A NOVEL OF THE FUTURE COMPLETE IN THIS ISSUE!

STARTLING STORIES

JULY

15¢

FEATURING

CITY OF GLASS

A Fantastic Novel of the Silicon World

By NOEL LOOMIS

A THRILLING PUBLICATION

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Most Amazing Introductory Offers Ever Made to THRILLING MAGAZINE Readers

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Yes, the coupon below entitles you to one or two of these nationally advertised Push-Button Fountain Pens for only 69¢ (two for $1.25) . . . and for prompt action your name will be imprinted on your pens without charge! This is the one advertising bargain you can't pass up! If you don't have a fountain pen now, this is your chance to get a life service pen for only 69¢ and get your name in gold letters on it free. But you must act promptly. The supply, due to the national emergency, is definitely limited. Don't wait—clip the coupon and mail it today sure.

SEND NO MONEY

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Send two (2) brand-new Push Button Fountain Pens with names imprinted as checked below. On arrival I deposit $1.25 plus postage with postman on understanding these pens are backed by a guarantee of life service . . . also I may return pens for any reason within 10 days and get my money back.

(Print Plainly)

Imprint These Names FREE on Pens

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☐ Matching Automatic Pencil 39¢
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☐ Send postpaid, enclosed find $.....
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The 882 broadcasting stations in the U. S. employ Radio Technicians with average pay among the country's best paid industries. The Radio repair business is booming due to shortage of new home and auto sets (there are 57,400,000 in use), giving good full-time and spare-time jobs to thousands. Many N. R. I. trained Radio Technicians take advantage of the opportunities to have their own full time or spare time Radio service businesses. The Government needs many Civilian Radio Operators, Technicians. Think of the many good jobs in connection with Aviation, Commercial, Police Radio and Public Address Systems. N. R. I. gives you the required knowledge of Radio for these jobs. N. R. I. trains you to be ready when Television opens jobs in the future. Yes, N. R. I. trained Radio Technicians make good money because they use their heads as well as their hands. They are THOROUGHLY TRAINED. Many N. R. I. trained men hold their regular jobs, and make extra money fixing Radio sets in spare time.

Beginners Soon Learn to Make $5, $10 a Week Extra in Spare Time

Nearly every neighborhood offers opportunities for a good part-time Radio Technician to make extra money fixing Radio sets. I give you special training to show you how to start cashing in on these opportunities early. You get Radio parts and instructions for building test equipment, for conducting experiments which give you valuable practical experience. My 50-50 method — half working with Radio parts, half studying my lesson texts — makes learning Radio at home interesting, fascinating, practical.

Broadcasting Stations employ N. R. I. trained Radio Technicians as operators, installation, maintenance men and in other capacities and pay well.

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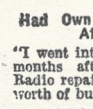
J. E. SMITH, *President*
Dept. 2G09
National Radio Institute
Washington, D. C.

I Trained These Men



$10 a Week in Spare Time

"I repaired some Radio sets when I was on my tenth lesson. I really don't see how you can give so much for such a small amount of money. I made $600 in a year and a half, and I have made an average of $10 a week—just spare time." JOHN JERRY, 1729 Penn St., Denver, Col.

Had Own Business 6 Months After Enrolling

"I went into business for myself 6 months after enrolling. In my Radio repair shop I do about $300 worth of business a month. I can't tell you how valuable your Course has been to me." A. J. BATEN, Box 1168, Gladewater, Texas.

Sergeant in Signal Corps

"I am now a Sergeant in the U. S. Army, Signal Corps. My duties cover Radio operating, maintenance of Army Transmitters and Receivers, operating Teletypes, handling duties of the Chief Operator in his absence." SERG. RICHARD W. ANDERSON, U. S. ARMY (Address omitted for military reasons).

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National Radio Institute, Washington, D. C.

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NAME..... AGE.....

ADDRESS .....

CITY..... STATE.....

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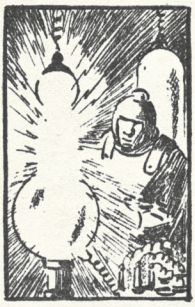
STARTLING STORIES

Vol. 8, No. 1 | CONTENTS | July, 1942

A Complete Book-Length Scientifiction Novel



CITY OF GLASS

By

NOEL LOOMIS

The World of the Future Which Invested Hart Niles with Supreme Power Was a Fabulous Community of Silicon Men, Fighting for Survival in the Year 800,000 A. D.! 12

Other Unusual Stories

THE MARBLE VIRGIN ..... Kennie McDowd 86
An Outstanding Classic from Scientifiction's Hall of Fame

THE MAN IN THE MOON ..... William Morrison 96
Maru Brought the Wisdom of the Ages to the Earth!

THE GHOST SHIP OF AZTLAN ..... L. Taylor Hansen 110
Only One Man in History Escaped the Dread Sargasso

Special Features

MEET THE AUTHOR ..... A Department 8
THRILLS IN SCIENCE ..... Oscar J. Friend 105
SCIENCE QUESTION BOX ..... Answers to Queries 109
THE ETHER VIBRATES ..... Announcements and Letters 120
REVIEW OF FAN PUBLICATIONS ..... Sergeant Saturn 126

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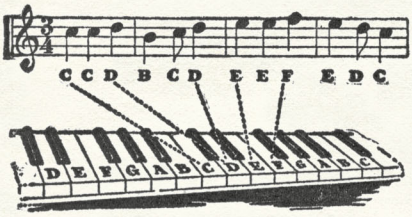
To those who think LEARNING MUSIC is hard . . .

MY COUNTRY 'TIS OF THEE,
SWEET LAND OF LIBERTY



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I can broaden your shoulders, strengthen your back, develop your whole muscular system INSIDE and OUTSIDE! I can add inches to your chest, give you a vise-like grip, make those legs of yours lithe and powerful. I can shoot new strength into your old backbone, exercise those inner organs, help you cram your body so full of pep, vigor and red-blooded vitality that you won't feel there's even "standing room" left for weakness and that lazy feeling! Before I get through with you I'll have your whole frame "measured" to a nice, new, beautiful suit of muscle!

What's My Secret?

"Dynamic Tension!" That's the ticket! The *identical natural* method that I myself developed to change my body from the scrawny, skinny-chested weakling I was at 17 to my present super-man physique! Thousands of other fellows are becoming marvelous physical specimens — *my way.* I give you *no gadgets or contraptions to fool with.* When you have learned to develop your strength through "Dynamic Tension" you can laugh at *artificial* muscle-makers. You simply utilize the DORMANT muscle-power in your own God-given body — watch it increase and multiply double-quick into real, solid LIVE MUSCLE.

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My method — "Dynamic Tension" — will turn the trick for you. No *theory* — every exercise is *practical.* And, man, *so easy!* Spend only 15 minutes a day in your own home. From the very start you'll be using my method of "Dynamic Tension" almost unconsciously every minute of the day — walking, bending over, etc. — to BUILD MUSCLE and VITALITY.

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(Please print or write plainly.)

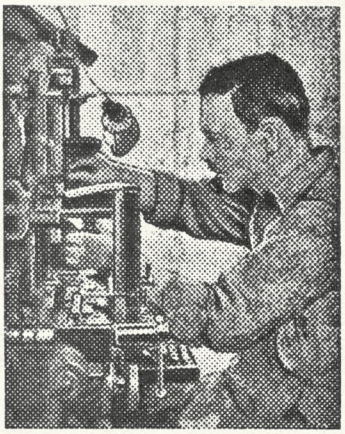
Address .....

City ..... State.....

Introducing Noel Loomis, Who'd Rather Write Than Eat!

THIS astrogator, Noel Loomis, who pilots us this issue to CITY OF GLASS, is fond of writing fiction. He has a studio on the second floor of a house that was laid out for a writer.

Up there is the most wonderful collection of maps you ever saw (locale), with dozens of back copies of the National Geographic (color), a poison chart which took two years to make and which is envied by everybody but understood by nobody, six file-cases filled with clippings from a thousand different sources and beautifully



NOEL LOOMIS

Author of "City of Glass," in This Issue

indexed for characters and occupations and such things as "Decapitation," "Dead Bodies and Returns," "Wild Men," "Lost Countries," "Great Mysteries," "Valuable Things," and "Persons Hit by Lightning."

Would you believe it, a Frenchman was struck nine times by lightning, and lived to tell about it. Other guys get hit and turn to writing (background; authenticity).

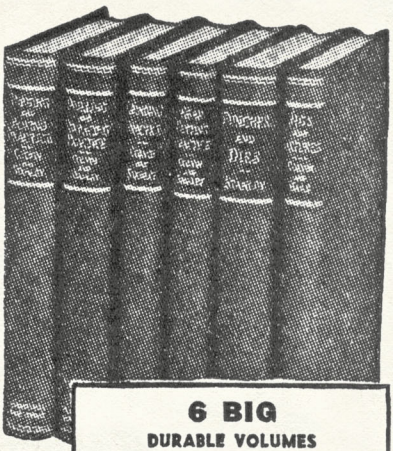
The Loomis file on pseudo-science is the most complete of all departments. It includes—but wait; that would be giving a

(Continued on page 10)

Increased production means more jobs for MACHINISTS

—and MORE PAY for men who know their work

This home-study course gives you the practical facts on modern machines, up-to-date methods, you need to advance in machine shop work. Take advantage of the other man's experience as found in books, to solve your problems, increase your efficiency, with



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—description of all important varieties of machines, both manual and automatic, and methods of operating them

—data on speeds and feeds, new cutting alloys and materials, use of coolants, etc.

—practical information on grinding machines and abrasive wheels, showing what they do, how to operate them, and how to make best use of them on various types of work

—preferred methods of leading shops, on speeds, feeds, precision grinding, automatic machines, special work, etc.

—training in the various operations performed in drilling and surfacing materials in the machine shop

—valuable data, methods, suggestions, and illustrations from accepted practice, showing plainly how to handle the cutting of materials, the care of tools, methods of production, etc.

—exact, descriptive data on all aspects of gear cutting practice, useful in shops of any size

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MEET THE AUTHOR

(Continued from page 8)

trade secret. His best contraption is a typewriter equipped to write on a teletype roll, so that in the heat of creation he never has to stop to change sheets. Right now he is experimenting with a dictaphone that he salvaged from a truck wreck—but he says that it doesn't help, as he has to type the stuff off later anyway, and he doesn't like to take dictation from his own voice.

Noel Loomis is five feet six, weighs 150 pounds, married, with a son just studying chemistry when he isn't in his dad's files, and a daughter with long curls.

He is a Linotype machinist by trade, the third generation of newspaper people. His father's family, thirteen generations ago, was English. He was born in 1905 in the Indian Territory (Oklahoma, to you) and he thinks this is the most interesting fact about his life.

He went to Oklahoma U. (some), edited newspapers, taught Spanish. He loves to hunt and fish. Right now he is trying to get things fixed so he can have more time to write.

He got the idea for CITY OF GLASS from a newspaper clipping about the future of glass, plus Einstein's theory of relativity, plus present conditions. And here's a trade secret we'll give away. He is trying now to devise a sequel to CITY OF GLASS.

Noel Loomis has been writing for seven years, selling stories in the western, adventure and detective fields. He is the author of five novels. He considers his best story a combination of Philo Vance, Fu Manchu and Dr. Kildare. But he likes science fiction writing better than any other type. He'd rather write than eat—but don't offer to buy his lunch, or the teletype roll will temporarily cease to revolve!

Hal K. Wells, Who Wrote Last Issue's Novel

HAL K. WELLS was born in Little Hocking, which is a small village of some 300 population in southeastern Ohio. There is no evidence that the event had any appreciable effect upon the community, then or since.

He removed at an early age to the nearby college town of Athens, a place that he still regards as his home town though he has spent most of the past 25 years somewhere else.

At this writing he is 42 years of age, but he refuses to believe it and spends most of his time doing things that a young squirt of 25 would have more sense than even to try.

He enlisted in what was boastingly referred to as a World War in 1917, spending the entire duration in fighting the Battle of Montgomery, Alabama.

During various years before and after the War, he attended Ohio University, an institution of higher learning that distinctly resents being confused with its larger neighbor, Ohio State.

He was at no time even remotely threatened with a diploma. He was captain of the varsity debating team, feature editor of the

campus newspaper, and editor of the humorous monthly.

His studies included entomology, astronomy, general biology, zoology, paidology, embryology, archaeology, meteorology, and seven different kinds of psychology. The result is an appalling collection of weird and diverse data that could be of no possible use to anyone but a science fiction writer.

He has worked at various times as soda jerk, pool-room houseman, department store clerk, stock-man in a stove factory, and plumber's helper.

His literary career includes staff jobs as city editor of a small town daily news-

HAL K. WELLS

Author of "Blood on the Sun," in Our Last Issue

paper, scenario writer and gag man for a Hollywood motion picture studio, and various associate editorships on movie fan magazines, both on the West Coast and in the New York offices.

He has written fan interviews and features over eleven different names, including his own. He has had action fiction published in western, detective, science, sports, and even love-story magazines.

At present he lives in Hollywood and spends most of his non-working time in Tujunga. He is single and has every intention of remaining that way, though he knows that many other bachelors have made that same brash statement just before the blitz finally struck them.

He plays a game of badminton that if not brilliant is at least violent, shoots golf in the high 80's (sometimes) and tosses a mean horseshoe. He plays almost any game that is played with cards, but prefers poker, pinochle, and bridge.

His pet dislikes are Japs, cold weather, and women with dark red Fu Manchu nails. His pet likes are sherry, Scotties, bourbon —and blondes.

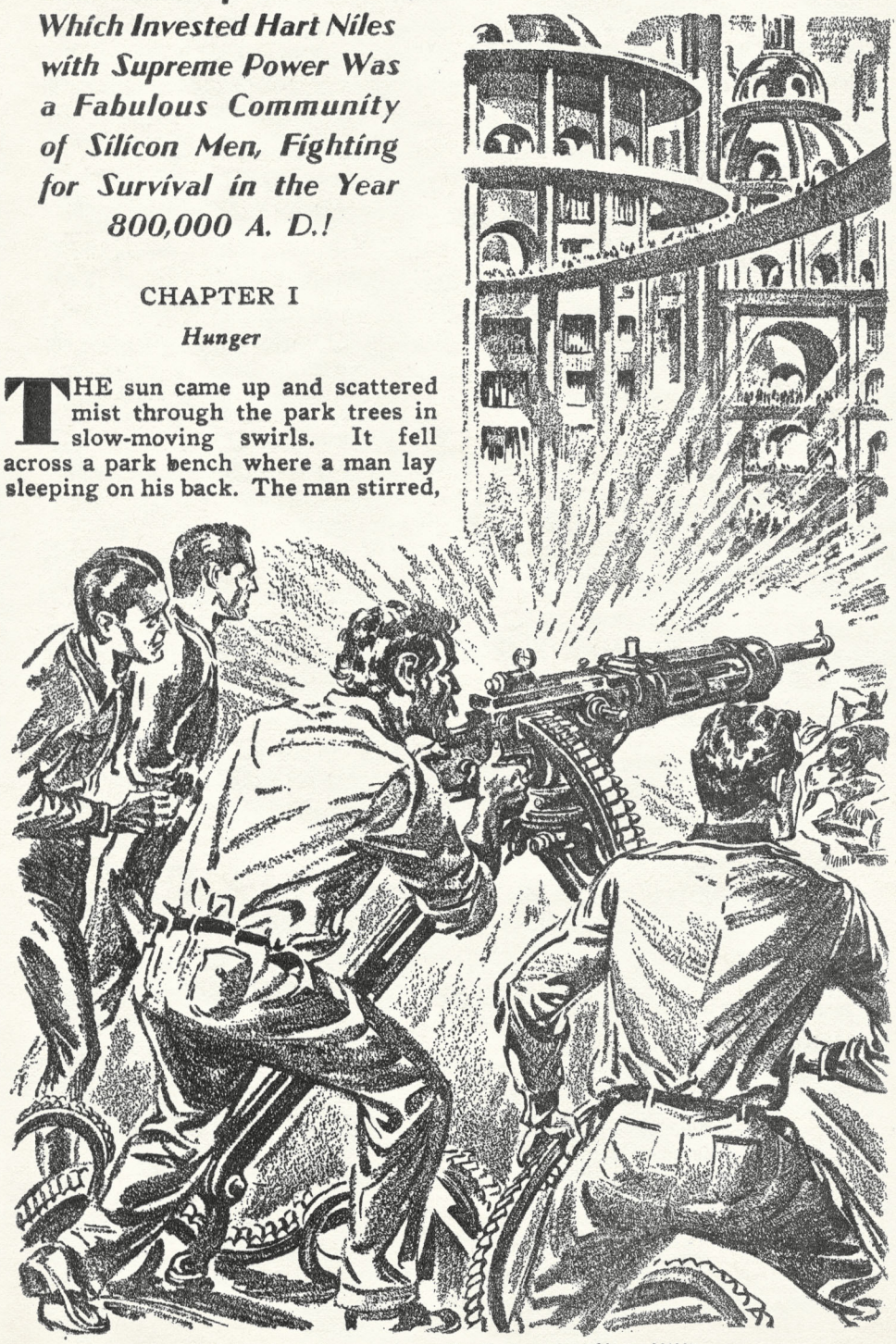
CITY OF GLASS

The World of the Future Which Invested Hart Niles with Supreme Power Was a Fabulous Community of Silicon Men, Fighting for Survival in the Year 800,000 A. D.!

CHAPTER I

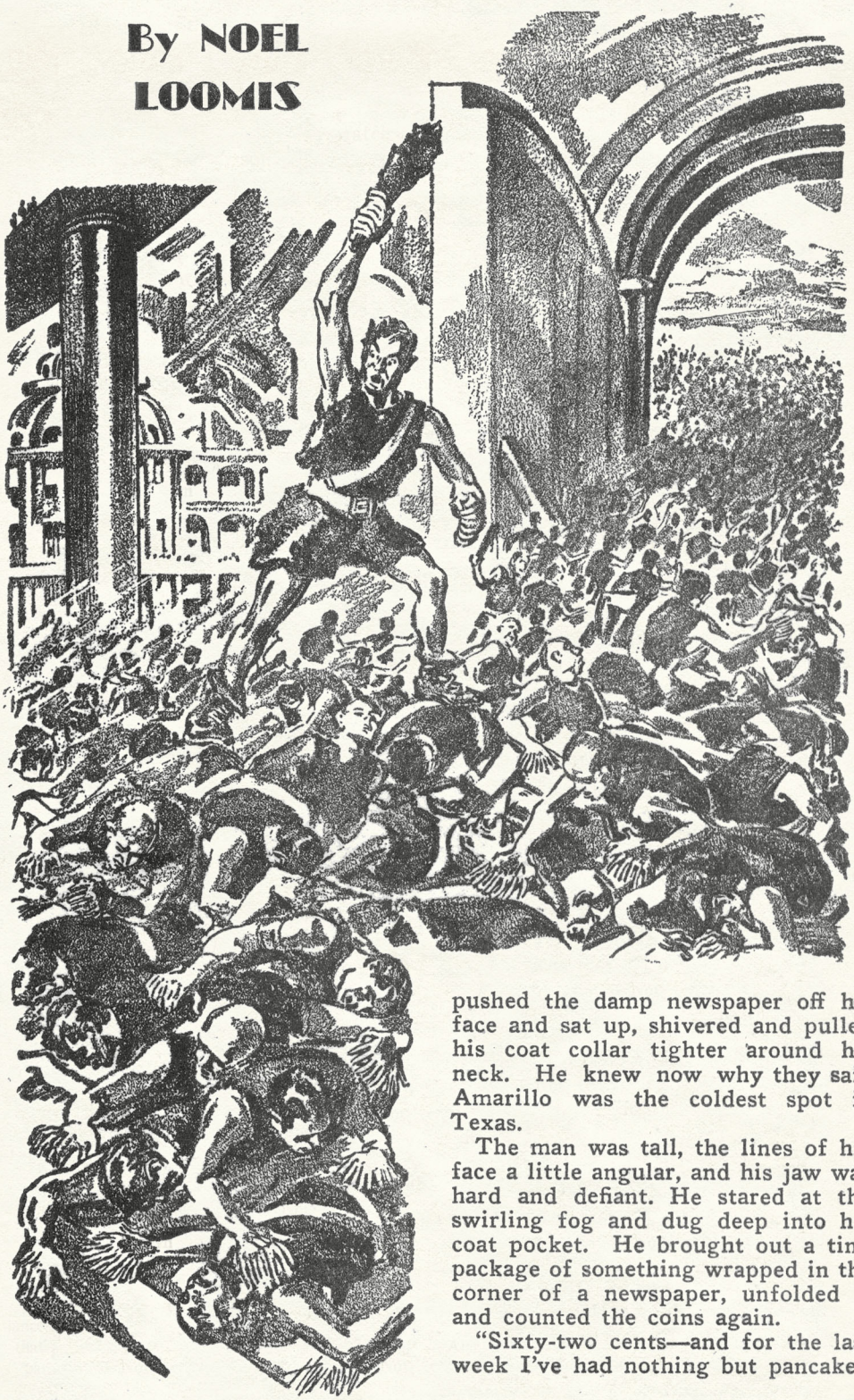
Hunger

THE sun came up and scattered mist through the park trees in slow-moving swirls. It fell across a park bench where a man lay sleeping on his back. The man stirred,



Niles trained the muzzle on the first ranks (Chap. XIX)

By NOEL LOOMIS



pushed the damp newspaper off his face and sat up, shivered and pulled his coat collar tighter around his neck. He knew now why they said Amarillo was the coldest spot in Texas.

The man was tall, the lines of his face a little angular, and his jaw was hard and defiant. He stared at the swirling fog and dug deep into his coat pocket. He brought out a tiny package of something wrapped in the corner of a newspaper, unfolded it and counted the coins again.

"Sixty-two cents—and for the last week I've had nothing but pancakes,

A Complete Fantastic Novel of the Silicon World

one stack a day. What I'd give," he thought grimly, "to set my teeth into a real steak!"

He stared at the thinning fog, remembered for the thousandth time that he was in a strange country, unknown, even hoping he would not be recognized, watching his last nickels slip away in those tiresome stacks of pancakes.

He got up and stretched some of the stiffness out of his muscles. He rubbed his ten-day beard, and then abruptly caught himself getting careless. He looked around. Behind his own bench, thirty feet away, a heavy-bodied tramp sat reading a paper. The tramp's head moved quickly, as if he had not been looking at the printed words.

Hart Niles approached him casually, remembering just in time to let his strong shoulders slump with his shapeless coat.

"Is that the morning paper, buddy? Could I see the classified?"

The tramp glared over the top of the paper. Niles swore mentally at the University of Berlin that had taught him flawless English but hadn't shown him how to take the gutturals out of his speech.

"Git movin'." The tramp's voice was ugly. "I been watchin' you, mister. You ain't no bum—and you talk like a foreigner."

"But—"

"But nothin'. Us hoboes have got honor, too. You can't git anything out of us. Move on." He jerked his dirty thumb.

Niles moved. There was nothing else to do. He found a saloon and made his way to the restaurant counter at the back.

"Hot cakes," he said.

"Stack!" the girl called, and set out a glass of water. "Brother, you like your hot cakes, don't you?"

He fingered the little packet in his coat.

"Yes," he said slowly, listening to the sizzle as the cakes spread out on the griddle. The warm smell of food

made him weak all over.

The girl brought his coffee.

"You've been around here about a week now. Where you working?"

He looked straight at her, seeing her peroxide hair for the first time. Working!

She saw something in his gaunt face, and the rest she heard in his flat statement.

"I'm not working."

SHE was instantly sorry.

"A man can't do much when his luck goes bad." She slid the butter plate across the counter. "There's some mighty smart men out of work."

It relieved his grimness a little and he smiled at her.

"That's right."

The stack came, four high. The

first bites hit his stomach with a jar. For a moment he was sick, but he got over it and finished the meal. The girl poured him a second cup of coffee. He unfolded the little packet of money and paid for the hot cakes, wrapped carefully the coins that were left.

"Thanks, mister." She eyed him as he got up.

Niles headed for the employment agency. Maybe a job would turn up today. And if he ever got a couple of dollars, he'd buy himself a steak as

big as a table. He sat on a low iron railing next to a poster urging young men to enlist in the Marine Corps, and rubbed his whiskers. He was tempted to spend twenty cents for a shave—but that represented more than a day's food. What was the difference, anyway, how he looked? His hand came out of his pocket.

His breakfast settled at last, and he went into the employment office. It was dirty and bare. A blackboard on the wall had one scrawled notation in chalk.

DAIRY HAND AT LUBBOCK.
$30 A MONTH

Hart Niles grinned.

"The hand that runs a cyclotron isn't worth a cent for milking cows,"

he reflectively said to himself.

But he pushed through the men at the counter—big men, little men, all stubbled with whiskers, all wearing coats with pockets that sagged from carrying a man's belongings in the sun and rain.

He stopped short. A small, well-dressed man stood with his back to the counter.

"Twenty dollars a day," he was saying.

Niles caught his breath. Twenty dollars a day! But the men were shaking their heads stubbornly.

"Thirty dollars a day," said the little man defensively.

He had a very gentle face and absent-looking blue eyes. He, too, wore whiskers, but they were trimmed and parted in the middle of his chin and carefully brushed back to each side.

Niles pushed up. One day's work would—

"I'll take it," he said quickly. "When do I start?"

THE absent-mindedness faded from the man's eyes. He looked at Niles as if he was startled that some one actually had accepted. He started to nod his head, and Niles exulted. But a quick film of suspicion came over the small man's face. Niles shrank a little. He had forgotten his erect bearing, the correctness of his shoulders. He knew he didn't look like a bum.

"I'm a college man," he explained. "I need the work."

"I'm Dr. Beckwith," the little man answered scrutinizing him. "I want someone to help me on an experimental rocket flight."

"I—" Niles repeated eargerly.

"But I don't want anybody who might be trying to steal my secrets," Dr. Beckwith said firmly. "This is a time of war, and I can't take a chance."

"But I could help," Niles said earnestly.

He was thinking fast. It would be fatal to let this man see how much he really knew about rocket ships.

"I've helped on experiments with rocket motors. I know something about pressures and heat."

DR. BECKWITH began to shake his head stubbornly.

"I know all about the proper shape and efficiency of the nichrome nozzle," Niles said quickly.

That should do the trick. Nichrome nozzles had been discarded by most inventors in favor of tungsten alloys.

It worked. Dr. Beckwith barely suppressed a smile at the out-of-date knowledge of this tall young man.

"Well, perhaps," he said. "Come along and we'll see."

Niles drew a deep breath. He had a chance, anyway. One day's pay would seem a fortune. He followed Dr. Beckwith out. He was so excited that he hit the door frame with his shoulder and it turned him half around. They walked along the street.

"By the way." The absent-minded look was in Beckwith's eyes again. "We have already—I mean, have you had breakfast?"

Niles looked down at him.

"Uh—yes."

"And my theory is—oh, yes, breakfast. I haven't eaten. Perhaps you'd like a steak or something."

Steak? Hart Niles swallowed, then he grinned. The pancakes seemed already to have evaporated and he was hungry again.

"If you insist," he said.

They went into a restaurant.

"Order anything you like," Beckwith invited.

He looked well able to pay, and Niles ordered a sixteen-ounce sirloin with onions and mushrooms. He watched the waitress go toward the kitchen, and his mouth began to water.

"Now, then," said Beckwith. He rubbed his eyes as if they were tired. "I've been working out here in the New Mexico desert."

Niles remembered his rôle.

"With Dr. Goddard?"

"No, my work is not connected with his. I've been trying to attain higher speeds by the—by a different method."

Hart Niles checked the excitement in his throat. He leaned forward.

"You mean—you are aiming at critical velocity?"

Beckwith nodded.

"But I thought the fuel weight—" Niles was watching his words with

care. He frowned involuntarily.

Beckwith smiled at this novice.

"I dropped liquid fuel long ago."

"Oh." Niles flushed. "You mean—you are using uranium?"

"Yes. It's a process developed first by Dr. Gerhard Wolff, a Hollander who unquestionably is the world's foremost authority on the fission of uranium. Or, that is, he was. I haven't heard a word from him since the war started."

He sighed.

"My own problem is to ascertain what speed I can attain. If it is the speed of"—his eyes had grown bright, but suddenly they filmed over and he watched Niles intently—"if it is the speed of escape," he went on, "I'll offer my invention to the President. It might be enough to win the war." Niles drew a deep breath. Critical velocity, the speed of escape from Earth, was seven miles a second—twenty-five thousand miles an hour. Incredible speed in itself. But that was not the most amazing thing about Dr. Beckwith's statement.

For Hart Niles knew this little professor was concealing something. He saw that Beckwith was not concerned about the speed of escape, that he probably had attained that already, and now had something else in mind—something bigger, tremendously bigger.

NILES picked his next question with care.

"Have you made a flight with human passengers?"

Beckwith answered abstractedly.

"Oh, yes, my daughter and I have been up. Past the troposphere, in fact. But it is hard work for just the two of us— Ah! Here comes our meal."

Niles' eyes grew round. The steak was brown and juicy and sizzling. His fingers fumbled as he picked up the knife and fork. He cut a small piece, controlling himself to avoid betrayal of his hunger. The first bite was halfway to his mouth when Dr. Beckwith laid down his fork.

"There's Carole. I wonder what—"

The girl was small like her father. A green-and-red plaid skirt swirled as she hurried to the table. Niles put his fork down and stood up. The girl glanced at him but spoke to Dr. Beckwith.

"The plane is leaving in twenty minutes, father."

Dr. Beckwith frowned absentmindedly.

"I thought—"

"The plans have been changed," she said patiently but firmly.

Her lips parted. She was about to say more—to explain why the takeoff time had been set forward, Niles thought—but she glanced at him and her lips closed.

Dr. Beckwith sighed.

"Very well." He got his hat. "Carole, this young man wants to work with us."

"My name is Niles," said the object of Carole's scrutiny.

"How do you do."

She studied his face and looked into his eyes for a moment. Then she smiled quickly and turned to her father, who was gazing absently at the floor.

"We must hurry, father."

Beckwith looked up.

"This young man knows something of rocket ships, and—"

Carole's brown eyes studied Niles with new interest.

"That's fine," she said.

Dr. Beckwith put on his hat.

"It takes a week to get through the mountains by mule," he explained to Niles. "I'm sorry you have to leave your meal. I hope you don't mind."

Hart Niles looked at the steak, browned in crisscrosses like a waffle. His jaws tightened and he drew a deep breath. Then he gazed at Carole. She was quite like her father, but very much alert. Her eyes were alive, and her firm little chin showed practicality. She seemed apologetic, and he stepped to her side.

"I don't mind," he said, "at all."

But another thought was more prominent. Dr. Beckwith had not actually hired him yet. Carole's entrance had disturbed the absentminded little man's train of thought. It might be that the professor expected Carole to pass on Niles' suitability. It seemed so, from the way Beckwith had spoken to her.

But now, concerned because she had disturbed Niles at his meal, she seemed to take for granted that her father had hired him. Well, either way, the further he should go with them, the harder it would be for them to send him back.

Niles drew a deep breath and went through the door at the girl's side. They followed Dr. Beckwith to a taxi. But Carole, with her slim fingers on Niles' rough coat sleeves, held him back.

"Father isn't very practical," she said, "but the War Department—" She stopped, watching him.

"Do you mean," Niles asked as casually as he could, "that your father's work is under the War Department?"

"Not exactly. But the commander of the Seventh Corps Area, at San Antonio, is an old friend of father's. There's nothing official—yet."

There was an undertone of apology in her statement. Niles understood that she was begging him to be warned. He studied her brown eyes, but Dr. Beckwith called from the taxi window. Niles helped the girl into the cab, calmly and smoothly, and followed her in as if he were quite sure of himself.

CHAPTER II

Take-Off Time

FOUR hours later the plane bellied down through hot winds to the high desert plain of central New Mexico. It bumped along a cleared space in the sand and stopped. Hart Niles, Dr. Beckwith and Carole got out.

The pilot waved and the plane roared off in a vortex of sand.

"What do you think of it?" asked Dr. Beckwith.

Niles stretched his arms in shapeless coat sleeves toward the clear blue sky.

"This is wonderful," he said, breathing the clean dry air.

He studied the purple mountains in the west and the endless stretch of gray-green sage to the east.

"It feels so—so free," he added.

He caught himself. He hadn't meant to say that, but all during the flight he had watched for a black speck in the sky behind them.

Carole looked at him oddly. He avoided her eyes and stared at the countless miles of white soil on the south—an alkali plain that covered bear-grass and prickly pear and mesquite bushes with heavy white dust.

"I've never seen so much room going to waste," he said.

"It isn't good for anything," Carole agreed. "That's why it's isolated—and why we like it out here."

"Back—"

Niles caught himself. He had been about to say that back in Europe, a space like this would have supported five million persons. But he remembered in time.

"Back over there"—he pointed—"are those mountains?"

"The Saguaches," Beckwith told him. "Rough country."

His bilateral beard nodded absently at the hills, hazy in purple clouds, then he turned to the right.

"I'll show you your room and then we'll inspect the ship."

Niles stared ahead. Nothing was there but the endless gray-green spikes of sage.

"I don't see anything," he frowned.

"The buildings are down in the canyon," said Carole, "so they won't be so noticeable.'"

Niles didn't see the small canyon until they were nearly at the edge. The sides went straight down for two hundred feet. And at the bottom were four adobe buildings, exactly the color of the soil. They'd be invisible even from the air. Dr. Beckwith might be absent-minded, but he must have a hidden strain of practicality somewhere behind that divided beard.

They walked down a steep trail no more than a foot wide. At the bottom of the canyon Niles glanced around.

"I don't see the ship," he said, puzzled.

"The ship is in another branch of the canyon, around the turn there," Beckwith told him. "There's a hangar blasted out of the canyon wall."

"The Army men insisted on that," Carole added.

"How do you bring in supplies? Where is the road?"

Carole looked at him quickly.

"There isn't a road. That's nothing but a trail through the sand up above. The nearest town is Encino, and the census gives it about four hundred population"—a little gay maliciousness crept into her voice—"most of them Mexicans."

Niles gazed at her. She was very personable, even in the glaring light of the midday sun. Her eyes were a russet brown and they were deep. She turned away from his direct appraisal, and Niles liked the swing of her red-and-green plaid skirt.

Niles smiled.

"Well," he said, "it looks as if Saturday nights would be dull around here, since we're off the beaten track."

She raised her chin abruptly but didn't answer.

IN ONE of the adobe huts Niles left his coat. He looked over his dirty white shirt and shrugged. If they had water around here he'd wash it tonight.

Niles grabbed Carole and held with all his strength to the control lever (Chap. XVI)

Beckwith took him down the canyon. They rounded a chalk butte and walked into a maze of steel girders. Up above, near the top of the cliff, the steel supported two cradlelike runways a hundred yards apart. The runways pointed toward the sky at their outer ends, and their inner ends slanted down and disappeared inside the cliff.

Beckwith led Niles into a small tunnel at the base of the chalk wall. They went inside.

At first Niles couldn't see, but then his vision began to discern things in the dim light. He stepped onto a wooden floor and stopped, his eyes

trying vainly to see better.

There in the bowels of the earth was a spaceship, thirty feet of sleek beryllium steel, gleaming darkly and powerfully in the near gloom.

Beckwith led Niles up the iron steps of the ship. The walls inside were covered with dials round and square, levers, green and red indicator lights. Niles studied them in amazement. This absent-minded man with the divided beard actually had constructed a spaceship — and the world knew nothing about it!

Except, of course, the War Department. For that matter, who knew how many ships like this were hidden over the Earth, with scientists everywhere working feverishly to perfect them?

Beckwith's examination of the ship was perfunctory. He led Niles back outside into the dazzling light.

"You're all alone out here," said Niles. "Except—I suppose you have some helpers."

"No," Beckwith replied. "The Army Engineering Corps furnished men to build the runway and fit the ship together, but I can't do my work with a lot of people around. Besides," he said absently, "our isolation itself is a protection." He dismissed the matter entirely. "Let's get back and see about dinner."

They met Carole on the canyon floor, with the sunlight shining in her eyes and a hawklike bird on her wrist. She clapped a leather hood over its head when she saw them.

"You have a falcon," Niles said admiringly.

The bird raised one clawed foot and a tiny bronze bell tinkled. It set the foot back on the girl's wrist and settled down.

"It's a yearling goshawk. I have a pair that I have trained myself," Carole said proudly.

"Excellent," murmured Niles.

"She treats those birds as she would her own brother and sister," Beckwith added indulgently. "She even takes them up in the ship with us."

"I imagine," said Niles, "it does get lonely out here."

Carole looked at him with gratitude shining in her eyes.

"What about dinner?" asked her father. "I suppose Mr. Niles is hungry."

"The man hasn't come from Encino with the eggs and meat," she said. "But we'll have lunch."

The lunch wasn't like a meal with steak, but it tasted good. Carole had warmed a can of beans, and there was salmon, coffee with evaporated milk, and oranges for dessert. Niles didn't leave any food on the table.

"We'll have to get up at four o'clock in the morning," Beckwith told him. "I'll call you."

"Fine," said Niles.

AFTER lunch he helped Dr. Beckwith wheel wooden boxes into the ship, and a large crate of live cottontail rabbits, which Beckwith said were for testing effects of gravity. When this work was finished, he went to his adobe hut.

After dark Niles took a bar of soap and went outside. Through the windows of the main hut he saw Carole and her father working over charts. He walked on down the sandy floor of the canyon. The cliffs brooded in mysterious shadows under the light of brilliant stars. The stars looked close, out here on the western desert, but Niles pondered that it took four years for light to reach the Earth from the nearest one.

He walked down a different branch of the canyon and came to a tiny creek. He took off his soiled shirt, washed it out, rinsed it, took it back to the hut and hung it over a mesquite-root chair to dry in the cool night air.

When Dr. Beckwith called him in the morning, the desert was fully lighted but the canyon was still cool and quiet, as if all life had hidden from the advancing heat of the sun. Niles put on his shirt and went outside.

"Good morning," said Carole. She was fresh and cool, and her eyes sparkled with energy. "Did you sleep well?"

"Very well," Niles assured her.

He watched the red-and-green of her skirt swinging as she went down to the creek. He carried three big cartons of food — bread, oranges, canned goods — into the tunnel and placed it inside the ship. Then Carole

came with a falcon on each wrist.

"Are just we three going up?" Niles asked her.

She studied his face for an instant.

"We can handle the ship," she said, and added, "Father and I are armed."

Niles studied her a moment and drew his shoulders erect.

"I need the work," he said, "but I don't want to go any further on a misunderstanding. It would only cause unpleasantness when you find out the truth."

"What do you mean?"

"You handle most of the details when your father deals with the outside world, don't you?"

"Yes," Carole said wonderingly.

"Then why didn't you hire me?"

"Why—father did that himself."

"No, he didn't," Niles told her frankly.

"Well—"

"I thought," said Niles, "that you and he would find that out before this. To be candid, I didn't think you'd send me back, but—"

Carole had been studying him. Now she held up her hand.

"I think you're honest, so consider yourself officially hired, Mr. Niles. Now excuse me. There's work to do."

Her plaid skirt swirled as she went past him into the ship.

Hart Niles grinned. It must be the way he combed his hair. He rubbed his hand across his face, then he studied his reflection in the beryllium side of the ship. He really didn't look bad in a beard.

The take-off time was near. Dr. Beckwith came up the tunnel, carrying a steel box as if it were made of the most fragile glass. Niles followed him into the ship and watched him disappear into the stern compartment, to return a few minutes later empty-handed. The professor went to the bow, seated himself before banked masses of dials and needles and indicator lights.

He threw switches, pressed buttons and set dials. He leaned back for a moment to check his work, his beard sweeping in quick, jerky motions from one side to the other. Then he seized a copper knife-switch and closed it firmly. A hum arose from the stern of the ship.

"Warming up the activator," Beckwith said, his eyes on a moving needle.

Niles watched sharply but said nothing.

THREE minutes later a tiny red light began to blink. Beckwith started a motor. He moved a lever and a clatter came from the stern. It grew into a roar. Beckwith watched his dials. He shifted a lever and Niles felt the ship jerk forward. Stop. Jerk forward again.

Beckwith inched it around the curve of the track, slowly. He returned the lever and the roar died to a hum.

"You can help me outside," he said to Niles.

They descended. Far ahead, up a straight track of gleaming steel, Niles saw an opening in the sky. At Beckwith's direction, he lifted a big steel hook into a ring at the stern of the ship. They got back in. Niles screwed tight the oval door. Beckwith seated himself and moved the lever upward.

A roar shot out at the stern, but Beckwith pushed the lever up until the roar grew into a giant rumble of power. The professor slipped on a pair of heavy green lenses.

The tunnel outside became charged with a dazzling white light that flooded the spaceship through small quartz windows. The rumble grew into a deep, vibrant hum that made the ship strain at its anchor. It quivered on the rails, the hum deepened and deepened, the tunnel became brighter until the blast of light was unbearable and Niles closed his eyes.

"Nozzle velocity, twenty thousand," he heard Beckwith mutter tensely. "Hold on!"

Niles seized a railing around the wall of the ship. He sensed Beckwith's quick movement. The ship hurtled up the rails like a steel dragon charging from its cave, roaring and quivering and spouting unbearable fire. Niles' arms were wrenched at their sockets. He was sick for an instant, but he felt the cessation of light and opened his eyes. The tunnel mouth was behind them and they

roared on into the sky.

"Holy cow!" Niles breathed. "We made it! We're up!"

No one heard him. Carole and her father were intent on their instruments. He glanced down. They were three thousand feet high already. He found an air-speed dial. It read six hundred miles an hour. He looked down again. The earth was turning into a miniature map of brown and white and dull green.

Hart Niles stared. Down on the desert an olive-drab speck was crawling through the sage. It was a car and from the cloud of dust that trailed behind, it was coming fast. Niles caught his breath. He knew that olive-drab color.

CHAPTER III

Test Flight

DR. BECKWITH was watching his instruments. The ship roared up at a steep slant. Beckwith set his lever and glanced back. He saw the olive-drab car. Suddenly he looked up at Niles, frowning.

"They're from Albuquerque," said Carole behind them. "The pilot must have called them."

"They should have got here sooner," Beckwith grumbled, "if they have business with us."

"There might have been some trouble on the road," Carole suggested.

Dr. Beckwith frowned. He stared at Niles.

"We can't go down now," he declared. "They'll be there when we get back." He turned to his instruments. "I want you to help Carole," he said.

In silence Niles took three steps through the narrow aisle, holding himself back against the pull created by acceleration.

"Your principal job," Carole told him, "is to pull this big lever if anything happens. It opens a section of the top and releases two big parachutes."

"Okay," he said. He looked around. "Where are your fuel tanks?" he asked.

He knew there wasn't much space for fuel. This ship weighed thirty tons. By the mechanics of ordinary space flight they would have to carry at least a hundred and twenty tons of fuel for take-off and landing alone. But this ship wasn't crowded with fuel tanks.

"Father brought it in that steel box. It's ten pounds of Uranium—two-thirty-five."

"Ten pounds!" Niles pretended to be amazed. "There isn't supposed to be that much isolated."

"Father did it," Carole said in a manner that settled everything.

"But all Uranium can do is boil water. That would take — " He stopped suggestively.

She shook her head and the brown eyes were deep.

"Not by father's process. He doesn't use heat. The exhaust from the tubes is only a by-product."

"But—"

"It's atomic power," Carole explained patiently. "It's different from anything else, the same as electric power is different from steam."

"Oh," said Niles.

This was what he had wanted to hear. But he dismissed it as if it meant nothing to him.

"You've been up before, your father said."

She nodded and started to speak, but a red light flashed.

"Number One tube thirty-two hundred degrees," she called to her father. He reached to the left and shifted a lever. The red light grew dim.

"We've been up before," Carole went on, "but this is the final test, the one toward which father has been working for years. He thinks"—she hesitated—"he thinks this power will give us infinite speed."

Niles' eyes widened. He'd been expecting this, but still it was a shock.

"Infinite speed?" he repeated. "Do you mean the speed of light?"

He tried to sound only superficially impressed, but it was hard to control his real eagerness.

Then Carole's face was turned to-

ward him, and he saw that it was white.

"Yes," she whispered. "The speed of light. We're going to try for that now. I'm afraid something—something will go wrong."

Niles stared at her, trying to take her words in and fully appreciate them. But Dr. Beckwith's voice came to them.

"Twenty thousand feet."

Carole opened an oxygen valve.

Niles glanced at the gravity indicator. It showed a constant acceleration of four gravities.

He studied the instruments and asked questions of Carole.

"We're at eighty thousand feet," she announced presently.

"Holy cow!" exclaimed Niles. "That's a world's altitude record." He looked out. "You can see the curvature of the Earth quite plainly."

THE sky was purple-black. Stars stood out like yellow pin-heads. Niles looked at the pressure gauge.

