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Contents for July, 1942, Vol. XXIX, No. 5

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DIODE TO PENTAGRID

The klystron tube, I've been informed, is now obsolete—displaced from its pre-eminence as a generator of ultrashort radio waves by a new device. That's a rather interesting thought for several reasons; in the first place, it means something decidedly better must have been perfected. The klystron, while capable of generating waves of a shortness not before attainable with any effective power, had two or three serious drawbacks. An actual klystron appeared to the layman to be a junior plumber's practice layout, with pipe of all sizes from five-inch drains down to one-half-inch copper tube. It required a constantly functioning vacuum pump usually, which added to the mechanical complexity. And it did not have sharp tuning capacity. It worked in the ultrashort waves, but the spread of its tuning was great enough to include about as broad a band of frequencies as the entire commercial broadcast band. The owner of a broadcast receiver of comparable selectivity would never miss a thing—he'd be sure to get all four networks and the police calls at the same time.

That breadth of band was not useless in the ultrashort radio spectrum simply because of the enormously increased range of frequencies involved. But it still wasn't desirable.

The new device was invented by Americans during the period of national-defense work; it was *not* published in international scientific journals. America's national offense work has it now; the Axis has the klystron to play with. The difference is somewhat comparable to the difference between an original de Forest audion and a modern super-control beam-power amplifier.

The rapid obsolescence of radio tubes—klystron or of the more usual variety—is rather startling if you have had no occasion to follow the improvement of tube design since the days when most radio sets were homemade, worked on "A," "B" and "C" batteries, or the early "battery eliminators."

The earliest forerunner of the electron tube was the hot-filament-and-plate, the diode tube. Thomas Edison reported the discovery that a heated filament in an evacuated bulb near a cold metal plate would retain a positive charge, but not a negative charge. The "Edison Effect" is the basis of the rectifier tube. Lee de Forest added the third element, the all-important grid that made the rectifer into an amplifier. With that immensely important addition, the radio oscillator, amplifier and transmiting tube became possible. It made radio telephones possible, where only radiotelegraphy had been before.

The essentials of the three-element triode remained from the beginning of radiotelephony to the early days of battery eliminators for home radios. There were many improvements in the three electrodes, but no fundamental change.

Then the changes really started. Alternating current sets had to be developed; it was an obvious necessity for commercial development. Rectifier tubes could convert high-voltage A. C. to high-voltage, pulsating D. C. Banked paper condensers and iron-core choke coils could smooth out the pulses to a humless D. C. in quantities enough to handle the plate current requirements—to eliminate the B battery. But the several ampere demands of the filaments required enormous condenser and choke coils if the A battery were to be eliminated. The heater-type A. C. tube was developed; if the filament heated and cooled sixty times a second, you naturally got hum in the set. But if it took forty-five seconds for the electron-emiter to heat up, the heat-and-cool cycle was smoothed out completely. Out went the A battery.

The real need then was to develop an amplifier that could really amplify. The old 201-A of fond memory had an amplification factor of half a dozen times or so; if you tried for more amplification, the capacitance effect between the grid and the plate of the tube itself would start to play merry hob; it would oscillate with all the vigor and howl of a telephone of the day when the earphone was put against the mouthpiece.

The tetrode—four-element—tube put a screening grid between the plate and the original grid. The first grid could still control the flow of electrons, but the screen-grid cut off the condenser effect between it and the plate. The amplification usable went sky-high. Some of the tetrode tubes will amplify more than seven hundred times.

But in ranges like that, working on radio frequencies, that amplification ran into a new trouble; electrons passing the screen-grid would tend to accumulate in the space between the plate and screen-grid, forming a little cloud of electron-gas—a highly repellent sort of cloud that interfered with the operation of the tube. So a third grid—the suppressor grid—turned the tube into a five-

element pentode. Available amplification, with the third grid draining away the electron-gas cloud, went up over the one-thousand-times mark.

With amplification factors of that order, it didn't take many tubes to turn a radio signal into something you could hear. Even the tiny signal of a loop antenna a foot across could be amplified to a terrific extent and skimmed for its music content. And the manufacturers were—hey, presto! —back to batteries again. Portable sets with heave enough to push a loud speaker were possible. But that meant a return to filaments instead of heated cathodes—little filaments that took a minimum of current from a dry-cell "A" battery, preferably a single-cell dry battery. And compactness. And tubes that delivered full power on ninety volts of plate current instead of two hundred fifty volts of stepped-up, rectified and filtered A. C. Also—since superhetrodyne circuits were most common —a multifunction tube doing two or more things at once was useful. By putting in two successive, separate control grids, a screen-grid and a suppressor grid between filament-cathode and plate, the triumph of the pentagrid converter was attained. It takes the place of two modern, or six old-style tubes, and uses only one filament—one and a half volts and five hundredths of an ampere.

Then there is the neat system of wrapping up three tubes in one bottle—saving a lot of space, considerable filament drain, and producing an octopus-armed, super-goldbergian achievement of beautiful ingenuity. The 1D8-GT type also draws one and a half volts or so, and one tenth of an ampere for the filament. That filament really has a job. It's the filament end of a diode-type tube that can be used as a detector tube; the filament of a triode—improved type with an amplification factor of twenty-five—that can serve as the first stage of audio amplification, and the filament for a pentode-type high-power amplifier as a final power output stage. One more tube for the half dozen left-over functions of a modern portable, and you've got a radio set. Three tuber, sure—but any one of those contraptions will take on a whole six-tube deluxe neutrodyne of the "battery eliminator" days.

For the cabinet-type sets they have a nice assortment of combined and cross-integrated affairs, too. And methods of twisting an electron stream into highly functional knots. The super-control type has a non-uniform control grid that succeeds in amplifying weak signals more than strong signals—and hence minimizing distortion due to overloading. On the other hand, for some purposes, it is desirable to amplify strong signals more than weak signals—volume expansion to make a phonograph reproduce the range of sound intensities the symphony orchestra actually produced, and which the record's grooves cannot handle. There's a tube for that job.

For scientific work aside from radio broadcast pickups, other special tube-types have been developed. The greenish "magic eye" tube, used as a tuning indicator on some receiving sets can serve as a hypersensitive sort of galvanometer in a scientific laboratory; the narrowing or widening of the shadow area cutting across the green-glowing fluorescent screen of the tube is exceedingly sensitive to slight changes in current values.

In many of the glass tubes now made, the control-grid lead is brought out of the top of the tube, not out through the base. For radio and similar high-frequency work, this has the advantage of reducing the condenser-effect between the lead-in wires to plate and grid. In much scientific work, it has the immense advantage that, when working with minute currents and very high resistance circuits, the leakage of current between the grid and cathode leads of the tube itself is enormously reduced. For instance, one of the standard photo-electric cell circuits used for accurate measurement of light intensity, calls for a resistance of 100,000,000 ohms in series with the grid of the first-stage amplifier tube. A little moisture condensed on the base of the tube could, if the grid lead ran in that way, change that 100,000,000 ohm resistance as much as fifty percent, with disastrous results on the accuracy of the measurements.

Then there are voltage-regulator tubes, one of the great blessings of the electronics worker's life. The slight dimming of the lights when your refrigerator or oil-burner turns itself on isn't bothersome; when a research worker is trying to measure a current of ten-millionth of an ampere by means of an amplifier it drives him frantic. Every electric toaster, oil-burner, and particularly that unbeloved guy down the hall who's doing magnetic research and draws ten kilowatts from the lines every time he turns his gadget on. The voltage on the lines is not 117.32 as it should be—it's 117 plus or minus enough to make measurements hopeless. But a voltage-regulator tube circuit can tie it down on the nose and keep it under control. Accurate, reproducible measurements of a billionth of an ampere can be made.

The development of these special tubes, plus the fact that smaller, more compact radio receivers can be made if a new type tube is designed for the circuit, instead of a circuit designed for available tubes, has led to difficulties, though.

So many tubes were designed for sets of special make that there are too many tube-types of only slightly varying characteristics. The present need for conservation of material, manufacturing power, and skilled labor has brought about the discontinuance of several hundred different types of tubes.

Among them, the old 201-A has died at last.

The Editor.

Ellery Queen is one of the famous names in radio.

Steve Fisher's movie, "I WAKE UP SCREAMING" broke box-office records.

Frank Gruber's books are acknowledged best-sellers.

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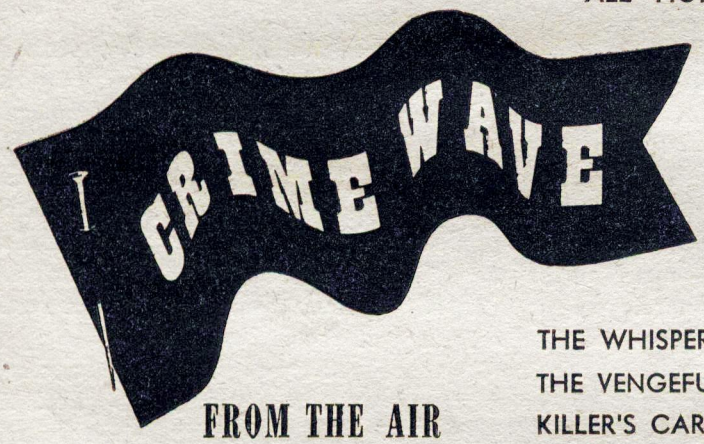

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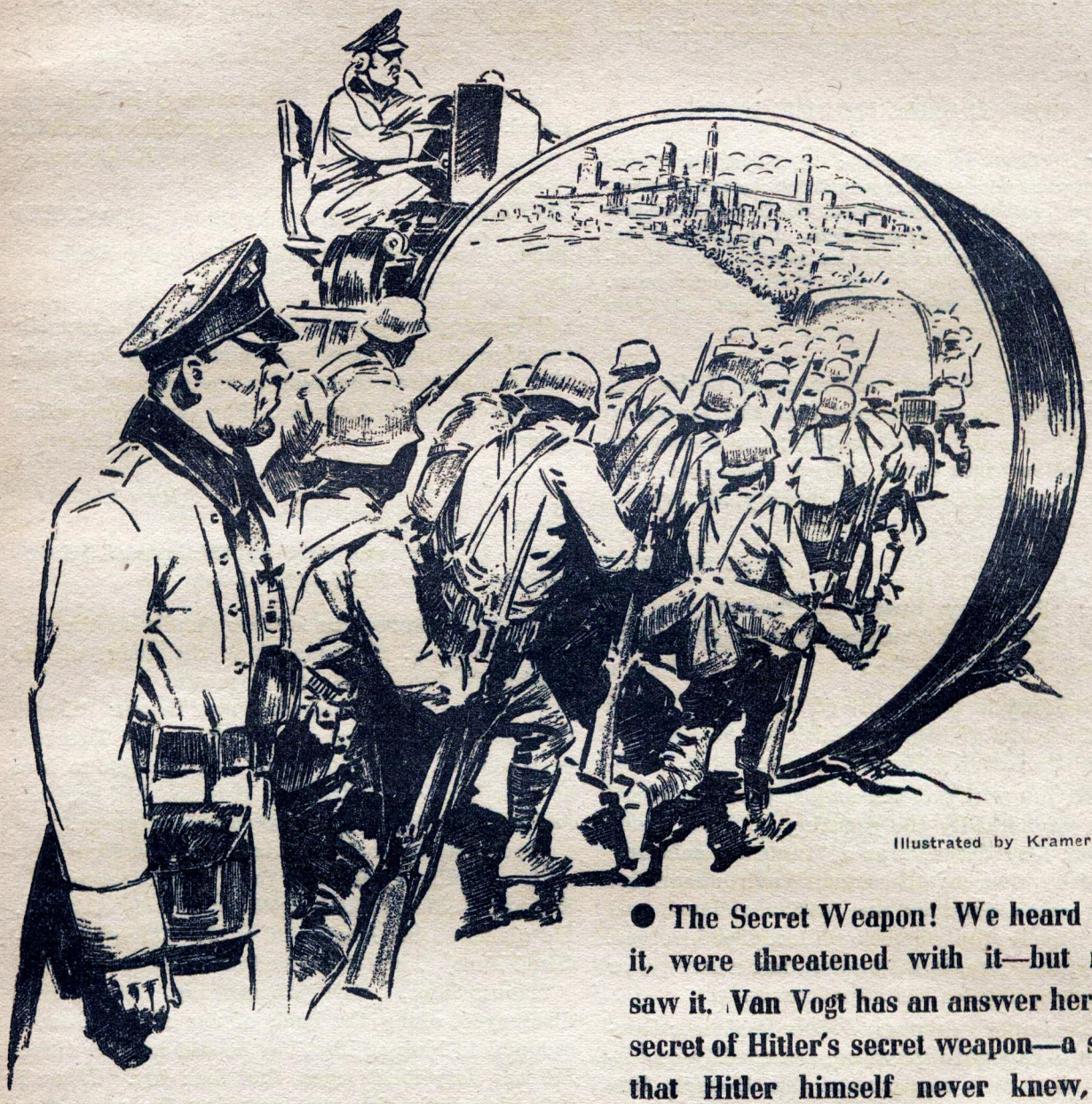

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● The Secret Weapon! We heard about it, were threatened with it—but never saw it. Van Vogt has an answer here, the secret of Hitler's secret weapon—a secret that Hitler himself never knew, and, even knowing, could never hope to use—

SECRET UNATTAINABLE

By A. E. van Vogt

How the file, known as Secret Six, was smuggled out of the German Reich and brought to the United States is one of those dramatic true tales of World War II that will some day be told. It involves people inside Germany who would be executed if their part and the process were discovered.

All the extraordinary documents of this file, it should be emphasized, are definitely in the hands of our own authorities; and investigations are proceeding apace. Further revelations of a grand order may be expected as soon as one of the machines is built.

The documents date from 1937, and will be given chronologically, without reference to their individual importance. But first, it is of surpassing interest to draw attention to the following news item, which appeared in the New York *Sun*,

March 25, 1941, on page 17. At that time it appeared to have no significance whatsoever. The item:

GERMAN CREEK BECOMES RIVER

London, March 24 (delayed): A Royal Air Force reconnaissance pilot today reported that a creek in northern Prussia, marked on the map as the Gribe Creek, has become a deep, swift river overnight. It is believed that an underground waterway burst its bounds. Several villages in the path of the new river showed under water. No report of the incident has yet been received from Berlin.

There never was any report from Berlin. It should again be pointed out that the foregoing news item was published in 1941; the documents which follow date from 1937, a period of four years. Four years of world-shaking history:

April 10, 1937

From Secretary, Bureau of Physics
To Reich and Prussian Minister of Science
Subject 10731—127—S—6

1. Inclosed is the report of the distinguished scientific board of inquiry which sat on the case of Herr Professor Johann Kenrube.

2. As you will see, the majority of the board oppose emphatically the granting of State funds for what they describe as a "fantastic scheme." They deny that an all-vacuum environment for energy would produce the results claimed, and refute utterly the number philosophy involved. Number, they say, is a function, not a reality, or else modern physics has no existence.

3. The minority report of Herr Professor Goureit, while thought-provoking, can readily be dismissed when it is remembered that Goureit, like Kenrube and Kenrube's infamous brother, was once a member of the SPD.

4. The board of inquiry, having in mind Hitler's desire that no field of scientific inquiry should be left unexplored, and as a generous gesture to Goureit, who has a very great reputation and a caustic pen, suggested that, if Kenrube could obtain private funds for his research, he should be permitted to do so.

5. Provided *Geheime Staats Polizei* do not object, I concur. G. L.

Author's Note: *The signature G. L. has been difficult to place. There appears to have been several secretaries of the Bureau of Physics Research, following one another in swift order. The best accounts identify him as Gottfried Lesser, an obscure B. Sc. who early joined the Nazi party, and for a period was its one and only science expert.* Geheime Staats Polizei *is of course Gestapo.*

April 17, 1937

MEMO
From Chief, Science Branch, Gestapo

If Kenrube can find the money, let him go ahead. H. concurs, provided supervision be strict.
K. Reissel.

COPY ONLY June 2, 1937

From Co-ordinator Dept., Deutsche Bank
To Gestapo

The marginally noted personages have recently transferred sums totaling Reichsmarks four million five hundred thousand to the account of Herr Professor Johann Kenrube. For your information please. J. Pleup

June 11, 1937

From Gestapo
To Reich and Prussian Minister of Science
Subject Your 10731—127—S—6

Per your request for further details on the private life of J. Kenrube since the death of his brother in June, 1934, in the purge:

We quote from a witness, Peter Braun: "I was in a position to observe Herr Professor Kenrube very closely when the news was brought to him at Frankfort-on-Main that August, his brother, had been executed in the sacred blood purge.

"Professor Kenrube is a thin, good-looking man with normally a very wan face. This face turned dark with color, then drained completely of blood. He clenched his hands and said: 'They've murdered him!' Then he rushed off to his room.

"Hours later, I saw him walking, hatless, hair disarrayed, along the bank of the river. People stopped to look at him, but he did not see them. He was very much upset that first day. When I saw him again the next morning, he seemed to have recovered. He said to me:

"'Peter, we must all suffer for our past mistakes. The tragic irony of my brother's death is that he told me only a week ago in Berlin that he had been mistaken in opposing the Nationalsozialistiche Arbeitspartei. He was convinced they were doing great things. I am too much of a scientist ever to have concerned myself with politics.'"

