPLORING OUR NEIGHBOR WORLD, THE MOON
by Donald H. Menzel
-1 painting and 3 drawings

Pages 278 & 279 - The surface of the moon. (mural by Chesley Bonestell
B/W, 9 x 13")

Pages 288 & 289 - Three drawings illustrating Jules Verne's FROM THE
EARTH TO THE MOON and ROUND THE MOON, published in the
1860's.

-- February, 1959 REACHING FOR THE MOON
by A.C. Fisher, Jr. and Luis Marden
1 painting in monotone

Pages 168 & 169 - A satellite swinging in orbit 800 miles above the
Moon. (Mel Hunter, B/W, 7½ x 10½")

Added information:

The lunar surface mural by Chesley Bonestell appearing in the
Feb. 1958 National Geographic is only a portion of the reproduction
appearing in the August 1957 Sky and Telescope.

Below is a listing of National Geographic Magazines in which some of
the astronomy minded fans may be interested:

June 1928 - THE MYSTERIOUS TOMB OF A GIANT METEORITE
by William D. Boutwell
Nov. 1932 - PHOTOGRAPHING THE ECLIPSE OF 1932
by Capt. Albert W. Stevens
OBSERVING A TOTAL ECLIPSE OF THE SUN
by Paul A. McNally
Feb. 1937 - OBSERVING AN ECLIPSE IN RUSSIA
by Irvine C. Gardner
Sept. 1937 - NATURE'S MOST DRAMATIC SPECTACLE
S. A. Mitchell
ECLIPSE ADVENTURES ON A DESERT ISLE
by J. F. Hellweg
July 1943 - THE HEAVENS ABOVE
by Donald H. Menzel
Sept. 1947 - ECLIPSE HUNTING IN BRAZIL'S RANGLAND
by F. Barrows Colton
March 1949 - OPERATION ECLIPSE: 1948
by William A. Kinney
Sept. 1950 - MAPPING THE UNKNOWN UNIVERSE
by F. Barrows Colton
Jan. 1952 - (Geology) SOLVING THE RIDDLE OF CHUBB CRATER
by V. Ben Meen and Richard H. Stewart
OUR HOME-TOWN PLANET, EARTH
by F. Barrows Colton

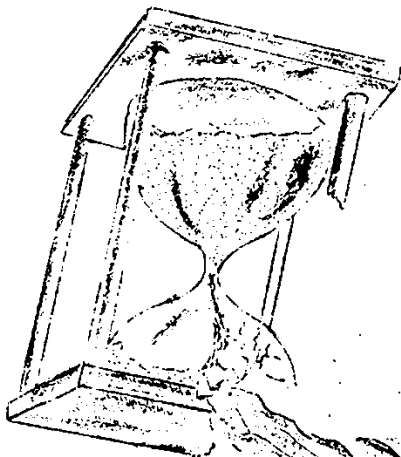
NATIONAL GEOGRAPHIC, Cont.

- Feb. 1952 - OUR UNIVERSE UNFOLDS NEW WONDERS
by Albert G. Wilson
- Jan. 1953 - FIRST PHOTOGRAPHS OF PLANETS AND MOON WITH 200-INCH 'SCOPE
by Milton L. Humanson
- Aug. 1955 - AVIATION MEDICINE ON THE THRESHOLD OF SPACE
by Martin A. Pomerantz
- Sept. 1955 - NEW LIGHT ON THE CHANGING FACE OF MARS
by E.C. Silpher
- Dec. 1956 - SKY SURVEY CHARTS THE UNIVERSE
by Ira Sprague Bowen
- April 1957 - ROCKETS EXPLORE THE AIR ABOVE US
by Newman Bumstead

MONORAIL ON THE MOON →

A scene from Arthur C. Clarke's EARTHLIGHT. The illustration portrays the passenger monorail as it ascends up the side of a lunar mountain. In the upper left hand corner is, of course, Earth. The sun is seen only partly above the twilight horizon, and most of the lunar landscape we see is lit with dull Earthlight. The only objects in line of sight with Sol is the summit of the jagged mountain on the left and the upper portion of the monorail track. The track appears as a band of light against the endless backdrop of space.

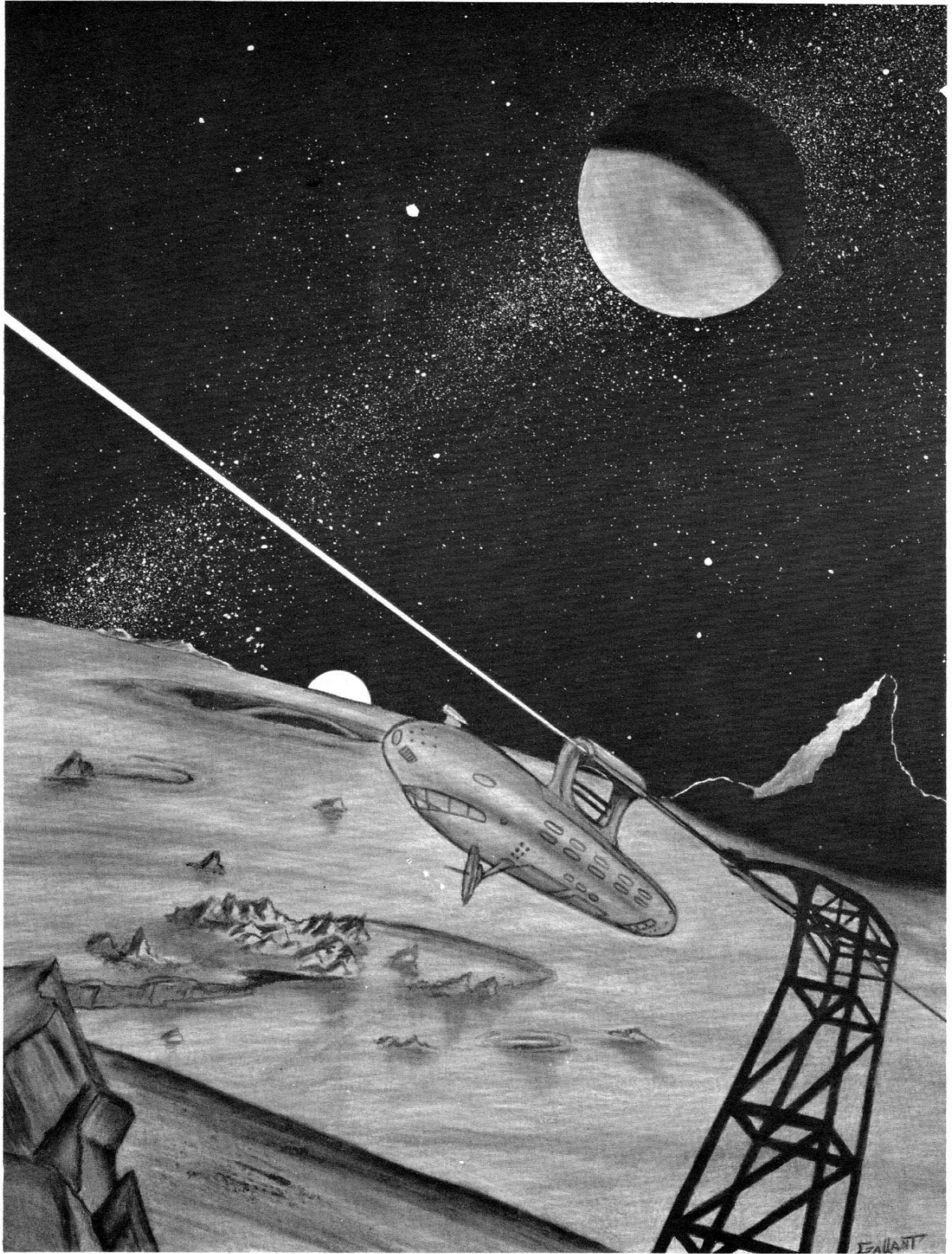
THE TIME HAS COME!



The time has come, my friends, to say
The glory of fandom is on its way.
SCIENTILLO—front to back,
The last scientifiction
(Tho some may be hack!)

"HACK! No No!" say you, the fen.
"How can you say this slan—der?"
The stories may be a little far-fetched...
But that's the goal of wonder.

From Trantor's reign to spirals edge
We search, for you, the best?
Computers, robots, slimey things...
But then, you know the rest.





CITY ON VENUS

by Ron T. Gallant and Willy don Rawn

As the Earthcraft slowly drops to the surface of the second planet from the sun, an amazing sight greets the eyes of the Earth crew. All around the ship they see strange cities and flying craft, apparently run from solar power. Even tho Venus is covered with a thick blanket of cloud more dense than Earth has ever known, the Venusians have devised solar cells so sensative that they are able to convert the direct light-energy to other forms such as direct current electricity, heat, sound viberations, and preserve it in batteries.

With a heavy atmosphere of 250 miles deep, flying craft enjoy liberties never known on Earth. Tho the jet engine has never been developed by the inhabitants, helicopter-like veichles fill the sky in prearranged flight patterns. Flying craft with wings are totally useless on this vegetation covered world for lack of landing strip room.

The planet's rotation is the same as its revolution period so one side is in eternal sunshine while the other in forever darkness. The Venusians, living only on the lighted side, have never seen a star in the sky other than the sun. They lack the fundamental knowledge that their planet is one of nine in a system orbiting around the sun. Even the exploratory trips in the flying machines around to the dark side has failed to add to their limited knowledge. Nothing above 200 miles has ever been seen because of the thick blanket of clouds.

Water power is abundant for there are a large number of gigantic rivers flowing steeply down the mountainsides, but as solar power is so readily available, the possibility of water turbines was never even considered.

There are very few intelligent life forms on this planet other than the "city builders". Most of the other living beings are ferocious meat eaters. For this reason the cities were built as they offer the only means of protection for the Venusians.

The cities are built far apart, hense the need for air travel. The buildings themselves are constructed in a dome-like affair. This serves a multitude of purposes. As the Venusians are moneral eaters, that is, they dissolve minerals with strong stomach acids, they have little need for vegetation and rainfall. The canopies afford protection from both rain and the sometimes fatal electron streams given off by the sun. The cloud layer and atmosphere is unable to halt these electric storms, and tho an Earthman would not be bothered by it, it often means death to the Venusians. The canopies also gather sunlight for the solar batteries which keeps the cities going.

IN THE BEGINNING -- continued from page 1

have sound scientific basis. Sugar coated science and to hell with the human element. Of course if the writer could supply the latter, too, well all the better.

This was all fine and dandy and it proved to be a great success. It served the foundation for things to follow. The lone wolf AMAZING soon had news stand companions, among them AIR WONDER STORIES, SCIENTIFIC DETECTIVE, and a little later the famous ASTOUNDING came into being. This is all old hat to most of you fans, but the point that I am trying to make is; that all the stories appearing in these early magazines had to have at least one of two qualifications. Especially so in the Gernsback publications. The author had the choice of writing an extremely well written story containing little scientific content or scratch out a story (?) with a great deal of actual and/or theoretical science. Many of the latter were very crude indeed. Very few of these early stories had both qualifications.

The Gernsback stories (Scientifiction), as stated before, were judged mainly upon their scientific content. The stories usually revolved around this centralized scientific object or problem with the inevitable result that the characters portrayed therein were only convenient vehicles to build the machines, to be the helpless victims of runaway robots, and so on. Science always came to the rescue. Thus the people—being endowed with little or no emotion—certainly played a minor role when compared with the scientific aspects.

