

A SMASHING NOVEL OF SUPER SCIENCE

VOLUME 72
NUMBER 10

AMAZING

OCTOBER 25th

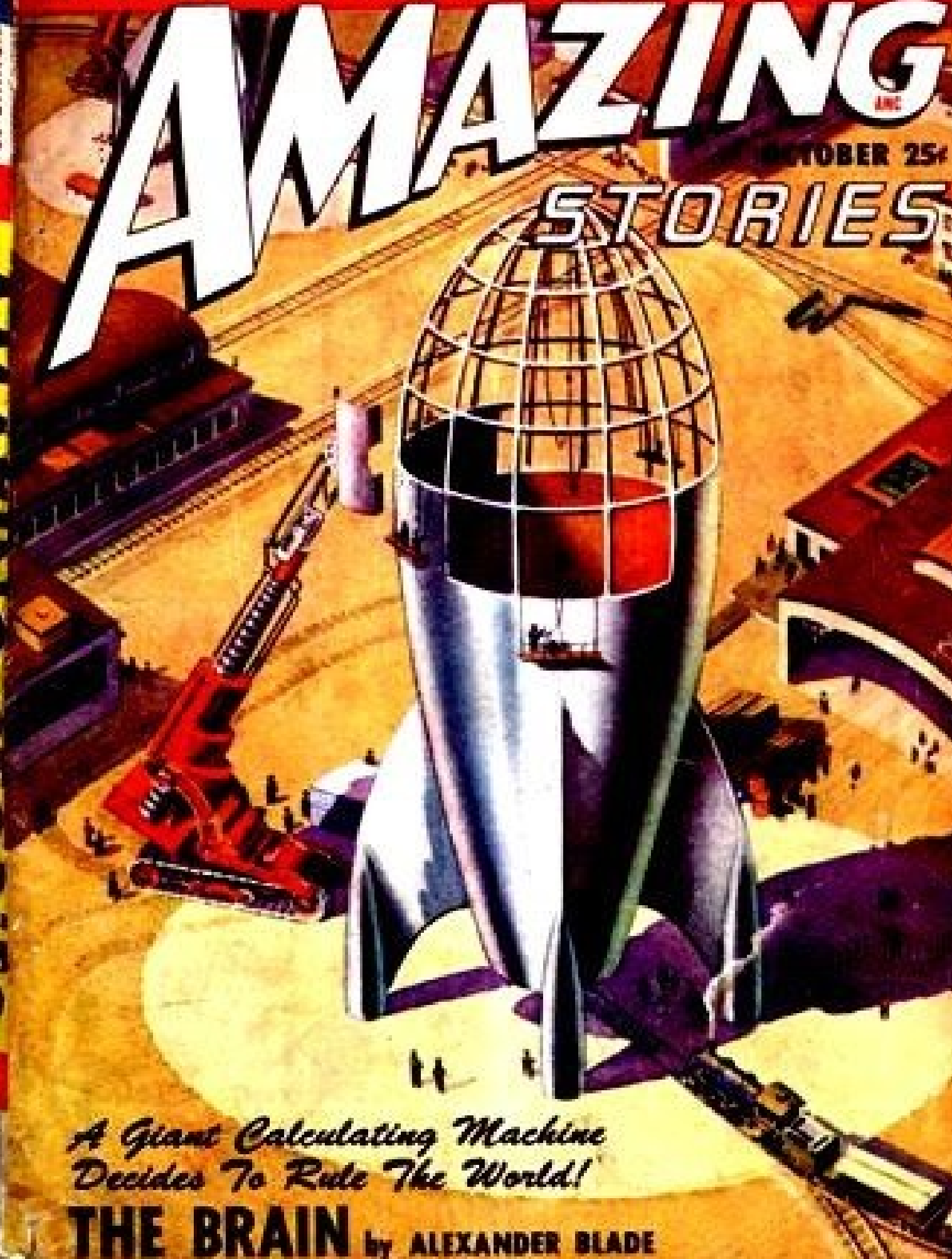
STORIES

AMAZING STORIES

*A Giant Calculating Machine
Decides To Ride The World!*

THE BRAIN by ALEXANDER BLADE

OCTOBER
1948



Project Gutenberg's Cube Root of Conquest, by Roger Phillips Graham

This eBook is for the use of anyone anywhere at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at www.gutenberg.org

Title: Cube Root of Conquest

Author: Roger Phillips Graham

Release Date: June 6, 2010 [EBook #32712]

Language: English

*** START OF THIS PROJECT GUTENBERG EBOOK CUBE ROOT OF CONQUEST ***

Produced by Greg Weeks, Mary Meehan and the Online
Distributed Proofreading Team at <http://www.pgdp.net>



CUBE ROOT OF CONQUEST

By Rog Phillips

[Transcriber Note: This etext was produced from Amazing Stories October 1948. Extensive research did not uncover any evidence that the U.S. copyright on this publication was renewed.]

