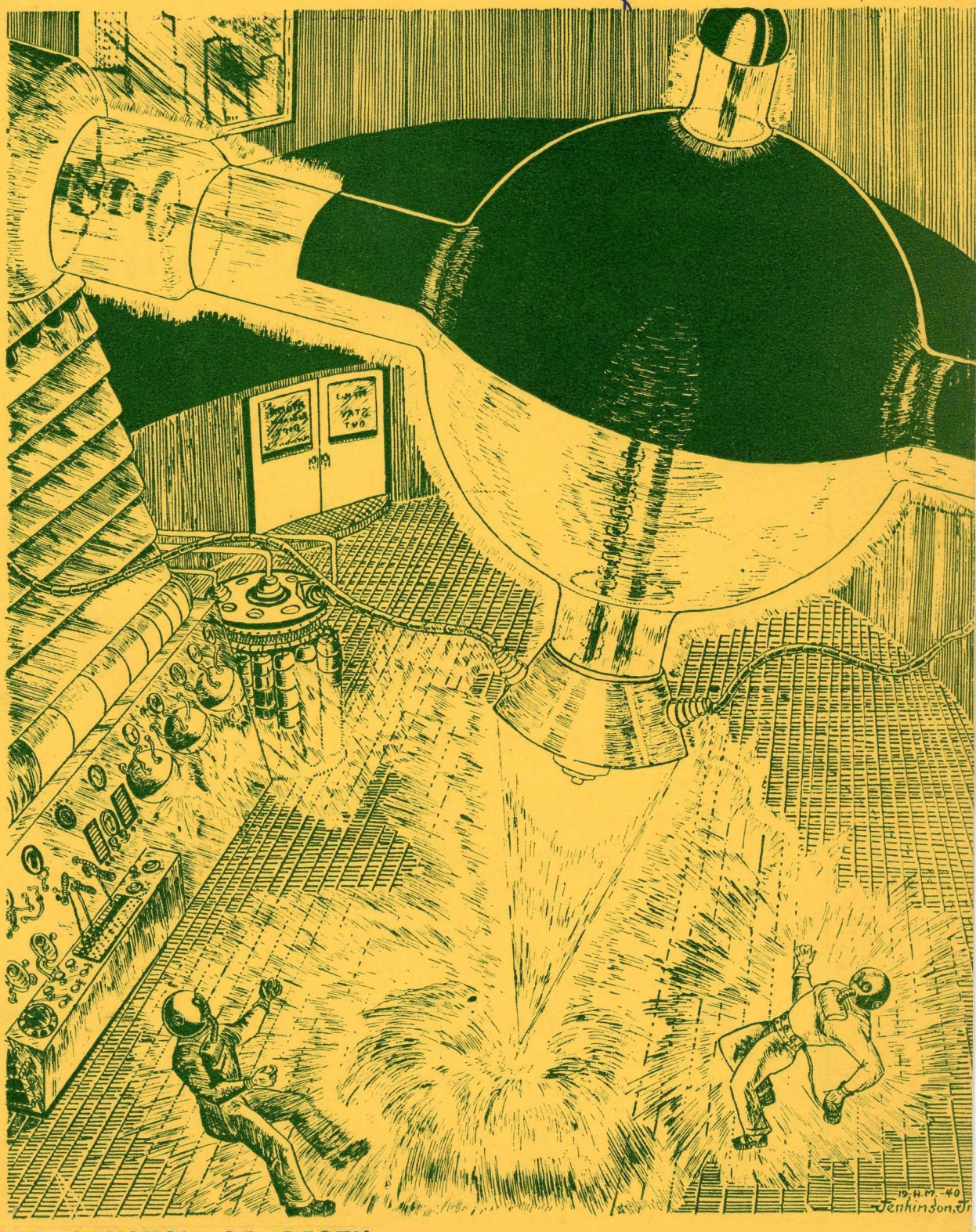
STARDUST

the magazine unique

Vol. 1 No. 3 August 1940 20c



CYCLE OF AGE

by ROBERT MOORE WILLIAMS

THREE ERAS

by Willy Ley

MEET THE FAN

A New Feature

IT'S THE STRAIN

by ırles R. Tanner

THE CRYSTAL OF DEATH by Jack Williamson

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AUGUST • 1940

VOLUME 1 • NUMBER 3

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Cover by H. M. Jenkinson - Interiors Jenkinson and Ley

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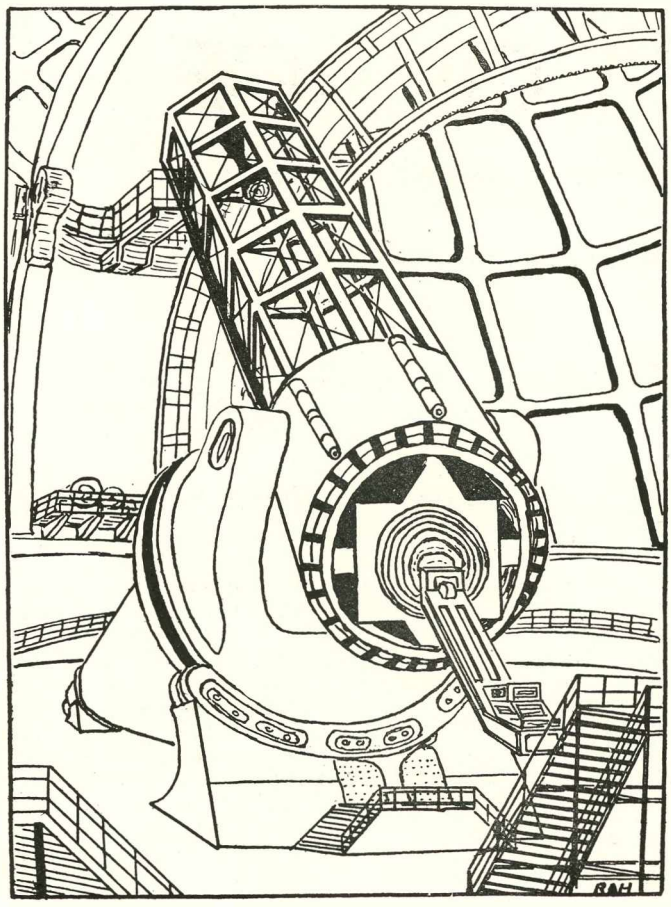
STARDUST solicits manuscripts which are slightly different from the Editorial policies of the professional magazines, and which would see publication but for this reason. STARDUST is a member of the QUILL & SCROLL, International Honor Society of Journalism.



Let's Discuss It EYE to EYE With The Editor

The results of last month's contest are not yet completely tabulated, as letters are still pouring in. If you have not already added your choice to the best story and author in science fiction, and why, do so at once while there is still time.

You will note that L. Sprague deCamp is absent from this issue. Due to last minute changes, his new story, INVERSE VARIATIONS has been held over to the next issue. I can definitely promise you that it will appear—and you will like it!

Last month first place was hard fought for. But finally, edging ahead by a slight margin, LIEDERMAN'S GENERATOR took top honors. This is the second time in a row that *Robert Moore Williams* has captured first place, and he is indeed to be congratulated. I should not be surprised to see him come in again in the near future.

Coming in a close second was POISONED SOIL, by the ever popular *WILLY LEY*. And if Mr. Williams & Mr. Ley had to fight it out so hard last month, what will this month's decision be—when they have yet another top-notcher to contend with?—*Jack Williamson!*

Dale Tarr aroused quite a controversy with his article on poetry in the last issue. In fact, it looks like he will have a few rebuttals to look into. Fred Pohl of *Astonishing Stories etc.* has promised your editor that he will be on hand soon with a reply to Dale. (Mr. Pohl, as I understand it was the first person to sell poetry to UNKNOWN.)

In this issue, as was promised, a new department is inaugurated. MEET THE FAN will run, every month, pictures and complete histories of all the prominent fans. Requests have come in for data on the staff of STARDUST as a result of this announcement, so, along with another prominent fan, each issue, a member of the staff will be reviewed. If *you* would like to be *met* in MEET THE FAN, contact ye editor for the complete details.

Next month STARDUST will run three headliners. In the parade of off-trail fiction, will be: *Robert Moore Williams* with a truly *different story!* And when I say different—I mean different! When Bob Williams wants to, he can turn out some beautiful stories—and *City In The Far Off Sky* is one of them! In it you will meet two delightful little characters—of a kind you have never met with before in this field of fantasy. I'm not going to tell you now what the story is about—wait!

L. Sprague deCamp returns too with his delightful satire, INVERSE VARIATIONS. What makes a Scotchman *scotch?* Read this unique yarn and find out!

Leading off the non-fiction parade is *Julius Schwartz* with an intriguing article entitled: *Memoirs of a Science Fictioneer.* Mr. Schwartz, as you all know, is fantasy's most prominent literary agent, and also one of the real old-timers in the fan world. His, THE TIME TRAVELER, was the first fan magazine ever to be produced—and that was way back when! In his article Mr. Schwartz reproduces excerpts from famous fantasy correspondents of his. Excerpts of letters from men who have now passed on

Concluded on page 22

THE CYCLE OF AGE

A Stirring Tale of the Year 4000 A.D.

by Robert Moore Williams

When the hand of time has added another thousand years to the pages of history—what will the world be like? Will vast cities stretch skyward? Will man have accomplished interplanetary travel? Will UTOPIA, the ideal civilization be finally realized? Or, what!

Robert Moore Williams, in this unique story, tells us what he visualizes the world of tomorrow as. He shows us the ultimate end—that is bound to come, unless civilization comes to its senses and takes a new hold on life. Poetic justice is the keynote throughout this tale of another age. Justice that is cruel, grim—and yet natural. It would do the entire world good to read a story such as this. Perhaps it would show the futility of our petty wars and grievances. . . . But on with the story . . .

* * * * *

Tense and watchful, Jahn shivered beside the game trail. Hunger was a gnawing knot in his belly, fear a crawling blot in his heart. Each vagrant gust of wind that swirled the dead leaves made him start. The shrill call of a hunting hawk riding down the wind sent his pulse pounding. He knew it was only a bird but still he wanted to run. His kind had run for so long . . . Jahn could not remember a time when flight had not been uppermost in his mind.

Hunger held him. That knot in his belly. Sooner or later food would come down that game trail. Maybe it would it would be a rabbit, and his club would crush life from it. Perhaps it would be a deer. Then he would strike with all his strength, and if the blow was well aimed, the sharp stone that he carried would enable him to gouge succulent flesh from a quivering flank.

Perhaps—Jahn shivered at the thought—it would be a brown shadow that moved on noiseless feet. A panther. It might even be Old Shaggy. If either came, Jahn would be the hunted instead of the hunter.

Old Shaggy would not come down the trail that dawning, but Jahn did not know it. Old Shaggy was crouched on an overhanging ledge a dozen feet up the trail. Hunger gnawed at Old Shaggy's belly, too, and he was waiting. He knew that sooner or later Jahn would leap from the place where he was hiding, and that leap would carry him within range of Old Shaggy's downward plunge.