You will note, Excellency, that this is very much the set speech of one who is anxious to cover up the indiscreet, emotional outburst of the previous day. However, the fact that he was able to pull himself together at all seems to indicate that affection of any kind is but shallowly rooted in his character. Professor Kenrube returned to his laboratories in July, 1934, and has apparently been hard at work ever since.

There has been some discussion here concerning Kenrube, by the psychologists attached to this office; and the opinion is expressed, without dissent,

that in three years the professor will almost have forgotten that he had a brother.

K. Reissel

MEMO AT BOTTOM OF LETTER:

I am more convinced than ever that psychologists should be seen and not heard. It is our duty to watch every relative of every person whose life is, for any reason, claimed by the State. If there are scientific developments of worth-while nature in this Kenrube affair, let me know at once. His attainments are second to none. A master plan of precaution is in order. Himmler

October 24, 1937

From Secretary, Bureau of Physics
To Reich and Prussian Minister of Science
Subject Professor Johann Kenrube

The following report has been received from our Special Agent Seventeen:

"Kenrube has hired the old steel and concrete fortress, *Gribe Schloss,* overlooking the Gribe Creek, which flows into the Eastern Sea. This ancient fortress was formerly located on a small hill in a valley. The hill has subsided, however, and is now virtually level with the valley floor. We have been busy for more than a month making the old place livable, and installing machinery."

For your information, Agent Seventeen is a graduate in physics of Bonn University. He was for a time professor of physics at Muenchen. In view of the shortage of technicians, Kenrube has appointed Seventeen his chief assistant.

G. L.

May 21, 1938

From Science Branch, Gestapo
To Reich and Prussian Minister of Science
Subject 10731—127—S—6

H. wants to know the latest developments in the Kenrube affair. Why the long silence? Exactly what is Professor Kenrube trying to do, and what progress has he made? Surely, your secret agent has made reports. K. Reissel

June 3, 1938

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Professor Johann Kenrube

Your letter of the 21st ultimo has been passed on to me. The inclosed precis of the reports of our Agent Seventeen will bring you up to date.

Be assured that we are keeping a careful watch on the developments in this case. So far, nothing meriting special attention has arisen.

G. L.

PRECIS OF MONTHLY REPORTS OF AGENT SEVENTEEN

Our agent reports that Professor Kenrube's first act was to place him, Seventeen, in charge of the construction of the machine, thus insuring that he will have the most intimate knowledge of the actual physical details.

When completed, the machine is expected to occupy the entire common room of the old fortress, largely because every section is being inclosed in a vacuum. In this connection, Seventeen describes how four electric motors were removed from Kenrube's old laboratories, their force fields skillfully and peculiarly surrounded by a vacuum, with the result that a ninety-four-percent improvement in their efficiency resulted.

Seventeen goes on to state that orders for parts have been placed with various metal firms but, because of the defense program, deliveries are extremely slow. Professor Kenrube has resigned himself to the possibility that his invention will not be completed until 1944 or 45.

Seventeen, being a scientist in his own right, has become interested in the machine. In view of the fact that, if successful, it will insure measureless supplies of raw materials for our Reich, he urges that some effort be made to obtain priorities.

He adds that he has become quite friendly with Kenrube. He does not think that the Herr Professor suspects how closely he is connected with the Bureau of Science.

June 4, 1938.

From Gestapo
To Reich and Prussian Minister of Science
Subject 10731—127—S—6

Raw materials! Why was I not informed before that Kenrube was expecting to produce raw materials? Why did you think I was taking an interest in this case, if not because Kenrube is a genius of the first rank; and therefore anything he does must be examined with the most minute care? But—raw materials! Are you all mad over there, or living in a world of pleasant dreams?

You will at once obtain from Herr Professor Kenrube the full plans, the full mathematics, of his work, with photographs of the machine as far as it has progressed. Have your scientists prepare a report for me as to the exact nature of the raw materials that Kenrube expects to obtain. Is this some transmutation affair, or what is the method?

Inform Kenrube that he must supply this information, or he will obtain no further materials. If he satisfies our requirements, on the other hand, there will be a quickening of supplies. Kenrube is no fool. He will understand the situation.

As for your agent, Seventeen, I am at once sending an agent to act as his bodyguard. Friendly with Kenrube indeed! Himmler

June 28, 1938

From Gestapo
To Secretary, Bureau of Physics
Subject Secret Six

Have you received the report from Kenrube? H. is most anxious to see this the moment it arrives. K. Reissel

July 4, 1938

From Gestapo
To Secretary, Bureau of Physics
Subject Secret Six

What about the Kenrube report? Is it possible that your office does not clearly grasp how important we regard this matter? We have recently discovered that Professor Kenrube's grandfather once visited a very curious and involved revenge on a man whom he hated years after the event that motivated the hatred. Every conceivable precaution must be taken to see to it that the Kenrube machine can be duplicated, and the machine itself protected utterly.

Please send the scientific report the moment it is available. K. Reissel

July 4, 1938

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Professor Johann Kenrube

The report, for which you have been asking, has come to hand, and a complete transcription is being sent to your office under separate cover. As you will see, it is very elaborately prepared; and I have taken the trouble to have a precis made of our scientific board's analysis of the report for your readier comprehension. G. L.

PRECIS OF SCIENTIFIC ANALYSIS OF KENRUBE'S REPORT ON HIS INVENTION

General Statement of Kenrube's Theory: That there are two kinds of space in the Universe, normal and hyper-space.

Only in normal space is the distance between star systems and galaxies great. It is essential to the nature of things, to the unity of material bodies, that intimate cohesion exist between every particle of matter, between, for instance, the Earth and the Universe as a whole.

Kenrube maintains that gravity does not explain the perfect and wonderful balance, the singleness of organism that is a galactic system. And that the theory of relativity merely evades the issue in stating that planets go around the Sun because it is easier for them to do that than to fly off into space.

Kenrube's thesis, therefore, is that all the matter in the Universe conjoins according to a rigid mathematical pattern, and that this conjunction presupposes the existence of hyper-space.

Object of Invention: To bridge the gap through hyper-space between Earth and any planet, or any part of any planet. In effect, this means that it would not be necessary to drill for oil in a remote planet. The machine would merely locate the oil stratum, and tap it at any depth; the oil would flow from the orifice of the machine which, in the case of the machine now under construction, is ten feet in diameter.

A ten-foot flow of oil at a pressure of four thousand feet a minute would produce approximately six hundred thousand tons of oil every hour.

Similarly, mining could be carried on simply by locating the ore-bearing veins, and skimming from them the purest ores.

It should be pointed out that, of the distinguished scientists who have examined the report, only Herr Professor Goureit claims to be able to follow the mathematics proving the existence of hyper-space.

July 14, 1938

COPY ONLY

TRANSCRIPTION OF INTERVIEW BY HERR HIMMLER OF PROFESSOR H. KLEINBERG, CHAIRMAN OF THE SCIENTIFIC COMMITTEE OF SCIENCE BRANCH, GESTAPO, INVESTIGATING REPORT OF HERR PROFESSOR JOHANN KENRUBE

Q. You have studied the drawings and examined the mathematics?
A. Yes.
Q. What is your conclusion?
A. We are unanimously agreed that some fraud is being perpetrated.
Q. Does your verdict relate to the drawings of the invention, or to the mathematics explaining the theory?
A. To both. The drawings are incomplete. A machine made from those blueprints would hum with apparent power and purpose, but it would be a fraudulent uproar; the power simply goes oftener through a vacuum environment before returning to its source.
Q. I have sent your report to Kenrube. His comment is that almost the whole of modern electrical physics is founded on some variation of electricity being forced through a vacuum. What about that?
A. It is a half truth.
Q. What about the mathematics?
A. There is the real evidence. Since Descartes—
Q. Please abstain from using these foreign names.
A. Pardon me. Since Leibniz, number has been a function, a variable idea. Kenrube treats

of number as an existing *thing*. Mathematics, he says, has living and being. You have to be a scientist to realize how incredible, impossible, ridiculous such an idea is.

WRITTEN COMMENT ON THE ABOVE

I am not a scientist. I have no set ideas on the subject of mathematics or invention. I am, however, prepared to accept the theory that Kenrube is withholding information, and for this reason order that:

1. All further materials for the main machine be withheld.
2. Unlimited assistance be given Kenrube to build a model of his machine in the great government laboratories at Dresden. When, and not until, this model is in operation, will permission be given for the larger machine to be completed.
3. Meanwhile, Gestapo scientists will examine the machine at *Gribe Schloss*, and Gestapo construction experts will, if necessary, reinforce the building, which must have been damaged by the settling of the hill on which it stands.
4. Gestapo agents will hereafter guard *Gribe Schloss*.

Himmler

December 2, 1938

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Herr Professor Kenrube

Inclosed is the quarterly precis of the reports of our Agent Seventeen.

For your information, please.

August Buehnen

Author's Note: *Buehnen, a party man who was educated in one of the Nazi two-year Science Schools, replaced G. L. as secretary of the Bureau of Physics about September, 1938.*

It is not known exactly what became of Lesser, who was a strong party man. There was a Brigadier General G. Lesser, a technical expert attached to the Fuehrer's headquarters at Smolensk. This man, and there is some evidence that he is the same, was killed in the first battle of Moscow.

QUARTERLY PRECIS OF REPORTS OF AGENT SEVENTEEN

1. Herr Professor Kenrube is working hard on the model. He has at no time expressed bitterness over the enforced cessation of work on the main machine, and apparently accepts readily the explanation that the government cannot afford to allot him material until the model proves the value of his work.
2. The model will have an orifice of six inches. This compares with the ten-foot orifice of the main machine. Kenrube's intention is to employ it for the procuration of liquids, and believes that the model will of itself go far to reducing the oil shortage in the Reich.
3. The machine will be in operation sometime in the summer of 1939. We are all eager and excited.

February 7, 1939

From Secretary, Bureau of Physics
To Gestapo
Subject Secret Six

The following precautions have been taken with the full knowledge and consent of Herr Professor Kenrube:

1. A diary in triplicate is kept of each day's progress. Two copies are sent daily to our office here. As you know, the other copy is submitted by us to your office.
2. Photographs are made of each part of the machine before it is installed, and detailed plans of each part are kept, all in triplicate, the copies distributed as described above.
3. From time to time independent scientists are called in. They are invariably impressed by Kenrube's name, and suspicious of his mathematics and drawings.

For your information, please.

August Buehnen

March 1, 1939

From Reich and Prussian Minister of Science
To Herr Heinrich Himmler, Gestapo
Subject The great genius, Herr Professor Kenrube

It is my privilege to inform your Excellency that the world-shaking invention of Herr Professor Johann Kenrube yesterday went into operation, and has already shown fantastic results.

The machine is not a pretty one, and some effort must be made to streamline future reproductions of this model, with an aim toward greater mobility. In its present condition, it is strung out over the floor in a most ungainly fashion. Rough metal can be very ugly.

Its most attractive feature is the control board, which consists of a number of knobs and dials, the operator of which, by an arrangement of mirrors, can peer into the orifice, which is located on the right side of the control board, and faces away from it. (I do not like these awkward names, orifice and hyper-space. We must find a great name for this wonderful machine and its vital parts.)

When Buehnen and I arrived, Professor Kenrube was busy opening and shutting little casements in various parts of that sea of dull metal. He took out and examined various items.

At eleven forty-five, Kenrube stationed himself at the control board, and made a brief speech comparing the locator dials of the board to the dial on a radio which tunes in stations. His dials, how-

"It's gold, pure gold from some other planet."

ever, tuned in planets; and, quite simply, that is what he proceeded to do.

It appears that the same planets are always on exactly the same gradation of the main dial; and the principle extends down through the controls which operate to locate sections of planets. Thus it is always possible to return to any point of any planet. You will see how important this is.

The machine had already undergone its first tests, so Kenrube now proceeded to turn to various planets previously selected; and a fascinating show it was.

Gazing through the six-inch orifice is like looking through a glassless window. What a great moment it will be when the main machine is in operation, and we can *go* through the ten-foot orifice.

The first planet was a desolate, frozen affair, dimly lighted by a remote red sun. It must have been airless because there was a whistling sound, as the air rushed out of our room into that frigid space. Some of that deadly cold came trickling through, and we quickly switched below the surface of the planet.

Fantastic planet! It must be an incredible heavy world; for it is a treasure house of the heavier metals. Everywhere we turned, the soil formation showed a shifting pattern of gold, silver, zinc, steel, tin—thousands of millions of tons.

At Professor Kenrube's suggestion, I put on a pair of heavy gloves, and removed a four-inch rock of almost pure gold. It simply lay there in a gray shale, but it was so cold that the moisture of the room condensed on it, forming a thick hoar-

frost. How many ages that planet must have frozen, for the cold to penetrate so far below the surface!

The second planet was a vast expanse of steaming swamps and tropical forests, much as Earth must have been forty million years ago. However, we found not a single trace of animal, insect, reptile or other nonfloral life.

The third, fourth and fifth planets were devoid of any kind of life, either plant or animal. The sixth planet might have been Earth, except that its green forests, its rolling plains showed no sign of animal or intelligent life. But it is on this planet that oil had been located by Kenrube and Seventeen in their private tests. When I left, a pipe line, previously rigged up, had been attached to the orifice, and was vibrating with oil at the colossal flow speed of nearly one thousand miles per hour.

This immense flow has now been continuous for more than twenty-four hours; and I understand it has already been necessary to convert the great water reservoir in the south suburbs to storage space for oil.

It may be *noveau riche* to be storing oil at great inconvenience, when the source can be tapped at will. But I personally will not be satisfied until we have a number of these machines in action. It is better to be childish and have the oil than logical and have regrets.

I cannot conceive what could go wrong now. Because of our precautions, we have numerous and complete plans of the machine. It is necessary, of course, to ensure that our enemies do not learn our secret, and on this point, I would certainly appreciate your most earnest attention.

The enormous potentialities of this marvelous instrument expand with every minute spent in thinking about it. I scarcely slept a wink last night.

March 1, 1939

From Chief, Criminal Investigation Branch, Gestapo
To Reich and Prussian Minister of Science
Subject Secret Six

Will you please inform this office without delay of the name of every scientist or other person who has any knowledge, however meager, of the Kenrube machine?

Reinhart Heydrich

Author's Note: *This is the Heydrich, handsome, ruthless Heydrich, who in 1941 bloodily repressed the incipient Czech revolt, and who, now that the notorious Himmler is Minister of Interior, has succeeded his former master as head of the Gestapo.*

March 2, 1939

From Secretary, Bureau of Physics
To R. Heydrich
Subject Secret Six

The list of names for which you asked is herewith attached. August Buehnen

COMMENT AT BOTTOM OF LETTER

In view of the importance of this matter, some changes should be made in the precautionary plan drawn up a few months ago with respect to these personages. Two, not one of our agents, must be assigned to keep secret watch on each of these individuals. The rest of the plan can be continued as arranged with one other exception: In the event that any of these men suspect that they are being watched, I must be informed at once. I am prepared to explain to such person, within limits, the truth of the matter, so that he may not be personally worried. The important thing is, we do not want these people suddenly to make a run for the border. Himmler

SPECIAL DELIVERY
PERSONAL

March 2, 1939

From Reich and Prussian Minister of Science
To Herr Heinrich Himmler
Subject Professor Johann Kenrube

I this morning informed the Fuehrer of the Kenrube machine. He became very excited. The news ended his indecision about the Czechs. The army will move to occupy.

For your advance information, please.

March 13, 1939

From Gestapo
To Reich and Prussian Minister of Science
Subject The Dresden Explosion

The incredibly violent explosion of the Kenrube model must be completely explained. A board of discovery should be set up at Dresden with full authority. I must be informed day by day of the findings of this court.

This is a very grim business. Your agent, Seventeen, is among those missing. Kenrube is alive, which is very suspicious. There is no question of arresting him; the only thing that matters is to frustrate future catastrophes of this kind. His machine has proved itself so remarkable that he must be conciliated at all costs until we can be absolutely sure that everything is going right.

Let me know *everything*. Himmler

PRELIMINARY REPORT OF AUGUST BUEHNEN

When I arrived at the scene of the explosion, I noticed immediately that a solid circle, a remarkably precise circle of the wall of the fifth floor of

the laboratories—where the Kenrube machine is located—had been sliced out as by some inconceivable force.

Examining the edges of this circle, I verified that it could not have been heat which performed so violent an operation. Neither the brick nor the exposed steel were in any way singed or damaged by fire.

The following facts have been given to me of what transpired:

It had been necessary to cut the flow of oil because of the complete absence of further storage space. Seventeen, who was in charge—Professor Kenrube during this whole time was at *Gribe Schloss* working on the main machine—was laboriously exploring other planets in search of rare metals.

The following is an extract from my interview with Jacob Schmidt, a trusted laboratory assistant in the government service:

Q. You say, Herr— (Seventeen) took a piece of ore to the window to examine it in the light of the Sun?

A. He took it to the window, and stood there looking at it.

Q. This placed him directly in front of the orifice of the machine?

A. Yes.

Q. Who else was in front of the orifice?

A. Dobelmanns, Minster, Freyburg, Tousandfreind.

Q These were all fellow assistants of yours?