What actual result is there in the act of conquest? What is its cube root?

Jan ran tirelessly, his long clean limbs carrying him at express train speed across the uneven terrain. The small deer was beginning to show evidences of tiring. Its foam-flecked mouth was open, the swollen tongue protruding over the teeth. The ten or more miles of the chase had proven Jan's superior strength.

The deer rounded a dense patch of blackberry bushes and bounded out of sight over the crest of the hill. To Jan's keen eye it seemed that the deer stumbled at the instant of vanishing from view. Eagerly he put on a burst of speed to catch up and make the kill.

The scene that burst into view brought amazement into his clear blue eyes. The deer had stumbled, but caught itself, and was bounding down the gentle slope. Jan thrust curiosity away and concentrated on regaining the ground lost. His naked feet touched the turf with pile driver force every ten feet. The muscles under the tanned skin of his legs worked with smooth effort.

The deer was headed directly toward a glistening square spot just ahead. It was in mid stride when it reached it, its front legs doubled, ready to straighten and touch the ground at the right instant, its hind legs stretched out behind.

In that position it sailed over the glistening square that was set flush into the ground, and—vanished.

It vanished about like it might vanish around a tree. Its head and antlers went first, followed by the rest of it. One hoof seemed to hesitate, hanging in the air by itself. Then it was gone.

Jan turned desperately to avoid the spot and brought himself to a halt a few feet beyond. The hair on the back of his neck felt prickly with fear of the unknown. He returned cautiously to inspect the mysterious, glistening square slab.

It was no more than four feet across each way. There was no way of telling what its surface was like. About where its surface might be was a soft carpet of glistening, cool force that seemed neither solid nor fluid. It was something like the surface of a glowing ember in a dying fire, smoothed out flat and spread with uniformity over an area of sixteen square feet.

Jan's eyes pulled away from this fascinating thing and turned to survey what had first caused him to break his pace in surprise. A short distance away a skeleton of twisted and sheered off steel girders hinted at what had once been a bridge across a deep gash in the rolling terrain. On the other side was what had once been a huge city of sky-scrapers, though Jan had never heard of such a thing and did not know that that was what it had been.

Nothing was visible in the mysterious plate, yet a man had gone into it!

With a frown of uneasiness he dismissed the ruins of the city and the bridge and turned to the mysteriously glowing square once more. The deer had vanished over it. Therefore it must have something to do with the vanishing of the deer. Since he had chased the deer so far, it would be foolish to turn away without investigating. The deer might still be there somewhere.

Jan's face lit up with an idea. He looked around until he spied a rock about as big as a fist. He came back with it and stood thoughtfully near the edge of the mysterious square. Then he tossed it with just enough force to carry it across. When it reached a point above the edge of the square it vanished. Jan waited, but it didn't land on the other side. It had simply ceased to exist!

Jan looked thoughtful for a moment. He turned and went back to the patch of blackberry bushes. Taking his long slim blade from its deerskin scabbard he cut

a long, tough stick, trimming the younger shoots away. With this he returned to the calmly glistening, mysterious slab.

Ready to drop his hold on the stick at the first sign of the unusual, he thrust it part way into the area where things vanished. The end of the stick disappeared. There was no sign of any force creeping along the stick to his hand. He waited, reassuring himself. Then he stuck the stick in a little farther and it vanished a little farther along toward his hand.

He held it that way, his nostrils flaring with tenseness. Then slowly he drew the stick back. The vanished part of it returned to sight. It came out and was not changed in the least.

He sniffed at it. It smelled no different than it should. He felt of it carefully. It felt normal.

Reassured, he thrust it into the area of vanishment again. He pulled it out again. It delighted him to watch it vanish and reappear. He laughed gleefully. The deer was forgotten in the excitement of this strange game in the shadow of the crumbling bridge.