A red squirrel barked from a tall hickory tree. Jahn mentally cursed the red mite. Because the squirrels had eaten the green nuts during the summer and had hidden the ripe ones as they fell in the autumn, there were few nuts to be found, not enough to fill the stomach of a seventeen-year-old man. Jahn did not know that he was seventeen, or that he was a man, but he did know that he was hungry.

He tensed. A rabbit hopped down the trail. The cottontail sat up, his ears thrust forward. Jahn could see the rabbit's nose about its eternal twitching as the creature tested the light wind.

Jahn's mouth watered. The rabbit was out of reach of his club and seemed in no hurry to make up its mind to come nearer.

The rank odor of Old Shaggy went with a vagrant gust of wind that ruffled the brown leaves and sent them scurrying. The rabbit's ears thrust back, it leaped into the brush and was gone. Old Shaggy settled back on the stone ledge where he crouched. He had patience, did that beast. Or was he a beast?

He looked strangely like a gorilla, except that his arms were not as long nor his shoulder muscles as massive. His face remotely approached the human, but the thick matted hair that grew profusely on it indicated he was not man, and the leer within his tiny red-rimmed eyes showed he was not beast. Animals do not leer. A huge knotted club rested on the ledge behind him. . . . He had learned the use of tools, the first step upward from the animal. Or perhaps he had never forgotten.

He crouched on his haunches on the stone ledge and watched Jahn through the tangled limbs of two gnarled and twisted oaks. Those limbs kept him from leaping at the unsuspecting form. He could see through them but even his heavy body could not crash through. And at the sound of the first breaking twig Jahn would be gone. He could run faster than Old Shaggy and had proved it several times. He lived by the fact that his legs were long and his lungs deep. In the Year of Our Lord, 4041, in the low range of Ozarks in what had once been northern Arkansas, survival was by strength or speed, with the odds apparently about even.

With hungry eyes Jahn watched a small black and white creature, with an erect bushy tail, walk past him. It was grunting and grumbling to itself and was utterly indifferent to all dangers. Jahn's club could have crushed the life from it, yet he let it go, despite the knot that tore at his belly with increasing vigor as the seconds lengthened into minutes.

The country was rich in game. There would be other and more palatable breakfasts. Old Shaggy eyed the skunk as it ambled past him and reached the same decision.

Jahn's keen ears caught a new sound. Feet padded on the game trail. Not the hard hoofs of a deer, nor the stealthy movement of an animal, but the sound of two feet, made by a creature that walked erect. Watching the lower bend in the trail, Jahn saw her come, a slender figure wearing a rough cloak of rabbit skins and carrying a long pointed wooden staff in one hand.

Old Shaggy saw her too. One breakfast suited him as well as another. His leg muscles quivered, then steadied.

Jahn had seen her before, on several occasions, and had tried to approach her. She had warned him away, and once, when he had not heeded her warning, the point of the rod she carried had flicked dangerously close to him.

Jahn knew she was his kind, and strange longings stirred in him at the sight of her. One-Arm, with whom Jahn hunted and fished occasionally, and who was his cousin, only Jahn didn't know it—and had no word for cousin anyhow—had chased her once. That was why he had only one arm. He had attempted to climb to the high dry cave where she stayed and a heavy stone had crashed on his wrist as he reached over a ledge, breaking the arm bones and almost severing the flesh. One-Arm had been sick a long time, and his hand had dropped off.

Her eyes quested every shrub, every overhanging branch, searching for danger, but Jahn was as capable at hiding as she was at discovering what was hidden, and she never saw him. His club could have swung in a smashing arc against her head as she passed almost within inches of him, but he did not move. He knew she was not food. Something out of his dim murky past whispered what she was. It troubled him. It seemed that he was trying to remember something that he had once known. Perhaps some long gone ancestor had known it. Jahn did not know that he had ancestors. He had never heard of racial memories, or of races. But in his mind was a dim, nebulous thought.

In the mind of Old Shaggy was a more pressing thought, and in his stomach was torture.

Jahn caught the tiny rasp of calloused feet on stone. He whirled and saw Old Shaggy start to leap from the ledge, and he knew that the leap of the beast was aimed at the girl.

The urge to flee thundered in his mind. Jump! Run! Get away from there! Survive! Fright distorted his face, sent his heart pounding. His leg muscles jerked as if they had eyes of their own, like they saw the beast; they tugged at him as if they had individual minds ordering him to flee.

But there was in his memory a dim, nebulous thought, that had perhaps come down through unnumbered generations. It had to do with her.

Jahn's reaction was split second. Before Old Shaggy was fairly launched from the ledge, the dim thought in the back of Jahn's mind had risen to the front, had assumed control. He knew what he was going to do. The why of the matter was meaningless.

His warning scream cut the morning air as he leaped from hiding. The girl never stopped to look. She knew what to do. Like a sprinter at the sound of the starter's gun, she leaped to life. Her lithe brown legs hurled her forward. Old Shaggy hit the ground where she had been.

Over two hundred pounds of slavering, raving beast whirled to face Jahn. The great canine teeth gleamed wickedly as the huge mouth gaped from ear to ear. Jahn could see the red flesh in the creature's gullet. Screaming like a mad panther, Old Shaggy swung his club aloft, and leaped at the daring mite that had robbed him of his breakfast.

Jahn slid to one side like a ferret ducking into a hole. Hot noisome breath struck his face and the leap of the beast missed him by inches. Cat like, Old Shaggy twisted his huge bulk, hit on sliding feet, clawed at the ground, and leaped again.

Jahn dug his bare toes into the cold earth. Terror gouged grooves in his heart. He knew he had to run as he had never run before or he would play a major part at a meal that would not do him any good. He did not look back. His ears told him too much.

One frantic leap, his foot slipped, he fell heavily. He did not see the club descending, but he knew it was, and his mad roll to the right was purely instinctive. The club thudded where he had been and he scrambled to his feet. Lurching forward he slipped again, ran square into the gnarled oak tree. His body caromed from it and he found himself face to face with Old Shaggy.

He was all beast now. He had dropped his club, for in the lower reaches of Old Shaggy's brain there was no knowledge of tools. The creature's movements were lightning-like, yet it seemed to Jahn that an eternity passed while the beast moved toward him. Taloned fingers reached for his throat, hot fetid breath overwhelmed him.

Jahn struck out weakly with his left hand. As well use a fly-swatter on a gorilla. The beast brushed it aside, grabbed Jahn's throat, started shaking him, started crushing the life from him.

Jahn got a glimpse of something flashing, something long and slender, that struck Old Shaggy high on his chest, glanced from a rib. The beast screamed, tore at his side, where a red river flowed from a long narrow gash.

Grabbing at his side was an error on Old Shaggy's part. It cost him his breakfast when he wasn't badly hurt.

Jahn wriggled around the bole of that oak like an eel around a submerged log, and before Old Shaggy could get his mind back on his business, Jahn's feet were beating a stiff tatoo upon the game trail. Running beside him, and urging him to greater haste, was the girl. She no longer carried her long slender rod.

Behind them, screaming his rage, Old Shaggy waddled. He was still hungry and now he was angry.

Hate was in Old Shaggy's blood, and had been down through long generations. Since the holocaust in 2619, defective gene had mated with defective gene during the long toll of the centuries. A sound gene coming from either parent is always dominant over a defective gene, for Mother Nature is not only patient, she is wise, and her patient wisdom is to the end that defectives will be eliminated, that only strength and intelligence shall survive. Her dim, eventual purpose is unguessed; no one knows to what end she works, to what vast nebulous goal she aspires. But she is patient, and she is willing to work with outworn tools.

Old Shaggy was such a tool. So were Jahn and the girl who ran beside him. But they were a little different; they were throwbacks. Back through their ancestry, back through an insane heritage, ran a streak of adaptability, like a thin vein of gold through a mountain of worthless rock. Two rare cases of ancestral mating, where a sound gene crept in to dominate a defective gene that carried an insane trait, had created them. Their minds were sound, but they lacked many of the most important tools of the mind: words. Their limited vocabulary kept them from using the intelligence they had, for without words the mind thinks with extreme difficulty, if at all.

They had never known the words. It wasn't their fault. It stemmed out of 2169, and what happened then.

The great disease of civilization caught up with the world. War, the most pathetic word in the Eng-

lish language, rolled its red tide over the face of the earth. Men said it couldn't happen. The hell it couldn't! It did. . . .

Bombers rained death from the sky. Swift pursuit planes caught the bombers, sent them flaming down, were themselves caught by equally swift planes protecting the bombers. Men died. It was nothing. There was two billion more.

Great guns hurled shot and explosive shell into ancient and mighty cities. Machine guns tolled their dirge of death. Gas stank in unprotected towns. Odorless, invisible gas crept over remote villages and women and children went to sleep and did not waken.

Men died. It did not matter. There were two billion more. The hell there were!

The butcher, the baker, the candlestick maker . . . black men, brown men, yellow men, white . . . Hindu Buddhist, Pagan, Christian . . . men died. War had rolled its red tide over all the earth.

The mighty struggle rooted in economic sores that had been festering for hundreds of years. The yellow races would not limit their population, the world-girdling white races held the gardens and the granaries, there was not enough to eat in Asia. All that anyone really wanted was something to put in his belly, but when the slaughter started, hate was added to hunger, and nothing could stop it . . . not even when it became obvious that Old Shaggy's kind would be the only survivors.

Hunger started it, patriotism kept it going. Men died. . . . The earth was becoming one vast cemetery.

Finally there came the blight. A clever Asiatic scientist tore the guts out of the cholera germ and found out what made it tick. He died. A more clever, more capable assistant lived for three months. During those months remote American villages awakened to find corpses rotting in the street. At first, men examined the corpses, but the same man never examined more than two or three before the fever he had caught from the first one got him, and he was rotting in the street himself. Madly fleeing refugees carried it on, the wind picked up the spores from dead bodies and flung them to high heaven, where the sun's rays caught them and kicked them in the pants. Perhaps they invaded the circling planets, eventually. No one speculated about that. There wasn't anyone left to speculate.

The blight caught weakened Europe. After a month the very saints in heaven must have been nauseated by the stench. It swept eastward along the Mediterranean, it rolled over the steepes of Russia, it climbed the Himalayas, and washed ashore in the land that gave it birth. Grim justice, this!

Butcher, and baker, and candlestick maker. . . .

The hell it couldn't happen! It did. . . .

A few survived, for a time. The weaklings and the cowards, the physically unfit, who had fled to the waste places. But even here the wind-borne spores came, to root out the unfit. Death does not discriminate between brave men and cowards. Nor did the blight.

It had a basis for discrimination, it left living a certain select group, but when the last spore had died, it mattered little that this group was alive.

The insane it did not touch!

The mad ones must have wondered what had happened when their keepers died and the gates of the asylums finally stood ajar. They did not know that in their blood streams were antibodies that effectively stopped this hybrid cholera germ. They died of other diseases but this one did not touch them. They did not speculate about the reasons, but when they got hungry, they went into the fields and ate, as best they could.