But what most of us may overlook is the fact that without this sometimes rather boaring technical foundation, the field would most surely have crumbled.

Isaac Asimov, a leading authority on such matters, gives the previous type of fiction the term "gadget" science fiction. This reigned supreme during the Gernsback era ranging from 1926 to around 1938. Then came the "second foundation", the long awaited scangeover to social science fiction.

Mr Asimov defines this as: "...that branch of literature which is concerned with the impact of scientific advance upon human beings."

From this point on (1938 to the present) S F did a complete reversal of policies. People, rather than "things" became the important consideration. No matter how wonderful a scientific machine or concept may be, it means totally nothing if it has no relationship with people. A reader has to associate himself with a person in a story before he can fully understand the author's own true feelings and motives. This, as might be expected, was a change for the better. Literary standards improved along with scientific developments.

No longer were the wonderful machines the stars of the science fiction novel or short. No longer could a great theory mean anything to the reader if (supposedly) all humans were wiped out completely. For example: Who cares if some Martian scientist invents a super-sconic

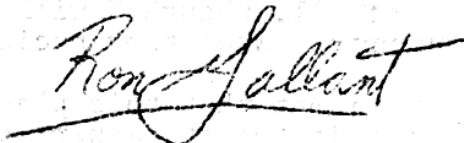
dodad (what ever it is), if all the humans have previously (again supposedly) been wiped out by a solar plague of poisonous spores. If the Martian's machine had the properties of bringing humans back to life, and he uses it—then the whole thing becomes a different matter.

Perhaps at the beginning of this (longer than I expected) editorial I should have stated: There is a difference between scientifiction and SOCIAL science fiction. And I am sure all will agree that all modern science fiction after 1938 (the Campbell era) is/or can be considered social science fiction.

So that brings us back to the very start where I said "we are scientifiction's last stand." By that I mean we will be featuring the old type of scientific fiction with the "gadget" element as the main theme and other considerations built around this. I hope we can make a satisfactory compromise with social science fiction though, and present the characters as something more than seemingly cardboard cut-outs in place of humans.

You will not the old format (pre 1938) in both the fiction and the illustrations. Who could ever forget the mechanical contraptions of Paul and Morey, though admittedly some of their figures looked more like two-dimensional comic strip characters than people. We are not trying to "turn back the clock" and retrogress into the glories of the past. Rather, we are trying to bring the past, the present, and compromise the two science fiction forms.

I trust this will be met with approval from you, the fans. I certinly hope so.



Introduction to THE HORRIBLE EARTHLING...

Many theories have been directed as to the credibility of life on Mars. Many of them say that Mars is the dead planet which at one time housed a race of super-beings more intelligent than Man. This story by Tom Arness runs along these lines but it does not end at that. Did you know that Earth was once invaded by the Martians? No! Well ten, perhaps you'd better read about it here, eh!

The Horrible Earthling

by Tom Arness

Iwaf turned sharply and faced the commander of the Martian spaceship. It was clear to see that Iwaf was disgusted at how Commander Ruyy was handling the whole operation. 'Things would be much different if I were commander,' Iwaf thought to himself; but the facts had to be faced. He was nothing more than a senior (some-officer class) crew-member with little or no authority.

"But Sir...", Iwaf said. "Just because the first expedition was so stupid to land in the sea is no reason for us to remain in this ridiculous hovering position over Planet "3". Why do we not abandon this foolishness and make planetfall? Afterall, it was pure incompetence on the part of the first expedition and..."

The captain's face turned red as he raised his pseudo-hand in a "to be silent" gesture. "You forget yourself, Iwaf," he said, "Just what gives you the right to sound off in the previous unmartianly way?"

Iwaf's complexion dropped to a deathly white and in reply all he could mutter was a few inaudible stutter-laden words.

"You know perfectly well," the captain continued, "that it was not incompetence but rather a mistake on their part. Yes, they underestimated this planet immensely. They failed to take the far greater gravitational attraction into account and so they fell far too quickly to properly adjust the anti-grav repulsors. Their second mistake was the biggest blunder of all, though I will admit that our Supreme Elders were just as surprised when they recieved the report of how that crew perished.

"It is now evident that this planet contains much more water in gaseous state even in the atmosphere than the total amount of water on the whole of our planet. But in addition to this there are the multitude of rivers, lakes, and the dreadful oceans which cover over three/fourths of the planet's surface."

Iwaf's face lit-up in an expression of disbelieving and deep surprise.

"See, even you did not know this. Before the first expedition I did not know this, so how can we expect the first expedition to have understood the fact. I presume they figured the oceans to be only a few inches deep, and a foot or so at deepest as it is on our planet. We are victims of environment. We can not understand things radically different from that of which we are familiar. Thus it is very difficult to get used to the facts; these oceans sometimes reach down for miles."

"Miles, Sir?" Iwaf questioned.

The captan's expression softened into an amused half-smile.

"I did not mean to bring in sematical terms. But for your information, it is the word Earthbeings use to measure distance. Our Elders have judged it to be approximately 12.5 woonas in our language. Does that answer your question?"

Iwaf stared at the captain, wrinkling his bulbious forehead in disbelief. "But how do we know all this?"

At this the captain looked pleased. Perhaps this Iwaf wasn't such a bad egg afterall. Perhaps after this expedition something might be

done about requesting full officership for the fellow. These were the rapid thoughts of the commander.

The captain was a man who liked to talk, much to the boredom of the crew. Iwaf, along with his fellows, could recall the constant conversation sessions on the trip over, but he supposed it was better than plain silence. For in space there is a tendency of crews to remain quiet. The psychologists of Martian culture have never learned the reason for this but there was only one prevenative, talk. There have been tales of whole crews going raving mad from the silence. At worst, the captain's chattering only annoyed, but of course no one told the captain of this.

The captain gave forth with an unhumanly smile. "It has been a secret up to now just how we know what we do about Earthlings. I was sworn to secrecy by the elders but I suppose it won't do any harm to let my crew know. We haven't all the facts you must realize. That would be asking for too much. But we have more than an inkling of what we are to suspect and that is more than the first expedition had. Facts, that's the key to conquest. Remember that. Facts! The first expedition perished and I do not intend the same fate for ourselves. I'll see to that.

"We began monitoring Earth radio only two solar cycles ago. I think we have learned much and learned well. Unfortunities sometimes creep in, but not to us, eh? That is why my orders state we are to circle the planet until such time as I am sure of all the factors."

"Yes sir," Iwaf said slowly. He let out an inaudible sigh, gave the Martian equalivent of a salute, turned, and left the cubicle.

The captain just stood there and mused to himself:

'In my day a crewman would never even think of questioning an officer. I must be getting soft. But orders are orders, and as long as I am captain orders will be followed without question. This slackness on the crew's part would have to be stoped, and soon. Especially that wise guy, Iwaf. But right now I need some rest.'

It was much later when the captain gave the "planetfall" order. The crew followed the usual actions of a landing by strapping themselves into the chairs. When the attractors and repulsors were activated, anything in the cubicles of the ship not fastened down became artificial bullets made to bounce around and smash against the walls in random fashion. It had happened to one crewmember long ago. What was left had to be removed from the walls with a scraper. No one dallied when the "strap in" signal was given.

While the ship's attractors slowly edged the ship nearer the globular bulk below, the captain was deep in thought: It wouldn't be long now... He, Captain Ruyy, would soon bring the news back to Mars. The report would read "Earth Habitable"—of course it would, it had to! He would be the most prominent flyer of his time. He was smart and he knew it. Take this orbital study programme of his. Learn all you can then plunge quick, that was the way to take things and hold on to them.

It would be up to the fleet to see that Earth was depopulated of its local inhabitants, but the captain had great faith in the fleet's potential. Of course there is no fleet at present. But there will be. Mars is a dying planet; even the Earthbeings knew that. But what those humans didn't know was, at that moment a survey ship was lowering itself deeper into the atmosphere of Terra, Earth.

Their purpose was simple: To find out if Earth is livable to Martians, and if so, can it be taken. They were soon to find out...

The ship made planetfall on the night side of the planet in a cool featureless plain. This was the most likely spot and the nearest in surface conditions to Mars, their home. The captain was no fool. He realized that three-fourths of the planet would be unlivable as the surface is submerged under H₂O. That naturally left one-fourth of the planetary surface for them to explore and evaluate.

The captain could not force himself to rest. Exciting would be an understatement. Just the mere thought of unlimited water was enough to make one's mouth seem dry. Imagine being able to drink as much as one wanted. That would be quite a switch on the restrictive rations which have been enforced on Mars for the past 20 thousand years.

But this was Earth, the promised land. It was dark but the captain was sure of his position. It was estimated the sun would rise over the eastern horizon in about 8 local hours and the crew would see the lush green vegetation of the planet.

Slowly the horizon brightened. The air was very dense and seemed to bother a few of the crewmembers. An analysis was taken earlier and proved that Earthly air was breathable to Martians, in fact beneficial to their oxygen starved metabolisms. But the air was difficult to swallow and some of the crew insisted on wearing their own self contained "bottled" air in place of the rich invisible gas which, here even had a force when it moved. A strange planet indeed. And look, clouds. That was something rarely seen on their home planet. However the "invaders" soon tired of the dreary landscape for the increased gravity exerted a force of which their feeble muscles were not able to withstand after a short time.

Finally, however, the sun came over the horizon in the typical earthly splendour. The Martians were awed by its beauty and spateousness when viewed from an inner planet. But soon they took to looking at the desolate landscape. Nothing! Nothing to be seen in all directions. It looked just like Mars. Except for a total lack of water. But the clouds, air, and gravity dispelled all fears of having made a turn in space and returned back to their home planet. This was Earth all right but it was far from what was to be expected.

Later that day the crew once more set foot on the sandy surface in order to collect rock samples of the surrounding territory while the captain ran tests on the atmosphere itself. A strange atmosphere with such a large oxygen content as to be almost unbelievable.

The Martians were used to gaining their needed oxygen through the oxidized minerals on the Martian surface, but here oxygen was in a free state and abundant everywhere. Thus it was understandable that Iwaf and the others began feeling lightheaded after a short time out in the open. Later if one was subjected to the abundant oxygen one became very sick. Martian bodies were not built to handle such large quantities of the air element.

The heat was another thing. The Martians were not used to such thermal radiation and the seemingly endless sand did nothing to ease the situation. The captain now knew that this was an unlikely spot. There was no water for thousands of miles in any direction and though Martians could live on very little water, they were not supermen to do without entirely.

The ship slowly climbed up to orbital height. The captain would have to pick another spot on the planet swinging on its axes below.

The captain was confused. This was such a strange and complicated planet, in some ways not at all like Mars. On Mars one knew where one was at. There the gravity was only .38 of Earth's with a rotation period of 24 hours, 37 minutes. The atmosphere was much more comfortable and less dense—only half of Earth's—and stretching from the surface to around 120 miles high. It was amazing how close the Earthmen had come with their measurements of Martian temperatures via thermocouples. Using the F. scale the Earthlings had arrived at the temperatures at the south pole, noon in summertime to range from 15° to 50°, 65° to 75° for the south temperate zone in summer, and 65° to 85° at noon in the Martian tropics. In the North temperate zone during winter it varies 30 to 60 below zero, and at night it usually reaches under 50° below zero.

The Martians could stand the cold, they had been accustomed to it many millena ago when the planet slowly lost its atmosphere. The heat of the Earth desert was too much. Bollh (a crewmember) had complained that he felt his blood boiling—unlikely—but the near thought was fearsom enough to send the spacecraft, crew intact, back into the orbit.