Suddenly the vanished end of the stick jerked in his hand. In spontaneous alarm he pulled toward him. The stick came unwillingly. Something held it.



Terrified, Jan dug his heels in the turf and pulled. Slowly inch by inch, the stick reappeared. But with it appeared a fat, pale hand, followed by a sleeved arm.

Jan slapped at the hand and pulled harder. The hand hung on grimly. Another hand appeared, gripping the slowly emerging arm. It fingered its way up the sleeve until it too gripped the stick.

Jan let go and sprang back several feet. He hesitated, ready to flee.

When he let go of the stick the hands dropped to the ground. The fat fingers dug into the sod and hung on. A bloated face came into sight and drew back into nothing once more.

The face appeared again and stayed, flushed with exertion. Little by little the face was followed by a neck, shoulders, and a thick torso. The last to appear was

two short legs.

The figure stood up shakily. It was covered by a brown uniform. Although Jan did not know it, this was the uniform of a field marshal.

The pig like eyes in the fat face blinked at him stupidly, then turned to survey the ruined city.

Jan recognized the newcomer for a man, though he had never seen one with such a shape. Vaguely he wondered how such a man could catch wild animals,—and if he couldn't, how he could eat enough to have grown up.

The man was even more of an enigma to Jan than the glistening square. And he might be dangerous.

Jan had wandered far in his brief lifetime. Nowhere had he found more than a handful of other wandering nomads, all like him in build; long of limb, lithe and powerful of shoulder, able to run swiftly all day without tiring.

This man, if man it was, came no higher than Jan's heart. He obviously wouldn't be able to run faster than the exceedingly rare, short-legged pig that became so fat when it grew up.

The man turned his fat face back toward Jan. The look in the small eyes made Jan's hand steal toward his sheathed knife. The eyes saw that movement. They narrowed cruelly. A sneer appeared on the bloated lips.

Suddenly a fat hand darted down to a lumpy object on the man's hip and drew out a squat blue object. It came up. Jan could see a dark hole in it. He stared curiously.

Unconsciously he had drawn his knife as the man drew the strange object. His keen nostrils brought him the smell of sweat that has the odor of a tense body. His hunting instinct told him this creature was going to charge.



Jan felt something hot touch his left shoulder. With it came the sound of a sharp report. The strange thing in the man's hand buckled queerly.

Jan looked at his shoulder. There was a gaping, angry wound in it. In some way

this man had hurt him. He didn't stop to analyze how or why. The fact was there. He could either turn to run or advance to fight,—and he had never yet turned to run.

He had learned the trick of weaving in and slashing, and withdrawing quickly. This stood him in good stead. The queer thing in the man's hand barked at him, but missed hurting him each time.

Jan's knife reached in unerringly and slashed the wrist of the hand holding the spitting thing. The blood gushed out in a pulsating stream.

The man dropped the gun and tried to stem the flow. Jan took this opportunity to dart in again and slide his blade across the fat neck.

A look of horrible realization appeared in the man's eyes. He turned, stumbled forward, and fell headlong into the space above the mysteriously glistening square slab. The soles of his shoes seemed to hang in the air briefly before they followed the rest of him into nothingness.

Jan touched his hand gingerly to the raw wound in his shoulder. It was a day's journey to the healing spring where he could bathe the wound and plaster it with healing mud.

His eyes surveyed the scene for a last time, taking in the strange slab flush with the ground, the skeleton of girders that jutted out from each side of the gorge, and the strange heaps of steel and masonry on the other side. Then he turned and started back the way he had come. By the time he vanished over the rise he had settled into the long, easy trot that would carry him a good fifteen miles an hour all the way to the healing spring.

Behind him the glistening square slab rested, oblivious of his departure. The two halves of the wrecked bridge still reached yearning, torn arms toward one another; and across the gap the ruins of the huge city squatted in silence, coldly aloof.

A wind born leaf dipped down in coy flight to investigate the slab—and slipped past the veil. The fresh cut end of the stick Jan had cut formed a white dot on the green carpet of stunted grass. Bright red stained a large spot on the green and formed a ribbon that led to the edge of the square of cold luminescence;—the red trail of blood left by the strange visitor from out of the square. And in the clean blue sky a bright sun beamed benignly over all, ignoring—

"My leader!" Carl Grinch clicked his heels softly, and bowed stiffly from the waist. His high, intellectual forehead, clear blue eyes and finely cut features, together with his civilian garb, indicated that he was a scientist. He was, in fact, much more than a scientist. He was THE scientist of Aleme.