Among them were young people. There were children eventually, wild savage things, who grew like weeds, and lived like animals. All that the race had learned was forgotten. Tools they did not know how to use, fire they knew nothing about. They only knew to eat. They ate. Sometimes their food was animals, sometimes it was roots, again it was each other.

The centuries swept on, and fostering nature, with an eternity of time, at her command, with tireless patience, dreaming to herself of that vast goal to which she aspires, stooped to rebuild with wornout tools. . . .

Jahn ran. Beside him ran the girl. Behind them Old Shaggy waddled, screaming his hunger and his insane rage.

In the valley below them a few stones overgrown with moss represented the asylum that had housed their forebearers.

"Here," the girl pointed. They had come perhaps half a mile up a steep slope, at full speed, but their breathing was free and easy. Jahn followed the direction in which she had pointed. It occured to him that she was taking him toward the high cave where she lived and he did not altogether like this. She had hurled stones at One-Arm, when he would have gone to the cave with her.

He hesitated.

"Come," she said, jerking her head toward the beast that followed. "He no climb so high."

"But . . ."

"Safe there. Come."

Something about her told Jahn that she would not throw stones at him.

A line of scrub oaks fronted a limestone bluff. Several tall pines grew at its base. She leaped for an overhanging limb, lithely drew herself up the pine trunk about twenty feet, leaped lightly to a ledge in the face of the bluff, and called encouragement down to Jahn, who followed her carefully but capably.

Footholds in the stone gave her a leg up, Jahn following. She led him into the cave. A narrow opening gave into a dark shadowy cavern. Facing the southeast, the first rays of the morning sun peeped in at the mouth, and flung bright streamers into the darkness.

Jahn peered about, half afraid, half glad. He glanced at a pile of round black objects, bigger than his two fists, that raised a small mound in the back of the cave. They were not worthy of a second glance. He did not know they were contact grenades, which had been stored there in the long past. He did not know that these were one of the minor engines of destruction created by the genius of a vanished people, that they might more expediously destroy each other.

But he did know that rasping howl that came from outside, and his face blanched.

Old Shaggy . . .

He and the girl rushed to the entrance. The beast was leaping up and down on the ground below. He was dancing in his rage. He tore at the earth, wrenched at a dead limb, sent the dry November leaves scurrying.

Continued on page 15

THREE ERAS

A Comprehensive Study of Rocketry and Space Flight

By WILLY LEY

As was promised, Willy Ley is back again, and this time with a most comprehensive study of rocketry and space flight. Mr. Ley is one of the world's foremost authorities on rocketry, and this present article is well representative of his ability in the field.

When will space travel be accomplished — how? Is rocketry the answer? What are the problems and hazards? . . . Mr. Ley outlines each item and presents all the known facts and theories concerning them.

* * * * *

In the Spring of 1939 I celebrated—alone and quietly—a private little anniversary that is not only of personal value but that also has some significance in the history of a great idea. The anniversary concerned my first visit to the Moon,—not the real moon, of course, but something that looked exactly like it.

It was the gigantic lunar landscape built by Fritz Lang for his film "*Frau im Mond*," known in English-speaking countries under the titles "The Girl in the Moon" or "By Rocket to the Moon." It was almost a conference of scientists that met in these strange and yet so familiar surroundings. There was Hermann Ganswindt, the man who was the first to design a space ship in about 1880, there was Professor Hermann Oberth, the father of modern rocket theory and there was, of course, Fritz Lang and his collaborators.

And while we were sitting and watching the photographing of one of the scenes of the movie the thought occurred to me that this might very well be the beginning of the Third Era of Astronomy.

Scene at the moonscape in the UFA studios in 1929. Left to right: Professor Hermann Oberth, Fritz Lang, (the boy Gustl Stark, one of actors) one of the architects, Hermann Ganswindt and Willy Ley.

Strangely enough the Second Era had started in connection with the moon too. And for all we know the First Era of Astronomy might also have begun on account of the existence of the Moon.

The First Era of Astronomy had begun when mankind had developed enough intelligence to note that the changes of the moon were periodical. Thus observation of the heavens had gradually become a duty of the priests and in due time they had noted that there were other periodical (and therefore predictable) changes too. The First Era, that of observation with the unaided eye neared its end and when the telescope was invented three hundred and two score years ago. But even before the telescope—primitive at first as everything that is new—heralded the advent of the Second Era, a great triumph had been achieved, Johannes Kepler had found the three laws governing planetary motions. And exactly at the borderline of First and Second Era the same Johannes Kepler wrote a book, printed posthumously, that he had called "*Somnium*"—Sleep. It was the first story about a visit to the moon that was inspired by astronomical observations and it deserves interest for many reasons. The conception of a "plurality of worlds," that had flowered for a short time in ancient Greece but that had been forgotten, had just been re-established. If there were other worlds, thus Kepler's and others thoughts ran, it might be possible to visit them. But since mankind could not even fly, the problems of flight and of interplanetary travel were hopelessly confused, in fact they were (even many years afterwards) believed to be the same.

Kepler was the first man who realized that there was a difference. He knew that birds' wings would not help, but since he knew no other way he had to trust little amusing "spirits" to carry him to the moon. That was sixty years before Sir Isaac Newton introduced "gravitation" into scientific thinking, but Kepler knew that something like this must exist. A certain passage in his "Somnium" is proof for this. When he neared the point in space where the gravitational influences of Earth and of the Moon are equally strong his body contracted in a peculiar manner. But he was not at a loss to explain why. "Since the magnetic influences of Earth and Moon keep things in suspension by mutual attraction it is as if

* * * * *

neither of them exerted any influence. Then the body attracts its own members because they are the smaller parts . . . "

Sir Isaac Newton, when he gave a better explanation of the mechanism of the gigantic celestial clockwork Kepler had seen and understood, also furnished the key for actually making trips such as Kepler had envisioned. I doubt whether he actually knew (as is sometimes asserted) that his Third Law of Motion would finally become the tool by use of which man might overcome gravity, but at any event Sir Isaac furnished this tool.

All this came to my mind while I was sitting there in Fritz Lang's studio moonscape, watching people manipulate a model of a space ship, designed as closely to truth as Oberth's science could do it and I felt that the Second Era of Astronomy, the Era of telescope, spectroscope and bolometer was also nearing its end and its final triumphs. Perhaps that new large mirror at Mt. Palomar is already the final triumph of the Second Era before the Third Era of actual astronomical visits comes true.

We owe it to Kepler and to Newton that we have now such a thing as an embryonic science of "astronautics." Kepler explained how the heavenly bodies move, Sir Isaac showed why, in stating that gravitational force decreases with the square of the distance if one travels away from its source. It is very fortunate that such a law as that of the square of the distance exists, otherwise dreams of interplanetary flights would remain always nothing but dreams. But the fact that gravity decreases the way it does leads to a very important figure that is the key to everything that has to be accomplished.

If we drop a weight from a certain height, say 100 yards, it will arrive on the ground with a certain velocity. Galileo Galilei, the first man who sensibly used the then newly invented telescope, knew already that it does not matter whether the weight is made of iron, lead, copper, stone or wood, the "velocity of arrival" will always be the same for a certain height.

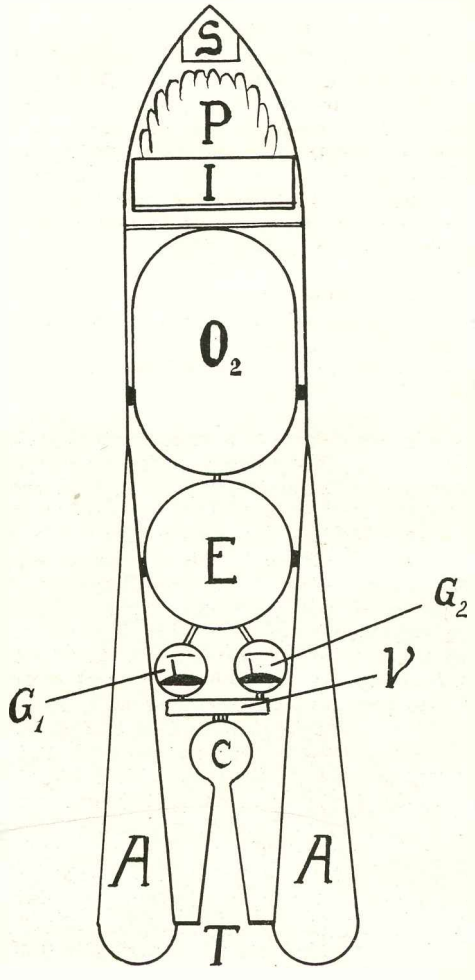
If the same weight were dropped from a height of 1,000 yards it will, of course, arrive with a much higher velocity, but *not* with ten times its former velocity. The "velocity of arrival" will be less than should be expected. Thus the experiment might be continued, it will always be seen that the weight arrives with a smaller velocity than would result if it were correct to simply multiply the heights and the original velocity that resulted from the first experiment. Evidently then, a weight, dropped upon Earth from an infinite height would not arrive with infinite velocity. And since the law governing free fall is known, this velocity can easily be calculated. A fall from an infinite height would result in a velocity of 11.2 kilometers or about seven miles per second. Since we also know that the velocity required to throw a stone to a height of a hundred yards is exactly the same as the "velocity of arrival" from this height, it follows that it is at least theoretically possible to throw a shell into infinity so that it will escape Earth's attraction forever. Hence "escape velocity" has been accepted as a name for the velocity resulting from a fall from infinite height. [1]

It is an enormous figure, the energy required to actually throw a weight into space so that it will not return. It amounts to 6,378,000 mkg. (meter/kilogramm) for each kilogramm of its weight. Or, to use units of measurement more familiar to an American reader, for each pound of weight, an energy is required that would be sufficient to lift 6,378,000 pounds to a height of forty inches. It is a frightfully large figure, but it tells us at least "what we are up against" if the Third Era of Astronomy is to be realized.

* * * * *

Schematic drawing of a liquid fuel rocket:

S - *mechanism to open nose of rocket and to eject parachute at peak of flight.*
P - *parachute*
I - *"payload" - instruments*
O_2 - *oxygen tank*
E - *fuel tank*
G_1 - *oxygen gauge*
G_2 - *fuel gauge*
V - *valve mechanism*
C - *combustion chamber*
T - *exhaust nozzle*
AA - *fins*



You may not have noticed it yet, but we are already deep in astronautic science. Unfortunately things are going to be more complicated from now on. It is not only necessary to attain "escape velocity," it is also necessary to do so slowly. Jules Verne, when he wrote his well known story about a shot to the Moon, knew exactly what had to be accomplished because the French Astronomical Society had furnished him with the necessary data. But we now know that a gun, even if it were still larger than the one Jules Verne created in his story, would not work. The air resistance encountered in the so-called Troposphere (say the first seven or eight miles from the ground up) is enormous. These layers and preferably also the next eight miles of Stratosphere have to be penetrated gently. While the atmosphere is around 300 miles high, almost 98 per cent of it is compressed in these first sixteen miles, possibly even 99 per cent. In addition to the conditions forced upon us by air-resistance we must bear in mind that the human body can stand only a certain amount of acceleration. While we are used to a constant acceleration of 9.81 meters or about 32 feet per second, it is not yet exactly determined how much we could safely stand. While the final velocity matters not—we are travelling with almost three times escape velocity around the sun—changes of velocity that are too sudden might prove fatal. Such changes have to be brought about with comparative slowliness,—a conservative and fairly reliable estimate places a *safe* maximum at an additional three times gravity, meaning that the vessel could safely accelerate with 100 feet every second in vertical flight.