How was a Martian to chose the most likely spot on such a large planet anyhow? The oceans were out of the question so that dismissed $\frac{2}{3}$ of the planet. The deserts were the most similar spots to Martian landscape, but with lack of water and the terrible heat, life would be most uncomfortable. Sure canals could be constructed, but this might take centuries. By that time the Martian race will most surely have died unless a ready-made enviornment can be found.

No, they would have to look elsewhere on the map spread out far below. How about the poles? The temprature isn't too extreme for Martian comfort but no self respecting Martian would build on ice. Anyhow, sand was important to their metabolisms as they dissolved minerals (mostly silicon) with strong stomach acids. The transportation problem of raw materials was too immense for Martian engineering, especially under the threefold gravity. Well then, how about the tundra or temperate zone? No, that same problem, the lack of sand. Vegetation was not useful outside of scientific studies of other life forms. As the Elders seen it, all life forms would have to perish to make room for the great Martian conuers.

Their history books, the only books surviving to this date, told of how their long dead ancestors took Mars as Earth was planned to be invaded. Unfortunately the texts have been rewritten so many hundreds of times in the past 50 thousand years that it is hard to tell if the present generation even looks like the original Martians. Probably not, as they had a fertile world with abundant atmosphere and water lakes, not the dead sphere that remained in orbit as a mockery of that long dead race. The present species were a 100% result of enviornment but nature can not addapt to radical changes. The "terrible lizards" of Earth all perished when the creeping glaciers ploughed the land.

The captain was running out of time. The power supply was becoming low from the constant use of the repulsors located in the belly of the ship. The spaceship could be made to orbit under its own momentum around earth making use of centrifugal force to fight gravity, but the captain said under the circunstances this would be too risky. He complained they would be likely prey to any stray meteor that might inter-

sect their orbital path and thus damage or totally destroy the ship. The ship was to remain motionless in relation to surrounding space so this could not be called an orbit at all. It was the captain's reasoning that the chances of being hit this way were far less than if they were on the move. Some of the power was concentrated on the now very feeble meteoric deflectors. At best only the very large chunks could penetrate the field but as yet only two had broken through the ship's hull.

A new search area would have to be located, and fast. It was estimated that only 170 days of power was still in the storage cells. 160 of these days would be used in the return trip back to Mars so that left ten days to find a spot, test it, and set up a signal tower for the "fleet" that was not yet built.

The captain along with the chief navigator looked over the Earth as projected on the large viewing screen.

Navigator zohn pointed a pinkish boney finger at a mountaneous spot on the West coast of what Earthmen would refer to as "Canada."

"This looks like the most likely spot," he said.

"I do believe you are right," the captain agreed in an almost cheerless voice. The previous landing had taken much of his adventuresome spirit.

The navigator continued: "It is close to the sea of water so transportation will be no problem. The mountains will give us a simulated Martian environment if we still want it in the distant future. At present it is a matter of life and death. (The captain nodded) The atmosphere will be thinner and cooler at higher levels. The rocks can be broken down into sizable chunks for eating I suppose, though I will have to admit I have never eaten solid stuff in my whole life. It would probably take some time to dissolve.

"Better than roasting to death on the desert or dying from lack of oxygen and water on Mars," the captain added.

The navigator was becoming so enthusiastic that smiles were being displayed by all the crew.

"And I suppose water could be obtained easily from the mountain sloops in the form of snow. Yes, I think this will suit us fine, unless..." His voice trailed off into nothingness.

"UNLESS WHAT?" the captain asked urgently.

"Unless there are undesirable life forms lurking there. Remember, we know very little of this planet, at best, only a little more than the first expedition. They didn't suspect a very simple danger and..."

The captain smiled at this. "Nonsense, we are Martians, the leading race of the solar system. We conquered a planet before and we'll do it again. Why the miserable creatures of Earth haven't even discovered the secrets of space travel yet. Is that not our advantage?"

"We didn't conquer Mars," the navigator shouted back, "our ancestors did. They had much more knowledge than we will ever acquire in the next ten thousand years if we survive as a race that long. Our race is dying in numbers and knowledge. How many thousands of technical books have rotted and fell apart in our museums for lack of use? They could not have been restored but the knowledge contained therein could have been reprinted. Instead they restored the history books so we can glory at the fabulous past our ancestors led. Even they are not true representations. The bad parts, our defeats have been glossed over so we can read the Martian story as a race of supermen. we are dying in spirit.

"Actually I am amazed that the scientist's were able to make this old craft spaceworthy. But it is nothing like the battleships our ances-

ter's traversed the galaxy in. The machinery in their ship would put the dwindling power of our storage cells to shame. This thing has only the bare essentials, a power drive and repulsor-tractor beams, and very weak ones at that.

"History tells of a beam used on one of the first ships eons ago that had the power to split a sun or shift the very central axes of our galaxy. An overstatement but it must indicate that..."

"Enough!" the captain ordered. "Strap-in, we're going down into the mountain region."

The ship touched ground as a small foggy rain drifted from the clouds above. The crew, having been couped up in the cramped quarters of the ship with its stuffy air, now realized that their restoration plant was faltering. They needed fresh air badly. Too bad the ship couldn't be equipped with air restoration apparatus like the first expeditionary craft had. As this second one was whipped up in a hurry, such luxuries had been left out. The crew had been told the trip wouldn't be a pleasant one, but a necessary one for the sake of Martian culture and survival. So the crew had to be content with a faulty restoration plant which did not function any more, and compressed bottled air. Even the air would have to be rationed now. The situation would have been more serious on an Earthship, but fortunately the Martian's needed very small quantities of oxygen at a low air pressure. Perhaps with careful handling the oxygen supply would hold out until the return to Mars was accomplished.

They had nine days left until the deadline. They would have to depart at just the right minute at the proper velocity to reach Mars in a pre-worked-out trajectory. Nine days left...

The outer panel slowly slid open and the crew huddled around the opening to see their new home on the lower slopes of a mountain. Through the fog they could make out a misty figure, a horrible creature of many heads and wings. A multicolored monster over 17 feet high, seemingly coming at them to devour the ship and its inhabitants.

"UP, UP!" the captain screamed as the crew stood transfixed in pure horror. "Strap in! Emergency procedure..."

It is needless to say that the crew acted quickly on his orders. In no time flat the ship climbed at maximum speed out of the Terrestrial atmosphere for home.

"I told you there might be unforeseen monsters," the navigator stuttered as he broke out in a cold sweat.

"God! What a creature," the captain added quickly as if oblivious of the others statement. "We were lucky to have made safety in time. Perhaps Mars was ment to be our final resting place after all.

"We have been a proud race up to the end and at one time we were masters of the universe. We could move planets at will, and did, but not it is time to let another race carry on the mastering of the universe. We were glorious in the past, non can deny that. We will die like Martians, proud. Perhaps the new rulers will not make the mistakes that we made.

"Science and knowledge is what makes any race the ruling force. We lost our knowledge through neglect and now it is too late. If only we had carried on the glories of our past..."

"Now it is anothers turn, maybe even the horrible Earthlings..."

"Another's turn," mumbled the navigator.

Joe and Williams, two old timers of the British Columbia region, had seen the thing come out of the sky.

"Wonder what them Air Force fellers want?" Joe said.

"Dunno," his partner said, then pointing, "Look, they're taking-off. Wow, look at that speed."

"Funny," mumbled Joe. "Guess them fellers never seen a totem pole before."

The news of a saucer sighting was given a few lines on an inner page in the local papers. The date held more significance for this was October 4, 1957, and front pages read:

U.S.S.R. LAUNCHES SPUTNIK—FIRST IN SPACE.

Below in a interview with a leading American scientist was the following:

"Russia made the first step, our turn is next."

And the inhabitants of Mars died.

----- THE END -----

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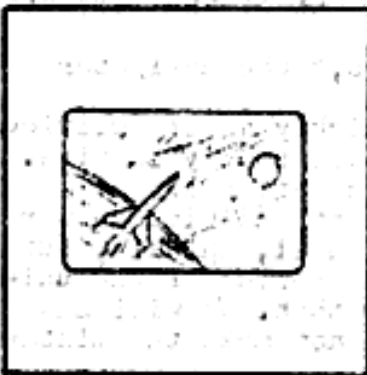
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A Chesley Bonestell Astronomical Artwork LISTING

COMPILED BY RONALD T. GALLANT

I do not pretend to have a complete collection of this man's work and I do not pretend that this listing is anywhere near being complete. I believe, however, that I have covered at least three-quarters of this artist's "Astronomical Art." I could be mistaken though, as my files have been built up (as most listings are) from miscellaneous information recieved over a number of years.

The editors of this magazine would be very grateful if you would let us know of any additional material appearing in periodicals, books, et cetera.

If you are interested in collecting Mr. Bonestell's art, and I am inclined to believe many Fans would be if given the necessary information, then here is your chance to find out just what is available. Just how successful you will be in locating some of the listed items is debatable: Many of the astronomical illustrations were featured in such publications as Life, Coronet and Collier's, all of them now very scarce.

Of course much of his work is available in book form. THE CONQUEST OF SPACE by Ley and Bonestell contains the largest number of his paintings in any one single volume. The fact remains; some of the paintings in this, and other books of the Viking series are reproduced in black and white. This brings us back to the original appearance in the magazines where in most cases they appeared in full color.



Chesley Bonestell

—A CHESLEY BONESTELL ASTRONOMICAL ARTWORK LISTING—

As can be imagined, this listing would not be possible through the singular efforts of myself. True enough, I did the far greater part of the work—hunting up leads, letter writing and sorting through hundreds of magazines which might have Bonestellian art therein. But we must not overlook the basic fact that this listing would have been impossible without the very kind assistance given me by others interested in seeing this listing materialize. It is to these people (listed below) that I dedicate this bibliography.

ACKNOWLEDGMENTS:

First on the list is Chesley Bonestell, who very kindly gave me a listing of his art reproduced sources from 1944 to 1948. Unfortunately after that time he ceased to keep a record; so all other information had to be acquired from other sources—very incomplete.

One of these "other sources" is the duplicate material of Chester D. Cuthbert, head of the local Science Fiction and Fantasy Society. Through him I located many hard to find items.

My thanks to THE MAGAZINE OF FANTASY AND SCIENCE FICTION and ASTOUNDING SCIENCE FICTION (now Analog) for their kind help in furnishing me with a listing of their "Bonestell" covers.

Also my thanks to Morris S. Bellens of Los Angeles and Roy Squires (Glendale, Calif.), for their help in answering some of my many questions concerning sources. Many thanks to R. C. Garver of McCall's Magazine who indirectly helped me locate much of the magazine material. My thanks to Malcolm Willets who very kindly supplied me with the #10 issue of Destiny. And last, but certainly not least, my thanks goes out to Donald H. Tuck of Lindisfarne Tasmania, who confirmed some doubt about the issues of Air Trails.

The illustrations are listed in the following manner:

PIC MAGAZINE, Sept. 1948, (When we reach the moon)
- text by Chesley Bonestell, page 44
#11-The rocketship preparing for take-off
page 44, 3½ x 5", 2 colors

This means that in Pic Magazine, September 1948 issue, there appeared an article by Chesley Bonestell titled "When We Reach the Moon" on page 44. Illustration number "4" in the listing, and first Bonestell illustration in this Pic issue shows: "A rocket being prepared for take-off." This illustration is on page 44; its size being 3½ inches by 5 inches, and reproduced in two colors.