"At ease." The leader waved a gloved hand carelessly, a cruel smile twisting the harsh face of the dictator of Aleme and avowed leader of downtrodden masses in every country on Amba.

His eyes held a gleam of satisfaction as he watched the uneasy tenseness of the scientist. He gloried in a sadistic satisfaction at his power to snuff out the life of one so great,—or let him live to serve his Leader.

"I told you not to come to me until you had succeeded in the task I set you," Generalissimo Hute Hitle said coldly. "Your presence means that you have, no doubt?"

"Yes, my Leader," Carl Grinch smiled. "Everything is in readiness."

"Good," Hitle said. He rubbed his chin slowly, a smile of triumph creasing his face into unaccustomed wrinkles. "Now we can't lose. We will let loose the destruction and let it take its course. After it is over we will return to rule an unresisting planet. Explain again to me the theory of the device."

"The theory of operation of the device is, of course, understandable only by a highly trained specialist," Carl Grinch said placatingly.

"You know what I mean," Hute Hitle snarled. "I'm not interested in what makes it work. Only in what it does."

"To begin with," Carl Grinch said. "Space has three dimensions. We live in those three dimensions of length, breadth, and thickness. This is called the space continuum.

"There is also a three dimensional time continuum. This also has length, which is past-present-future. In addition it has width and breadth, which are approximated by the idea of simultaneity to a certain extent. This is not, however, the simultaneity of events co-existent in our one, three-dimensional space. All events we can be aware of are in one point in the time continuum, which moves along a single time line.

"Since there are only three dimensions of space, all things must be in our space. It is the time co-ordinates that determine whether we are aware of something or not. At this very moment there is an infinity of universes all occupying the same space, but each in a different position in time. They are existing now, but separated from us in a direction at right angles to the universal time stream.

"Mathematically, these other universes are expressed in co-ordinates that have the square root of a minus one as a coefficient. Also mathematically, these universes are imaginary, but not in the non-mathematical, mythical sense. They are just as real as ours, but relatively imaginary or relatively non-existent.

"All this has been known by others. They have also known that to make an imaginary value real it is only necessary to multiply it by the square root of a minus one. Then it becomes real. This fact became the entering wedge into the principal that enabled me to succeed in bridging the abyss of right angle time travel.

"As you know, many years ago the secret of single dimension time travel was solved. However, it would not answer our problem. Though it is true time travel, it amounts to nothing more than perfect stasis for controlled periods, and if destruction hits the space the time traveller is in, he is as vulnerable as he would be if not travelling. In order to escape that it is necessary to step over, so to speak, into one of the imaginary universes at right angles to us in the time continuum and travel forward there.

"So, all I had to do was discover some principal for multiplying a sector of space by the square root of a minus one. As you know, I did that. Then I discovered that there are gaps, so that it was impossible to discover another universe co-existent in space, without determining the basic equation of the time curve.

"As everyone knows, both time and space are curved, due to the distortion of mass on surrounding space and time. The exact equation for this curvature had to be determined.

"We knew beforehand that it had to be a cubic equation. Each cubic equation has three roots for every value of the independent variable, which is in space. It also has three roots for every value of the time. Basically, that means that if any primal unit exists in our space, it exists in three forms, the positive, the negative and the neutral. These units are the positron, the negatron, and the neutron. Those three are the three solutions in space to the co-ordinates of the existential primal point.

"But also there must be two other universes co-existent with ours in space, but separated sideways in time. They would be impossible to find with the machine without solving the cubic equation of the curvature of our time line."

"So you have solved that and contacted one of the other two universes," Hute Hitle broke in impatiently.

"Exactly," Carl Grinch said.

"Take me to it," Hute ordered. "I want to see for myself."

"Yes, my Leader," Carl said, clicking his heels again and bowing. The bow was lower than usual to hide the gleam of triumph that rose unbidden in the scientist's eyes.



The Leader stood with military stiffness, looking curiously at the square of glowing force. It was set flush with the wooden floor of the room, and seemed to be nothing more than a square carpet of luminosity.

Near it was a tripod with a telescope attached. The telescope went up to the edge of the space above the square place and seemed to end there,—a tube with no lens in the end.

"The telescope is pointed into one of the other two worlds," Carl was explaining. "Without a physical solid connecting the two there is no contact."