A. Yes.

Q. What happened then?

A. There was a very loud click from the machine, followed by a roaring noise.

Q. Was anyone near the control board?

A. No, sir.

Q. It was an automatic action of the machine?

A. Yes. The moment it happened we all turned to face the machine.

Q. All of you? Herr— (Seventeen), too?"

A. Yes, he looked around with a start, just as Minster cried out that a blue light was coming from the orifice.

Q. A blue light. What did this blue light replace?

A. A soil formation of a planet, which we had numbered 447-711-Gradation A-131-8, which is simply its location on the dials. It was from this soil that Herr— (Seventeen) had taken the ore sample.

Q. And then, just like that, there was the blue light?

A. Yes. And for a few instants, that was all there was, the blue light, the strange roaring sound, and us standing there half paralyzed.

Q. Then it flared forth?

A. It was terrible. It was such an intense blue it hurt my eyes, even though I could only see it in the mirror over the orifice. I have not the faintest impression of heat. But the wall was gone, and all the metal around the orifice.

Q. And the men?

A. Yes, and the men, all five of them.

March 18, 1939

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Dresden Explosion

I am inclosing a precis of the report of the Court of Inquiry, which has just come to hand. The report will be sent on to you as soon as a transcription has been typed.

For your information, please.

August Buehnen

PRECIS OF REPORT OF COURT OF INQUIRY

1. It has been established:

(a) That the destruction was preceded by a clicking sound.

(b) That this click came from the machine.

(c) That the machine is fitted with automatic finders.

2. The blue flame was the sole final cause of the destruction.

3. No theory exists, or was offered, to explain the blue light. It should be pointed out that Kenrube was not called to testify.

4. The death of Herr— (Seventeen) and of his assistants was entirely due to the momentary impulse that had placed them in the path of the blue fire.

5. The court finds that the machine could have been tampered with, that the click which preceded the explosion could have been the result of some automatic device previously set to tamper with the machine. No other evidence of sabotage exists, and no one in the room at the time was to blame for the accident.

COPY ONLY
FOR MINISTRY OF SCIENCE

March 19, 1939

From Major H. L. Guberheit
To Minister for Air
Subject Destruction of plane, type *JU-88*

I have been asked to describe the destruction of a plane under unusual circumstances, as witnessed by several hundred officers and men under my command.

The *JU-88,* piloted by Cadet Pilot Herman Kiesler, was approaching the runway for a landing, and was at the height of about five hundred feet when there was a flash of intense blue—and the plane vanished.

I cannot express too strongly the violence, the intensity, the blue vastness of the explosion. It was titanic. The sky was alive with light reflections. And though a bright sun was shining, the entire landscape grew brilliant with that blue tint.

There was no sound of explosion. No trace was subsequently found of this machine, no wreckage. The time of the accident was approximately ten thirty a. m., March 13th.

There has been great uneasiness among the students during the past week.

For your information, please.

H. L. Guberheit
Major, C. Air Station 473

COMMENT AT BOTTOM OF LETTER

Excellency—I wish most urgently to point out that the time of this unnatural accident coincides with the explosion of "blue" light from the orifice of the Kenrube machine.

I have verified that the orifice was tilted ever so slightly upward, and that the angle would place the beam at a height of five hundred feet near the airport in question.

The staggering feature is that the airport referred to is *seventy-five miles* from Dresden. The greatest guns ever developed can scarcely fire that distance, and yet the incredible power of the blue energy showed no diminishment. Literally, it disintegrated metal and flesh—everything.

I do not dare to think what would have happened if that devastating flame had been pointed not away from but at the ground.

Let me have your instructions at once, because here is beyond doubt the weapon of the ages.

August Buehnen

March 19, 1939

From Chief, Science Branch, Gestapo
To Reich and Prussian Minister of Science
Subject Secret Six

In perusing the report of the inquiry board, we were amazed to note that Professor Kenrube was not questioned in this matter.

Be assured that there is no intention here of playing up to this man. We absolutely require an explanation from him. Send Herr Buehnen to see Kenrube and instruct him to employ the utmost firmness if necessary. K. Reissel

March 21, 1939

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Dresden Explosion

As per your request, I talked with Kenrube at *Gribe Schloss.*

It was the second time I had seen him, the first time being when I accompanied his Excellency, the Minister of Science, to Dresden to view the model; and I think I should point out here that Herr Professor Kenrube's physical appearance is very different from what I had been led to expect from the description recorded in File Secret Six. I had pictured him a lean, fanatic-eyed type. He IS tall, but he must have gained weight in recent years, for his body is well filled out, and his face and eyes are serene, with graying hair to crown the effect of a fine, scholarly middle-aged man.

It is unthinkable to me that this is some madman plotting against the Reich.

The first part of his explanation of the blue light was a most curious reference to the reality of mathematics, and, for a moment, I almost thought he was attempting to credit the accident to this *actuality* of his incomprehensible number system.

Then he went on to the more concrete statement that a great star must have intruded into the plane of the planet under examination. The roaring sound that was heard, he attributed to the fact that the component elements of the air in the laboratory were being sucked into the Sun, and destroyed.

The Sun, of course, would be in a state of balance all its own, and therefore would not come into the room until the balance had been interfered with by the air of the room.

(I must say my own explanation would be the reverse of this: that is, the destruction of the air would possibly create a momentary balance, a barrier, during which time nothing of the Sun came into the room except light reflections. However, the foregoing is what Kenrube said, and I presume it is based on his own mathematics. I can only offer it for what it is worth.)

Abruptly, the balance broke down. For a fraction of an instant, then, before the model hyperspace machine was destroyed, the intolerable energies of a blue-white sun poured forth.

It would have made no difference if the airplane that was caught in the beam of blue light had been farther away from Dresden than seventy-five miles—that measureless force would have reached seven thousand five hundred miles just as easily, or seventy-five thousand.

The complete absence of visible heat is no evidence that it was not a sun. At forty million degrees Fahrenheit, heat, as we know it, does not exist.

The great man went on to say that he had previously given some thought to the danger from suns, and that in fact he was in the late mathematical stage of developing an attachment that would automatically reject bodies larger than ten thousand miles in diameter.

In his opinion, efforts to control the titanic energies of suns should be left to a later period, and should be carried out on uninhabited planets

by scientists who have gone through the orifice, and who have been then cut off from contact with Earth. August Buehnen

COMMENT ATTACHED

Kenrube's explanation sounds logical, and it does seem incredible that he would meddle with such forces, though it is significant that the orifice was tilted "slightly upward." We can dispense with his advice as to when and how we should experiment with sun energies. The extent of the danger seems to be a momentary discharge of inconceivable forces, and then destruction of the machine. If at the moment of discharge, the orifice was slightly tilted toward London or New York, and if a sufficient crisis existed, the loss of one more machine would be an infinitesimal cost.

As for Kenrube's fine, scholarly appearance, I think Buehnen has allowed himself to be carried away by the greatness of the invention. The democrats of Germany are not necessarily madmen, but here as abroad they are our remorseless enemies.

We must endeavor to soften Kenrube by psychological means.

I cannot forget that there is *not now a working model of the Kenrube machine in existence.* Until there is, all the fine, scholarly-looking men in the world will not convince me that what happened was entirely an accident.

The deadly thing about all this is that we have taken an irrevocable step with respect to the Czechs; and war in the west is now inevitable.

Himmler

May 1, 1939

From Chief, Science Branch, Gestapo
To Reich and Prussian Minister of Science
Subject Secret Six

The Fuehrer has agreed to exonerate completely August Kenrube, the brother of Herr Professor Kenrube. As you will recall, August Kenrube was killed in the sacred purge of June, 1934. It will now be made clear that his death was an untimely accident, and that he was a true German patriot.

This is in line with our psychological attack on Professor Kenrube's suspected anti-Nazism.

K. Reissel

June 17, 1939

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Professor Johann Kenrube

In line with our policy to make Kenrube realize his oneness with the community of German peoples, I had him address the convention of mathematicians. The speech, of which I inclose a copy, was a model one; three thousand words of glowing generalities, giving not a hint as to his true opinions on anything. However, he received the ovation of his life; and I think he was pleased in spite of himself.

Afterward, I saw to it—without, of course, appearing directly—that he was introduced to Fraulein Ilse Weber.

As you know, the Fraulein is university educated, a thoroughly mature, modern young woman; and I am sure that she is merely taking on one of the many facets of her character in posing to Kenrube as a young woman who has decided quite calmly to have a child, and desires the father to be biologically of the highest type.

I cannot see how any human male, normal or abnormal, could resist the appeal of Fraulein Weber. August Buehnen

July 11, 1939

From Chief, Science Branch, Gestapo
To Secretary, Bureau of Physics
Subject Secret Six

Can you give me some idea when the Kenrube machine will be ready to operate? What about the duplicate machines which we agreed verbally would be built without Kenrube's knowledge? Great decisions are being taken; conversations are being conducted that will shock the world, and, in a general way, the leaders are relying on the Kenrube machine.

In this connection please submit as your own some variations of the following memorandum. It is from the Fuehrer himself, and therefore I need not stress its urgency. K. Reissel

MEMORANDUM OF ADOLF HITLER

Is it possible to tune the Kenrube machine to our own earth?

July 28, 1939

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Secret Six

I inclose the following note from Kenrube, which is self-explanatory. We have retained a copy. August Buehnen

NOTE FROM KENRUBE

Dear Herr Buehnen:

The answer to your memorandum is yes.

In view of the international anxieties of the times, I offer the following suggestions as to weapons that can be devised from the hyper-space machine:

1. Any warship can be rendered noncombatant at critical moments by draining of its oil tanks.
2. Similarly, enemy oil storage supplies can be

drained at vital points. Other supplies can be blown up or, if combustible, set afire.

3. Troops, tanks, trucks and all movable war materials can be transported to any point on the globe, behind enemy lines, into cities, by the simple act of focusing the orifice at the desired destination—and driving it and them through. I need scarcely point out that my machine renders railway and steamship transport obsolete. The world shall be transformed.

4. It might even be possible to develop a highly malleable, delicately adjusted machine, which can drain the tanks of airplanes in full flight.

5. Other possibilities, too numerous to mention, suggest themselves with the foregoing as a basis.

Kenrube

COMMENT ATTACHED

This machine is like a dream. With it, the world is ours, for what conceivable combination of enemies could fight an army that appeared from nowhere on their flank, in the centers of their cities, in London, New York, in the Middlewest plains of America, in the Ural Mountains, in the Caucasus? Who can resist us?

K. Reissel

ADDITIONAL COMMENT

My dear Reissel:

Your enthusiasm overlooks the fact that the machine is still only in the building stage. What worries me is that our hopes are being raised to a feverish height—what greater revenge could there be than to lift us to the ultimate peak of confidence, and then smash it in a single blow.

Every day that passes we are involving ourselves more deeply, decisions are being taken from which there is already no turning back. When, oh, when will this machine be finished?

H.

July 29, 1939

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Secret Six

The hyper-space machine at *Gribe Schloss* will be completed in February, 1941. No less than five duplicate machines are under construction, unknown to Kenrube. What is done is that, when he orders an installation for the *Gribe Schloss* machine, the factory turns out five additional units from the same plans.

In addition, a dozen model machines are being secretly constructed from the old plans, but, as they must be built entirely from drawings and photographs, they will take, not less, but more time to build than the larger machines.

August Buehnen

August 2, 1939

From Secretary, Bureau of Physics
To Herr Heinrich Himmler
Subject Professor Johann Kenrube

I have just now received a telegram from Fraulein Ilse Weber that she and the Herr Professor were married this morning, and that Kenrube will be a family man by the middle of next summer.

August Buehnen

COMMENT WRITTEN BELOW

This is great news indeed. One of the most dangerous aspects of the Kenrube affair was that he was a bachelor without ties. Now, we have him. He has committed himself to the future.

Himmler

FURTHER COMMENT

I have advised the Fuehrer, and our great armies will move into Poland at the end of this month.

H.

August 8, 1939

From Gestapo
To Reich and Prussian Minister of Science
Subject Secret Six

I have had second thought on the matter of Fraulein Ilse Weber, now Frau Kenrube. In view of the fact that a woman, no matter how intelligent or objective, becomes emotionally involved with the man who is the father of her children, I would advise that Frau Kenrube be appointed to some great executive post in a war industry. This will keep her own patriotism at a high level, and thus she will continue to be an exemplary influence on her husband. Such influence cannot be overestimated.

Himmler

January 3, 1940

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Secret Six

In glancing through the correspondence, I notice that I have neglected to inform you that our Agent Twelve had replaced Seventeen as Kenrube's chief assistant.

Twelve is a graduate of Munich, and was for a time attached to the General Staff in Berlin as a technical expert.

In my opinion, he is a better man for our purpose than was Seventeen, in that Seventeen, it seemed to me, had toward the end a tendency to associate himself with Kenrube in what might be called a scientific comradeship, an intellectual fellowship. He was in a mental condition where he quite unconsciously defended Kenrube against our suspicion.

Such a situation will not arise with Twelve. He

is a practical man to the marrow. He and Kenrube have utterly nothing in common.

Kenrube accepted Twelve with an attitude of what-does-it-matter-who-they-send. It was so noticeable that it is now clear that he is aware that these men are agents of ours.

Unless Kenrube has some plan of revenge which is beyond all precautions, the knowledge that he is being watched should exercise a restraint on any impulses to evil that he may have.

August Buehnen

Author's Note: *Most of the letters written in the year, 1940, were of a routine nature, consisting largely of detailed reports as to the progress of the machine. The following document, however, was an exception:*

December 17, 1940

From Reich and Prussian Minister of Science
To Herr Heinrich Himmler
Subject Secret Six

The following work has now been completed on the fortress *Gribe Schloss,* where the Kenrube machine is nearing completion:

1. Steel doors have been fitted throughout.
2. A special, all-steel chamber has been constructed, from which, by an arrangement of mirrors, the orifice of the machine can be watched without danger to the watchers.
3. This watching post is only twenty steps from a paved road which runs straight up out of the valley.
4. A cement pipe line for the transportation of oil is nearing completion.

August Buehnen

MEMO AT BOTTOM OF LETTER

To Reinhart Heydrich:

Please make arrangements for me to inspect personally the reconstructed *Gribe Schloss.* It is Hitler's intention to attend the official opening.

The plan now is to invade England via the Kenrube machine possibly in March, not later than April. In view of the utter confusion that will follow the appearance of vast armies in every part of the country, this phase of the battle of Europe should be completed by the end of April.

In May Russia will be invaded. This should not require more than two months. The invasion of the United States is set for July or August.

Himmler

January 31, 1941

From Secretary, Bureau of Physics
To Chief, Science Branch, Gestapo
Subject Secret Six

It will be impossible to complete the five extra Kenrube machines at the same time as the machine at *Gribe Schloss.* Kenrube has changed some of the designs, and our engineers do not know how to fit the sections together until they have studied Kenrube's method of connection.

I have personally asked Kenrube the reason for the changes. His answer was that he was remedying weaknesses that he had noticed in the model. I am afraid that we shall have to be satisfied with this explanation, and complete the duplicate machines after the official opening, which is not now scheduled until March 20th. The delay is due to Kenrube's experimentation with design.

If you have any suggestions, please let me hear them. I frankly do not like this delay, but what to do about it is another matter.

August Buehnen

February 3, 1941

From Chief, Science Branch, Gestapo
To Secretary, Bureau of Physics
Subject Secret Six

H. says to do nothing. He notes that you are still taking the precaution of daily photographs, and that your agent, Twelve, who replaced Seventeen, is keeping a diary in triplicate.

There has been a meeting of leaders, and this whole matter discussed very thoroughly, with special emphasis of critical analysis of the precautions taken, and of the situation that would exist if Kenrube should prove to be planning some queer revenge.

You will be happy to know that not a single additional precaution was thought of, and that our handling of the affair was commended.

K. Reissel

February 18, 1941

From Gestapo
To Reich and Prussian Minister of Science
Subject Secret Six

In view of our anxieties, the following information, which I have just received, will be welcome:

Frau Kenrube, formerly our Ilse Weber, has reserved a private room in the maternity ward of the Prussian State Hospital for May 7th. This will be her second child, another hostage to fortune by Kenrube.

K. Reissel

COPY ONLY
MEMO

March 11, 1941

I have today examined *Gribe Schloss* and environs, and found everything according to plan.

Himmler

March 14, 1941

From Secretary, Bureau of Physics
To Herr Himmler, Gestapo
Subject Secret Six

You will be relieved to know the reason for the changes in design made by Kenrube.

The first reason is rather unimportant; Kenrube refers to the mathematical structure involved, and states that, for his own elucidation, he designed a functional instrument whose sole purpose was to defeat the mathematical reality of the machine. This is very obscure, but he has referred to it before; so I call it to your attention.

The second reason is that there are now two orifices, not one. The additional orifice is for focusing. The following illustration will clarify what I mean:

Suppose we had a hundred thousand trucks in Berlin, which we wished to transfer to London. Under the old method, these trucks would have to be driven all the way to the *Gribe Schloss* before they could be transmitted.