"The mercury is almost at the bottom," he noted. "Temperature eighty below zero."

A bell sounded one note. Beckwith switched a control knob.

"Father has a special air-speed indicator," Carole explained. "When the velocity reaches a hundred thousand miles an hour, father switches in a dial that indicates miles per minute."

"A hundred thousand miles an hour!" Niles exclaimed.

The needle dropped to fifteen hundred when Beckwith shifted the knob. That represented miles per minute, Niles reminded himself. The needle settled once and then began to climb. It was almost impossible to believe.

This little man and his daughter, working alone, out of contact with the world, had done what a thousand scientists would give their lives for. They had harnessed atomic power to a vehicle. Now they were traveling two hundred times as fast as man had ever gone before!

"How much faster—"

"I don't know." Carole watched her instruments. "There is a dial to register miles per second." Her voice was

Niles let go, heading for the passing car (Chap. VIII)

tight. "We've never used it—yet."

But it was apparent they would use it soon. Dr. Beckwith held the ship at four gravities. The miles-per-minute needle crawled steadily to the top of its arc. Through the windows, the Earth was now a distinct ball, the globes' continents like those flour-and-paste relief maps Niles had made in school.

"Which way are we going?"

"In the general direction of Sirius," Carole told him. "See there, ahead?"

Niles looked at the blackest, most perfectly defined sky he had ever seen. Ahead of them was the constellation of the Great Dog and the dazzling whiteness of Sirius, brightest star in the heavens. Niles shuddered. If they kept going at this rate, they themselves soon would be in the heavens.

Dr. Beckwith came out of his abstraction and spoke to them.

"We're going over the asteroid belt," he announced.

Niles stared at the professor. He looked at the chronometer over the professor's head and down at the accelerometer, which still showed four G's.

"It isn't possible," Niles said. "We've been gone only a few hours. At four G's it would take—let's see—" He thought a moment. "It would take about thirty hours to reach the asteroid belt. And we—"

"You forget," Dr. Beckwith said, "that gravity itself is relative. Near the Earth's surface you would fall thirty-two feet per second. A force of four gravities would carry you away from the Earth at a speed that would increase by one hundred and twenty-eight feet each second. But that speed moves against the force of gravity. In other words, it lifts whatever you weigh."

"Of course," said Niles. "I—"

"Sh-h!" Carole warned. "When he gets started you can't stop him till he delivers his lecture."

"Out here," Beckwith went on with a reproving glance, "you weigh only a fraction of an ounce, as far as the Earth is concerned. Thus the same force that moves one hundred and eighty pounds on earth, at an acceleration of four gravities, will move you now at an acceleration of hundreds of gravities and cause less discomfort than it did when we left Earth."

"Then," said Niles slowly, "acceleration can progress infinitely."

"Exactly. The only approximation of our actual speed is the ether indicator."

The bell sounded a single tone. Niles' eyes shot to the speed dial. It went dark for an instant, then the needle that showed miles per second left its starting post and began to climb. The last figure on this dial was 186,000—the speed of light.

CAROLE saw the movement of Niles' eyes.

"The bell will sound twice just before we reach that velocity—if we ever do," she said huskily.

It was some comfort to Niles to know that she was scared. He walked up to Beckwith's side, astounded to realize that time had passed so swiftly that he himself must have stood in one spot for hours, watching Carole and examining the controls. He still had to lean forward against acceleration, for of course that had increased as his weight decreased. Now it must be terriffic. The needle on the dial was mounting steadily.

"You know what will happen if we should reach the speed of light?" Niles asked.

Beckwith didn't hear him, so he said it again. The professor glanced around quickly, confused. His beard lifted.

"What? Oh, yes. Yes, I see—I mean, I know. Don't worry, don't worry." Impatiently he turned back to his instruments.

Time went very slowly from then on. Hours, and possibly days, passed. Niles quit watching the chronometer. They took turns sleeping in a narrow bunk. They ate lunches and fed the rabbits. Dr. Beckwith examined the animals from time to time. Carole had Niles kill a rabbit to feed the falcons.

Eat and sleep and eat. And always Beckwith drove the ship on and on and on, never slackening that terrific

velocity through the black cold of space. It grew by the hour, by the minute, by the second. The ether-speed needle crawled so slowly they couldn't see it move. But always, when they looked, it was a little higher than before.

It reached the top of its arc, the halfway mark, and started down on the other side.

The stars seemed to grow closer and closer. Finally, when the velocity was a hundred and twenty-five thousand miles a second, Niles spoke to Carole.

"Shouldn't we at least start back? We've been gone several days, haven't we?"

Carole's brown eyes looked bravely at him.

"Father won't let anything happen." She was trying to reassure him, but her voice was ragged.

The velocity passed a hundred and sixty-five thousand. Carole's face lost its color. The needle went to a hundred and seventy-five thousand. The stars glowed in the quartz windows, glowed brightly and receded. One hundred and eighty thousand.

Niles' throat became tight. He didn't seem even to be hungry any more. His gaze was always fixed on Beckwith. This little man with the bifurcated beard had done the impossible. He was attaining infinite velocity, and with infinite velocity they would have infinite mass.

They would outgravitate the universe. No man could know what would happen.

The needle hovered over a hundred and eighty-five thousand. The bell rang twice. It broke Niles' restraint. He leaped up the narrow aisle and shouted at Beckwith.

"You've got to stop! Another thousand miles a second and you'll upset the whole universe!"

Niles was hardly prepared for Beckwith's reaction. The whiskered head shot around. Beckwith's dreamy blue eyes were sharp. He stared at Niles with more presence of mind than he had yet shown.

"What do you know," he demanded, "of infinite mass?"

"I was just thinking of Einstein's—"

"Why were you thinking of Einstein? Why did you, at a time like this, relate his theory to the conditions under which we are traveling? Why—"

NILES interrupted this time. He forced a smile.

"You're a true scientist, Dr. Beckwith. Always hunting the answer. But now—" His eyes swept the mass of dials and his face became grave. "You must—"

"Why?" Dr. Beckwith repeated, talking to himself. "You're well taught, you've had much work in physics, familiar with rocket ships—" His voice trailed off.

Carole had come up on the other side of her father. She stared at Niles, her brown eyes wide.

"Niles." She said the name thoughtfully. "I've seen your face—or your picture."

She hesitated. Something hard to define came into her eyes. It might have been fear.

"Who are you?" she demanded.

Hart Niles looked from one to the other. He started to speak, but hesitated. The only sound in the steel ship was the high, fast vibration that came from the throbbing hum of the atomic-power engine. Outside it was purple-black, and stars swept by the portholes.

Inside, no lights flashed on the instrument board, but the miles-per-second needle hovered over the 185,000-mark and began its crawl toward the last line on the dial.

"I am Wolff," Niles said simply. "Gerhard Wolff, of Rotterdam."

Beckwith stared. Carole's eyes opened wider.

"He's telling the truth," she whispered to her father. "He *is* Dr. Wolff!"

Dr. Beckwith jumped from his seat.

"Wonderful!" he said, shaking Niles' hand. "Why didn't you tell me?"

"You wouldn't have believed me." With his free hand Niles reached quickly around Dr. Beckwith and threw the power switch. "And please call me Niles. I'm used to it."

"But how—"

"I got out during the collapse of France. Entered the United States on a passport I bought in Portugal. If they find that out—they'll send me back."

"No, they won't. I'll be responsible for you," Beckwith insisted.

"Thanks." Niles indicated the ship's controls. "You'd better take over," he suggested.

Beckwith turned back.

"You're right. I want to get back and report to Washington. The democracies can win the war within a month." He murmured to himself: And I had you carrying boxes for us!"

Hart Niles started back to Carole, but as he passed the quartz window he halted.

"You've already turned around!" he exclaimed.

Beckwith stared. The Earth was close. The North American continent was half in sunlight, half in darkness.

"Why, yes, so I have," he said puzzled.

Niles rubbed his stomach. He was hungry, famished after those long hours of tenseness. Perhaps when they got down—

"Say," he exclaimed, "the continent doesn't look right! See how it's shrunk up on the Atlantic coast."

Carole was beside him, looking down. Her hair was softly fragant in his nostrils. The ship circled the Earth with amazing speed. Dr. Beckwith had power on the forward tubes now, and they felt the pull of deceleration toward the bow.

"Look at Europe!" Carole whispered.

The continent was in moonlight—as much of it as they could see. The British Isles had disappeared.

They stared. Beckwith made a choking noise in his throat.

"We're too late! Some secret weapon—they've blasted the islands out of existence!"

"It may be hidden by clouds," Niles suggested, but as he spoke he realized there were no clouds anywhere in sight.

It seemed days before they lost sufficient speed to get nearer to the Earth, but always they circled, losing speed and getting closer. They ate, but the food didn't taste right. Eventually the barometer began to rise from its pocket.

Fifty miles from Earth, Niles calculated. They were losing speed and going lower. And after they circled the Earth until they had seen it all in sunlight, Niles verified something that unaccountably chilled him. . .

"There *are* no clouds on Earth!" he declared.

No one answered. At a height of twenty-five miles, Dr. Beckwith turned the ship over the Mediterraean and shot back above the Atlantic Ocean. They approached the eastern shore of the United States. Something was wrong there. Badly wrong. Suddenly Carole clutched Niles' arm.

"N e w Y o r k!" she whispered. "Where's New York City?"

Niles stared.

"It's gone," he said huskily.

They flashed over the Great Lakes.

"Chicago, too! Chicago isn't there." Dr. Beckwith's voice was tremulous and strange. "It's nothing but prairie," he muttered.

"You're right," said Niles in a queer voice. "There are no man-made structures anywhere on Earth!"

CHAPTER IV

People Underground

CAROLE gripped Niles' arm desperately, trying to find assurance. But Hart Niles could not provide it. "And there aren't any trees!" she pointed out.

"Do you realize," he said huskily, "that the polar ice-cap is also gone?"

The ship was cold inside. Freezing, it seemed. Niles felt dizzy. Dr. Beckwith looked around wildly.

"Something terrible has happened," he sputtered.

For the first time since Niles had met him, the little man was completely alert.

"We must get back to our base at once," he declared hoarsely.

The ship glided down to the southwest. Twilight was creeping over a desolate area that should have been

Kansas. Dr. Beckwith watched his charts. He swung back north and traveled in a great circle. Presently his beard came up and they saw his harassed face.

"Even the mountains have changed," he said. "I can't find our canyon."

Carole's face whitened. Her hand found Niles' and he held it reassuringly. Her fingers were soft and warm. It was nice to have someone look to him for confidence.

"I don't understand it at all," said Beckwith perplexedly. "We should at least have crossed the Santa Fe railroad's double-track line through Albuquerque."

"We haven't seen a single railroad," Niles reminded him tersely, "or a highway."

Then he almost grinned. He was thinking the Army car wouldn't be waiting for them, but he didn't say that.

"Aren't we just about over the spot from where we took off?"

"If my figures are right," said Beckwith.

But certainly there were no landing runways here. They cruised south.

"It's all so flat and so—so lifeless," said Carole, shuddering. "How can we land?"

Niles shrugged.

"How about the parachutes?" he asked Beckwith.

"They're not big enough to get the ship down safely."

"I think," Niles observed dryly, "we'd better be concerned about getting down alive."

"If we could find a sandhill"—Beckwith said—"we might save the ship."

Niles was studying the desert beneath.

"There's a black mound off to the left there," he suggested.

They swung over it.

"It's high enough," Niles said. He looked through the window. "It's a strange substance—and it's formed in straight, regular lines—as if it had been made by men."

But Beckwith was worried about the ship.

"Free the parachutes," he directed presently. "We'll try it."

Niles pulled the big lever. Two great cracks reached his ears and the space ship lurched as the parachutes took hold. Beckwith manipulated the controls and the ship slanted down toward the mound. The ground went by them fast. The ship ground against the black substance, skidded and settled. They heard a shattering.

"It's breaking!" Niles shouted. "We're going through!"

The ship lurched. Beckwith's hands were clenched on the controls. He tried the power tubes. The ship went forward, crushing the substance beneath them. They were almost on the sand. The stern of the ship dipped and they started to slide back.

But the little professor gave the tubes a last spurt of power and the ship leaped out on the sand. It bumped once, skidded, rolled over on one side—and stopped.

BECKWITH released the controls and got up shakily. Carole

[*Turn page*]

straightened her skirt and rose from where she was sitting on the floor by the instruments.

"Let's get outside," said Niles, and helped her up.

He unscrewed the door that was now in the bottom of the ship. He let himself down through the opening, and they followed. He walked about gingerly. His feet sank into the earth. He stooped to pick up a handful and let it sift through his fingers.

"Just plain, fine-grained sand," he announced.

"What did you think it would be—plastic?" asked Carole.

He looked at her kindly. Her smile was brave but her voice had been tense.

Dr. Beckwith was querulous.

"What's going to happen to us?" he demanded.

"I don't know," Niles said soberly. "Some great change has come over the earth. It's as if we were on a different planet. The things we knew are gone. Undoubtedly there are many other things here that we know nothing about."

He paused and stared at the black mound on which they had landed.

"From now on," he said slowly, "we must be very careful."

Carole's face was white and drawn.

Beckwith looked toward the mound.

"I wonder what that's made of?"

The big ship had left a trough that looked very much like the debris of black shatterproof glass. Niles picked up a small piece and turned it over in his fingers, felt its weight.

"I think—"

"There's someone behind us!" Carole screamed.

Niles wheeled. From somewhere had come eleven men, tall and dressed in strange clothing — knee-length pants and short tunics of some finely woven material that gleamed softly in many colors. Shoes of some flexible, transparent material. Woven glass, Niles thought.

But the oddest thing about these men was a peculiar sound they made as they moved—a small crackling and gritting.

"Like pieces of glass rubbing together," Niles thought.

One of the men stepped out in front and threw up his arm in a signal. The crackling was sharp as he moved his arm, and then the sound died.

Carole gasped over Niles' shoulder, and Niles admitted then something he had been trying to ignore. He'd been telling himself it was a trick of the fading light, but now he knew that it was true.

That odd, brittle skin was a strange color, like the skin of no human being he ever had seen.

"They're green!" Carole moaned.

There was no doubt of it. Their skin was a deep, fleshy shade of green. Not an unhealthy green, but rather a color that seemed to belong to them. Niles backed a step.

"What can we do?" whispered Carole at his side.

Niles answered steadily, keeping his eyes on the green men.

"Wait," he ordered.

Niles saw the three of them were cut off from the ship.

Now one of the green men approached. He stopped suddenly. The crackling ceased as he halted. His mouth opened and he spoke to them in a smooth but unfamiliar language. The skin of his face separated into geometrical three and four-sided areas as his mouth moved. The areas closest to his mouth shifted the most, and rubbed against one another with a tiny metallic noise.

"It's their skin!" Niles whispered to himself. "Their skin makes that noise. How is it possible?"

Niles listened to what the man said, then shook his head and looked at Beckwith. The professor just stared at the green man in the blue glass tunic, who stood still now, waiting.

"Can you speak English?" Niles asked them.

A MOMENT'S hesitation. Then the leader shook his head, and his neck crackled as it moved.

"Sprechen sie Deutsch?" Niles asked, and when he saw their puzzled faces he gave the answer: "No." He turned to Carole and her father.

"I'll try," said Beckwith. His beard rose. *"Parlez-vous francais?"* he demanded.

Blank faces. Then Carole tried.

"Habla usted español?"

But the men in the glass tunics were still puzzled. The leader broke out in strange, elided sentences.

"It doesn't sound like anything I've ever heard," said Beckwith finally, "though their features are like Americans'."

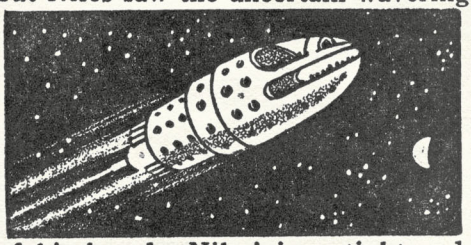
The leader gave an order and the men sprang into a circle around them. Carole shrank against her father. Dr. Beckwith's beard made uncertain motions.

"This *can't* be Earth!" said Carole. "Not with these creatures here!"

Niles compressed his lips.

"Wherever we are," he said carefully, watching the green men, "we'll do the best we can."

He glanced at Beckwith. The little man had an arm around his daughter, but Niles saw the uncertain wavering



of his beard. Niles' jaws tightened. He had no idea what they should do next.

The green men moved closer. Niles spoke to Beckwith without turning his head.

"You may need your pistols," he said. 'But don't show them—yet."

The circle of green men moved a step and the leader looked at Niles. He spoke slowly and motioned with his green arms.

"They don't want your weapons," said Niles. "But they want us to go with them."

"No!" Carole protested. "We don't know anything about them!"

Niles spoke carefully.

"I believe we'd better. They haven't touched us so far, and perhaps we'd be better off with them than out here alone."

"I wish we could go back!" Carole moaned.

"We'd better do as Niles says," Dr. Beckwith told her.

They followed the blue-tunicked leader to the base of the black mound and into the mouth of a frosted glass tunnel that glowed with a soft, pleasant light. Niles felt the glass with his bare hand.

"Cold light," he said. "And it's entirely diffused. There doesn't seem to be a bulb anywhere behind it."

They reached the end of the tunnel. A glass wall rose before them. They passed through and came out on a platform. There, surrounded by the strange green men, they stopped involuntarily, looking out over a silent, beautiful City of Glass.

Perhaps half a mile from where they stood, reared a huge gold-colored glass dome in the center of the underground city, glowing with a mysterious soft golden light. From the dome, as from the center of a circle, streets radiated to the edge of the city.

There were cross-streets like circles around the Golden Dome, and the city was filled with shimmering glass buildings in many colors and shades.

But at regular intervals on the straight radial avenues and the curving boulevards were other domes, smaller than the Golden Dome and of different colors. Some were the deep blue of cobalt, some vivid green, some a soft violet; others were delicate pink and a vivid ruby red. Some were opalescent, with a milky whiteness that shifted into blue and red.

"It's magnificent!" Carole whispered.

There was activity through the city. They saw the movement of green-skinned men in glass tunics, the shifting of lights, the flashing of transparent glass cars in a tunnel-like framework above the streets. But through all of this, the City of Glass was amazingly silent. There was no clank of machinery or hum of motors. There was only the brittle crackling of skin of the Glass-men around them as they moved restlessly.

"It's like sinking down into a feather bed," said Niles.

THEY followed the leader down from the platform and onto a glass sidewalk that lighted before them as they walked. They crossed a pavement of glass bricks and stepped onto

a moving walk, which carried them toward the Golden Dome in the center of the city. But near a warm-colored peach dome they were halted.

A glass car flashed to a silent halt in the tunnel framework above. They were motioned to get in with their guide and two other Glass-men, and the car shot off smoothly and soundlessly but for a swish of air.

Dr. Beckwith was puzzled.

"What furnishes motive power for these cars?" he wondered.

"I think," said Niles, "they are propelled by magnetic repulsion and attraction, like an electric motor."

"But," said Carole, "they seem to float through this framework without touching it."

"That could be accomplished with magnetism."

"But why is everything made of glass?" she went on.

"Probably because their supplies of metal are limited. Come to think of it, there is no metal at all in this car. I suppose they have a way of impregnating glass with some material that makes it a conductor of electricity."

Dr. Beckwith came out of his abstraction.

"You said something about a motor run by magnetic repulsion. I thought all motors were based on the attraction theory."

"No," said Niles. "There have been a number of motors based on the principle that like poles repel. The Thomson and the Eichberg are two, and then there is the Deri motor which has been successful in Europe. There's really no difference. And that's the principle of these cars.

"Say, for instance, the front end is the positive pole and the back end the negative. Then the magnets in the track would present negative poles and would first pull and then push."

Dr. Beckwith looked up from the flowing colors of glass on both sides.

"It's a privilege to have you with us," he said. "You are considered one of the greatest atomic scientists in the world."

"You'd be better off," Niles observed dryly, "to have a linguist. Someone who could speak the language of this City of Glass."

CHAPTER V

Where Are We

THEY flashed through beautifully colored streets, passed many green-faced men walking in their transparent shoes and in tunics of red, pink, peach, orange, purple, blue, black—and even white. But over all was that strange, soft silence, like rubber wheels rolling on steel.

The car floated to a stop before a yellow dome. They went through a glass door and into a room of yellow glass that glowed with a soft white light. Dr. Beckwith was staring at the walls.

"I can't believe it," he said.

"You don't have to," Niles said cryptically.

They were confronted by a tall, green-faced young man with an odd design on the shoulders of his yellow glass tunic. He questioned them in what seemed to be several different tongues, but they had to shake their heads.

"He's evidently a linguistic expert," Niles remarked, "and he's very eager for us to talk. He seems worried about something."

The Glass-man pressed a tiny glass bar and waited.

"Do you realize," Carole asked suddenly, "that we haven't seen a single woman in this city?"

Niles smiled at her.

"Saturday nights," he said, "ought to be interesting for you from now on."

She lifted her chin and turned her head.

Four more Glass-men came through a wall into the room. They spoke to Niles as if he were the leader of the three, but he recognized no words whatever. One of the Glass-men looked at Carole and then spoke rapidly to the others. They all stared, and her color heightened.

Niles was hungry. He made signs to the Glass-men, as of eating. They were puzzled. He opened his mouth and pointed down his throat. They crowded around, watching. The tall

young man looked down his throat, stepped back and shook his head.

Abruptly he thought of something. He snapped an order. A moment later

A small, wrinkled Glass-man examined Niles as a younger one stared at Carole (Chap. V)

the three were taken to the street, whisked in a magnetic car to a blue glass dome, into a room lined with glass shelves that held many small instruments.

"A surgical laboratory," Niles observed.

A small, wrinkled Glass-man examined them, much as a physician would have. He seemed perplexed. He spoke into a glass plate that was obviously a voice transmitter. Another Glass-man entered.

"Look at his eyes!" Carole gasped.

The green man's eyes glowed like a cat's in the dark. He came close to Niles and stood silently, seeming to look through him. He moved his head in a circle over Niles' thorax and abdomen. He shook his head and went to Carole.

When he started on Dr. Beckwith, Carole turned to Niles.

"What is he doing?" she asked anxiously.

Niles suppressed a grin.

"I think his eyes operate somewhat like a fluorescent screen, and he's trying to see what we'd do with food if we had it."

"A fluorescent screen!" Carole's color rose in her cheeks.

"Personally," Niles remarked arch-

ly, "I don't need a fluorescent screen to see what a nice figure you have."

The Glass-men conferred. They looked at the three and talked earnestly. Then they spoke into the glass plate. Another green man entered the room, and this time Carole screamed.

"I can't stand it!" she cried.

HE was a very old man, this one. He had enormously big eyes, bigger than anything Niles had ever imagined.

But Niles spoke calmly.

"There's nothing to fear. Those three-inch pupils merely mean microscopic power. Either by mutation or by very careful breeding—"

"Or both," said Dr. Beckwith.

"Yes," agreed Niles, "probably both. These Glass-men have developed him to use his eyes as a microscope."

The man came very close and turned his enormous pupils on their skin. He had Niles move his fingers and watched carefully. He spoke to the physician, who came with a glass knife and deftly cut a tiny piece from the lobe of Niles' right ear. He put it on a slide and the green man examined it with his huge eyes.

He spoke in a shrill voice to the physician. A moment later the two of them, joined by the man with fluorescent eyes, gathered in an excited conference, and finally turned to Niles and shook their heads slowly in awe and bewilderment.

Niles spoke casually to Carole and Dr. Beckwith.

"No steak here," he said.

They were taken outside, past a peach-colored dome to a pink glass building. Their guide, the man in the blue tunic, took Carole by the arm and seemed to Niles oversolicitous. They stepped onto stairs that started moving upward at their weight. Inside the building everything—floor, walls, and ceiling—was glass of soft shades, and all glowed with soft light as they approached.

They were shown into a four-room apartment of pink glass. Their guide looked at Carole with a strange light in his eyes.

He swept the room with his crackling arm, said something in his strange tongue, and left them.

Niles felt unexpectedly resentful of the guide's attention to Carole.

"You've made a hit," he said.

Carole turned away so quickly her skirt swirled, its red and green vivid against the soft pink walls.

"It's a lovely apartment," she said, gazing at the glowing glass ceiling and the glass beds and chairs.

"I'll bet that's a nice mattress," said Niles, standing in the doorway to the second room. "It's made of glass threads."

"But it's wonderfully soft," Carole decided, sitting on it.

"What I want to know," said Dr. Beckwith, "is where do we cook?"

Niles grinned.

"You're more practical than I expected, Doctor."

There were two more bedrooms. But with the living room, they comprised the entire apartment, and there was no place to cook or eat.

Niles reported this.

"The first thing we'd better do is try to make some decisions," he then added.

"I agree," said Dr. Beckwith, his beard in the air. "Where are we, in the first place?"

"And why, in the second place," Niles reminded them.

Carole was sober.

"And how do we get out?" she wanted to know.

Niles studied her thoughtfully.

"And if we should get out, where could we go?"

She looked at him, perplexed. The three of them discussed their position, with Niles saying little. No definite conclusion could be reached. Finally Carole turned to Niles.

"I'm awfully sorry that I made you leave your meal in Amarillo. You must be very hungry now," she said.

"No more than you," he told her. "But I think a good move is to explore the city and see what I can find—if they will let me."

"Be careful," she warned.

NILES reached the street. Where would a man go to find food in a place like this? The peach-colored dome would be worth a try. Niles

stepped on a moving sidewalk and rode as far as the dome. No Glass-man was in sight when he got off. He approached the glass door. It slid up and he stepped inside.

He chose a hallway to the left and walked softly along it, but at once a red flash came through the peach-colored glass.

He tried to go back, but a glass wall had come from somewhere and closed the hall.

He started to run forward, but three Glass-men came toward him, their green skins crackling rapidly as they moved.

Their hands were empty, and Niles didn't try to fight them.

They looked at him curiously and spoke to each other. They examined his hands and seemed actually relieved about something. Then they took him through the streets to the yellow building, where Niles again faced the man who had first questioned them inside the city. This man listened to the report, and Niles saw disappointment growing on his green face, as if he had recommended Niles to be trusted and now his judgment had been proved wrong.

"Well, what the heck would you have done," Niles demanded aloud, "if you were hungry?"

The tall young man motioned him to leave. But one of the three who had captured him followed him all the way back to the apartment. When Niles got inside he looked for a window. There wasn't any. The walls were opaque, but he found a small globe mounted on a tube that led down to the street.

"Hm-m!" said Niles. "Now we have curved light."

For in the frosted surface of the globe he could see the entire street, with the Glass-man stationed before the entrance to the building. Across the street was another, and on each side, fifty yards away, were a third and a fourth.

They weren't taking any more chances with him.

"Now things are in a fine mess," Niles declared. "Whatever chance we might have had to escape is gone completely."

CHAPTER VI

Lapse of Time

HART NILES stood looking at the tiny colored figures in the globe. Carole came to his side. She saw the guards. She glanced quickly at Niles and her lips tightened.

"Have you found out about their language?" asked Dr. Beckwith.

"I am beginning to," Niles answered. "Within a few days I think I'll be able to talk to them. It seems—"

"Hold on!" Beckwith exclaimed. "Look at the globe! There come some yellow people!"

Niles stared.

"You're right! Their skin is yellow instead of green."

Two persons were walking along the street. The tunic of one was a brilliant ruby red, the other's a soft violet. But their hands and arms and legs were a bright golden yellow. They stopped for a moment to exchange gossip with the blue-tunicked green man before the apartment door.

"They're girls!" Carole said intuitively.

Niles nodded slowly.

"I must be losing my grip. They *are* girls! But why—"

"Evidently," said Carole, "their systems lack some secretion to form the green color—some substance that is present in the men's bodies. You add blue to yellow and get green, you know."

"What we've got to do," Beckwith declared, his beard pointing at the floor, "is hold a conference to answer these questions: one, where are we? Two, how do we get food? Three, how can we get out?"

"And four," Niles added slowly, "where would we go if we did get out?"

"We have to go somewhere," Carole said in a strained voice. "I can't stand these green people who stare at us as if we were strange animals. And that guard"—she shuddered—"the way he looks at me!"

"And what about my work?" de-

manded Beckwith of Niles. "Is all my experimentation to be wasted because we're in this infernal place that has no right to exist?"

"It strikes me," Niles pointed out, "that you'd better present your grievances to someone who knows the answers better than I do."

Beckwith's blue eyes stared at him, then he went on absently.

"This is the most absurd situation I've ever been in. We left New Mexico in my spaceship. We returned a few days later to find the entire face of the world altered, civilization wiped off the Earth."

He groaned and put his head in his hands.

"Now we are captives in this incredible City of Glass. Where is it?" He appealed to Niles. "How can such a place exist?"

"We'll find out more when I can speak their language," Niles said soberly.

"Can't you do something?" asked Carole anxiously. "We just can't stay here like this."

"I think I'll make a try for the ship," Niles told her. "There's plenty of food there, at least."

"How can you get by the guards?" She was watching the globe.

"I have an idea they don't want to hurt us. For some reason they aren't afraid of us. You remember how the physicians acted when they examined us? They're puzzled more than anything else."

Carole nodded slowly.

"They don't understand us, primarily because we are not the same color, but they don't intend us any harm." Niles got up from his glass chair. "I'm going outside."

"What will they do to you?" asked Beckwith.

Niles grinned.

"I'll know better in a minute or so."

He stepped on the escalator and it started down. The glass door slid up at his approach. He went outside and pretended not to notice the Glass-men on guard. He started off, but on impulse he turned and waved. He knew Carole would see his gesture in the globe.

He walked on. The Glass-man at the door followed him but didn't try to stop him. Niles mounted a moving sidewalk and the Glass-man got on a few feet behind. They rode slowly toward the exit of the city.

HE wasn't stopped until he started up the steps to the platform, on which they had stood when they first looked over the city. His foot touched the bottom step. There was a swish at the top of the platform and a glass wall slid down, cutting him off completely.

Niles turned to the guard behind him.

"You boys are pretty effective, aren't you?"

The green man stared at him. His spinach-colored face changed from puzzlement to a slight leer.

"So that's it," Niles remarked. "You're going to be smart about it. Just for that, I'll show you. Incidentally," he went on, since no one would understand him, "you've got a stray look in your eye that I don't like. You'd better watch your step around Carole, mister. I'll handle that end of the situation.

"Your job is to watch me, and I hope you don't forget it. You go monkeying around my girl and I'll cook you up into a mess of greens!"

This was the first time in months that he had been able to tell anyone exactly what he thought, and even though the Glass-man didn't understand a word, it was still very satisfying.

The leer left the guard's green face. There was a tiny popping as it changed to a look of profound puzzlement. Niles wheeled and headed for the rolling sidewalk. The guard came after him with his skin crackling.

Niles rode the sidewalk down the radial avenue past a kaleidoscope of colored glass buildings toward the shining Golden Dome. There were more and more Glass-men as he drew near the dome. Their colored tunics moved silently but swiftly in all directions, like a rich, shifting spectroscope, dotted with the movement of Glass-women with golden yellow skins and long black hair.

The only thing Niles couldn't understand was the silence. It was a spot as busy as Grand Central Station, but as quiet as a country telegraph office. There were no newsboys, no train announcers, no bells, no escaping steam—only the thud of mute feet, the tiny rhythmic crackling of a thousand skins, the regular soft swish of magnetic cars.

It made Niles feel that a great jar-bell had been clamped down over the central part of the city and he was looking in from outside.

He was within two blocks of the dome, but still he seemed to ride the sidewalk without attracting notice. Every Glass-man was intent on some mission that seemed to emanate from or to be destined for the great Golden Dome.

They hurried straight ahead, not loitering or stopping to talk, showing in their faces a common look of tenseness and even of anxiety.

Some carried burdens to the Golden Dome, others came from the glowing doors and rode quickly away on the moving sidewalks. Glass cars stopped at intervals of a few seconds, with only that soft swish of air. They discharged passengers, took on more and flashed away.

But in all this silent bustle, one man did not forget Niles. A block from the dome his guard stepped up beside him, pointed to the dome, his arm snapping as it stretched out, and shook his head with finality.

Niles raised his eyebrows.

"You need some oil on your neck, Buddy, but I guess it's okay if you say so. What the heck's in that dome that's so important? Must be a gold mine."

The green man shook his head profoundly to show that he didn't understand. Niles grinned.

"If you—"

He stopped abruptly and his eyes swept the street. Red lights flashed on overhead, and there was a sudden rush from the street. Every Glass-man within sight ran for cover with a popping and rustling that filled the central part of the city, but the street was completely deserted within five seconds.

Niles swung the sled out of harm's way (Chap. XVI)

THE guard was gripping Niles' arms. His face was anxious. He pushed Niles into an open doorway. A transparent pane fell behind them.

"What the devil," Niles demanded, "is the matter with everybody?"

The guard was watching the street with straining eyes. Down its silent, deserted, red-lighted length came a strange party. Four Glass-men, each with a set, resolute look on his green face, bore a stretcher made of glass poles and woven fabric.

On the stretcher was a big glass boot, transparent and sealed at each end. It was twice the size of a coffin, and Niles' lips tightened. His jaws hardened into knots at what he saw inside the case.

It might have been the body of a Glass-man. But now it was black instead of green. Black, and swelled until it almost filled the big glass coffin. Niles' guard sucked in his breath and drew back.

The stretcher-bearers walked solemnly down the center of the street as if they all were doomed. Niles stared. The bearers looked to neither side, but straight ahead. There was a sudden movement inside the casket. The body moved. It burst and shrank, deflated. But the four bearers marched on.

Niles shuddered and closed his eyes. A moment later, Glass-men began to reappear on the street. Niles looked at his guard.

"You've got your own problems here, Buddy, and I think you and I had better explore."

He stepped to the door. It raised and he walked through with his guard behind him.

* * * * *

Hours later Niles alighted from a magnetic car, with his guard still behind him. He vaulted up the moving stairs into the pink glass apartment. Carole faced him with quivering eyelids.

"I—we were afraid something had happened to you," she said.

Niles looked into her soft brown eyes and his face relaxed.

"I'm all right. I've found a way to answer some of our questions."

"Thank goodness," Carole said fervently. "Now maybe we can leave this place."

"Where are we?" asked Dr. Beckwith.

"You'd better come with me," said Niles.

Briskly Dr. Beckwith put on his hat. They went down the moving stair. The guard's face lighted up when he saw Carole, and he fell in behind them. Niles stopped a magnetic car and they rode in it to the yellow glass building.

"This seems to be a sort of library," Niles said.

They were met by the Glass-man with the queer insignia on the shoulders of his woven yellow tunic. His face glowed with a tiny tinkling when he saw Niles, and he motioned them to sit down.

"As near as I can understand," Niles told Carole and Dr. Beckwith, "this man's name is Perso. Beyond that we have to answer our own questions."

"But how—" Dr. Beckwith began.

"Just a minute," said Niles. "You remember I said this is a library. It has a map that shows that geographically we are about fifteen miles from what once was Roswell, New Mexico. Not far from where Dr. Goddard conducted his experiments, I should say."

DR. BECKWITH'S beard shot up. "Then we're really on Earth," said Carole.

"That's right."

He rose and went toward the wall. He turned and looked inquiringly at Perso. The yellow-tunicked man nodded. Niles went on. The wall lighted and revealed rows of books in colored glass bindings. He took down one book and opened it, turned the pages with faint clicks.

"This paper is very interesting," he observed. "It's made of glass, and much thinner than the paper you are familiar with." He stopped turning the pages and faced them squarely. "This is the last historical reference to the Earth in our own language. I imagine it was recovered from a time-capsule of some sort, and the Glass-people have photographed it for preservation."

Carole leaned forward tensely.

"What does it say?" she asked in a strained voice.

Niles glanced at Beckwith. The little man's beard jutted forward defiantly. Niles turned his eyes to the book and read slowly:

The third era of the Metal Period was from 1 A. D. to about 3000 A. D. It was characterized by the spread of Christianity, by alternate periods of progress and retrogression in arts and science, and by continued destructive wars.

At the culmination of this period, an insane man attempted to conquer the Earth by taking advantage of the world's attempt to eliminate fighting. He was defeated eventually, but the Earth's population included many elements that refused to become unified.

There was continuous strife between these elements and those that tried to bring about international stability, until now, in the year 5000, only a handful of men is left on Earth. Our continued existence is doubtful, and we leave this record for those who some day in the uncertain future may find it and may be able to read.

Niles closed the book softly.

"That is all," he said to them.

Carole's eyes were bright — too bright.

"It says—it says 'now, in the year five thousand'. Niles, what does that mean?"

"It means the year five thousand A. D. is far in the past," Niles said gently.

"How far?" demanded Beckwith.

Niles drew a deep breath.

"That is something I can only estimate from the various divisions in the books of history here. You see, the written language of the Glass-men has evolved into a series of characters something like those of geometry."

"How far?" repeated Beckwith.

"Yes, how far." Carole's voice was faint.

Niles looked straight at them.

"My calculation is supported by the changes in the topography of the Earth," he stated. "Our little test flight lasted an incredibly long time."

Carole sank into her chair. Beckwith stared and his whiskers trembled. And in spite of himself, Hart Niles, at the repetition of what he had already learned, felt cold, though sweat rolled out on his forehead. But he attempted to pass it off.

He looked at Perso. The Glass-man was watching the anxiety in the faces of Carole and Dr. Beckwith, and his own green features showed as much suffering as theirs.

"How long?" muttered Dr. Beckwith.

Niles cleared his throat.

"I estimate," he said slowly, "that we are now in the year eight hundred thousand A. D."

CHAPTER VII

Strange Journey

INVOLUNTARILY Dr. Beckwith stiffened. His beard shot out.

"I don't believe that!" he said defiantly.

But a half moan escaped from Carole's lips.

"Hush, Father." She rose from her chair. "It seemed like only a few hours," she said faintly.

Niles heard a crackling and saw the blue-tunicked guard start toward her.

"No, you don't," he muttered under his breath. He reached her first and took her by the elbows. "Imagine," he said softly. "It took a hundred years for you to drop the lids over those brown eyes."

"Eight hundred thousand years!" repeated Dr. Beckwith. "I still don't believe it."

"Why not?" asked Niles, after Carole was seated.

"I just do not see how such a preposterous thing can happen."

"That's easy," said Niles. "We traveled at nearly the speed of light. Our bodily functions and our perceptions slowed down until time meant nothing to us. We could travel forever at that speed. We would age but little and would be unaware of the passage of time. Then when we slow down, our perceptions would speed up until, as they are now, they would be quite normal. Simple, isn't it?"

"Why did our bodies slow down at that speed?" Carole asked.

"You remember the Michelson-Mor-

ley experiment in Eighteen Eighty-one? The failure of that experiment was explained later by the Lorentz-Fitzgerald contraction theory. They assumed — and proved with mathematics—that any moving thing contracts in the direction of its velocity, until at the speed of light it has no fore-and-aft dimension."

"But—" said Dr. Beckwith.

"Einstein later proved with mathematics that mass increases with velocity. But energy doesn't increase with mass. If my weight is increased double, my present energy will move me at only half speed. If my weight is increased a thousand times, I will move at one-thousandth my normal speed."

Beckwith spluttered, but Niles went on imperturbably.

"If mass increases with velocity, and if light velocity is infinite, as Einstein says, then any mass that can reach light velocity will also be infinite. In plain words, as mass approaches light velocity its mass increases, and the electrons that compose it therefore move more and more slowly.

"At one hundred sixty-one thousand miles a second mass is doubled, and from there on it increases rapidly, until at nearly one hundred eighty-six thousand miles a second it would take you a thousand years to draw a full breath."

"He's right, father," whispered Carole. "It's terribly logical."

"But we didn't notice anything like that!" Beckwith protested.

"Of course not," Niles replied. "Your perceptions slowed in proportion. You could travel a million years at the speed of light and you wouldn't age a day and you wouldn't realize it. You could shoot a running watch around the universe at light velocity, and when it got back its hands wouldn't have moved at all. But as soon as its velocity slowed down, it would pick up right where it left off.

"You have done the same thing, Dr. Beckwith, with no more awareness of it than the watch would have, because naturally your perceptions slowed down along with the rest of your existence."

BECKWITH was still fighting reality.

"Preposterous! I know the theories, but they are merely theories."

"I think you've heard of relativity," Niles said dryly. "This change in the rate of existence is relative. It isn't real to you, because you can't detect it. As far as we are concerned physically, we've been gone only a few days, but to those on Earth it has been eight hundred thousand years.

"Maybe," he said whimsically, "maybe the man on Earth is wrong. Perhaps he travels too slowly and lives too fast. It all depends on the point of view."

"He's right, Father," Carole declared earnestly. "You know the theory of increasing mass has been proved—and we *did* travel at nearly the speed of light, and the Earth certainly has changed. The coastlines have sunk into the sea in places, the mountains have tended to level off, civilization has disappeared. That couldn't happen overnight."

Beckwith sank back dejectedly.

"Maybe so," he said, "but—" He sat up suddenly. "How did we get back to Earth?"

"That isn't hard to explain," said Niles. "You aimed at Sirius. Your ship shot through the galaxy, was pulled back by the combined gravitational force of the entire galaxy, and swung toward the Solar System like a comet. And by a billion-to-one shot, by the time we were back in the Solar System our speed was down to a reasonable figure again. Otherwise we would have gone on through and we'd still be going."

Carole shuddered. Dr. Beckwith gave up.

"I suppose you're right," he sighed. "I was so busy on my ship I didn't think of that."

"What you need," said Niles, "is a drink—but you can't get one here."

"What is our status here?" Beckwith asked after a moment. "Are we prisoners—or what?"

"I think we are free to a certain extent. They don't want us to approach the Golden Dome. Our skin is white, you know—not like theirs, and so we are strangers, and I don't think they

would like for us to leave the city."

"You mean," Carole said, "we can't go outside?"

"Not if they know about it," Niles answered.

And that was that.

Back in the pink glass apartment, Niles sank into a green-tinted glass chair.

"There isn't much we can do but wait," he said. "Where would we go if we could get outside?'"

"If we could use the ship," Carole told him, "we could at least explore the Earth. These people haven't seen much of it for thousands of years, and there might be other human—or near-human—races where we would fit in better."

Niles got up.

"We're all on a primitive level now," he said. "Nevertheless, I'll side with the majority. It may take several days, but—"

He broke off. A section of the wall was opening. A wheeled tray slid into the room.

"Food!" exclaimed Niles. "I don't believe it!"

THEY gathered around the dishes filled with vegetables.

"It looks good," said Carole. "I'm starved. But — where did it come from?"

"That is something else we'll have to find out," Dr. Beckwith declared. "At any rate, it looks as though those

"I doubt it," said Niles. He was thinking how vivid was Carole's red-and-green skirt against the faintly glowing yellow glass of the divan.

"I agree with Carole," declared Dr. Beckwith. "I think we should try to get away as soon as we can."

Niles shrugged.

"Very well. I can get to the ship and examine it, though I don't see how you can take off without a runway."

Dr. Beckwith was indignant.

"I built that ship, young man. I—"

"Father," Carole said softly.

Beckwith blinked, but his beard continued to project at an obstinate angle.

physicians who examined us diagnosed our needs."

"Hothouse spinach," said Niles, studying the tray. "That one looks like carrots. This could be lettuce—maybe. Hm-m, tastes like asparagus—or something. These red ones—are they tomatoes?"

Carole tried them and made a face.

"They don't taste like anything."

"These orange ones have no taste at all," said Dr. Beckwith.

"Anyway," Niles grinned, "soup's on."

They finished the meal, leaving nothing.

"I wonder if a man can live on that kind of stuff indefinitely," Niles said.

Carole looked at him gently.

"A man like you needs something substantial, like meat," she declared.

But at least they had eaten.

CHAPTER VIII

Suspicion

THE next few days were quiet. Niles spent most of the time in cautious exploration of the City of Glass. He listened carefully to the Glass-men's speech, and began to pick up words and phrases. He often saw Perso, who was a research worker. Perso helped him learn the language. Niles discovered the city was controlled by a Regulator, named Magrum. Before long he verified the approximate date of their new existence, and told Carole and her father. He ascertained the interval at which their food was sent them, and though he did not leave a scrap of vegetable on the tray, he became ravenously hungry.

"You've got to have meat," Carole said one day.

"I think you're right. Even a can of beans would help." Niles got up decisively. "We all need food we're used to. I'm going to the ship."

He left the apartment, but halfway down the stairs he heard his name called softly. He waited when he reached the bottom.

Carole rode the steps down, her brown eyes tremulous.

"I want you to take my pistol." She put it in his hand. "And please, Hart —don't get in trouble."

He drew a deep breath. His eyes searched hers.

"I'll be back," he promised.

He touched her warm little hand and left. Before he went through the door he stopped and removed a bullet from the gun.

Zudat, the guard in the blue tunic, turned in behind him when Niles appeared on the street. Niles grinned at him.

"Come along, Buddy, you're going for a ride."