"What is the nature of that?" Hute asked, pointing at the glowing square surface.

"It's difficult to explain it," Carl answered, "I'll put it this way. Two attracting bodies that are close enough together will revolve around each other, like the sun and our planet, Amba. The material of this slab is what I have named tri-matter. It consists of matter from all three universes of our time equation, blended into one solid. Before I was able to contact these other two universes it was necessary to use the machine, which took incredible power to operate for a few brief moments, and had to be so delicately controlled that the slightest vibration unbalanced its adjustment. Once the materials were gathered and blended so they could not separated, I had a permanent bridge into the other worlds. The machine and its incredible power were no longer needed.

"You must remember that the three universes occupy the same space, so that spatially they are not separated at all. Their separation was temporal, and at right angles to the path from the past into the future. The attracting forces of the atoms had to be directed across this plane of time by the machine. When that took place the materials had to be brought together so that the three substances blended would cohere. Once they were brought into that state the bridge was established. The bridge is anchored at this end in the matter of our universe and at the other two ends in the matter of those universes, just as the bridge above this building is anchored on this side to the matter of the bank of this side of the river, and on the other to the matter there."

"And you just have to walk across?" Hute asked.

"That's all there is to it," Carl replied casually.

"And," Hute's eyes took on a crafty gleam. "A time machine in one of these other universes could carry me to any point in the future without danger it might have encountered in this one, such as an atom bomb dropped on the space it would have been in here?"

"That's correct," Carl agreed. "If you will look through the telescope you will see my aides already nearing completion on the time machine."

Hute placed his eyes to the telescope. The scene that appeared was quite a normal one. The landscaping was different in many ways. The vegetation was prolific and of strange forms. But for a considerable area the ground was flat, meeting the surface of the ordinary world only at the one spot where the tri-matter block was anchored.

A dozen workmen were busy on the conventional time machine. Hute could see that a few more days would see it completed. He took his eyes away, satisfied.



The Leader stood before the intricate panel. It was located in a deep subterranean room, safe from all attack. He knew that there were other similar panels in countries all over the planet, different only in one respect.

The hundreds of buttons on his panel were set to send robot rockets roaring toward predetermined targets. In a second he could end the long war by a rapid

series of pushes on buttons. The enemy could do the same, wiping out his own country, Aleme.

These panels had been constructed by international agreement, so that every country could know that it would be suicide to use atom bombs in war. Suicide for all. Afterwards there would be nothing but isolated bands of wandering savages, without the rudiments of civilization. A few generations after such a holocaust these wandering bands would lose all ability to learn. The art of reading would be forgotten. The past would be forgotten or distorted into legends of a God Race. If that happened, so much the better. When he reappeared again in the world he would be accepted as a God.

With his superior knowledge, and with modern weapons to back his authority, he could be in reality the world Leader he HAD to be to fulfill his insatiable ambitions.

The war was stalemated. Soon the tide would turn and the enemy would gain the advantage. His hold on Aleme would weaken. If he survived the defeat he knew must come, he would be tried as a war criminal according to the war code set up ten centuries before, and executed.

A few minutes of exertion pushing buttons, a hasty trip to the tri-matter slab, and over into the time machine that was set to return him to normal time rate after three centuries, and he would be in a position to rule the world.

He contemplated the terrific cost. A billion and a half people would be killed in the space of a few hours. Two hundred million of them would be his own state-slaves, his subjects.

His heart would feel the burden of that awful responsibility. No ordinary man was capable of deciding the good of the world for all future time with strict impartiality and willingness to sacrifice one whole generation so that world peace might come. No ordinary man had a great enough soul to carry the burden of the great responsibility. The ordinary man quaked with pangs of conscience at the murder of a single person. He, Hute, had many times had to decide on mass executions for the good of the whole.

He had tried, as other great leaders before him, to bring about permanent world peace by the forging of one world government, supreme, and controlled by one man,—unified under one dominant will.

Too few people could see that such was the only path to peace. On any other course there would always be would-be leaders who would try to set themselves up in authority.

On any other course world planning would be stalemated by the eternal bickering and disagreement among nations and self-anointed saviors of the common man.

Only in the Unified World State could competition be entirely eliminated, and world planning become a reality.

Hute, standing before the control board, squared his heavy shoulders manfully, jutted his strong jaw out at a dominant angle, and spoke to the silent walls as he had often spoken to the masses.