With the new two-orifice machine, one orifice would be focused in Berlin, the other in London. The trucks would drive through from Berlin to London.

Herr Professor Kenrube seems to anticipate our needs before we realize them ourselves.

August Buehnen

March 16, 1941

From Gestapo
To Secretary, Bureau of Physics
Subject Secret Six

The last sentence of your letter of March 14th to the effect that Kenrube seems to anticipate our needs made me very uncomfortable, because the thought that follows naturally is: Is he also anticipating our plans?

I have accordingly decided at this eleventh hour that we are dealing with a man who may be our intellectual superior in every way. Have your agent advise us the moment the machine has undergone its initial tests. Decisive steps will be taken immediately.

Himmler

March 19, 1941

DECODED TELEGRAM

KENRUBE MACHINE WAS TESTED TODAY AND WORKED PERFECTLY.

AGENT TWELVE

March 19, 1941

COPY ONLY
MEMO

To Herr Himmler:

This is to advise that Professor Johann Kenrube was placed under close arrest, and has been removed to Gestapo Headquarters, Berlin.

R. Heydrich

March 19, 1941

DECODED TELEGRAM

REPLYING TO YOUR TELEPHONE INSTRUCTIONS, WISH TO STATE ALL AUTOMATIC DEVICES HAVE BEEN REMOVED FROM KENRUBE MACHINE. NONE SEEMED TO HAVE BEEN INTERFERED WITH. MADE PERSONAL TEST OF MACHINE. IT WORKED PERFECTLY.

TWELVE

COMMENT WRITTEN BELOW

I shall recommend that Kenrube be retired under guard to his private laboratories, and not allowed near a hyper-space machine until after the conquest of the United States.

And with this, I find myself at a loss for further precautions. In my opinion, all thinkable possibilities have been covered. The only dangerous man has been removed from the zone where he can be actively dangerous; a careful examination has been made to ascertain that he has left no automatic devices that will cause havoc. And, even if he has, five other large machines and a dozen small ones are nearing completion, and it is impossible that he can have interfered with them.

If anything goes wrong now, thoroughness is a meaningless word.

Himmler

March 21, 1941

From Gestapo
To Secretary, Bureau of Physics
Subject Secret Six

Recriminations are useless. What I would like to know is: What in God's name happened?

Himmler

March 22, 1941

From Secretary, Bureau of Physics
To Herr Heinrich Himmler
Subject Secret Six

The reply to your question is being prepared. The great trouble is the confusion among the witnesses, but it should not be long before some kind of coherent answer is ready.

Work is being rushed to complete the duplicate machines on the basis of photographs and plans that were made from day to day. I cannot see how anything can be wrong in the long run.

As for Number One, shall we send planes over with bombs?

August Buehnen

March 23, 1941

COPY ONLY
MEMO

Received telephone call from Herr Himmler to the effect that no bombs should be dropped. This is a command transmitted from the Fuehrer.

A. B.

March 24, 1941

COPY ONLY
MEMO

From Detention Branch, Gestapo

The four agents, Gestner, Luslich, Heinreide and Muemmer, who were guarding Herr Professor Johann Kenrube report that he was under close arrest at our Berlin headquarters until six p. m., March 21st. At six p. m., he abruptly vanished.

S. Duerner

COMMENT WRITTEN BELOW

Kenrube was at *Gribe Schloss* before two p. m. March 21st. This completely nullifies the six p. m. story. Place these scoundrels under arrest, and bring them before me at eight o'clock tonight.

Himmler

COPY ONLY
EXAMINATION BY HERR HIMMLER OF F. GESTNER

Q. Your name?
A. Gestner. Fritz Gestner. Long service.
Q. Silence. If we want to know your service, we'll check it in the records.
A. Yes, sir.
Q. That's a final warning. You answer my questions, or I'll have your tongue.
A. Yes, sir.
Q. You're one of the stupid fools set to guard Kenrube?
A. I was one of the four guards, sir.
Q. Answer yes or no.
A. Yes, sir.
Q. What was your method of guarding Kenrube?
A. By twos. Two of us at a time were in the great white cell with him.
Q. Why weren't the four of you there?
A. We thought—
Q. You thought! Four men were ordered to guard Kenrube and— By God, there'll be dead men around here before this night is

over. I want to get this clear: There was never a moment when two of you were not in the cell with Kenrube?

A. Always two of us.

Q. Which two were with Kenrube at the moment he disappeared?

A. I was. I and Johann Luslich.

Q. Oh, you know Luslich by his first name. An old friend of yours, I suppose?

A. No, sir.

Q. You knew Luslich previously, though?

A. I met him for the first time when we were assigned to guard Herr Kenrube.

Q. Silence! Answer yes or no. I've warned you about that.

A. Yes, sir.

Q. Ah, you admit knowing him?

A. No, sir, I meant—

Q. Look here, Gestner, you're in a very bad spot. Your story is a falsehood on the face of it. Tell me the truth. Who are your accomplices?

A. None, sir.

Q. You mean you were working this alone?

A. No, sir.

Q. You damned liar! Gestner, we'll get the truth out of you if we have to tear you apart.

A. I am telling the truth, Excellency.

Q. Silence, you scum. What time did you say Kenrube disappeared?

A. About six o'clock.

Q. Oh, he did, eh? Well, never mind. What was Kenrube doing just before he vanished?

A. He was talking to Luslich and me.

Q. What right had you to talk to the prisoner?

A. Sir, he mentioned an accident he expected to happen at some official opening somewhere.

Q. He what?

A. Yes, sir; and I was desperately trying to find out where, so that I could send a warning.

Q. Now, the truth is coming. So you do know about this business, you lying rat! Well, let's have the story you've rigged up.

A. The dictaphone will bear out every word.

Q. Oh, the dictaphone was on.

A. Every word is recorded.

Q. Oh, why wasn't I told about this in the first place?

A. You wouldn't lis—

Q. Silence, you fool! By God, the co-operation I get around this place. Never mind. Just what was Kenrube doing at the moment he disappeared?

A. He was sitting—talking.

Q. Sitting? You'll swear to that?

A. To the Fuehrer himself.

Q. He didn't move from his chair? He didn't walk over to an orifice?

A. I don't know what you mean, Excellency.

Q. So you pretend, anyway. But that's all for the time being. You will remain under arrest. Don't think we're through with you. That goes also for the others.

Author's Note: *The baffled fury expressed by the normally calm Himmler in this interview is one indication of the dazed bewilderment that raged through high Nazi circles. One can imagine the accusation and counter accusation and then the slow, deadly realization of the situation.*

March 24, 1941

From Gestapo
To Reich and Prussian Minister of Science
Subject Secret Six

Inclosed is the transcription of a dictaphone record, which was made by Professor Kenrube. A careful study of these deliberate words, combined with what he said at *Gribe Schloss* may reveal his true purpose, and may also explain the incredible thing that happened.

I am anxiously awaiting your full report.

Himmler

TRANSCRIPTION OF DICTAPHONE RECORD P-679-423-1, CONVERSATION OF PROFESSOR JOHANN KENRUBE IN WHITE CELL 26, ON 3/21/41

(Note: K. refers to Kenrube, G. to any of the guards.)

K. A glass of water, young man.

G. I believe there is no objection to that. Here.

K. It must be after five.

G. There is no necessity for you to know the time.

K. No, but the fact that it is late is very interesting. You see, I have invented a machine. A very queer machine it is going to seem when it starts to react according to the laws of real as distinct from functional mathematics. You have the dictaphone on, I hope.

G. What kind of a smart remark is that?

K. Young man, that dictaphone had better be on. I intend talking about my invention, and your masters will skin you alive if it's not recorded. IS the dictaphone on?

G. Oh, I suppose so.

K. Good. I may be able to finish what I have to say. I may not.

G. Don't worry. You'll be here to finish it. Take your time.

K. I had the idea before my brother was killed in the purge, but I thought of the problem then as one of education. Afterward, I saw is as revenge. I hated the Nazis and all they stood for.

G. Oh, you did, eh? Go on.

K. My plan after my brother's murder was to build for the Nazis the greatest weapon the

world will ever know, and then have them discover that only I, who understood, and who accordingly *fitted in* with the immutable laws involved—only I could ever operate the machine. And I would have to be present physically. That way I would prove my indispensability and so transform the entire world to my way of thinking.

G. We've got ways of making indispensables work.

K. Oh, that part is past. I've discovered what thing is going to happen—to me as well as to my invention.

G. Plenty is going to happen to you. You've already talked yourself into a concentration camp.

K. After I discovered that, my main purpose simplified. I wanted to do the preliminary work on the machine and, naturally, I had to do that under the prevailing system of government—by cunning and misrepresentation. I had no fear that any of the precautions they were so laboriously taking would give them the use of the machine, not this year, not this generation, not ever. The machine simply cannot be used by people who think as they do. For instance, the model that—

G. Model! What are you talking about?

K. Silence, please. I am anxious to clarify for the dictaphone that will seem obscure enough under any circumstances. The reason the model worked perfectly was because I fitted in mentally and physically. Even after I left, it continued to carry out the task I had set it, but as soon as Herr— (Seventeen) made a change, it began to yield to other pressures. The accident—

G. Accident!

K. Will you shut up? Can't you see that I am trying to give information for the benefit of future generations? I have no desire that my secret be lost. The whole thing is in understanding. The mechanical part is only half the means. The mental approach is indispensable. Even Herr— (Seventeen) who was beginning to be *sympathique* could not keep the machine sane for more than an hour. His death, of course, was inevitable, whether it looked like an accident or not.

G. Whose death?

K. What it boils down to is this. My invention does not fit into our civilization. It's *the next*, the coming age of man. Just as modern science could not develop in ancient Egypt, because the whole mental, emotional and physical attitude was wrong, so my machine cannot be used until the thought structure of man changes. Your masters will have some further facts soon to bear me out.

G. Look! You said something before about something happening. What?

K. But I've just been telling you: I don't know. The law of averages says it won't be another sun, but there are a thousand deadly things that can happen. When Nature's gears snag, no imaginable horror can match the result.

G. But something is going to happen?

K. I really expected it before this. The official opening was set for half past one. Of course, it doesn't really matter. If it doesn't happen today, it will take place tomorrow.

G. Official opening! You mean an accident is going to happen at some official opening?

K. Yes, and my body will be *attracted*. I—

G. What— Good God! he's gone.

(Confusion. Voices no longer audible.)

March 25, 1941

From Reich and Prussian Minister of Science
To Herr Himmler
Subject Destruction of *Gribe Schloss*

The report is still not ready. As you were not present, I have asked the journalist, Polermann, who was with Hitler, to write a description of the scene. His account is inclosed, with the first page omitted.

You will note that in a number of paragraphs, he reveals incomplete knowledge of the basic situation, but except for this, his story is, I believe, the most accurate we have.

The first page of his article was inadvertently destroyed; it was simply a preliminary.

For your information.

DESCRIPTION OF DESTRUCTION OF *GRIBE SCHLOSS* BY HERR POLERMANN

—The first planet came in an unexpected fashion. I realized that as I saw Herr— (Twelve) make some hasty adjustments on one of his dials.

Still dissatisfied, he connected a telephone plug into a socket somewhere in his weird-looking asbestos suit, thus establishing telephone communication with the minister of science, who was in the steel inclosure with us. I heard his Excellency's reply:

"Night! Well, I suppose it has to be night some time on other planets. You're not sure it's the same planet? I imagine the darkness is confusing."

It was. In the mirror, the night visible through the orifice showed a bleak, gray, luminous landscape, incredibly eerie and remote, an unnatural world of curious shadows, and not a sign of movement anywhere.

And that, after an instant, struck us all with an appalling effect, the dark consciousness of that great planet, swinging somewhere around a distant sun, an uninhabited waste, a lonely reminder that life is rarer than death in the vast Universe.

Herr— (Twelve) made an adjustment on a dial; and, instantly, the great orifice showed that we were seeing the interior of the planet. A spotlight switched on, and picked out a solid line of red earth that, slowly, as the dial was turned, became clay, then a rock stratum came into view; and was held in focus.

An asbestos-clothed assistant of Herr— (Twelve) dislodged a piece of rock with a pick. He lifted it, and started to bring it toward the steel inclosure, apparently for the Fuehrer's inspection.

And abruptly vanished.

We blinked our eyes. But he was gone, and the rock with him. Herr— (Twelve) switched on his telephone hurriedly. There was a consultation, in which the Fuehrer participated.

The decision finally was that it had been a mistake to examine a doubtful planet, and that the accident had happened because the rock had been removed. Accordingly, no further effort would be made to remove anything.

Regret was expressed by the Fuehrer that the brave assistant should have suffered such a mysterious fate.

We resumed our observant positions, more alert now, conscious of what a monstrous instrument was here before our eyes. A man whisked completely out of our space simply because he had touched rock from a planet in hyper-space.

The second planet was also dark. At first it, too, looked a barren world, enveloped in night; and then—wonder.

Against the dark, towering background of a great hill, a city grew. It spread along the shore of a moonlit sea, ablaze with ten million lights.

It clung there for a moment, a crystalline city, alive with brilliant streets. Then it faded.

Swiftly it happened. The lights seemed literally to slide off into the luminous sea. For a moment, the black outline of city remained, then that, too, vanished into the shadows. Astoundingly, the hill that had formed an imposing background for splendor, distorted like a picture out of focus, and was gone with the city.

A flat, night-wrapped beach spread where, a moment before, there had been a world of lights, a city of another planet, the answer to ten million questions about life on other worlds—gone like a secret wind into the darkness.

It was plain to see that the test, the opening, was not according to schedule. Once more, Herr— (Twelve) spoke through the telephone to his Excellency, the minister of science.

His Excellency turned to the Fuehrer, and said: "He states that he appears to have no control over the order of appearance. Not once has he been able to tune in a planet, which he had previously selected to show you."

There was another consultation. It was decided that this second planet, though it had reacted in an abnormal manner, had not actually proved dangerous. Therefore, one more attempt would be made.

No sooner was this decision arrived at, than there was a very distinctly audible click from the machine. And, though we did not realize it immediately, the catastrophe was upon us.

I cannot describe the queer loudness of that clicking from the machine. It was not a metallic noise. I have since been informed that only an enormous snapping of energy in motion could have made that unusual, unsettling sound.

My own sense of uneasiness was quickened by the sight of Herr— (Twelve) frantically twisting dials.

But nothing happened for a few seconds. The planet, on which we had seen the city, continued to hold steady in the orifice. The darkened beach spread there in the half light shed by a moon we couldn't see. And then—

A figure appeared in the orifice. I cannot recall all my emotions at the sight of that manlike being. There was a wild thought that here was some supercreature, who, dissatisfied with the accidents he had so far caused us, was now come to complete our destruction.

That thought ended, as the figure came out onto the floor; and one of the assistants swung a spotlight on him. The light revealed him as a tall, well-built, handsome man, dressed in ordinary clothes.

Beside me, I heard someone explain: "Why, it's Professor Kenrube."

For most of those present, everything must have, in that instant, been clear. I, however, did not learn until later that Kenrube was one of the scientists assigned to assist Herr— (Twelve) in building the machine, and that he turned out to be a traitor.

He was suspected in the destruction of an earlier model, but as there was no evidence and the suspicion not very strong, was permitted to continue his work.

Suspicion had arisen again a few days previously, and he had been confined to his quarters, from whence, apparently, he had now come forth to make sure that his skillful tampering with the machine had worked out.

This, then, was the man who stood before us; my impression was that he should not have been allowed to utter his blasphemies, but I understand the leaders were anxious to learn the extent of his

infamy, and thought he might reveal it in his speech. Although I do not profess to understand the gibberish, I have a very clear memory of what was said, and set it down here for what it is worth:

Kenrube began: "I have no idea how much time I have, and as I was unable to explain clearly to the dictaphone all that I had to say, I must try to finish here.

"I am not thinking now in terms of revenge, though God knows my brother was very dear to me. But I want the world to know the way of this invention."

The poor fool seemed to be laboring under the impression that the machine was his. I did not, and do not understand, his reference to a dictaphone. Kenrube went on:

"My first inkling came through psychology, the result of meditating on the manner in which the soil of different parts of the earth influence the race that lives there. This race-product was always more than simply the end-shape of a sea coast, or a plains, or a mountain environment.

"Somehow, beneath adaptations, peculiar and unsuspected relationships existed between the properties of matter and the phenomena of life. And so my search was born. The idea of revenge came later.

"I might say that in all history there has never been a revenge as complete as mine. Here is your machine; it is all there, yours to use for any purpose—provided you first change your mode of thinking to conform to the reality of the relationship between matter and life.

"I have no doubt you can build a thousand duplicates, but beware—every machine will be a Frankenstein monster. Some of them will distort time, as seems to have happened in the time of my arrival here; others will feed you raw material, that will vanish even as you reach forth to seize it; still others will pour obscene things into our green earth; and others will blaze with terrible energies, but never will you know what is coming, never will you satisfy a single desire.

"You may wonder why everything will go wrong. Herr— (Twelve) has, I am sure, been able to make brief, successful tests. That will be the result of my earlier presence, and will not recur now that so many alien presences have affected its —sanity!