Zudat grunted suspiciously. A magnetic car appeared far down the street, its glass reflecting many colors as it flashed between the glass buildings. Niles pressed a rod to stop it. He climbed in, and just as he was sitting down he threw the bullet across the street with a quick motion. Zudat whirled to see what he had thrown. Niles pressed the control lever and the car shot off. He waved cheerfully as Zudat started to run after him.

Another car was coming, but Niles only grinned. He watched the rear. As Zudat got into the second car, Niles stopped the first one, leaped out, touched the lever to send the car on, and stood motionless under the center of the tunnel. The cars were transparent, of course, but Zudat would pass him before he knew what was up.

The car flashed overhead. Niles heard the rush of wind as it slowed. He ducked down a radial street and forced himself to walk. He mustn't be seen running.

He reached the next radial avenue and stopped a car going toward the exit of the city. He ducked low inside just as Zudat turned the corner with a crowd of excited Glass-men following him. The car shot along at high speed. It had almost reached the wall of the city, where the black bricks sloped down to the second-story level of the buildings, when it halted without warning and threw Niles against the front.

He knew what that meant. Zudat had had all power cut off from the cars.

They'd be looking for him.

The chase began to take on aspects of seriousness. Up to now Niles had thought of it only as a game. These Glass-men hadn't seemed to know anything about defending themselves, but it began to look as if he had underestimated them.

HE got out of the car quickly. The street was empty. He walked in the middle to avoid the self-lighting sidewalks. He reached the platform that led out of the city, stepped quickly to one side in a slight shadow, waited, half under the platform.

In a moment a Glass-man ran onto

the steps. His green face was grim and there was a purposefulness in his stride that made Niles wish he hadn't started this. For a moment he considered giving himself up, but he felt the pistol in his pocket and remembered the look in Carole's eyes when she had given it to him.

No, he didn't feel like turning back —particularly not when he thought of Zudat and his black eyes gleaming at Carole from his green face.

Niles heard the soft swish of a car coming. He looked around quickly. It took him a minute to see it, up near the roof of the city. It was bigger than the ones that ran through the streets, and was coming more slowly. It carried refuse, likely.

His glance shot around. The Glass-men had gone outside and there was no one in sight. Just over his head, the track turned and went through the glass wall to the outside. If he could get up there—

He ran back to a glass post that supported the roof. The car would pass it. On the far side were projections for workmen to climb. Niles was up the post in an instant. He leaned out over a wide space in the frame of the car tunnel, fixed his eyes on a spot six feet away.

The nose of the car passed that spot and Niles let go. He landed with a jolt in an almost empty car. He rolled on his shoulders and came up against a pile of gravel. Just as the car passed through the wall he heard more Glass-men running up the platform, but he didn't think they had seen him.

In a few seconds the car came to a stop as if it were up against an air cushion. A door opened suddenly in the bottom and Niles poured through with the gravel. He floundered to his feet, pulling rocks out from between his neck and his shirt collar. Glass-men were running toward him. He darted into the darkness.

It was sandy out there. Sandy and pitch black. The night was cold. He heard a large body rush past him in the ebon gloom. He circled back to the city, found the edge of the glass bricks and followed along until he located the space ship.

He checked it over, partly by feel, partly with a cautious use of matches. One of the two forward tubes on the bottom was half torn away. The number two stern tube was gone completely. The stern keel plates were sprung, at one place an inch apart. The ship would never get into the air again without a good deal of repair.

Hart Niles shrugged. He went inside. He thought he heard a strange sound in the dark interior of the ship. He struck a match and looked around, decided it was nothing but the rabbits they had brought along. He went over and fed them. How good a rabbit stew would taste!

When he thought of that, he left extra feed for them. He opened some canned food for the falcons, but he didn't kill a rabbit for them, because he thought stewed rabbit would be better than fried falcon.

Niles managed to get three oranges in each coat pocket, and started out. He took a last look around and dropped the match. His fingers closed on the door handle.

And some other fingers tightened on his neck!

The slimy feel of them shocked Niles Hart into ferocious action. For there weren't just ten fingers closing on his windpipe. It felt as though there were about twenty fingers and thumbs trying to throttle him.

NILES threw himself backward, hanging onto the door handle just long enough to pull the door open. He hit a body and went to the floor on top of it, but those strangling fingers didn't loosen. They were everywhere, on his throat, over his face, probing at his nose. Niles tore himself loose, saw the darker shadow against the oval of the door and tackled it head-first.

They both went through the door and landed in the sand. Suddenly there were more fingers pulling at him. Slimy fingers. Multitudes of them. More than had any right to be on human hands—or Glass-men's hands. They fought him silently in the dark.

Niles slashed out furiously and heard grunts. The fight seemed to be

growing. Skin was crackling and rasping around him. But that same tenacious sheaf of fingers was tightening on his throat. He was down. His face was in the sand.

Then he thought of the pistol. With his lungs bursting, Niles worked the pistol from his pocket, held it over his shoulder and fired past his ear.

The explosion deafened him, but the thing on his back went limp, and Niles squirmed out from under with his gun in his hand. The fight was over.

A light flashed on. The Glass-men had arrived. Niles shoved the gun into his pants pocket just before the light swung around to him. At his feet was a body.

He felt revulsion at the unhealthy white skin. Part of the body was covered with a crude garment of some woven fabric. He turned the body over with his foot. The thing was shaped like a man, but there wasn't much left of its face.

Niles' gaze went to the hands. He looked at them a long moment, counted the fingers and shuddered—for there were twelve white, snaky fingers on each hand.

Niles turned to the Glass-men.

"Let's get back," he said, and headed for the lights that marked the entrance of the city.

The Glass-men walked on either side of him, but he looked straight ahead. There'd be trouble enough now.

Back inside the city he faced Zudat, whose black eyes gleamed suspiciously—almost triumphantly—in his verdant face.

"What are you so happy about?" growled Niles.

Zudat's eyes roved over him, stopped at the bulges in Niles' coat pockets. He rapped an order. Two Glass-men came from behind Niles and explored his pockets. They took out the oranges and delivered them to Zudat. He scowled at them, his green face rasping. He turned them over and over, his suspicion increasing.

He snapped out an order, and Niles was marched down the street toward the Golden Dome. Far behind him came a Glass-man with the oranges, holding them gingerly as if they were bombs.

"Well," thought Niles, "this will be the first time a man is accused of sabotage for carrying half a dozen oranges!"

But he didn't feel easy, for he'd been captured outside of the city, where he didn't belong.

He was right back in the position he'd occupied eight hundred thousand years before, when he'd hidden from American immigration officials. But this time he was a prisoner. If they decided he was a spy, he would have no defense.

Another thought struck him—a thought that set his jaw in hard lines, that made his erect shoulders sag. If they decided he was a spy, they would consider Dr. Beckwith and Carole as spies, also.

CHAPTER IX

Threat to the City

THEY stopped at a Green Dome that gleamed in its glass depths like an emerald eye. Niles was taken before a man who wore a golden tunic, and whose green skin was beginning to turn yellow, whose hair was black no longer, but white.

This man spoke to him in a deep, firm voice. Niles understood some of his words and tried to answer. He knew from the man's bearing of authority that he was talking to Magrum, the Regulator, and he tried to give coherent answers. He explained why he had gone to the ship. He told Magrum the oranges were food, and Magrum appeared to believe him.

But at Niles' side, the green face of Zudat began to show a dull blue tinge. He stepped forward and shot words at Magrum. The Regulator's face turned into a slow frown. His brittle skin sounded like breaking glass. He started to speak sharply to Niles, but there was a sudden stir in the room and the popping of Glass-men's skin.

Perso and his yellow tunic appeared at Niles' side, his tall form facing Ma-

grum. Perso's face was serious.

"*Porme lom alee?*" he said. "Why is this man here?"

The blue in Zudat's face flared to a deep purple.

"Why are *you* here?" he demanded of Perso.

The tall Glass-man regarded him levelly.

"Remember," he said to Zudat, "you have been accused before of having atavistic instincts. Under our law, you will recall, no man with such instincts may be allowed to live in the City of Glass."

Zudat's face turned from purple to gray. He started to answer, but closed his green lips.

"It is necessary," Perso explained to Niles, "that every inhabitant of our city have complete control of himself and absolute respect for others. Anti-social tendencies have almost entirely been bred out of the race, but sometimes—"

He looked leisurely at Zudat, but the guard now had recovered his composure.

"I need you," Magrum said to Perso. "Our men have captured a Cro and I want you to question him."

He touched a glass rod. A door slid up in the wall, and three Glass-men came in, two of them holding the Cro.

Niles backed a step when he saw the prisoner. The man was repulsive, like a snake. His face was white, decolorized as if he had never seen the sunlight. Though he appeared to be a young man, his head was completely bald, and in his beady eyes was a menacing, defiant look. Niles stared at his hands. On each hand were twelve long, white, curving fingers and a thumb.

"He was trying to get into the city," one of the guards reported, "with two companions. One was killed; the other escaped."

"How was the one killed?" asked Magrum.

The guard hesitated, then pointed to Niles.

"This one used some kind of fire, probably electricity, that destroyed the Cro's face."

Magrum turned to Niles.

"Is this true?"

Niles nodded.

"Where is the instrument?"

Niles hesitated. Should he deliver the pistol to them? But he was saved. The guard spoke up.

"We searched the ground but found no battery," he said.

Niles was relieved. He understood now why they had not searched him from head to foot. They were looking for some cumbersome weapon that couldn't possibly be hidden in a man's clothes.

"Ask the Cro," Magrum directed Perso, "what he was doing near the city."

PERSO spoke to the twenty-six-fingered man in harsh gutturals. The Cro's eyes gleamed but he refused to answer. Perso asked more questions, calmly, unexcitedly, while the gleam in the Cro's eyes became a writhing thing, gathering itself to strike.

Perso prodded him steadily. At last, in answer to a soft but persistent question the prisoner's eyes glittered madly and he broke forth into an explosion of harsh, animal-like grunts that ended in a string of sibilants.

Perso turned calmly to Magrum, but Niles saw that Perso's breathing was faster than before.

"He says that soon Ytlair will attack us in force; that the Cros have some secret, terrible device that will render us helpless."

Magrum was silent for a long time. His face became heavy, and older.

"See if you can find out what this device is," he said finally.

Perso started another series of questions, but the Cro stared at the floor and refused to answer. Magrum directed Perso to ask him if Niles was one of their race. The Cro looked at Niles' hands, at his brown skin, tanned by sun and wind in the months he had been in America, and shook his head. Magrum motioned him away.

"Why don't you send some Glass-men to Ytlair and make peace with him?" Niles asked Perso.

The interpreter regarded him gravely.

"We have sent ambassadors, but none of our race has ever penetrated

the Cro stronghold and returned alive. We have tried to find out why they want our nitrate, but without success."

"From what this Cro said, it looks as if they mean business now."

"Yes," Perso said slowly. "I am afraid this means danger. There seems to be no solution but the extinction of one of our races."

"What about me?" asked Niles. "What is my status?"

Perso spoke rapidly to Magrum. The Regulator nodded. Perso looked straight into Niles's eyes.

"Magrum will release you in my custody," he said simply. "If you commit any crime, I shall receive the same punishment as you."

Niles glanced at Zudat. The guard was furious. His face was turning blue again. Niles shook Perso's hand.

"Don't worry," he said. "From here on I'll be a model prisoner."

Perso nodded, his neck emitting only a gaint crackling.

"And your possessions? Those round objects?"

"They're oranges—food."

"Food?"

"Sure. Want to try one? They're good. They have fine flavor."

Perso shook his head.

"All foods are alike to us. We lost the sense of taste many thousands of years ago."

He turned an orange over in his green hand, felt it with his fingers. He spoke briefly to Magrum. The Regulator nodded.

"You may have the or-ranges," said Perso.

Niles dropped them into his pockets and turned to leave at Perso's side. But a red light flashed in the glowing walls of Magrum's office. There was scuffling outside on the glass floor, a popping and crackling. Magrum snapped a command. The door slid up.

Three Glass-men were on the floor. They got up slowly, gripping a fourth man's arms. They stood there in the door, three men with green hands and faces holding a fourth man whose skin was neither green nor white.

This man had twenty-six fingers. He was bald. His eyes gleamed like those of a cornered snake about to strike. But he wasn't white. His skin was a mottled black.

MAGRUM'S face turned to a lighter, thinner shade of green until it was almost white.

Perso stood where he was. The three Glass-men, holding firmly to the Cro, did not move, but watched Magrum as if in dread while Perso shot questions at the Cro.

"This one," Perso told Magrum, "is the one who escaped when the other was captured."

"And he has been in the city all this time?" asked Magrum.

"Yes.'

Magrum's face became heavy.

"There will be many outbreaks of bitro," he said. "I am afraid we can fight no longer. This man has roamed through the Green Dome and has spread his condition to many, many Glass-men." He shook his head and his neck grated slowly. "There will be an outbreak of his condition now that may wipe out the entire city."

CHAPTER X

Niles Offers Help

NILES studied Magrum and Perso. He saw the deadly fear they had of the disease. He saw the Cro with his mottled skin. The man was certain to die quickly and unpleasantly, and yet there was a fanatic gleam of hatred and triumph in his eyes. This, then, was the purpose of the Cro's presence in the City of Glass. He had been sent to spread the dread disease.

Niles swung back to Perso.

"This is Ytlair's secret weapon," he said quickly. "He'll keep sending afflicted Cros in here until the disease spreads beyond control and wipes out the Glass-men!"

Perso stared at him. He spoke to Magrum. Magrum shook his head sadly.

"We are doomed," said Perso. "We have no way of stopping it."

Niles couldn't understand. Did these people give up so easily?

"Why don't you isolate the known cases and fumigate the city?"

Perso was puzzled.

"What do you mean, 'fumigate'?"

"Use sulphur, formaldehyde, hydrocyanic acid—anything to kill the germs."

"Yes," Perso said thoughtfully, "we know something of germs, of course. And I recall that Kasner has mentioned germs that carry disease. But through his methods diseases were eliminated, and we have not the personal knowledge that would enable us to combat them. Work like that, I should think, requires a great deal of specialized training."

"How about your physicians?"

"Their work is with hereditary and environmental factors, and with artificial means of adjusting the race to a silicon economy. They know nothing of illness, because there is none."

Niles' eyebrows twisted.

"Did you say a silicon economy?"

"Yes."

"Do you mean—"

"We are living now on carbon-based food, produced by intensive cultivation. But we are changing our body economy because we foresee the day when our supply of nitrate will be exhausted. According to present calculations, that will be approximately another half million years. By that time we expect to be able to subsist on something else."

"What is that?"

"Sand," said Perso. And at the astonishment on Niles' face, he smiled for the first time. "It isn't so strange. Silicon is much more plentiful than carbon. It is the same to the mineral world as carbon used to be to the plant and animal world. Your body is adapted by nature to a carbon economy. Ours is being adapted by necessity and by scientific means to a silicon economy."

"That's why your skin is brittle—like glass!"

"That is true. Of course, we had to work very gradually, and as yet our bodies don't assimilate thoroughly, even the small amounts we use."

"That is not what we do. Our laboratories use gamma-ray bombardment from uranium to prepare an isobaric form of silicon, which we take in small quantities. Then, through selection and scientific encouragement, we have adapted the once useless appendix to use sunpower and prepare a hormone that acts as a catalyst which reduces silicon to a usable fuel. The hormone acts the same as chlorophyll in plants, but I can't tell you *how* it works."

"Scientists were never able to determine how chlorophyll operated, either," Niles recalled.

"Then," said Perso, "the part of silicon that is not assimilated comes to the skin, the same as starch in plants."

"It sounds reasonable," Niles agreed. "And in the course of a million years or so, your bodies will become completely adapted to silicon?"

"We believe so. Our scientists work from light to light to find ways of speeding up the change."

"And the hormone catalyst makes your skin green?"

"Yes."

IT WAS all most interesting.

"Hm-m." Niles considered. "Seems to me you have an ideal life, all protected from storms and weather. Wait until the Florida chamber of commerce hears about this. And you have glass for everything. Glass that can be bent, sawed, hammered, nailed, that can be magnetized or made into mattresses. I think I'll stick around. There'll be nothing to worry about for half a million years."

"It would be ideal," Perso agreed, "if it were not for the Cros and the bitro."

Niles was alert.

"What about this bitro?"

"It affects Cros and Glass-men the same. They turn black and swell up, and finally burst."

"In plain words," said Niles, frowning, "you're in a spot."

"Yes," Perso said gravely. "Four Glass-men have developed this condition within the last period."

Niles was deadly serious.

"That means the three of us, too," he said reflectively. "If it affects the Cros and the Glass-men alike, we can't hope to be immune."

Magrum broke in.

"Ask the Cro why Ytlair wants our nitrates," he directed Perso.

Perso did, but Cro's mottled face set stubbornly. The Glass-man persisted, until finally the Cro began to writhe. He tried to break away, but his captors held him. His face turned blacker than his hands. Perso kept prodding him in that calm voice, until finally the Cro broke forth in a string of defiant gutturals.

Perso listened and turned to Magrum.

"He says that before thirty revolutions of the planet we shall be helpless from bitro, and that then Ytlair will attack us with all his men."

Magrum stiffened. He pressed a glass rod and spoke hurried words into a glass plate. He turned to the men who held the Cro and waved them away.

"They will develop the disease, won't they?" Niles asked Perso.

"Yes," said Perso, "but they will not infect the rest of the city. They will take the Cro into the desert as far as they can."

"But—"

"Have no fear. Their deaths will be quick and painless, away from the energy of the sun-power banks."

"But I thought the sun-power was to furnish a catalyst," Niles said.

"That is true. But in the process there is a by-product of energy, and through hundreds of generations our bodies have become dependent on it."

"These men will die, then?"

"Within a few hours," Perso assured him. "If the desert animals don't find them."

"But that's murder!"

"I am not familiar with the word. In the City of Glass, all personal interests are subject to the perpetuation of the race."

"Maybe this isn't such a bad society, after all," Niles said half aloud. "Here's one place where survival of the species is more important than survival of the individual. This is what I'd call a real democracy. Moreover—"

"I don't understand," Perso broke in, puzzled.

"Listen." Niles brushed aside the query. "I can show you how to control this disease. I can make a serum that will counteract it!"

Hope sprang into Perso's eyes. He talked to Magrum and turned back to Niles.

"How long will it take?"

"Several planet-revolutions. Perhaps eight or ten."

MAGRUM looked doubtful when Perso told him this.

"We will give him whatever help he requires," he said to Perso, "but he must be watched. It may be a trick."

There was more that Niles did not understand, until Perso interrupted.

"The Regulator wants to know about the instrument with which you killed the Cro."

"That," Niles said cautiously, "was nothing but a weapon."

"Weapon? You have used that word before."

"If you hadn't been so complacent all these years," Niles pointed out, trying to avert the subject while he considered it, "you would have weapons, too."

"True. But we did not want to waste our men and women in fighting."

"I've heard that one before," said Niles dryly. "But it's too late to speculate on it now. So you want a weapon?"

"If it will keep the Cros from invading our city."

"This weapon," said Niles cautiously, "is just the thing for that. It will kill at a distance."

Perso showed delight.

"That is exactly what we need. Otherwise the Cros have only to keep sending their afflicted members into the city until this—this disease, as you call it—wipes us out entirely."

"I think I can make the weapon," said Niles.

He was beginning to wonder if he hadn't taken on too much. He hadn't meant to, but here was Perso, who had defended him. He realized that he deeply wanted Perso's race to survive.

"I'll make one," he said, "if you need it. But why can't you just bar the entrance to the city? Isn't your glass strong enough to keep them out?"

"It is for a while," Perso told him

earnestly. "But there are over fifty thousand Cros. If they attack us all at once, with their stones and metal clubs, they will certainly be able to break in and destroy the city."

"You're right," Niles said soberly. "You wouldn't have a chance. So I'd better get to work. No telling when the Cros will be after us."

The atmosphere in the room was heavy with foreboding.

"We can provide you a laboratory," said Perso.

But Niles was thinking.

"Now, hold on. There must be other people on Earth, some who have scientists who would be more familiar with your conditions. It would be better—"

"The City of Glass," Perso said solemnly, "has two thousand five hundred men and women—the only real human beings left on Earth. And our one aim is to perpetuate this species. That is the end toward which all our effort is directed."

"Are the Cros the only others?"

"Not entirely. There are a few small groups scattered over the Earth, but each has evolved separately, until no two are of the same species."

"Are they all advanced like the City of Glass?"

Perso shook his head sadly.

"Some of them have science of a sort, but all groups we have discovered have failed to develop control of the emotions or respect for anything but force."

Niles snorted.

"Sounds familiar. Do they all live underground?"

"Yes," said Perso. "Partly as a result of their heritage, partly from necessity. About the year four hundred thousand there were twelve hundred years of tremendous sunspot activity, and the only survivors of the terrific storms were those who took refuge in deep caves."

NILES frowned in thought.

"Does that mean that you people have lived here ever since?"

"Yes. For nearly half a million years we have lived in this city. Conditions outside have remained so unfavorable that we agreed to limit our population and to devote all our energy to preservation of our species, in the hope that some day we can again resume our place upon the surface. That hope," Perso said sadly, "has been all but forgotten except in our archives."

"Haven't you tried?"

"About fifty years ago we established a colony a few diameters from here, but that was a mistake—a serious mistake."

"Why?" Niles wanted to know. "Couldn't you protect yourselves from the storms, after all this time?"

"We had worked out methods of protection from the elements and from the savage beasts that now populate the world. But—"

"Animals?" asked Niles. "Then there must be vegetation."

Perso shook his head.

"There are no plants, but there are animals that have adapted their bodies to live on power from the sun, and others that live on what moisture they can find. They can no longer eat flesh, but the age-long, unsatisfied instinct to kill is still deep within them. However, they are not our worst enemies."

Niles frowned.

"What is your worst enemy?"

"The Cros. They live in a huge hole about a hundred diameters toward the sun from here."

"Carlsbad Caverns in New Mexico," Niles thought reflectively.

"They have always outnumbered us greatly and they have attacked us at every chance. So, some eighty thousand years ago, we gave up all attempts to live outside. Under the leadership of Kasner, our greatest scientist, we retired permanently to this city. And except for some minor adventures, we have been here ever since."

"Couldn't you whip them? Couldn't your scientists make weapons?"

"Weapons?"

"Yes. Something to fight back," Niles declared impatiently.

"Fight back? I do not understand."

"Well, look," said Niles. "When one man attacks another in the city, the other one fights back, doesn't he?"

"We don't fight," Perso said simply. "It is a waste of energy."

Niles was nonplussed.

"If I hit you, what would you do?"

"Why should you hit me?" asked Perso. "I have no intent of harming you."

"You mean," asked Niles incredulously, "that nobody harms anyone else?"

"Very seldom, because any who show outcroppings of the old combative instinct are banished from the city."

"Then," Niles decided, "you don't know what a weapon is!"

"That is true. Kasner said our only hope of preservation was in retreating to our city."

"Have the Cros tried to penetrate the city in force?"

"They didn't for a long time. But recently a new leader named Ytlair has gained control of the Cros. He is directing them in systematic efforts against us."

"What do the Cros want?"

"Our—" Perso hesitated, searching for the word. "Our nitrates. Kasner had us build the city over a great deposit of sodium nitrate, so we should have material to raise our plants for food."

"Why should the Cros attack you for nitrates?" asked Niles. "Aren't there deposits all over the Earth?"

"No. This is the only deposit. We have explored thoroughly, because without nitrate we could not live."

"Couldn't you eat these sun-power animals?" Niles suggested.

"They are not edible."

"It seems," Niles reflected, "that the warring nations in the twentieth century must have exhausted all the nitrate deposits to provide explosives. But listen, don't you ever go outside?"

"We send out expeditions on glass sleds occasionally for the small supplies of metal required in our work. But that is hazardous, and our principal working material is sand. That is why everything is made chiefly of glass."

"Well, well." Niles paused. "It looks as if it's up to me to help you fight these Cros."

Perso seemed relieved.

"What material will you need?" he asked.

CHAPTER XI

A Deadly Serum

HART NILES paused and began to enumerate.

"Let's see."

A thousand test-tubes. Beakers. Hypodermic needles. Glass slides. The Glass-man with microscopic eyes to help him.

"How about iron?" he asked finally.

"We have small amounts for laboratory use," Perso told him.

"What do you mean by 'small amounts'? A thousand pounds?"

Perso's eyes flickered as he translated pounds into *libas*.

"No," he said. "Ten or fifteen pounds, perhaps. But we have glass—"

"Will it stand a sudden strain?"

"Sudden—yes. We can make it to withstand any amount of sudden shock. It cannot be used for sustained heavy work such as structural supports, but—"

"Then for the weapons," Niles said quickly, "I shall want twenty-five bars of your best glass, each as long as my hand and with longitudinal holes the size of this." He held out a .38-caliber bullet. "Can this material be ground to exact shape?"

"As much as you need. We use a good deal of it in our electrical controls."

"Sulphur?"

"That is plentiful."

"I must have also as much nitrate as the weight of a man."

This request made Perso hesitate. He spoke to Magrum. The Regulator turned grim. He asked a question.

"He wants to know if there is anything else you can use," Perso said.

Niles shook his head. Magrum studied him and touched the glass switch-rod. Faces appeared on the visiscreen. Magrum spoke to them.

"He is calling the Council in the Golden Dome," said Perso.

"What's the matter? Is there a shortage of nitrate?"

"No. It is only that nitrate is essential to our life. We cannot waste it."

"Hm-m," said Niles.

Magrum finished his conference. He turned to Niles and nodded gravely. He issued orders into the glass plate.

"All the material you have asked for will be furnished," Perso said in a low voice. "Your laboratory will be in the Red Dome."

"Good. Let's get started. I want to talk to the physicians about the disease."

From the doctors Niles ascertained that bitro had an incubation period of ten to twelve days, and that it affected Cros and Glass-men alike. It was highly infectious. In one instance it had been caught when a Glass-man had sat in a chair where an infected Cro had been.

Niles found out also that the first symptom in the case of a Glass-man was the failure of his system to utilize sun-power.

Niles obtained a hypodermic needle, some culture tubes, a pair of flexible glass gloves as thin as paper, and took his leave.

In the pink glass apartment, Carole and Dr. Beckwith were finishing a meal of the Glass-men's vegetables.

"We've saved yours," Carole said softly, "and I've kept it warm."

"I'm sorry. No time to eat. There's work to do."

Niles was startled at the intensity in his own voice. The old eagerness for work had come over him, unnoticed.

"I wish we could get somewhere so I could go ahead with my experiments," Beckwith complained.

Niles left, but Carole followed him outside.

"Do you think," she asked in a small voice, "that we can leave soon? I—this tasteless food—and that green-faced man is trying to make love to me!" She shuddered.

NILES caught her firm little shoulders.

"If Zudat isn't careful I'll give him a taste of atavistic treatment," he said sharply.

He hadn't intended anything else, but he was drawing Carole closer. The touch of his hands on her warm shoulders, the loneliness in her brown eyes— His arms went around her and he kissed her hard. She let him hold her for a moment, then he drew back quickly.

"I love you, Carole," he said.

He wheeled and was gone. There was work to do. He had to find the dead Cro, somewhere out on the desert, and draw some blood from the body to prepare a serum.

The desert was just turning light. Niles found tracks in the sand. Dragging tracks, as if the Glass-men had had to pull the Cro away from the city.

The sun came over the eastern edge of the desert. The black sun-power banks of the city disappeared behind the sand dunes. The desert began to steam. Still the tracks led on. The Glass-men seemed to be carrying the Cro now. The disease must have made him unconscious, but the Glass-men were taking him as far as they possibly could from the city.

Niles came across a strange spot. Outlines of skeletons lay white against the sand. He stopped to examine them. They weren't painted; they were like a design set in a mosaic. He picked up some of the white stuff between his thumb and finger. It felt gritty, like crushed bone. His face tightened as he studied it, then he went on slowly.

He found the Cro at last. The body has exploded and deflated. The Cro was no longer a menace to the City of Glass, but three pairs of footprints led on into the desert. The steps were short now, with the ebbing of the Glass-men's energy, but the tracks went on and on, as far from the city as they possibly could.

Niles knelt in the hot sand by the Cro's body, avoiding the marks made by it. He drew on the glass gloves and filled ten tubes, sealed them over, closed the air-tight glass lid of the case. He threw away his gloves and the needle.

He stood up and looked around him. There was no movement anywhere in the desert. Only the sun edged higher in the sky, and the heat rolled over the desert in smothering waves.

He looked at the tracks leading over the next dune and had an irresistible

desire to follow them. He walked through the sand to the top of the hill—and stopped.

A quarter of a mile away was a small group in the sand. He shouted and waved to them. He thought he saw movement of the bodies, but they didn't respond to him. He started toward them—three men dying in the desert for the future of their race—but then he caught himself, shook his head slowly. His jaws tightened. There was nothing he could do for them. He turned slowly and started back through the burning sand.

Niles reached the city and found the Red Dome. Up moving stairs he went, to a big room under the dome. The walls were lined with benches and glass shelves. He found row after orderly row of sparkling test-tubes, Crookes' tubes, beakers, burners, apothecaries' scales, mortars and pestles, stands and dropping funnels.

They shone under the soft light. It looked as if all the chemical equipment of the city had been turned over to Niles. He picked out a place to work, put on glass clothes and prepared to divide the serum in the tubes.

BUT the broth Niles had requested hadn't arrived yet, and he decided he would need a filter for his mouth and nose. He went down to the glowing street and took a magnetic car to the Golden Dome. He alighted before the dome and started to enter the big glass doors. But a dozen Glass-men rushed before him and pushed him back to the street.

"My, my," said Niles aloud. "Must be about ten tons of uranium in there."

The silence of the city was broken by the bristling and crackling of brittle skin. Red lights were flashing. Three more squads of Glass-men converged on Niles, and three minutes later he was facing Magrum. Perso came running in, his face pale green.

"You must not try to enter the Golden Dome," he said, his face crackling with anxiety.

"But I need more equipment!" Niles protested.

"It is better to call the dome on the visiphone," Perso said gravely.

Magrum spoke sharply to Perso. There was some argument, but Perso resisted and finally Magrum gave in.

"Please, my friend," Perso told Niles when they were outside, "do not approach the dome again."

"Why?"

"I cannot tell you. I can only say —nothing."

The new material was waiting for Niles in the laboratory, and he went to work in earnest. Within half an hour he was absorbed, preparing cultures and labeling them. He discovered then that he needed a watch. He had just dipped his glass gloves into a hasty preparation of iodoform when the sliding door at the end of the laboratory lifted and he heard short, quick steps.

"Carole!" he exclaimed. "My dear, why are you here?"

She came across the glass floor of the long room, her red-and-green skirt swinging with each sure step.

"Hart Niles," she said, coming close to him, "you need someone to help you."

He stared at her.

"It's dangerous," he said finally. "It's one of the most deadly diseases ever known on Earth."

"All the more reason," she insisted, "why there should be two of us."

She came a step closer, but Niles backed away.

"Be careful," he warned.

She stopped. Her eyes were large as she looked into his.

"Hart Niles, you told me this morning that you loved me—but you didn't ask *me* how I felt about *you!*"

Niles stepped back, frowning.

"Well, I—you—I'm not the kind of a man for you."

"No," she said, "you're not. You're the *one* man for me! You're risking your life to help these people who aren't even of your own species. What's good for you is good enough for me—and I'm going to help." She looked around quickly. "Now dig me up some clothes so I can get busy."

He studied her, the poise of her capable chin, the tenderness in her eyes, the purpose in her firm shoulders.

"You're the one I need," Niles said

softly, and went to a glass cabinet. "I had to have a steam cabinet made," he explained. "It isn't a finished product, but it's efficient—I hope."

HE struggled to forget that this girl was Carole. From now until this crisis was over, she was his helper—an efficient one, he could see quickly, for she took in the array of tubes with a businesslike glance.

"Where do I start?" she asked gravely.

"You can help me divide this broth. We've got to produce, in not more than a week, enough serum to inoculate a hundred Glass-men. We'll use Pasteur's first method."

"I know," she said firmly. "We'll prepare full-strength culture and attenuate separate quantities of it with heat, so that after seven days the portion longest exposed will be very weak. Then you'll start inoculating with the weaker serum first. Then the six-day serum, the five-day, and so on."

Niles was wide-eyed.

"What do you know about it?" he asked.

"I?" Carole asked primly. "I studied bacteriology."

"Well, I'll be doggoned!" said Niles.

The rose glow from the walls lighted the girl's cheeks, and he started toward her. Then he remembered.

"All right," he said briskly. "Start on this rack. Label them. We'll call this—what day is it, anyway?"

"About June fifteenth.

"Call this June fifteenth. We'll start from there." He chuckled. "A day or two won't make much difference." He put the mask over his face. "But you must be very careful." His voice was a little muffled. "Don't get even a tiny drop of the culture on your skin."

She looked through the slit in her mask.

"Is it that bad, Dr. Niles?" she asked archly.

"It is highly virulent." His voice was crisp. "Any kind of direct exposure will be fatal."

CHAPTER XII

First Attack

THEY worked long hours on the cultures, bringing them up to full strength, subdividing them, drying them out, labeling, labeling, labeling. Niles ordered five thousand more test-tubes.

They worked side by side for long hours. Carole was as efficient as she was lovely. Magrum visited them the second morning and asked many questions.

The man with microscopic eyes came in and peered for hours through his immense pupils at the cultures Niles prepared for him. The Glass-man isolated the bitro germ and drew a picture of it with chalk on a glass plate, his enormous eyes growing even bigger and rounder as Niles explained the nature of the germ.

In these hours Carole and Niles were careful to maintain a professional attitude toward each other. But on the second afternoon, when Zudat came up in his bright blue tunic and hovered over Carole, Niles snapped at him.

"You're bothering us."

Zudat glowered, but Niles brusquely told him to let them work. Zudat left reluctantly.

"He ought to get the disease," Niles growled to Carole, and she smiled.

That evening Perso took Niles to the Peach-colored Dome. With an air of secrecy he was admitted to a huge inner room.

"Our most profound scientists have been at work for a long time," Perso said proudly, "and have constructed a weapon."

"A weapon?" repeated Niles. "But I thought—"

"Perhaps you can suggest improvements," Perso said. "If our weapon is efficient, you will be able to devote all your time to the serum."

"Well," said Niles, skeptical, "let's see it work."

He couldn't see how these people, with no experience in war for half a

million years, could possibly develop an adequate weapon. There was a possibility, of course; they might have something entirely new. But he was disappointed when he saw it.

The "weapon" turned out to be a very simple catapult, with a carriage running along a glass slide propelled by an elastic glass bow-string. They put a glass ball the size of a man's fist in the carriage, and a Glass-man pulled the carriage back and locked it. Another Glass-man pushed the entire contraption around on the floor to get it located.

"You see," said Perso. "We can change direction with it."

"Yes," said Niles. "But can you hit anything?"

They set up a six-feet-square sheet of glass at the other end of the room. The man holding back the carriage squinted along the track and moved the catapult around for a full minute. Then he released the carriage. The glass ball hit one edge of the target and tore a hole in it.

Perso turned proudly to Niles.

"You see! It is powerful."

Niles shook his head sadly.

"It won't do, my friend."

"It will certainly kill a man," Perso insisted.

"Sure," Niles retorted, "if you hit him. That target's only forty feet away and you almost missed. If that were a Cro, he'd be down here before you could load a second shot. And what would you do against ten thousand? No, it isn't enough. You've got to have something better than that."

"But Magrum likes it."

NILES snorted.

"I don't give a hoot what Magrum likes. I can prove to him it won't do at all. I'm going to work on this weapon business myself. How about the glass rods?"

"We have them ready," Perso said doubtfully.

"Is there another room in the Red Dome where I can work?"

"I'll ask Magrum."

"You'll play ball with me!" Niles snapped at him. "Get the stuff in that room and I'll work on it tonight. We're fighting a war!"

There was authority in Niles' voice. Perso studied him solemnly.

"I will see that it is done," he said.

"And I want a chemist and a couple of men who know how to work with glass," Niles added.

"Very well," said Perso.

Niles wrote out a list of material he would need. He had a qualm when he thought about how he was putting Perso on the spot, but there was little time, and Perso had great influence with Magrum.

The Glass-men were efficient. By the time Niles reached the Red Dome the material was there. And three men were waiting for him—a Glass-man with long, strong fingers, and another with a chest twice the size of Niles'. The chemist was a thin, intelligent-looking fellow.

"What are you?" he asked the big-chested man.

"I'm a glass-blower," the man said. "I can make anything you want, in rough form. This man finishes it up."

"Good. I'll show you what I want."

Niles drew the pistol from his pocket. He found an instrument that resembled a screw-driver and took the gun apart. He showed them the individual pieces. He swallowed when he came to the mainspring. He had forgotten about that. But the big-chested man tried it between his thumb and forefinger.

"We can duplicate that," he said, unconcerned. "We have a special glass thread that acts in the same way."

Niles was dubious again when he came to the shell casing, but the glass-worker tested it for strength and hardness and announced he could produce a glass case exactly like it.

Apparently there was little in the way of small metallic parts that could not be duplicated by the thousands of years' experience of the Glass-men. They took careful measurements and went to work.

"In one revolution of the planet," they promised, "it will be finished."

"That's fast work if you can do it."

Niles started the chemist with mercury and nitric acid and alcohol.

"Funny you boys haven't learned to drink that stuff," he said of the alcohol.

The nitrate, Niles found, was easy to work, and before long he was mixing potassium nitrate, sulphur and charcoal to make black gunpowder. He went up to check on Carole's work and sent her off to bed. When he returned, the chemist was precipitating the gray crystals of mercuric fulminate.

Twenty hours later, astonishingly enough, the glassworkers finished putting together a glass duplicate of Carole's .38-caliber revolver. Niles tried the action and found that it worked. He complimented the men in their own language.

They gave him half a dozen cartridge cases, which they showed him could be crimped the same as brass. Niles poured fulminate into a hole and plugged it up. He filled the bottom half with some of the black powder he had made, put in a glass bullet and crimped the edges.

"We'll try one of the bullets in my pistol first," Niles said.

HE PUT the cartridge in the chamber, spun it into position, threw the chamber into place. He held the gun far from his face, aimed at a bag of sand and squeezed the trigger. Nothing happened. The Glassmen looked blank.

Niles frowned, then he ejected the glass shell and looked at it. His face cleared.

"Look here, you fellows made this of unbreakable glass all the way around. This spot in the center must break easily."

Three hours later they presented him with some new cases, with percussion caps set exactly as they were in his own cartridges.

"My error," Niles said. "I should have had more confidence in you from the first, instead of trying a shortcut."

He put another glass bullet in his pistol and squeezed the trigger again. The explosion shocked the Glass-men. They jumped for the door, their skins rattling a protest. But Niles, with success warm in his face, called them back. He was looking at the cartridge case. It wasn't even swelled.

Niles nodded. He examined the bag of sand which had served as the target. It was punctured in the middle.

But he still had misgivings when he tried a cartridge in the glass revolver. He held his breath, expecting a shower of glass in his face—but didn't get it. He let out his breath in a long sigh of relief. The glass pistol worked as well—or almost as well—as his own.

He appreciated then the skill and knowledge of perhaps a thousand generations of glass-workers, and the amazing accuracy of their tools.

Perso arranged a test before Magrum, and the Regulator was pleased. He assigned Niles enough men to turn out twenty revolvers and a thousand cartridges a day.

Then at last Niles returned to the bacteriological laboratory. Carole was sweeping up some broken glass.

"You're tired," he said gently. "You're getting circles under your eyes."

[*Turn page*]

"So are you," she said. "I can't stop while you are still working."

"Go home and sleep a few hours," he insisted.

"But there isn't time." Her small white hand swept the room. "The cultures. T h e r e are thousands of tubes—"

"Never mind." He took her by the shoulders and turned her around. "Four hours, at least," he ordered.

She dropped her glass apron on a bench.

"Look out for Zudat," she warned him. "He doesn't like you. He'll try to do something to hurt you."

Niles snorted.

"That green-faced Quisling?"

The tubes had multiplied incredibly fast. He worked steadily until morning. Then Carole returned and sent him to sleep. He awoke in the afternoon, checked the pistol-makers, showed a Glass-man how to load cartridges and went upstairs.

"Our ordnance department is going full blast," he told Carole. His lean brown hands tilted her face to the light. "And we've got a beautiful brown-eyed bacteriologist." His fingers left her face reluctantly. "But" —his face drooped—"no eggs for breakfast. No oatmeal. Not even hot cakes. I'm so hungry for real food I could—" He hesitated.

"Eat glass," she suggested. Her eyes were twinkling.

He looked at her and rubbed his hands together.

"Darn near," he said.

AT MIDNIGHT they both stopped for sleep. And at seven o'clock the next morning Niles was called by Perso.

"The first twenty guns are ready."

"And ammunition?"

"Plenty of fire-power." Perso was getting into the spirit of things, Niles thought. "That's fine," he said. "Get twenty men up there and I'll teach them how to handle that artillery."

The men were there when Niles reached the Red Dome. He arranged silhouette targets against sacks of sand, showed the men how to load their pistols and how to aim them.

"It'll be crude," he told Perso, "but it's be bloody, too. They won't all miss."

But Niles had forgotten that the Glass-men were selective above all. Perso had chosen twenty men most suited to the use of a pistol, and though they were nervous at first, they soon straightened out and began to hit the targets.

"Boy, oh, boy!" said Niles gleefully. "These fellows would make a fine army. I wonder if the Cros need protection from the dastardly Mammoth Cave people in Kentucky."

Perso stared at him, trying to figure it out, but Niles laughed.

"Skip it, pal. We're all— *What's that?*"

The white glow of light from the walls changed suddenly to red, back to white, red again.

Perso started to run.

"The Golden Dome!" he cried.

But Niles shot after him and seized his arm.

"Find out what's the trouble!"

Perso looked at him an instant, then ran to a desk, turned on a televisor. He shot words into it, then listened. He turned haggardly to Niles.

"A hundred Cros have overcome the guards at the entrance to the city. They are marching toward the Golden Dome!"

"Okay," Niles said coolly. "We're between them and the Dome, aren't we?"

"Yes, but—"

Niles glanced at the box of cartridges.

"Four hundred—twenty r o u n d s apiece. That's plenty. Here"—he passed out cartridges to the twenty marksmen—"load your guns. Keep the rest of the cartridges for reloading. Now—follow me!"

"What are you going to do?" asked Perso.

"I'm going to find out," Niles said grimly, "whether your Uncle Niles stays here to eat fried tripe for breakfast, or whether he gets skidded out on his ear!"

He led the men at a hard run to the street up which the Cros were coming. The soft quiet of the city was shattered by the invaders' hoarse yells. Niles stopped his green-faced marks-

men at a corner.

"Listen to me! Six of you hide in the doorways on each side. Four stay here with me. When the Cros get close enough I'll shoot once. Then all of you shoot at the Cros. And try to hit them!"

The Glass-men scattered. In thirty seconds the ambush was ready. Niles waited in the middle of the street. The band of Cros reached the next corner and yelled derisively at him. Niles stood calmly, studying the ranks of unhealthy white skins, noting the hands with their great flanges of fingers.

THE Cros were not in order but they were closely packed. They poured across the intersection. They swarmed up the street to the middle of the block, but still Niles didn't move. He wanted them to get close enough so his Glass-men would hit some of them.

An iron club hurtled through the air at him. He let it clatter by on the street, waiting. When the first rank was forty feet from him he raised his arm, with the revolver held in his hand.

"Stop!" he commanded.

As he shouted, he hoped his snipers hadn't forgotten they were supposed to shoot at his first shot.

The Cros came on. Niles aimed at the leader and fired. The Cro staggered as if he had been struck. Blood flowed out on his chest and he shrieked.

The next instant seemed ages to Niles. But he had forgotten that the Glass-men in no sense were fools, but highly intelligent people and readily adaptable. Before the Cro fell to the ground, the four men with Niles were firing, and the roar of black-powder explosions rolled around the cul-de-sac at the end of the street.

Red fire spouted from twenty guns, and glass balls tore through hairy white torsos. Hoarse cries came from the Cros. Niles fired again and the Glass-men began to shoot in earnest. By the third volley a dozen Cros were down and more were injured.

Niles advanced on them with the four men at his side, shooting steadily. That is, the four were shooting steadily. Niles was only pretending to shoot, because he alone of the defenders had failed to bring extra ammunition.

The Cros began to break and started back up the street to the exit—slowly at first, then faster.

"They don't even take *their* wounded," Niles observed.

He followed with his twenty marksmen, cautioning them to fire in turn, but only four or five at a time, so their ammunition would last until the Cros got away. The invaders fought one another to get through the broken doors, shouting and cursing, screaming when they were hit by glass bullets.