"If I fail to have the courage to do this thing, then the welfare of all future generations will be on my shoulders. The sacrifice of the billion or two now living is a SMALL price to pay, compared to the sacrifice of countless billions of future generations if I weaken.

"If I weaken—!"



The thought of what would happen,—the war crimes trial, the ignomy of death as a war criminal at the hands of fools who couldn't understand the noble, selfless motives that governed his life and caused him to sacrifice the comforts of home and normalcy as a public servant and the purpose,—the goal toward which he strove, gave him the courage to press the first button. With that simple act the fate of Tranx-Yrhl was directly sealed, and with it the retaliation against his own country. That knowledge made easy the pressing of the other buttons.

When it was finished he walked stiffly from the room and took the elevator to the surface. His general staff awaited him. They stood awkwardly, faces pale, in this historic moment.

He nodded imperceptibly to signify that the deed was done. A few dry throats swallowed loudly in the hush of imminent death.

Hute Hitle marched stiffly through the passive group. One after another fell in behind him. The procession marched down to waiting cars.

The cars crossed the bridge. There they stopped. As one man the Leader and his general staff looked back at the great city they loved so well. The Sacrifice they were making for the good of humanity pressed heavily on their hearts.

With bowed heads they turned back and went down the path to the research building.

Carl Grinch and his science aides were waiting. They paled at the knowledge that the deed was done and there was no turning back now.

Hute placed a fond hand on Carl's shoulder.

"Are you sure you don't want to come with me?" he asked, his voice choked with emotion.

"The success of the Plan depends on my staying," Carl replied, his voice shaken with the emotion of the moment. "The time machine is constructed in connection with the tri-matter block so that nothing in either of the other two universes can enter it. After you enter, it must be sealed from this side for the period of time travel, so that nothing can enter from this side until it is time for you to come back. I, and my aides, must remain to do that."

"Your sacrifice is greater than mine," Hute said simply.

"It is very little compared to what *you* are sacrificing," Carl said, smiling, with a trace of amused contempt carefully hidden in the back of his eyes.

Hute took his hand from Carl's shoulder and gravely shook hands with Carl's aides. It was his simple gesture of reward for their great sacrifice. They would die with the gratifying knowledge that the Leader himself had taken their hand and shaken it in gratitude at a service well performed.

Then he squared his massive shoulders and stepped onto the tri-matter slab—and vanished. One by one the members of his general staff followed.

When the last of them stepped into thin air above the softly glowing square, Carl walked over to a switch board and pulled the disconnects that broke the surge of power playing over the room.

His pale assistants watched, hypnotized.

Carl smiled at them encouragingly. He glanced at his watch and estimated the time left.

"Another hour at the most now," he said quietly. "It could come any second."

The wooden walls of the room closed them in with brooding foreboding. A heavily barred window brought a view of the steel bridge that led to the city.

A large clock on the wall became the center of attention. A red second hand moved with slowly deliberate swiftness around the dial.

And in the center of the waiting group the luminous square built flush with the wooden floor waited too, its face inscrutable, its substance anchored in three roots of Being.

An electrical tension was building up around the hushed group of scientists. Vague stirrings of cold light rippled the surface of the square block of tri-matter.

"The cleavage is beginning," Carl said quietly. "When I say the word step through. The entropy shift must be just right or we'll find ourselves with Hitle and his gang. Now!"

As one man the group stepped onto the block and vanished. An instant later the holocaust broke loose.



Carl Grinch stood before the tribunal of the United Nations of the planet Amba. Video cameras pointed at him from every direction. The audience room was filled to overflowing with officials, and over the whole planet people had paused in their work to watch him and listen to his words.

"We, of Aleme," he was saying. "Dared not openly defy Hute Hitle. He was too strongly entrenched. Unless we obeyed his orders to the letter we were executed; and a dead man cannot serve the interests of all Amba. My researches gave me the plan I had been looking for.

"As you all know, time travel was discovered many centuries ago. It amounted to nothing more than perfect stasis. A person could travel forward in time to any period, but not backward. The time machine in marching forward existed at every instant, and was therefore always present to the view of outsiders.

"My researches made possible sideways travel in time. By means of a device that used fabulous amounts of power, I was able to gather matter from two other

universes existing in the same space as our own, but with different time coordinates. I proved to Hitle that in one of these other universes he could escape the destruction he planned, and then return to a torn world and fulfill his destiny as ruler of the planet.