To repeat briefly: 11.2 kilometers per second has to be attained, but under no circumstances should the vessel reach high velocities as long as it is in the denser layers of the atmosphere; neither should its velocity increase faster than about 100 feet in every second.

To accomplish all this by an application of Sir Isaac Newton's Third Law of Motion that simply states that "every action has an equal but opposite reaction" seems as big a task as indeed it is. But just as 11.2 kilometers per second is a big but not impossible figure so it is only a big, but not impossible task.

To understand just what Sir Isaac's Third Law means we'll imagine a stick, weighing two pounds. To simplify conditions we'll think that it is suspended in mid-air, we eliminate friction that way. Now let us imagine that some force, such as for example a powerful spring or a small quantity of gunpowder, disrupts the stick into two equal parts. The speed with which this happens shall be 2,000 feet per second. Obviously each part will then move away from the other, each with half of the full speed, 1,000 feet per second. We'll neglect one of the two parts and center our attention on the other that is being disrupted again into two equal parts. One of the two parts, that are now each one quarter of the original mass, will come to rest, receiving as it does a speed of 1,000 feet opposite to the direction of its flight that is performed with the same speed. But in the other part the two impulses will add, making it travel now at 2,000 feet per second. It is unnecessary to mention that this must happen no matter what the surrounding medium, only a very dense medium would hinder the movements of all parts. In fact the phenomenon could be observed best in a vacuum. I might mention that the center of gravity of the whole assembly of smaller sticks is still the same as that of the original single stick, in other words the center of gravity of the whole does not move regardless of the antics of the single parts.

This, evidently, furnishes a method to move in airless space where no propeller would "bite." It is only necessary to throw one part of the whole in one direction to move in the opposite direction. But the loss of mass is terrific and it might be worthwhile to see what happens if the parts are not of equal weight and mass.

When we repeat the experiment, throwing away only one quarter of the mass in each division, the one piece in which we are finally interested receives in the first disruption only a speed of 500 feet per second, its mass is three quarters of the original mass. After the second disruption the mass of the main piece is 3/4th of 3/4th or 9/16th, after a third disruption it is 3/4th of 9/16th or 27/64th, after a fourth disruption it is 81/256th, and its speed is then 2,000 feet per second. The remaining mass (having the same speed) in the first example was 1/4th or 64/256th of the original mass. In throwing off only quarters of the original mass we therefore saved 17/256th of it. Evidently the remaining mass, although it eventually attains the same speed, is larger the smaller the parts become. Using a little of higher mathematics it is simple to calculate what amount of mass has to be ejected to attain the speed of 2,000 feet per second, if infinitesimally small parts are ejected. The result of this calculation is "e" or 2.718 . . . , meaning that "e" times as much mass has to be ejected as is supposed to remain.

A toy that does just this was known even before Kepler dreamed his dream of a visit to the moon, the rocket. It ejects particles of gas, produced by the rapid combustion of gunpowder and rises into the air because it receives a reaction from the ejected particles, *not* because these particles push against the air. Having our theoretical experiment in mind we can easily conceive of a method to test whether a rocket actually rises because of its reaction or because its "stream of fire pushes against the air." If the latter were the case the rocket should not work at all in a vacuum, if the theory as outlined above is right it should work better in a vacuum because no resisting medium hinders the movement of the "parts." Professor R. H. Goddard tried it and found what theory demanded, rockets work better in a vacuum.

In the light of such knowledge space flight ideas assume form and shape, what looked like a hazy dream before condenses now into a solid engineering problem.

Powder rockets are a poor embodiment of Sir Isaac's beautiful Third Law. It is evident from our theoretical examples that the speed of flight is greater if the speed of ejection (or of exhaust) is greater. The exhaust speed of powder rockets is very low, hardly more than twice the speed of sound. It is also evident that the speed of flight grows with the amount of mass ejected, this amount (i e. the amount of gunpowder or, generalized, fuel in the rocket) is also small. That's why powder rockets do not go very high, because the fuel burns only a very short time so that the acceleration, albeit high, does not

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1) *The escape velocity, I might mention, differs for every planet. It is 2.39km/sec. for the Moon, 4.97 km/sec. for Mars, 59.3 km/sec. for Jupiter and 9.87 km/sec. for Venus that has a slightly smaller size than the Earth. The formula to calculate it is: $v = \sqrt{2\,g\,r}$ where r is the radius of the planet and g the acceleration at its surface, in the case of Earth 9.81 km/sec. or about 32 feet per second.*

last long. This is another disadvantage. And then gunpowder is not a very trustworthy fuel, accidents have been many and severe.

Fortunately theory permitted the prediction of the existence of other and much better fuels. Gasoline and oxygen, for example, should result in an exhaust velocity of about 6,000 feet instead of the 2,000 feet per second of ordinary rocket powder. A similar result could be expected from a mixture of oxygen and alcohol, a thousand feet more from a mixture of oxygen and methane (swamp gas or marsh gas, CH_4) and more than twice the exhaust speed of oxygen-alcohol from a mixture of oxygen and hydrogen. I might add that each one of these exhaust speeds can be increased some 20 per cent if ozone were used in place of oxygen. Together with this advantage liquid fuels offered the further advantage of being more easily controllable than compressed powder. When powder burns it just burns and nothing can stop it, but liquids can be passed through valves that regulate the flow, change the mixture, if desired, or stop the rocket motor completely. Another, and perhaps the most important advantage is that liquid fuels are much safer, taken separately, neither oxygen nor alcohol are explosive. Of course they will be transported and stored in separate tanks. Only the comparatively small amounts that are present in the "combustion chamber" of the rocket motor mix and burn and even if an explosion occurs it occurs only in the combustion chamber.

Exactly six weeks after the scientific meeting on Fritz Lang's lunar landscape, the UFA Films, Inc., decided to finance Professor Oberth's scientific rocket experiments. The first experiments made were conceived to decide the question whether liquid instead of gaseous oxygen could be used safely. While the intense cold of liquid oxygen tended to bring about a few mechanical complications, it was most desirable, in fact, essential to use liquid oxygen. In order to transport the necessary amounts of gaseous oxygen it would have been necessary to compress it highly, which would in turn necessitate pressure proof tanks that would be much too heavy. We knew, therefore, that only liquid oxygen, which, aside from its low temperature, behaves like water or alcohol, would answer our quest. But every expert questioned had insisted that the bringing together of liquid oxygen with combustible liquids must result in instantaneous explosion.

I do not have to tell that these "experts" were wrong, there were explosions on the proving stand, to be true, but they could always be traced to some avoidable cause. And, after all, liquid fuel rockets did make successful flights, using a variety of liquid fuels. Winkler's rockets used liquid methane, Professor Goddard's rockets used gasoline, at the *Raketenflugplatz* we used alcohol and gasoline, the American Rocket Society used gasoline. All these rockets worked, there is no doubt that the principle is sound and that the theory can be utilized in practice.

But, I have often been asked, how about attaining the velocity of escape? If a given rocket has an exhaust speed of not quite two miles per second, and if it carries "e" times, meaning 2.7 times as much fuel as it weighs unfueled it still reaches only a speed of not quite two miles per second. Can a rocket move faster than its own exhaust speed? The answer is that it can and does and that it can be calculated with any desired amount of accuracy how much fuel is needed for a certain velocity. If, for example, the final velocity of the rocket is supposed to be twice the exhaust velocity, the amount of fuel has to be 7.4 times the weight of the rocket (the exact figure is e^2 if you care to know) while three times exhaust speed requires 20.1 times (e^3) the weight of the rocket in fuel. Three times exhaust speed, if powerful fuels are used, means about escape velocity. And since it is the very nature of the rocket to acquire its high final speeds gradually, our two conditions as to slow penetration of the dense layers of the atmosphere and as to a limited amount of acceleration are being complied with, without additional difficulties.

It might be hard or even impossible to actually construct a rocket that can carry twenty times its own weight in fuel and even some more for corrections, landing maneuvers and other purposes. But here the so-called "step principle" puts in a very helpful appearance. If it should be found that a weight ratio of 12:1 is the highest that can be realized nothing hinders us to have a second smaller rocket of the same ratio as "payload" for the first one. It has been calculated in detail that a passenger rocket designed to reach the moon, circle it without landing at close quarters and return to land on Earth would have to be a "three-step-rocket." But although these calculations are very valuable insofar as they show that even present day engineering science could build such a moon ship it has always to be remembered that complications usually decrease when a principle is being developed. One little trick that doubles what we now believe to be the ultimate in exhaust speed reduces all these calculations to "theoretical papers of historical interest" and allows far superior designs.

At any event it has been proven that a flight around the moon is at least theoretically possible and the experiments with small test rockets already made tend to show that there are no practical difficulties that cannot be overcome.

It is usually at this point that the listener to a scientific discussion about space travel bursts forth with thirty-two different questions. Experience in several countries has taught me that it matters little whether said listeners name is Herr Walter Engelmann, or Monsieur Tribulat Bonhomet, or Tovarishtch Vladimir Tchilinsky or simply Mr. Horatius T. Conx, the questions, or rather the objections are always the same.

Not knowing what the term rocket really means but having some vague and fantastic notions about "series of intermittent explosions" they customarily ask whether the human body would be able to stand their shocks and especially that of the "initial explosion." I then usually answer that a rocket motor that sputters intermittent explosions is ripe to be thrown on the garbage heap. Any self respecting rocket motor has to emit a steady exhaust and while the thrust diagram cannot always be brought to be the straight line it is theoretically supposed to be, it should under no circumstances show sudden jumps. "Initial explosion," therefore, can have but one meaning, that the rocket motor explodes the moment it is ignited, an accident that successfully prevents the flight of the rocket but does not necessarily imply serious consequences. As to the ability of the human body to stand a steady acceleration of four times gravity for ten minutes (that is more than would be needed to attain escape velocity) we know from experiments undertaken with large contrivances

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CRYSTAL OF DE

BY JACK WILLIAMSON

It is with extreme pleasure that we welcome Jack Williamson to the pages of STARDUST. The author of such great novels as THE LEGION OF SPACE, and THE LEGION OF TIME, can always be depended upon to turn out an unusual story. CRYSTAL OF DEATH is no exception.

Do the rays of the moon actually produce madness? Is there some strange force emanating from the Lunar surface which causes men to go mad? The author of this story tells you the answer, and in doing so provides a unique piece of weird fantasy.