The last Cro leaped up the steps, turned and threw his club at them defiantly, then wheeled toward the doors. But a Glass-man's bullet caught him as he whirled. He spun around and around, his eyes staring from his white face, then toppled over the edge of the platform and landed on the glass walk with a crunch. His twenty-six fingers closed and spread convulsively.

Niles gathered his snipers and commended them. Then he got Perso off to one side.

"We've licked them this time, but they'll be back for more. We'll need more guns and more ammunition—lots more ammunition! They won't be so easy to stop the next time."

"I am afraid you are right," said Perso.

"Listen. We've got to make a lot of cartridges—thousands and tens of thousands. I want ten tons of nitrate sent to the Red Dome."

"Ten tons?" Perso said gravely.

"Yes. Ten tons! The weight of a hundred men! And don't let Magrum talk you out of it."

It was two o'clock in the afternoon. Niles went to the laboratory and had a lunch of tasteless vegetables with Carole. Then he was called to the televisor.

"Magrum wants you," said Perso's image in the glass.

NILES went to the Green Dome. White-haired Magrum sat at the

head of a table. Four other Glass-men sat around the table and studied Niles curiously.

"We have noted your success in repelling the Cros today," Magrum began in his deep voice, "and we are very thankful."

Niles wet his lips and waited.

"We have also your request for a large quantity of nitrate to make more ammunition for your—what is it—pistols."

"Yes," said Niles. "We must get up a good stock—"

"I am sorry," Magrum interrupted. "The regulating body has voted unanimously that this request must be refused."

"Refused?" Niles felt as if he had been struck on the head with a hammer.

"Yes. We have agreed that no more nitrate, not even a small amount, may be used for your purposes."

"Not even as much as I had before?" Niles asked slowly.

"I'm sorry," said Magrum. "Not a single unit of weight. It is the regulating body's decision."

Niles was stunned. He felt like a trapped animal. He was hurt—and bewildered. He looked around the table. There at the foot was Zudat, grinning evilly.

CHAPTER XIII

Powder vs. Proteins

HART NILES controlled himself as he looked at Zudat. Zudat was an ordinary garden variety of selfish man. He was willing to risk the future of the City of Glass and of his own species, rather than let Niles get the credit for saving them. How big a part did Zudat's designs on Carole play in this game of treachery?

But Magrum in his golden tunic was rising slowly, his brittle skin protesting.

"I am sorry, Niles." His voice was kind. "We have decided the continued future of the race is more important than our immediate safety."

"But—"

"There are perhaps some things about our way of life which you do not understand," Magrum said kindly. "You've never gone past the Golden Dome to the other side of the city, have you?"

"No, I haven't."

"Then come with me."

Ten minutes later Niles stepped up to Magrum's side and stared out over a great slope of sparkling glass and green plants. It stretched away for half a mile to the wall of the city, and then sloped upward to meet the black sun-power blocks that formed the city's roofs.

"Holy cow!" Niles breathed. "Millions of plants—all in glass cases!"

They ranged back row after row and upward tier upon tier. Transparent cases filled with flourishing plants. Acre after solid acre of sparkling green.

"Here," said Magrum, "is the vital portion of our food supply. Silicon, you know, as yet furnishes only about one per cent of our body needs. The process of adaptation, even with all our advanced work, is slow in reaching a point of practical use.

"Out there"—his arm swept the desert outside—"are incalculable quantities of sand with its silicon component. But our bodies will accept only a few grams a day, and even most of that is not assimilated. It comes to the surface and is eliminated through the skin. That is why our skins have this peculiar brittle quality."

"But these plants—"

"We have eliminated all but a few species. Into those we have bred all the essential elements."

"Vitamins, you mean?"

Magrum smiled.

"That is an archaic term. Your vitamins and calories and carbohydrates and proteins are all part of a complex whole that differs with each plant."

"You seem to have advanced hydroponics to its ultimate."

"Yes. We grow the plants artificially with light, heat, water and a chemical food made of potassium phosphate, calcium nitrate, boric acid crystals, and the sulphates of mag-

nesium, ammonium, iron and manganese."

"And no dirt at all?" Niles asked.

"We use a coarse sand to support the roots, but nothing in the way of soil."

"They grow fast, too, I imagine."

Magrum smiled.

"The plants you call potatoes require three months to mature in the desert. Here it takes only two weeks."

Magrum bent over a glass case, pushed aside the vines and showed Niles the liquid in the bottom.

"You can understand our complete dependence for survival on ourselves and our own resources. We have none of the natural vegetation that once covered the Earth."

"I see," Niles said.

MAGRUM went on.

"The essential element is nitrogen, which we must obtain from the vast deposit that underlies this city to a depth of nearly a mile. We know the exact extent and purity of the deposit, and have gauged our use of it accordingly. For at our present rate of adaptation, it will take three hundred and fifty thousand years more before we can live entirely on silicon."

"And you calculate—"

"We *know* that our supply of nitrate will last for exactly that length of time. If our rate of adaptation should slow down, we would be forced to reduce our population. You see, therefore, why we guard our supply so closely. "If we permitted you to use the nitrate to make gunpowder, we should be endangering the existence of our species. That we cannot do."

Niles' brows knit in a thoughtful frown.

"I understand," he conceded. "As time went on you would require more and more gunpowder to fight off the Cros, until the drain would be too great."

"That is it precisely."

"There used to be a great many deposits of nitrate over the world," Niles said slowly.

"They do not exist now. We have neglected no possible source. This is the only remaining supply of fixed nitrogen on Earth."

"But plants can fix nitrogen."

"That is true, but they must be in the open on normal soil. It would require tens of thousands of acres of ordinary soil to produce the food raised here in a comparatively small area." Magrum's jaws tightened. "There is not that much soil in all the world," he said with finality.

"I wonder what happened to the big nitrate deposits in Chile and Australia."

"We have some records of those, but they seem to have disappeared about the time you left the Earth."

"Oh," said Niles. "That means they were completely exhausted by warring nations."

"Exactly what we are trying to avoid," Magrum pointed out shrewdly.

Niles studied him and then offered his hand.

"You are right," he said soberly. "You are properly the Regulator of this city. I am sorry for interfering."

Magrum returned to the Green Dome and Niles went slowly to the pink glass apartment. Dr. Beckwith was fussing with some chemicals in glasses on a table.

"I wish you'd get me a laboratory, so I could go ahead with my work," he said peevishly.

His parted beard bobbed up and down as he examined the glasses.

"It looks," Niles said wearily, "as if you can have my arms laboratory in the Red Dome."

He sank into a chair. The soft glass cushions were relaxing. He started to talk to Beckwith, but in reality he was arguing with himself.

"We've been making black gunpowder, which is out. Smokeless powder is from cellulose, again a nitrogen base, which would require fertilizer. So that's out. Nitroglycerine also requires fixed nitrogen—and it isn't even a propellant. Same for the fulminates.

"There is the ammonium salt of hydrazoic acid, which is not an organic compound, but even in the days of specialized war they never developed it to the point of practical use.

"Oxygen and liquid air can't be controlled. Uranium is a powerful explosive, but too scarce. So what?" he asked disgustedly.

BECKWITH jumped.

"What's that? What did you say?"

Niles drew a deep breath.

"In my quaint way, I was just saying that we've reached a bottleneck." He got up, feeling very tired. "I'd better get back to the serum factory."

He sent away the men making pistols and cartridges, but took the chemists upstairs to help Carole. Their work was becoming mountainous. At midnight they went home.

Niles pondered the problem of a weapon but drifted into an uneasy sleep. They ate their usual tasteless breakfast.

"Boy, how I could go for a luscious stack of hot cakes—twelve high!" said Niles.

"With molasses and butter?" Carole smiled at him across the table, her brown eyes soft with understanding and sparkling with humor.

"With axle grease and the trichloride of arsenic—if the hot cakes were underneath." Niles grinned at her. "And if you were across the table."

But down in the City of Glass a grim thing was happening. Niles discovered it when he saw a group of fifteen grave-faced men and eight golden-yellow women in varicolored tunics walking up the center of the street toward the city's exit.

Perso was at the laboratory.

"Seven men showed one of the first symptoms of bitro when their systems refused their morning ration of silicon," he explained. "The others were close enough to these to have been infected."

It hit Niles like a blow. Twenty-three human beings had gone out to die in the desert. They were brave. There was no crying, no resistance to the regulations. For the race must go on.

But the eight women in the group reminded Niles that all these people had others who loved them and who would grieve for them. He *had* to get that serum ready!

"Others may have been infected unknowingly," said Perso. "Do you think you can help us, Niles?"

"I've got to," Niles answered grimly, and went to work.

He started checking and testing, with Carole, silent but efficient, at his side. The Glass-man with three-inch pupils came in wearing his orange tunic, and Niles put him to work examining the attenuated cultures. By noon Niles made a terse announcement.

"There's enough to start," he declared.

"You won't give it without testing first?" asked Carole.

"Of course not. Do you think I—"

"How are you going to test it?"

"Why, on—oh, Lord!" Niles groaned. "We haven't any guinea-pigs."

"No, but—wait, Niles! The rabbits—father's rabbits!"

He looked up. His eyes widened.

"Sure! That's it. Those rabbits. I'll go after them right away!"

But the Glass-man with the huge eyes dropped a demolition bomb on Niles' eagerness.

"Do these—these rabbits," he said, milling over the word as he said it, "have the same physiological structure as we Glass-men?"

CHAPTER XIV

An Unsuspected Hero

NILES stared at the man in the orange tunic and then sank onto a stool. He rubbed his jaw with his lean bronze hand. Incongruously he noticed, for the first time since he had left on the space flight, that he was still wearing a beard.

He'd better see Perso and get something to cut his whiskers. It would be a glass razor, probably. He chuckled to himself, thinking of all the jokes that had been written about a man's shaving with a piece of window pane.

But he had to see Perso about something else. He pulled himself together and got up.

Two hours later Niles sat slumped in a glass chair in the pink apartment. On the visiphone screen he watched

Magrum select one hundred Glass-men to form a test-inoculation group. Carole, at Niles' side, smoothed out her skirt and pulled her legs under her, watching the screen and Niles alternately. The old Glass-man with microscopic pupils, whom Carole affectionately called Big-eyes, sat behind him.

But Niles' eyes never moved from the screen. He saw Magrum, in his golden flexible-glass tunic, step onto a platform.

"Glass-men," he said, and his deep, vibrant voice rolled from the screen, "we have to select one hundred of our number to undergo a test. One of our visitors has devised a method of protection from bitro, and it is necessary to inoculate first a small group, so that we may observe the results.

"Since this group must be representative, and requires no special qualifications, we will choose it by chance. I have ruled, under Kasner's Law Number Four for the Preservation of the Species, that our women shall not participate in this group."

He turned to an instrument at his right. It looked like a numbering machine, with faceted glass disks a foot in diameter. Each disk had ten facets, and each facet held digits from one to zero.

The unit disk was red, the disk for the tens was yellow, the hundreds green, the thousands violet, and the ten thousands black. The last three disks were orange, blue and brown.

"You will be selected by your birth-numbers," Magrum said, and pressed a button.

The wheels spun dizzily, with light flashing from their colored facets. Abruptly they clicked into position and stopped. The colored numbers flashed on a screen.

"Number one-nine-seven-six-two-four-eight-one," said Magrum.

Niles was taut. He watched Magrum press the button. This time the disks whirled at dizzy speed. They didn't stop, but Magrum presently called another number. A moment later he called a third. But the wheels didn't stop.

"I don't see how he can possibly pick any numbers," Niles said to Perso, who had just come in.

"It's stopping all the time," said Perso, "but it starts again so fast you can't see it."

"But how can Magrum tell the numbers?"

"They are recorded by photographs, synchronized with the instrument. Isn't that clever?"

Niles turned to stare at him mirthlessly.

"Yes, it is." He watched the screen. "That machine goes up to nine million. It'll take ages—"

"No. The first four disks always stop at the same figures. There are only about three thousand numbers to cover, and the machine gives a hundred decisions a minute. That means the selection will be finished in half an hour, by your way of reckoning time."

HE tried to follow Perso's figures, but his mind wouldn't click. He put his hand on Perso's arm and spoke earnestly.

"Listen, Perso. I don't think we ought to do this."

"How else can you do it?" asked Perso logically.

"I don't know," Niles said dully. He sank back into his chair. "But you can't experiment on human beings like guinea-pigs. I haven't made any preliminary tests at all. I don't know if the stuff will work. It might kill them." He shuddered, watching the wheels flashing on the screen. "They might develop the disease."

Perso shook his head.

"If we cannot find protection from the disease, the Cros will get us all sooner or later, anyway. If you are successful, the race is saved. Magrum would have it no other way."

"He's got plenty of nerve," said Niles.

"Magrum is logical," Perso responded.

Within an hour Niles was back in the laboratory. Carole had stayed at home, saying she needed rest. Something about the way she said it seemed strange to Niles, but he realized that she had worked very hard, so he told

her to take it easy for a day.

He reached the laboratory and put on his aseptic glass gown. Big-eyes followed suit. Perso and Magrum watched. Dr. Beckwith puttered at the other end of the laboratory. One hundred green-skinned Glass-men in colorful tunics moved restlessly on the floor, making a continuous, intermittent crackling and popping.

Niles was preparing a hypodermic needle. He examined his tubes of culture indecisively, and suddenly wheeled to Magrum and Perso.

"Let's inoculate just ten," he said. "That will be enough for a test."

But Magrum was firm.

"The test must be conclusive."

Niles wet his lips.

"Even if the test is successful," he said desperately, "it is not unlikely that ten per cent of them will develop the disease anyway."

But Magrum shook his white head.

"Most of these are young men who can be spared. None is over sixty years old."

"Sixty!" repeated Niles. "Young men!"

"Of course."

"But sixty is—was old when I left the Earth."

"It isn't now," Perso said. "Since we have bred eugenically and have weeded out the unfit, and since we have had no disease for countless generations, we live much longer. I myself am only thirty-eight, but Magrum here is two hundred and forty-six, and Big-eyes, as you call him, is three hundred and twelve."

"Holy cow!" Niles exclaimed.

He filled the hypodermic needle. His hands were steady but cold, and his heart was slugging against the walls of his chest.

He faced the hundred men.

"I'm ready for the first one," he said tensely.

A Glass-man started forward. Niles took his arm. Big-eyes rubbed a spot with alcohol. Niles started the injection.

But there was a sudden commotion in the room. Niles stopped. Someone was pushing through the crowd. He stepped out in front defiantly, and Niles looked into the gleaming eyes of Zudat.

Zudat turned his back to Niles.

"This is a trick," he said to Magrum. "This man is trying to give us all the disease!"

Niles was silent, though he raged inwardly. Too bad, he thought dully, that the Glass-men hadn't been able to breed men like Zudat out of their race.

ZUDAT was talking, with venom in his voice.

"We don't know where this man came from, or why he is here. He was found near his ship with three Cros. He killed one of them—but how do we know he didn't do it to establish himself as a friend! How do we know it isn't a trick all the way, a trick to wipe us out with bitro!"

"Talk about fifth-column work," muttered Niles. "This guy invented the technique."

But Perso spoke up stoutly.

"The newcomer is a friend," he declared. "He proved that by driving away the Cros with a new weapon."

"Yes," Zudat growled. "That was a very clever way of trying to deplete our nitrate supply!"

Magrum frowned.

"I trust Niles," he said. "I do not believe what you say—but it could be true. And since I am responsible for the future of our race—"

He paused. He turned to the hundred Glass-men waiting there.

They were murmuring. Their skin was rustling. Their looks toward Niles were not friendly.

Niles studied the crowd, rubbed his beard, glanced at Magrum. The Regulator was undecided. He trusted him, that much was plain. But Magrum was weighing the possibility of error.

"Then if it can be true," Zudat insisted, "it is your duty to stop it until we are certain."

Niles picked up the hypodermic needle and stepped before the hundred human guinea-pigs.

"When you are certain," he said in a ringing voice, "it will be too late. You and your wives and your children and your race are in the greatest dan-

ger. I am here by accident, true. But I have stayed here because you are my kind of people, because I feel a close kinship with you.

"I have stayed also to help you, because in the enmity of the Cros you are facing a kind of peril that you have not learned to cope with. When I left the Earth, we were fighting on a world-wide scale the same kind of danger. Delay is what almost cost our side control of its own destiny. Because a part of the world delayed too long, you yourselves were forced to limit your numbers for self-protection.

"If the world had been well organized at the time of the sunspots, the race could have protected itself. But because part of the world was slow in recognizing the danger and in preparing itself against it, the entire world was destroyed."

Niles put every shade of emphasis he could muster into his next words.

"That same catastrophe will happen to your own race now—if you cannot protect yourselves against this disease. I know this test is dangerous. I never have maintained anything else. If there were any other way to test this serum without subjecting you to the danger, I would do it. But there is no other way. I have put all my ability into this work and I have faith in it.

"To prove that to you, to show you that I myself am willing to take any risk I ask of you"—Niles held the hypodermic high, then swept it toward his arm—"I am inoculating myself first!"

But something deflected his arm, and there at his side stood Dr. Beckwith, his bifurcated beard high.

"If you should contract the disease," he reminded Niles, "the work would have to stop, even though it should be successful in every other case."

"But Carole—"

"Carole is not a bacteriologist, young man. She told you that, just because she wanted to help you in the work. They need you, Hart Niles!" The little man's beard was trembling with excitement.

Niles was silent for a moment. This absent-minded, impractical little man who never had seemed aware of any problems but his own, had suddenly come to life. And an instant later Niles knew what the scientist was going to do.

He was an instant too late. Niles started back, but Beckwith seized the hypodermic, shot the needle into his own arm and pushed the plunger home.

"There!" He turned to Magrum and then to the awed crowd. "One of your men is a coward, but the rest of you are not, I know. I'm not afraid of Niles. Are you?"

An answering roar came from the Glass-men. They surged forward toward Niles, baring their arms. But it was a full minute before he recovered his poise. He had never in his life been so completely overwhelmed by the confidence of another person.

Little Dr. Beckwith had trusted his life to Hart Niles' knowledge and sincerity.

CHAPTER XV

A Note on Glass

FINALLY Niles took the hypodermic from Beckwith's hand and looked long into the little man's blue eyes.

"Thank you, Doctor," he said simply.

He sterilized the needle, filled the hypodermic again and turned to Magrum. The Regulator was impressed, but still he hesitated. Niles could see what was going on in his mind. He was weighing the possibility that there was even yet a trick.

And now for the first time Niles felt really discouraged. Dr. Beckwith had risked his life to convince them. How could anyone do more?

But someone did do more.

Perso in his yellow tunic came quietly forward, his green face unemotional.

"Here is my arm, Niles," he said. "Inoculate me."

Niles groaned inwardly. Did all those closest to him have to undergo this risk?

He started to refuse, until he glanced at Magrum and saw the Regulator watching him closely. He raised the needle slowly, then started to turn it aside.

"It is for the future of our race, my friend," Perso said calmly. "You have done your best. I am willing to do mine. Go ahead."

Niles shook his head, trying to clear the mist from his brain. He had been overwhelmed by Dr. Beckwith's unselfishness. But now Perso, a man not even of his own race—

Slowly he raised the needle. It had been worth coming the eight hundred thousand years to find men like these. He pushed the needle in and pressed the plunger. His eyes didn't leave Perso's unmoving face.

He withdrew the needle and stepped back. Magrum was looking inquiringly at Zudat. The guard bit his reddish-green lip. He was struggling with himself. He wanted to discredit Niles, but a thousand centuries of tradition were demanding the race have a chance for survival.

Zudat's green face was streaked and mottled as he fought within himself. He glared at Niles, but his look softened when he turned to Perso. He looked at the hundred men waiting for his answer. He stared out over the thousand glowing colors in the City of Glass that had stood for half a million years.

All the energy and intelligence of Zudat's race was directed toward insuring the city's stand. His mind flashed back to Kasner and all the men who had followed Kasner, devoting themselves to one single purpose—the survival of the species.

He must have seen fifteen men and eight golden-skinned women trudging without complaint up the long street that led to the desert and certain death —all because they wanted the race to live on.

Here in Zudat's struggling mind must have been a fight for real democracy, which requires that its members shall when necessary give up their personal interests for the future of the state.

And democracy won.

Zudat turned back to them, his face a pale gray-green. He came slowly forward, his skin rustling faintly in the stillness, and offered Niles his arm.

IT TOOK an hour to inoculate the hundred men, and another hour to check pulse-rates and temperatures and make out cards for them. When it was over, Niles' shoulders were sagging from the heavy responsibility of a hundred and three lives.

"These hundred men," he told Magrum, "should be isolated for observation. There will be one injection a day for the next eight or ten days. And within five days, Dr. Beckwith, Perso and Zudat must also be isolated, to prevent spread of the disease if they should develop it."

Magrum's voice was deep.

"We shall do it," he said.

Niles resumed his work on the cultures. He had to arrange them so he would have sufficient serum of the proper strength for each of the succeeding eight or nine days.

He had to continue with the more extensive preparations to inoculate the other twenty-four hundred Glassmen, as soon as the test proved successful—if it did. And only Niles realized the heavy risk he had taken by inoculating the test-group.

A disease of which he knew almost nothing, a race with alien physiologies had confronted him with the greatest test of his life.

It might even be that the Glassmen's bodies, having had no disease germs to combat for so long, had lost the power of manufacturing antibodies. In that case, all the hundred men would develop bitro—and they all would die.

Perso and Zudat—perhaps even Dr. Beckwith—would die. And death by bitro was terrible even to see. Niles' face was tight and grim. He never had been so depressed in all his life.

Late that night he disturbed Dr. Beckwith while the professor was throwing eighteen-inch sparks from a static machine into a vial of colorless liquid.

"I need more equipment," the little man muttered, "and I wish they'd let me have my uranium from the ship."

"I will get that tomorrow," Niles said wearily. "Right now it's quitting time."

Carole was asleep and they didn't waken her. Niles opened his eyes early next morning and slipped out of the apartment quietly. He'd let Carole sleep as long as she could.

Big-eyes was waiting for him at the laboratory. They swung into the work smoothly and efficiently, checking the labels on culture-tubes, separating new cultures, setting aside fifty tubes for the second inoculation that afternoon.

Niles left for a while, saw Perso and obtained permission to recover the uranium. He fed the falcons, which were restless and quarrelsome, and took care of the rabbits.

Perso took the uranium to the Golden Dome, where he said it would be safe. But Niles was not allowed to enter.

The hundred Glass-men in the test-group had an entire black glass dome to themselves, at the edge of the city near the field of plants. They were cheerful. Some read the glass books, others were playing guessing games that involved colored glass disks.

With Perso and Big-eyes helping, Niles checked their temperatures and pulse-rates. He had set a normal Glass-man's temperature at 100.2 degrees. He surmised it had become higher than an Earthman's temperature to facilitate elimination of the silicon. The pulse-rate, correspondingly, averaged 135.

Niles set down the readings on each man's glass card. Big-eyes examined the skin of each one to detect any change in metabolism, and when all were found normal, Niles gave the second inoculation.

DOCTOR BECKWITH was not in the laboratory when they returned to it. Niles made a final check of their work and then took a magnetic car to the apartment. The pink glass walls didn't look so cheery tonight. They seemed to have a depressing dullness about them that never had been there before. Even the light that glowed from within them appeared no longer soft, but harsh and glaring.

"Must be the way I feel," Niles thought.

He rode up the stairs. The pink door slid upward and he stepped inside. And there he got the most startling shock of his life.

Dr. Beckwith was sitting on the edge of a glass chair, his arms spread over a table, his face hidden, sobbing softly.

"Holy cow!" said Niles. "What's going on here?"

The little professor raised his head.

His eyes were red, his beard wilted.

"Carole is gone," he whispered.

"Carole gone?" Niles repeated. He strode to the professor and shook his shoulder. "What do you mean, gone?" he demanded fiercely.

Beckwith handed him a glass plate, with lines written on it in Carole's round, regular script. It read:

Dear Hart Niles:
Six days ago I broke a tube of culture in my bare hand. I washed my hand in antiseptic, but I didn't tell you because you were overloaded already. Today my pulse-rate has been 110 and I have had fever.
I am developing the disease, and to keep from infecting you I have gone away. Don't look for me, dear. If you should find me, we would both die. Love to you and father. Carole.

Niles stood like a man made of solid glass. He stared at the plate in his hands, not seeing the words. He raised a haggard face to Dr. Beckwith.

"Where has she gone?" he asked dully.

CHAPTER XVI

Into the Desert

FOR a moment Niles couldn't speak. He couldn't think at all. He could only feel the loss of the girl he loved. But finally he forced himself to think, to be practical.

"Where would she go?" he asked aloud, and added, "The desert is about the only place any one could go from here."

"What can we do?" asked Beckwith despondently.

"We can find her!" Niles shouted back, and sprang into action. "Meet me at the laboratory in fifteen minutes!" he directed the professor, and ran for the stairs.

He didn't wait for the steps to carry him down. He vaulted down them as they descended, and raced for a magnetic car.

In twelve minutes Niles was in the laboratory, breathless. Dr. Beckwith was there waiting for him.

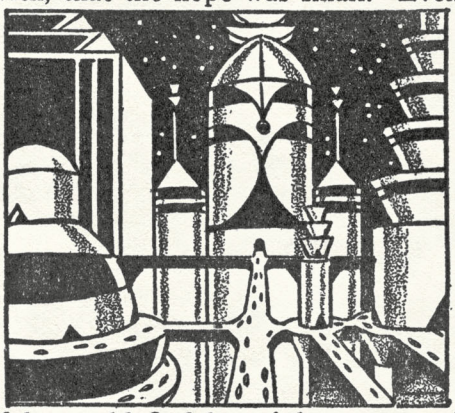
"Carole went out on the desert alone," he told her father, "about noon. She told the guards she had to take care of the ship, and they let her through the doors. She's out there now," he said grimly, "with the heat and the Cros and animals we know nothing about.

"Now listen!" Niles shook Beckwith fiercely by the shoulders. "You've got to take over the inoculation until I get back."

"Where are you going?" Beckwith asked dazedly.

"I'm going to find her. I'll take serum to inoculate her. She'll get well. I'll show you!"

But he knew, as well as Dr. Beckwith, that the hope was small. Even



if he could find her right away, and assuming the serum to be effective, Carole was already showing the symptoms. That was a dangerously late time to start treatment, even under the most favorable conditions.

But Niles didn't allow himself to think of that. He took Beckwith over to the bench and started explaining the inoculation.

"It's nothing but a duplication of Pasteur's first experiments with hydrophobia," he said. "We're using heat to attenuate the cultures. I used the weakest culture for the inoculation. That had been subjected to heat for seven days. Yesterday we used a six-day serum. Today it is five, and so on.

At the end, use the full-strength for five days. The tubes are all labeled, and Perso will see that you get help. Use about ten c.c.'s to the injection."

"But I've been inoculated," Beckwith protested. "I may develop it,

too. You'd better stay, and let me go after her."

"You can do better here," Niles said kindly. "If there's anything you run up against, Big-eyes can help you. He knows as much about it as I do."

Perso came into the laboratory and started to tell Niles something, but he felt the tenseness of the two men.

"You are in trouble," he said at once.

"Carole is developing the disease," Niles told him. "She has gone into the desert—and I've got to find her. Can you get me one of those rocket sleds?"

Perso hesitated and wet his lips. He looked at Niles. "I think so," he said.

"Good! I've got to take serum and equipment to inoculate her."

He started gathering material. Perso went out.

"Meet me at the outer door as soon as you are ready," the Glass-man told Niles.

Niles nodded. He was sealing test-tubes over a flame, stowing them in a case and packing glass fiber around them to prevent breakage. As a last thought, he filled one coat pocket with unused glass pistol cartridges before he went to the city doors. Perso was waiting for him, and without a word he took him through to the outside and the blazing sun.

THE sled was waiting, a large carriage equipped with two broad runners of tough, transparent glass, and four firing tubes at the back.

"It is the only type of free conveyance we have," Perso told him, as they set out. "Kasner designed it and it is very efficient, but the fuel is uranium and for that reason we do not often use it. I had to gather all the uranium we had for this trip."

"Uranium?" Niles repeated when he finally realized what Perso had said. "Why, that stuff I brought in from the ship is uranium—ten pounds of it! There's plenty. Maybe—"

"I do not think," Perso said firmly, "that it would be wise to go after it."

They were in the shadow of the crashed spaceship now. Its sleek beryllium walls reflected dazzling blotches of light under the hot mid-morning sun. Niles went into the ship and packed a box with canned food. He stowed it away beside his medicine case, and Perso showed him how to operate the sled.

"This tank is filled with water. You don't have to worry about that. The activating power comes from the sun, gathered by this bank of small black bricks, the same as those over the city. You move this lever to start the activating process, and this—"

He stopped abruptly. A bell had tinkled somewhere behind them. Niles glanced around, but no one was near them. Perso was standing stiffly. He reached down and turned a dial on the sled's portable televisor.

Magrum's voice came to them clearly. Niles saw the Regulator's white hair and green face grow on the visiphone screen.

"Hart Niles," he said, "I have received word that you have left the city. I must forbid this. Twenty-one of the hundred men you inoculated are ill. Three are very ill. If you have been acting in good faith, I command you to return at once. Otherwise we shall be forced to treat you as as an enemy."

Niles groaned. He pushed Perso from the sled and seized the activating lever.

"Good-by!" he said to Perso, his voice choking.

The sled shot out over the desert.

The sled was fast. It slid over the sand at sixty miles an hour. Niles went out about a mile and started a circle around the city. He heard again the tinkling of the visiphone bell but he didn't turn it on. He drove the sled grimly to its limit.

A great cloud of dust rolled out behind him. The wind in his face was like the hot breath from an oven, but he drove on in slowly widening circles, hunting for tracks that would tell him which way Carole had gone. But in most places the sand was hard on the surface and showed little sign of disturbance.

NILES drove up over a dune. It didn't matter how far he had to go. He'd find her. He had to find her. She loved him and trusted him. Life

anywhere, on Earth as he had known it or in the City of Glass as he knew it now, wouldn't be worth much without her.

He hit the top of the dune and something flashed in his eyes—something with all the brilliant, glaring, concentrated power of the sun. Then it seemed that he was driving straight into the sun itself.

The light blinded him completely. He couldn't see anything, but instinctively he knew the Glass-men were trying to capture him. They must have some kind of great mirror out there in the desert to stop him. Well, he'd fool them!

He closed his eyes against the glare, but it came straight through his eyelids with the force of incalculable candlepower. He shifted the control lever to concentrate all his driving power in the right-hand tubes, but the sled didn't respond.

His speed was dropping. That terrific concentrated power of the sun was interfering with his activator.

If they stopped him, he'd never have a chance to find Carole. She would die out there on the desert, from bitro or starvation—or she might be attacked by the animals that roamed the sand, or even captured by the white-skinned Cros.

Niles was chilled at this last thought. He drew his shoulders together and felt the heaviness of his pocket.

That touched him off. The reflector must be glass. It would not necessarily be a tough glass. It might be easily broken. He snatched the pistol from his pocket. He was completely blinded, but he drew two cartridges from his pocket and stuffed them into the cylinder. He snapped it into place and aimed straight into the center of the light.

He shot twice, held his fire and listened. He thought he could feel a resurge of power in the sled, but the light in his eyes didn't lessen. He faced into the center of the glare. The sled now was shooting over the sand. He changed its direction by feel, but the light in his eyes didn't lessen. Were they still able to hold it on him?

The sled lurched and almost overturned. Niles cut down the speed. His sight began to return. He looked around for the mirror. Two miles behind him a tiny group of men was on sand. It was too far to tell what they were doing.

Niles rubbed his eyes. He understood then. He had disabled the mirror, but his eyes couldn't adjust themselves so soon.

The sled hit a soft strip of sand and slowed down a little. Suddenly he swung the sled and cut off the power. He jumped to the ground. The burning sand was hot on the soles of his feet, but he went to his knees, examining tracks. They showed small, flat heels—the kind that might be left by a woman's sport shoe.

He jumped back in the sled and followed the tracks across the sand. And just before the sled left the area of soft sand, he was puzzled by another track on the desert. It swept up to Carole's tracks and followed them, a broad indentation, as if a cylinder twelve feet long had rolled over the desert of its own volition. It must have been quite heavy. Where it had passed, the sand was pressed down at least three inches, and when it went out on the hard sand the crust was broken through.

"Looks like a rolling tank," thought Niles.

AS HE considered that possibility, he speeded up. The Cros had metals; he knew that from their clubs. And it was not beyond reason that they had some kind of self-propelling machine, which moved over the desert on a single wheel twelve feet wide. That would be a natural development of desert travel.

The trail was plain now. Niles drove straight south into the fiery maw of the sun. He loaded his pistol again and put it in his pants pocket, dropped his coat between the medicine case and the box of food. He wiped the sweat from his forehead, and his hand came away caked with a fine white mud.

"No wonder the Glass-men built their city underground," he said half aloud.

The sled was approaching the top

of a long hill. Niles swerved sharply as he reached the ridge, for most of these hills with a southern face had been ground away by the wind, until they were perpendicular on the south side. On some of them the drop was a hundred feet.

This one turned out to be what Niles had expected. He stopped a moment to find the quickest way down. The tracks led to the right; or, rather, the track of the big wheel—because this was hard ground and Carole's footprints did not show. Niles looked across the sandy depression to the top of the next ridge, and stiffened.

Something had moved up there. Something huge and cumbersome had shown against the hot sky for an instant and then had disappeared. It had been the color of sand, and Niles' first impression was that it was a part of the dune. But it had disappeared too quickly for that.

He scanned the desert as far as he could see. Toward the east, the dunes sloped down into rolling plains and shallow valleys, but to the west were high, rugged hills. Nowhere did Niles observe any living thing. There was no sage, no mesquite, no cactus; not even, he thought grimly, a buzzard. There was no cloud in all the blazing sky. No movement.

He followed the wide track to the west. It went down through a wind-cut ravine to the floor of the depression. And in the ravine Niles' eyes widened, for it was barely wide enough for his sled. The track he was following decreased in width, while its mark deepened in the sand.

The sled came out on the floor of the valley and started climbing the slope. And through the heat waves that shimmered up from the desert floor there came a cry.

"Help! Help!"

It was a woman's cry, so faint Niles could not be sure it was Carole's—but there was desperation in it. His fingers fumbled at the control lever, but he hesitated an instant. The sled passed over a strange spot, like the one he had seen before, with the vague white outlines of bones in the sand.

He swerved the sled back from the top of the ridge just in time to avoid going over. The tracks again led to the right. But down there at the bottom of the next valley, a girl was running in he sand, running hard, floundering, falling, rising desperately to run again.

"Help! Niles, help!" he heard her scream.

BEHIND Carole was the wheel. It wasn't mechanical. It was a living creature. Its bulk was huge. It rolled or flowed along over the sand, like a drop of water on a greased skillet. But this thing was twenty tons of flesh. It didn't have a head or legs, but it followed Carole with amazing agility, turning when she turned, hesitating when she fell, then going on after her swiftly when she got up.

Niles shoved down the control lever. The sled roared away. He shot down the track and through a cut in the ridge. He came out at the bottom of the valley. The hot wind seared his face until he could hardly see, but he could hear Carole's cries. He steered the sled straight after the rolling blob of sand-colored flesh.

He couldn't stop the thing, he decided. It was too big for him to injure. Apparently it couldn't hear, for it paid no attention to the roaring of his tubes. He drew close behind it, peering into the hot wind. The thing didn't have an animal smell.

"Okay, Buddy!" Niles growled. "Pull over. I'm going by!"

He drew out and cut in. Carole now was hidden completely by the wheel's bulk. Niles gave the sled its last atom of power. It tipped up on the left runner as he drove in before the wheel. He saw her running. She heard the sled and looked around. At the same time, her weary legs got crossed in the sand and she started to fall.

In another second the wheel would have passed over her. But Niles drove the sled across the wheel's path. The thing was eight feet high, but he gauged the sled's course at an angle. He held on with one hand and leaned far out. He grabbed Carole from the sand, swept her onto the sled and held with all his strength to the control lever.

"Niles!" Carole murmured, and sat limply on the floor of the sled, braced against the housing over the power generator. "It's been following me for miles," she whispered in a half sob. "Oh God, what a thing to fight off!"

"I know," said Niles tensely. "Get a grip on yourself, darling."

He was just learning something else. He was learning what real terror Carole had been under, for she must have seen that the wheel could crush her at any time it chose. It was coming after them now at amazing speed. Surely the sled could outrun it, but— Niles glanced over his shoulder. The thing was gaining! In spite of its bulk, it flowed along over the sand smoothly and almost without effort.

Niles' eyes narrowed grimly. He swerved the sled and sent it at high speed down the floor of the depression toward the open country at the east. The monster turned after him and drew closer. The sled was doing better than sixty miles an hour, but the wheel was only fifty feet behind. Perhaps, if he could get into level country, Niles thought desperately, he could tire it out.

But he gasped when he looked ahead. Half a mile away, cutting off the end of the valley completely, was a column of men marching in loose military order. They were ten or twelve abreast and Niles could not see either end of the column. The light reflecting from their white faces identified them as Cros. Several hundred were in sight, and they were marching toward the City of Glass!

NILES couldn't take a chance on breaking through the column of Cros. He would overturn the sled if he drove into them.

"Niles!" Carole screamed. "The wheel! It's going to get us!" She covered her face with her hands.

But Niles swung the sled in a wide arc and headed back. He skirted the precipitous north wall. He couldn't seem to find the place he had come down. He darted into one cut but it was a dead end. He shot back out just as the wheel was starting to roll its twelve-foot width across the entrance.

He gained distance when the wheel wasted a few seconds turning around. The west side of the depression was high and rugged. He didn't dare try it. But then he studied the ridge ahead and his eyes lighted.

"Hang on!" Niles shouted. "We're running for it!"

The wheel acted angry now. It was coming on at thunderous speed. Niles drove the sled straight at the top of the ridge. The wheel came within fifty feet again. Then it was only thirty, and then twenty. The sled neared the top.

Niles glanced back. The shadow of the wheel was falling on them. Carole was holding tightly to the sled-rail. Niles braced himself, swung his body far out to the left and cut the left tubes. The sled swung in a screaming arc, the glass runners gritting on the sand.

It tipped. Niles gave a burst on the left tubes and it settled. But they were perilously near the edge. He cut the left tubes and they shot along the top of the ridge.

He looked back. The wheel hadn't been able to stop. Its mass was too great. Since inertia or momentum is the product of mass and velocity, Niles had figured correctly that he could swing the sled faster than the wheel could turn.

The wheel struggled for an instant, poised at the edge of the cliff, its huge, sand-colored form writhing against the sky. Then it went over.

A great, watery thud reached Niles and Carole. Niles looked back and saw the thing spread over the base of the cliff. There wasn't any blood in it. It was all water.

He slowed the sled and wiped the alkali mud from his forehead.

"That thing must live on moisture, any kind of moisture. That's why it followed you," he said hoarsely to Carole.

She raised her head and managed a wan smile.

"Why did you follow me?" she asked, glancing back at the pulpy monstrosity with a shudder.

"Why did you run away?" he asked her. "Did you think we couldn't fight

this crazy disease together?"

He stopped the sled. He didn't have the heart to tell her that the serum probably wouldn't work, anyway. She would succumb to the dreaded bitro, as all the rest.

CHAPTER XVII

Chief of the Cros

HART NILES opened his medicine chest.

"Do you suppose it's possible for an animal to live on water?" Carole asked, to avoid talking about her own illness.

"Why not? That is, if its needs and its processes are adjusted to it. And that monster seems to have adjusted itself very well."

He selected a tube and started to break the seal.

"Wait!" Carole said sharply. "Those men—running up here!"

Niles' jaw tightened. He had forgotten the Cros. A company of them had spread out and started to encircle the sled. But the upper end of the valley was still open. Niles snapped the tube into the case and seized the controls. He swung the sled around and drove it back up the ridge.

He wanted to cut back to the north, but he feared being caught in a blind alley where he couldn't turn around. He swept up the ridge to the west end, looking for a ravine that would allow the sled to pass. All these ravines widened out toward the bottom, and so it was safer to go south until he got into different terrain.

Niles found a depression and the sled went through. Down at the east end of the new valley were still more Cros, in a never-ending column. He drove on across the ravine to the next ridge.

They went two miles before the country opened out so they could go where they wished. Niles stopped the sled at the top of a rise, where he could see any approach, and inoculated Carole from the first tube.

"You'll feel better tomorrow," he said, as calmly as if he was quite certain.

"Did it really work on the Glassmen?"

"It really did."

"Then you'd better inoculate yourself. You've been exposed, you know." Her brown eyes were filled with concern.

He looked at her, taken aback for an instant. But he grinned.

"That's right, I have."

Very calmly Niles injected the rest of the tube into his own arm.

"It's terribly hot," Carole observed.

"Yes, but you haven't much internal fever. Here, I'm going to rig up this coat for a little shade. The thermometer says a hundred and twenty-five degrees, translated into Fahrenheit."

"Won't you get a sunstroke?" she asked. "Isn't there something—"

"Me?" He grinned. "I'm used to the weather. The freight trains I used to bum never provided much shade. How about some lunch?"

She breathed deeply.

"I've been hungry for a week!"

Niles opened a can of beans and then another. He looked in the provision box.

"How about a nice mess of fresh sardines, aged eight hundred thousand years?"

"Just so it's food," Carole said. "Listen, Hart, what can we ever do? I mean—if I get well?"

"Do? Oh—get married, I suppose," he said, opening another can of sardines.

She smiled.

"But what can we eat in this glass world?"

"I have ideas," he said, opening a can of tomatoes. "Right now we'd better get back."

THEY finished the meal. Niles threw away the cans and started the sled.

"All set?" he asked.

There was no answer. He looked around quickly. Carole had fainted.

He shook his head worriedly.

"Too much heat. I've got to get her to some shade. But where?"

Niles scanned the desert. A mile

farther south was broken country. He though he could see a cave. At least it was dark; and where it was dark, it would be cool. He washed Carol's burning face with water. She moaned and stirred. He arranged her as comfortably as he could and drove the sled carefully to the hills.

It was a cave—a big one. Niles drove up near it and helped Carole off the sled. There were great stones around the cave-mouth, and he took the sled farther down along the base of the hills, until he found a place where it would be fairly safe from discovery.

He walked back to Carole. Her face was white but she got to her feet when he came up. The girl straightened out her skirt and walked with him into the cavemouth. She relaxed in the cool darkness and sank down thankfully with her back to the wall.

"I think," Niles said, "we'll wait here until it gets dark. The moon comes up early and we can find our way. It may be cold, but it won't take long to get back."

"You mean—home?"

He grinned.

"That's exactly what I do mean."

"What is that thing out there?" Carole was staring at one side of the cave, where the sunlight was strong.

Niles followed her gaze. "I don't know," he said. "It's flat and seems to kind of grow out from the center, like—"

"Like a flowering pancake," she suggested.

"Don't say that word! It makes me hungry. Yes, it does, if you can imagine a pancake twenty feet across."

"But what is it, Niles?" She moved closer to him. "I thought—I saw it move."

He studied it.

"I believe it is moving a little. Slowly, but—"

"But it's coming this way!"

"Oh, take it easy," Niles said a bit peevishly. "One thing I'm not afraid of is pancakes. Anyway, I don't think that is an animal. It looks more like a plant." He felt in his pocket and brought out a glass bullet. "Here, I'll find out."

He raised his arm and tossed the bullet at the big disk. But instead of ricocheting off, the bullet sank in.

"There, you see, it—"

Niles dodged instinctively. From the plant had come an explosion, and from the ceiling of the cave dropped pieces of rock.

"Holy cow! That thing shot the bullet right back at us. What's the big idea?"

"I would say"—there was a touch of archness in Carole's voice—"that it didn't want your bullet."

He looked at her and grinned.

"There's one nice thing. It isn't coming after us. It doesn't seem disturbed at all. Therefore, it has no highly developed nervous system—and, therefore, it is still a plant. But how did it explode that cartridge?"

"I don't know," said Carole. "But it does have a certain degree of mobility. It's moving with the sun."

Niles was studying the thing. He tore a strip from his handkerchief, wadded it up, walked over and dropped it on the flowering pancake.

"Holy cow!" he said, jumping back. "It burns!"

INSTANTLY the scrap of cloth had flared up in flames.

"I get it!" Niles declared. "Since anything combustible is ignited on contact with the thing, obviously it can't use ordinary food. It soaks up sunlight all day long. It must live on sun-power—and turn that into some other kind of energy. I wouldn't want to walk across it."

"You'd never get across," Carole observed. "Your shoes would be ignited at the first step."

"Sh-h!" Niles pressed her back. "Four men are coming over the hill! They're Cros."

"And coming toward this cave!" Carole whispered.

The white skins and bald heads gleamed in the sun. They were close enough so Niles could distinguish their multiple fingers.

"We'll have to get back. It's too late for the sled."

They tiptoed back a hundred feet. The cave grew bigger. They stopped

at the first turn to watch.