"I told him nothing but the truth. Because of that he believed me. If I had told him one lie he would have seen through the whole thing.

"In order for you to understand just what happened, and why Amba was not destroyed when he pressed the buttons that started the atom bombs on their journeys of destruction, I must tell you a little of the basic nature of reality. Our universe is at all times and in every respect a root of a cubic equation. It has long been known that space is curved. Being curved, it is not the expression of linear equations, but of equations of some higher order. It had never been determined if that order was quadratic, cubic or higher. I determined that it was cubic.

"To tell you how I solved the constants of the equation would be to go into material too complicated for any but the expert, so I'll skip that. When I solved that, though, I was able to calculate the field necessary to create a bridge from this root of the equation to the other two, gather substances from those two, blend the substances, and create a natural bridge. I did that. BUT instead of blending substance from our own universe with the other two, I kept the field going. The field acted as a bridge, and when the disconnects were broken that bridge vanished, leaving only a bridge between the other two universes.

"Now while the field lasted, all three roots were blended into the Whole, or cubic equation. In plain language, all three universes within the limits of the field were identical. So it was a simple matter to get Hute and his general staff to carry out their plans in one of the other universes rather than this one, and then escape into a time machine in the third universe.

"After they did that I merely pulled the disconnects and destroyed the field that linked our universe temporarily with the one where the destruction went on according to plan. When Hitle and his men wake up a few centuries from now they will find that things went according to plan. They will find their destruction and their bands of savages to rule, if they can rule them. But their threat to us is gone. We are rid of them for good."

The chairman cleared his throat importantly as Carl paused.

"But what of the people in this other universe,—the ones who were destroyed by

the bombs let loose there? And their descendents who will survive until the day Hitle returns to force his will on them?"

Carl smiled broadly.

"They were destroyed, sir," he answered. "According to plan. That is the truth. But is isn't ALL of the truth. You see, the cubic equation that connects this universe of ours with the other two has only ONE real root. The other two are imaginary. That is what I didn't tell Hitle. The number one is a cube root of itself, and represents our own universe. The field set up by the machine was literally another cube root of one acting on our universe as a factor, transposing its forms into an imaginary universe. There Hitle succeeded in his conquest of all Amba. It was not the conquest he figured on however, because events are merely single values that fit the cubic equation,—never the equation itself. What Hitle did not know was that no one can ever succeed at conquest, but only at what might more accurately be termed the cube root of conquest.

"And in his case that cube root of conquest was imaginary, represented by the number, (a minus one half, plus the square root of a minus three fourths.) Cube that quantity yourself! You will get one for the answer. Square that quantity and you will get the third cube root of unity. Blend or multiply the two together and you get unity, which is reality in our plane of the omniverse. Multiply unity by one of the two imaginary cube roots of one, and you transform the one, or our reality, into an imaginary plane. Try it. Get a piece of paper and work it for yourself! And study the metaphysical applications of the relationships of the three cube roots of unity,—the relationship of mind, imagination, and reality, the relationships of the positive, the negative, and the neutral units of matter;—and wonder!"

End of Project Gutenberg's Cube Root of Conquest, by Roger Phillips Graham

*** END OF THIS PROJECT GUTENBERG EBOOK CUBE ROOT OF CONQUEST ***

***** This file should be named 32712-h.htm or 32712-h.zip *****
This and all associated files of various formats will be found in:
<http://www.gutenberg.org/3/2/7/1/32712/>

Produced by Greg Weeks, Mary Meehan and the Online
Distributed Proofreading Team at <http://www.pgdp.net>

Updated editions will replace the previous one--the old editions

will be renamed.

Creating the works from public domain print editions means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and distributing Project Gutenberg-tm electronic works to protect the PROJECT GUTENBERG-tm concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for the eBooks, unless you receive specific permission. If you do not charge anything for copies of this eBook, complying with the rules is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. They may be modified and printed and given away--you may do practically ANYTHING with public domain eBooks. Redistribution is subject to the trademark license, especially commercial redistribution.

*** START: FULL LICENSE ***

THE FULL PROJECT GUTENBERG LICENSE
PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK

To protect the Project Gutenberg-tm mission of promoting the free distribution of electronic works, by using or distributing this work (or any other work associated in any way with the phrase "Project Gutenberg"), you agree to comply with all the terms of the Full Project Gutenberg-tm License (available with this file or online at <http://gutenberg.org/license>).