"It is not that the machine has will. It reacts to laws, which you must learn, and in the learning it will reshape your minds, your outlook on life; it will change the world.

"Long before that, of course, the Nazis will be destroyed. They have taken irrevocable steps, that will insure their destruction.

"Revenge! Yes, I have it in the only way that a decent human being could desire it. I ask any reasonable being how else these murderers could be wiped from the face of the earth, except by other nations, who would never act until *they* had acted first?

"I have only the vaguest idea what the machine will do with me—it matters not—but I should like to ask you, my great Fuehrer, one question: Where now will you obtain your raw materials?"

He must have timed it exactly. For, as he finished, his figure dimmed.

Dimmed! How else describe the blur that his body became?

And he was gone, merged with the matter with which, he claimed, his life force was attuned.

The madman had one more devastating surprise for us. The dark planet, from which the city had disappeared, was abruptly gone from the orifice. In its place appeared another dark world. As our vision grew accustomed to this new night, we saw that this was a world of restless water; to the remote, dim horizon was a blue-black, heaving sea. Abruptly, the machine switched below the surface, at least ten hellish miles below it must have been, judging from the pressure, I have since been informed.

There was a roar that seemed to shake the earth.

Only those who were with the Fuehrer in the steel room succeeded in escaping. Twenty feet to a great army truck that stood with engines churning—it was not the first time that I was thankful that some car engines are always left running wherever the Fuehrer is present.

The water swelled and surged around our wheels as we raced up the new-paved road, straight up out of the valley. It was touch and go.

We looked back in sheer horror. Never in the world has there been such a titanic torrent, such a whirlpool.

The water rose four hundred feet in minutes, threatened to overflow the valley sides, and then struck a balance. The great new river is still there, raging toward the Eastern Sea.

Author's Note: *This is not quite the end of the file. A few more letters exist, but it is unwise to print more, as it might be possible for* Geheime Staats Polizei *to trace the individual who actually removed the file Secret Six from its cabinet by ascertaining which was the last letter filed.*

It is scarcely necessary to point out that we have seen the answer that Hitler made to Professor Kenrube's question: "Where now will you obtain your raw materials?"

On June 22nd, three months almost to the day after the destruction of Gribe Schloss, *the Nazis began their desperate invasion of Russia.*

THE END.

BRIMSTONE BILL

By Malcolm Jameson

● Bill was a crook, a hell-fire-damnation specialist in the art of collecting cash. A marvelous orator—with gadgets. But Commander Bullard had a good use for a bad actor!

Illustrated by Orban

The prisoners were herded into the room and ranged against one of the bulkheads. Captain Bullard sat stiffly behind his desk regarding the group of ruffians with a gaze of steely appraisal. Lieutenant Benton and a pair of pistoled bluejackets were handling the prisoners, while Commander Moore stood at the back of Bullard's desk, looking on. Then Bullard gave a jerk of his head and the procession started. One by one they shuffled to the spot before his desk, clanking their heavy chains at each dragging step. And one by one the captain of the *Pollux* surveyed them, critically and coldly, comparing their appearance and their marks with the coded descriptions in the ethergram on his desk.

These were the survivors of the notorious Ziffler gang, captured on Oberon the month before, after the encounter on the lip of a little crater that the Polliwogs had already come to call the "Battle of the Mirrors." The first, of course, was Egon Ziffler himself, all his arrogance and bluster melted away long since. Then came Skul Drosno, his chief aid, and there followed ten other plug-uglies who had survived the holocaust of reflected fire. All were big hulking brutes of Callistans, ray-blackened, scarred and hairy. The last and thir-

teenth man was of a different type altogether. Bullard waited in silence until he had ranged himself before his desk.

"Paul Grogan," called Benton, checking the final name of the list.

"Hm-m-m," said Bullard, looking at the miserable specimen standing at a grotesque version of "attention" before him, and then glancing at the Bureau of Justice's ethergram summary of his pedigree. After that he studied the prisoner in detail. He was a queer fish indeed to have been caught in such a haul.

The self-styled Grogan was a wizened, underfed little fellow and bore himself with an astonishing blend of cringing and swagger. The strangest thing about him was his head, which was oversize for his body. He had a fine forehead topped with a leonine mane of iron-gray hair, which after a cursory glance might have been called a noble head. But there was an occasional shifty flicker of the eyes and a twitching at the mouth that belied that judgment. Bullard referred to the Bureau's memo again.

"Grogan," it said, "probably Zander, alias Ardwell, alias Nordham, and many other names. Small-time crook and chiseler, card sharp, confidence man. Arrested often throughout Federation for petty embezzlement, but no convictions. Not known to have connection with Ziffler gang."

"Hm-m-m," said Bullard again. He had placed Grogan, et cetera, now in his memory. It had been a long time since the paths of the two had crossed, but Bullard never forgot things that happened to him. Nor did he see fit to recall it too distinctly to his prisoner, for he was not altogether proud of the recollection. But to check his own powers of retention, he asked:

"You operated on Venus at one time—as an itinerant preacher, if the record is correct—under the name of Brimstone Bill?"

"Why, yes, sir, now that you mention it," admitted Brimstone Bill, with a sheepish grin. "But, oh, sir, I quit that long ago. It didn't pay."

"Really?" remarked Bullard. That was not his recollection of it. He had visited Venus in those days as a Passed Midshipman. One night, in the outskirts of Erosburg, they had curiously followed a group of skymen into a lighted hall emblazoned with the sign, "Come, See and Hear BRIMSTONE BILL—Free Admittance." And they went, saw and heard. That bit of investigation had cost the youthful Bullard just a month's pay—all he had with him. For he had fallen under the spell of the fiery oratory of the little man with the big bushy head and flashing eyes, and after groveling before the rostrum and confessing himself a wicked boy, he had turned his pockets wrongside out to find some worthy contribution to further "the cause." Bullard winced whenever he thought of it.

"No, sir, it didn't pay," said the little man. "In money, yes. But not in other ways."

"The police, eh?"

"Oh, not at all, sir," protested Brimstone Bill. "Everything I ever did was strictly legal. It was the suckers . . . uh, the congregation, that is. They got wise to me. A smart-Aleck scientist from the gormel mills showed me up one night—"

He lifted his manacled hands and turned them so the palms showed outward. Deep in each palm was a bright-red, star-shaped scar.

"They crucified me. When the police cut me down the next day, I swore I'd never preach again. And I won't, so help me."

"You are right about that," said Bullard grimly, satisfied that his memory was as good as he thought it was. "This last time you have stretched your idea of what's legal beyond its elastic limit. The gang you were caught with is on its way to execution."

Brimstone Bill emitted a howl and fell to his knees, whining and pleading.

"Save that for your trial," said Bullard harshly. "Take 'em away, Benton."

After they had all gone, Bullard sat back and relaxed. He promptly dismissed Ziffler and his mob from his mind. The Oberon incident was now a closed book. It was one more entry in the glorious log of the *Pollux*. It was the future—what was to happen next—that mattered.

The *Pollux* had stood guard over the ruined fortress of Caliban until the relief ships arrived. Now she was homeward bound. At Lunar Base a richly deserved and long-postponed rest awaited her and her men. And there was not a man on board but would have a wife or sweetheart waiting for him at the receiving dock. Leave and liberty were ahead, and since it was impossible to spend money in the ship's canteen, every member of the crew had a year's or more accrued pay on the books. Moreover there would be bonuses and prize money for the destruction of the Ziffler gang. Never in the history of the service had a ship looked forward to such a satisfactory homecoming, for everyone at her arrival would be gayly waving bright handkerchiefs, laughing and smiling. Her chill mortuary chamber down below was empty, as were the neat rows of bunks in the sick bay. The *Pollux* had achieved her triumph without casualties.

It was on that happy day of making port that Bullard was idly dreaming when the sharp double rap on the door informed him that Moore was back. And the executive officer would hardly have come back so soon unless something important had turned up. So when Bullard jerked himself upright again and saw the pair of yellow flimsies in Moore's hand, his heart sank at once. Orders. Orders and

always more orders! Would they never let the ship rest?

"Now what?" asked Bullard, warily.

"The Bureau of Justice," said Moore, laying down the first signal, "has just ordered the immediate payment to all hands of the Ziffler bonus. It runs into handsome figures."

Bullard grunted, ignoring the message. Of course. The men would get a bonus and a handsome one. But why at this particular moment? He knew that Moore was holding back the bad news.

"Go on," growled Bullard, "let's have it!"

Moore shuffled his feet unhappily, expecting an outburst of rage. Then, without a word he handed Bullard the second message. It read:

Pollux will stop at Juno Skydocks en route Luna to have hull scraped. Pay crew and grant fullest liberty while there. Implicit compliance with this order expected.

Grand Admiral.

Bullard glared at the thing, then crushed it to a tight ball in his fist and hurled it from him. He sat for a moment cursing softly under his breath during which the red haze of rage almost blinded him. He would have preferred anything to that order—to turn about and go out of the orbit of Neptune for another battle, if there had been need for it, would have been preferable. But this!

He kicked his chair backward and began pacing the room like a caged tiger. It was such a lousy, stinking trick to do—and to him and his *Pollux* of all people! To begin with, the ship had no sky-barnacles on her hull, as the pestiferous little ferrous-consuming interplanetary spores were called on account of the blisters they raised on the hull. And if she had, Juno was no place to get rid of them. Its skydock was a tenth-rate service station fit only for tugs and mine layers. The twenty men employed there could not possibly be expected to go over the hull under a month, and the regulations forbade the ship's crew working on the hull while in a planetary dockyard. The dockyard workers' guilds had seen to that. Moreover, Juno was not even on the way to Luna, but far beyond, since from where the *Pollux* was at the moment, the Earth lay between her and the Sun, while Juno was in opposition. It was damnable!

Bullard growled in midstride and kicked viciously at an electrician's testing case that stood in his path. That wasn't all—not by a damsite! Juno was one of the vilest dumps inside the Federation. It was an ore-gathering and provisioning point for the asteroid prospectors and consequently was populated by as vicious a mob of beachcombers and their ilk as could be found in the System. Juno literally festered with gin mills, gambling hells and dives of every description. No decent man could stand it there for three days. He either left or took to drink. And, what with what was sold to drink on Juno, that led to all the rest—ending usually in drugs or worse. It was in that hell hole that he had been ordered to set down his fine ship for thirty days. When he thought of his fine boys and the eager women impatiently awaiting their homecoming, he boiled.

"Shall I protest the order, sir?" asked Moore, hopefully.

"Certainly not," snapped Bullard, halting abruptly and facing him. "I never protest orders. I carry 'em out. Even if the skies fall. I'll carry this one out, too, damn 'em. But I'll make the fellow who dictated it—"

He suddenly checked himself. He had been about to add, "regret he ever had," when he remembered in a flash that Moore's family was in some way connected with the Fennings. Only Senator Fenning could have inspired the change of plans. The grand admiral had issued the order and signed it, of course, but he had inserted the clue as to why in its own last redundant sentence. "Implicit compliance is expected," indeed! No admiral would be guilty of such a tacit admission that perhaps not all orders need be strictly complied with. That sentence meant, as plainly as if the crude words themselves had been employed, this:

"Bullard, old boy, we know this looks goofy and all wrong to you, but we're stuck. You've been chosen as the sacrificial goat this year, so be a good sport and take it. None of your tricks, old fellow. We know you can dope out a way to annul any fool order, but don't let us down on this one."

The line of Bullard's mouth tightened. He sat down quietly in his chair and said to the expectant Moore as matter-of-factly as if he had been arranging a routine matter:

"Have the course changed for Juno, and inform the admiral that he can count on his orders being carried out to the letter."

Commander Moore may have been surprised at Bullard's tame surrender, but, after all, one was more helpless sometimes in dealing with one's own admiral than with the most ruthless and resourceful enemy. He merely said, "Aye, aye, sir," and left the room.

Two weeks rolled by, and then another. They were well within the orbit of Jupiter now, and indeed the hither asteroids. Hungry eyes now and then looked at the pale-blue tiny disk with its silvery dot companion as it showed on the low-power visifield and thought of home. Home was so near and yet so far. For the ship was veering off to the left, to pass close inside Mars and then to cut through beyond the Sun and far away again

to where the miserable little rock of Juno rolled along with its nondescript population.

During those days the usual feverish activity of the ship died down until it became the dullest sort of routine. Men of all ratings were thinking, "What's the use?" Moore and Benton were everywhere, trying to explain away the unexplainable, but the men did not react very well. Many were beginning to wonder whether the service was what it was cracked up to be, and not a few were planning a big bust the very first night they hit the beach on Juno. It was not what they had planned, but it seemed to be what was available. Only Bullard and Lieutenant MacKay kept apart and appeared to take little interest in what was to happen next.

Alan MacKay was a newcomer to the service, and his specialty was languages. So he had filled in what time he had to spare from the routine duties by frequenting the prison spaces and chatting with the Callistans in the brig. He had managed to compile an extraordinary amount of information relating to the recent war as seen from behind the scenes on the other side, and he was sure it was going to be of value to the Department. Moreover, he had gleaned additional data on the foray to Oberon. All of which would make the prosecutor's job more thorough when the day of the trial came. As for Bullard, he kept to his cabin, pacing the deck for hours at a stretch and wrestling with his newest problem.

His thoughts were leaping endlessly in a circuit from one item to the next and on and on until he came back to the point of departure and began all over again. There was the ship, the crew, and the devoted women waiting for the return of the crew, and the fat entries in the paymaster's books that meant so much to them both. And there was the squalid town of Herapolis with its waiting, hungry harpies with a thousand proven schemes for getting at that money for themselves; and there was the cunning and avaricious overlord of the asteroids, their landlord and creditor, who would in the end transfer the funds to his own account. That man also sat in the upper chamber of the Federation Grand Council and was a power in Interplanetary politics. His name was Fenning—*Senator* Fenning—and he dominated the committee that dealt out appropriations to the Patrol Force. And from that point Bullard's mind would jump to the Tellurian calendar and he would recall that it was now March on Earth, and therefore just about the time that the annual budget was in preparation. Which in turn would lead him back to the General Service Board, which dealt on the one hand with the Force as a master, but with the Grand Council as perennial supplicant for funds on the other. Which naturally took him to the necessities of the grand admiral and the needs of the Service as a whole. Which brought him back to the *Pollux's* orders and started the vicious circle all over again.

For Bullard was cynical and wise enough in the ways of the world to have recognized at the outset that the ship's proposed stay at Juno yard was neither more nor less than a concealed bribe to the honorable senator. Perhaps it had been a bad season in the asteroid mines and his debtors had gotten behind. If so, they would need a needling of good, honest cash to square accounts. Perhaps it was merely Fenning's insatiable lust for ever more money, or maybe he only insisted on the maneuver to demonstrate his authority. Or perhaps, even, having bulldozed the Patrol Force into erecting a small and inadequate skydock where either an effective one or none at all was needed, he felt he must have some use made of it to justify his prior action. Whatever Fenning's motives really were, they were ignoble. No exigency of the service required the *Pollux* to visit Juno now—or ever. And to Bullard's mind, no exigency of politics or personal ambition could condone what was about to be done to the *Pollux's* crew.

It was the ethical content of the problem that bothered Bullard. Practically it was merely annoying. With himself on board, his veteran officers and a not inconsiderable nucleus of tried and true men who had been in the ship for years, she could not go altogether to hell no matter how long they had to stay on Juno. He knew he could count on many—perhaps half—going ashore only occasionally; the other half could be dealt with sternly should they exceed all reasonable bounds for shore behavior after a hard and grueling cruise. But in both halves he would have to deal with discontent. The decent, far-sighted, understanding men already resented the interference with their plans, since there was no sufficiently plausible reason given for it. They would accept it, as men have from the beginning of time, but not gracefully or without grumbling. Then the riotous element would feel, if unduly harsh disciplinary measures were applied, that, somehow, they had been let down. Wasn't the very fact they had been sent to Juno for liberty and paid off with it an invitation to shoot the works?

There were other courses of action open to him, Captain Bullard knew. The easiest was inaction. Let the men have their fling. Given a few months in space again, he could undo all the damage. All? That was it. Nothing could undo the disappointment of the women waiting at Earth and Luna—nor the demoralization of the men at not getting there, for that matter. Nor could the money coaxed or stolen from them by the Junoesque creatures of Fenning ever be recovered. Moreover, the one thing Bullard did not like was inaction. If he was already half mutinous himself, what of the men? No. He would do something about it.

Well, he could simply proceed to Luna, take the blame, and perhaps be dismissed. He could give the story to the magnavox in the hope that by discrediting Senator Fenning and the System, his sacrifice might be worth the making. But would it? Would the magnavox dare put such a story on the ether? And wouldn't that be letting the admirals down? For they knew his dilemma quite as well as he did. They had chosen, chosen for the good of the Service. The System could *not* be broken, or it would have been long ago. It was the *Pollux's* turn to contribute the oil that greased the machine.