"They're coming in!" Niles said softly. "They're careful to walk around that flowering pancake."

"They're coming straight back," Carole amended. "What are we going to do?"

"Keep ahead of them. And be quiet."

Carole shuddered.

"It's dark in here. We can't see."

Niles was watching the Cros over his shoulder. It struck him they walked into the cave as if they were familiar with it. They didn't hesitate or seem curious about their surrounding. The first glimmering of a chill came over Niles.

He calculated rapidly. They had come, he estimated, somewhere between twenty and thirty miles from the City of Glass. That might be. The Carlsbad Caverns, Niles knew, never had been fully explored in his time, but it was known they extended miles in every direction.

Perhaps this tunnel was a northern outlet that had been discovered by the Cros; or perhaps it had not existed at at all, until the Earth had gone through its period of severe change.

"They're following us," Carole whispered. "They can see in the dark!"

Niles hurried on, looking for a branch opening where they could hide while the Cros went on by, but it was almost pitch black. He bumped into something and recoiled.

"A stalagmite!" he muttered. Then a cold thought struck him. "Why don't they pay any attention to us?" He fingered the pistol in his pocket. "They must have heard us by this time."

"Because," Carole whispered faintly, "there is a bigger party behind them!"

Niles swallowed.

"More? How many?"

Her warm hand was on his arm for an instant.

"Too many for you to shoot through," she said.

And then, quite suddenly, they were trapped. They rounded a turn and came into a lighted cavern.

Its floor surface was the size of a city block and its ceiling was three hundred feet high. Huge stalactites hung like tremendous icicles from the roof—icicles of glittering white and pale green and vivid orange. They cast weird shadows over other masses of rock formation that rose fifty feet from the floor, some straight and tall and slender like cathedral spires, others with broad bases, rising tier upon tier like white coral on a hillside.

"What can we do?" said Carole, then stiffened as her panicky voice whispered back at them from a hundred places in the cavern.

NOW it was too late to try to hide. Niles snatched the girl's hand. He ran with her to the center of the room, faced in the direction of the approaching Cros, and waited.

"What—"

"Be quiet," he ordered, "and follow my lead."

The first Cros came out into the room. Niles threw his hand into the air.

"How?" he said, and grunted.

They stopped. One approached cautiously and grunted back.

"We are friends," said Niles in everyday English.

The four came up and looked them over suspiciously. They talked among themselves. Then the second party came in. One of them seemed to be a leader. He issued orders. Niles' arms were clamped upon by two Cros and he was marched off, with Carole beside him.

"Hart," she asked in a flat voice, "what are they going to do with us?"

"We'll soon know." A tightening of the grip on his arms warned him to be quiet.

They passed through room after room of fantastic limestone formations, through grotesque shadows and overwhelmingly huge columns of rock. Always down, down, until Niles guessed they were a thousand feet below their starting point. The caves became bigger and higher. White faces peered at them from behind stalagmites, and then disappeared into the gloom. Feet pattered around them.

They were in the greatest hall of all. Its ceiling was so high, it was lost in darkness. Its far end was a quarter of a mile away, and the entire great room was studded with crystals that glittered in a thousand colors.

"It's beautiful!" breathed Carole.

They were stopped. A voice came to them. It seemed only a few feet in front of them, but they saw no one.

"Roog dy ohm zu?"

Niles stared ahead. He saw no one, but he answered in dignified English.

"We represent the National Association for the Advancement of Jitterbug Collectors," he said solemnly.

A grunt answered him, and then a guttural syllable:

"Mugh."

They were moved forward. Niles widened his eyes and stared at the far end of the great hall.

"Holy cow!" he said to Carole. "The acoustics are perfect. Do you realize that voice came from a quarter of a mile away?"

They made a slow trip across the limestone floor, until finally they faced the man who had spoken to them. He sat in a seat carved in the side of a purple stalagmite. He wore only a loincloth of some loosely woven fabric. His chest and legs were hairy like an animal's, but his head was bald.

His skin was that same queer, unhealthy white, and his twenty-six-fingered hands rested on the arms of his seat. He grunted words to the Cros. Niles and Carole were pushed closer.

"I'm afraid!" said Carole suddenly. "What is it?"

"We are being received—somewhat formally, I should say"—Niles' voice was tensely whimsical—"by his majesty Ytlair, chief of the Cros."

CHAPTER XVIII

"My People Need Food"

YTLAIR looked at them from crafty black eyes. The whites showed full below the pupils. He grunted again.

Niles made a low bow.

"What, Your Majesty, is the price of eggs in China?" he asked gravely. Then he broke into the smooth speech of the Glass-men.

"Alaru. Emalarse estama natho." "We are friends. We come to make peace."

Ytlair's crafty eyes narrowed. He answered in the speech of the Glass-men, a broken, rough version, but understandable.

"Why do you want peace?"

"To save lives. To save the lives of Cros as well as Glass-men."

"Why are you interested in us? You never have been before!" Ytlair's voice became suddenly bitter. "You have everything. We have nothing. My people have been forced to live in these caves past the memory of any of them. You Glass-men have food, shelter, warmth. We have little. Why is the great City of Glass suddenly interested in the well-being of the Cros?"

But Niles was not daunted.

"Because we have not known what it is you require," he answered. "I have come to find out. You have things we want. There is no reason why we cannot trade."

Ytlair's eyes became crafty again when Niles mentioned trading.

"What do you need?" he asked.

"Let me ask a question. Why do you want our nitrates?"

Ytlair's eyes dilated. His white face grew dark with indignation.

"Why do we want nitrates!" he roared. "Have you been so uninterested in our welfare that you never have asked that question before?"

"We have sent you ambassadors," Niles reminded him.

"And none of them ever returned alive," Ytlair boasted.

"Nevertheless," said Niles, unperturbed, "we are willing to trade."

He saw Ytlair's eyes grow suddenly small with suspicion.

"You are not a Glass-man," he said. "You are white-skinned."

Niles heard Carole draw in her breath, but he had an answer ready.

"We have been trying to approximate your conditions, to learn something of your problems."

Ytlair did not believe that, but nevertheless he was impressed.

"I sent a delegation to you not long ago," he said, "and you killed many of them and forced the others to leave. Why do you murder my people?"

"It was a misunderstanding," Niles said smoothly. "We thought they had come to fight. When we finally learned they were on a peaceful mission, we at once arranged this visit to you to make amends."

He took a deep breath, but he was remembering that a big lie is more easily believed than a little one.

"Our supply of nitrates is not unlimited," he went on. "But if your people need them, we can trade with you. What we do not yet understand is why you need them."

Ytlair surged upward from his purple throne.

"I will show you why we need them!"

He shouted an order, and the Cros closed in on Niles and Carole and moved them behind Ytlair.

THEY walked deeper into the Earth and the caverns became damper and warmer. Ytlair stalked ahead in energetic dignity. Finally he stopped and swept the interior of a great cavern dramatically with his arm.

"You see our poor source of food," he said. "In the soil of these endless caves, we grow food for my people. But the soil is poor. Our scientists tell me we must have nitrogen for our plants. We cannot get it from the air, but you have plenty. You could spare the small amounts we need."

Niles moved forward. In the dim light, he saw acres of sickly yellow plants. So this was why the Cros wanted nitrate!

But Ytlair was going on. He led Niles through interminable miles of tunnel showing him over and over the subterranean fiields of yellow plants, pitying himself and his people, berating the Glass-men.

And finally they went through tunnels lined with carved-out dwellings in the walls. Wild-haired, white-faced females stared out at them and dodged from sight. Children with protruding ribs and knobby knees scuttled past them and dived into the cliff dwellings.

"My people need food," proclaimed Ytlair. "We will take it by force if we cannot get it peacefully!"

"I have come to trade," Niles repeated for the hundredth time.

Ytlair whirled around.

"What can we possibly have that the Glass-men need?"

But the question was rhetorical; he waited craftily for the answer.

"Metals," said Niles. "Iron, copper and the harder metals. We are prepared to trade weight for weight. There is no reason why we cannot live at peace."

They reached Ytlair's big room again. Carole was tired, and Niles found a place for her to rest while he parleyed. Ytlair continued to proclaim the needs of his people in strident tones; but finally Niles had a chance to talk.

Eventually Ytlair agreed to trade. He told Niles to return to the City of Glass, and sent an escort of Cros with Niles and Carole to the mouth of the cavern. They walked through the twisting black tunnel until in the distance Niles saw the star-filled sky.

"We've got to get away from these Cros," Niles said in a low voice. "They're not an escort. They're guards, and if they see the sled they won't let us leave."

He turned to the leader of the Cros in the darkness.

"We must leave you now," he said in the Glass-men's language. "We are grateful for your company."

He bowed and started off, holding Carole's hand. The Cros was hesitant, but Niles walked off steadily. He heard grunts and finally silence among the Cros.

"I think we've made it," he breathed. "They'll come out in a minute or so, but we'll be gone by then."

"Look there!" Carole whispered. "In the mouth of the cave! That plant!"

"Ha, the flowering pancake!" He swore under his breath.

"It covers the opening. We can't get around it!"

Niles walked on.

"I believe," he said thoughtfully, "we can go over it, though."

"We'll burn up before we get across." Carole shuddered.

"Maybe not," Niles muttered. "I have a theory that this thing, absorbing its subsistence from the sun, is impotent at night. Otherwise the Cros would have destroyed it. At any rate, we'll know in a minute."

HE PICKED Carole up in his arms and dashed onto the plant. It was spongy but tough, like leather. In two seconds he was across.

"Only a little warm." He grinned as he set the girl down, and rubbed a smoking shoe-sole in the sand. "Come on, let's move."

Ten minutes later the sled was roaring over the desert, leaving a trail of blue fire and thundering echoes back from the cave-mouth. Carole snuggled against Niles.

"The City of Glass will look good now," she murmured.

"You bet," he agreed.

The terrain was clear in the moonlight. Clear and stark and deserted. Well, probably not deserted, Niles thought, for there were wheels and flowering pancakes, and heaven knew how many other weird things growing in this vegetationless world.

He followed the trail of the second Cro expedition. He noted that Ytlair had not spoken of the expedition—nor had Niles. Diplomacy had dictated that neither mention the army of several hundred invaders from which Niles and Carole had so narrowly escaped.

Niles did not think the Cros would attack the city that night, for they would hardly have time. But the following night— He considered that probability and then he moved far out to the east, into open country, to keep from alarming the Cros.

Carole was fast asleep. She must have been exhausted. Niles drove north for what he estimated was thirty miles, and then he remembered that his only chance to locate the City of Glass was to see the lights at the entrance. He started circling, but within an hour he knew they were lost.

The cold of the desert night began to pass. Gray loomed in the east. Niles was still driving the sled, making a series of what he hoped were interlocking circles. But here the desert had no distinctive landmarks and he could not be sure.

The sun had just raised its blazing face above the horizon, when for the first time Niles saw the track of their own sled. At first he felt relief; but as he looked along it, that feeling changed to apprehension. The tracks of the sled were not deep; but the ground between them, for a distance of four feet on either side, was rolled smooth.

Niles forced himself to look for the break in the crust—and found it. There was no question about it. One of the monstrous, bulky wheels was on their trail.

A chill went over Niles and he glanced at Carole. She was just waking up. He shot the sled away from the tracks.

"Where are we?" she asked.

"Near the city," he answered tersely.

He pressed the control lever for more power, but the sled did not increase its speed. A moment later he knew it was slowing. A quick examination of the controls told him nothing—but the speed was dropping more and more.

Niles knew what was wrong. Their fuel was running out. He turned to the back of the sled and began to try buttons and levers.

It was no use. The sled slowed gradually. Niles worked levers. Then a voice came to him. A familiar voice.

"Niles," it said, "please answer. Niles, please answer."

It was monotonous, as if it had been saying the same words over and over. He stared at the visiplate and saw Perso's young, anxious face.

"Niles, please answer. Niles, please answer."

He must have turned on the screen by accident, then.

"Hello, Perso," he said. "Where am I?"

PERSO'S grave face lighted.

"I will tell you."

Niles saw Perso reading instru-

ments, then the Glass-man's green face turned to his.

"You are thirty-two diameters toward the sun from the city."

"About twenty miles," Niles calculated.

"Start away from the sun. I will meet you," said Perso. "I am in a sled about twelve diameters from you."

"I can't," Niles told him. "We are out of fuel."

Perso nodded, and even from the visiplate Niles could hear his neck crackle.

"I expected that, when you were gone so long. I brought your own uranium in another sled. Stay where you are and I will find you."

"You'll have to hurry," Niles said. "We are being followed by a wheel."

Carole's fingers clutched his arm at the words.

"By what?" asked Perso.

"A wheel—the big animal that rolls over the desert after people."

Perso's face grew anxious.

"How far away is it?" he asked.

"I don't know. I can't see it."

"I'm coming," said Perso, "as fast as possible. If it isn't in sight yet, it probably is following slowly."

Niles saw Perso making swift adjustments. The Glass-man's image on the screen began to waver as his sled got under way. They heard the roar of his rocket tubes.

"I have a bigger sled than you," Perso told them a moment later. "It travels much faster."

"Then it can outrun the wheel," said Niles.

But Perso shook his head.

"I'm afraid not."

"You'd better not come this way, then."

"Stay where you are," Perso advised. "I'll be there in a few minutes."

Niles calculated. Perso was seven miles away. If his machine was "much faster", he should reach them in about five minutes. Niles looked back along his trail. Something rolled over the top of a sand dune a mile away. Niles rubbed hard at his whiskers.

But a moment later he heard Perso's sled. It swept into view at the head of a great funnel of dust. It disappeared in a depression and a moment later came over the hill a hundred yards away.

It ground to a stop. Perso stepped down, his green face and his yellow tunic caked with alkali. "Get in," he said anxiously. "We're going. We have a head start."

"No." Niles pushed him toward his sled. "Put some of that uranium in my sled."

Perso looked at him.

"That I will not do. You cannot sacrifice yourself for us."

Niles frowned.

"I'm not going to. Give me some fuel, quick!"

Perso hesitated, then dived into his sled. Within a few seconds he came back with a glass tube of silvery white metal. He put it in Niles' machine and Niles started the activator.

The wheel rolled over the top of the hill, huge and sand-colored, and came more swiftly as it sensed the nearness of water.

"Get into Perso's sled!" Niles shouted at Carole.

But she shook her small head. Her hazel hair shone in the sunlight.

"I won't," she said. "I'm going to stay with you."

"You will!" he snapped.

He picked her up, carried her across the sand at a run, set her down on Perso's sled.

"Wait for me at the top of the hill!" he shouted.

NILES leaped for his sled. The wheel was forty yards away, rolling swiftly now. He jerked the control lever and hung on as the sled shot away. He had gained a hundred yards before the wheel began to increase its speed. Evidently its perceptions were not highly developed and so it reacted slowly.

But when it began to roll faster, it came on at ominous speed. Niles' sled was running wide open, its tubes spitting blue fire into the glaring light of the sun. Niles made a sharp circle. The wheel followed his path and came closer. A hundred feet away. Fifty. Forty. Thirty.

Niles looked for Perso. The Glass-man had moved his sled. Now Perso and Carole were standing up, watching Niles flee before the desert Juggernaut.

Niles headed for the ridge. He gave the sled everything it had. He would pass within twenty-five feet of Perso, but if he had it figured right—

The sled hit the top of the hill and the wheel was almost brushing it. Niles left the sled in a giant leap. He jumped a little forward to take advantage of his momentum. He landed on his shoulders in the hard sand and rolled over and over.

He got to his feet and saw the spot where he had hit, just at the edge of broken crust that showed where the wheel had passed. Then Perso's sled came by. Niles seized the Glass-man's arm and climbed on. The sled shot off along the ridge.

"The wheel doesn't hear, or see," said Perso. "It will find our trail presently, but not until it has absorbed all the water in the sled. You have done a noble thing, my friend."

"Noble, my eye!" said Niles. "I risked your necks to save my own."

He looked back. The runaway sled was just crossing the bottom of the depression. At that instant, the wheel caught up with it and rolled over it. In the sled's broad track in the sand was left a flattened mass of glass. The wheel stopped quickly and returned to settle itself slowly over the spot.

"We're safe," breathed Niles.

But the back of his scalp began to prickle. Something was wrong. He wheeled. Perso was hanging to the controls, trying to stand but going down slowly.

Niles leaped for him.

"What's the matter?" he exclaimed.

"My—energy battery." Perso struggled to talk. "I've been on the desert all night. The battery's—exhausted."

Niles saw then the small case of black glass bricks, and the two wires running to Perso's upper arms. He had forgotten that the Glass-men had to have sun-power to live. Evidently this battery furnished it in something like the form of electricity.

"How long will you last?"

"Half an hour," breathed Perso. "Go straight from the sun. Straight—straight—" He slumped over unconscious.

Niles eased him down and then grimly seized the controls.

"Half an hour," he muttered. "Half an hour. If we miss the city—"

He turned the control lever to full power and fled from the scorching sun. The glass runners shrieked a gritty song against the sand. The sled sailed over the desert at eighty miles an hour.

But half an hour wasn't much time to travel twenty miles and find a black dome in the desert, considering Niles didn't know the way.

CHAPTER XIX

Mass Attack

FIFTEEN minutes passed, but he saw no dome. Perso was lying still, his face a pale green. Niles drove the sled at full speed into the withering desert heat. He must be far enough! He ought to turn. But which way? He guessed left.

Then Carole was at his side.

"Why don't you turn on the visi-screen?" she said in his ear.

Why hadn't he thought of that? He snapped the switch but the screen was blank. Perhaps it was still attuned to the crushed sled. He moved a pointer slowly. He turned to watch his steering for a moment, and Carole gave a cry of delight.

Niles looked back. There were two great owlish eyes staring at them from the plate.

"It's Big-eyes," Carole said.

Niles cut the speed and stopped the sled.

"Mala," he said in greeting. "Hello, Big-eyes. Where are we from the city?"

Big-eyes disappeared from the screen. A second later he returned.

"Go to your right four diameters."

Four diameters—over two miles. Niles had picked the wrong direction. He swung the sled around and drove it back.

The Black Dome came in sight. They had been traveling twenty minutes since Perso had lost consciousness. Niles shot the sled into the very entrance of the ctiy.

"He needs sun-power!" he shouted at the guards.

They looked at him and at Perso, slumped on the floor of the sled. Then they moved fast, their skins creeking and rubbing. They carried Perso into a glass room by the doors and clamped the terminals of a battery on his biceps.

Five minutes later he stirred. Presently he sat up and smiled at Niles.

"Thank you, my friend," he said fervently.

"Skip it," Niles replied, embarrassed at the other's gratitude.

"You see," Perso said, "we must have the hormone catalyst that is stimulated by sun-power. If we are without the power for any length of time, the hormone secretion stops, and then we are drugged by the excess silicon in our bodies."

"But you don't carry a battery around with you in the city," Niles pointed out.

"No. The glowing light that comes from all the walls is an emanation of sun-power. We live with it constantly."

"How soon can you get up?" Niles asked him.

"I can go with you now. This battery contains the power in concentrated form. I'll be all right inside the city."

"Well, come along. I've got business with Magrum. The Cros are sending a large force to the city."

Perso's face became solemn.

"I had hoped they would not attack so soon," he said. "What can we do?"

"I don't know," Niles admitted somberly, "but we've got to lick them some way. And it won't be easy. They mean business this time."

They went down the steps into the radial street that led to the Golden Dome. They waited for a magnetic car. It swished to a stop before them, and Niles gave a sudden whoop.

"I've got it! I've got the answer!"

"What is it?" asked Carole. "What can you do now?"

"Listen!" said Niles to Perso. "Can you get me those glass-workers who helped me with the pistols?"

"Yes, but—"

"Don't argue with me. Get them to the laboratory right away!"

"But Magrum—"

"The devil with Magrum! Get those guys up there and I'll put them to work. We've got to have a weapon, haven't we?"

"All right," said Perso resignedly. "I'll do what I can."

THE men were at the dome when Niles got there. He started them to work. One was to build a long gun-barrel with successively energized-magnetic coils. Another went to work on glass bullets. A third prepared woven-glass belts to hold the bullets. A fourth worked out with Niles a method to feed the bullets into the gun-barrel by electricity.

It would have been hopeless if these men had not been exceptionally intelligent and superbly skilled. They did not know metals, but they could do anything with glass.

He left them and went upstairs. Carole was there in the laboratory, helping her father.

"How do you feel?" he asked anxiously.

"Much better," she said, and smiled. "It's time for another shot."

Niles gave her an injection and took one himself.

"Well," he demanded of Dr. Beckwith, trying to be casual and not succeeding very well, "how many inoculated Glass-men are dead?"

Dr. Beckwith's pointed beard bobbed at him.

"I think you'd better come with me to examine them."

"Oh, all right," Niles said discouragedly. "You hate to tell me, don't you? Well, let's get started."

They rode to the Black Dome. Beckwith held back, but Niles strode resolutely to the door. He'd better get it over with. He went inside, and stopped, astounded.

Instead of Glass-men lying on couches and moaning with fever, he found the green-skinned men very much alive. In the center of the big

room, twenty Glass-men were lined up on opposite sides of a glass wall, playing a strenuous game with two glass balls and magnetic rods.

Niles' mouth opened.

"There's nothing wrong with this bunch," he decided at last, pinching himself mentally.

"Here are the charts," said Beckwith. "Of the twenty-one who were ill, all have recovered but two. The rest are in excellent condition. Temperatures and pulse-rates are normal. Big-eyes says there is no breaking down of the skin."

"Well, holy cow!" Niles sank into a chair and mopped his forehead. "I thought I was coming back to a public bonfire—but this is about the most pleasant news I've ever had. Are you ready to give them the fourth injection?"

"All ready."

"And how about yourself?"

BECKWITH'S eyes opened wide. "I've been taking it, of course. I always thought you knew what you were doing."

"Yes, you did!" Niles said affectionately. "You knew it was like stepping into an open grave. Well, how about the serum? Shall we have enough to begin more inoculations in a day or so?"

"I have calculated that we can inoculate three hundred, beginning tomorrow, if you so desire."

"We'll see." Niles rose still somewhat dazed. "I've got to find out how my machine gun is getting along and then take a nap." He grinned. "Maybe a little sun-power wouldn't hurt me, too."

One of the glass-workers was constructing a chamber to revolve like that built into the pistols, but in such a way that when the belt was started into the chamber, the bullets would slip into place through a chute. And a tiny motor in the stock of the gun would keep the chamber revolving, as long as the trigger of the gun was held back.

There was no problem of a firing-pin, because electrical impulses were sent into the gun-barrel to energize the magnetic coils.

PERSO bespoke his quiet admiration.

"It seems very simple," he said. "I wonder that we didn't think of it ourselves."

"It is simple," Niles agreed, "but it isn't my idea. A man in California invented an electric gun in the first years of the Second World War. The wonder is that I didn't think of it before. If it hadn't been for those magnetic cars—"

He covered his mouth with his bronzed hand.

"Ho, hum. I'm going to turn in. Call me if anything happens."

He was asleep almost as soon as his head came down on the glass pillow. And almost at once, it seemed, someone was shaking him. He crawled out of bed and tried to pry his eyes open.

"Who is it?" he asked, shaking his head.

"It is I, my friend," said Perso. His face was grave. "I did not like to awaken you, but it is late afternoon and the Cros are gathering around the city. There must be two thousand of them."

"How about the gun?" Niles was awake now.

"It is ready. The men have tested it and adjusted it to operate smoothly. Magrum has seen it and he is delighted. He wants to talk to you."

"Fiddlesticks! Magrum would do better to let me do my job."

"He is the Regulator, my friend."

"Oh, sure." Niles yawned and stretched. "Well, come on."

Magrum was pleased to see Niles.

"You have done much for us, my friend, but now we are depending on you to save our city from attack. I am sorry for the handicaps we have forced on you—"

"Never mind," said Niles. "We've got to work out a plan to lick these heathens. Where are they most likely to attack?"

"I don't know that. What do you suggest?"

"How about the ceiling of the city?" Niles asked.

"It is very strong. It is doubtful that they can harm it."

"Then the weakest part is the entrance."

"I think so," Magrum agreed. "The doors are of construction glass, but they are not made to withstand continuous pounding with metal clubs."

"That means they'll come through the doors. And we'll be waiting for them," Niles said grimly. "How about that glass sled? Can you mount an electric-power unit that will operate the gun?"

"That will be very simple, my friend."

"Then do it," Niles directed. "And get the sled ready to travel. We'll give these boys something to remember us by."

When he reached the laboratory it was dark outside, but under the great dome the City of Glass glowed quietly with soft colors as it always did.

The gun was set up. The green-faced technicians stood around it proudly. Niles nodded to them, stepped up to the gun. He tried it on its swivel base, glanced over the mechanism and the belts of bullets.

"Where's your practice target?" he asked tersely.

THEY wheeled a sheet of glass into place at the other end of the room. Niles trained the gun-barrel on it. His hands were steady, but he was tense inside. The fate of the City of Glass rested on the operation of this weapon.

He pressed the contact. There was a little sound of suction from the barrel, but no explosion, no smoke, no recoil. But sharp cracks came from the other end of the room. Niles released the contact and looked up. He walked over to the target.

In the center of the plate of glass were fifteen or twenty holes, in an irregular pattern but one that could be covered by Niles' two hands. He looked at the back. Every bullet had fully penetrated the inch-thick glass, and some had damaged the wall beyond!

Niles released a deep sigh. He walked back to the gun.

"You boys are real mechanics," he said warmly, and the glass-workers turned pinkish-green with pleased embarrassment.

But now the Cros were marching on the desert outside. The thud of thousands of feet vibrated through the ground. Green Glass-men and golden Glass-women huddled in little groups throughout the city.

A flash of light glowed on the visiphone.

"A column of Cros, twelve abreast, is marching to the doors," came an entrance guard's report.

Niles picked up the machine gun and went down. He set it in the middle of the street and placed the box of cartridge belts at one side.

"Let them come," he said grimly.

The marching feet grew heavier. Yells and cries sounded beyond the doors. The battering of clubs echoed on the glass plates. But the glass was strong. The metal clubs didn't break it.

"Maybe," said Niles, just a little regretfully, "we won't get to try out this thing, after all."

The noise at the doors stopped. Glass-men came into the street and looked happy. But not Niles.

"They haven't quit," he warned.

There was a great crash at the doors. The glass plates buckled and broke. A huge metal battering ram came through the hole. Cros were crushed against the broken edges. One Cro held on to the battering ram and was under it when it dropped to the floor inside.

The Cros poured through the hole by tens and then by hundreds. Some started up the side streets, but they were called back. Presently a thousand Cros formed a column in the street and began their march toward the Golden Dome.

Niles waited until they were close. They swung their clubs and threw firebrands into the air. There was now no Glass-man on the entire street except Perso, at Niles' side. The only sounds were the cries of the Cros and the thud of marching feet.

"Do not let them get too close, my friend," urged Perso. His green face was pale.

"They won't!" said Niles.

He gave them a sudden burst from the machine gun. Two men dropped, but the rest surged forward. Then began a slaughter. Niles held back the contact and swung the gun, raking

the column running toward him. Cros fell by the dozen; but more, pushing in through the gates, surged on.

"Tough!" grunted Niles.

The gun was spitting death, but more Cros poured over their dead and lumbered forward in a solid stream.

"They're getting closer!" Perso warned.

"I'm holding it wide open," Niles snapped. "Give me another belt!"

HE HELD the muzzle on the first ranks and mowed them down. He fired over their heads to strike those behind, then brought the muzzle down and sprayed death into the front ranks again. They were within forty feet now. For perhaps a minute Niles held the gun on them. The street was choking with dead.

It was a strange battle. No roaring of planes or booming of big guns. No chattering of automatic rifles, no rumble of tanks. Only the hoarse cursing of the Cros, the clatter of metal clubs on the glass street, the deadly soft snarl of the electric gun.

The street became jammed with bodies. A Cro fighter jumped on top of the heap and shouted, swung his club in the air, urged his followers on. Niles turned the gun on him and the invader pitched forward, to fall face down on the glass street.

Niles started another belt. He aimed just over the heap. Now the Cros, blocked by their own dead, began to scream instead of shout. They turned and tried to flee, but piled up in mad confusion.

Those nearest the broken doors began to fight their way back into the desert. A thoroughly terrified stream poured back through the sundered gates.

Niles didn't want to stop the retreat. He kept his fire on the nearest ones. Not many were left when he called for the sled.

A dozen Glass-men carried it over the smashed bodies and through the doors. Perso took the controls and they roared out over the desert.

"Go past that bunch over there," Niles directed.

"You're going to kill more, my friend?"

"Enough to settle this war," Niles said grimly. "It's we or they."

The sled roared past. A barked command and Cros surged toward them from the ranks. The machine-gun raked them mercilessly. Men fell. Others came on, but the sled was gone already.

"Circle them!" shouted Niles.

The sled swerved grittingly around the regiment. The electric gun sprayed death. Cros started for their tormentors, but the sled was always gone. Two circles Niles and Perso made of the remaining fifteen hundred men. The white desert floor was littered with black blotches. Yet not a hand touched the sled, for it was much too fast.

They started around again, but this time a Cro stood out in front with his hands upraised.

Perso stopped the sled a hundred yards away.

"Look out for a trick!" Niles warned.

The Cro came slowly toward them, with Niles behind the gun, watching every move of the men, glancing behind the sled once to see that they were not trapped.

The Cro halted. Niles motioned him onto the sled. He grunted. Fear shone in his shifty eyes, but he got on.

"Come with us," said Niles. "We want to make peace."

The Cro glared at him in futility.

"What are you going to do with him?" asked Perso.

"I have just promoted him from general to ambassador," Niles said cryptically. "Now back to the city. The hardest job is yet to come."

CHAPTER XX

Fruits of Victory

BY noon the next day it was known all over the City of Glass that Hart Niles and Carole Beckwith had spent a night with Ytlair. It was known, too, that Niles and his electric

machine gun, single-handed, had routed the massed army of the Cros from their attempt to capture the City of Glass.

Groups of green-skinned Glass-men and golden-skinned Glass-women were gathered in glowing glass buildings and in the street, talking of this strange white-skinned young man, who had taken the welfare of the City of Glass and its inhabitants as his own problem, and who had risked his life to save them from invasion.

At one o'clock in the afternoon, a delegation of Glass-men went to Magrum and asked that Hart Niles be given a place on the regulating body.

At one-thirty Magrum greeted Niles in the Green Dome.

"My friend," said Magrum sincerely, "you have saved the future of our race and you have earned a voice in its affairs. For some reason that I do not fully comprehend, you understand better than any of us the strange mentality of the Cros and of Ytlair.

"We want only to live at peace, but it is now apparent the Cros have not the same ambition. We do not understand that. Therefore, I am calling a meeting of the regulating body to propose that you be included on it."

Niles stood straight and tall before the white-haired Regulator. His bronzed face was earnest, his shoulders erect.

"You do me an honor," he said, "but you have not taken me into your confidence. Without full knowledge of your liabilities and resources, I can promise nothing."

"I do not understand," said Magrum.

Niles' answer was frank.

"There is some secret about the Golden Dome that seems of vital importance to this city."

Magrum smiled tolerantly. His skin rustled faintly as it moved.

"Come with me," he said quietly. "You have earned the right."

They rode in a magnetic car to the great, glowing Golden Dome. Before the big doors a guard of six men fell in behind them.

"This is our greatest possession, our most valuable secret," Magrum told Niles solemnly. "I think the Cros suspect the value of the Golden Dome to us, and that is why their attacks have been in this direction." He paused. "Never before, in half a million years, has anyone not a true member of our race been permitted to enter here."

He waited for what seemed to Niles an interminable time, gazing on the great golden glass doors. If Niles could have backed away from his position then, he would have done so. From Magrum's solemnity and from the Regulator's deep feeling, he saw the vital significance of this dome to all Glassmen. He was ashamed now that he had insisted on penetrating it.

But Magrum raised his hand. The great glass doors slid up noiselessly. Magrum stepped forward.

Niles followed. At first he saw nothing but sheer beauty—glass walls in softly shining colors, frosted, glowing floors, Glass-men and Glass-women going from one room to another.

MAGRUM walked with measured, stately tread. The workers lined the sides of the corridors and stood at respectful attention, silent. The only sound was the soft tap of glass shoes on glass.

Magrum stopped before a great glass instrument board, with lights and dials in many glowing hues. He scanned it for a moment, pressed a glass rod. Doors slid apart. Magrum stepped into an elevator. Niles and the guard followed.

The doors came together and the room started down. It descended several hundred feet. Doors slid open and Magrum marched out. Niles followed, into a world of dazzling soft whiteness.

The immediate chamber in which they stood was a great hall, carved from some white material that glowed and glittered from innumerable lights. It was as large as Ytlair's throne room, but different. Here were light and cleanness and wholesomeness.

They stepped onto a moving walk and crossed the long length of the chamber to the far wall. They en-

tered a vast labyrinth of white rooms and dazzling pillars of white. Here men worked at the walls, digging out the white material and loading glass cars that swept noiselessly toward a central point, dumping their contents into hoppers that went endlessly up.

Niles swallowed. He cleared his throat and tried to speak. The words died. He stared at the dazzling walls and finally got out the words.

"Your nitrate supply!" he said huskily.

"All of it," Magrum declared simply. "You can understand, perhaps, why we have protected this supply better than we have defended our individual lives. In this mine lies the very existence of the race."

"Yes," Niles said soberly. He was silent for a moment, then he spoke of a practical matter. "But it must extend for miles in every direction. Why haven't the Cros dug into it from outside the city?"

"For two reasons," Magrum told him. "They do not know how far it extends. They have not asked themselves how much nitrate we have. They know only that we have nitrate, and—for some reason I cannot understand—they want it."

"But—"

"The second reason is in the physical nature of the deposit. It lies under a thick sheet of lava that would frustrate any but the most determined attempt to penetrate it. At the site of the Golden Dome, where Kasner discovered it long ago, it broke through the surface during some long forgotten upheaval of the Earth. But from this point the deposit slopes downward, until at the edges of the city it is several hundred feet below the surface."

"The deposit itself must be very thick."

"It is," Magrum acknowledged. "Our men work on some twenty different levels. We prefer to dig down instead of out, because it simplifies, for the present, our eventual problem of shoring up buildings when the nitrate is removed."

"But eventually you will have to dig outward. What will you do then?"

Magrum sighed.

"It will be the responsibility of future generations to secure metals to shore up the city. We shall need iron—a great deal of it."

NILES nodded as if he had expected this.

"What about glass?" he asked.

"We cannot make glass with the rugged tensile strength of steel. Up to a point, we can design glass for any purpose—but not for this kind of work. To hold up the structure of the city itself, we must have something of a different strength."

"Hmm," said Niles. "You've got a job on your hands."

They went through more levels dug out of solid nitrate. They saw dozens of cars loaded and their contents hoisted to the top. And finally they left the great Golden Dome as they had entered it. Their guard dropped back at the doors.

"Will you meet the regulating body this afternoon?" asked Magrum.

"In one hour," said Niles. "But before I am made a member of the body, I have a proposition to make."

"You can make it afterward," Magrum suggested.

"No." Niles was positive. "The proposals I shall make will vitally affect the future of the city, and I want the decision to be made by Glass-men alone."

Niles had decided, too, that if they refused his proposition, he could not be a member. But this he left unsaid.

At four o'clock Niles stood before the regulating body—five Glass-men, including Zudat, at a long glass table in Magrum's office in the Green Dome.

Niles stood erect before them, vigorous and sincere.

"As most of you know, I have talked to Ytlair himself," he began.

The Glass-men listened intently.

"I believe I understand the mentality of this man as none of you do, because you never have known such a man. He is a fanatic, a self-centered egomaniac. Everything is interpreted by him as an addition to or a subtraction from his own individual greatness. I repeat, he is a fanatic. You can deal with him on no ordinary basis."

"Do you consider him dangerous?" asked a Glass-man.

Niles drew a deep breath but controlled himself.

"What do you think his men would have done last night if we had not had a superior weapon? His army is still camped outside the city, waiting for his decision as to whether they shall retreat or shall attack again."

"We still have the weapon," said Zudat.

"But," asked a second Glass-man, "can't we make peace with him?"

Niles smiled a little cynically.

"Peace is a thing that depends on mutual trust—and this man is one you cannot trust."

Magrum nodded soberly.

"I can understand that. But tell us, Niles, why does he want our nitrate? Is it to make explosives?"

Niles looked straight into Magrum's eyes.

"It might be that. But primarily I think he wants to feed his people."

"Feed his people?" Zudat's astonishment was partly skepticism.

"Exactly. How do you think the Cros lives? On air?"

"Why—we've never seen them eating."

"Nevertheless, in those dark caverns of the Cros, they raise millions of square diameters of food."

"You have a suggestion," said Magrum searchingly.

"I have. I propose three courses of action, to be undertaken simultaneously."

"What are they?"

HART NILES squared his shoulders and drew a deep breath.

"One," he said, "give them limited supplies of nitrate." He heard a sharp intake of breaths, but went on. "Two, take supplies of iron and other metals in exchange. And three, perfect weapons for permanent defense."

Magrum rapped quickly on the table.

"We will discuss points in order. First, Niles proposes to give the Cros limited quantities of sodium nitrate."

There was silence for a long time. The Glass-men stared at Niles and searched his face.

"They must have nitrogen for food," Nils repeated. "Do not forget that."

"Wait." Zudat raised his hand. "If we refuse to give them nitrate, won't they die out?"

"Not until they first make desperate efforts to destroy the City of Glass."

"Couldn't we make war on them?" Zudat demanded.

"I expected that question sooner," said Niles. "We cannot do so successfully. There are fifty thousand of them, in untold miles of caverns. The Glass-men would inevitably be struck down before we could accomplish anything at all."

"But our own supplies," Magrum spoke up. "You have seen they are vital to our race."

"That brings up my second point," said Niles, "to exchange nitrate for metals in equal weight. There are two reasons for that. You must have iron to reinforce the city against attack, because this is the one place on Earth which you must control to exist. Also, you need iron for steel to support the city as the nitrate is dug out."

"Steel?" asked the third Glass-man.

"It is made from iron and is much stronger. I can show you how. Eventually the Cros will have more powerful weapons than they have now, but that will be many generations hence. In the meantime, you can build an impregnable city if you have sufficient iron."

"If those items are arranged for," Niles went on, "the weapon problem can be handled more leisurely. For the present, a supply of machine guns is sufficient."

"And still," remarked the third Glass-man, a very old gentleman with deeply lined face and a pink tunic, "you have not told us how to replenish our supply of nitrate."

"That," said Niles, "is the easiest problem of all. With the iron we secure from the Cros, we can build machinery to extract nitrogen from the air."

"We never have been able to do that," replied the Glass-man, "except in small quantities in the laboratory. Our growing plants require many tons

daily, and such an artificial production is impossible."

"Not with iron," Niles contradicted him. "You have been unable to fix nitrogen because you do not have the heavy machinery. You cannot make such machinery from glass—but you can from iron. At five hundred degrees Fahrenheit, and with a pressure of two hundred atmospheres, using uranium as a catalyst, you can fix nitrogen in quantities."

"How do we know that?" asked the elderly Glass-man.

"It is necessary only to trade enough nitrate for iron to build the first machine, and I will show you."

"But our city will be filled with noises," Zudat protested.

"Not if the plant is located in the bottom levels of your mine. Air can be pumped to it, and water for the hydrogen that will be necessary."

"That," said Magrum slowly, "would take care of our nitrate problem for an unlimited time."

"It will," Niles told him forcefully.

THERE was talk, then, around the table, in Glass-man's language. Niles made no attempt to hear or to interfere. And finally Zudat, he of the atavistic instincts, rose, his green skin creaking. He took a deep breath.

"This man," Zudat said with emphasis, "has shown himself sincerely interested in the welfare of the City of Glass." He stopped and looked searchingly at Hart Niles. "I propose that we make him a member of the regulating body, with the position of regulator of defense and of trade with the Cros."

There was complete silence for an instant, and then the august regulating body broke the stillness with the rustling and rubbing of their glass skins, as they moved in their chairs and turned to look expectantly at Niles.

Niles breathed a great sigh of relief. It was over, just like that. He shook hands with all of them.

"I will see the captured Cro general this evening," he said to Magrum. "We will give him a ton of nitrate to take back to Ytlair with our message."

To Zudat, who was last, his words were especially warm.

"Thank you, my friend. You are a true patriot."

"I do not understand," said Zudat, "but I know that you are loyal to us. We trust you and have confidence in you such as no Glass-man ever has given to one of a different race before."

"You won't find me abusing it," Niles told him solemnly.

He stopped a moment and whispered to Magrum. The Regulator nodded and pressed a glass rod.

* * * * *

Niles found Perso in the apartment with Carole and Dr. Beckwith.

"The news has been flashed all over the city," said Perso warmly. "I am glad."

"You are as much responsible as anyone," Niles declared.

"You had a lot of nerve," said Carole, "asking them to give away the nitrate."

He turned to her.

"Think you can live for awhile in the City of Glass?"

Carole's face was beaming.

"I'm going to love it," she said. "I've just seen Perso's wife and their baby. She's awfully nice, and the baby is so cute! His wife is going to make me a new glass dress."

But she became doubtful.

"If we could only find something better to eat," Carole told him.

"Don't worry," said Niles. "I'm going to fix that. Magrum is having the rabbits brought into the city. The falcons are already here. We can feed the rabbits on those plants. They can learn to like that stuff. Then we feed the falcons on rabbits. We'll have rabbit fried, rabbit stewed, rabbit boiled, rabbit baked, rabbit roasted, rabbit—"

"Maybe," Carole suggested, "the plants will be better."

"Stewed falcon," Niles went on. "Falcon eggs for breakfast. We'll plant orange seeds for fruit. It won't be half bad."

Dr. Beckwith's bifurcated beard came up.

"And—"

Niles smiled. "And you will have your laboratory," he said.

He rubbed his chin and looked into a mirror.

He saw Carole's brown eyes watching him.

"What's troubling you?" he asked.

"Niles," she said softly, "you are a really great man. You came to Amarillo on a freight train, afraid even to tell your name. And now you have saved civilization."

"And you with it, Carole."

A LOW cry came from her lips. She ran to him, put her arms around his neck, and he held her tightly.

"Think you'll like me without a beard?" Niles grinned. "If you do, your Saturday nights will be taken up for a long time."

A muffled sob came from her.

"Now what?" he asked gently.

"After all these years, Niles, you still can't have a real meal—with meat, I mean."

He held her out and grinned at her.

"Among other things," Hart Niles said, "before the war I worked out a way to make artificial steak—with all the proteins. I can even duplicate the taste—if I can remember what steak tasted like, after eight hundred thousand years.

"As soon as I get to it, I'm going to make a sirloin as big as a flowering pancake—and three times as thick!"

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COMING IN THE NEXT ISSUE

TWO WORLDS TO SAVE

An Amazing Complete Novel of Future Peril

By WILLIAM MORRISON

•

The Marble Virgin

By KENNIE McDOWD

Amazing Happenings Take Place When a Modern Pygmalion Clashes with a Mysterious Svengali!

TIME, as everyone knows, is valuable and cannot be recalled. An hour from now, perhaps less than that, time probably will mean nothing to me; possibly it will be a factor with which I no longer have to bother—but now it is vitally important. I am faced with the task, self-imposed it is true, of reporting certain events, and I dare say that no historian ever was so impatient to see "Finis!" typed at the foot of the last page. For within sixty minutes I am to join Naomi, the marble virgin!

Before I go, while yet I inhabit a living body, and breathe, reason and act in the normal manner customary to me, I must chronicle all that has happened in the last four months, beginning with April. When I am gone into the great void with a body of I know not what shape or contour—if a body at all—I want the world to read these pages. Thus all mankind will learn why I now act as I do and why I will dare inconceivable possibilities of terror to become invisible so that I may again claim the marble virgin.

To become invisible! I mean that—and more! I mean that I, Wallace Land, shall enter the terrible cabinet devised by Professor Carl Huxhold; I shall be bathed in the awful rays of invisible force emanating from Huxhold's fearful electron-dissolver and will become nothing! Nothing, unless his tale is true, and I am shot forth into the vapor-filled Universe, a mass of radio-active split-electrons, to find Naomi.

That is what I hope will happen, and what I feel assured, without knowing why, will happen!

Technically, in the eyes of the law, I am a murderer. I do not accept this charge, for I believe I was but an executioner, whether legally justified or not. Professor Carl Huxhold deserved death. I am only sorry that I could not kill him gradually, to stab him one by one with a thousand twisted knives! You will say I am mad. But read on. Huxhold took from me that which I prized more than sweet life itself —Naomi!

When I saw that she was indeed gone, when Huxhold in his hour of triumph taunted me and swore that I should never again clasp her in my arms, when I realized that never again would I feel her delicious kisses on my lips, I killed him! It was a pleasure to thrust the knife into his cruel heart, to see his demoniacal face whiten, his popping eyes stare, and finally to see the crimson flood gush from his breast as I drew the knife out and he fell!