A bit of confusion may arise over the "illustration numbers:"

Every illustration has its own number, depending upon the sequence in which they appear. Thus the first illo in the listing will be number "1", the second, number "2", et cetera. However, in some cases the same painting has appeared in two or more different magazines or books. No matter where the picture appears, its number will be the same if the picture is the same.

The illustration in the example on the opposite page is number "111", but this same picture has been reprinted in THE CONQUEST OF SPACE on page 73. In the CONQUEST OF SPACE listing, this same illo will also be number "111". This is the only literary means I have for picture identification.

The ideal situation would be to have small reproductions of these illustrations, but for now we will have to be content with the present system.

Later on, if I can gather enough additional information, or even better—the items themselves, I will publish a complete Bonestell art listing. Or perhaps a supplement listing would be better.

In one of the future issues of this magazine I will list some of the magazines in which some-Bonestellian items were reproduced, i.e., scientific films such as George Pal's DESTINATION MOON, WHEN WORLDS COLLIDE, WAR OF THE WORLDS, and THE CONQUEST OF SPACE.

Enough! On with the listings..

THE CHESLEY BONESTELL ASTRONOMICAL ARTWORK LISTING

THE SCIENCE FICTION MAGAZINES

GALAXY SCIENCE FICTION

February 1951

- #1 - The tying-down of the spaceship in a Martian sandstorm
cover, 6 x 5", color
- #2 - A space crew outside spaceship in free-fall orbit to Mars
cover, 6 x 5", color
- #3 - Explorers observing a double star system from a hypothetical planet
cover, 6 x 5", color

"THE SCIENCE FICTION MAGAZINES" continued...

ASTOUNDING SCIENCE FICTION (now ANALOG Science Fact & Fiction)
-both American and British editions

October 1947

#4 - Mercury, in transit of the Sun
cover, 7½ x 6", color

April 1948

#5 - The star, Myra and companion, seen from a local planet
cover, 7½ x 6", color

July 1948

#6 - Exploring the moon; crew outside ship setting up scientific
testing apparatus
cover, 7½ x 6", color

September 1948

#7 - Infra-sun seen from a local planet
cover, 7½ x 6", color

June 1949

#8 - A super-planet seen through telescope ?
cover, 7½ x 6", color

January 1950

#9 - symbolic: "Reaching for the planets"
cover, 7½ x 6", color

November 1951

#10 - "When worlds collide", a painting illustrating a scene from
the Paramount motion picture release of the same name.
cover, 7½ x 6", color

December 1951

#11 - Mars, as seen from one of its moons, Phobos
cover, 7½ x 6", color

THE MAGAZINE OF FANTASY AND SCIENCE FICTION

December 1950

#12 - Spaceship gliding over the misty surface of one of Saturn's
satellites
cover, 5½ x 7½, color

August 1951

#13 - Spaceship destroyed by meteors; Jupiter in background
cover, 5½ x 7½, color

February 1952

#14 - The exploration of the Moon
cover, 5½ x 7½, color

"THE SCIENCE FICTION MAGAZINES"

THE MAGAZINE OF FANTASY AND SCIENCE FICTION

October 1952

#15 - Saturn, as seen from its satellite, Dione
cover, 5½ x 5½", color

December 1952

#16 - Base established on one of Jupiter's satellites
cover, 5½ x 7½", color

March 1953

#17a - A space fleet leaves Martian inner moon to land on planet
cover, 5½ x 7½", color

#17b - (same as front cover)
back cover, 5½ x 7½", color

February 1954

#18 - Unstreamlined spacecraft blasts-off from the Moon
cover, 5½ x 7½", color

October 1954

#19 - The rocket testing base on the moon
cover, 5½ x 7½", color

November 1954

#20 - A planet of Antaries and companion star; showing a structure
constructed by the hypothetical intelligent inhabitants
cover, 5½ x 7½", color

April 1955

#21 - Surveying Mars; looking across the sandy plains
cover, 5½ x 7½", color

September 1955

#22 - Establishing the Lunar rocket base
cover, 5½ x 7½", color

December 1955

#23 - The sun becomes a nova; seen from Earth
cover, 5½ x 7½", color

February 1956

#24 - The Mars-ship leaves the space station orbit for Mars
cover, 5½ x 7½", color

April 1956

#25 - A sandstorm on Mars
cover, 5½ x 7½", color

July 1956

#26 - Disassembling the glider section from Earth-return rocket
section
cover, 5½ x 7½", color

"THE SCIENCE FICTION MAGAZINES"

THE MAGAZINE OF FANTASY AND SCIENCE FICTION

September 1957

#27 - The planet Mercury near the terminator
cover, 5 1/2 x 7 1/2", color

February 1959

#28 - Under Jupiter's "red spot"
cover, 5 1/2 x 7 1/2", color

THE PERIODICALS...

SKY AND TELESCOPE magazine, August 1957, (A panorama on the moon)

#29 - A panorama on the Moon (Bonestell's lunar mural at the
Hayden Planetarium
(fold out page) 7 1/2 x 31 1/2", B:W

THE NATIONAL GEOGRAPHIC MAGAZINE, February 1958

#29 - A panorama on the Moon (shows only about half of whole illo.)
pages 278 & 279, 8 1/2 x 14", B:W
(same painting as in Sky & Telescope; see above)

SCIENTIFIC AMERICAN, November 1948

#30 - The sun, as seen from the hot surface of Mercury
cover, 7 1/2 x 7 1/2", color

DESTINY (fanzine), Summer 1954 (#10)

#22 - Establishing the lunar rocket base.
cover, 6 1/2 x 5 1/2", B:W

NEWSWEEK, October 21, 1957

31 - Three moonships decelerating over the lunar landscape
cover, 7 x 7", color

TRUE SPACE SECRETS, April 1958

#31 - Three moonships decelerating over the lunar landscape
page 16, 7 x 8 1/2", B:W

"THE PERIODICALS"

SPACE WORLD, May 1960

- #32 - The von Braun spaceship orbiting the Moon
page 38, 4 1/2 x 4", B:W

SPACE JOURNAL, Summer 1958

- #33 - A comet crashes into the Earth
page 38, 7 1/2 x 5 1/2", B:W
- #34 - The sun turns nova, as seen from Chicago, Ill.
page 39, 10 1/2 x 8 1/2", 2 colors
- #35 - The Moon breaks-up from gravitational stresses, showering Earth with meteors
page 40, 9 1/2 x 7", B:W

POPULAR SCIENCE, December 1959

-7 paintings used for an add for CBS TV's "GEMEN INTO SPACE". All paintings are on page 69; their size measuring 1 1/2 x 1 1/2", and printed in duotone (2 colors.)

- #36 - The three stage rocket blasts-off from Earth
- #37 - Jettisoning second stage of rocket; earth below
- #38 - Decelerating; Moon below
- #39 - On the Moon
- #40 - Blast-off from Luna; Destination: Earth
- #41 - Spaceship; Earth below
- #42 - Earth seen from space

LIFE MAGAZINE, October 19, 1959

-Same add; same illustrations as above only their size in LIFE is 2 1/2 x 2 1/2", 2 colors. Other issues of LIFE contain this add also, and it is very likely that this add appeared in other magazines issued around that period.

- #'s - 36, 37, 38, 39, 40, 41, 42

"THE PERIODICALS"

LIFE MAGAZINE, May 29, 1944

- #43 - Saturn as seen from Phoebe
page 79, 3½ x 4½", color
- #44 - Saturn as seen from its satellite, Japetus
page 79, 3½ x 4½", color
- #45 - Saturn, as seen from the snows of Titan
page 79, 8 x 9", color
- #46 - Saturn, as seen from the rocks of Mimas
page 80, 8 x 9½", color
- #47 - Saturn, as seen from satellite Dione
page 80, 3½ x 4½", color
- #48 - The fabulous rings of Saturn, seen from the planet's surface
page 80, 3½ x 4½", color

LIFE MAGAZINE, March 4, 1946

- #49 - 200 miles above Long Island in the moonship
page 73, 8 x 9½", color
- #50 - Over Europe at sunset, 600 miles up
page 73, 4½ x 6", color
- #51 - The crew outside ship during free-fall; moon up front
page 74, 3½ x 4½", color
- #52 - 200 miles above the Lunar crater, Albategnius
page 74, 3½ x 4½", color
- #53 - The surface of Luna
page 74, 7½ x 9", color
- #54 - The rocket, 30 miles above the crater, Aristarchus
page 75, 3½ x 4½", color
- #55 - Coming in to land; Mt. Pico below
page 75, 3½ x 4½", color
- #56 - The Moonscape seen from the rim of the crater, Theophilus
page 75, 7½ x 9", color
- #57 - The rocket returns to Earth
page 76, 8½ x 9½", color
- #58 - In the spaceship everything is weightless
page 76, 3½ x 4½", color
- #59 - The rocket, 50 miles above San Francisco Bay
page 76, 3½ x 4½", color

"THE PERIODICALS"

LIFE MAGAZINE, May 21, 1951

#13 - Spaceship destroyed by meteors; Jupiter in background
page 140, 3 1/2 x 4 1/4", color

LIFE MAGAZINE, December 8, 1952

#60 - The new-born planet Earth is bombarded by meteors; the still
semi-plastic moon looks over the horizon
cover, 10 1/2 x 12 1/2", color

#61 - The life history of Earth from birth to death
page 87, 10 1/2 x 12 1/2", color

#62 - A cut-away view of the Earth's interior
page 88 & 89, 12 x 12 1/2", color

#63 - The Earth's crust
page 89, 3 1/2 x 5 1/2", color

#64 - The solar system is born
page 90, 3 x 4 1/2", color

#65 - Proto-Earth and Proto-Moon
page 90 & 91, 12 1/2 x 15 1/4", color

#66 - The continents congeal; the rains cool the molten seas of
rocks; meteors bombard the earth
pages 92 & 93, 9 1/2 x 20", color

#67 - The primeval oceans
page 94, 5 1/2 x 8 1/2", color

#68 - The primeval landscape
pages 94 & 95, 6 1/2 x 20", color

#69 - How mountains are built
page 96, 5 1/2 x 8 1/2", color

#70 - The sea floor sags
page 96, 2 1/2 x 3 1/4", color

#71 - The crust crumbles
page 96, 2 1/2 x 3 1/4", color

#72 - A new fault appears
page 96, 2 1/2 x 3 1/4", color

#73 - The floor of the ocean
page 97, 12 1/2 x 9 1/2", color

#74 - The glaciers move across the Earth
page 98 & 99, 12 1/2 x 15", color

"THE PERIODICALS"

LIFE MAGAZINE, December 8, 1952 (continued)

- #74 - The last great ice cap; 1 million years ago
page 99 4 x 4", color
- #75 - The end of the Earth when the sun goes into its nova stage
10 billion years from now
pages 100 & 101, 12" x 20", color

LIFE MAGAZINE, December 20, 1954

- #76 - The star system R W Persei, seen from a hypothetical airless planet
cover, 10½ x 12½", color
- #77 - The rings of Saturn, as seen through the dense atmosphere of the planet itself
pages 46 & 47, 6½ x 14½", color
- #78 - The wastes of Mercury
page 46, 5½ x 8½", color
- #79 - The deserts of Mars
page 47, 5½ x 8½", color
- #80 - The sizes of the Sun, the nine planets, and their 31 satellites compared
pages 48, 49 & 50 (fold-out page), 7½ x 24½", color
- #76 - The double star, R W Persei, seen from hypothetical planet
page 59, 12½ x 10½", color
- #81 - Purple Pleione, a star of the familiar Pleiades cluster
page 60, 2 x 4½", color
- #82 - The beautiful double star system known as Beta Lyrae, seen from a local planet
page 60 & 61, 12½ x 14½", color