* * * * *

Fourteen days before we had left behind the waters of the mighty Negro River. For a fortnight we had been pushing up a small tributary stream through the gloom and ominous mystery of the Brazilian jungle. Its implacable, all-pervading spirit weighed oppressively upon us. It seemed that a sinister intelligence lurked in that dull twilight just beyond our vision, a malignant entity, baleful, waiting for us to come to our doom.

There had been insects, enemies terrible beyond the comprehension of one who has not traversed the jungle, and snakes, and the wild men. The blackened, swollen bodies of four of the Indian paddlers had been weighted and sunk in the stream. While Collins, the fourth white man of the party, had been gone from his place one morning, leaving not a clue to his fate.

And twice, we had been compelled to resort to our weapons to suppress a mutiny of the surviving paddlers.

The strangeness and fear of the jungle was beginning to get me. Sometimes, in my nervousness, I saw imaginary reptiles, and screamed aloud, alarming the others. And when I tried to sleep, in the terror of the sultry, black, and insect-ridden nights, with the dreadful *something* hovering about, I tossed fitfully, and my dreams were things of fear and horror.

Yes, I would have liked to turn back. But O'Brien and Hemmingway were set in their determination to proceed. We had heard, among the Indians, a persistent legend of a cup-shaped mountain, in a hitherto unexplored region of the jungle, with a ruined city within. And we had set out to find it. A mad expedition perhaps; certainly if it be judged by its end.

Now there was a rift in the jungle. A welcome bit of blue sky showed above us. Hemmingway pointed. I looked and saw, far toward the zenith, the summit of a great mountain, red and blue in the sunshine and clad in impenetrable mystery.

"Hollow mountain. Go him today," said Tagloa, the guide.

We went on with renewed effort, back into the dull and deadening gloom. I found myself recoiling involuntarily from the repulsive forms of the grotesque plants that grew by the edge of the steaming, sluggish stream. A little later the watercourse straightened, and the banks grew higher. Soon we saw that we had entered a canal, which must have been hewn by the hand of man! But it was waterworn, and the solid stone of its walls was crumbling. If it was a canal it had been cut countless ages past. Suddenly a stone arch loomed before us. The canal entered the mountain!

"We're on the right track," said O'brien. "Some job to cut a tunnel like that! Those old fellows must have known more than we think. Probably done for drainage. And before the Pyramids were built!" His tone changed to astonishment. "Look at that!"

I heard strange sounds fro
and then monstrous things cr

Above the arch, cut upon the blue face of the keystone, was a strange scene. A great Death's-head was depicted, resting on a pedestal. And about its foot was a host of figures, groveling in the dust. I made out the shape of one of the latter. It was reptilian—covered with scales and armed with great claws. And it had a human head!

We entered the tunnel. The darkness was terrible. O'Brien's flashlight made hardly an impression in the gloom; showed us but faintly the moss-covered roof and the water-eaten walls. Hours later, it seemed, we emerged into daylight. The stream widened and disappeared in a desolate morass, surrounded on all sides by grim, unscalable mountain walls. And at the mouth of the tunnel was a granite pier, so time-worn that it tired the mind to think of all the centuries that must have passed since human feet had trod it.

We clambered out, unloaded the baggage, and moored the canoes. Hemmingway and I, with two of the Indians, set out to reconnoiter, leaving the other natives to set up a more or less permanent camp. O'Brien stayed to prevent their slipping off and leaving us stranded.

For perhaps fifty yards the men had to clear the

ATH

WHAT WERE THOSE MONSTERS FROM SOME FORGOTTEN AGE?

n the foul jungle around me
wled into the open space . .

way with their heavy jungle knives, but we skirted the cliff and soon came to a bank of talus that was so scantily overgrown that we could push our way through it with ease. After half an hour we emerged on a level treeless highland that had, somehow, a dead, deserted aspect. Then I saw, here and there, broken columns, colossal blocks of crumbling stone and great heaps of fallen masonry that were the ruins of buildings. Here was the city of our quest!

It gives one a strange sensation to enter thus a city dead and buried in its dust. I felt that the untold millions of spirits who must have lived and toiled here in their fleshly garb were watching us apart, resentful of our intrusion and hungry for revenge upon those who disturbed them.

I started. Staring at us from the brush nearby was a strange, intent, black face. I jerked out my gun but before I had time to fire I realized that it was not alive. I approached it. I could see the head and shoulders of what seemed to be a marvelously lifelike statue, half buried in the sand. I took a spade from one of the Indians and moved the soil from about it.

Hemmingway gazed at it.

"That is no statue!" he exclaimed. "It's a *petrified man!* Notice the perfect detail of the pores of the skin and hirsute growth. Possibly it's a sort of mummy. This race seems to have had a knowledge of the sciences of architecture and engineering far beyond comparison with that of the ancient Mayans or Incas."

I saw a glistening bit of blue crystal in the cold stone fingers and managed to dislodge it with a sharp rap of the spade. It was a little oblong piece of blue stone, brilliant and translucent. One side bore a Death's-head, carved in relief. And on the other, in a design of gold, wonderfully inlaid, was a monstrous reptilian creature, with a human head. And it is singular, that when I touched the stone I felt an odd thrill analogous to a shock of electricity. Somehow the current gave me confidence, tended to lift the weight of foreboding that had descended upon me.

It was almost night when we got back to camp. The tents were pitched, and an open fire was going, as well as one in our folding camp-stove. O'Brien had arranged for us to take a much-needed bath. He was elated at the news of our discovery of the petrified man and what it might imply of the accomplishments of the lost race, in a scientific way.

That night I dreamed that I was running through a swamp, clutched in the soul-killing fear that is experienced only in nightmares, while hideous, malignant monstrosities, half human, half lizard, pursued me, trying to tear from my hand the little blue crystal, which I clutched as a talisman of safety. Of course my knowledge of dream psychology tells me that it was a result only of my nervous condition and of the incidents of the day, and yet—I don't know.

The nightmare was shattered by a real scream so laden with horror that I sat bolt upright in bed, wet with the perspiration of terror. Hemmingway had been sleeping in the other tent, alone. The cry had come, evidently, from him. In a moment I heard his voice, shaking uncertainly.

"O'Brien—Carter—are you there?—A thing came and took one of the men—dragged it past the tents! I saw—I saw it in the moonlight—and I couldn't move—couldn't speak! It was like a lizard—a monster lizard—with a man's head! It dragged the Indian with its teeth!"

By that time O'Brien and I had pulled on our boots and rushed from the tent with weapons in hand. And one of the natives was gone! I saw the drag and we heard a dull splashing from the dead waters of the slough. We roused the other men and attempted pursuit, but soon the quagmire became so deep that we were compelled to desist.

When we had come back, O'Brien remarked, "You remember the so called 'Dragon Lizards,' fifteen feet long, of the East Indian Island of Komodo, huge carnivorous reptiles surviving from the Eocene. It is not impossible that there are similar creatures here. The resemblance of the cranium to a human head may be more imagined than real."

"If you had seen it, you wouldn't take it so lightly," Hemmingway retorted. "God! It was hideous! You can't imagine!"

We did not return to bed, but spent the remainder of the night on guard. The next day we moved the camp to the upland, next to the cliffs and behind the ruins of the city. Here we would be more distant from the jungle. O'Brien spent some time digging about and found an exquisite vase of cut crystal and an odd piece of white metal that looked like a crucible, as well as several clay cylinders that were

covered with what we took for inscriptions.

I scrambled up on a great block of hewn granite to get a better view of our surroundings.

Some distance out in the jungle I saw a great dome of shining blue that rose above the vivid green of a vegetation that seemed weird and unnatural. I showed it to the others and naturally we set out to examine it at once. We left two Indians to guard the camp and took the others along to cut the way. We carried the rifles in case of an encounter with one of the reptiles.

After an hour, guided by the compass, we came to a titanic block of blue stone, ten feet high. So dense was the undergrowth that we were unable to see what was above. We made our way around to the side and came unexpectedly into an open, miry place where the vegetation had been kept down, apparently by much trampling.

"A congregation spot for the monsters," O'Brien muttered.

And then the sight of the thing upon the pedestal burst upon us. It was a gigantic Death's-head, a colossal human skull set in a hard blue stone that, strangely bore no trace of decay. It was fully forty feet from the bare chin bone to the top of the naked dome. And it had eyes—immense eyes of some crystal that glowed with an awful blood-congealing fire of red. A soul-chilling symbol of Death, this, of a death that was terribly alive.

I touched the blue pedestal and jerked back my hand. It struck me with a palpable shock of sheer horror, comparable to nothing I know save the diametrically opposite, strangely reassuring current of the blue crystal. I sweated and trembled from the thrill of it and my heart grew sick with a terror unnamable and indescribable.

I wonder how long the thing had stood since its evil creators were gone, unchanged in its malign power, there in the reeking jungle with the foul mists of decay drifting up about it.

Presently we went back, and, after supper, arranged to take turns in the guarding of the camp. Mine was the first. Carrying my flashlight and rifle, I walked slowly back and forth in the darkness, feeling all the hostile power of the strange unknown about me. Sometimes my straining eyes caught a shadow that made me pause with a stifled heart, but the light showed nothing.

Then a brief weird glow suffused itself over the mountains and the great orb of the moon rose, turning the valley fantastic with its flood of eerie light. And as it rose higher so its rays struck the earth less obliquely, I felt a strange force overpower me. I felt a tide of Evil rising higher — ever higher — in the pit; a demoniac spirit, feeding on the rays of the moon, gaining strength of volition until presently all must bow to it.

Then I knew that the dread *something* was coming from the blue death's head; that its builders had given it a terrible power for a purpose incredibly vile. It was calling, drawing, urging me to it. Incredible horror gripped me, but I was powerless to resist. With my rifle in hand I set off at a run down through the dead city, and along the path we had cut in the jungle.

A length I emerged before the figure. What a hideous surprise awaited me! Under the rays of the moon (I am sure it was the result of moonlight) the head had changed. The skull glowed a green fire—a living green, throbbing and pulsating with alien malific life. And the blood-red beams from the demoniac burning eyes lit the scene before them with a lurid flood of scarlet horror indescribable. With unnatural terror searing my soul, I looked into the depths of those fiery eyes and saw there a will of malevolence supernal.

And under the spell of those eyes, I know not how I managed it, but I clambered up the side of the pedestal and stood on the blue stone platform before that awful face of living, Eternal Death.

I heard strange sounds from the foul, loathsome jungle around me—semihuman cries of terror and pain—screams of agony unutterable. And then monstrous things—lizards with the heads of men—crawled out into the open space and wallowed about in the mud, uttering weird, unearthly cries.

Then came the sound of human footsteps. O'Brien and Hemmingway and the Indians came racing down the passage, drawn as relentlessly as I had been. They reached the pedestal and struggled until they had climbed up beyond the reach of the worshipping monsters.

They crowded on the platform, their faces masks of living horror. I wondered that they did not seem to recognize me, or each other, that they fell on the stone in the ghastly red glare and groveled as did the things below, crying incoherently.