PERHAPS the name of Wallace Land means nothing to you. Yet among any circle of sculptors it is uttered with respect. Why not, when I have had commissions that excited envy from sculptors much older than myself?

I began early, with clays. At twelve I could so use my fingers as to form and mold a semblance of life into the tiny figurines I created. Though my parents were poor, they contrived to draw attention of the right people to me. Thus, I became the protegé of a wealthy lover of sculpture, and was sent to Paris, Rome and Berlin! This, when I was but eighteen. You are correct in assuming that I was proud!

Yet do you know what one must go through to become capable of reproducing in marble the likeness of, say, a woman? As the artist has to master pigment mix and the judgment of color values, as the musician is relentlessly enslaved to the practice of certain difficult scales, so does a sculptor bow to the acquisition of knowledge in molding. He usually studies from models in the nude, learning how a bare body looks in hundreds of different positions. Then it is a matter of endlessly striving to duplicate. As in anything else, practice and work must complete his tutelage.

For three years after returning from Europe, I labored hard. One with the skill I have need never be idle! I was quite successful by the time I reached twenty-eight,

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EDITOR'S NOTE

Some stories are forgotten almost as soon as they are printed. Others stand the test of time.

Because "The Marble Virgin," by Kennie McDowd, has stood this test, it has been nominated for SCIENTIFICTION'S HALL OF FAME.

In each issue we will reprint one of the most outstanding fantasy classics of all time, as selected by our readers.

We hope in this way to bring a new prominence to the science fiction gems of yesterday and to perform a real service to the science fiction devotees of today and tomorrow.

Naomi breathed, and the beautiful arm which was half-raised trembled

my present age. Then I met Professor Carl Huxhold that morning in April, four months ago. Hardly had the snow disappeared off the nearer hills, yet Spring spoke in the soft, warm winds that blew, and already the cottonwood trees had new, gleaming, miniature leaves. The park greens were velvety, lilacs about to bud forth, and that aroma of hedge-rows quickening with fresh sap came to one's nostrils like a piquant wine. It was Spring! Geese were flying over, booming down paeans that must ever excite adventurous youth!

The studio where I had worked since coming back to America was a big attic room on the third floor of a great, red sandstone building. My living-room abutted it. It was really an impossible place during cold weather, and though I could easily have afforded quarters more comfortable, I dreaded the task of moving and so had endured its cheerlessness. The last winter made its shortcomings more apparent than ever. April, dawning with her subtle assurances of Spring, brought about a change.

Suddenly I felt myself answering spring's magnetic call. I wanted to bound, to caper like a frisky colt, to run! Remember, I am but twenty-eight! No less sensitive than any artist is, I responded to a seasonal impulse. I would move!

An advertisement in a morning newspaper brought me to a little apartment house with a spacious, pretty park adjacent on the north. What Jamison, the slim, stooped, middle-aged janitor, had to offer was a suite of three rooms on the second floor. On inspection, this proved all that I desired, and the terms of the lease were satisfactory. Wonder here makes me pause —who will be the succeeding tenant, when I have left to seek the marble virgin, Naomi?

"Professor Carl Huxhold"—I read the neatly engraved card tacked to the door of room number 12, directly opposite my new studio, as I returned from breakfast downtown on my first day in the apartment house.

NO premonition either of good or evil came to me as I read the name. All that I thought was that I at least knew the name of one tenant, a neighbor on the same

floor, whether he turned out to be a bore, a grouch, or a good fellow with whom it would be interesting to chat. As I stood there, fumbling for the right key on my keyring, the door of number 12 opened and the tenant looked out.

Professor Carl Huxhold was shorter than I, and he had a body like a barrel—or like a gorilla! Hanging low at his sides, his hands, and what I could see of his wrists, were as coarsely hairy as the legs of an airedale! His dark suit was wrinkled and ill-fitting, but his face was clean-shaven and smiling, his curious, sea-green, slightly popping eyes twinkling at me from behind thick glasses.

At this first meeting, I rather liked him; it was difficult not to. Later, when I knew him better—but wait.

"A scientist!" I told myself. "Above such things as clothes. Brainy—no doubt of it!"

For Professor Carl Huxhold had the shape of head that fiction writers like to ascribe to Martians; a bulging dome that narrowed down to a pointed chin. Here was a man who soared into infinite realms of learning, who delved in the very bowels of knowledge! Personal magnetism emanated from him.

Under his peculiar twinkling gaze, I felt that an aura, invisible yet commanding, was enveloping me. Then my skin prickled and I felt the epidermis tighten on the back of my neck! Was it because I suddenly realized my proximity to a being who recognized no inhibitions before his scientific lore?

Then he was holding out his hand and introducing himself. "Wallace Land?" he smiled. "Jamison said you were moving in. I'm Huxhold. Come in and see me sometime, when you aren't too busy with your clays and marble."

Before I could more than mutter a greeting in reply, he had clapped me on a shoulder and hurried off. Puzzled, I watched him run down the stairs, taking the steps three at a time. I was to learn that, too, was in tune with his queer abilities. Huxhold was a hot-bed of high-tension energy. He was unable to walk slowly, but skipped along like a boy, half-running. Odd-mannered, his brain flashed like lightning, cut-slashed and leaped figurative mountains to reach logical goals—or results so illogical and true that none save himself could understand.

We got to visiting back and forth. He was most interesting, all right, but many times I was uneasy in his presence. That brain of his—God! Why he endured my blundering ignorance, why he cared to come to me and explain his marvelous deductions, will ever be beyond my comprehension. I have very little understanding of the sciences.

Radio, for instance. Huxhold devised a twelve-tube radio with which, one night that I was with him, he logged two hundred and twelve stations, in this country, Europe, South America and Africa! On wavelengths, he explained, ranging from fifteen meters to a thousand! It was like an easy-chair adventure about the world.

Huxhold talked of Steinmetz, DeForest, Marconi—and other electrical geniuses.

"Bah!" he exclaimed, his sea-green eyes seeming to glow with chameleon colors. "Let them come to me. I will give them greater inventions than television. Bah!"

"Do you consider them so much inferior to yourself?" I asked, somewhat nettled.

PROFESSOR CARL HUXHOLD laughed contemptuously. Merriment such as his, I have never heard elsewhere. It jarred by its jeering note, even though the undercurrent of ridicule that ran through it was intangible.

But on that occasion, which was early nightfall, he vouchsafed no information concerning any fearful capability as we sat in his living-room, a disordered place, smoking. April had come and gone. This was the night of May-day.

Up to now I had done very little serious work. Perhaps I had spring-fever, though I have always believed that that expression is but an excuse to cover laziness. Still I was finding it impossible to concentrate as I wished. Huxhold's strange personality was driving all thoughts of art from my head. I could not put out the directed effort of will, imagination and physical skill, that was necessary if I was to do artistic sculpture!

So I took to avoiding Huxhold. He sensed it, and twitted me with it, which further angered me.

"What is he to me?" I asked myself, bitterly. "Am I not Wallace Land, the sculptor?"

Whatever my shortcomings, I consider that art is greater, of infinitely superior benefit to the world, than any cold cruel law of science, or machine of metal rods and wheels. No doubt the latter are necessary; but they do not further the march of intelligence as does art.

Huxhold merely experimented. His entire apartment resembled a machine-shop—even a junk-shop, such was its scramble of contrivances of all sorts. There were littered tables of chemicals, retorts, apparatus, an electric-furnace, irons and devices—more than I had seen in any other laboratory.

But, thought I, all these are not comparable to a single piece of sculpture, where every line of the carved marble is like a lyric!

Huxhold apparently had wealth sufficient to pursue scientific machinations as he willed. Certainly it was none of my business. I realized that I was being very foolish in thus allowing him to distract me from my art. Presently I began to feel mentally rectified, at ease in spirit, and ready for work. God gave me great skill, and I would use it greatly.

On a dais in my studio there rested a block of gleaming, white marble. It stood an inch over five feet in height, over eighteen inches through. It was of itself beautiful, but I saw in it something more beautiful still! Could I carve this block of marble into the likeness of a maiden on the verge of womanhood, into a superb marble virgin seeming to stand at the threshold of all God intended His priceless creation,

woman, to be?

The vision with which I was inspired was flawless, perfect. I trembled with the creative power that suddenly seemed to sweep through me. When completed, I would call the marble virgin—Naomi!

Already I could see how the finished statue would appear. Already I knew what the posture of her limbs would be. Already I pictured the delicious curves of her arms, her throat and breasts, the tilt of her small round chin, and the molding of her shell-fragile ears. She would be beautiful—if my great talent could bring reality forth from the vision!

Huxhold should be forgotten. In the tremendous requirement of energy for the lovely task, Huxhold should be erased from my thoughts. I would live only for my dream in marble, that I might not mistake a single chisel stroke.

Having decided upon this course of action, I went directly to work. Why be tardy to a task as glorious as mine?

BUT upon the second day, the man whom I supposed I could erase from my life as a slate is wiped intruded himself. Looking up from my labor on the marble when I heard the door open, I saw Professor Carl Huxhold entering. Strangely enough, I was not sorry to see him, in a way, despite antipathy to his personality, I had grown to like him. It was not friendship, but Huxhold was interesting.

He nodded appreciatively at the cutting which was already accomplished on the marble.

"A woman?" he asked, thrusting his hairy hands in his trousers pockets.

"Yes," I said simply.

For a matter of minutes he said nothing else but watched while I worked. I was exasperated that he had guessed what my skill was toward, and with his probing glances which he bent upon the marble. Somehow it seemed as though the white stone was really a woman, bare and beautiful, and that Huxhold was feasting his hot eyes upon her nudity.

I threw down my tools. What I would have said was unuttered as Huxhold asked me an amazing question!

"Wouldn't it be great, Land, if the marble could be brought to life?"

I stared at the man, doubting his sanity. Then I smiled. He was joking, of course. I said as much.

"Maybe," Huxhold mused. And he walked out without another word.

May passed, a month of many showers. In the shelter of my studio, intent upon the marble virgin, I did not care when it rained—was hardly aware of it when it did. But every early morning and evening that it was possible to be out, I took long walks. These journeys rested me, helped with the problem every artist faces—the letdown in spirit after tense, concentrated effort, when it seems that the result of one's application isn't as perfect as was the previsision.

Huxhold, too, was busy. But upon what I knew not. He did not call, nor did I visit him. We merely exchanged greetings in the hall. That was all. Yet I sensed, perhaps from his strange, burning glance when it briefly rested upon me, that I was in his thoughts. I flattered myself that it was respect of me, engendered by my art!

From Huxhold's apartment came the noise of pounding, the rattle and clank of his whirling lathe, the buzz of a little sawing. Once I heard crackling sizzle as when the carbons of an arc-lamp are caught and pulled apart flaming. Huxhold was busy upon television instruments, I thought, devising a method by which storage-batteries might be charged by radio. He had told me that he was interested in the possibility.

Meanwhile, sixteen, eighteen, even twenty hours a day, I used the tools of my art upon the statue of the marble virgin. It was hard work, but I gloried in it, loved it! Loved it as I loved the marble upon which I toiled. Because every day it became more beautiful, more the perfect likeness of a woman, a virgin like unto Eve herself.

Naomi, the name I had given her, was as fitting a name as that borne by the first woman on this earth. And I, Wallace Land, sculptor, loved Naomi! I loved a likeness that I was creating, a young woman in marble!

WITHOUT conscious arrival at such a conclusion, I believed that Fate had decreed it, had foreordained that I who had never loved before would be drawn in irrepressible mate-hunger to her! And always I would seek love in vain—because Naomi was stone. I could love her, but the marble virgin could not reply with one endearing word. Though the expression on her face was pleasant, Naomi could never smile; and nothing, unless I put it there, ever could bring a dimple to her smooth, firm cheeks.

Yes, foolish as it may appear, I was daily more enraptured of the marble virgin, Naomi. I loved her as any artist loves a pet brain-child, a work that he is proud of and responsible for, and that is all. Am I to be blamed if I entertained the wish that she was real? I did wish so, with all my heart.

It was about the first of July, and the days often uncomfortably hot, that a series of loud and excited shouts emanating from the apartment of Professor Carl Huxhold brought me on a run to his door. The hour was six, in the evening. I instantly concluded that Huxhold must be hurt, perhaps caught in some of his machinery, and had yelled to attract my attention.

But, no! Unhurt, Huxhold stood near one of his laboratory benches. His glasses dangled from one ear. He had torn open the neck of his shirt in a fine disregard for good cloth and buttons, and his hairy chest was exposed. The expression on his face was terrible, and I started abruptly back after throwing open his door.

"Come on in!" Huxhold insisted. "I'm all right. I lost my temper and did some tall cursing because that confounded beast bit me!"

Huxhold pointed beneath a bench where

a small, nondescript cur, very frightened, trembled and crouched down.

"A dog? What in the world—" I began.

Huxhold for the moment made no answer as he bound up his bitten hand. He now had his glasses back astride his nose. And his curious, sea-green eyes glittered strangely behind their thick little windows. Then:

"It's done, Land!" he declared. "The greatest piece of apparatus in the world. Carl Huxhold is the inventor. Look!"

I followed the directing wave of his bandaged hand and for the first time saw the electron-dissolver and the cabinet! The latter was six-and-a-half feet tall, with a top, bottom and three sides, but open on the fourth. The outside was plain and smooth, of dark wood that I took to be walnut. The inside was not an open rectangular space, but was curved in a big half-circle from side to side, like a round-bottomed tub stood on an end.

This half-circle was a single sheet of thick lead, fastened at top and bottom, and coated with what I took to be enamel, or thin glass. The coating seemed to shimmer and glow. It was now a deep, dull red, now a vivid violet, appearing to comprise both colors and seem at the same time a weird green.

The open side of the cabinet faced toward the electron-dissolver, a squat and box-like affair having much the appearance of a radio, not overly large, on legs. There were many dials, switches, and tiny ammeters, both on the top and front. Directly in the center of the front was a sort of horn-shaped opening.

THE horn was carried six or eight inches forward from the machine and was not round at the mouth. It had a rectangular shape, its position corresponding to that of the cabinet, which it was pointed toward.

"The greatest invention in the world!" Huxhold repeated. "It was made by the great Carl Huxhold. Let us catch that accursed dog, Land, so I can show you!"

"An experiment?" I demanded.

"No! A certainty!" Huxhold snatched his coat from a table where he had carelessly thrown it. With this protecting his hands, he made a dive under the bench at the frightened, shivering animal. He succeeded in catching it, and came up triumphant, his eyes blazing.

"Look here," I broke out. "I won't be a party to any torture of that dog, Huxhold. Count me out. It's inhuman!"

Before I could further object, Huxhold seized a hypodermic needle and injected some fluid into the animal's neck. The dog almost immediately became quiet, lethargic, but it did not become unconscious. Now its eyes were luminous, beseeching, pitiful.

I cursed. Huxhold set the dog inside the cabinet, where it sank on its side, watching us with that fixed, pleading gaze.

"Huxhold—" I began.

But he caught hold of my arm and drew me back from between the cabinet and the electron-dissolver. Another detail drew my eyes. There were heavy, insulated wires leading from the box to an electric switch above a farther bench. Huxhold snapped this switch shut, and immediately a low humming came from the electron-dissolver.

"Watch!" Huxhold commanded, his voice rising shrill and excited. His eyes snapped, glittered—glowed with a light which bordered on the insane!

Then Huxhold touched a vernier-dial, began to turn it slowly. An awful radiance shot forth from the mouth of the rectangular-shaped horn, bathing the entire inside of the cabinet, about six feet distant from it, in a torrentous luminosity.

"Watch!" shrieked Huxhold.

He touched and turned another dial. The poor, sluggish-limbed dog which had stirred and crouched lower as if hoping to escape whatever dreadful fate it was to meet—at once vanished! The cabinet stood empty!

"Great heavens!" The cry was drawn from me involuntarily as I blinked and shook my head, trying not to believe what I had seen. This was necromancy, black art, demonology. Conjuration raised to the nth degree, and aided by the bewitchery of a genius in science.

Huxhold's strange, sea-green eyes, glowing with fires one does not see in a normal person's eyes, blinked and twinkled behind his thick glasses.

"It worked," he said quietly. His low words had all the effect of a robin's soft cheep after the lightning and thunder and rain is over.

"Yes," I agreed dumbly, "it worked. But how?"

"There is another thing I want you to see," continued Huxhold in that same confident quietude. "I noticed a marble leg bit of sculpture in your studio. Do you still have it? Will you run and get it for me?"

I WALKED across the hall into my workroom like a man in a dream, found the leg—a limb broken from a small statue I had made several years before—and returned with it to Huxhold's laboratory.

Huxhold took the marble leg, which weighed nearly forty pounds, and leaned it upright inside the cabinet. Again I watched, my heart pounding and my hands clenched. What terrible revelation was I now to see? Would the leg disappear as had the flesh-and-blood dog?

It did not. Though the broad beam of radiance again flooded the cabinet, and the glassy-surfaced leaden curve seemed to respond with reflected shimmers of weird, many-colored luminosity, the leg stayed.

But there occurred a change in its appearance, even as I gazed. It grew whiter, a faint pink then suffused it, and suddenly the knee bent, and I distinctly saw the toes wriggle! A second later it had collapsed onto the bottom of the cabinet, the stump end, where the marble leg parted from the statue, revealing itself as quivering, bloody flesh!

Before I could recover myself sufficiently to move closer, Huxhold twirled the identical dial that he had when the cabinet had held the dog, and the leg vanished! Again Professor Carl Huxhold's awful cabinet stood empty.

"Now," announced Huxhold, his twinkling eyes fixed upon me in an unwavering stare, "you have seen what the Huxhold Rays will do. Radio-magnetic-control? Bah! Television? Bah! My rays are a greater discovery. I have split electrons and protons, dissolved them into infinitely minute nothings of heat and light-flash. No scientist before me has succeeded in the feat, and there is no other living brain which can duplicate it.

"What—what happened?" I asked inanely. "How does it work?" For I was trembling all over, and unable to speak sensibly.

Huxhold laughed. It was a note of excited superiority. "Ho-ho! What the world would give to share my secret. But no one shall have it—it is mine, all mine!" His voice rose in mad elation.

"The marble leg was mine," I coldly reminded. "You made it move and seem to turn into live flesh, but you didn't pay for it."

Huxhold disregarded this thrust. He took off his glasses, wiped each lens and replaced them upon his nose.

"The leg *was* flesh!" he corrected. "Just for a moment. Then I shot it forth in dissolved electrons, as I did the dog before. It now inhabits the plane of split electrons, supposing that such plane has any shape or form. That is one thing even I, Professor Carl Huxhold, do not know.

"Did the dog suffer? It did not! What if the beast did? And the leg had no consciousness. Its movement was an involuntary one of suddenly relaxed flesh. My discovery should supplant the electric chair. It could rid the world of criminals!"

"But how?" I persisted. "I don't believe—"

"You have seen? Yet you don't believe?" Huxhold again laughed, and shrugged. He continued in something of a classroom manner:

"An atom was long believed to be the smallest particle of indivisible matter. Science then learned that atoms possess constituent parts — positively electrified 'protons', with countless, infinitesimal, negatively electrified 'electrons' massed in a spinning, darting planetary-system about them. Therefore, it is the number of these alone that determines the element. Whether it is gold, iron, silver, a lump of potash—or living flesh!"

THIS was an amazing statement. Huxhold went on.

"You see? If by some means or process the number of electrons could be altered, subtracted or added at will, then any substance can be changed into some other substance.

"And I have discovered this secret. The Huxhold Rays, when played on any substance in my cabinet, cause the infinitesimal electrons to split and multiply. A slightly added strength to the ray dissolves both protons and electrons, destroys the atom and the molecule. The substance becomes as nothing, goes flying into the ether, seeking the plane of split electrons, because my ray had made it a mass of split electrons itself."

Huxhold paused a moment. His right hand rested lovingly upon the electron-dissolver, the radio-like box with a horn. Then, his blinking sea-green eyes upon me, he quietly added:

"Now I will buy your woman statue, Land. How much?"

Buy Naomi, the marble virgin? Did my ears hear aright? I returned Huxhold's gaze somewhat doubtfully. He could not believe that I would sell my beautiful work of love. Surely he spoke facetiously. And yet I knew that Huxhold was unaware of my love for the marble beauty.

"She is not for sale," came from my lips. Anger that I did not then understand began to rise in me. "Not at any price, Huxhold," I added and turned to leave the laboratory where I had witnessed such demoniacal use of science.

Huxhold caught at my arm. "Don't be a fool. A thousand dollars, man!"

Angrily I shook him off. "No!"

"Two thousand! Five!"

"No, I tell you!" Did Huxhold think that he had but to bid for Naomi as though she were a harem slave-girl?

"But, Land—think!"

"Of what? Shoot some of your own old junk around here into nothingness. Thanks, though, for letting me see your 'ray' work."

I walked out while Huxhold stood and glared. I seemed to feel his sea-green eyes bent upon me in a mad, hypnotic gaze, even after I had closed his door and was behind mine.

Once more in my workroom, I seized the tools of my art. The marble virgin lacked but a little of being completed. I knew that I could never let her go. She was perfect, lovely! Like unto Eve herself! Sell her? Profane her slim gloriousness by accepting a price for her? Huxhold was crazy!

It was an evening two weeks later, that I gazed in awe at the completed marble virgin. Naomi! That is how I will speak of her in the remainder of this chronicle. White, beautiful, standing on tiptoes, one arm of delicious curves thrust backward, the other half-raised before her as if she sought to grasp an invisible something in the air, her delicate chin lifted, she was lovely!

God had been good in giving me the skill out of which she was born. I sank before her, pressing my hands about her feet and weeping. In such a manner did a Greek sculptor before me once clasp the feet of his creation while he bowed himself and wept. But the marble his art had fashioned into a woman, so beautiful that he dared to pray for life to imbue her, was never to live!

But again I must remind myself to get on. There is, if Huxhold's visitor comes at the appointed hour as I am sure he will, less than twenty minutes left me. Time does not cease its flight for anyone. Huxhold's caller will notify the police, they will view the body, and be drawn across the hall to my workroom. Not, of course, to find me!

AFTER my departure from his laboratory on the occasion when he tested electron-dissolver and cabinet, Huxhold and I had had a talk. The substance of it was this: He had expended no small fortune in preparing his scientific machine of such titanic power. He had got it together in a feverish burst of genius for no other purpose than to transform my statue into a being of flesh and blood. Did I believe he could? I had witnessed the transmutation of the marble leg.

Huxhold then explained in intricate detail just how the electron-dissolver and cabinet worked. Most of it was over my head, but I remembered the dial-settings for both the conversion of objects and their dissolution. There was but a slight difference of manipulation between empowering the Huxhold Ray to commute dissolution or metastasis.

Wonderful, as we common people describe something not understandable? Surely! I, least of all, would traduce the genius of Professor Carl Huxhold.

But in spite of his astonishing revelation, I would not agree to sell Naomi to Huxhold. I loved her. I caught Huxhold's confident enthusiasm that his ray could bring life to her, and I agreed to help him place her in his terrible cabinet only after he had sworn with mighty oaths to shut off the electron-dissolver when, if his experiment was a success, she lived and breathed!

Believe me, as I rose now from my knees before Naomi and stumbled across the hall to Huxhold's apartment I was trembling so desperately that I could hardly control my feet.

"She—she is finished," I faltered, when I faced him.

"Fine!" Huxhold exploded in gloating delight.

I caught his shoulders in my strong, young grip. I looked past his thick glasses deep into his curious-twinkling sea-green eyes.

"If you harm her—" I said.

"Nonsense!" Huxhold laughed, and his eyes glowed. "Good heavens, Land, I just want to see what she does. Think of it—an opportunity to study the reactions of a woman who comes into the world fully mature, without the formality of birth!"

"Then come, Huxhold, and help me carry her," I agreed soberly. "But as you value your life, be careful!"

Twenty minutes later, facing the electron-solver, Naomi stood within the cabinet. Huxhold snapped on a series of bright ceiling electrics so that we might see every happening clearly. I stood beside him. The wall-switch had been closed. A weird humming came from the box whose horn was directed at Naomi in the cabinet.

"Now!" breathed Professor Carl Huxhold. He bent over; his fingers twisted the vernier-dial to a number.

From the rectangular mouth of the horn shot that refulgent phosphorescence. On either side of Naomi, the curved, glassy-coated concave of the cabinet answered with glittering, shimmering, fluorescent darts of violet, deep red and green. I took a step nearer the cabinet. Off in the distance, the sound carrying clearly through the open windows of the laboratory, a clock in a tower far uptown began striking:

Boom! Boom! Boom!

Huxhold turned another dial to a number.

Boom! Boom!

He snapped shut a tiny switch.

Boom! Boom! The clock ceased striking. It was seven o'clock! And the beam of light coming from the horn of the electron-dissolver changed from fiery incandescence to gold! I held my breath. Transubstantiation was occurring in Naomi!

Huxhold whirled a dial, and the beam slightly ascended so that it swept no lower than the bottom of her toes. He was sobbing curses.

BEFORE my eyes I saw a delicate something—like the roseate tinge of an oyster shell—suffuse what an instant before had been cold marble. A wave of pink flooded Naomi's breast and climbed into her face. Her cheeks glowed. Between lips suddenly carmine I saw the gleaming pearls of two white, perfect rows of teeth. Naomi's eyes took color—blue as that of an Italian sky, as the Bay reflects it at Naples. I saw dark-brown hair fluff up on her head, and saw the tendrils of it escape the soft warmth at her temples to waver in a stirring of the air. Naomi lived!

She breathed. Her breast heaved. Then the beautiful arm which was half-raised before her trembled and dropped to her side. Her other arm swung forward, fingers wriggling. A foot was lifted and rubbed softly against the ankle of the other.

Professor Carl Huxhold shut off the electron-dissolver. Exultantly he swung about toward the girl. I shoved him roughly aside.

"Naomi!" I called. "Oh, Naomi!" Whipping off my coat, I sprang forward and wrapped it about her nude, lovely form. Naomi turned her head and dazzled me with her smile. Trustfully, her hand clasped mine. Gracefully she stepped from the cabinet.

"Naomi!" I said again.

"You fool!" shrieked Huxhold. "*I* made her live! Let her alone!" And he would have jerked my coat away and had her bare again.

So it was the truth. I had felt offended at his gaze upon her when she was marble, in the process of sculpture. Now that she lived Huxhold's eyes mirrored an unholy desire. He had become a devil!

I stormed at him: "You are forgetting yourself, Huxhold! Get back—away! Naomi goes with me! She—I love her!"

But Huxhold caught at Naomi's arm. She gave a pitiful little cry: "Oooo!" Her first sound in the world was a note of pain.

"Let her alone!" Huxhold screamed, reiterating the words as if frenzy-driven. "Let her alone!" Then, like a mad man, he rushed upon me.

Thrusting Naomi behind me, I let go of her and drove a furious fist to Huxhold's face. His head snapped back, he tripped and collapsed. Without waiting to see how

he came out of it, I hurried Naomi across the hall and into my workroom. There, I locked the door.

"Naomi," I said—and when I let go of her she promptly let my coat fall to the floor. "Naomi, can you speak to me?"

"Oooo!" she answered, cooing like a tickled baby. "Oooo!" And her cheeks dimpled, and she gave a happy laugh.

Then Naomi ran suddenly to me, threw her shell-pink, deliciously cool arms about my neck. Her lips pressed dear, indescribably sweet kisses on mine.

Twelve minutes are left me in which I must complete this chronicle. A dozen periods of sixty seconds each! Mortal man does not live who can describe in so limited a space of time the happiness of two such weeks as followed for me.

Let me high-light, difficult as it may be, what transpired. I am not as skillful at writing, as I am with chisel and carving tools.

FIRST there was the question of what I should do with Naomi—and this was quasi-humorous! Startling was the fact that I had on my hands a young woman who did not know the meaning of clothes. She was perfectly content to remain without them, running about my workroom like a Sappho, picking up things, dropping them —and always with movements as light and effortless as those of a dancer. I had no little trouble in getting her to keep a long smock of mine on. Whenever it tripped her, immediately she shrugged out of it.

Conversation with Naomi was impossible. "Oooo!" which she uttered delightedly with every new feature of interest that she discovered, appeared to be her limit in speech. When I called to her, Naomi seemed to think it was an invitation to run to me, throw her arms about me and kiss me with soft fragrant kisses.

Believe me, it is not easy to write of these things. Quite soon, now, I shall go as she went onto the same invisible plane.

Being mature of body and in mind, Naomi learned fast—nay, like lightning! In four days she spoke a few words, knew her name, and that a shake of my head meant that she should desist in whatever she was about to do. In five days she called me "Wally"—pronouncing it "Wal-ly!"—so sweetly, in such a gentle voice, that it drew hot tears to my eyes.

In eight days, clothed in a pretty dress of sheer French voile, silk stockings and black kid pumps, outwardly she was like any other lovely being of her sex. And I ventured upon a walk with her. Charming was her reaction to the outside world, previously seen only from the windows of my living quarters. Flowers fascinated her, and birds. She was forever springing lightly into the air, as if she hoped to succeed in brushing their feathery bodies with her velvety fingers. I laughed to see her bend and pat hands upon the park greens, or snuggle her dainty nose into the cupped petals of flowers.

Professor Carl Huxhold met us as we returned from that walk. He stopped dead in his tracks. Then with a queer expression on his face, hands outstretched, he came forward. I noticed that his curious, sea-green eyes did not twinkle as usual behind his thick glasses. They were brooding, I thought.

He seemed very lonely, and ashamed, and like one who has no friends. It was because of this, and the fact that I owed Naomi, as she was, to him, that I waited—with an arm, neverthleless, raised protectingly about Naomi.

"My God!" Huxhold broke out. "Is it really she?" He clutched at my hand and spoke rapidly. "Don't hold that night against me, Land. I was wild. When I thought of what she was—" Huxhold broke off and whistled. I allowed him to greet Naomi.

"How do you do!" she said quite correctly, as if the pleasantry was commonplace to her.

"Heavens!" stuttered Huxhold. "Now I know I'm crazy. She's learned to talk—already?"

"Yes." I let him shake my hand. "If you like, Huxhold, you can come up with us."

I can only believe that what was to happen was foreordained. Else, why did no intuitive sense warn me against the invitation that I extended to Huxhold? I gave it, unaware that it was to lead to something which would seal Naomi's doom, and mine.

HUXHOLD stayed late that night. He dropped in every evening following. And I, meanwhile, went ahead with my education of Naomi. How I loved her!

Her voice in my ears was like song. The gentle touch of her hands, her manner of suddenly throwing both lovely arms about my neck and kissing me with soft pressure of lips as red as cherries, as fragrant as hyacinths, always brought the hot tears of happiness to my eyes. A dozen times a day I swore my servitude to her and renewed my vow of protectorate. And my heart threatened to burst when my name, uttered in her inimitable, sweet way, came from Naomi's lips! "Wal-ly!" she always said.

But Naomi's attitude toward clothing was that of a savage. She seemed to think it very odd for anyone to cover themselves with garments. Nakedness had no meaning whatever for her. She was wholly innocent.

While in the confines of my workroom and apartment, what she wore did not matter. One watching her did but watch the loveliest being on earth. Yet I thought it best for her to wear garments of some sort, and I had a knee-length robe of sheer gray chiffon made for her. This, with sandals on her feet and the ropes of jewels and bracelets I had given her about her throat and arms, plus her mischievous habit of tucking a rose in one side of her dark, fluffy hair, made her appear more than ever like a lovely princess of some far earlier period.

Professor Carl Huxhold, demon spirit of awful and evil genius, continued to be a regular evening visitor. I did not guess what was happening before my very eyes, nor what was to be his propensity in re-

venge when he was thwarted. I was blind, or I should not have failed so in my vow to protect Naomi.

Now, I see what I was insensible to then. Now, I realize that Huxhold, the vile beast, was striving to ingratiate himself in Naomi's favor, was making love to her. Believing, because she was lacking in sophistication and acquaintance with men of the world, that his pretty talk and a veneer of manners over his bubbling purpose would wrench Naomi's affection from me to him!

Four nights ago, returning from the telephone in the lower hall, having left Naomi alone with Huxhold in my living-room no more than five minutes, I sped lightly up the stairs and halted even as I opened my door.

Huxhold had his hairy arms about Naomi, striving to plant his gross, brutal lips on her clean, beautiful mouth. Naomi terror mirrored in her eyes, fear tightening the muscles of her face, was fighting him off.

"Wal-ly!" cried Naomi. "Wal-ly! He hurts!"

Then, twisting aside, she managed to get one arm free of his grasp. Slap! Slap! Slap! Furiously angry, three times Naomi brought her hand in violent contact with Huxhold's right cheek, knocking off his glasses and sending him reeling back.

"You damned vixen!" Huxhold shouted.

Then I had him. With my hands on his collar, I so savagely jerked him about that his coat parted in one mighty rip. I smashed my fists into his face, pounding his nose, and eyes and mouth.

And Naomi, a glorious creature of brilliant blue eyes, danced about us like a veritable savage, voicing "Oooos!" of delight. She would have leaped upon Huxhold when he finally lay senseless and supine on the floor, but I restrained her.

"No," I said. "No, Naomi, dear, it is enough."

I DRAGGED Huxhold into his laboratory and dumped him on the floor. As I turned to leave his eyes opened. Deprived of his glasses, his eyes inflamed from the effects of my blows, he could not see me clearly, but he muttered:

"By seven hells of devils, I will get even, Land—for this!"

"And I will kill you, Huxhold, if you ever cross my path again!" I answered his threats.

Feeling a little sick, I returned to my living-room and Naomi.

Careful as I was after that, it was useless. I did not dream of the direction that Huxhold's implacable vengeance would take. A simple telephone call—just to get me to leave Naomi unguarded for an instant.

An hour and a half ago, that was. I had just lifted the telephone receiver downstairs when I heard Naomi scream. I went numb as my brain reminded me that a phone call before had given Huxhold an opportunity to lay hands on Naomi.

I took the steps up four at a time, but it seemed an age before I had snatched open my door.

"Naomi!" I called. *"Naomi!"*

But no dear, sweet voice answered me; my living-room and workroom were strangely still and—empty.

Naomi was gone!

I hurled myself across the hall, and at the door of Professor Carl Huxhold's laboratory. It was locked, and I battered at it, tore at it with the strength of desperation. Unaware of the hurt that my shoulder received, I stepped back a few paces, then lunged forward with all my might. Huxhold's door burst open.

I saw him standing beside the fearful electron-dissolver. He turned with an animal snarl as I plunged into the room. Naomi, whom I knew I loved with all my soul, was standing against the glassy-surfaced curve inside Huxhold's terrible cabinet!

I cried out and raced forward with the speed of lightning. But Huxhold's fingers were quicker.

Naomi had evidently been doped as Huxhold had doped the dog on that first occasion. But the injection had not been sufficient to subdue her thoroughly. She was standing erect, dazed but recovering her wits. In another instant she must have escaped to my arms. Then Huxhold flicked the switches shut and whirled the dials of the electron-dissolver!

From the rectangular-shaped horn of that awful box shot that appalling beam of effulgent, boltaic potentiality! It swept about Naomi, was reflected back from the gleaming curve of the terrible cabinet in dizzying flashes of violet, of red and green.

Naomi half-raised her beautiful arms to me; her lips voiced one low tragic cry—"Wal-ly!" Then the beam, like a wave of live malignancy, became a blood-hued shaft. Barely uttered, trembling in the very air, Naomi's voice ceased. She . . . was . . . gone!

Huxhold's cabinet stood empty, only the luminosity from the electron-dissolver striking and being beaten back and repulsed by the scientific capability of that curve of shimmer-surfaced lead. Utterly, irrevocably, Naomi had been torn from me.

THE rest has been written at the beginning of this chronicle—how I stabbed Huxhold and he died. I know that he had planned, after shooting my beloved Naomi to the plane of split-electrons, to send himself by the same means after and join her there. Because Huxhold told me he believed that a being, dissolved by his ray, has some sort of a life there, although in a form he did not comprehend.

So I have dragged the electron-dissolver and cabinet to my workroom, by the act making deep scratches and gouges in the floor which I know that the police who come to investigate will follow, and it is set up here and ready. I have connected the wires to a switch, and the dials on the box are properly set. It only remains to place myself inside the cabinet and pull the electric switch shut by an attached cord, which is likewise ready for me. Thus, in the twinkling of an eye, I shall dart into the eternity of space, myself a swirling mass of split-electrons, to find Naomi—the girl

of my dreams, whose form I made by my skill in sculpture!

My time is up. There are steps on the stairs. It is Huxhold's visitor, come to keep his appointment! Huxhold's door is unlocked; in an instant the man will open it.

There!

The man is shouting something. Displeased, no doubt, at finding Huxhold dead, when he should be glad.

What shall I write to bring this to a close?

A "Good-by?" No, I think not. It will be beautiful to go out with her name on my lips!

Now I will step inside Huxhold's terrible cabinet and grasp the switch-cord!

"Naomi . . ."

NEXT ISSUE'S HALL OF FAME CLASSIC

THE CUBIC CITY

By LOUIS TUCKER

The Man in the Moon

By

WILLIAM MORRISON

Maru Brought the Wisdom of the Ages to the Earth, But a Policeman Was Just Naturally Suspicious of a Creature Who Had Six Arms!

AS Mac Hubbell came into the city editor's office, he could hear Swenson cursing luridly at his secretary. The girl had a hurt look on her face and was crying.

"But is isn't *my* fault, Mr. Swenson. The telephone just isn't working."

Hubbell eased himself into a chair, and advised:

"Stop yelling at each other as if you were married. I want to talk to you, Swenson, about this crazy planetarium assignment you handed me."

Swenson turned on him furiously.

"Keep your advice to yourself. Do you know what's happened? Our whole teletype system has gone bad. And not a telephone's working. We've had no news for the past half hour."

"So what? Nobody reads the *Observer* for the news, anyway."

"Oh, Mr. Swenson, the telephone works!" the girl exclaimed suddenly.

A boy poked his head into the office. "All right now, Mr. Swenson. The teletype is fixed."

"I told you not to get excited. Now, about this planetarium story—" Hubbell said.

"It isn't about the planetarium. It's about the man in the moon."

"Well, well. So you're going in for kindergarten stuff now."

"Renec is in a state of hypnosis induced over the air."

"Shut up and listen," Swenson growled. He lighted a cigarette. "A guy by the name of Erno Renec has been writing in, saying that he's in communication with somebody up in the moon."

"Why pay any attention to the old crackpot?"

"He may be cracked, but he isn't old. He's only twenty-two. And judging from what he's written, he'll be good for a lot of laughs. Go see him, and kid him along. Pretend you believe everything he tells you—and then bring it back here and make it funny."

"You're the boss," sighed Hubbell.

When he rang Erno Renec's bell, a young fellow with a round eager face, and a pair of intelligent eyes beneath shell-rimmed glasses answered the door. He didn't look like a crank.

"Hello," Hubell greeted him. "Are you the man in the moon?"

The youngster said gravely:

"I'm Erno Renec. You're a reporter, aren't you?"

"Yes, my editor sent me to get the news." Hubbell coughed modestly. "Would you mind giving me the whole story?"

He followed Renec into the house, and sat down in an easy chair.

"I'm a radio ham, Mr. Hubbell, and a student," Renec said. "So naturally, when I got those signals—"

"What signals?"

"I thought your editor told you. They started coming a little over a month ago. First in the early evening, and then later on in the night, or even in the afternoon. They spread out over a lot of wave lengths, and they weren't like an ordinary code message."

"I see. Did anybody else get them?"

"I never heard of anybody. Maybe other people thought the signals were just static, and didn't pay attention. Or maybe my set is better than most. I've got some gadgets I invented that are pretty good."

HUBBELL'S eyes narrowed. This kid was no fool.

"As I was saying, I began to listen in regularly, even though I couldn't understand the signals. Then I discovered an odd thing. While the signals were on, there were peculiar electrical disturbances. Sometimes all the stations would be blotted out. Then telegraph and telephone systems would become unusable—"

Hubbell sat up, suddenly alert.

"When was the last time you got one of these messages?"

"Why, just today, about four o'clock."

That was about the time when the teletype system had gone wrong. It might be only coincidence, but—

"After about a week, the signals stopped coming, and a voice took their place. It was very weak, and on a set not so good as mine it wouldn't have come in. But I got it more clearly after a while."

"What kind of voice was it?"

"I don't know how to describe it. It was a very funny voice, speaking English with a kind of foreign accent."

"French, German, Italian?"

"None of them. Just foreign. It talked to me, and I tried to answer it, but it didn't seem to hear. My sending set wasn't strong enough. But I didn't know what to do about it until about a week later the voice told me how to strengthen my set, without having to increase my power."

Hubbell's eyebrows went up.

"Did you follow instructions?"

"Of course. It was a simple, but very ingenious method. Now I can communicate with the voice both ways. But I still receive better than I send."

"And what do you communicate about?"

"Well, he does most of the talking. He tells me that he originally came from someplace out in space. He had been traveling for a very long time, and he finally came to rest on the moon, because his ship broke down. He intends to repair it after a time."

Hubell asked noncommittally:

"Did he tell you how he learned our language?"

Renec nodded. "He did, but I couldn't quite make it out. He decided from what he could see of Earth that

it was inhabited. So he set up his receiving set, and the moment he picked up the radio signals he knew he was in contact with intelligent life. You know, most radio signals are reflected back at the Heaviside layer, but some manage to get out into space."

"That's news to me."

"Oh, it's well known. But the point is, that from listening to radio communications, he was able to figure out how our language works."

"What did he do, follow up *One Man's Family,* and the *Good Will Court?*"

Renec didn't bat an eye.

"You may joke, Mr. Hubbell, but he followed up everything. It was just the pleasure of having found an intelligent race once more, after having traveled alone through space for so long."

Hubbell stood up.

"I'll tell you what I'm going to do, Mr. Renec. I'm going to print your story just as you've told it. But meanwhile, don't talk to any other newspaper men. They mightn't handle it in a dignified way."

"I won't, Mr. Hubbell."

WHEN Swenson heard the story, he smiled.

"I told you it would be good. Write it up."

"Give it to a rewrite man. I've been on the go, and I'm too tired to do it justice. And by the way, Swenson, go easy on the kid."

"Why should I? He's nuts, isn't he?"

"I don't think so."

"You don't? And since when have you been an expert on insanity?"

"About ten years," answered Hubbell gloomily. "Ever since I got into the newspaper racket."

The story came out the next day, and when Hubbell saw it he cursed. Swenson had *not* gone easy on the kid. But Hubbell was kept busy about other things during the next day or two, and it was not until half a week later that Swenson spoke to him again about Renec.

"The kid's written in, and he's sore about the story poking fun at him. Go over and square everything. And get another story."

Hubbell shook his head despondently, and set out to follow directions.

He found Renec looking more hurt than angry.

"That wasn't a very intelligent story you wrote, Mr. Hubbell."

"I'm sorry, Renec, but I didn't do the actual writing. I turned the facts over to a rewrite man, and I didn't see the story until it was printed. By then, of course, it was too late. But I'll tell you what I'll do. Give me some more information, and *I'll* personaly write the story."

"I'll do better than that, Mr. Hubbell. I'll let you listen to the man in the moon this very evening. About ten o'clock."

Hubbell was pleased at the idea. It would make a much better story that way.

A little after ten he returned. Renec asked him to sit quietly in an easy chair, and began to tinker with his receiving set. Hubbell watched him.

Ten minutes passed, and the loud speaker gave off nothing but howls and whistles. Hubbell demanded:

"What's the matter? Won't he talk?"

"I don't know what's wrong, Mr. Hubbell, but for some reason I'm not receiving very well. If you'll just be patient—"

The reporter bit his lip. It began to look as if Renec had been deliberately stringing him along. Well it would be the youngster's tough luck. He would write a story that would burn the pants off Renec.

Then suddenly a voice was saying:

"Hello, hello, hello."

"There he is!"

Hubbell sat down again, and a queer shiver went up his spine. He had never before heard anything quite like that voice.

"I have been delayed fixing my ship. Are you listening?"

Renec began to reply, and Hubbell tried to figure out what made the voice so unusual. There was no foreign accent, in the ordinary meaning of the term. But there was a peculiar liquid

quality which made it difficult for him to understand what was being said.

The kid was talking.

"I have told people about you, Maru. But they have refused to believe that you exist. They do not yet realize the possibility of travel in space."

There was a world of confidence in the reply.

"They shall realize it soon."

"I have here a newspaper man. You understand what a newspaper is. You can speak to him."

"Hello, hello, hello."

"Hello, Maru," Hubbell said. "I understand you come from way out in space. How about telling us something about yourself?"

"Willingly. I have come originally from the neighborhood of a star in what you call the constellation Orion. I have been traveling, according to your units of time, more than 100,000 years."

"All alone? Nobody to talk to?"