LIFE MAGAZINE, December 15, 1958

- #83 - A mighty explosion creates a lunar crater
cover, 10 x 10½", color
- #84 - A lunar explosion, seen from space
page 90, 4½ x 10½", 2 colors

McCALL'S MAGAZINE, October 1950

- #85 - The airless surface of Mercury
page 41, 12½ x 10", color

"THE PERIODICALS"

MECHANIX ILLUSTRATED, July 1947

- #86 - Lowering the atomic spaceship onto the back of the strato-sphere plane
page 97, $5\frac{1}{2} \times 5\frac{1}{2}$ ", color
- #87 - The atomic rocket leaves the strato-plane at 50,000 feet
page 100, $4\frac{1}{2} \times 6\frac{1}{2}$ ", color
- #88 - The crew seen during the "free fall"
page 101, $4\frac{1}{2} \times 6\frac{1}{2}$ ", color
- #89 - Decelerating over the Lunar surface
page 104, $7 \times 5\frac{1}{2}$ ", color
- #90 - Man on the moon
page 105, $7 \times 5\frac{1}{2}$ ", color
- #91 - Decelerating over Mars
page 108, $1\frac{1}{2} \times 2\frac{1}{2}$ ", color
- #92 - Approaching Mars, near Phobos
pages 108 & 109, $7\frac{1}{2} \times 9\frac{1}{2}$ ", color
- #93 - A series of parachutes slow down the atomic-sip's fall to Earth
page 112, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color

CORONET MAGAZINE, August 1946

- #94 - 25 miles above New Jersey
page 59, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color
- #95 - 600 miles above the central United States
page 60, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color
- #96 - 35,000 miles from Earth
page 61, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color
- #97 - The Moon, as seen from 4,300 miles out
page 62, $5\frac{1}{2} \times 7\frac{1}{2}$ ", color
- #98 - 750 miles from the Moon
page 63, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color
- #99 - 11,000 miles beyond the Moon
page 64, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color
- #100 - 12,000 miles away from Mars
page 65, $7\frac{1}{2} \times 5\frac{1}{2}$ ", color

"THE PERIODICALS"

CORONET MAGAZINE, August 1946 (continued)

- #101 - Mars, seen from its satellite 6,000 miles out
page 66, 7½ x 5½", color
- #102 - A Martian dust-sand storm, seen from above the atmosphere
page 67, 7½ x 5½", color

CORONET MAGAZINE, July 1947

- #33 - A comet strikes the Earth
page 27, 7½ x 5½", color
- #34 - The sun as a nova, seen from Chicago, Ill.
page 28, 5½ x 4", color
- #103 - A white dwarf star in Earth's sky
page 29, 5½ x 4", color
- #35 - The Moon breaks-up via gravitational stresses; showers Earth
with meteors
page 30, 5½ x 4", color
- #104 - The Earth freezes, seen from Rio de Janeiro
page 31, 5½ x 4", color
- #105 - A close passing asteroid flattens Paris
page 32, 5½ x 4", color
- #106 - A meteor strikes Manhattan
page 33, 5½ x 4", color
- #107 - The Earth is a glowing cinder when the sun goes nova; Earth
seen from space
page 34, 5½ x 4", color

ESQUIRE MAGAZINE, December 1947 (not astronomical)

- #108 - San Francisco seen in moonlight
page 112, 7½ x 7½", color
- #109 - New York City in twilight
page 113, 7½ x 7½", color

MORE ADVENTURES IN TIME AND SPACE (pocketbook)
(Bantam Books, #1310, 29¢)

- #110 - A redish sun rises over the curving horizon of a planet as
a powerful space-arc rises into the heavens.
cover, 7 x 4½", color

"THE PERIODICALS"

"THE BOOKS"

PIC MAGAZINE, September 1948 "When we reach the Moon" COMMENTARY ON THE PERIODICALS
- text by Chesley Honestall, page 44

- #111 - The rocket being prepared for take-off, page 44, 3 1/2 x 5", 2 colors
- #112 - Earth eclipses the Sun, as seen from the Moon, page 44, 6 1/2 x 8", 2 colors
- #113 - The Lunar Leibnitz Mountains, page 45, 6 1/2 x 8", 2 colors
- #114 - Sime Iridum and vicinity, on the Moon, page 45, 6 x 8", 2 colors
- #115 - The Lunar Alpine Valley, page 46, 5 1/2 x 8", B/W
- #116 - The Lunar crater, Copernicus, page 47, 8 x 6", 2 colors
- #117 - The rocket departure from the Moon, page 47, 2 1/2 x 4", 2 colors

PIC MAGAZINE, December 1948

- #20 - Antaries and white companion star, as seen from a hypothetical planet supposedly supporting intelligent beings, page 7, 10 x 15", 2 colors

COLLIER'S, March 22, 1952

- #118 - The third stage of the Earth-to-station manned rocket jet-tessoning the 2nd. stage, cover, 9 1/2 x 13", color
- #119 - The space station over Central America, pages 24 & 25, 9 1/2 x 20 1/2", color
- #120 - The skin of rocket ship's third stage glows red hot upon re-entry into the atmosphere; Cape Town, South Africa below, page 29, 7 x 10 1/2", color
- #121 - The von Braun orbital Moonship hovers 200 miles above the lunar surface, pages 32 & 33, 13 1/2 x 14 1/2", color
- #122 - Mars, as seen from its outer moon, Deimos, page 36, 6 1/2 x 9", color

"THE BOOKS"

CONQUEST OF THE MOON

- #123 - Exploring the plains of Sinus roris
dust jacket, 7½ x 8", color
- #124 - Construction of the three Moonships in space; Earth below
front endpaper, 7½ x 16", color
- #119 - The space station over Central America
page 11, 7½ x 8", color
- #31 - The three moonships decelerating over the lunar surface
page 63, 6½ x 8", color
- #125 - Touching down on the lunar plains
page 67, 8½ x 8", color
- #126 - The moonship 24-hours after landing, Sinus roris plain
pages 76 & 77, 7½ x 16", color
- #123 - Exploring the plains of Sinus roris
page 101, 7½ x 8", color
- #127 - Blast-off for Earth
page 115, 7 x 8", color
- #125 - Construction of the three moonships
back endpaper, 7½ x 16", color

ACROSS THE SPACE FRONTIER

- #118 - The third stage of the Earth-to-station manned rocket jet-
tesoning the second stage
dust jacket, 7½ x 8½", color
- #119 - The space station over Central America
front endpaper, 7½ x 16½", color
- #119 - The space station over Central America (same as endpapers)
page 29, 7 x 8", color
- #121 - The orbital spaceship over the crater, Autolycus
page 51, 10½ x 8", color
- #120 - The third stage of the manned ship entering the atmosphere;
Cape Town, South Africa in darkness below
page 61, 5½ x 8", color
- #122 - The planet Mars, as seen from Deimos
page 133, 6½ x 8", color
- #119 - The space station over Central America
back endpaper, 7½ x 16½", color

THE EXPLORATION OF MARS

- #126 - The Marsship, 8,600 miles from Mars
front dust jacket, 7 x 7", color
- #26 - Disassembling the glider section from the passenger-rocket
back of dust jacket, 7 x 7", color
- #127 - The South polar cap of Mars (line drawing)
left front endpaper, 9½ x 7", 2 colors
- #128 - The North polar cap of Mars (line drawing)
right front endpaper, 9½ x 7", 2 colors
- #126 - The Marsship 8,600 miles from Mars
page iv, 7 x 7", color
- #129 - The sizes of Earth, the Moon, and Mars compared
page 65, 4½ x 7", color
- #130 - The Temple of Zeus Olympus, near Athens
page 66, 4 x 4½", B:W
- #131 - The Temple of Zeus if it had been constructed on Mars
page 66, 4 x 4½", B:W
- #132 - The canals of Mars
page 67, 5½ x 7", B:W
- #133 - The red planet, seen from Deimos
page 68, 7 x 7", color
- #11 - Mars, seen from Phobos
page 69, 7 x 7", color
- #134 - Exploring the South polar cap of Mars
page 72, 6 x 7", color
- #135 - The three-stage rocket being readied for firing
page 89, 7½ x 6½", color
- #136 - An artificial satellite over Eastern Asia
page 91, 8½ x 7", B:W
- #137 - An instrument-carrying satellite over the Atlantic coast
near New York
page 92, 8½ x 6", color
- #138 - The reentry of the instrument-carrying satellite 40 miles
above the San Francisco Bay area
page 93, 5½ x 7", color
- #139 - Assembling the Mars ships in Earth-orbit
page 96, 7 x 7", color

"THE BOOKS"

THE EXPLORATION OF MARS (continued)

- #24 - The two Mars-ships blasting-off from the Earth orbit
page 114, 7 x 7", color
- #140 - Orbiting Mars at a distance of 620 miles
page 115, 7 x 7", color
- #141 - The landing on the Martian sands
page 118, 7 x 7", color
- #26 - Disassembling the glider and return rocket sections
page 119, 7 x 7", color
- #142 - The Mars expedition, 270,000 miles out from Earth
page 120, 8 x 7", B:W
- #25 - A dust storm on Mars
page 145, 7 x 7", color
- #21 - Investigating the vicinity of the landing sight on Mars
pages 148 & 149, 7 $\frac{1}{2}$ x 14 $\frac{1}{2}$ ", color
- #143 - The Earth, seen from 180,000 miles out in space
page 150, 8 x 7", B:W
- #144 - Blast-off from Mars
page 152, 7 x 7", color
- #127 - The South polar cap of Mars (same as front endpaper)
left back endpaper, 9 $\frac{1}{2}$ x 7", 2 colors
- #128 - The North polar cap of Mars
right back endpaper, 9 $\frac{1}{2}$ x 7", 2 colors

THE CONQUEST OF SPACE

-introduction on page 9 "...Mostly about Chesley Bonestell"

(see any illustrations marked in the following way: -a, -b, etc.,
at the end of this listing)

- #6 - Exploring the Moon
front of dust jacket, 6 $\frac{1}{2}$ x 7", color
- #45 - Saturn, as seen from the snows of Titan
back of dust jacket, 5 $\frac{1}{2}$ x 7", color
- #85 - The hot surface of Mercury
left front endpaper, 6 $\frac{1}{2}$ x 7 $\frac{1}{2}$ ", color
- #145 - The rivers of lava on Jupiter
right front endpaper, 7 $\frac{1}{2}$ x 6 $\frac{1}{2}$ ", color

"THE BOOKS"

RELEASE ONLY

THE CONQUEST OF SPACE (continued)