And then, the incredibly fearful occurred. Those men changed! Their skins grew black and scaly; their finger nails developed into murderous talons. They tore off their clothing. Their heads—their faces—changed, but still bore the human stamp! They were metamorphosed into reptilian things like those below! Their jaws protruded, their teeth were long and terrible, and they foamed at the mouth.

Then the things attacked me! I fought a nightmare battle for my life. Three I killed. I know it was a mercy. Yet my conscience smote me for it. All the others I was able to stun with my clubbed rifle and drag off the platform.

At last day came and the evil power lulled. The lights of horror died and the beasts slunk away. Then it was that I found that my hand gripped the little blue crystal. I must have taken it unconsciously from my pocket as I ran across the plateau. To its strange emanation, I am sure, I owe my immunity from the effect of the Head. The men of the old city had made it for self-protection.

I left that accursed land as fast as feet and canoe could carry me. Two weeks later I passed into the river and five days after reached Manaos. But I shall never be able to forget the horror of that night as long as I live. . . .

* * * * *

That is all, except for the scanty explanation that science can suggest for the fearful effect of the Head.

There are strange things about moonlight. For one, it is polarized. It evidently excited new rays in the Head—in the crystal eyes that seemed the focus of its power. The theory of vibratory mental currents is pretty well confirmed. It is possible that the eyes produced mental vibration by mechanical or chemical means, which, pouring out in a beam of terrible intensity, possessed a fixed hypnotic effect, controlling not only the motions of the victims, but were able to alter or aid the alteration of its physical shape.

The science of embryology has shown that in the development from oosperm to adult, an animal undergoes a series of changes which are usually a brief

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CYCLE OF AGE

Continued from page 7

"Yah!" jeered the girl, making a face at the beast. She picked up a small stone, sent it spinning with expert aim. It caught Old Shaggy squarely on the snoot, and spoiled his temper completely.

"No!" Jahn gasped, grabbing her arm.

"No can climb," she answered scornfully, sending another stone zipping past the creature.

Something of the human must have still lingered in the beast, for he seemed to realize that those two midges overhead were laughing at him, and to resent it. He tore at his chest, howled his defiance. His screams echoed through the chill November air and ran through the valley below. He tore a young pine tree from the ground, a sapling twelve feet high, and slammed it against the bluff as if he thought it might tumble it down if he hit it hard enough.

He got an idea. Jahn saw him stare at the pine tree, and walk around it several times. The tree went up, food was up. . . . Hugging the tree like a bear, Old Shaggy started up.

The girl paled a little but her defiance did not desert her. However she looked for a heavier stone. It knocked bark from the pine within inches of the creature's head, but he did not hesitate. He had business up that tree and he was going up.

Jahn wanted to run. Old Shaggy scared him, had always scared him, but Old Shaggy couldn't catch him. He tugged at the girl's arm.

"No can run," she answered. "No other way. Pah! He no climb so high."

The pallor on her face showed she was not certain about this. Old Shaggy had chased her home in the past and had danced on the ground while she made faces at him, but he had never tried to climb before. He had never been so hungry and so mad before.

"Rocks," she said, and Jahn got the idea.

A small pile of stones lay on the ledge. She had carried them there to have handy for an emergency such as One-Arm, but One-Arm and Old Shaggy were two different customers.

They laid down a barrage. Stones whistled past the beast like angry hornets. He cared nothing for hornets. A heavy one caught him fairly in the side. He screamed in rage and pain, but came on.

He managed to leap to the lower ledge and was beginning to experiment with the footholds, when Jahn discovered that they were out of rocks. The face of the girl showed fear for the first time. Her fear gained ground as Old Shaggy managed the first foothold, got the idea, and reached for the second. They could smell him now, as a dank effluvium rose from his unclean body.

Jahn looked at the top of the pines. No . . . A leap to the trees was almost certain death, a leap to the ground was destruction.

"More rocks," the girl gasped, dashing into the cave.

She returned with both hands full of round black stones, a little bigger than a man's two fists. The first one missed for inches, careened from the lower wall, fell to the ground.

The second one caught Old Shaggy on the shoulder. He lost his grip on the niche, scratched frantically. Jahn could see the great muscles heave and twist, the taloned hands cut tiny grooves in the soft stones, the twisted contorted look on the beast's face. At that moment fear shook the creature, a fear that had come down from a long lost time indeed, the fear of falling that has been inherent in the human race since man has had a memory. For a fleeting second something human showed on the repellent face.

Jahn grabbed one of the rocks from the girl, sent it hurtling downward. It hit the beast a glancing blow on the head, provided the energy to upset his balance. He clawed for a hold, missed, there was a scream, a heavy body plummeted, crunched, kicked feebly, lay in a twisted heap at the foot of the cliff.

"Dead," the girl muttered. A grim, awed finality was in her voice.

They went down. They had to look at their game. The dominant genes had done a good job of it and they were human.

It seemed to Jahn that Old Shaggy looked smaller now, and not a tenth as dangerous. Death had deflated the beast. He had been a monster, a stalking terror in the wilderness. Now he was a lump of impotent flesh. Jahn nudged the carcass with his great toe. The flesh was still warm. Warmth was good in November.

Jahn, again conscious that he had not eaten, was wondering whether or not this flesh was food, and it was in his mind to ask the girl, when he realized that she was no longer looking at Old Shaggy. Her head was turned, she was looking behind her, at the face of the wall, and she was tense. Danger. He whirled.

A flower was growing in the dead leaves at the base of the cliff, a flower new to November and new to Jahn. He thought it was a flower because it reminded him of the goldenrods that bloomed in the overgrown fields when summer was waning. It was yellow, like the goldenrods. The blossom culminated in a writhing, flickering streak of blue. It was fragrant, too, and as Jahn sniffed that fragrance a message came down to him through a thousand generations. . . .

He sniffed the flower, tried to take it in his hands, and recoiled abruptly.

"It bites!" he cried.

The girl thrust her hands toward it, not too near. A puzzled awed expression came over her face, peeped from her blue eyes.

Turn Page

Watch for the Special

Convention Issue of Stardust!

"It's warm, like sun," she said.

Jahn gingerly moved near, taking care not to touch this strange flower.

"It is warm," he answered.

They watched it move slowly along the ground to a small pile of dead leaves. It grew brighter then, and warmer. It touched a tangle of pine needles, leaped up, crawled to some dead sticks.

Jahn knew what it was doing.

"It eats," he said.

It awed him. His face was pinched, his eyes wide. He grinned, a little. Somehow he knew that this flower would be kind to him, was kind to him. And to her.

He did not know anything about incendiary grenades, contact bombs, that threw a sheet of blinding flame when they exploded. He did not know what an explosion was. He did not know that in the long ago, men, with murder in their hearts, had made grenades, and that during the vanished centuries the murder had leaked from the hearts of the men and the powder had weakened in the grenades, so that the first was gone and the second only had the strength to ignite pine needles and dry leaves. He did not know. . . .

But he did know, somehow, that this flower would be generous to him and to his kind, if only they could learn to use it. . . .

He saw the girl move to the base of the pine. She returned carrying pine needles, dry leaves and sticks. Gently, tenderly, like a fostering mother, she laid them on the flame. . . .

Cycle of age. . . .

Over the incredibly ancient Ozarks, as the sun rose high on that November day of 4041, A.D. old Mother Nature, dreaming still her age-old dream, courageously, tenderly, working with infinite patience and with all time at her command, stooped to rebuild with wornout tools the shattered, fragile remnants of her wayward children.

THREE ERAS

Continued from page 11

resembling centrifuges that the body does stand the strain. If a space ship were ready, one would, of course, "test" every passenger with such an apparatus several times, in fact a large centrifuge could be applied to make them used to the conditions during the critical eight minutes at the beginning of the flight.

Another objection has to do with the absence of gravitational pull that prevails for practically all the time of the journey. This condition sets in the moment when escape velocity (plus additional speed, if desired) is reached. Since escape velocity enables the ship to travel away from Earth in "coasting flight" or, as the term invented for this condition reads, in "free flight" to any desired distance there is no need for using the rocket motors except for corrections of the orbit or to counteract gravitational influences of other planets. The passengers have therefore to face absolute weightlessness for the entire journey, except during take-off, landings or orbit corrections. While we cannot create this condition on Earth we are able to create its sensations by taking alcohol and scopolamine and then immersing ourselves in a bath tub filled with water of body temperature.

Professor Oberth performed this experiment. He did not experience any after effects except those caused normally by alcohol and scopolamine. But if it should be found that a prolonged state of weightlessness actually has dangerous after effects it will be easy to substitute centrifugal acceleration for gravitational acceleration. Passenger cabin and machinery could be designed in such a way that they could be detached from the remaining fuel tanks. These two units, connected only by a very long rope, could be made to spin around their common center of gravity (that would probably be much closer to the fuel tanks than to the cabin) to create centrifugal forces that can be made as strong as desired. If only the rope is long enough this would not even result in a feeling of dizziness.

Granting all this, the critics are still not convinced that space flight can be accomplished by humans. Machines, yes, humans, no. Emphatically no! There is dispute whether the occupants of the space ship would be roasted by the unshielded rays of the sun before they have time to freeze to death or whether suffocation or well aimed meteorites would "liquidate" them (as the Russians put it so nicely) faster than the cosmic rays . . . but death is certain and utterly inevitable.

A little thoughtful consideration should show that most of these dangers exist only in the imagination of frightened spectators that have the unpleasant feeling that they might be commanded to act as guinea pigs. Most of the contrivances necessary to make the interior of the cabin comfortable for its occupants have already been built and tested, partly for submarines, partly for stratosphere balloons. In painting one half of the outer hull of the ship black and silvering and polishing the other half the designer can enable the pilot to absorb all the radiation coming from the sun or to reflect all of it, by simply turning the appropriate half of the hull toward the sun. [1] If he wishes, he may also admit part of the sun's rays by turning the ship slantwise. The much talked about cosmic rays, although utterly penetrating, are not present in sufficient quantities anyhow to become a serious menace.

I might add that air purification in a space ship would be much simpler than for example in a submarine. If the air is made to circulate through tubes placed in the shadow of the ship, all the impurities, mainly carbon dioxide, would freeze out since the tubes in the shadow would soon require a very low temperature. Fortunately the boiling and freezing

* * * * *

[1] *Turning the ship would be accomplished by spinning an unattached wheel inside the ship. If the wheel has, say 1/1000th of the mass of the ship one thousand revolutions of the wheel would cause one revolution of the ship in the opposite direction.*

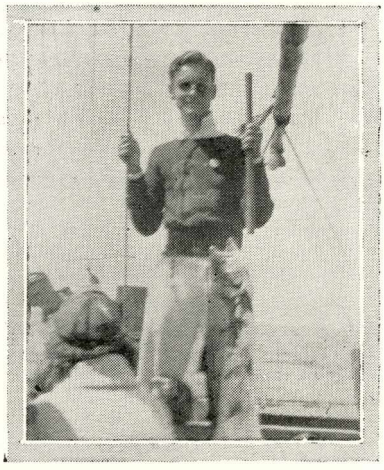
Concluded on page 18

MEET THE FAN . . .