APPARENTLY Maru wasn't up on sarcasm. He answered seriously:

"I was not alone at first. But an accident destroyed my companions."

"Why did you originally leave your home planet?"

"A sudden explosion of our star made life in our system impossible. We had thought to continue our existence elsewhere, but now I am the last of my race."

"That's too bad."

"I had feared that the knowledge we had painfully acquired over countless generations would be wasted. But now that I have found this planet, with its intelligent inhabitants, I fear no longer. I shall pass everything on to you."

Renec whispered excitedly, "Do you hear that, Mr. Hubbell? At one stride, the human race is going to make more progress than it has made in the last ten thousand years! Just imagine what that'll mean!"

Hubbell smiled and said:

"That'll be swell, although personally the only thing I'm looking for is a raise. Meanwhile, I want to ask a few more questions. Hello, Maru!"

There was no answer. "Hello, Maru!"

The liquid voice came again.

"A meteor has just landed close by. There is a dangerous swarm coming and I shall have to shelter my ship from them. I have time to say little more."

"Just a few questions," repeated Hubbell. "What do you think—"

"Tomorrow. I shall answer questions for your scientists. Useful questions."

Renec exclaimed, almost tearfully:

"But scientists do not believe in your existence! They won't listen!"

"I see. Then I shall talk to you tomorrow. Goodby."

Hubbell stared at the kid hard. That was a neat trick that this fellow who called himself Maru had pulled, signing off just when he was afraid the questions would get embarrassing. Very neat.

"After he gets in touch with me tomorrow," Renec said, "I'll tell you what happens."

"Don't forget. I'd give anything to know," replied Hubbell. Then he went out and got drunk. He thought he had the right, after listening to a story about a man traveling 100,000 years.

The next day he was talking to Swenson when the phones and the teletype system went bad again. Swenson began to curse hopelessly.

"Never mind them," Hubbell advised. "They'll go on again soon. I want to tell you about the guy who's responsible for these messages."

"What about him?"

"I'm going to find out where he is. I've got in touch with the Federal Communications Commission, and told them what to expect in the way of signals. They're going to locate the sending set by a triangulation method."

Swenson's eyes gleamed.

"Swell. When do you expect to hear from them?"

"Shortly after our phones are usable again."

A half hour later, the phone calls began coming in once more. Hubbell

dialed the FCC office.

A man's voice answered. Hubbell said, "Hello, Mr. O'Connell. Did you find out where those signals came from?"

HUBBELL listened, and his eyes popped. Swenson demanded impatiently:

"What did he say?"

"They don't know! The signals came from a generally easterly direction, but they couldn't locate them exactly. Also, they seemed to be coming from up in the air."

"Your pal, Maru, is sending from a plane."

"They'd have found him if he'd been doing that. Swenson, the moon is rising about now. I looked it up in an almanac. It's in the east."

Swenson had a dazed look on his face. The phone rang, and Hubbell answered it.

"Yes, this is Mr. Hubbell."

Renec was speaking.

"Maru has got in touch with me, as he promised. He asked me to get certain apparatus for a scientific demonstration he intends to give. I'd like to have you and Mr. Swenson come over here, and any experts in whom you have faith."

"Sure," said Hubbell. "About this apparatus. What's it like?"

"Vacuum tubes, and crucibles, and so on. Some of it I don't understand very well myself."

"Just a minute." Hubbell spoke to Swenson, then turned to the phone again. "I trust you, Renec, but Swenson has no faith in human nature. You give us that list," he directed. "I'll show it to a few experts, and *we'll* buy the stuff. In that way, Swenson won't suspect that anybody's pulling a fast one on him."

"If you say so, Mr. Hubbell."

There were four of them besides Renec gathered a couple of nights later around the radio in the basement of Renec's house. In addition to Hubbell and Swenson there were Dr. Adler, a chemist, and Professor Maguire, a well-known physicist. Except for the apparatus they had bought, and a few chairs, the room was bare.

Renec was fiddling around with the radio controls, with Adler and Maguire looking on. Maguire remarked:

"That's an ingenious attachment you've got there, my boy. I don't think I've ever seen anything like it. Did you figure it out yourself?"

Renec shook his head, without speaking. Suddenly the room was filled with a hissing signal, and then came the liquid voice Hubbell had listened to previously.

"Hello, hello, hello!"

"Is that him?" Swenson whispered.

"Sure. You can't mistake that voice."

The voice was saying:

"Renec, is everything ready?"

"I have brought what you ordered."

"Good." The voice went on, but it was no longer speaking English. Swenson looked at the other men, and demanded.

"What's he saying?"

Hubbell shrugged his shoulders.

"It must be a charm. Magic. My God, look at Renec!"

The latter had suddenly seemed to stiffen in his chair. As he stood up, they could see the blank look in his eyes.

"This," said Dr. Adler in deliberate tones, "is very interesting."

"So is a monkey house!" snapped Hubbell. He was irritated because he didn't understand what was going on. "What's supposed to be happening?"

"Renec is in a state of hypnosis induced over the air. It is unbelievable!"

"Shut up," growled Swenson. He was gazing at Renec in fascination.

The voice continued to speak, and Renec, his face expressionles, seemed to be obeying its instructions. He was moving about among the different pieces of apparatus, putting things together rapidly. The four men watched in complete silence.

AFTER a time, Professor Maguire spoke softly, as if to himself.

"Not at all like a rhumbatron. And no more than 10,000 volts, and an insignificant current. It can't be!"

"What can't be?" Hubbell asked.

Maguire didn't answer. Apparent-

ly, he didn't even hear the question, and Hubbell resentfully subsided into silence.

Renec had put a transformer into his setup, and now he plugged in an A.C. current outlet. A dull violet glow came from two of his vacuum tubes. The space between them began to crackle.

The voice droned monotonously, and Renec went on rapidly and without stopping, but without any apparent attempt to hurry. Adler's face was puzzled.

"There's an enormous amount of heat coming out of this apparatus. And it isn't from the electric current. I wonder what he's got here."

Maguire was whispering to himself, "My God, to think that it was staring us in the face all these years, and nobody had the sense to see it!"

Swenson said blankly:

"What was staring you in the face?"

Maguire gestured.

"This. It's evidently a device for producing high-speed protons in large quantity. Do you know what the ordinary apparatus requires? A cyclotron weighing tons, a huge laboratory—and here Renec does it with a few simple pieces of apparatus that can be put together in less than an hour."

"Do you understand how he managed it?" Hubbell said.

"Not completely. There are a few details I'll have to ask him about later. But I think I know the principle involved. One of the iron isotopes, ordinarily considered stable, is sensitive to the bombardment of exceedingly slow alpha particles. Its decomposition acts as a trigger for the other isotopes."

Abruptly the voice from the radio stopped. Renec came to a dead halt.

It was uncanny to see him standing there motionless. Hubbell asked uneasily:

"What can be going on?"

Adler shook his head blankly. Maguire exclaimed:

"Darn it, he can't stop here. I want to see what happens."

A minute passed, then another—and the voice became audible once more. Renec began to move again.

An hour must have gone by. Renec moved quickly to the scales, mixed some chemicals, and turned away again. Adler demanded excitedly:

"Quick, which bottles did he use? And how much of each? I couldn't see!"

Hubbell shrugged.

"I didn't see either. Is it important?"

"Is it important!" Adler almost choked with indignation. "How can we learn what he's doing unless we know that?"

"I think he used some lead acetate, and some thorite," Maguire said. "I didn't get a look at the other bottle."

The violet glow from the vacuum tube had spread. Then Hubbell became aware of a curious thing. There were streaks of darkness in the violet light, like black arrows shooting at a target. The needle of a nearby galvanometer leaped over as far is it could, and then broke off.

Maguire's eyes gleamed.

"Massive proton streams. It's unbelievable."

ANOTHER hour went by, and Renec turned off the current. His face began to lose its blank stare, and his lips were twitching. He sat down in one of the chairs. The voice ceased abruptly.

"What's he doing now?" asked Swenson.

Renec's eyes had closed. Adler went over to him.

"Renec!"

He didn't move. Adler shook him, but got no response.

"I imagine he's obeying a hypnotic order to go into an ordinary sleep once he came out of his trance. It's no use trying to awaken him."

Maguire was examining the target Renec had been bombarding. Adler picked it up and carried it over to the bottles of chemicals. After a few moments, he said:

"There's no doubt about it. This is gold. And the patch beside it is gold amalgam."

"This experiment has led to the production of both gold and mercury, in amounts large enough to be seen, weighed, and tested," Maguire ob-

served. "I should say it was a decided success."

"How do we know he didn't slip some gold into that mixture he used?" Hubbell protested. "You couldn't see the bottles."

Adler shook his head.

"That makes no difference. None of the bottles contained gold or mercury. I know, because I bought them for Renec myself."

Maguire was examining the target

"He's put together an apparatus that manufactured high speed particles in enormous quantity," Maguire said. "That was the real miracle. Once he did that, the production of gold and mercury was easy."

They all stared at Renec, sleeping in his chair. Then Hubbell led the way out. He went straight for a bar, and Swenson followed him. But the two scientists looked at their watches, shook their heads, and made for their homes.

It was not until the third Scotch that Swenson opened up. He snapped:

"Do you believe that this Maru is on the moon?"

"One hundred percent. Laugh your head off if you feel like it, but I believe he is."

Swenson wasn't laughing.

"Maybe I'm crazy, but so do I. When Renec snaps out of that trance of his—"

Renec called them up the very next day. He asked eagerly:

"Is Swenson convinced now, Mr. Hubbell?"

"He sure is. Renec, have you been in communication with Maru again?"

"Oh, yes. He said that the transmutations he showed you were part of an experiment for children, but he thought they might convince you of his superior knowledge."

"They did that. Renec, have you ever been hypnotized before?"

"Never."

"Then Maru certainly has some strange powers."

"Of course. Now he intends to visit Earth. He's been troubled of late by attacks of sleep. Everything just stops for a few moments, and he doesn't know what's going on."

"Something like that happened yesterday." Hubbell said. "What does it mean?"

"He's old, and it's a sign of approaching death. He may live thousands of times as long as we do, but he's not immortal. And he wants to visit us and pass on his knowledge before the end comes."

"How soon—"

"Oh, he doesn't expect to die for another hundred of our years."

HUBBELL put down the receiver and sat for a while at the phone. thinking. As he had told Swenson, he believed in Maru one hundred per cent. Renec had been right all along, and they, the wise guys, had been wrong. And Renec had realized, too, what they had been too blind to see. He had realized what Maru's coming would mean to the world.

Maru would bring with him the stored up knowledge of a civilization hundreds of thousands of years in advance of that of Earth. The human race would skip over countless centuries of painful struggle. With one stride, it would pass beyond all the problems that now tortured it, forward into a Utopia more grand than anything that had yet been imagined. Hubbell grew dizzy thinking of the possibilities.

But Swenson suggested:

"How do you know he won't use his abilities to harm us, instead of to benefit us?"

"Why should he? He didn't have to get into touch with us if he meant to harm us. He could have arrived without warning."

Swenson nodded. Hubbell was right. The following day, they went to see Renec again and found him much excited. He told them.

"Maru intends to set out for Earth tomorrow afternoon. His ship is repaired, and the trip will take him only a few hours."

Hubbell objected:

"Suppose he has one of those sleep attacks while coming here?"

"That won't matter. He has arranged automatic controls."

Swenson asked, "Where does he intend to land?"

"Near New York. I've described the shore line to him, and he should reach Earth not many miles away from here. It would be best, Mr. Swenson, if not too many people knew about him at first."

"We'll take care of that. We'll find out the minute he lands, and get there fast."

Renec said chokingly:

"Gee, Mr. Swenson, think of what it will mean—"

FOR the next twenty-four hours, Swenson and Hubbell thought about it. When the time approached for Maru to set out, Swenson forgot that he was a newspaper editor. He handed everything over to an assistant, and he and Hubbell and Renec sat in his office and waited. He had been in on the making of important news before, and had never come near losing his head. But this was different. This was going to be the greatest thing that had ever happened to the human race. It wasn't news. It was history.

The office boy came in and said cheerfully:

"Here's something for you, Mr. Swenson. An AP report about a flash of light on the moon."

Swenson was out of his chair, and had grabbed the report before the astonished boy had finished talking. His eyes scanned the printed words.

"This is it. The final proof."

Renec was silent. Hubbell said:

"We don't need proof any longer." He talked on dreamily. "I'm still trying to understand what Maru's knowledge will do for us. There'll be no more wars. War will be silly when we can make Nature sit up and do tricks. We'll be able to change people, make them over so that they live together without fighting. We'll be able—"

"It'll be easier if you try to figure out what we won't be able to do."

"Maybe. But I like to look at it the other way. There are so many things about this darned world we'll have to change."

Three hours later, while Hubbell was still dreaming, came the report that an amateur astronomer in Long Island had discovered a new body in space between the Earth and the Moon.

"Maru's ship," decided Hubbell.

Another fifteen minutes, and there was the report of an explosion somewhere on the edge of Brooklyn.

Swenson stood up.

All three were trembling with excitement.

"He's landed. Let's get going."

He had an automobile ready nearby, and they got into it and sped away. In Brooklyn they stopped to make a phone call.

"Coney Island, of all places," grinned Hubbell. "Lucky it's deserted now."

From then on they raced along in nervous silence, past red traffic lights and cursing truck drivers. Speeding down the shore front, they could see a silvery object gleaming in the distance.

Swenson stepped on the gas, and two minutes later on the brake. They hopped out and ran over to the ship.

It was about fifty feet long, smooth and egg-shaped, and there was an opening at the side. Several people were standing around, gaping at it. Hubbell and Renec stepped inside and looked around. They had expected to find it almost full of apparatus, but it was disappointingly empty. There was no sign of its occupant.

They stepped out again. Swenson pointed.

"Look."

There were tracks on the sand, almost obliterated by the gathering crowd. They began to follow the tracks toward the right.

A HUNDRED yards away a group of people were standing near a policeman, staring down at something. Hubbell saw a huge head, and six long arms—

"It's an octopus, that's what it is," explained the policeman. "It must have come out of the ocean. When I saw it, it was asleep. Just as it started moving toward me, I out with my revolver, and bang! I got it with the first shot."

A woman asked:

"Is it completely dead?"

"It couldn't be deader, lady. It can't hurt you now."

Swenson moved away from the crowd and said hoarsely:

"That thing—"

Hubbell had difficulty speaking.

"It was Maru. He must have had one of his sleep attacks just after landing. Because he had superhuman intelligence, we expected him to be shaped like us. But he wasn't."

Renec wasn't saying anything. He was merely staring as if he were hypnotized again.

"Why didn't he tell us?" Swenson asked.

"Maybe he didn't think it was important. How was he to know we'd blast away at him the minute we saw him?"

The policeman was explaining proudly again:

"That there thing is an octopus, lady—"

Swenson and Hubbell walked away, Renec following them silently. Hubbell's voice was a croak.

"He traveled through space 100,000 years to pass on to us what he knew. And we killed him the minute we saw him. When I think of what might have been—"

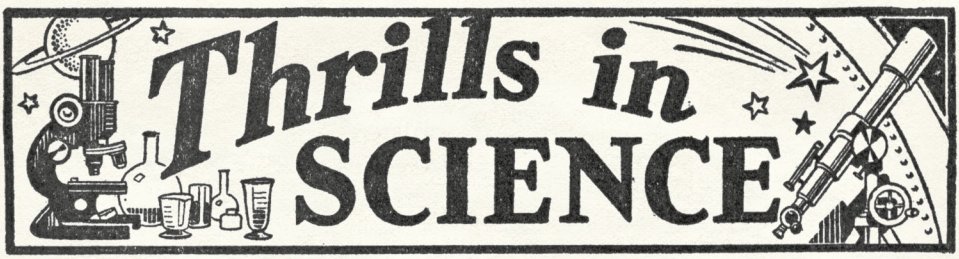
"I know," Swenson nodded.

"I suppose we'll still get everything that Maru could have told us, but we'll get it the hard way, over centuries of struggle." He pulled himself together. "Meanwhile, there's no use making everybody else feel bad. Or making ourselves look silly in case people refuse to believe us. So when you write this thing up—"

"What the heck do I want to write it up for?" shouted Hubbell furiously. "To amuse darn fools like the one that killed him?"

"That's it. You're still a newspaper man, Mac, and amusing people is part of your business. Write it up as a hoax." Renec looked up. "A man coming to us from the moon! What a laugh that would be! What a laugh!"

Neither Renec nor Hubbell said anything.



Thumbnail Sketches of Great Men and Achievements

By OSCAR J. FRIEND

MASTERS OF TIME

I—THE SUNDIAL

Berossus Creates the First Accurate Time Measurer

THE only sound in the shade of the square tower was the rhythmic tap, tap, tap of a mallet on a chisel head. A vigorous young man with jet-black hair and a tightly curled spade beard was hard at work cutting lines and figures in a block of stone.

But there was something queer about this business. For the square tower was a temple. What was a stone mason doing plying his trade in the shade of a place of worship? What place, what land, what time was this? Who was this stalwart wielder of mallet and chisel?

His name was Berossus and he lived in the city of Babylon, ancient Chaldea, in—as we now reckon time—about the year 250 B.C. He was not a stone mason; his profession was that of a priest to the great god Baal. In his spare time he made sundials. He was cutting the simple lines in the face of one now.

A shadow fell athwart his work, and a pleasant voice fell upon his ear.

"How now, Berossus, wasting away your time again? Why are you not at work on your history of Chaldea?"

Berossus laid down his mallet and wiped his sweating brow. He smiled at his fellow priest and then sighed.

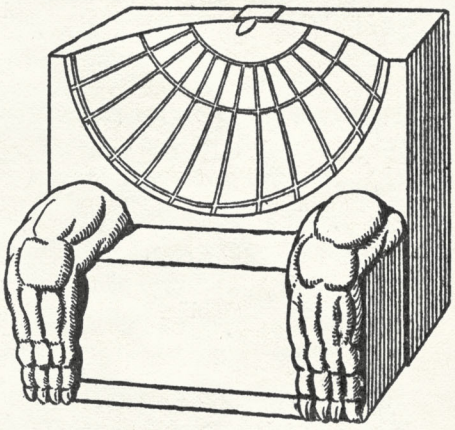
"Why do you call the making of a sundial to measure time a waste of time, Hezrach?"

"Isn't it?" returned Hezrach. Obviously they had had this argument before. "Aren't there enough sundials now? And is one any more accurate than the other? Do they not vary from day to day as the god Shamash does in the position and time of his rising?"

Berossus drew a deep breath. Hezrach stroked his own black beard and braced himself to listen.

"In the days of old, Hezrach, we know that primitive man learned to mark the time of day by the shadow cast by a pinnacle of rock. Down through the ages he struggled to learn to measure time, but until the founding of our own great civilization he advanced no further than to count the seasons and the waxing and waning moon. But our wise magi, the scientist-priests of Ur, learned to measure time by the study of the stars.

"You know well, Hezrach, that we have divided the year into three hundred and sixty days, into twelve months which correspond to the waxing and waning moon and the twelve star houses of the zodiac. We have divided the days into hours, the



The Hemicycle of Berossus

hours into sixty minutes, the minutes into sixty seconds. We have even worked out a week of seven days, each day named for one of our seven gods. And—"

"To what end?" interrupted Hezrach. "We have learned that the year is three hundred and sixty-five days. Every six years we have to double the month Adar to equalize the time and get it right. The same is true of the sundial—without the equalization. It is only right two times

in the year, at the solstice and the equinox. Of what use theoretical minutes and seconds? Best not worry your head about sundials, Berossus. Get along with your recording of the history of Chaldea."

"Nay, Hezrach. Great as the history of Chaldea is, time is of greater importance. Only by the mastery of time can we advance at all and plan for the future. If only we could measure the hours of each day more accurately!"

Hezrach laughed. "And what future, O Berossus, do you plan under this great bowl of sky across which Shamash takes his regularly erratic way? Best that you write down the events of the past."

Berossus stared from his friend up at the heavens which, indeed, always looked like a huge, inverted bowl. Especially at night.

"This great bowl of sky," he repeated slowly. "Across which Shamash weaves his erratic way. Yes—a bowl. I wonder. . . ."

And he fell industriously at work, ruthlessly chiselling out the marks he had previously cut, slowly gouging out a hollow hemisphere in his stone block.

"What do you do, Berossus?" demanded the other young priest in amazement. "I was but jesting. You are ruining your sundial."

"On the contrary, Hezrach!" cried Berossus, his eyes gleaming. "Thanks to you, I am making the first accurate dial."

"How mean you?"

"Wait until it is completed. Wait until I have calculated the path of Shamash and made measurements. Wait until the passing of the next solstice—and I will show you."

The months passed by, and Berossus labored when he could at his new work. He made painstaking computations, day by the sun, and night by the stars. Until at last it was finished, a hollowed hemisphere of a sundial with a style or bead for a gnomon—or marker—above the center of the depression on the line of the diameter.

In the bowl itself he had cut arcs which he had bisected with twelve radial lines from the center, not unlike the longitudinal lines on a modern globe map. Proudly he exhibited the finished measurer of time to Hezrach.

"The sky itself is an inverted bowl," he explained. "Howsoever the sun moves against it, the shadow of this bead—which always falls within my miniature hemisphere so long as the god Shamash remains above the horizon—will move in the same way upon the inside of this artificial bowl. As Shamash changes his course, the shadow changes the part of the arcs it touches. Thus, by this easy method of computation I have worked out, the hours can be correctly measured in spite of the seasonal change Shamash makes from equinox to solstice and back again. This new dial will always be accurate, Hezrach!"

Hezrach, himself a student and watcher of the stars and of astronomy, had no difficulty in understanding.

"May Baal seize me!" he exclaimed. "You are right, Berossus. It will work. It will measure time more accurately than any dial ever made. Antiochus will shower you with gifts. But it isn't a true dial. What can you call it?"

"I have called it a hemicycle," answered the inventor modestly. "Now I can get back to my recording of history in peace."

And he could. For The Hemicycle of Berossus made the greatest stride forward for mankind in the accurate measuring of time up to that day.

Later, when it was learned that different latitudes required different angles and figures for sundial, and it was learned to set the style or gnomon to point at the Polar Star, other improvements were to come. But this did not detract from the mathematical solution found by Berossus in the reign of Antiochus II.

The Hemicycle of Berossus remained in use for centuries, becoming the favorite form of sundial all through the classic period of the Greek and Roman Empires, while his history of Chaldea, a noteworthy compilation in three volumes, perished and has been lost.

II—THE WATER THIEF

Hero of Alexandria Gives the Clepsydra a Face!

IN the city of Alexandria, Egypt, about 140 B.C., there lived a Greek who was known as Ctesibius the artisan and mechanic. But he was more than this. Had he lived today he would have been known as an eminent hydraulic engineer.

True to the ancient Greek system of taking pupils to live with them while teaching of their lore and wisdom, Ctesibius was one day attracted by the quick wit and native intelligence of a young stripling who was anxious to learn. The master mechanic took the youth into his home and proceeded to teach him all that he knew of the mysteries of hydraulic forces.

It was a happy combination for both of them, although the pupil became more generally known than his tutor. For this bright pupil was called Hero of Alexandria.

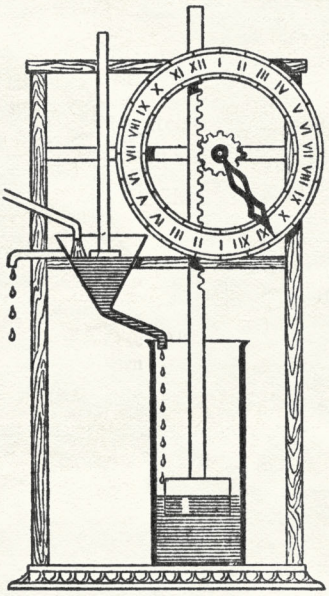
Working and studying together, the master and pupil invented the first keyboard and the first hydraulic organ which Hero called a syrinx.

They turned their hands to other things, also, inventing the first cross-bow to be geared by pistons working in cylinders filled with compressed air.

"Ctesibius," observed Hero one day as the master tinkered away at one of his hydraulic devices, "it is past time to eat. My stomach tells me what the sundial yonder belatedly reveals."

Ctesibius raised his bearded head and gently corrected his pupil. "You mean, Hero, what the sundial inaccurately reveals. Why do you not consult the clepsydra?"

"The water thief has run dry," retorted Hero, making a wry face. "I continually



The Clepsydra

forget to fill the upper bowl."

"For shame, my son!" reproved the master. "When the clepsydra tells the passing hours more accurately than the sundial. Come, let us eat."

"Tell me the story of time-measuring devices, Ctesibius," pleaded Hero, as they seated themselves at their simple repast.

"Very well," obliged the master. "From time immemorial man has told time by use of the sundial. But several centuries ago it was dimly understood that the sundial did not meet all purposes. It was no good after night had fallen, on cloudy days, or on a pitching ship at sea. Hence, some man whose name is unknown now to us thought of the idea of measuring time by letting water drip from a small hole in the bottom of a container, telling the passage of time on a scale marked within the jar.

"But this didn't work so well because, as the water lowered in the container, it dripped out more slowly, and the clock ran slow. Hence, a double bowl was invented, the lower and larger one containing a float which rose and thus marked the hours on a scale, while the upper and smaller vessel from which the water dripped was kept fairly full of water all the time—a matter which you neglect to attend. Neverthless, this is a more accurate method of measuring the hours than using the sundial. And, what is more important, it is a crude use of a sort of machine. It is employing the power of gravitation instead of using the sunlight. And it works day or night. Have you any questions?"

Hero deliberated on this condensed history of the water clock. Then: "Yes," he cried. "Why don't we make a clepsydra like a machine, one that records the hours with a moving gnomon—one like I know you can make?"

For a moment Ctesibius stared blankly at his pupil. Then, at the faith and enthusiasm depicted on the face of his ardent pupil his own eyes kindled and took fire.

"By the Pantheon of the Gods, Hero!" he cried. "Why not? We are master workers in hydraulics! This is within our province."

That afternoon, laying aside their other work, they tackled the problem of building an accurate clepsydra and gearing it with cogwheels to a dial marked with twenty-four hours.

After days of figuring and hand-cutting of cogs and fitting of shafts and gears, not to mention a water wheel which would motivate the gears at just the right time, they finally put a water clock together that would work. Difficult, yes, but not impossible to these two workers with the forces of hydraulics.

They set the mechanism up and started it to working, checking it by the clepsydra and sundial already in their possession for accuracy. At last it was working perfectly, telling time visibly with a pointer against a round, flat dial.

"It works! It works, Ctesibius!" cried Hero happily, tears of joy in his eyes.

"Yes, thanks to both of us, it does," agreed Ctesibius. "Only, you must not forget to keep the upper chamber filled with water. The only thing I marvel at is why we didn't build this instrument before, we—expert workers with hydraulics!"

Both Hero and Ctesibius overlooked one significant detail, but, not having the power of prophecy or second sight, they can be excused for not looking down the centuries yet unborn to see what was so significant about their handiwork.

It was simply that they had fashioned the first clock of any kind to function by machinery and to have the prototype of a modern watch dial for a face. They had invented the progenitor of the modern pocket watch which today keeps time as faithfully as the stars.

III—THE IMPIOUS CLOCK

Gerbert Fashions the First Timepiece with Springs!

IT was the year 988 A.D., at high noon of a bright summer's day. The great cathedral of Reims seemed cool and vast and meditative and quiet. But in the town all around and in the bell tower of the cathedral itself there was sound. Bells were tolling the hour of high noon, men of the watch were blowing their horns, peo-

ple were shouting the time to each other.

Hour-glasses were reversed in the taverns, clepsydras and sundials were consulted by the curious, pompous courtiers and men of affairs consulted the ring sundials they carried in their pokes.

Even a blind man could not have been unconscious of time in this picturesque period of the Dark Ages.

But one man in all of Reims was unaware of the flight of time. Yet oddly, that was precisely what was occupying his mind.

Gerbert, Pope Silvester II

In his private workroom in one wing of the cathedral, Gerbert, secretary to the archbishop, was toiling away with wooden wheels and gears and pinions.

Gerbert, one of the most scholarly monks of his time, was doing that which no known man had done before him. He was putting together a mass of wheeled machinery which was to be driven like a mechanical set of gears by a coiled spring.

A gentle knock at the door interrupted him. A fellow monk entered the chamber at his bidding and stared with amazement at what Gerbert had wrought.

"The Archbishop wishes to see you, Brother Gerbert," he announced. "What are you doing here? Making some instrument of the Devil?"

"No, Bennio, rather an instrument of God," replied Gerbert mildly, even as his eyes flashed. "I am just about to complete a clock."

"A clock?" repeated Bennio stupidly. "You mean a *cloche?*"

"*Cloche* to the French, *clugga* to the Saxons—it is all the same, meaning the striking of the hour upon a bell," answered Gerbert. "As yet, this has no bell attachment, but I can easily add that when I once set it going."

"How going?" asked Bennio.

"By means of this spring which I hammered out and tempered at the forge. Bennio, I am making a clock which will drive itself, which will not depend on the dripping of water or the path of the sun to tell time. It will work like—like clockwork, telling the proper hour day or night, regardless of weather. It will be necessary only to keep the driving spring tight."

Bennio's eyes bulged and he hastily crossed himself. "This is truly a work of the Devil, Gerbert. Best that you consign such evil to the flames. I will help you."

"Don't you dare touch one item of this work!" thundered Gerbert majestically.

Shooing his fellow monk out of the chamber before him, Gerbert hurried to see his master, the Archbishop Adalbero, who was ailing. It was the next day before he could return to his beloved labors.

As the days passed, and the archbishop sank lower with the sands of his life running out, Gerbert's clock gradually came into being. But Brother Bennio had not been idle.

For the good of Brother Gerbert's soul, Bennio had set other wheels in motion.

On his deathbed the Archbishop Adalbero designated Gerbert as his successor, but here the work of Bennio came to fruition. The Empress Theosphana prevailed on Otto III to appoint Arnulf as archbishop. And Gerbert was brought face to face with his church superiors on charges of making a pact with the Devil.

Bennio was the chief witness. He had only to lead the investigators to Gerbert's workshop and point out the ticking masterpiece which Gerbert had constructed to tell time in utter defiance of the laws of God.

"Gerbert has trafficked with the Devil!" he cried. "Behold the evidence!"

And in spite of all his protests, Gerbert was convicted of his sin. They had a vast respect for the intellectual powers of his Satanic Majesty in the Middle Ages.

"Hence," spake his judge, "I hereby banish you from France for your iniquities, Fra Gerbert."

"Very well," answered Gerbert bitterly. "But I shall live and you shall live to see my clockwork supersede the inaccurate clepsydrae and sundials as keepers of God's time, that work yond being my witness!"

Thus, Gerbert, the wise monk who knew and thought too much, was removed, perhaps more for political reasons than for his alleged dealing with Satan. Whatever the cause, so remarkable a character as that of Gerbert left its mark on the age, and fables of Faust began to cluster about his name.

But Gerbert proved correct in his prophecy. He lived to return to power and honor as Pope Silvester II and to see other men take his invention and found the dynasty of modern watch- and clock-making, sounding the death knell to the ancient methods of telling time which had served their purpose but which must yield now to a better method.

Mankind had made the last great step forward in his mastery of time; there remained only improvements.

SCIENCE Question BOX

IT'S A DATE

Editor, SCIENCE QUESTION BOX:

Just exactly what is the Gregorian Calendar the Christian world is now using, and how does it differ from other calendars?—F. C. H., Mexico City, Mex.

While not exactly a scientific question, this query is of sufficient interest to warrant an answer. The ancient Babylonians invented the first yearly calendar of 360 days, or twelve 30-day months.

Later, it was discovered to be five days short.

When Julius Caesar was Rome's dictator it was discovered that the year was 365¼ days long. Caesar revised the calendar, giving the first, third, fifth, seventh, ninth, and eleventh months 31 days each and the others 30 except February to which he gave 29, giving it a thirtieth day once every four years.

This Julian calendar—tampered with just a little by the Emperor Augustus—remained in use until the time of Pope Gregory. By this time astronomers had established the fact that 365¼ days to the year was not exact.

The exact time of a year being ascertained as 365 days, 5 hours, 48 minutes, and 46 seconds—11 minutes and 14 seconds less than 365¼ days—the adding of one day every four years was gradually building the calendar ahead of itself.

Pope Gregory XII in 1582 corrected this excess by changing the calendar so that the last year of a century should be a leap-year only when its number could be evenly divided by 400. Thus, 1700, 1800, and 1900 were not leap-years, although 2000 will be. This is the Gregorian calendar, the one in general use throughout most of the world.

PASS THE YEAST, PLEASE

Editor, SCIENCE QUESTION BOX:

What is an enzyme, and how does it work?—N. W., Fort Worth, Tex.

Your dictionary should tell you that an enzyme is a complex organic substance capable of effecting by catalytic action the transformation of certain other compounds. In actual fact, the enzymes are chemical ferments, distinct from such living ferments as yeast.

They are divided into several classes; those decomposing carbohydrates being diastase, those decomposing proteids being pepsin, those decomposing glucosides being emulsin, those decomposing fats being lipase, those producing oxidation being laccase, those producing coagulation being rennin, etc.

You might say that the enzymes are just as important to life as the vitamins we are hearing so much about nowadays. Without enzymes we could digest nothing.

ANOTHER LEFT-HANDED MONKEYWRENCH?

Editor, SCIENCE QUESTION BOX:

Is there really any such thing as "pigeon's milk," or isn't it just another of those non-existent things novices are sent after on April Fools' Day, like striped paint, pipe stretchers, and left-handed monkeywrenches?—W. H. B., Louisville, Ky.

While it is true that pigeon's milk is used as a hoaxing phrase on April 1, it is really a highly specialized food—presumably partially digested food—regurgitated by parent pigeons to feed their nestlings for a few days after hatching.

NEWER LIGHT THAN FLUORESCENT

Editor, SCIENCE QUESTION BOX:

A friend told me that he read in the N. Y. *Times* of a better and cheaper light than the modern fluorescent lamp. Can you tell me if this is true?—A. G. K., Philadelphia, Pa.

Doubtless your friend referred to the new carborundum light recently patented by the General Electric Company. The inventors state that transparent carborundum crystals have the property of converting electric current directly into a vivid white light without heating the crystals to a stage of incandescence.

They need no special filament, gas, or vacuum and require only low voltage current for operation. They are simple and inexpensive to make. Better keep your eye on the G. E. Co. for further reports. There may be something big to this.

Address Your Questions to SCIENCE QUESTION BOX, STARTLING STORIES, 10 East 40th Street, New York City.

I made a frantic attempt to grab him, but I was too late

THE GHOST SHIP OF AZTLAN

By L. TAYLOR HANSEN

Only One Man in History Escaped the Dread Sargasso —and It Lured Him Back to the Graveyard of the Sea!

UNABLE to sleep, I left my cabin and sought the deck for relief from the heat. In the bright flood of the full moon I was amazed to see Sutton, the great authority on the Antilles, standing on the rear deck with the captain. Though he must have known that Dr. Rankin and I were on an expedition to the Antilles, Sutton had kept to

himself all during the trip from New York.

"Hello there, Dr. Dilling!" called the captain. "Won't you join us? We're passing the outer edge of the Sargasso Sea, into which all the wrecks of the Atlantic drift, if they're allowed to. Dr. Sutton and I are watching for ghost ships."

I smiled. "Ghosts? You're not superstitious about the sea, are you?"

"All men of the sea are superstitious," the captain answered soberly. "Some admit it. I happen to be one of those who do."

"Have you ever seen a ghost ship?" I asked tauntingly.

"Twice. Bad luck followed both voyages."

"Any witnesses?" I pursued.

"The whole crew saw the first one. Only the men of my watch saw the second." I grinned. "Were you sober, Captain?"

Sutton turned his haunted gray eyes from the moonlit expanse of water and shook his head at me.

"That's not fair, Dilling," he stated somberly. "I once saw a ghost ship. Furthermore, I had a friend who was carried away by one."

"What?" I gasped, horrified by such treason from a fellow-geologist.

"If this person had not been physically carried away," he continued in his usual thoughtful, unhurried tone, "I might have attempted to explain the sight as mass hypnotism. Or the uneven heating of the layers of sea and air might have caused a remarkably clear mirage. I've been forced to give up both these explanations, though. Ghost ships have certain characteristics, some of which resemble those of mirage objects. They seem to be riding in a different sea, for example. The observing ship may be cutting a mirror-like ocean, as we're doing, yet the ghost ship may race out of the silence, sails flapping in a soundless gale."

"You said yourself that those are mirage charactistics," I replied.

"But ghost ships are not always soundless," he insisted. "The Flying Dutchman is always announced by the tolling of a bell. And there is another ship—I have called it the 'Ghost Ship or Aztlan'—which approaches amid a lovely, haunting melody of the East played upon strange instruments."

"Do you have a logical explanation?" I asked, deciding to humor him.

THE GHOST-SHIP

See you, beneath yon cloud so dark,
Fast gliding along a gloomy bark?
Her sails are full,—though the wind is still,
And there blows not a breath her sails to fill.

Say, what doth that vessel of darkness bear?
The silent calm of the grave is there,
Save now and again a death-knell rung,
And the flap of the sails with night-fog hung.

—Thomas Moore.

HIS veiled gray eyes grew more distant than ever as he nodded.

"Perhaps we have our existence in one plane, but ours is not the only plane. It is also possible that this other plane intersects ours at certain places under an unknown set of conditions. Perhaps in this other plane time has a different tempo, a lengthened measuring unit."

"If you're going to bring Einstein into it," I broke in, "remember that one of the requirements for the variation in time is a change in the amount of gravitational pull. In this case, we're dealing with the same planet."

"But there is a variation," Sutton said. "These ships are always larger than they would be if they were actually in our plane of existence."

"A mirage characteristic," I declared. "Besides, why would they be found in this other plane at all, if they once belonged to ours?"

"Because they crossed over in some maner unknown to themselves and are unable to get back. Apparently that passage is more easily made on sea than on land. The fact is that more authenticated ghosts exist on the sea."

"Then you believe the ships aren't

ghosts, but contain live men?"

A wan smile softened his strong features. He nodded slowly, emphatically. The captain stirred, as if forcing himself to relinquish a clinging memory.

"You couldn't convince any tar that the Flying Dutchman was alive," he said, "no matter how convincing your theories might be."

"It's more reasonable than that they're dead and still sailing the seas," I argued.

"Furthermore," Sutton put in, "there seem to be zones where these planes intersect, such as near the Horn, where the old Hollander does his haunting."

"And woe to the vessel who sights him!" the captain added. "It almost always runs into a storm and goes down."

"Another locality is here," said Sutton, "in the deathlike calm of the Sargasso. This is where my friend was taken on the ship of ancient Aztlan."

I halted with a match an inch from my cigarette.

"How do you know?" I challenged. "Maybe he was drowned. You wanted him to be saved, so your subconscious solved the problem and saved him for you by having him picked up by a ship that didn't exist."

"Excellent psychology, Dilling, except for one fact. I knew him after it happened and he was very much alive."

"Do you mean you actually believed him?" I protested.

"I know he was telling the truth."

Ordinarily I would have attacked the fantastic story with ruthless logic and savage irony, but my respect for Dr. Sutton prevented me in this case. He wasn't arguing to convince me. He was stating what he seemed to consider facts.

"Isn't it possible," I asked, "that your friend's hallucinations were caused by physical hardship, like a shipwreck?"

"That's the correct explanation, except for the element of time."

I looked appealingly at the captain. When he shrugged, I turned back to Sutton.

"Suppose you tell us the story and let us draw our own conclusions."

"That's what I was going to suggest," the captain said.

Sutton put his elbows on the rail and gazed out at the quiet, swelling water.

"During the Mexican War," I heard his low voice say, "a young Texan was wounded and became separated from his companions. By hiding in the daylight and moving by night, he managed to reach the camp of friendly Indians."

"I thought you said you knew this man," I objected.

SUTTON'S head nodded without turning around.

"Doc," said the captain, "if you'd spent as many years at sea as I have, that wouldn't surprise you. Ever hear of islands where time stands still?"

"Ponce de Leon listened to that yarn," I replied sarcastically.

"Maybe there was such a place, but he made a mistake, thinking it was Florida."

"Now, Captain," I said with admirable patience, "are you trying to tell me that the ocean hasn't been charted? Are there uncharted islands with civilized inhabitants, fountains with unusual properties and cities of unknown grandeur?"

"One moment, Dilling," interrupted Sutton. "If we admit there's a plane into which a ship might be transferred, it's also possible for an island to be carried over during some vast convulsion."

I shrugged defeatedly. "That puts us right back where we started. Well, if I have to accept the extraordinary length of your friend's life, all right."

With my back to the water, I leaned against the rail, trying to watch Sutton's intent, yet abstracted face. The captain listened attentively, but his eyes followed the geologist's gaze across the black and silver waters.

"This man," said Dr. Sutton, "whom we shall call Tom Smith, was hidden by friendly Indians. With their help, he later made his way in disguise to a pueblo city of the Keres peoples. These ancient tribes boasted of a miraculous medicine man. Undoubtedly he was a great natural physician, for

he healed Tom's wounded body. But the boy acquired more than health while he lived in the pueblo. He learned the Keresian tongue, which has no affinities to any American language. I suspect it has an ancient kinship to the Hamitic group, of which the mysterious European Basque is a member."

"You may be right, Sutton," I admitted. "The Basques and Aztecs play practically the same game. One calls it 'Poletta' and the other calls it 'Pelota.' Besides, the original inhabitants of the Canaries spoke a Basque tongue."

A black look from the captain made me realize I was digressing. I smiled wryly and muttered an apolgy.

"After Tom Smith absorbed the language and myths of the Keres Indians," Sutton went on, as though I hadn't interrupted, "the urge to return to his own people became too strong to resist. He left for Texas. There he learned that the Mexican War had been settled without his help, so he traveled to New Orleans. The fascination of the sea grew still stronger than his urge to go home. He thought he was killing time by lounging around the docks while he awaited passage, but he ended by going to sea."

His voice faded away. My eyes followed his. Great, ropy patches of seaweed floated on the long, glassy swells.

"After five years," Sutton continued suddenly, "Tom had become a real sailor. He knew Singapore, Pagopago, Tunis, Borneo, but he never reached home. One night, not far from here, his ship ran into a violent storm. She was a clumsy craft, anyhow. In trying to outride the storm, a mizzen yard-arm was broken and the sails torn. Tom was sent aloft to repair the damage. The instant he reached his perch, a vast cliff broke over the ship. With a sickening crunch of cracking wood, the mast turned and swung with the wave. He clung to the mast, knowing that if it were not drawn down with the wreck, it would float, perhaps until a ship passed."

The captain nodded silently. Undoubtedly the story recalled similar ones to his mind.

"Dawn brought a clear sky and a calm sea — too calm. Tom stared around in dismay. During the night, the storm had driven his mast to the edge of the Sargasso Sea! Tom knew only too well that no man had ever reached the center of the evil whirlpool of the Atlantic and lived to leave it. He knew his mast would drift slowly to the exact center. He was alone on an expanse of dead ocean, with nothing to eat, no water to drink. There was nothing but mottled patches of seaweed and a fiery sun that crawled over an empty, cloudless sky. Tom knew he had been trapped."

HE paused and drew a long, shuddering breath.

"He must have fallen asleep. When he awoke, it was night. The full moon was silvering the oily water, but the patches of seaweed remained vicious black shadows, just as they are now. Tom shivered and an icy hand seized his heart. At the center of this gigantic, slowly revolving whirlpool drifted the wrecks of the ages, each layer more ancient than the next. He could almost imagine the slave ships with their cargoes of chained skeletons, the high Spanish galleons with their rotting chests of stolen Incan gold. They formed an island of masts and rested on a tangle of seaweed that kept their decaying keels afloat—like that!:"

He pointed abruptly at the water, black and ropy with the living carpet of seaweed. The patches were growing larger and larger.

"We don't usually go so far into the old net," the captain explained casually. "The weed fouls the propellers. But Dr. Sutton has been a friend of mine for fifteen years, so I decided to stretch the rules a little tonight."

I tried to look as if I understood, but I was puzzled.

"Suddenly Tom heard music," Sutton continued. "He wasn't certain just when or how it began. He was afraid his thirst and hunger had driven him insane, but finally there was no longer room for doubt. The sound of playing and singing came nearer and nearer, until he could even distinguish the individual instruments. They were

strange ones, unlike any he had ever heard before. The music itself was Oriental, with a minor wailing note he had learned to enjoy during his stay with the Indians. To this despairing man, the music meant only one thing. There were other human beings in this graveyard of the sea!"

A disciplined emotion began creeping into the gray monotone of Sutton's voice. It rang with sincerity and triumph — and yearning. His hands tensed on the rail and his strong, slender body stiffened.