- #146 - The trans-continental rocket 10 miles above Manhattan
page 33, 7 x 7", B:W
- #94 - The rocket 25 miles above New Jersey
page 34, 7 1/2 x 6 1/2", B:W
- #147 - The rocket 125 miles above Williamsport, Pa.
page 35, 7 x 7", B:W
- #148 - The rocket 500 miles above central Nebraska
page 36, 5 x 5", B:W
- #149 - The rocket 250 miles above the Nevada-Utah border
page 36, 3 x 3", B:W
- #-49a - The rocket 200 miles above the Atlantic Ocean
page 37, 5 1/2 x 7", B:W
- #50 - Circling the Earth outside the atmosphere
page 38, 6 x 7", B:W
- #150 - The Earth, 2,000 miles away
page 39, 5 1/2 x 7", B:W
- #-57b - The Earth, 4,000 miles away
page 40, 5 1/2 x 7", B:W
- #111 - Preparing the spaceship for the Moon voyage
page 73, 7 1/2 x 5 1/2", color
- #58 - 15,000 miles out from the Earth
page 74, 5 x 6", B:W
- #96 - 35,000 miles out from the Earth
page 74, 3 x 3 1/2", B:W
- #151 - 4,500 miles out from the Moon
page 75, 6 x 7", B:W
- #113 - The Leibnitz mountains on the Moon
page 76, 5 1/2 x 7", color
- #112 - Eclipse of the Sun by Earth; seen from the Moon
page 77, 5 1/2 x 7", B:W
- #52 - 200 miles above the Lunar surface
page 78, 5 1/2 x 7", B:W
- #-117c - 50 miles above the Moon
page 79, 4 x 5", B:W

"THE BOOKS"

THE CONQUEST OF SPACE (continued)

- #-59d - 50 miles above San Francisco Bay
page 79, 4 x 5", B:W
- #22 - Construction of the Lunar base
page 80, 7 $\frac{1}{2}$ x 6 $\frac{1}{2}$ ", B:W
- #152 - The Great Wall, a mountain range on the Moon
page 81, 5 $\frac{1}{2}$ x 7", B:W
- #54 - Over the Lunar crater, Aristarchus
page 82, 5 x 6 $\frac{1}{4}$ ", B:W
- #114 - A lunar scene, Promontory Laplace in foreground
page 82, 3 x 4", B:W
- #53 - The Earth as seen from the foot of lunar mountains
page 83, 5 $\frac{1}{2}$ x 7", B:W
- #115 - 10 miles above the lunar Alps
page 84, 5 $\frac{1}{2}$ x 7", B:W
- #153 - 10 miles above the lunar pole
page 85, 5 $\frac{1}{2}$ x 7", color
- #116 - On the Eastern wall of the crater, Copernicus
page 86, 5 x 6 $\frac{1}{4}$ ", B:W
- #55 - 25 miles above Mt. Pico
page 86, 3 x 3 $\frac{1}{2}$ ", B:W
- #56 - Lunar view from the rim of the crater, Theophilus
page 87, 5 $\frac{1}{2}$ x 7", B:W
- #6 - Exploring the moon (same as on front of dust jacket)
page 88, 6 $\frac{1}{2}$ x 7", color
- #85 - The hot surface of the inner planet, Mercury
page 121, 7 $\frac{1}{2}$ x 6 $\frac{1}{2}$ ", color
- #99 - Halley's Comet, Earth, and the moon, seen 11,000 miles out
page 122, 5 $\frac{1}{2}$ x 7", B:W
- #154 - The planet Venus as seen from space
page 123, 5 $\frac{1}{2}$ x 7", B:W
- #155 - The surface of the mysterious planet, Venus
page 124, 5 $\frac{1}{2}$ x 7", color
- #156 - The surface of Mars
page 125, 5 $\frac{1}{2}$ x 7", color

"THE BOOKS"

THE CONQUEST OF SPACE (continued)

- #157 - The red planet Mars, as seen from Deimos
page 126, 7½ x 5½", B:W
- #100 - Mars, as seen from Deimos (another view)
page 127, 5 x 6½", B:W
- #101 - Mars, as seen from Phobos
page 127, 3 x 3½", B:W
- #158 - Mars as seen from Deimos
page 128, 7½ x 6", color
- #44 - Saturn, as seen from its satellite, Japetus
page 129, 5½ x 7", color
- #43 - Saturn as seen from Phoebo
page 130, 5 x 6½", B:W
- #159 - Saturn, seen from Rhea
page 130, 3 x 3½", B:W
- #47 - Saturn, seen from Diono
page 131, 5 x 6½", B:W
- #-48e - The rings of Saturn
page 131, 3 x 3½", B:W
- #45 - Saturn, seen from the snows of Titan (same as back dust j'kt)
page 132, 5½ x 7", color
- #46 - Saturn, seen from Himas
page 133, 5½ x 7", color
- #160 - Uranus, seen from its third major satellite
page 134, 5 x 6½", B:W
- #161 - Neptune, seen from Triton
page 134, 3 x 3½", B:W
- #162 - The surface of Pluto
page 135, 5½ x 7", B:W
- #5 - The star Mira, seen from a hypothetical planet
page 136, 5½ x 7", color
- #107 - If a meteor ever struck Manhattan
page 153, 7 x 5½", B:W
- #163 - The Martian landscape
page 154, 7½ x 6½", color

"THE BOOKS"

THE CONQUEST OF SPACE (continued)

- #102 - The Martian landscape (another view)
page 155, 5 $\frac{1}{2}$ x 7", color
- #164 - Jupiter, seen from Europa
page 156, 5 $\frac{1}{2}$ x 7", B:W
- #165 - Jupiter seen from its moon, Jupiter v
page 157, 5 $\frac{1}{2}$ x 7", B:W
- #145 - The lava-rivers of Jupiter (same as right endpapers)
page 158, 7 $\frac{1}{4}$ x 6 $\frac{1}{4}$ ", color
- #166 - The rings of Saturn
page 159, 4 x 5", color
- #167 - The rings of Saturn (another view)
page 159, 4 x 5", color
- #168 - The 200-inch Hale telescope
page 160, 7 $\frac{1}{2}$ x 6", B:W
- #145 - The rivers of lava on Jupiter
Right back endpaper, 7 $\frac{1}{2}$ x 6 $\frac{1}{4}$ ", color
- #85 - The hot surface of Mercury
Left back endpaper, 7 $\frac{1}{2}$ x 6 $\frac{1}{4}$ ", color

There was some slight differences in the paintings appearing in this book and their original appearances in the magazines. Differences relative to THE CONQUEST OF SPACE reproductions are noted:

- 49a - The spaceship was left out (original appearance--LIFE)
- 57b - The Moonship once more was left out (orig. appearance--LIFE)
- 117c - The Moonship was left out (original appearance--Pic)
- 59d - The spaceship was left out (Original appearance--LIFE)
- 48e - A few clouds have been added to the atmosphere of Saturn (Original appearance--LIFE)

SPACE SATELLITES

- #125 - A spaceship making a landing on the Moon
page 142, 4 x 3 $\frac{1}{2}$ ", B:W

SECRETS OF SPACEFLIGHT

- #31 - Three Moonships decelerating over the Moon's surface
page 115, 3 x 4", B:W

"THE BOOKS"

"THE BOOKS"

THE COMPLETE BOOK OF OUTER SPACE

- #169 - The "Destination Moon" spaceship on the lunar plains
cover, 9½ x 6½", color
- #121 - Orbiting the moon in the von Braun spacecraft
page 14, 6½ x 5½", B:W
- #119 - Space station and third stage of manned rocket over Central
America
page 18, 3 x 6", B:W
- #135 - A nose cone space satellite over the Earth
page 120, 9½ x 6½", B:W
- #121 - Orbiting around the Moon (same as second listed illo.)
page 125, 4½ x 6", B:W

THE NEXT 50 BILLION YEARS

- #108 - The Sun becomes a nova; reduces Earth to a cinder
dust jacket, 5½ x 5½", color
- #34 - The Earth is struck by a comet
page 9, 7½ x 5½", B:W
- #107 - If a meteor struck Manhattan
page 11, 7½ x 5½", B:W
- #36 - The moon breaks-up and showers Earth with meteors
page 13, 7½ x 5½", B:W
- # 106 - A close passing asteroid flattens Paris
page 15, 7½ x 5½", B:W
- #105 - The Earth freezes; seen from Rio de Janeiro
page 17, 7½ x 5½", B:W
- #104 - The super-gravity of a white dwarf star lifts things from
Earth
page 19, 7½ x 5½", B:W
- #108 - The Earth is reduced to a glowing cinder when the sun goes
nova
page 21, 7½ x 5½", B:W
- #35 - The nova-sun as seen from Chicago, Ill.
page 23, 7½ x 5½", B:W

"THE BOOKS"

THE WORLD WE LIVE IN

- All information on this book was gained from the deluxe edition. There are two other editions: the regular, and the juvenile. As far as I know, all editions contain the same illustrations on the same pages as the deluxe edition. But this is not known for sure.

- #61 - The life span of Earth from beginning to end
page 5, 12 $\frac{1}{2}$ " x 10", color
- #62 - The interior of the Earth
page 6 & 7, 12 x 11 $\frac{1}{2}$ ", color
- #63 - The Earth's crust
page 7, 3 $\frac{1}{2}$ x 5", color
- #64 - The solar system is born
page 8, 3 x 4", color
- #65 - Proto-Earth and proto-moon
page 8 & 9, 12 $\frac{1}{2}$ x 14 $\frac{1}{2}$ ", color
- #60 - The continents congeal
page 10 & 11, 9 $\frac{3}{4}$ x 20", color
- #66 - The primeval oceans
page 12, 5 $\frac{1}{2}$ x 8 $\frac{1}{2}$ ", color
- #67 - The primeval landscape
page 12 & 13, 6 $\frac{3}{4}$ x 20", color
- #68 - The mountains are created
page 14, 5 $\frac{1}{2}$ x 8 $\frac{1}{2}$ ", color
- #69 - The sea floor sags
page 14, 2 x 2 $\frac{1}{2}$ ", color
- #70 - The crust crumbles
page 14, 2 x 2 $\frac{1}{2}$ ", color
- #71 - A new fault appears
page 14, 2 x 2 $\frac{1}{2}$ ", color
- #72 - The ocean floor
page 15, 12 $\frac{1}{2}$ x 9 $\frac{1}{2}$ ", color
- #73 - The glaciers move across the Earth
pages 16 & 17, 12 $\frac{1}{2}$ x 14 $\frac{1}{2}$ ", color
- #74 - The last great ice cap
page 17, 4 x 4", color
- #78 - The wastes of Mercury
page 270, 5 $\frac{1}{2}$ x 8 $\frac{1}{2}$ ", color

"THE BOOKS"

THE WORLD WE LIVE IN (continued)

#77 - The rings of Saturn
page 270 & 271, 6" x 14 1/2", color

#79 - The deserts of Mars
page 271, 5 1/2" x 8 1/2", color

#80 - The nine planets and the Sun (fold-out page)
page 272-273-274, 7 1/2" x 24", color

#76 - The double star system, R W Persci, seen from a local planet
page 283, 12 1/2" x 10 1/2", color

#81 - Purple Pleione
page 284, 2 x 4 1/2", color

#82 - Beta Lyrae star system seen from a local planet
page 284 & 285, 12 1/2" x 15", color

----- THE END

Below is some additional information that may prove to be useful.

:: On page 44 in the fanzine review department of the September 1951 Amazing Stories is a review of the fan-mag IMPOSSIBLE. There it stated that an issue had a cover depicting a sunrise on Neptune by Chisler Bonestell; having checked this out as a possible misprint, I have discovered that this was a pseudonym and not a misspelling. It is NOT Chesley Bonestell.