Bullard sighed. Juno was less than a week away now, and he saw no way out. Time after time in his gloom he was almost ready to admit he was beaten. But the instincts and training of a lifetime kept him from the actual confession. There must be some way of beating Fenning! It must be a way, of course, which would cast no reflection on the grand admiral. Or the ship. Or the crew. And, to be really successful, no ineradicable discredit upon himself. Bullard got up, rumpled his hair, and resumed his tigerish pacing.

It was Lieutenant MacKay who interrupted his stormy thoughts. MacKay had something to say about the prisoners. He had just about finished pumping them dry and was prepared to draw up the report. There were several recommendations he had to make, but he wanted his captain's opinion and approval first.

"It's about that fellow Zander—the Earthman, you know—" he began.

"Oh, Brimstone Bill?" grinned Bullard. He was rather glad MacKay had broken in on him. The sense of futility he had been suffering lately had begun to ingrow and make him bitter.

"Yes, sir. He's a highly undesirable citizen, of course, but I'm beginning to feel a little sorry for him. The old scalawag hadn't anything to do with the Caliban massacre. He just happened to be there when Ziffler came, and escaped being killed only by luck. He was dealer in a *rango* game when they landed, and his boss had a couple of Callistan bouncers. Ziffler gave 'em the chance of joining up with him, which they did and took Brimstone along with 'em, saying he was O. K. Brimstone went along because it was that or else. He had no part in anything."

"I see," said Bullard, and thought a moment. "But I haven't anything to do with it. What happens hereafter is up to the court. You should submit your report to them."

After MacKay left, Bullard's thoughts turned upon his first encounter with the little charlatan many years before on Venus. Somehow, the fellow had had a profound effect on him at the time. So much so, in fact, that it came as something of a shock the day of his preliminary examination to find that the man had been a fake all along. Bullard had been tempted to think him a good man who had eventually gone wrong. Now he knew better. But as he continued his train of reminiscence, something suddenly clicked inside his head.

He sat bolt upright, and a gleam of hope began to dawn in his eyes. Brimstone Bill had a peculiar talent which might come in very handy in the trying weeks ahead. Could he use it with safety to himself? That had to be considered, for dealing with a professional crook had risks. Yet, according to Brimstone's own admission, it had been a gormel engineer that had shown him up, and Bullard figured that if a biophysics engineer could match wits with the grizzled trickster and win, he could. Perhaps—

But there was no perhaps about it. Bullard's fingers were already reaching for his call button, and a moment later Benton stood before him.

"Go down to the brig," directed the captain, "and bring that man Zander up here. Take his irons off first as I do not like to talk to men bound like animals. The fellow is a cheap crook, but he is harmless physically."

While he waited for Benton's return, Bullard explored the plan he had already roughly outlined in his mind. By pitting Brimstone Bill against Fenning he hoped to foil the greater scoundrel. But would he fall between two stools in the doing of it? He must also pit himself against the swindler, or else he would simply have enabled one crook to outsmart another without profit other than the gratification of spite. He had also to think of the other possible costs. The grand admiral must have no cause for complaint that there had been any evasion of his orders. Likewise Fenning must have no grievance that he dared utter out loud. There remained the item of the reputation of the *Pollux* and its men.

He puckered his brow for a time over that one. Then he relaxed. There were reputations and reputations, and extremes both ways. Some regarded one extreme with great favor, others preferred the other. Bullard liked neither, but for practical reasons preferred to embrace one for a time rather than its alternate. He would chance a little ridicule. After all, people might smile behind their hands at what a Polliwog might do, but no one ever curled a lip in the face of one and afterward had his face look the same. *Pollux* men had quite a margin of reputation, when it came to that, so he dismissed the matter from his mind. From then on he sat and grinned or frowned as this or that detail of his proposed course of action began to pop out in anticipation.

When Brimstone Bill was brought in, there was no hint in Bullard's bearing that he had softened his attitude toward the prisoner one whit. He stared at him with cold, unsmiling sternness.

"Zander," he said, drilling him with his eyes, "you are in a bad jam. Do you want to die along with those other gorillas?"

"Oh, no, sir," whined Brimstone, "I'll do anything. . . . I'll spill all I know. . . . I'd—"

Bullard shut him off with an abrupt wave of the hand.

"As the arresting officer I am in a position to do you a great deal of good or harm. If you will play ball with me, I can guarantee you a commutation. Maybe more—much more." He uttered the last words slowly as if in some doubt as to how much more. "Will you do it?"

"Oh, sir," cried Brimstone in an ecstasy of relief, for it was plain to see he had suffered during his languishment in the brig, "I'll do anything you say—"

"On *my* terms?" Bullard was hard as a rock.

"On any terms— Oh, yes, sir . . . just tell me—"

"Benton! Kindly leave us now while I talk with this man. Stay close to the call signal."

Bullard never took his eyes off the receding back of his lieutenant until the door clicked to behind it. Then he dropped his hard-boiled manner like a mask.

"Sit down, Brimstone Bill, and relax. I'm more friendly to you than you think." He waved to a chair and Brimstone sat down, looking a little frightened and uncertain. Then, proceeding on the assumption that a crook would understand an ulterior motive where he would distrust an honest one, Bullard dropped his voice to a low conversational—or rather conspiratorial—tone, and said:

"Everybody needs money. You do. And—well, a captain of a cruiser like this has obligations that the admiralty doesn't think about. *I* could use money, too. You are a clever moneymaker and can make it in ways I can't. I'm going to let you out of the jug and put you in the way of making some."

Brimstone Bill was keenly listening now and the glint of greed brightened his foxy eyes. This man in uniform was talking his language; he was a fellow like himself—no foolishness about him. Brimstone furtively licked his lips. He had had partners before, too, and that usually worked out pretty well, also. He might make a pretty good bargain yet.

"We are on our way to Juno where we will stop awhile. I am going to let you go ashore there and do your stuff. You'll be given my protection, you can keep the money here in my safe, and you can sleep here nights. You had a pretty smooth racket there on Venus, as I remember it. If you work it here, we'll clean up. After we leave, we'll split the net take fifty-fifty. That'll give you money enough to beat the charges against you and leave you a stake. All I want you to do is preach the way you did on Venus."

While Bullard was talking, Brimstone grew brighter and brighter. It was beginning to look as if the world was his oyster. But at the last sentence he wilted.

"I can't do that," he wailed. "I'm afraid. And—"

"There are no gormel mills on Juno," Bullard reminded him, "only roughneck asteroid miners, gamblers and chiselers."

"That ain't it, sir," moaned Brimstone. "They smashed my gadgets, 'n'—"

"Gadgets?"

"Yeah. I ain't no good without 'em. And the fellow that made 'em is dead."

He talked on a few minutes more, but Bullard interrupted him. He called in Benton and told him to take notes.

"Go on," he told Brimstone Bill. "We'll make you a set."

It took about an hour before Benton had all the information he needed. Brimstone was hazy as to some of the features of his racket, but Bullard and the young officer were way ahead of him all the time.

"Can do?" asked Bullard, finally.

"Can do," declared Benton with a grin, slamming his notebook shut. "I'll put the boys in the repair shop right at it. They won't have the faintest notion what we want to use 'em for."

Benton rose. As far as that went, Benton himself was still somewhat in the fog, but he had served with his skipper long enough to know that when he was wearing a certain, inward kind of quizzical expression that something out of the ordinary was cooking. His talent for a peculiar oblique approach to any insoluble problem was well known to those about him. Wise ones did as they were told and asked questions, if ever, afterward.

"On your way out, Benton," added Bullard, "take our friend down to the chaplain's room—we left Luna in such a hurry, you know, the chaplain missed the ship—and let him bunk there. I'll see that suitable entry is made in the log. And you might tell Commander Moore that I'd like to see him."

When Benton and Brimstone had left, Bullard leaned back in his chair and with hands clasped behind his neck gazed contemplatively at the overhead. So far, so good. Now to break the news to Moore.

"I've been thinking, Moore," he said, when his executive came in, "that we have been a little lax in one matter. I was thinking of . . . uh, spiritual values. I'm sorry now that the chaplain missed the ship. Do you realize that we have made no pretense at holding any sort of service since we blasted off on this cruise?"

Moore's eyes bugged a little. The skipper, he was thinking, must have overdone his recent worrying. Or something. Bullard had always been punctiliously polite to the chaplain, but—

"So," went on Bullard calmly, still gazing placidly at the maze of wires and conduits hanging from the deck plates over him, "I have made appropriate arrangements to rectify that lack. I find that the Earthman we took along with the Ziffler outfit was not one of them but a hostage they had captured. He is an itinerant preacher—a free-lance missionary, so to speak. I have released him from the brig and installed him in the chaplain's room, and after he has had a chance to clean up and recover, he will talk to the men daily."

It was well that Moore's eyes were firmly tied to their sockets, for if they had bugged before, they bulged dangerously now. Bullard had brooded too much. Bullard was mad!

"Oh," assured Bullard, "there is nothing to worry about. The man is still a prisoner at large awaiting action by the Bureau of Justice. But otherwise he will have the run of the ship. And, I should add, the run of the town while we are on Juno. He calls himself, oddly enough, Brimstone Bill, but he explains that he works close to the people and they prefer less dignity."

Moore gasped, but there seemed to be nothing to say. Bullard had not consulted him, he had been merely telling him. Unless he had the boldness to pronounce his captain unwell and forcibly assume command, there was nothing to do but accept it. And with a husky, "Aye, aye," he did.

It was the night before they made Juno that the long unheard twitter of bos'n's pipes began peeping and cheeping throughout the ship. At the call, the bos'n's mates took up the cry and the word, "Rig church in the fo'c's'le ri-ight a-awa-a-ay!" went resounding through the compartments. Bullard clung tenaciously to the immemorial old ship customs. The sound of bunks being cleared away and the clatter of benches being put up followed as the crew's living quarters were transformed into a temporary assembly hall. They had been told that the missionary brought aboard at Oberon had a message for them. They had not been told what its subject was, but their boredom with black space was immense and they would have gone, anyway, if only from curiosity. The text for the evening was "The Gates of Hell Are Yawning Wide."

Two hours earlier Benton had reported that all was in readiness for the test of Brimstone's persuasive powers and that the three petty officer assistants picked by him had been instructed in their job. A special box had been rigged at one corner of the hall for the use of the captain and executive. Consequently, when "Assembly" went, Bullard waited only long enough for the men to be seated when he marched in with Moore and took his place at one corner of the stage that had been set up.

Brimstone Bill appeared in a solemn outfit made up for him by the ship's tailor. The setting and the clothes had made a new man of him. No longer was he the shifty-looking, cringing prisoner, but a man of austerity and power whose flashing eyes more than made amends for his poor physique. He proceeded to the center of the stage, glared at his audience a moment, then flung an accusing finger at them.

"Hell is waiting for you!" he exploded, then stepped back and shook his imposing mane and continued to glare at them. There was not a titter or sneer in the crowd. The men were sitting upright, fascinated, looking back at him with staring eyes and mouths agape. He had hit them where they lived. Moore looked about him in a startled way and nudged Bullard.

"Can you tie that?" he whispered, awe-struck. He had been in the ship many years and had never seen anything like it. All the skymen he knew had been more concerned with the present and the immediate future than the hereafter, and the Polliwogs were an especially godless lot. The followers of their own chaplain could be numbered on the fingers of the two hands.

Brimstone Bill went on. Little by little he warmed to his subject until he soon arrived at a stage where he ranted and raved, jumped up and down, tore his hair and beat his breast. He thundered denunciations, pleaded and threatened, storming all over the place purple-faced. His auditors quailed in their seats as he told off their shortcomings and predicted the dire doom that they were sure to achieve. His theology was simple and primitive. His pantheon consisted of but two personages—the scheming devil and himself, the savior. His list of punishable iniquities was equally simple. The cardinal sins were the ordinary personal petty vices—drinking, smoking, gambling, dancing and playing about with loose women. There was but one redeeming virtue, SUPPORT THE CAUSE!

That was all there was to it. An hour of exhortation and a collection. When he paused at the end of his culminating outpouring of fiery oratory, he asked for volunteers to gather in the offerings. Three petty officers stood up, received commodious leather bags, and went among the audience stuffing them with whatever the men present had in their pockets. For no one withheld anything, however trifling. The sermon, if it could be called that, was an impressive success. Then the lights came on bright, Brimstone Bill left the stage clutching the three bags, and the men filed out.

"Amazing," said Moore, as he sat with Bullard and watched the show. "Why, the fellow is an arrant mountebank!"

"Quite so," agreed Bullard, "but the men seem to like it. Come, let's go."

The next day saw a very different atmosphere in the ship. About two thirds of the crew had

heard the preaching, the remainder being on duty. Those went about their tasks silently and thoughtfully, as if pondering their manifold sins. They had to take an enormous amount of kidding from their shipmates and a good many black eyes were in evidence by the time the ship slid down into her landing skids at Juno Skydock. Bullard did not let that disturb him; to him it was a healthful sign.

As soon as the ship was docked, he went out and met the dockmaster, who, as he had suspected, was an incompetent drone. No, he had only fourteen men available—he had not been expecting the ship—they would get at the job tomorrow or next day—or at least part of them. No, there was a local rule against working overtime—no, the ship's force could not help—six Earth weeks, he thought, barring accidents, ought to do the trick. Oh, yes, they would be very thorough. At Juno they were always thorough about everything.

Moore started threatening the man, stating he would report him to the grand admiral for inefficiency, but all Bullard said was:

"Skip it, you're wasting breath. These people have just two speeds—slow ahead and stop. Put pressure on them and they backfire. Go back aboard and post the liberty notice. Unlimited liberty except for the men actually needed to stand watch. And see that this goat gets a copy."

Moore shook his head. Something *had* happened to Bullard. Of course, the man was up against a stone wall, but he could at least make a show of a fight. It was a terrible thing to see a fighting man give up so easily. In the meantime Bullard had walked away and was talking with Brimstone Bill and Benton, who had just emerged from the lock and were looking around.

There were lively doings ashore that night. Most of the contingent that had not heard the Rev. Zander's moving sermon went as early as possible, ostensibly to look around and do a little shopping. In the end they wound up by getting gloriously drunk. It was a bedraggled and miserable-looking lot that turned up at the ship the next morning and there were many stragglers. A patrol had to be sent out to comb the dives and find the missing ones. Many had been robbed or cheated of all they had, and some had been indiscreet enough to draw all their money before they went. Captain Bullard lined up the most serious of the offenders at "mast" and handed out the usual routine punishments—a few days' restriction to the ship.

After that things were different. The next day Benton and Brimstone had suceeded in renting an empty dance hall. As Bullard had guessed, things were dull that year in Herapolis. A gang of enthusiastic volunteers—Polliwog converts to Brimstone's strange doctrines—busied themselves in making the place ready as a tabernacle. The last touch was a neon sign bearing the same wording Bullard had seen on that other tabernacle in steamy Venus. Brimstone Bill was about to do his stuff in a wholesale way.

That afternoon when work was done, the entire liberty party marched in formation to the hall and there listened to another of Brimstone's fiery bursts of denunciation. The denizens of the town looked on at the swinging legs and arms of the marching battalion and wondered what it was all about. They supposed it was some newfangled custom of the Patrol Force and that whatever it was, it would soon be over and then they would have plenty of customers. The barkeeps got out their rags and polished the bars; gamblers made a last-minute check-up of the magnetic devices that controlled their machines; and the ladies of the town dabbed on the last coat of their already abundant make-up.

But no customers came that night. For hours they could hear the booming, ranting voice of Brimstone roaring about Hell and Damnation, punctuated by periods of lusty singing, but except for an occasional bleary-eyed miner, no patron appeared to burden their tills and lighten their hearts. At length the strange meeting broke up and the men marched back to their ship in the same orderly formation they had come.

This went on for a week. A few at a time, the members of the first liberty party recovered from their earlier debauch and ventured ashore again, but even those were soon snatched from circulation as their shipmates persuaded them to hear Brimstone "just once." Once was enough. After that they joined the nocturnal demonstration. It was uncanny. It was unskymanlike. Moreover, it was lousy business. Spies from the townspeople camp who peered through windows came back and reported there was something funnier about it than that. Every night a collection was taken up, and it amounted to big money, often requiring several men to carry the swag back.

Strong-arm squads searched the town's flophouses to find out where the pseudo-evangelist was staying, but in vain. They finally discovered he was living on the *Pollux*. A committee of local "merchants" called on Captain Bullard and protested that the ship was discriminating against them by curtailing the men's liberty. They also demanded that Brimstone Bill be ejected from the ship.

"Practically the entire crew goes ashore every day," said Bullard, shortly, "and may spend the night if they choose. What they do ashore is their own affair, not mine. If they prefer to listen to sermons instead of roistering, that's up to them. As far as the preacher is concerned, he is a refugee civilian, whose safety I am responsible for. He is in no sense under orders of the Patrol

Force. If you consider you have a competitive problem, solve it in your own way."

The dive owners' impatience and perplexity turned into despair. Something had to be done. They did all that they knew to do. They next complained to the local administrator—a creature of Fenning's—of the unfair competition. That worthy descended upon the tabernacle shortly thereafter, backed by a small army of suddenly acquired deputies, to close the place as being an unlicensed entertainment. He was met by a determined Patrol lieutenant and a group of hard-faced Polliwog guards who not only refused to permit the administrator to serve his warrant, but informed him that the meeting was immune from political interference. It was not amusement, but religious instruction, and as such protected by the Constitution of the Federation.