W. Lawrence Hamling, (William Lawrence Hamling) was born on June 14th, 1921, in the great metropolis of Chicago.

Up until his high school days, little happened of any consequence, but then his entire life was changed. He joined the staff of the school magazine, The Lane Tech Prep, (the largest slick prep publication in the world) and soon sported the title of Editor-in-chief. He had always been interested in fantasy, and the bright idea came to him that as long as he was

W. Lawrence Hamling



editor, he might as well boost science-fiction as much as possible in the Board of Education. Thus he wrote a few fantasy yarns and put them into the school magazine—which circulated nationally to the sum total of 10,000 copies, and it was then that he was brought into fandom actively.

He became acquainted with other Chicago fantasy enthusiasts, through the school magazine, and it was not long before he delved into fandom wholeheartedly.

Bill read his first science fiction story in 1935—SPACE HOUNDS OF THE I.P.C., and bought his first fantasy magazine in July of that year, a copy of the old Wonder Stories. In 1938 he, with Mark Reinsberg, also of Chicago, wrote a yarn called "WAR WITH JUPITER" and sold it to AMAZING STORIES. From that time on, his interests were definitely decided.

Today Bill has accomplished many things. Among them, he has formed the CHICAGO SCIENCE FICTION LEAGUE, & THE CHICAGO SCIENCE FICTIONEERS, being elected the Director of both organizations. Too, he has brought forth science-fiction's only printed, semi-professional fan magazine, STARDUST. Ever since the days of the FANTASY MAGAZINE & MARVEL TALES, fandom has wished for such a magazine. Bill decided that it was worth the effort involved to give fandom such a magazine—and did it.

He will enter Chicago University this fall, after a year's vacation. (Vacation, hell! He's worked every

Concluded on page 22

To start at the logical spot—the beginning, Harry B. Warner, Jr., was born in some unknown and unfrequented little town in Pennsylvania. However, at the age of two weeks, having no control over the matter, he was removed to Hagerstown, Maryland, where he has spent most of his life up to the present. The natal day was December 19, 1922.

In 1933 he bought his first science-fiction magazine. It was one of the last large size AMAZING STORIES. At the time he had a rather astonishing mania for

Harry Warner, Jr.

matters scientific, and the words: *science-fiction*. on the cover were the final inducement to buy. Thus, one of Hugo Gernsback's pet theories was soundly spanked.

WONDER STORIES, ASTOUNDING STORIES, and WEIRD TALES followed suit, and by then Harry was doomed!

In 1936, ASTOUNDING STORIES published his first fan letter. That changed the entire course of his life. It brought in about ten correspondents, and also a number of fan magazines. The fourth Anniversary issue of FANTASY evoked little more than a mild pleasure. The second SCIENCE-FANTASY CORRESPONDENT was better, but something or other intervened, and that "something or other" delayed his entrance into fandom for two years.

But then, together with one of his first correspondents, James S. Avery, Harry began SPACEWAYS—today one of fandom's most popular fan magazines. Later he began HORIZONS, along entirely different lines than its companion. Both magazines are thriving.

Harry has been collecting fan magazines, and has been reading fantasy enthusiastically for about two years.

Physically, he is about 5' 11" and thin as a board. Fantasy and music are his two hobbies, with neither taking the fore. Stamp collecting, coins, art, and sundry other topics have intrigued him at various times.

Concluded on page 22

THREE ERAS

Concluded from page 16

points of oxygen and nitrogen are much lower than those of the impurities. If after a while the tubes are clogged with impurities they could be opened and brought on the sunward side of the ship where the impurities would quickly evaporate into space.

All this sounds as if there were hardly any problems left.

As far as the engineering problems are concerned this is true. Only larger and still larger and again larger rocket motors have to be built. If in the course of this experimental research somebody could find time and opportunity for investigation of what may be termed "ozone question" it would be another long step forward. I mentioned that theoretically ozone is a good substitute for oxygen, in fact it is much superior. But at present it is regarded as a tricky stuff that loves to blow up without apparent reason. But in all probability there are reasons, only they are unknown. If they were known liquid ozone could be used to advantage, ozone-alcohol rockets for the take-off with "upper steps" propelled by ozone-hydrogen could do most of what is now only theory.

The Third Era of Astronomy to become reality needs research, research and again research, mainly about rocket motors. And here the real problem, the only problem, comes in. Its name is money. But even here I am not pessimistic although I have often wailed about the lack of research funds myself in letters, lectures and articles.

Galileo Galilei's first telescope, that marked the beginning of the Second Era of Astronomy was, by comparison, not better, but more primitive than our present-day test rockets. It will be a long way until the equivalent of a 200-inch mirror is achieved. But we know that there is such a way, even though we do not know how to cover it with money which is the *conditio sine qua non* if we want to follow it. But even Johannes Kepler, astronomer to His Majesty the Emperor could not have commanded the millions that were spent for telescopes during the last half century. That's why I feel fairly safe also about the financial side of the problem. The Third Era of Astronomy is certain to arrive . . . because with the conception and theoretical solution of the problems of space flight, it has already begun!

IT'S THE STRAIN

BY

CHARLES R. TANNER

Every science fiction story
Tells in details, old and hoary,
How the poor professor, working with his brain;
Feels a fever stealing o'er him
Till his books begin to bore him,
And he knows that he's a victim of—the Strain.
Every clever politician,
Chemist, lawyer or physician,
Ought to realize his learning is in vain;
All his studies must abate or
He'll become a mad dictator
Or some other kind of victim of—the Strain.
Every prisoner in his cubby—
Hole would soon grow plump and chubby,
Fed on crusts of bread and water from a drain;
If it wasn't for the sinking
Feeling that's brought on by thinking
It's his thoughts that lead to Madness. It's the Strain.
This most curious contradiction
Is peculiar to this fiction;
Yet the lesson isn't hard to understand—
There is madness in the knowledge
That they teach to you in college;
Thinking's more than any human brain can stand.

L'ENVOI

Take you heed, mesdames and messieurs,
Think of all those poor professors.
Do not analyze the stories that you read;
Just to question them is treason,
And you'll get a mental lesion
If you try to think about 'em—take you heed!

THE SCIENCE FICTION SERVICE

Publisher . . . to You

Special for August

THE WONDER STICK

by STANTON A. COBLANTZ

A$2.00 EPIC OFFERED FOR ONLY 70c

The Science Fiction Service is founded in the interests of the reader. In this department, every month, a special book offer will be made to the fantasy reader, an offer that cannot be easily matched elsewhere. Each book offered for sale by the Service, is guaranteed to be brand new, taken from the shelves for the first time.

This month we offer you a remarkable novel from the pen of one of science fiction's most popular authors, Stanton A. Coblentz.

THE WONDER STICK was published in 1929 by the Literary Guild of New York. It sold for $2.00 at all dealers—and is now *out of print!* The book itself contains 309 pages, with illustrations by S. Glanckoff —eight full page illustrations. The jacket is a two color job. Here is a slight preview of the story:

The WONDER STICK is a story of the days before history began, and how Ru, despised by his people, saved them from a terrible destruction. Every persons who loves excitement and strange adventures will enjoy reading about the blood-curdling perils of the doomed tribe of Ru, as it searched forlornly for a friendly land.

Romance is spiked into the story, and suspense is high. Deadly rivalry for leadership between Ru and the Wolf-eyed monster lends thrilling excitement to an already action packed story. By all means read this book of a lost page of history. For refreshing, and fascinating entertainment, THE WONDER STICK is highly recommend.

Here also is an unusual bargain, offered to you by the Service department: Who has not heard of these thrilling novels:

CAVES OF OCEAN—BY RALPH MILNE FARLEY!
JAN OF THE JUNGLE—BY OTIS ADELBERT KLINE!
THE JUNGLE REBELLION—BY RAY CUMMINGS!
THE HUMAN ZERO—BY EARL STANLEY GARDNER!
THE INSECT INVASION—BY RAY CUMMINGS
THE RADIO WAR—BY RALPH MILNE FARLEY!
PIRATES OF VENUS—BY EDGAR RICE BURROUGHS!
FLOOD—BY RAY CUMMINGS!
JAN IN INDIA—BY OTIS ADELBERT KLINE!
RED TWILIGHT—BY HARL VINCENT!

Well, you may have your choice of any one of these thrilling novels upon the receipt of only $1.00 for a year's subscription to *STARDUST*. Think of it, you not only receive a year's subscription to science-fiction's only printed, semiprofessional fan magazine, but you also receive, absolutely free, a famous novel by an equally famous author. (When sending choice, make a duplicate selection, in case demand becomes too great on any particular item.)

Copies of THEY FOUND ATLANTIS, and TARRANO THE CONQUEROR are still available at 95c each. Only a few copies of these great books are left, so if you want one act quickly! Address all communications to the SCIENCE FICTION SERVICE c/o STARDUST, the magazine *UNIQUE!*....

* * * * *

THE EDITOR AND THE FAN

. . . the reader airs his views

TOM WRIGHT . . . .
Dear Bill:

Congratulations!

Congrats on a semi-pro that beats the pros! And the fan magazines don't even come near it. *STARDUST* beats anything I've ever seen!

I just got it today, so as yet I haven't had a chance to read it except for the articles by Tarr and Ackerman which were excellent. If the stories are half as good as they look they'll be plenty good enough for me.

May I offer a few suggestions?

First there's the art which I don't think so hot. I'd like to try a few for *STARDUST* myself. I think I can do better.

I'm looking forward to Williamson's story, as he has yet to disappoint me. Maybe I'm wrong, but I always thought it was Harry B. Warner, not Harry S. Warner. If you have fan biographies and pictures, don't have most of them who have been reviewed a million times. Introduce your staff and newcomers.

Best of luck for continued success—and bring on *Crystal of Death*. . . . R.F.D. 1, Box 129, Martinez, Cal.

(*Glad you like STARDUST so much Tom, and thanks. How do you like the artwork in this issue? Any improvement? As to biographies of newcomers etc.—got any suggestions? You're right about Harry Warner's name, it should be B, not S. A mistake I apologize for. Your looked for story, CRYSTAL OF DEATH is here—like it? . . . Ed.*)

* * * * *

JOSEPH GILBERT . . . .

I'll not rave about *STARDUST* this time—though it's difficult to refrain from so doing. The second issue was truly *superb!*

Leading off, and coming in front is William's sequel. The end was evident from the beginning, but that certainly did not detract from the excellence of the yarn. The style of the tale is a product, and a distinct characteristic of the best in pulp fiction. It is rather common in a large number of detective and western stories told in the first person, and even more common in the better adventure magazines, such as Argosy and Blue Book, although usually done not quite as well as Williams did it. And that proves, I believe, that the majority of science-fiction on the stands, today, is pulp junk with a lower writing standard, than even the great amount of dime novels cluttering up the market now.

All of which leads up to the sad fact that the modern scientifictional situation, is, to phrase it quite mildly—bad.