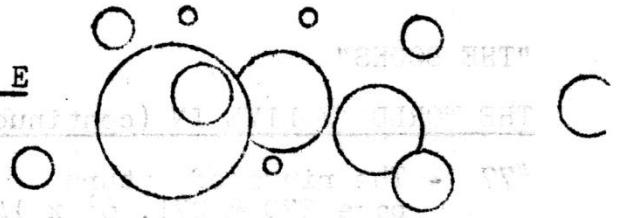
:: In THE WORLD WE LIVE IN book one illustration was left out; probably due to lack of space. This was painting # 75 (the end of the Earth when the sun goes nova), and it originally appears in the Dec. 8 1952 issue of LIFE magazine.

:: For slight differences in some paintings appearing in the CONQUEST OF SPACE and their original sources, see the notation below the "CONQUEST" listing.

R. T. GALLANT

THE ETERNAL CIRCLE

by Willy don Rawn



Today the world is filled with the jagged fingers of lightning; the depths of thunder fill the ears with abstruse rumblings.

This is no gentle rain, no lank mist from the tranquil Gods. No! It's as if the seas of Hell have overflowed their brims spilling forth their firey wrath upon those miserable creatures called Man on that paltry sphere below. Man is disturbed and depressed.

But in some ways this is a bright day, for this—it could be said—is the beginning of the universe; the beginning of Man.

Strange! But wonderful.

Today the calendar on Dr. Pritchell's desk shows the present day to be the 6th of March, 1994.

The room is quiet and very dark. A few shivering mice scamper from a hidden store of crumbs to their damp grey hideouts in the wall. The only sounds audible over their rapid scamperings is the shallow, yet very belated, slumbering breaths of Dr. Hans Pritchell. A few shadows weave ghostly patterns on the brownish walls as the few random lightning sparks light up a troubled sky. The rumble soon after distends the deathly silence into a goulsh curse. But the rain made not itself heard.

In just a few hours from now the universe will again be recreated and the cycle will be complete. At present even Dr. Pritchell—deep in the subconscious oceans of slumber—does not realize what is about to happen. But soon, in a few hours from now, he will see one of his dreams come true, and another cherished dream will shatter. The universe will be born; the cycle complete...

It will be very soon now.

The door swung open under the gentle pressure of Thomas Wilson's slender fingers. A bright cone of yellowish light penetrated the darkness to be projected on the farther wall as a dull sheen.

Thomas was considered more than just Dr. Pritchell's chief assistant, he was a very close friend. His slender, almost frail looking form, entered, crossing the room in brisk, even strides. The gentle hands lowered as a dim smile crossed the assistant's expressionless features.

"Time to wake-up, Dr. Pritchell," the gentle voice said firmly. "This is the day."

The tired features of the old man slowly came to life. His dark eyes opened as slits, unacustomed as yet to the dim light. He drew in a deep breath and smiled:

"Yes, I know. I spent the better part of the night thinking about it. God! If it only works..."

"Yes," interrupted the assistant, "And I suppose you didn't even try to sleep. There is nothing to worry about. We have gone over the mathematics dozens and dozens of times."

The old professor grinned even wider. "I suppose you are right. I am an old man and I worry too much." His eyes happened to wander in the direction of the cracked window. It was still holding back the wind and rain. "Brrrr, it's chilly in here. Help me up and we'll go down to the lab."

"Yes, but not until you have had some breakfast. I don't know why you insist sleeping in this damp room anyhow."

He winked. "I am an old man. Humor me, eh."

It was ten o'clock by the time the small group of scientists were assembled in the lab.

Dr. Pritchell looked around—Dr. Werner, Dr. Eric, Herb Stuart, Jackson, Maine, a news paper fellow, and Curt; They were all here.

A warm smile crossed the unshaven face of Dr. Pritchell as he motioned for the others to sit down. He was about to speak as his assistant entered, attired in the familiar spotless white smock. He nodded to the familiar faces.

Dr. Pritchell grunted and sat down while the younger gent took the floor.

"You all know why today is important," he said in somewhat stuffy lecture style. "Today is the day the very foundations of science will be rocked. For the sake of our one guest, Mr....as..."

"Bowen. Joseph Bowen," the gentleman in question said as he stood up so all could see his face.

"Oh yes, Mr. Bowen." The speaker paused to gather his thoughts.

"For the sake of Mr. Bowen I will try and summarize our project in a nutshell. Mr. Bowen, incidently, is a reporter for the North American Times."

Upon hearing that his work was about to begin the reporter reached for his notebook and proceeded to copy all that was said in shorthand.

"I suppose you have heard," the young scientist said in a monotonous tone, "about the theories of time. There are many theories of course, but I am referring to the temporal theories of Dr. Kendall Kersh."

"He died a few years back and his work has, by the greater part, been unpublished and ignored. We, however (he gestured to the group of men sitting on the metal folding chairs in front) have always believed that Kersh was on the right track. Oh, he was wrong on a few points but we have ironed out most of the kinks. We are now ready to test our findings."

"The reporter took this all in with rapid scratchings of his green pencil. "You don't mind if I quote you in a few places do you," (then he decided to add a...) sir."

"You may quote what you wish."

"The mathematical implications of Kendall's theory are fantastically complex. It was beyond our own small "adding machines" and we tried to gain the services of the Scientific Institute's mathematical computer. We almost made it too, with a bit of string pulling but in the end we were refused. They thought that the construction of a time machine was so much nonsense and that their computers had much better purposes to serve."

"Well, we did it without their help. We confirmed our mathematics the hard way. The way was clear..."

The reporter stopped writing; perceptible beads of perspiration slid down his wrinkled forehead. "You can not be serious," he said in a contemptuous half-smile. "Such a thing is totally impossible!"

The old professor stood up with such rapidity that his chair toppled over with a "crash!" "This is no joke, we are dead serious. For years now we have put up with this sort of thing. Can you not conceive such a machine? Why is it impossible? Damn! It's all the fault of those stupid atomic tests of the 50's and 60's. All science has been looked upon with suspicion and mistrust." A boney finger pointed to a metal cage on the far end of the lab. "Well there it is, damnit! There is the time machine!"

All stared in mute silence as the old man picked up his chair and sat.

The machine did not look like the popular fictional concept of a time travel device. Rather, it was built for functionality in a more or less hit and miss way. But theoretically it would work.

They hoped it would.

Kendell Korsh had said such a machine might be possible if only the mathematics could be found to support his theory. The mathematics were found many years after his death by a female physicist in Chicago. Many more years passed until Dr. Pritchell and his young assistant founded the Temporal Research Labs in Ottawa; but it soon folded for lack of funds. Public opinion was of the idea that time couldn't be traversed by man and that was that.

The truth of the matter was this: The average man didn't want to temper with the universe too much. The feeling was that God owned the universe and Man has no part trespassing on the Lord's property. That was what they thought, though they gave the outward impression that science was the all and all; that it was Man's only insurance of continued survival in a changing cosmos.

It was the Government of North America that supplied grants to research labs and time travel was a very unpopular project, so grants were refused. That was almost the fatal blow to the Labs. Fortunately some favourable publicity was gathered through the Government's refusal and soon two or three millionaires donated large sums with the hope that the Labs might actually produce. But more important, the Labs gained a larger staff of three specialists in mathematics, one in cosmological physics and two in engineering.

That was an old story and popular opinion was still unchanged. That was why news of the machine's completion was not issued. They couldn't risk the loss of their project through public disapproval. But the machine was complete, and now it would be too late to halt the project. Perhaps some good could come of publicity now though undoubtedly there would be protests, especially from religious groups and the insecure--those who opposed all change, good or bad. Perhaps via publicity a new feeling of trust could emerge, a feeling that technicians were not trying to hide anything from the greater public. Also, a feeling of accomplishment might be gained. A feeling that everything can be conquered by Man's technology and bold stubbornness.

Man is basically a bold stubborn creature. A paradox in the universe to which nature must eventually reveal all her secrets. ...The eyes of the gathering slowly came back to the speaker, still standing in patient wait. Finally, with the full attention of everyone, he continued:

"our machine has been termed 'impossible' but if you come to think about it, it isn't, really. Time is only a plane, a dimension as real as any other. Since you think of position along the tri-dimensional planes as a 'place', why not think of time as a place?"

"You must realize that the universe is a geometrical system with rules. All matter has weight and occupies space, that is elementary. The three dimensions are the planes of space which 'take up space.' But what about a fourth dimension in right angles to the first three. The first three are of course length, width, and thickness. Being a dimension we must conclude that time is actually an abstract form of space, if you get what I mean."

The old professor in the front row grunted in dull amusement. This reporter must have very little idea of what the universe was about, and he wondered why the paper had sent such a person on such an assignment. Now mathematics, that was the way to explain things without having feelings, emotion, beliefs, and prejudices getting in the way.

Wilson continued:

"Combining this fact of dimensional space-time continuum and cosmological expansion we come up with the Kendall Kersh Theory.

"Even the numerous science fiction writers of the 30's to the 1980's have played up similar themes, unknowing how right they were. And that is the point I want to stress: Time is a dimension and the universe is expanding!

"In the time I have talked, the universe has expanded several parsecs outward and upwhen. Do you see the significance of those last words; time has also expanded. Of course, time, being a dimension, is subject to the same laws which govern length, width and thickness.

The reporter frowned as he scribbled, frantically trying to keep pace with the speaker.

"Think of the expansion as a forever inflated balloon, with all the galaxies moving outward like the sides of a balloon. A more simple picturization can be had though.

"Think of a series of concentric circles which represents the expanding universe. Each circle outward represents a year later, or as we prefer to call it, a year upwhen. This means that in a years time the universe will have expanded to the next circle.

To travel in time is simple when looking at the problem in this manner. All we have to do is move along the time plane to where the universe 'was' a year downwhen. We will thusly be a year back in time. It's just a matter of moving to an inner circle, in a way it is a form of space travel and..."

The reporter looked up. "But if you reached, say a year back in time, and the universe has expanded to where it is now, you would be lost in space with the universe light years away. The universe just wouldn't be there when you arrived, would it?"

"Ha!" shouted the old professor. "See! (he pointed) he still refuses to believe."

The speaker smiled at the outburst.

"No, Mr. Bowen. What you have stated would be a 100% paradox. The universe contains all the matter in the cosmos, and if a time traveler appeared out of the universe, then the universe wouldn't have ultimate mass, now would it.

"You must keep in mind that the universe wasn't here a year ago. As the universe moves outward so does time. Likewise, as time moves

downward toward the center of the universe, so does the universe. The two are interlocked like mass and energy. They can not move in two different directions at once.

"True enough, a three dimensional object has three planes of direction, all of them at right angles to each other. But what about the fourth dimension, time.

"We sometimes overlook this dimension as such for the simple reason that we can not see this as readily as the others. It is more of an impressionistic form of matter-energy; something which prevents everything from happening at one time.

"But the three dimensions of material space are contained in a comparatively narrow shell, somewhat similar to the skin of a balloon as contrasted with the empty space within. We have freedom of movement within the three dimensions of space, but just you try to leave this skin of material-energy space-time continuum. It just can't be done. Please don't take the word "thin" in this example too seriously. It is several thousands of parsecs thick, but that is insignificant to the empty space within the shell.

"But there are problems in even space travel. Suppose a spaceship were constructed which has the speed of light as maximum velocity. The crew experiences the sensation of time-dilation, a slowing down of time. Excluding the time sensation there are still more problems.

"Since the universe is roughly a spherical shell a spaceship should be able to go right around and return to the same spot it started out from. A sort of great circle route. But this is impossible, at the speed of light anyhow. Let's look at an analogy.