"Tom raised himself on his floating mast, with its pathetic wash of torn sail. He looked around and saw the vessel plainly. It did not occur to him that it might be a ghost ship. If the outlines were a bit hazy, he laid the fact to his weakened condition. He knew only that it was a beautiful, welcome sight. The huge, square sail, which was made of some kind of lustrous orange cloth, shone in the yellow pools of the torches that lit her decks.

"Tom didn't have enough education in archeology to recognize the type of vessel used by the ancient Egyptians, or to be puzzled by the size of this one. He merely gazed in amazement at the oarsmen who kept it at an even keel, then at the lovely women in diaphanous pastel gowns and flower-bedecked hair. The women changed places with the men clad in toga-like mantles, while they wove lines and circles of changing colors to the slow and minor wail of the music.

"For a long moment Tom watched them dance and listened to the lovely music. Then he suddenly grew fearful that they would pass without seeing him. He began to wave and shout with all the strength he could force from his exhausted body."

Sutton turned back to us for the first time, yet I felt his eyes were focused on a point far beyond us. He was breathing fast and his face was strained. He obviously did believe this yarn he was telling in such detail. I wondered what had convinced him. Generally the scientific mind is inclined to be overcautious. His voice, when it began again, was low and anxious, weighted with fear.

"When he exhausted himself by shouting, Tom realized that they were completely unaware of his presence. They were so absorbed in their dance. they would never see or hear him. They would sail on and leave him to rot in the stagnant air of a dead sea, unless— It was a mad hope, but it was his last desperate chance. He had only a small amount of waning strength left. He must give up all thought of ever returning to the mast again. . . .

"Calculating the angle of interception, he plunged into the water. Without allowing himself to look up, he struggled forward. Once the waters closed over his head, but he fought on, insanely, blindly. Nothing but death lay behind. He knew that. If only death lay ahead, it was better to die by drowning than to rot on a floating mast in a dead sea. With his last breath he gave a cry of agony and despair. Perhaps it was at that moment that he made the transition."

AGAIN that soft light, which usually comes with some beloved memory, came into Sutton's eyes.

"Tom opened his eyes upon a strange room. He was lying on a kind of divan and two women in flowing garments were attending him. One was old. Her wrinkled skin, like fine parchment, half-hid her dark eyes, which were watching him kindly as she fanned him with a great purple feather fan. The other one was young. Her classical features were enhanced by her clear golden skin, her wide hazel eyes and long, silky dark hair in whose waves she wore a large white flower.

"It was probably this flower which Tom had smelled in a half-delirium that had been filled with exotic perfume. He kept his eyes almost closed, lest the two discover he had regained consciousness. He wanted to watch the girl. She had reminded him of someone and he was anxious to place that memory while she was unaware of his scrutiny. Then he knew that it was but one of those flashing seconds which are engraved upon a man's memory with a lightning clearness.

"On a dreary day in Istamboul, a

shrouded and chaperoned harem girl had managed to drop her black veil for one fleeting second in order that he might remember for all time the legendary beauty of the Circassian woman."

Sutton smiled with a little twisted smile and turned back to the sea.

"They were talking idly in a strange language which nevertheless had the familiarity of a tongue known in childhood, but forgotten many years ago. At first Tom did not pay much attention to the words. He was interested only in the deep yellow pools of the morning sun upon the marble floor. It slanted in from slim colonnaded windows to his right and reflected up upon a magnificent wall-fresco of tall fern trees which dominated a glade of tropical luxuriance.

"Tom thought it made a perfect background for the living beauty of the girl. But suddenly he realized that he could understand most of what they were saying. They were apparently speaking a tongue with Keresian affinities, though in his five years upon the sea he had picked up many simple words from Berber, Portugese, Malay, Arabic and even a smattering of Polynesian. He began to listen.

" 'One who has come to us from the realm beyond,' the girl was saying. 'That makes me think that the realm out there must be much larger than ours, since many of them come to us, but none of our men get through to them. Not even the sage Menos, and after such careful calculations!'

" 'Yet perhaps the most aggravating part of it all,' the elder woman mused in a resigned tone, 'is that they come by accident and not design. They are evidently still unaware of us, or of our realm. And as one would expect under such circumstances, a varied scattering of types get through, though none shows any remarkable degree of intelligence. Thus what we do learn from them is so little compared with what we might learn if—'

" 'Will you never give up the hope, Grandmother, of finding a man who knows all about science and history and mechanics and, in fact, anything besides the handling of ships? Forgive me for laughing.'

" 'Yet the very difference of physical types and of histories convinces me that the sage Claudio may be right in his theory about the time element, or perhaps Zenus, or both. Their realm is undoubtedly larger, but the main factor of difference is that time moves so much more rapidly out there. It takes the lives of many butterflies to span that of the parrot, even though they both move in the same realm.' "

I OPENED my mouth to argue, but Sutton gave me no chance.

" 'Yet you have so often told me that our two worlds once belonged to the same realm,' the girl objected. 'You said that when you were a little girl, your mother used to tell you stories of the great land of Antis before its separation from Aztlan. In those days the world was large, for our men sailed fleets of ships and traded with all lands of the Earth and there were no split planes. We were all in the same one.'

" 'And so we were. The climate of Antis was warmed by the seas which washed its shores, while the other lands were white with eternal mountains of ice. Of course there had been legends which warned the people that whenever the ice sheets waned, the sea rose and the volcanoes spouted fire. For ice sheets had come and gone before, bringing flood and a hail of burning death. No one believed those ancient stories any longer. Antis had ruled the earth for such uncounted generations that men called her 'the eternal.'

" 'But when the suns of a few hot summers began to melt the ice mountains, the first tremors shook Antis. People began to leave. The land trembled regularly. The lava came more often. All who could get passage sailed from the stricken kingdom before the sea poured over her cities. After a few years, when peace seemed to have returned, men began to turn their ships home to their motherland. They found the great island split into three parts.

" 'The sea now rolled over fertile valleys, leaving three portions above

the waves—Northern and Southern Antis and the southwestern section which we called Aztlan. Once more the people rebuilt the cities. This time they did not seek the rich valleys, or what remained of them. They built upon hill-tops, a habit which they carried with them around the world, wherever colonies were built and no matter what the nature of the land.'"

"Excuse me for suggesting it, Sutton," I remarked at this point, "but it seems to me that this elderly woman was pretty familiar with her Plato."

"True enough, except for three things. Those are to be found in the myths and languages of America. It is as if we learn that torn pages of the same lost manuscript are buried upon both sides of the Atlantic. I refer to the mention of the ice-sheets, 'Aztlan' as the name of the southern part, and the word 'Antis' as meaning 'land.' It is also interesting in this connection that the general root for 'water' throughout American language-roots is 'atl.'

"If you will recall Solon's story to Plato, he gave the ancient name of this land as 'Atlantis,' which you can see means 'water-land.' The name of the ocean — 'Atlantic' — literally means 'double-water'."

WHEN I nodded thoughtfully, he continued.

"'But, Grandmother,' the girl persisted, 'you have often told me that when your mother was young, she made trips to Antis. In fact you have described the beauty of its marble government buildings, its fountains, its statue-lined boulevards and colonnaded temples so vividly that I would be ready to swear I had been there.'

"'True enough. The convulsion seemed to come in spasms, with long years between. These times of calm covered generations. Men grew used to earthquakes and the intermittent eruption of volcanoes. History continued. Dynasties rose and fell on other parts of the Earth. Antis was the Eternal.' Then came the end. It began with days and nights of increasing fury. Once more the fleets of ships sailed away, taking all they could carry.

"'During one night of horror, lit by the scarlet flames of exploding volcanoes, Antis went down into the sea. In panic most of the inhabitants had fled from Aztlan, taking our ships with them. Yet one boatload of terror-stricken survivors from doomed Antis managed to reach our shores. After that, we were cut off forever.'

"'Do you think our wise men are making any progress in their search?' asked the girl hopefully.

"'It is hard to say. There is some talk among them that solid matter consists of tiny particles in motion. The particles of the other realm are vibrating at a more rapid rate and are more compact than ours. Then there are the time theories. The sage Zenus believes that when the two planes split, ours continued on with but a slightly increasing rate, while theirs is rapidly increasing. Thus as theirs moves ever faster and faster, the distance between us lengthens.'"

Sutton turned his haunted eyes upon mine.

"Some day this conversation may come back to you in another light, Dilling. Then perhaps you will understand why I do not have time to discuss the question I just raised. While there is still time, I would rather paint a picture for you, though there are no words with which I can capture the gold-green of the moonlight as it falls through the unbelievably tall fern trees of that lost realm, nor the splash of their red-gold sun upon the water—that sun which seems to come through a haze of smoke.

"I could never convey the days in which study balanced work and exercise, or the long, lazy nights of dancing and music. For you see, if Tom had been merely a hedonist, he would have never wished to leave Aztlan. Unfortunately he had the inquiring mind with which the potential scientist is blessed—or cursed. He wanted to know the 'why' of the split planes. He found himself spending more and more time in the Council of the Sages. He even began to imagine that if he could return again—

"It was only because of Azelea that

he suppressed the thought, or tried to suppress it. Azelea was the girl who had rescued him and who had now become his wife. But the more he tried to suppress the idea, the more insistent it became. Finally he made the suggestion in the Council of the Sages. He was immediately accepted."

SUTTON had turned back to the sea and I felt it was to hide from my probing eyes. He continued softly.

"Azelea was broken-hearted. She had taken the flowers out of her hair as a token of mourning. She declared that unless he returned safely, she would never wear them again. . . ."

He was speaking so low that the captain and I could scarcely hear him. I found myself staring at that expanse of water. It seemed to me that the ship was drifting, we were moving so slowly. No breeze seemed to relieve the sense of pressing heat and silence. There was only the *slap-slap* of the waves against the hull as they lifted their endless patches of seaweed upon the polished silver of the moonlight.

"The most minute plans were laid. The same conditions were sought for both transitions—the same angle of the full moon, the same spot which, upon our world, was the edge of a vast vortex of dead matter—and seaweed."

I was certain that the ship was drifting. The sense of stagnant air was overwhelming. I looked at the captain narrowly, but he, too, was watching the water as he leaned over the rail. I had the feeling that we were waiting for I knew not what.

"Listen!" Sutton breathed suddenly. "Do you hear that?"

I stared at the scientist in astonishment as he looked from the captain to me.

"I don't hear anything except a sort of high-pitched humming sound," I said reassuringly.

"Yes, that is the way it starts. Soon you will be able to distinguish the different instruments. Then, as it comes nearer, even the individual voices of the singers will stand out."

I nodded in apparent agreement, but I found myself listening as if I really expected to hear something. That was when I first realized that the engines were not running. What was that humming sound? Was I imagining things, too, or was it resolving itself into a strain of music?

"Now, Sutton, don't tell me that you are going to get excited about a radio," I said. "That is how these absurd superstitions get started. Someone in a hot, stuffy cabin can't sleep, so he spins the dials. Up here on deck, we imagine we sense the approach of a famous ghost ship."

"Stop talking, you fool!" the captain growled furiously as he swung around on me.

"I bow to the superstition of the sea," I answered icily.

I was just about to turn on my heel and walk off when Sutton clutched my arm and pointed a trembling finger out into the moonlight.

"Look, do you see that frosty white patch like fog? That one beyond the large shadow of seaweed? I can already see the sail and the deck. This time they have come. They have come!"

THERE was a note of intense exultation in his voice, while the fingers which gripped my arm trembled with excitement. I adjusted my glasses and tried to stare at the particular bit of moonshine he had indicated. It was true that the person who had turned on the radio had succeeded in bringing in a delightfully exotic Oriental selection. But this supposed apparition— Confound that seaweed! It did have a way of playing tricks on the imagination, especially when one knew just what one was supposed to see.

"Yes, sure as you're alive!" the captain was whispering. "You were right about tonight. This time they have come!"

"There is only one way to make the transition and the time is very short."

As Sutton dropped his clutching fingers from my sleeve, I turned around to stare at him. Immediately I saw that my worst suspicions were confirmed. The man was taking off his coat and his shoes!

"You must get hold of yourself." I said calmly but firmly, gripping his arm to halt him. "You are excited and not quite yourself."

"On the contrary, Dilling, I know exactly what I am going to do. For a half-hour I have been trying to make you understand."

"But you will drown!" I argued. "It's only an apparition caused by moonlight and seaweed! Captain!"

"Yes, Bill," Sutton said earnestly, also turning toward the captain. "You must help me again—this time by keeping him off until I can get away. I haven't a moment to lose!"

The captain jerked my hand from Sutton's arm as he stepped in between us.

"Sorry, Doc, but you don't seem to understand, or maybe you're just stubborn. Whatever it is, you're not going to stop Tom Sutton from going back to all that matters to him. If you do stop him, it will be over my dead body!"

"Tom Sutton?" I blurted, my hands falling to my sides.

"Known to you as Dr. Thomas F., but known to me as Tom, the boy our ship picked up in a weird skiff on this same spot just fifteen years ago."

Our conversation had not taken much time, but it had been long enough to give Sutton the chance to kick off his other shoe and climb the rail. Before I could get around the bulky figure of the captain, he jumped.

At the sound of the splash, we both stiffened. I rushed back to the rail and my opponent followed me sheepishly.

"Captain, I still consider you responsible for Sutton's life," I snapped. "I expect you to keep track of him down there in the water. I would myself, but my glasses need changing. I have never noticed it before, but tonight I find that they are most unreliable."

"I thought I was stubborn, but, Doc, you're worse. You know as well as I do that Tom has almost reached the ship. They see him, too! Look, they are throwing him a life-line! They must think a lot of him, all leaning over the rail like that, watching the men haul him in. It's queer to see them heave so slowly and lazily on that rope. You'd think he would get tired and drop off before they got him up."

"It is the time element." I answered before I thought.

I GLANCED at the captain quickly. If he had noticed my slip, he said nothing.

I took my glasses off and polished the lenses.

"Go on talking—describe the ship to me," I begged.

I could no longer believe my own eyes and this confirmation from him was strangely reassuring.

"Well, Doc, she's a strange craft. I can't say as I have ever seen anything like her, even in books. She has that big, square sail of orange silk and the serpent's head on the bow, just as Tom said, and the rowers and men carrying torches and women in filmy dresses and— They have pulled him up now. They're putting him in a sort of chair. . . ."

"But that woman who is kneeling beside him," I said, adjusting my glasses again. "I cannot make out what she is doing."

"What she's doing is the signal to us, Doc, that he has made it. She's pinning flowers into her hair!"

For a long time we stood there silently. I had forgotten the heat and the expanse of ocean. I had even failed to realize that the strange music had stopped, until it began again.

"They're getting ready to shove off," the captain murmured softly, "because the rowers are lifting their oars."

"The edges of the sails are already becoming diffused."

"I'd say those glasses of yours are pretty good, Doc. The whole ship is getting blurred. Even the colors seem to be fading, but the music is as loud as ever."

We did not speak again until the ship had gone. The weirdly haunting melody which had seemed to accompany it faded out at last into what appeared to be interminable distance, leaving only the *slap-slap* of the moon-polished swells against the hull.

"You'd better get some rest, Doc," the captain said. "It will soon be daylight now."

"What are you going to do?" I whispered.

"Report a man overboard and stand by while the routine search is made. Then after the fouled propellers are cleaned in the morning, we'll move on." When I did not move, he continued softly: "This night reminds me of the night we picked Tom up in that funny skiff of his. We had fouled propellers that night, too. Of course we had no more business coming this far into the old graveyard than I had tonight. Fact is, it was my fault that time, too.

"The captain was sick in his quarters. When I shot the sun at noon with the sextant, I made some kind of mistake in the reckoning. That night, when we were drifting with our fouled propellers, the music and the sight of that ship made our hair curl. I couldn't have told you what it looked like. I was too scared. And then—well, picking Tom up in that funny skiff, all dressed up in the clothes of the last century was bad enough.

"When the captain died the next day and our propellers fouled again, you just couldn't blame the men for wanting to throw Sutton back in!"

ONE phrase from the captain's story stood out in my memory. During the years which followed, that phrase has kept coming back again and again to haunt me.

"All dressed up in the clothes of the last century."

Yes, that time element blocked every logical explanation. Try as I may, I have never been able to trace either the birthplace or childhood of Thomas F. Sutton.

That is why I find myself wondering, in spite of my better judgment, if the amazing knowledge of the Antilles possessed by Sutton was based primarily upon a fund of knowledge beyond the grasp of the average scientist. Or was I, too, the victim of a self-imposed hypnotic suggestion, a mere fantasy of heat, moonlight and seaweed, to which a great scientist had sacrificed his life while under the impression that it was his so-called Ghost Ship of Aztlan?

NOW if you kiwis can crawl out from under the bell jar — CITY OF GLASS, to you—we'll haul out the manifest sheet and consider next issue's cargo while you're getting your breath back.

Prepare yourselves for a spatial voyage to Mercury with a trio of sturdy Earthfolk, two men and a woman, in a strange radio-controlled space ship.

Douglas Carson, Nora Sayres and Frank Haines have TWO WORLDS TO SAVE, Mercury and Earth, and Author *William Morrison* pilots us through the weirdest maze of labyrinthian adventure in showing us how the matter is cleaned up. You junior pee-lots take it up from here and meet the Purple Mercurians and the Crawlers and all the other flora and fauna and complications in this imagination-stirring novel for yourself.

The old Sarge has got to get over in a corner and cogitate a bit. He's traveled the Solar System over and run into queer things, but he never suspected subterranean life on Mercury.

And the living tunnels! Boy, what a method to pump Xeno from one place to another!

HALL OF FAME CLASSIC

DID you ever dream that you waked up in a strange place and then had the darnedest time orienting yourself? Remember how lost, how helpless you felt? Well, that's exactly what happened to the hero of *Louis Tucker's* little yarn, THE CUBIC CITY. Only he doesn't just dream it! He is transported suddenly from his hotel room into a marvelous city of the future, a city built, complete, in a cube—like an apartment hotel.

How he solves his problem and comes to grips with the situation you will learn in next issue's Hall of Fame classic.

There will be other unusual short stories in the cargo, too!

MEANWHILE, let's have the reports on the last shipment. Wait a second until the old space dog pulls on his asbestos gloves. I don't intend to sear my hands handling the smoldering thermite bombs you kiwis shower down on me. But maybe we can start off with the first flash before I grab my gloves. The opening sentence indicates coolness.

NOT SO HOT

By Buddy Boxenhorn

Let me say first that TARNISHED UTOPIA ain't so hot. In fact, it isn't even lukewarm. As for the cover—nowhere in the story does it say that the Martian pitcher plant has a human face, nor does it say that Winchester has a regular space suit on, and in general the picture is poor art work and inaccurate. SILENT EDEN isn't so bad, and HORNETS OF SPACE is swell.

How about shortening THRILLS IN SCIENCE? The SCIENCE QUESTION BOX is good. How about making it longer? Shorten REVIEW OF FAN PUBLICATIONS. Incidentally, how come that you use that phony space prattle instead of making sensible remarks. You waste space that could be used for some more letters. DOWN WITH SARGE SATURN! Your disrespectful reader — **56 Featherbed Lane, The Bronx, New York.**

And that, I guess, is what is known as a Bronx cheer on paper. Do we have to go over all that stuff on the old Sarge again? This mixing chamber reflects—or erupts—only what you space-dizzy monkeys pour in. As for cutting down on the professional text matter to make more space for letters, suppose the old Sarge did that? Soon you wouldn't have anything to grouse about in your letters.

I have to feed you pee-lots skitar steak to give you something to chew on. And what's wrong with the pitcher plant having a symbolic face? Or Winchester wearing a space suit? You better zipper up your own space suit, kiwi; you're space-sick.

Comes now a "first" letter.

WE'RE IMPROVING

By Lucien R. Jones

This is my first letter to a Scientifiction magazine and I'm writing it to give you my opinion on your mag. On the whole, I think it's above average, but I think there is still room for improvement. The place these improvements would do the most good is in your art department. I think the cover and inside work has more than a touch of fantasy, and I don't think there should be any of this in a STF. mag. In the department "The Ether Vibrates" there were several requests for art work by Bok and I am against these 100%. First of all, I don't consider Bok's work art; in fact, it reminds me more of nightmares I have had when I have gone to bed after eating. In the second place, he writes and draws with his mind more on fantasy than on science-fiction. Well, I guess that's enough for Bok.

Now for the stories in your last issue (March 1942) according to their merits:

1. "Tarnished Utopia"—I think this was a very great story and hope to see more by M. Jameson.

2. "Silent Eden"—this story has the second place with me because of its unusual plot and because it was very well written.

3. "Hornets of Space"—although this was a Hall of Fame story, I was very disappointed in it although I liked the ending.

4. "Mister John Doe, Earthman"—this story could have been raised to the number two spot had it not been for the ending, which left entirely too much to the readers' imagination.

Your departments are all swell especially "The Ether Vibrates." Keep up the good work and it will not be long, in my opinion, before your art work becomes as good as that in "Captain Future."—**129 W. Ninth Avenue, Homestead, Pa.**

Well, the old space dog can't find much to take issue with in your first letter, Pee-lot Jones, and if any of you kiwis think I'm going to disagree with Pee-lot Jones—you're the accompanying piece of a bolt in the plural sense. And I don't mean washers.

Blast on, you junior asterogators!

A BIT GRUESOME

By Bill Watson

First of all, thanx plenty for the swell Science-Fiction League badge. And also for the membership card.

But this letter was meant to go to you in care of STARTLING STORIES. So I'll just stop now.

Malcolm Jameson wrote a fine story in "Tarnished Utopia," but don't you think it was a little gruesome? Nowadays we need light, sparkling Science and Fantasy Fiction. "Utopia" was just a horror novel with a dash of science in it. Look at that caption on the contents page:

"Racked with Pain in the Torture Chambers of the Moon, a Brave American Plots a Terrible Death for Prince Lothan, Dictator of the Solar System!"

Now, Sarge, I'm ashamed to see such a horrible thought flung in the faces of the trusting fans. True, the story was exceptionally well-written but, like I say, "light, sparkling Science. . . ."

"Silent Eden" was about the only other piece of work in the mag of any merit. But then Kuttner usually lands on top with his work.

Say, Sarge, quite some time ago you promised the fans of TWS a Quarterly. I'm a-waiten—**1299 Calif. St., San Francisco, California.**

I'll admit, Kiwi Watson, you've got the old Sarge hanging on the ropes with that beautiful caption you just quoted. Reads like a ten-twenty-thirty melodrammar in the Harpy Theater in the Misty Swamplands of Venus. But the Sarge didn't write it, and the Sarge didn't cook up the story, either, and if that isn't exactly what happened to Prince Lothan, I'll use Xeno for hair tonic the rest of my bald-headed life.

And hold on there, junior; you're carrying the old space dog too fast. I didn't promise you a quarterly. I asked for kiwi opinions on an annual—which is still pending decision. That's a difference of nine months. And lots of things can happen in nine months. Get back into your cage and study your astrogation chart. Pee-lot Schomburg has something on the fire.

ORCHIDS AND ONIONS

By John Schomburg

I'll start off with the orchids, the onions will come later. The index was neat, nice, and promising. Why don't you keep your promises?—(talking to the whole mag as a unit). Now for the onions.

"Tarnished Utopia" is a supreme example of what liquor, smoking, or dope can do to one's mind. To start with, it's built around an old plot. Item number two is that it is (confidentially) hacky. It goes on and on and on. And on.

The cover is O. K. as to the art, but when did Winchester get that goofy-looking gun? Probably was when I fell asleep from pure boredom. And those faces? Yow! I haven't slept a wink since. Not from horror, mind you. It's just the idea of a plant having a face. Oh, well. Isn't it the truth?

A good true-to-life artist can't paint worth a foo, while one who paints like a dream is about as realistic as a cow. "Silent Eden" was fair enough for a moron reader. I've always thought I was at least slightly above a moron.

I again take up the matter of illustrating stories. In the story called "Mister John Doe, Earthman," Rav Tuu is shown as a typical Earthman, while his own race is shown as a bunch of queer-looking jerks. I don't get it, do you blame me? You'd better not. Whoops! I'm nearing the end of the sheet of paper, so this is adios, my fran.—**No address.**

More abdominal agony over the cover, eh? And I don't get your simile, Pee-lot Schomburg. What on earth *is* more realistic than a cow? Never mind, just keep your snoot out of my Xeno jug and maybe you won't see those horrible faces on the ceiling of your bunk when you're off watch.

Shucks, the old Sarge forgot to make a special announcement at the start of this dogfight. And it's important, too. So we'll stow it in here in the middle of the cargo.

SPECIAL NEWS FLASH!

(From the Los Angeles Science Convention Committee)

Due to present war conditions, the prospective Los Angeles Science Fan Convention may be postponed or held in an inland city. Please communicate with the Convention Committee, care of Pacificonews, Los Angeles, Calif.

Here's hoping all you convention-goers voted on the matter by now. If you haven't kept up with events, and want to know, write and find out.

Here's a kiwi who's been snitching Xeno on the side, too.

POLICY, POLICY, WHO'S GOT THE POLICY?

By Edward C. Connor

I have come to the conclusion that it is not the artists (?) who are to blame for the poor covers on STARTLING STORIES. For if that were so, I think it would be quite safe to assume that they no longer would do the covers of STARTLING STORIES. Am I right? No doubt, I am.

For the editor of STARTLING STORIES is more than likely getting just the type of cover he wants. The string of sickening blobs of color could not go on forever if it were against the policy of the magazine.

Heheheh!—Sorry, Sarge, but I had to put that Xeno by-product on paper. And if you think I have been drinking that stuff again—you are absolutely right. But all is now well, since there is no more left.

As for the stories in the May issue—why is it the shorts are always the cream of the crop? Keep it up if you can, Sarge—and I hope you can. As for "Blood on the Sun" by Wells, I can only say that it is one of the top 3 that have appeared in STARTLING. It's super-great!—**929 Butler St., Peoria, Ill.**

Not to mention the vivid green ink you dipped your pen in, Pee-lot Connor. Where were you on March 17?

But to get serious with you birds with the cover mania. Sure, the old Sarge will admit discrepancies and errors and that some types of covers suit some of you while other types suit other readers, and that different artists do different work

from themselves as well as from each other—BUT the main idea is to put the main idea across. Just that. Arrest the attention. Excite the curiosity.

Now if you space monkeys can't take the covers with a grain of salt without getting technical and picayunish, your power of imagination rests at zero and you have no business studying astrogation. Why, the old space dog has seen scenes hither and yon about the old Solar System that would make these cover paintings look like drab monotones of still life by comparison.

No, I ain't going to show you my book of etchings. Glue your eyes on the star maps in the chart-room and plot out a course from the Moon to Arcturus for rocket practice.

B AS IN BERGEY

By Lynn H. Benham

Upon receipt of the latest STARTLING STORIES I turned to the letter section, and look what I found! A whole readers' section without one of my letters! Oh! Come to think of it, I don't believe I sent one in the last time; excuse it please!

Got a good lead story this time, Sarge! The three shorts, including the Hall of Fame story, were of about equal merit, and received a one-star rating. Seems like neither I nor the author can do well on shorts not exceeding 20 pages. The plot, even if it is good, doesn't have time to properly unfold.

"Blood on the Sun," on the other hand, was excellent, meriting a five star rating. Good for Wells, but he spoiled the chance of bringing these characters back (or did he?) by marrying them.

The cover of this issue isn't bad at all (Belarski's doing better), although I hid it under my jacket upon leaving the newsstand. Schomburg is a very good interior artist. Has he ever painted a cover? Get one from him.

Oh, by the way, Sarge, I wonder if there's any chance of the scienti-cross-word puzzle being brought back. I am becoming quite a puzzle nut in the last few months.

And in closing I might add, bon voyage, and a brimming Xeno jug to you, Sarge.—
411 W. Howard St., Crothersville, Indiana.

Far be it from the old Sarge to correct a cocky junior pee-lot—but the artist who painted the cover is Bergey, not Belarski, as you can ascertain by a glance at the contents page. I'd hate to send you to read the three-dimensional astrogation chart for the pilot in the control-room. If we were heading for the Moon we'd wind up on Mercury.

I can make a better observation on the cover than that. Did you notice how short the skirt of the heroine was? No wonder the Brain-destroyer was blushing so red. No crossword puzzles in sight at the moment. Why don't you pick up a copy regularly of POPULAR CROSSWORD PUZZLES? There are enough brain teasers in that book to keep you occupied from one space port to another—and allow you plenty of time to bump into a few asteroids.

THIRD TIME'S A CHARM

By Victor King

After I had read the January issue of STARTLING STORIES, I started to write a letter with my opinions re the same, but the darn thing started smoking in my typewriter, and I got it out just in time to keep the platen from fusing.

After reading the March issue, I started an-

other letter. That one got thru the typewriter, but there **were** some touchy moments. I was just about to mail it, when I happened to run across a list of what may and may not be sent through the mails. I didn't post it. . . .

But the May issue! **Sergeant Saturn!** You shock me profoundly. Here I was all ready to give your latest effort in STARTLING STORIES a round panning, and what do you do? You give me a magazine I actually enjoyed! No kidding. Much as I have disliked some of the stories you have been running in your three mags lately, I must concede that you've hit a high with this issue of SS.

"Blood on the Sun" is truly an excellent novel. It hits a high pace from the first chapter on, and believe it or not, there's no anticlimax. The story is plausible, considering the plausibility of stf as a whole, well-constructed, interesting, and contains just the right amount of humor to balance it.

Items of the future world are brought in frequently enough to make them seem real—most authors bring them in as incidentals, then dismiss them without shedding as much as a hypocritical tear, and pass on to the next, giving the story a superficial taint that makes it nauseating.

I absolutely refuse to ask for a sequel—I don't believe in 'em, they make the characters commonplace and make them seem like a vehicle, but I **do** plead for more work by the same author.

"Alla-Beg's Genii" was good, altho really a little inclined toward fantasy.

"Macrocosmic" was mediocre.

"The Making of Misty Isle" was good, altho I usually don't care for Coblentz. It is quite a relief from the drivel that depicts America as eternally snow-white, and incapable of doing anything naughty. But I enjoyed it immensely—I don't take my stf too seriously.

And Virgil Finlay the man gives us! 'Nuff sed. I don't suppose there could possibly be any of the originals available? Ouch! Okay, okay, I deserve it.

Will we get more of the same in the future issues?—**711 South Arch Street, Aberdeen, So. Dakota.**

If the old Sarge has anything to say about it, you space apes will get more Finlay. You'll get more of all the artists that you kiwis can't agree on, and who cares? Sure, sure, the old space dog cares, but you pee-lots will all have to get together and pull in one direction for me to make sense of your yapping. As it is, I am pulled about like a lingerie dummy in a basement sale.

As for original drawings, maybe we'll run another prize contest of some kind soon and offer original drawings as prizes to especially good junior astrogators who con their charts well. The old Sarge will see what he can cook up in the space galley.

THANKS, SARGE

By Byron Kelham

Thanks for acknowledging my ethergram, even if you couldn't read it. My brother is responsible for that. I asked him to mail it for me and he carried it around for a week first.

Is that dame on the May cover supposed to be the beautiful blonde described in the story? Bergey can do better than that, so why don't he?

The novel is swell. The shorts are only fair. The H of F story was awful. That reminds me, why not elect "Emissaries of Space"?

Don't drink too much Xeno—**3725 S. E. Clinton, Portland, Oreg.**

Okay, kiwi, we'll see about the other things in proper course, but the old Sarge can explain the dame on the cover. You see, she just had a shot of Xeno, and who can keep a straight face while swallowing

[Turn page]

that fire-water? How do I know? Don't be silly? It made her dress shrink, didn't it! Only Xeno does that. Take it from a Xeno expert who knows.

Now climb back and chisel the caking out of the starboard rocket tubes. You'd make a face worse than that if you were scared to death.

THE DREAM BACK

By Carl Mason

The back cover on the May issue of STARTLING STORIES looks like a dream such as I have when I take an extra drink of Xeno. I classify the stories as follows:

1. "Blood on the Sun."
2. "The Making of Misty Isle."
3. "Macrocosmic."
4. "Alla-Beg's Genii."

I liked THRILLS IN SCIENCE and the SCIENCE QUESTION BOX. Make THE ETHER VIBRATES longer. Now I'm going to take another drink of Xeno and try to forget the back—**Franklin, N. C.**

Better take a third drink, kiwi, and have a peek at the *front* cover.

Put a patch on your space suit, Pee-lot Mason, and quit sniping at the art work. If you remember the novel, it was a pretty bad dream for all the characters concerned, don't you think? Or don't you think?

Well, here we are nearing port, and the manifest just about checked over and pulled thoroughly to pieces. But before we start decelerating here's another space barrage we might as well plow through.

XENO AND WATER

By Paul Carter

So you don't like the way I cover up on the repartee, hah? Well, your space-mad, caged correspondent will remedy that. Here are a few comments on the **Jolly S. S.,** and you may fire at will:

That May cover! My, oh, my, that cover! Although it is many parsecs above the worst of Belarski, it is also many parsecs below the best of Bergey. The humans are not as good as usual—not anywhere near the usual standard. But the BEM is gorgeous; likewise the flames. That cover looks so hot it could be used to warm one's feet in winter instead of a water-bottle or brick (or Venusian glow-stone). This cover, then, is neither good nor bad; let's have something better next time.

Now to dissect the magazine's innards. Ahhhhhh—such a glorious vision intersects my Xeno-bleared eyes. . . . VIRGIL FINLAY! Five Xeno jugs to Virgil, please. Sarge, if Finlay continues with his fine-line-and-dot method of drawing, you'll find no kick from these quarters. The Morey pic on page 103 rates four Xeno jugs for its striking, different style. See, boys? Morey **can** draw, when he wants to. The pic for "Alla-Beg's Genii" gets two Xeno jugs—nothing spectacular. The pic for Coblentz's short rates one glass of water. Yeah, you heard me—H_2O. And you can poison the H_2O if you want.

Hmmm . . . something tells me this one is by Morey, also. Queer, what? Dr. Jekyll-Mr. Hyde affair, as it were.

And now to the meat of the matter; the stories . . .

"Blood on the Sun." Rival reporters, Mercurian valet, Martian nations on brink of war, mysterious glow-eyed men, Brain Spiders, and last but not least fifty evil Devils fixing to conquer the universe. Seventy-odd hack plots combined. And it was **good!** It was one of the best productions seen yet in **Jolly S. S.!**

How did it happen? It's this way. First, Hal K. Wells has a nifty style. His extremely apt similes, etc., are among the best in the trade. Second, there were some new ideas—notably the football game of the future, with two balls (hey—what's Wells been drinking?). Third—well, I don't know. Maybe it's

because I like devil stories for some reason. (I refuse to say what reason.)

Say, Sarge, what does the "X" in Val X. Barnes's name stand for?

I won't try to rate the other three stories; they were all surprisingly good. But regarding "Making of Misty Isle," the local Chamber of Commerce is going to be very sore at a guy named Stanton A. Coblentz. After all, calling a prize villain General **Blackfoot—156 S. University St., Blackfoot, Idaho.**

There's one thing to commend about your ether flash, Kiwi Carter. You ask questions, but you proceed to answer most of them yourself. Such a system may be annoying to other space apes who want to chip in on the chatter, but that sort of double-talk monologue certainly keeps an outpost station agent from getting lonely.

But take the chief astrogator's advice and don't get so gay with Xeno and water. They won't mix, but they make the drinker do it. With anybody.

So you thought you left the hard question for the old Sarge, eh? Well, rocket pants, the X in Val X. Barnes' name stands for Xylophone, and didn't he play a merry tune in BLOOD ON THE SUN?

Next, you'll be asking what the K means in Author Hal K. Wells' name. So I'll tell you first. It means Knockout.

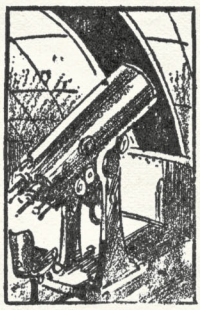
Now put on your bright red space suit with the yellow pronton buttons, and don't forget your leaden overshoes in case the ter-rains. We aren't so long on gravity in this control-room, anyway.

Find me my Xeno jug, and you junior astrogators can take over until the next run.

—SERGEANT SATURN,
The Old Space Dog

REVIEW OF THE SCIENCE FICTION FAN PUBLICATIONS

By SERGEANT SATURN



ATTACH your gravity belts, you space apes, and put some heavier padding in your acceleration hammocks; we're blasting off for a swift survey of the fanzinoidal belt. Since last issue the old Sarge has received a brief assortment from E to Z in fanzine titles for review. What I want to know is what has become of the fan mags with titles starting with the missing letters of the alphabet. A fine mess of soup we can make, with two-thirds of the alphabet missing.

Don't throw any barrage flack right now, but how about somebody—a fan mag or even the old Sarge—publishing a complete indexed list of all extant fan publications from A to Z—including Ampersand—once a year? If you want the old space dog to do it, suppose we set the time for this recrudescence for our January issue. That means that I must have a report from every fanzine to be included in the list on hand by October 1st.

If you fan mag publishers like this idea, be sure to write a brief letter to Sergeant Saturn — one page is sufficient, with the publication data upon it—and mark your letter for inclusion with complete list of fanzines, and get it to me by October 1st, 1942. And between now and that time, be sure to see that I get a copy of your publication (any current date) so I will know that I am compiling more than just a list of names.

That's just a suggestion. If you don't do it, the list simply won't be complete, that's all.

All right, let's see what the space furies have dumped on the old space dog for this trip.

ECLIPSE (Ten-weekly) 13598 Cheyenne, Detroit, Mich. Richard J. Kuhn, editor. Price, 10c per copy; 3 for 25c.

Uummm—thirty-six 8x11½ pages, including front and back covers of yellow art paper Brown, green, red, and blue ink on the nice white inner sheets. Good headings, good art work, good articles, nice going. The old Sarge has to recommend this February issue of ECLIPSE.

FANFARE (Bi-monthly) Box 122, Bryantville, Mass. Art Widner, Jr., editor. Price, 10c per copy; 3 for 25c.

Well, what do you know—almost exactly what I said for the first fanzine goes for this fan mag. Only the cover is a green-inked drawing on white—and a nice bunch of spinach it is, too. A griffin **en couchant**, with talons on four legs, bat wings, and an octopus with ten tentacles for a head, all of which seems to be pursuing a Spanish sailor who took symbolic dancing from the Russian Ballet. And a darned nice fanzine it is. February, 1942, number reviewed.

FANTAST (When and If) Idlewild, Fountainhall Road, Aberdeen, Scotland. Douglas Webster, editor. Price, 6d. per copy; 3 for 1/6. (Approximately 10c each; 3 for 25c.)

Say, what goes on here? Thirty-two pages, including the gray front and back covers, of well-edited material. Nice headings and art work—all black ink on white paper. Three first-class fanzines in an alphabetical row.

And, pee-lots, this one is published over there amidst and among the heather where things aren't as easily come by right now as they are here in America. Three rocket salutes to FANTAST!

FANTASY FICTION FIELD (Weekly) 1702 Dahill Road, Brooklyn, N. Y. Julius Unger, editor. Price, 5c per copy; 6 for 25c.

As regular as a space chronometer on Captain Future's **Comet.** Three issues on hand for this review. The idea of giving fans a preview miniature of forthcoming science fiction magazine covers grows on you. Nice work, kiwis. Good and timely information on science fiction field, books, mags, and activities. The old Sarge salutes your indefatigable efforts.

JINX (Quarterly) 2409 Santee Avenue, Columbia, S. C. Harry Jenkins, Jr., editor. Price, 10c; free to FAPA members.

Fourteen pages of sharp and clean-cut small type on intensely orange paper. No art work, but heavy on the editorial labor. Good stuff—articles and departments and fiction and poetry. Nothing here for the old Sarge to sharpen his teeth on. This is a good fanzine.

LEPRECHAUN (Bi-monthly) 1301 State Street, Schenectady, N. Y. Lawrence T. Shaw, editor. Price, 5c per copy; 25c per year.

Fourteen pages, including the yellow front and back covers. Drawing of a Puckish leprechaun on cover. A couple of illustrations, nice headings. The stencil work could be sharper, but this is a nice fanzine—and it is the first issue! Maybe it will grow into a humdinger. Good spacings, Editor!

SPACEWAYS (Eight times yearly) 303 Bryan Place, Hagerstown, Md. Harry Warner, Jr., editor. Price, 10c per copy; 3 for 25c.

Twenty-six pages, including the bright school-house red front and back covers with two nice drawings. Interior pages black ink on white sheets, sharp and clear-cut. No interior artwork, but neat headings—and meaty material. A good issue. If that gal on the cover is waving good-by to the old Sarge taking off in his space ship, there ain't gonna be any voyage. I'm going back to park on her roof.

Flash! That was the January issue. I also have the March issue at hand. Same format, only the front and back covers are a nice Christmas green with a pair of good drawings. Nice work; neat but not gaudy. No complaints.

[*Turn page*]

UNIVERSE STORIES (Bi-monthly) 2310 Virginia, Everett, Wash. Tom Ludowitz, editor. Price, 10c per copy; 50c per year.

The second issue of this 5¼x8½ fanzine. Twenty pages of purple ink on white, two or three illustrations. What this mag needs is increase to double size and pay a little more attention to the art work. Keep blasting away, kiwi; your editorial work is picking up.

VOICE OF THE IMAGI-NATION (Six-weekly) Box 6475, Metro Station, Los Angeles, Cal. Ackerman & Morojo, editors. Price, 10c; 10 issues for $1.

Fourteen pages of 8½x14 white stock. Good stencil work, black and green ink on white sheets. Regular rotogravure composite photograph cover of editors of various fanzines, etc. Nice going. No illustrations, but two or three nice headings and—whoa! The drawing on page 7. Does that give the old Sarge a bust in the eye! A very nice number. (I mean the magazine.)

VOMAIDENS (Special two-part folios) A Novacious Publication, Los Angeles, Cal. Price, folio 1, 15c; folio 2, 10c.

Well, fan my mixing chamber and cool my rockets! A double folio of drawings, number 1 by boys, number 2 by girls. There's no reading matter in folio one, but you won't miss it. I've seen nothing like this since my last trip to the Spacemen's Café in Aphrodite City on Venus. Well, pee-lots and pee-lotesses, you've got me.

What goes, anyhow? How come this sudden burst of art work on the female form? From the haloed angel with the domino mask

reclining on the cloudbank on the first page of folio one, to the devil dancer on the last page of folio two, you've dished up as fancy a picture gallery of Minsky's Burlesque as the old space dog ever hopes to see. VOMAIDENS is right! Tie Ulysses to the mast and sail on.

ZENITH (Bi-monthly) 41 Longford Place, Victoria Park, Manchester 14, England. Harry E. Turner, editor. Price 6d. per copy.

What's this? Another fanzine from the British Isles! Twenty-four pages of tasty mimeographing, including the front and back covers of pale green with two exceptional drawings in the style reminiscent of Finlay. Nice illustrations and headings in brown ink on white paper, text in black ink. And a darned nice job, too.

Again the old Sarge doffs his space helmet to fanzines in the right little, tight little isles. Kiwis, you've got something!

AND there, all you kiwis, you have this issue's cargo. An exceptional cargo all the way through. Do you amaze the old space dog! What is this, anyway? A conspiracy to keep the old Sarge from hurling cosmic brickbats? This batch of stuff was so good that Saturn couldn't rightly find any place to dig in and blast you loose from your space belts.

Keep up that pace, and it won't be long before the old Sarge will have to maroon you kiwis out on Pluto to stop you from competing with the professional magazines.

No fooling with the rocket keys, you space birds are doing nice work. Happy spacings to you. The old Sarge has to go now and refill his Xeno jug.

—SERGEANT SATURN.

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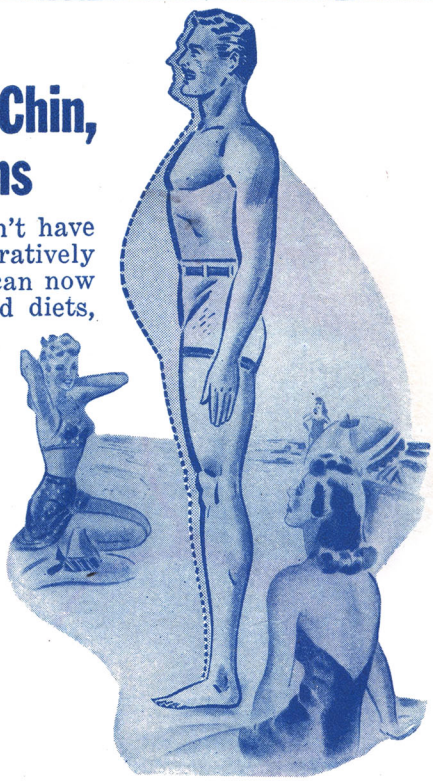

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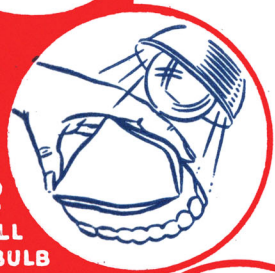

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