The astounded administrator looked at the steely eyes of the officer and down to the browned, firm hand lying carelessly on the butt of a Mark XII blaster, and back again into the granite face. He mumbled something about being sorry and backed away. He could see little to be gained by frontal attack. He went back to his office and sent off a hasty ethergram to his esteemed patron, then sat haggardly awaiting orders. Already the senator had made several inquiries as to receipts since the cruiser's arrival, but he had delayed reporting.

The answer was short and to the point. "Take direct action," it said. The administrator scratched his head. Sure, he was the law on Juno, but the *Pollux* represented the law, too, and it had both the letter of it and the better force on its side. So he did the other thing—the obvious thing for a Junovian to do. He sent out a batch of ethergrams to nearby asteroids and then called a mass meeting of all his local henchmen.

It took three days for the armada of rusty little prospectors' ships to finish fluttering down onto the rocky wastes on the far side of Herapolis. They disgorged an army of tough miners and bruisers from every little rock in the vicinity. The mob that formed that night was both numerous and well-primed. Plenty of free drinks and the mutual display of flexed biceps had put them in the mood. At half an hour before the tabernacle meeting was due to break up, the dive keepers all shut up shop, and taking their minions with them began to line the dark streets between Brimstone's hall and the skydock.

"Yah! Sissies!" jeered the mob, as the phalanx of bluejackets came sweeping down, arm in arm and singing one of Brimstone's militant hymns in unison. By the dim street lights one could see that their faces were lit up with the self-satisfaction of the recently purified. In the midst of the phalanx the little preacher trotted along, surrounded by the inevitable trio of petty officers with the night's collection.

An empty bottle was flung, more jeers, and a volley of small meteoric stones. The column marched on, scorning to indulge in street brawling. Then a square ahead they came to the miners, drawn up in solid formation from wall to wall. The prospectors were armed with pick handles and other improvised clubs. They did not jeer, but stood silent and threatening.

"Wedge formation," called Benton, who was up ahead. "Charge!"

The battle of the Saints and Sinners will be remembered long in Juno. That no one was killed was due to the restraint exercised by Benton and MacKay, who were along with the church party. Only they and the administrator had blasters, and the administrator was not there. Having marshaled his army, he thought it the better part of valor to withdraw to his office where he could get in quick touch with the senator if need be.

Dawn found a deserted street, but a littered one. Splintered clubs, tattered clothes, and patches of drying blood abounded, but there were no corpses. The Polliwogs had fought their way through, carrying their wounded with them. The miners and the hoodlums had fled, leaving their wounded sprawling on the ground behind, as is the custom in the rough rocklets. But the wounded suffered only from minor broken bones or stuns, and sooner or later crawled away to some dive where they found sanctuary. There had been no referees, so there was no official way to counteract the bombastic claims at once set up by both sides. But it is noteworthy that the Polliwogs went to church again the next night and were unmolested by so much as a catcall on the way back.

"I don't like this, captain," Moore had said that morning as they looked in on the crowded sick bay where the doctors were applying splints and bandages. "I never have felt that charlatan could be anything but bad for the ship. He gouges the men just as thoroughly as the experts here would have. Now this!"

"They would have thrown their money around, anyway," grinned Bullard, "and fought, too. It's better to do both sober than the other way."

That afternoon the administrator rallied his bruised and battered forces and held a council of war. None would admit it, but a formation has advantages over a heterogeneous mob even in a free-for-all. What do next? There was a good deal of heated discussion, but the ultimate answer was—infiltration. The tabernacle sign read, "Come one, come all," and there was no admission. So that night the hall was surrounded by waiting miners and a mob of the local bouncers long before the Rev. Zander arrived. Tonight they would rough-house inside.

He beamed upon them.

"Come in, all of you. There are seats for all. If not, my regular boys can stand in the back."

The roughs would have preferred to the standing position, but the thing was to get in and mix. So they filed in. By the time Brimstone Bill mounted the rostrum the house was crowded, but it could have held more at a pinch.

He was in good form that night. At his best. "Why Risk Damnation?" was his theme, and as he put it, the question was unanswerable. It was suicidal folly. The gaping miners let the words soak in with astonished awe; never had they thought of things that way. Here and there a bouncer shivered when he thought of the perpetual fires that were kept blazing for him on some far-away planet called Hell. They supposed it must be a planet—far-off places usually were. They were not a flush lot, but their contribution to the "cause" that night was not negligible. There was little cash money in it, but a number of fine nuggets, and more than one set of brass knuckles and a pair of nicely balanced blackjacks. Altogether Brimstone Bill was satisfied with his haul, especially when he saw the rapt expressions on their faces as they made their way out of the tabernacle.

The administrator raved and swore, but it did no good. The chastened miners were down early at the smelter office to draw what credits they had due; the bouncers went back to their dives and quit their jobs, insisting on being paid off in cash, not promises. All that was for the cause. There were many fights that day between groups of the converted and groups of the ones who still dwelt in darkness, but the general results were inconclusive. The upshot of it was that the remainder of the town went to the tabernacle that night to find out what monkey business had been pulled on the crowd they had sent first.

The collection that night was truly stupendous, for the sermon's effect on the greater crowd was just what it had been on all the others. Not only was there a great deal of cash, but more weapons and much jewelry—though a good deal of the jewelry upon examination turned out to be paste. The administrator had come—baffled and angry—to see for himself. He saw, and everyone was surprised to note how much cash he carried about his person. What no one saw was the ethergram he sent off to the senator that night bearing his resignation and extolling the works of one Brimstone Bill, preacher extraordinary. He was thankful that he had been shown the light before it was too late.

An extraordinary by-product of the evening was that early the next morning a veritable army of miners descended upon the skydock and volunteered to help scrape the cruiser's hull. Brimstone's dwelling, they said, should shine and without delay. That night even the dockmaster had to grudgingly pronounce that the ship was clean. The job was done. She was free to go.

Bullard lost no time in blasting out. Brimstone Bill was tearful over leaving the last crop ungleaned. He insisted that they had been caught unawares the first night, and the second they were sure to bring more. But Bullard said no, they had enough money for both their needs. The ship could stay no longer. Bullard further said that he would be busy with the details of the voyage for the next several days. After that they would have an accounting. In the meantime there would be no more preaching. Brimstone Bill was to keep close to his room.

At once all the fox in Brimstone rose to the top. This man in gold braid had used him to exploit not only his own crew but the people of an entire planetoid and adjacent ones. Now he was trying to cheat him out of his share of the take.

"I won't do it," said Brimstone, defiantly. "I've the run of the ship, you said. If you try to double-cross me, I'll spill everything."

"Spill," said Bullard, calmly, "but don't forget what happened at Venus. The effect of the gadgets wears off, you know. I *think* you will be safe in the chaplain's room if I keep a guard on the door. But if you'd rather, there's always the brig—"

"I get you," said Brimstone Bill, sullenly, and turned to go. He knew now he had been outsmarted, which was a thing that hurt a man who lived by his wits.

"You will still get," Bullard hurled after him, "one half the net, as I promised you, and an easy sentence or no sentence at all. Now get out of my sight and stay out."

It was a queer assembly that night—or sleep period—for a space cruiser of the line. They met in the room known to them as the "treasure house." Present were the captain, the paymaster, Lieutenant Benton, and two of the petty officers who had acted as deacons of Brimstone's strange church. The third was missing for the reason he was standing sentry duty before the ex-preacher's door. Their first job was to count the loot. The money had already been sorted and piled, the paper ten to one hundred sol notes being bundled neatly, and the small coins counted into bags. The merchandise had been appraised at auction value and was stacked according to kind.

"Now let's see, Pay," said Bullard, consulting his notes, "what is the total amount the men had on the books before we hit Juno?"

Pay told him. Bullard kicked at the biggest stack of money of all.

"Right. This is it. Put it in your safe and restore the credits. Now, how much did the hall cost, sign, lights and all?"

Bullard handed that over.

"The rest is net—what we took from the asteroid

people. Half is mine, half is Brimstone's. The total?"

Benton was looking uneasy. He had wondered all the time about what the fifty-fifty split meant. He was still wondering what the skipper meant to do with his. But the skipper was a queer one and unpredictable.

"Fifty-four thousand, three hundred and eight sols," said the paymaster, "including the merchandise items."

"Fair enough. Take that over, too, into the special account. Then draw a check for half of it to Brimstone. Put the other half in the ship's amusement fund. They've earned it. They can throw a dance with it when we get to Luna. I guess that's all."

Bullard beckoned Benton to follow and left the storeroom, leaving the two p. o.'s to help the paymaster cart the valuables away to his own bailiwick. There were still other matters to dispose of. Up in the cabin Benton laid the "gadgets" on the desk.

"What will I do with these, sir?" he wanted to know. "They're honeys! I hate to throw them into the disintegrator."

"That is what you will do, though," said Bullard. "They are too dangerous to have around. They might fall into improper hands."

"Now that it's over, would you mind telling me how these worked?"

"Not at all. We've known for a century that high-frequency sound waves do queer things, like reducing glass to powder. They also have peculiar effects on organisms. One frequency kills bacteria instantly, another causes red corpuscles to disintegrate. You can give a man fatal anemia by playing a tune to him he cannot hear. These gadgets are nothing more than supersonic vibrators of different pitch such that sounded together they give an inaudible minor chord that affects a portion of the human brain. When they are vibrated along with audible speech, the listener is compelled to believe implicitly in every word he hears. The effect persists for two or three days. That is why I say they are too dangerous to keep. Brimstone could just as well have incited to riot and murder as preach his brand of salvation for the money it brought."

"I see. And the ones carried in our pockets by me and the boys were counter-vibrators, so we didn't feel the effects?"

"Yes. Like the ones you rigged in my box that night we had the try-out up forward. Neither I nor Commander Moore heard anything but ranting and drivel."

"Pretty slick," said Benton.

Yes, pretty slick, thought Bullard. He had stayed the prescribed time on Juno and had paid off the crew and granted full liberty. Outside the five men in his confidence, not a member of the crew had had a hint that it was not desired that he go ashore and waste his money and ruin his health.

"I'm thinking that the *Pollux* is not likely to be ordered back to Juno soon," said Bullard absently. But Benton wasn't listening. He was scratching his head.

"That little guy Brimstone," he said. "He isn't such a bad egg, come to think of it. Now that he's pulled us out of our hole, do you think you can get him out of his, sir?"

"He never was in the hole," said Bullard, reaching for the logbook. "I needn't have kept him at all once I let him out of the brig. Read it—it was on your watch and you signed it."

Benton took the book and read.

"At 2204 captain held examination of prisoners; remanded all to brig to await action of the Bureau of Justice except one Ignatz Zander, Earthman. Zander was released from custody, but will be retained under Patrol jurisdiction until arrival at base in the event the Bureau should wish to utilize him as witness."

Benton looked puzzled.

"I don't remember writing anything like that," he said.

"The official final log is prepared in this office," reminded Bullard, softly. "You evidently don't read all you sign."

THE END.

NO FINER DRINK... *at sixteen—or sixty*

THE CONTRABAND COW

By L. Sprague de Camp

● Author de Camp suggests that there might be peculiar political sidelights and unexpected sorts of bootlegging under a Union Now scheme—

Illustrated by Kolliker

A bat zigzagged across the sluggish reach of the lower Nueces, and Homer Osborn piled out of the rowboat with the painter in one hand. Since most of the boat's load was now concentrated on its rear seat by Charles Kenny, its bow rose high into the air, and Osborn had little trouble in hauling the boat well up onto the sand of the beach.

Then he took hold of the bow and braced his legs to hold the craft level. Kenny grunted his elephantine way slowly toward the bow, crouching and holding the gunwales with both hands, and lifting his feet carefully over the fishing tackle.

"Hey," said Osborn, "don't forget the critter!"

"Not so loud!" Kenny halted, backed one step, reached under the middle seat, and brought up a package the shape of a brick and a little larger. Attached to this package by a stout cord was one real brick. As Kenny raised the package, the brick dangled revolving on the lower end of the cord.

Osborn suggested: "If you untie it, we can throw away the sinker—"

"Naw," said Kenny. "You don't know how a real fisherman does it, Homer. You want to keep your sinker attached until you're ready to cook your critter. Then if a Fodals shows up, you heave the evidence *ka-plunk* into the river. You cain't swallow half a pound of critter in one second, you know."

"O. K., boss," said Osborn, and tied the painter to the nearest pecan tree.

Kenny stretched his cramped muscles. "Now, if we can just find a dry spot—"

"Don't think there is such a thing in this part of Texas," said Osborn with slight asperity.

"—we'll have plenty of time to get to Dinero before she's too dark."

"With no fish for the girls."

"Aw, Homer," wheezed Kenny, "you don't get the *i*-dea. A real fisherman don't care whether he catches anything or not. Reckon this spot'll do."

"If that's dry," said Osborn, feeling the sandy soil with his hand, "I'm a—"

"Hush your mouth, Yankee, and help get some wood. Careful; don't go steppin' on a snake. Used to be 'gators in this part of the river, too; I reckon the hide hunters killed 'em all."

Osborn returned after ten minutes of collecting soggy scraps of firewood, to find Kenny, by some private thaumaturgy, conjuring a fire out of a heap of equally unpromising fuel.

When the fire was going, the massive department head opened a can of beans and hung it in the flames. Then he sat back, uncorked the whiskey bottle, took a swig, passed the bottle to Osborn, and sat back looking at the deepening blue sky.

"And to think," he said, "that a young squirt like you would give this up to go back to Brooklyn!"

"No snakes in Brooklyn, anyway."

Kenny sighed. "When you learned to say 'bird' instead of 'boid' I thought I'd make a real Texan out of you. Mebbe I will yet."

"Not likely. Seriously, boss, you can find plenty of biochemists, and it would mean so much to Gladys and me—"

"Not another biochemist who can make the discovery of the age. You go on turnin' out discoveries of the age, and the San Antone labs will go on gettin' appropriations, and when your contract's up I'll offer you another you cain't afford to turn— What's that?" Kenny was silent for a frozen quarter minute, then resumed: "Imagination, I guess. Unless, maybe, you *are* bein' followed."

"I'm not imagining that," said Osborn. "You know Pedro, who runs the steakeasy on Apache Street? Well, he asked me—"

"Pedro got padlocked the other day," interrupted Kenny.

"Yeah? You don't say!"

"Yep! Damn fool insisted on servin' roast beef. It takes a long time to cook, and you're apt to have a lot left over, so the Fodals got him with the evidence. What did he say to you?"

Osborn explained: "The word got out among the leggers that this synthetic protein of mine was going to put 'em out of business. I explained that I could make a steak, all right, but it wouldn't taste like a steak and would cost twenty times as much as a hunk of prime Mexican critter delivered in San Antonio by a reliable steaklegger. He didn't seem convinced."

"So now you think the leggers are out to get you," said Kenny. "Well, mebbe the repeal act will pass when it comes up Monday in Delhi. The Bloodies have tried hard enough; I've been up all night this week gettin' folks to write letters and send telegrams."

Osborn sighed. "Not likely, boss. The Hindus disagree on everything else, but not on eating critter."

"Here they lynched a Fodals in Dallas last week," said Kenny, poking at the fire. "Good *i*-dea on general principles, but I'm afraid it won't do the Bloody vote no good come Monday."

"You're a fanatic," said Osborn quietly. "Now me, I vote Bloody, but I can take my critter or leave it alone. What really gripes me is getting my research mixed up in a prohibition question."

"You wouldn't care if your synthetic steak stopped all this corruption and lawbreakin'? You'd be famous!"

"Nope. Don't want to be famous, outside the technical periodicals. What I want is to get back to Brooklyn."

Kenny laughed and heaved himself to his feet. "Looks like those coals are about ready for the critter. You start it; I'm going to get me some more wood. And any time you can figure how to repeal the anti-vaccacide law, you can have your contract back, and I'll get you a new one in Brooklyn, Belfast, or any place you pick."

Kenny crunched off into the brush, muttering about the iniquity of a Union Now scheme which gave the cow-worshiping sons of India, on a straight population basis, a clear majority in the Assembly of the Federation of Democratic and Libertarian States.

Homer Osborn nervously unwrapped the package. The crackle of the heavy yellow paper seemed inordinately loud. His mouth watered at the sight of the steaks, for which he had paid his pet steaklegger four dollars and fifty cents of his and Charles Kenny's money.

He then pulled a lot of pieces of heavy steel wire out of his boot. These, when joined to-

gether, made a rickety but serviceable grid.

The sound of Kenny's movements died away. No, thought Osborn, he would never learn to like Texas, really. The Gulf Coast region was fairly comfortable this early in spring. But in a couple of months San Antonio would be a baking inferno, outside the laboratories—

He slapped a mosquito, and extended the grid over the coals. A flame licked the fat on one of the steaks, and a pearly drop fell into the coals, sending up a brief spurt of yellow.

As the hiss of that drop of fat died out, something came out of the darkness and wrapped itself like an affectionate anaconda around Homer Osborn's right wrist, and something else calmly took the grid, steaks and all, away from him.