There's another angle to it too. You won't receive many more tales from Mr. Williams the calibre of the "Generator."

Amelia Reynolds Long story was not really bad, just inconsequential. No comment on Geier's piece. It's typical fan fiction.

There was more fan material this time—keep it up. I particularly like the idea of fan biographies and photos. That department alone will be worth the price of the magazine.

Wiggins strikes a very unfairly sour note in the readers department. I'd like to say some things about his letter, but it would involve personalities, and I'm through with that.

STARDUST's makeup is magnificent. And how that printing fascinates me—I only hope you can keep it up. The cover on the second issue was fine. I'll be waiting for No. 3. . . . 3805½ Park St., Columbia, S.C.

(*You're wrong about STARDUST not being able to obtain any more of Robert Moore Williams unusual stories. I have three more on hand waiting for publication—and they are humdingers! . . . Ed.*)

* * * * *

JACK WILLIAMSON . . . .
Dear Mr. Hamling:

Just returned home after a few months at Santa Fe —and the skiing, thank you, was fine—to discover the first two issues of *STARDUST* waiting for me. Splendid! Congratulations on format, covers, paper, and contents. *STARDUST* is actually *unique!* Here are my best wishes for the success it deserves. I hope you use some more astronomical covers—though Binder is very good. I'll be looking forward to future issues. . . . Star Route No. 1, Pep, New Mexico.

(*Thanks Jack for the well wishes. And we'll see about those covers. . . . Ed.*)

* * * * *

WEAVER WRIGHT . . . .
Dear "Dusty":

My stars, what a mag! It definitely is showing dust to the majority, in its appearance. And take a tale like *Liederman's Generator*, that couldn't make a show elsewhere because it was "too hot to handle" —it should generate plenty of warm debate. Williams sequel to "Steinmetz" is one They Won't Forget; a powerful example indeed, of our crying need for correcting the economic un-system.

Advance Vision may have been an interesting & informative interview with "Life(Hein)Line" had there not been that Ackermannoying simp-lifyd spelling & stuff to contend with. If that's the tongue of "tomoro" I'll eat roast beef! I see nothing clever in word combinations and whatnot that compose that juvenile jargon known as "Ackermanese" after its perpetrator, & can only say I hope it is many a day bfor we have to hear from "little J" again.

Looking forward to Ley, deCamp, more Moore—& your First Anniversary issue! . . . 236½ N. New Hampshire, Hollywood, Cal.

(*Tut, tut, 4SJ—we know you! Am I Wright or wrong! . . . Ed.*)

* * * * *

EARL SINGLETON . . . .
Dear Mr. Hamling:

STARDUST is wonderful! Keep it up! (Pity about the misprint, I suppose, in Warner's poem in No. 1) . . . M. I. T. Dorms, Cambridge, Mass.

(*Misprint? Pray tell-where? . . . Ed.*)

AMELIA REYNOLDS LONG . . . .
Dear Mr. Hamling:

Permit me to extend my sincere, if tardy, congratulations on *STARDUST*. In both form and material it is excellent. But why call it semi-professional? It's much more intelligent in tone than the majority of professionals.

I particularly liked, in the first issue, Farley's article and deCamp's story. In fact I liked them much better than most of the things they are doing elsewhere. And that again bears out my contention that the professionals are afraid to use material that necessitates any intelligence for comprehension.

Your covers are really excellent. But can you keep that pace up? I most sincerely hope so. Before I forget, thanks awfully for the Holiday cards etc. Well, here's wishing you the best of luck with *STARDUST*. I shall be watching for future issues. . . . 725 S. Twenty-Fifth St., Harrisburg, Pa.

(*And thank you Miss Long. I believe STARDUST will be able to keep up the pace you mention. At any rate—watch! . . . Ed.*)

* * * * *

HARRY WARNER JR. . . . .
Dear Bill:

I had in some way expected something of a letdown over the first issue to the second—but for once, it didn't happen! This second number is every bit as good as the first—and in some ways even better. The printing for instance seems to be more uniform this time. And the cover, while not of Binder's best work, is very good.

The interior material is: Ackerman was the best, as usual. Partly because of the subject, though I honestly think Heinlein is one of the best new authors ever to come out of the fantasy woods. Next comes JUSTICE IN TIME. I saw the ending coming a mile away—but the yarn was good just the same. LIEDERMAN'S GENERATOR was not quite as good as "STEINMETZ" but maybe if I'd read it before all the other time-capsule stories, I'd have liked it more.

Geier was a bit melodramatic—I really think the fans should stick to articles. Willy Ley's article was very good.

About Dale Tarr's letter and article: I think the whole trouble with science fiction poetry is that it of necessity has to be rather cold—too extraspective if I may use the word. After you've written about a few subjects, you're done and have either to stick to them indefinitely, or stop writing it. There is such a wide range and variety in weird poetry possible, that it is much more attractive to write—and read.

The readers' section is good this time, and so is the editorial. Never drop these two items, they're indispensible. Artwork throughout, pleasing, though you could get better work.

I think that about winds up the verdict for this month: on the whole, a swell issue, and if you can keep it up you'll be doing wonders. . . . 303 Bryan Place, Hagerstown, Md.

(*Watch the artwork in future issues. How about this one? Glad you like the mag as much as you do, and I'll certainly do my best to accomplish the wonders you want. . . . Ed.*)

* * * * *

GERTRUDE KUSLAN . . . .
Dear Mr. Hamling:

STARDUST is wonderful! I was rather skeptical at first, but after seeing it I fully agree with fandom that it is worthy of wholehearted support. You can count on me!

The format of *STARDUST* is truly too good to be true and I would rather just look at it than read it. The articles were old in theme, but good. DeCamp and Geier are the best in the first issue. More fan material is welcome. Give us articles by, for, and about fans. Don't cater to the pros, too many pubs do that now. All the luck in the world to you! . . . 170 Washington Ave., West Haven, Conn.

(*You will get more fan material. Viz. MEET THE FAN. . . . STARDUST does not cater to anybody, never did, and never will. STARDUST is a magazine inbetween the pro and the fan pubs, but it is nobody's lawnmower. STARDUST welcomes material by any and all magazines, professional and fan. Each is treated alike—with the emphasis towards the fan, as this magazine is founded primarily for fandom. The only thing STARDUST caters to at present is the coming 1940 World's Science Fiction Convention in Chicago—and STARDUST is behind that with every bit of ink in the whole magazine! . . . Ed.*)

* * * * *

LABORATORY SKELETON

By VINCENT MANNING

He hangs on a wall by a ring in his head,
The remains of a man who's these many years dead;
Bones wired together and bolted in place,
With the trace of a grin on his skeletal face-
Like he'd heard a good joke on the whole human race.

MEET THE FAN

Continued from page 17

(*W. Lawrence Hamling*)

day!) He will work for a degree in law. Bill has appeared on both the stage and radio in his young life—due to a peculiar gift of oratory, made evident in High School when he won contests and captained the school debating team. His great ambition is to be a professional science-fiction editor. He loves fishing, (Note picture: 18¾ lb. Chinook salmon caught off the Oregon Coast last summer) swimming, and writing. He is looking forward to the 1940 Convention in Chicago, and hopes to meet his fellow fans there. Bill says, "The door of 2609 Argyle St. will be open day and night, and I hope everyone will take time out to pop over."

* * * * *

EYE TO EYE

Concluded from page 4

—and from others who have risen to new heights today. A few of the names to be found in this unusual memoir revelation are: *Howard Philips Lovecraft—A. Merritt—John Taine—Edward Elmer Smith—Raymond Z. Gallun—Eando Binder—Jerome Siegal—Raymond A. Palmer—Forrest J. Ackerman—etc.*

As you all know by now, the 1940 World's Science Fiction Convention is to be held here in Chicago over the Labor Day holidays. That is, the 31st of August, and the first two days of September. The Convention headquarters is to be at the Hotel Chicagoan, in the Loop's heart of this great city. Make your reservations beforehand—send in your name at once to either 3156 Cambridge Ave., or to STARDUST. We want to know approximately who and how many will attend the Convention. Will you help us?

Well, STARDUST has now seen three issues of a young, but promising life. And if you continue to support her like you have been doing, many more additions will be made to her history.

It has been definitely proven that fandom wanted a magazine like STARDUST—so fandom will continue to have it. All I ask is that you stand beside me shoulder to shoulder—and I'll see you in this column every month, EYE TO EYE!

* * * * *

(*Harry Warner, Jr.*)

The great joy of his life was selling a poem to WEIRD TALES. But he also has one of the largest collections of rejection slips in the Eastern United States.

He plays the piano, English horn, and oboe—the last two mentioned, in the Hagerstown Symphony Orchestra. (Hagerstown boasts the distinction of being the smallest town in the U.S. to support a full-size symphony orchestra.) One feat of his, perhaps unparalleled, is that of playing the English horn in the Cesar Franck D Minor Symphony three months after first touching the instrument!

Harry likes roast chicken, cats, (alive of course) baseball, Wagner, Kirsten Flagstad, Stanley G. Weinbaum, and weird better than science-fiction. He doesn't like hypocrites, Edmond Hamilton, jazz versions of classical melodies, and editors who reject manuscripts.

* * * * *

CRYSTAL OF DEATH

Concluded from page 14

epitome of all the changes that it has passed through in the long history of evolution. So every man bears in him the mark of all his ancestry—even of the reptiles typified by the worshipers of the Head. The control of body growth is thought to be but a matter of glandular chemistry. By manipulation of embryonic life, science has succeeded in the creation of strange monstrosities. And it is possible that the rays from the Head, by photochemical means, reversed the process of development and produced a degeneration of horrible rapidity. The human characteristics of the result are due no doubt because ossiferous structure offers greater resistance to a rapid change than does flesh.

I have had the blue crystal examined and it seems to be of a new radioactive compound. Its radiations must have neutralized the emanations of the Head.

The End.

* * * * *

Next Month...

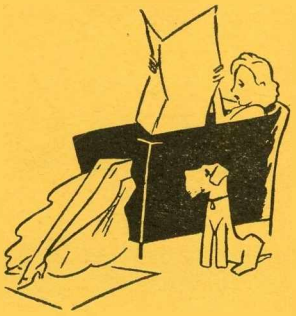
City In The Far Off Sky by Robert Moore Williams

Inverse Variations by L. Sprague DeCamp

Memoirs of a Science-Fictioneer by Julius Schwartz

IN FUTURE ISSUES

Stardust Brings You The Best of "Off-Trail" Fiction and Non-Fiction



WATCH FOR . . . .

City in the Far Off Sky *by Robert Moore Williams*

Inverse Variations *by L. Sprague DeCamp*

Do or Die *by Robert Moore Williams*

Redemption *by J. Harvey Haggard*

The Light That Never Was *by Robert M. Williams*

Isle of Eternity *by Raymond A. Palmer*

Memoirs of a Science Fictioneer *by Julius Schwartz*

In the Earth's Maw *by Amelia Reynolds Long*

Plus - - many other Headliners - Features Departments. Watch for them in Stardust