Section 1. General Terms of Use and Redistributing Project Gutenberg-tm electronic works

1.A. By reading or using any part of this Project Gutenberg-tm electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg-tm electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg-tm electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. "Project Gutenberg" is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg-tm electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg-tm electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg-tm electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation ("the Foundation" or PGLAF), owns a compilation copyright in the collection of Project Gutenberg-tm electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is in the public domain in the United States and you are located in the United States, we do not claim a right to prevent you from

copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project Gutenberg-tm mission of promoting free access to electronic works by freely sharing Project Gutenberg-tm works in compliance with the terms of this agreement for keeping the Project Gutenberg-tm name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg-tm License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg-tm work. The Foundation makes no representations concerning the copyright status of any work in any country outside the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg-tm License must appear prominently whenever any copy of a Project Gutenberg-tm work (any work on which the phrase "Project Gutenberg" appears, or with which the phrase "Project Gutenberg" is associated) is accessed, displayed, performed, viewed, copied or distributed:

This eBook is for the use of anyone anywhere at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at www.gutenberg.org

1.E.2. If an individual Project Gutenberg-tm electronic work is derived from the public domain (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase "Project Gutenberg" associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg-tm trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg-tm electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg-tm License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg-tm License terms from this work, or any files containing a part of this work or any other work associated with Project Gutenberg-tm.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg-tm License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any

word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg-tm work in a format other than "Plain Vanilla ASCII" or other format used in the official version posted on the official Project Gutenberg-tm web site (www.gutenberg.org), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original "Plain Vanilla ASCII" or other form. Any alternate format must include the full Project Gutenberg-tm License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg-tm works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg-tm electronic works provided that

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg-tm works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg-tm trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, "Information about donations to the Project Gutenberg Literary Archive Foundation."
- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg-tm License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg-tm works.
- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.
- You comply with all other terms of this agreement for free distribution of Project Gutenberg-tm works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg-tm electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from both the Project Gutenberg Literary Archive Foundation and Michael Hart, the owner of the Project Gutenberg-tm trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread public domain works in creating the Project Gutenberg-tm collection. Despite these efforts, Project Gutenberg-tm electronic works, and the medium on which they may be stored, may contain "Defects," such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a

computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the "Right of Replacement or Refund" described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg-tm trademark, and any other party distributing a Project Gutenberg-tm electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH F3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you 'AS-IS' WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg-tm electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg-tm electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg-tm work, (b) alteration, modification, or additions or deletions to any Project Gutenberg-tm work, and (c) any Defect you cause.

Section 2. Information about the Mission of Project Gutenberg-tm

Project Gutenberg-tm is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the

assistance they need, are critical to reaching Project Gutenberg-tm's goals and ensuring that the Project Gutenberg-tm collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg-tm and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation web page at <http://www.pglaf.org>.

Section 3. Information about the Project Gutenberg Literary Archive Foundation

The Project Gutenberg Literary Archive Foundation is a non profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Its 501(c)(3) letter is posted at <http://pglaf.org/fundraising>. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's principal office is located at 4557 Melan Dr. S. Fairbanks, AK, 99712., but its volunteers and employees are scattered throughout numerous locations. Its business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887, email business@pglaf.org. Email contact links and up to date contact information can be found at the Foundation's web site and official page at <http://pglaf.org>

For additional contact information:

Dr. Gregory B. Newby
Chief Executive and Director
gbnewby@pglaf.org

Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation

Project Gutenberg-tm depends upon and cannot survive without wide spread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine readable form accessible by the widest array of equipment including outdated equipment. Many small donations (\$1 to \$5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit <http://pglaf.org>

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg Web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: <http://pglaf.org/donate>

Section 5. General Information About Project Gutenberg-tm electronic works.

Professor Michael S. Hart is the originator of the Project Gutenberg-tm concept of a library of electronic works that could be freely shared with anyone. For thirty years, he produced and distributed Project Gutenberg-tm eBooks with only a loose network of volunteer support.

Project Gutenberg-tm eBooks are often created from several printed editions, all of which are confirmed as Public Domain in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our Web site which has the main PG search facility:

<http://www.gutenberg.org>

This Web site includes information about Project Gutenberg-tm, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.