"Put an ant on a balloon and inflate the balloon. Further, let us suppose the balloon can be inflated to almost infinite proportions. While the ant walks around the sphere, the sphere is expanding. Now, if the sphere expands at a greater rate than the ant's velocity, then no matter in what direction the ant travels, relatively, it will always maintain a minus velocity. Though it is going forwards, it is really going backwards. Do you see?"

The reporter looked up in bewilderment.

"This is why inter-galactic travel is impossible. The galaxies are moving away faster than any ship could hope to travel, so with us it is a losing race.

"The universe is expanding outward beyond the speed of light, and no spaceship can reach that velocity without gaining infinite mass. The universe, being infinite mass, is able to exceed the thought to be 'ultimate speed.'

The reporter wailed, "Ok, I'll accept the fact that you can do it, but how do you do it? That is what the readers will want to know."

The speaker coughed, then cleared his throat:

"I can only give you a bare outline excluding the necessary geometrical and mathematical theory.

"As the universe is compared with an ever expanding balloon, how to travel in time. The answer is simple; move along the time axis. But there are a few variations on the objection you made earlier. The situation as they see it is this:

"It is 1990, for instance, and the machine is set for ten days into the past. The machine moves downward ten days and the universe has followed them. But what about local circumstances; Earth is ten days away in its orbit around the Sun. Or is it!

The simple fact is overlooked; time ten days ago on Earth was in

a position where the time machine appeared. The machine, you see, can move in space as well as time to prevent such catastrophe.

"Kersh has said time is a wave of energy, and, not energy really, but something rather than nothing. Each atomic particle is affected by this temporal wave, and as the universe expands so does the wave. It is a uniform, perfectly balanced system.

"And in traveling in time you must move in one of two directions along the fourth dimensional axes. Toward the central sphere of the universe is the past, outward is the upwhen; the future, but I must say there is no present in time. The present exists for less than one billionths of a micro-second; a single atomic vibration. For all practical purposes we consider the present as the immediate past."

The speaker's hand once more strayed in the direction of the time travel device.

"The machine you see in the corner is really a super-vibrator. It sets up an atomic-time field which in actuality is enlarged sub-atomic vibrations which can be made to move along with, or against the normal time flow.

"But I know you are all getting impatient. We will soon be ready for the experiment. I will go over a few points for the sake of the reporter.

"You can picture time if you think of the vibration as a conveyor belt moving along with a surface velocity of one-hundred miles per hour. Now, any object placed upon such a belt will move along with it. Now suppose the conveyor belt is stretched as far as the eye can see in all directions. Anyone upon this belt would swear he was not moving, for relatively, all his surroundings are standing still.

"Now suppose the technology of these belt-people advances to the point where someone invents a car with a top speed of 50 M.P.H. It is obvious he can't exceed the belt's motion going against, so he can only slow down his time rate. Everything would move past with a greater rate; whereas, if he goes in the opposite direction, everything is slowed up in relation to his own body processes and sensations. If a later model auto is developed with maximum velocity of 100 M.P.H., speed of the belt being matched, the traveler would remain motionless in time while everything about would whizz past at its normal rate. At 150 M.P.H. he can move back in time.

"Our machine is like the car, with thousands of billions of vibrations per second as compared with just billions of vibrations per second normal time flow.

"And that, sir, about finishes what I have to say about time travel. I am sorry I did not prepare in advance, perhaps I could have made the matter more easily understood." He glanced at his watch. "We may as well adjourn for lunch and return at 2:00."

The large clock in the lab showed 2:15 by the time everyone was assembled. The machinery was softly humming to itself while a large metal board flickered random patterns of multi-colored lights. The room was in silence but for the machinery.

A red light dully pulsed on the North wall, in rhythm to the rising and falling of the current flow into the mighty generators.

Unlike the fictional time machine of H. G. Wells', this one required a full half room of transistorized intricate parts, along with hundreds of positronic circuits, hyper microscopic drives, and the fabulous meson drive mechanisms--all of this completed and packaged

into a cage-like affair to fill half the lab space.

Inside there was not much room for even one man to ride in comfort, but that was not important. Quadrimensional transference did not take long once the hyperchron meson control accelerated the temporal vibrations to a point where the machine exceeded time itself; perhaps a second to cover 500 millinans at the minimum.

Why, with such a machine you could record the whole history of Man on one single reel of motion picture film providing a high speed camera was used. Each frame would show the stages of development in 500-year intervals. Unfortunately the machine couldn't be slowed down too much from its present setting as the artificial vibrations become unstable at lower velocities. However, it was something to be looked into at some later date.

For the time traveler it would be impossible to stop in any given era or to take several thousands of years. That was why the mechanism was under the direct control of meson flow. By setting the timer to any desired period you could arrive with an accuracy of a dozen years. Step in...set dial...pull lever. As simple as that.

But not really that simple!

The machine had been tested time in and time out. Nothing seriously wrong. It went and it returned at predesignated intervals but never with a human passenger. The old professor could recall the time the machine returned with a prehistoric form of rabbit. Obviously the unwary creature scampered aboard as the device rested in some swamp infested area of the times before Man.

This unintended accident could have been serious had the nature of the situation been of greater proportions. The fact remained, you can travel between times as long as you don't try to step out into the past or future. It is a simple law of nature; no two objects can occupy the same space at the same time. It is like the car moving along the conveyor belt. As long as the traveler is in the car he is protected by the machine, but just you try and step out...

If the machine is in motion when the traveler leaves its confines, he will be killed instantly. The atoms making up his body are accelerated a billion fold, and upon leaving the accelerating field, he will naturally slow down to match normal time with the result that his body will fly apart and disintegrate in a blast of heat and light. But even if the machine is at rest in another period in time and the traveler leaves its confines, still more serious things can happen.

Nothing is left unbalanced in nature, and so it is with time. When the rabbit entered the present, being from another time its atomic structure was not compensated for, and the first eight minutes after entry were filled with minor shifts in time to compensate—to even out the space-time continuum. Needless to say, the animal disintegrated into a decayed mess for no animal can remain intact from the prehistoric to our time. The cage protects only that which is inside its field, and time status can thusly be broken.

Yes, time travel had its complexities; and of this machine the workings were minute and complex. If any one of the thousands of circuits and other workings fouled, the traveler would be in trouble, great trouble. He would be stranded in time; a horrible thought which must certainly plague everyone assembled here in this room.

But the trouble was not limited to the traveler alone. If he stepped out, serious consequences could result, especially so if he tried something foolish like killing someone. Theoretically then, the

the whole history of Man would change according to the importance of the change. But of course this was impossible. The time traveler couldn't have left the machine for the world remained unchanged, and if he did kill someone, it was done years, centuries or even millenniums ago so the change has been compensated for and we always have been living with the change.

The time for thoughts ceased.

The power of the machine was building up to maximum efficiency around 2:45. Curt took his place at the controls inside the cage as the door slammed shut, sealing him off from the normal time flow. An eerie greenish-cream glow surrounded his muscular form as the steady clicking of the chronometers registered their messages. The deep hum was growing even deeper in time as miriads of other sounds added their audables to form a trembling force which shook the very foundations of the building. The lights dimmed as the shaking sound reached beyond the range of audability.

"CRASH!" A flask shattered, then another.

"SMASH...tinkle-tinkle!" The only window exploded into a million splinters.

Then...a "scream from a tortured soul" and nothing. The machine disappeared in a rising globe of heatless light so brilliant as to shame the disc of the sun. A flash so fantastically immense as to throw the shadows of the equipment and persons upon the walls to remain there as silhouettes, like a photographic wall of cement.

Then a terrific clap of "thunder." The rush of air filling the gap once occupied by the machine's mass, lifted the watchers off their feet and carried them to the far end of the room.

"Unbelievable!" someone whispered.

"God! What have we done? WHAT HAVE WE DONE!"

It was lucky that Herb, one of the technicians, wasn't killed when a brass coil struck his head in the blasting rush of air. As it was, he was out cold and a sickening trickle of sticky fluid ran down his wrinkled brow. Everyone else seemed to be fine except for bruises.

Herb was looked after while the old professor looked around at the shambles of his lab. Then, looking at the large dial on the East wall of the lab, said:

"We can see the period in which our time traveler is traversing."

"You've thought of everything," the reporter mumbled as he wiped the bloody gash on his lower cheek.

"Almost," replied the old gent. "We even installed a radio-phone in the case so that Curt can keep in touch with us. Unfortunately it works only one way; he can speak to us and that's all."

The hand on the chronometer moved at an accelerating pace.

A finger pointed up. "Look! He has passed the two million mark!"

"Now, two million years into the past!"

"Unbelievable!" remarked another.

The professor made a wild dash to the radio-phone. "What are you trying to prove? WHAT ARE YOU TRYING TO PROVE? Curt, for crissake, you're going back too far. CURT! Can you hear me, CURT!"

The clock-device showed minus ten million, eleven, twelve...

The young assistant ran over to his superior's aid. "He can't hear you, sir. I'm sure nothing is wrong, the machine..."

"NOTHING WRONG!" the scientist screamed. "Look at the chronometer, men. LOCK!"

"My God!" was the reply.

A feeble static-filled voice rustled from beyond the sub-etheric over the mike:

"The lever, it's stuck. STUCK! I can't pull 'er out. Help me. Help me, please.....!"

The voice was lost in a final outburst of temporal static, and the time indicator dial came to rest. The final number being -3.86255 B. Minus 3.86 billions of years into the past—23 million years before the theoretical formation of the universe.

The silence in the room was deathly. Only the sudden splash from a fallen sliver from the broken window pane sounded as everyone looked on.

Thomas Wilson took a deep breath. "We should have realized..."

"Let's hear it, men" the old man wailed. The tears streamed from his tired eyes onto the thin cheeks.

"Curt isn't returning. Where he is there is no time. Where he is there is no universe!"

"WHAT!" shouted Pritchell.

"Look at the indicator. Curt has reached a point beyond both time and space. Geologists can prove the Earth is no older than 3.5 billion years, and it is assumed that the universe is no older. If this is so then Curt has reached beyond the very formation of the universe.

"The time machine acted like an elevator, moving up and down the shafts of time. Only the lever stuck, like an elevator cable breaking, and he fell down the temporal shaft to the basement of time. Only he did not stop, he penetrated the very base of the shaft; like crashing a few feet into the cement floor of an elevator shaft.

"Don't you see the obvious? He was traveling in sub-etheric time. What would that be in terms of space travel?"

"You mean faster than light—hyper space! Oh Lord! I see it all now. Then Einstein was right, wasn't he?"

"So it seems. Anything exceeding the speed of light gains infinite mass. In other words, Curt, in that last instant, contained all the matter and energy making up the universe in his body. Curt is the universe!"

"It must be true," the old man groaned as he broke down and cried.

The others left the old man to himself, for Curt was Dr. Pritchell's son. The old man had much to grieve about...

But it was not a needless death for the universe was created. A few million years later the infinite mass of Curt and the machine will form into a gigantic ball to explode into a universe. A universe made up of small globes called protons and electrons which will later form systems of atoms, molecules, and star systems. All this, forever expanding outwards. Then will come a time when an experiment in time will take place, a man will be sent into the past only once more to recreate the universe in a continuous cycle. An eternal circle of creation.

The others stepped outside into the cool, fresh air. The sky was clearing and it would be a very fine day indeed.

THE END...

THE POWER PLANET (illustrated on the next page) →

A scene from Murray Leinster's Power Planet appearing in the June 1931 issue of Amazing Stories (vol 6 No. 3).