"You," said a voice, "are under ar-r-rest for violation of the anti-vaccacide law, Title 9, Section 486 of the Criminal Code of the Federation!"

"Huh?" said Osborn stupidly. It had all been done so swiftly and competently that he had not recovered his wits.

"Which reads," continued the voice, "Paragraph 1: The eating of cattle, which term shall include all animals of the subfamily *Bovinæ* of the family *Bovidæ*, the same comprising kine, buffaloes, bison, zebus, gayals, bantengs, yaks, and species closely related thereto, or of any parts or members thereof, or of any hashes, gravies, soups, or other edible products thereof, is hereby prohibited!"

"B-but, I wasn't eating—" In the twilight Osborn could now make out the turban and beard of a towering Sikh of the Border Patrol.

"Par-r-ragraph 2: The killing, for any purpose whatever, and the assault, molestation, capture, imprisonment, sale, purchase, possession, transportation, importation into or exportation out of the Federation of Democratic and Libertarian States, or any territory subject to the jurisdiction thereof, for purpose of eating, of cattle, as hereinbefore defined in Paragraph 1 hereof—"

"O. K., O. K.!" shouted Osborn, as the Patrolman carefully set down the evidence and with his free hand snapped a handcuff on the culprit's wrist. "I know your damned law, and I think it's a lousy invasion of my personal liberty—"

"I am sorry, sir," purred the East Indian. "I merely carry out my orders. Now let us go; it is about a mile to my car."

Osborn groaned, mentally consigning Mr. Clarence Streit to the most elaborately sadistic hell he could imagine. He thought of yelling for Kenny, but decided that it would be better not to involve his boss; Charley could do more for him from outside the bars.

The thought that most pained Homer Osborn was the recollection of how cocksurely he had brushed aside his wife's cautions before leaving. Gladys would kid him about this in front of their grandchildren, if they lived that long.

He let the Sikh tow him gently up the infinitesimal rise that passed for the bank of the Nueces River. Better, he thought, make enough noise to warn Kenny, so that the department head should not blunder into them.

He declaimed: "Who do you think you are, to come all the way from India to mix in our American affairs?"

"I am Guja Singh, sir, Patrolman Number 3,214. As for the mixing, surely you know that the Federation government was forced to send us of India to enforce the anti-vaccacide law, because none of your American officials could be trusted to do so."

"Yeah, but what business is it of yours in the first place? I'm not hurting—"

"Ah, but you are," continued the soft, slightly accented voice. "The sacrilege of vaccacide hurts us of India to our very souls."

"Well, but aren't you a Sikh? I thought they didn't take this cow-worship business seriously."

"We of the Udasi sect take it seriously, sir. Observe this branch and duck, please. Please, sir, do no think too harshly of me because I do my duty. Do you think we enjoy patrolling this hostile land, where we dare not go out in your cities except in pairs?"

"Well, why do it, sap?"

"You mean me personally, sir? I have a wife and nine children to support. My father, though he could have secured me a position at Delhi, was reluctant to do so lest the charge of nepotism be br-r-rought against him."

"Who's your father?"

"Sahib Arjan Singh, sir. You have heard of him?"

"Sure. A politician." Osborn put scorn into it.

Guja Singh sighed unhappily. "I fear we shall never understand the mysterious West. Nothing appears to please you—"

They walked on in silence. Osborn cooled off somewhat, and was thankful that his captor was not a really tough guy, despite his formidable appearance. Still, Homer Osborn knew better than to try to get away; he had met Fodals cops of this superficially humble type before.

They reached the road, and a few rods away Osborn made out the bullet shape of a patrol car parked by the side. They were halfway to it when Guja Singh halted and stood with his head up silently, as if sniffing the air. Osborn strained his ears, and thought he made out a whisper, unintelligible but urgent, from the trees.

"Put those up!" came a voice.

The Fodals released Osborn, jerked out his pistol, and fired. Osborn had already started to run when the flash and report from behind him were mixed with a tingle of glass. Something struck his body a light blow and shattered, and

as he took his next step he smelled geraniums. He knew what that meant, and tried to stop breathing—

But not quickly enough. His muscles all at once began to jerk uncontrollably, as if he had St. Vitus' dance, and the sand came up and hit him with a thud.

The convulsion—more exasperating than painful—died, and hands tried to heave him to his feet. His legs buckled, and a couple of them picked him up and carried him, not too gently.

He tried to talk, but he could not control his tongue: "Th upp sh mwa-a-a th uh uwz ze idea?"

No answer. Somewhere in the darkness another contingent was breathing heavily as it toted six-feet-three of Sikh patrolman. The sound of a door latch compounded this, and Osborn made out the shape of a vehicle, not Guja's patrol car. Somebody had a flashlight. Osborn saw dimly that the conveyance looked like a rather large delivery truck.

"Don't bother with him; he's already got one handcuff on."

The response to this advice was to pull Osborn's unmanacled hand behind him and snap the empty half of the pair of handcuffs over the wrist. Next he was boosted into the body of the truck, and the door boomed shut behind him.

As it did so a light flashed on, penetratingly, right into his eyes.

"Sit down, you two."

There were wisps of straw under Osborn's feet, and a definite smell of cow. Osborn knew that he was in a cattle-runner's truck. He sat, and was aware of Guja Singh beside him. They were seated on a bench built into the inner side of the door at the rear of the body. At the front end were that damned searchlight and—when his eyes got accustomed to the glare—a pair of powerful-looking dark men with submachine guns under their arms.

The body jerked and swayed into motion; there was no sound from outside. Sound-insulation that would keep the moo of a smuggled steer in would likewise keep the noise of the external world out.

"Who do you think you are and what do you think you're doing—" began Osborn, but soon gave up when no response was coming from the men with the guns. He pushed himself into the angle of the corner to keep from being thrown about by the motion of the truck.

So his imagination had not played him tricks! Next question, whose was the gang? Not one of the indigenous steakleggers; they were mostly individuals or small concerns, on amicable terms with the local Texan police forces and hence constrained to the more seemly forms of illegality. Highjackers? The method suggested it, but such downright criminals would hardly concern themselves with anything so recondite as the synthetic-protein experiments of the San Antonio branch of the Federal Research Laboratories.

That left the great Mexican critter kings; shadowy but sinister figures: the modern equivalent of the old political generals who had run Mexico back before the great period of Mexican prosperity and peace in the middle of the century. Some of Osborn's scientific Mexican acquaintances were bitter about the vaccacide law for having conjured this robber-baron class out of its feudal graves.

The truck body bounced and shuddered silently over invisible miles. Homer Osborn thought a great volume of private thoughts, and at last out of sheer boredom went to sleep on Guja Singh's shoulder.

The motion was easier, though as far as one could tell from the dark interior of the truck it might have been up, down, or sideways. Then it stopped altogether.

"Stand up," commanded one of the guards.

They did, and the door swung open. The searchlight winked off automatically, and was replaced by the vaster but more diffused light of early morning on the desert.

Osborn had narrowed the list of kidnaper suspects down to the Big Three: Ximinez, Dualler, Stewart.

Endless, arid, gently rolling plain; patches of white rock on brown dirt; occasional sage, mesquite, cactus—the last with bright-red or yellow flowers; a hint of low, rugged mountains surrounding the huge basin, already shimmering in the heat: that meant Harmodio Dualler, even though Homer Osborn had never before been in the Bolsóm de Mapimí.

"Jump down."

Osborn gave the guard a venomous look and jumped. He avoided falling, and, with Guja Singh, was herded toward one of a small city of adobe houses and barns. He saw that there were a great many trucks parked about, most of them with appropriately deceptive signs painted on their weather-beaten sides: "Fort Worth Express Co.," "Lone Star Cleaners & Dyers," "Pogbadian, the House of Rugs." An Indian vaquero with a pink ribbon around his black hair trotted by on a horse.

The others were no cowboys; dark suits, Panama hats, and not a serape in the lot. They shoved Osborn and the Sikh through a gate in a wall, revealing more hundreds of yards of adobe structures, until a big man in shirt sleeves came out and spoke to them in Spanish. Osborn guessed this to be Harmodio Dualler; powerful, sallow, not fat but with a big roll of fat around his neck.

Dualler looked sharply at Guja Singh, and asked the boss of the kidnapers what the obscenity he

meant by bringing this one. The boss kidnaper stopped flicking the dust off his shoes with his handkerchief, shrank visibly, and squeaked that Osborn had not been alone for a minute, and that therefore it was necessary either to bring this one too or to let the prey go, and he had been merely trying to do his duty—

"I obscenity on God!" roared Harmodio Dualler, "hast thou no more brains than a burro? But I will attend to thee later; bring these ones in."

Seated behind his desk with his hat still on, Dualler dug out a package of gum which he offered to his prisoners. They did not consider it politic to refuse. When all three were chewing, Dualler said in good English: "I am sorry there has been a little mix-up here—"

"How long," interrupted Osborn, "do you think you can get away with this? I'm a citizen of the Federation—"

Dualler laughed softly. "Pipe yourself down, my friend. The nearest town is Cuatro Cienegas, and that is fifty miles across the desert, and what Harmodio Dualler says in the state of Coahuila, that goes."

"Well, what do you want of us?"

"Of you, it is simple. I want all your samples of this phony critter that you have made, and all your notes and writings. All your everything that has to do with it. Understand?"

"Uh-huh," said Osborn. "I thought so."

"As to this one," said Dualler, eying the Sikh, "it was a stupidity that he was ever captured. I can't shoot you, my friend, because your patrol will come looking for you; and I can't hold you prisoner until you die of old age, and I can't let you go. So what *am* I to do with you?"

Guja Singh said loftily: "You can give me back my lost honor."

"Now how do I do that thing?"

"You can fight me like a man. Guns, knives, anything you say."

Dualler sighed. "Mr. Osborn, what can I do with such a foolish one? He thinks I'm an old-time *caballero* fighting duels like in the movies. I'm a businessman. Your country has all gone to hell since you let those Asiatics in, though I don't complain because it makes much business for me. Hernán, take this one away.

"Now, Mr. Osborn," continued the critter king, "I'll tell you what I will do. Tomorrow I will arrange a television hookup in a confidential channel—you have got a secretary?"

"I've got an assistant."

"Good. You will tell this assistant to pack up all your phony-critter stuff and take it to an address in Laredo, where a man of mine will pick it up. You must make it plain if your assistant misses something that would make it so another one could do the same thing, you . . . uh . . . it'll be just too bad."

"Meaning?"

Dualler looked embarrassed. "Don't make me talk of these unpleasant things right out, Mr. Osborn. I hate to have my guests get accidentally-like killed, especially a so young and promising one."

Osborn protested: "You're all wet, Señor Dualler. My synthetic protein can't possibly compete with the real thing—"

Dualler heard him out, then said: "Ah, yes, that is the thing I would say if I was in your place. Even if you are telling the truth, which I don't believe, I know that in this so wonderful Age of Science you will quickly improve your product."

"But listen, damn it, I'll prove to you—"

"No use, Mr. Osborn. Take this one away, too, Jesus-Maria."

Osborn was taken to a cell-like room: sparse but comfortable furniture; a small, high, barred window; a lack of furnishings and ornaments that could be put to practical use by a prisoner on escape bent. The heat was severe, even after Osborn had stripped to his shorts. He wondered why a man as rich as Harmodio Dualler had not air-conditioned his ranch, until he remembered the scarcity of water in the Bolsóm de Mapimí.

The only concession that Dualler had made to his boredom was a carton of cigarettes. When he got hungry, he pounded on the heavy oak door and yelled. Nothing happened.

In fact, Osborn was convinced by sunset that he had never spent a day of such exquisitely horrible boredom in his life. If being in jail was like this, he resolved never to do anything that would land him in such a predicament.

Before dark he was let out and taken to eat with the gang, who treated him with carefully controlled politeness. Guja Singh was there, too, looking famished.

When the Sikh sat down, he took one look at his plate and half rose. "I can't eat critter, Dualler! It's against my beliefs, and I'm still an officer—"

"That's all right," beamed Dualler. "Some of Mr. Osborn's synthetic beef, specially removed from his laboratory."

Osborn looked at Guja's plate, and knew at once that he had never turned out such a realistic imitation of a steak. Guja, after going through a mental struggle, tried the steak.

He chewed a few times, then said judicially: "That is not bad. If this is the imitation, no wonder the Americans go to such illegal lengths to get the real thing—"

Osborn had taken a bite of his own to make sure, and spoke up: "That is the real thing, Guja; they fooled you."

"What? Why—" The Sikh burst out with an inarticulate roar and bounded to his feet, his

rawhide-bottomed chair going over with a crash. He knocked one of the Mexicans clear across the table before the rest piled on him.

The fight did not last long; the patrolman seemed suddenly to go limp with weariness, and let his antagonists fasten themselves to his arms. His dark face was pale and glum, as if the last spiritual prop had been knocked out from under him.

"I am ruined," he said.

"Oh, come on, Mr. Singh," said Dualler. "It's not as bad a thing as that. I just had to make sure you would not make trouble for us when I let you go." At this point a grinning henchman appeared with his hands full of motion-picture camera and sound-track recorder. "You see, Jesus-Maria has made a nice record of this scene, in three-dimension color. That goes in my safe. When you get back to your headquarters, you tell them you got drunk—"

"I don't drink," moaned Guja Singh.

"Well, then, that you got full of the marijuana. Anyway, you will know nothing about Mr. Osborn, and nobody will know you ate the critter."

"I am ruined," was all the Sikh would say, until they took him back to his room.

"*Sst!* Osborn!"

Homer, getting ready for bed, looked around for the source of this whisper, which sounded as if it came from miles away. After looking in the closet and under the bed, he located its source in the little window. He stood on his chair and opened the fly screen.

"Guja?"

"Yes. Put your hand out and catch this."

Osborn, wondering, did so. Something swung up and past his window; after several tries he caught it. It was the end of a long strip of cloth, to which was tied a small automatic pistol. Guja Singh had been swinging the strip of cloth by its other end from the next window.

"Where'd you get this?" asked Osborn.

"They did not think to search my turban." Osborn realized that the strip of cloth was the patrolman's unwound headgear. "Take the pistol; you will need it. I heard a couple of Dualler's men talking of how they were going to kill you as soon as they get your scientific things; they did not know I understand Spanish."

"But what about you?"

"Never mind me. Good-by." And the turban-cloth was hauled back with a faint hiss through the bars of Guja's window.

Osborn reasoned that he had better keep his pants on in order to have a pocket in which to carry the gun. He was donning them when there were excited shouts from outside, and the sound of men running. Osborn could not make out the words, and presently the hubbub died away without his being enlightened.

But the next morning Guja Singh appeared without his turban, and looking more gaunt and hopeless than ever.

"He tried to hang himself by that head-scarf of his," explained Harmodio Dualler. "We had to dope him to put him to sleep." The critter king shook his head. "I thought I knew how to handle men, but with a so unreasonable one as this one—*Ts, ts.* I'm glad you are a reasonable one, Mr. Osborn. Now we will go in the communication room; everything is set up."

The room in question had a television booth at one side. Swank, or love of gadgets, thought Osborn; in the United States few private telephone subscribers cared to have their expense quadrupled for the doubtful privilege of being able to see the faces of persons with whom they were arranging a bridge date or arguing about a grocery bill.

But there was the contraption, and Osborn knew that there was one in Charley Kenny's office as well. They did come in handy in conversations where the identity of one of the speakers was open to question. This perhaps explained Dualler's use of a set, since he was engaged in a business that was illegal according to the laws of the Federation if not the laws of the United States of Mexico.

Dualler explained in detail what Osborn was to tell his assistant, and they sat chummily on the bench in front of the ike. The ubiquitous Jesus-Maria lounged against the far wall of the room with a gun in plain sight.

The call was put through; Kenny's round face snapped into focus on the screen.

"Homer!" cried Kenny. "Where in God's name are you?"

Dualler murmured: "Tell him—"

The critter king broke off as he observed that the hard object which had suddenly been dug into his ribs was the small pistol which Osborn had received from the Sikh.

"Just a minute, boss," said Osborn. He gave his head an infinitesimal jerk toward the unsuspecting Jesus-Maria, and told Dualler: "Send him out—and tell him to send Guja Singh in here."

Dualler smiled. "Do I have to search—" Osborn jabbed him with the muzzle, and the Mexican stopped his sentence and gave the required order.

Homer Osborn's muscles quivered tautly, and he could feel that Dualler's were, too; the slightest relaxation on his part, and either Dualler would be shot or would attack him, roaring an alarm.

"Boss," he told the visiscreen, "this is important. First, can you arrange to switch this call to the house of a Hindu politician named Arjan Singh in Delhi?"

Kenny's jowls quivered and his voice rose to a

squeak. "Are you nuts, Homer? Think of the expense, and it's the middle of the night in India—"

"I know. Can you?"

"I . . . I reckon so, if it's a life-or-death matter."

"It is." Osborn raised his right hand to bring the gun momentarily into the view of the ike. "Any minute now, Señor Dualler and I will be trying to kill each other."

Kenny's eyes popped, but he buzzed his switchboard operator and told her what to do. While they waited for the connection, Osborn told Kenny what had happened. He finished: "Now that you know where I am and everything, boss, I think Señor Dualler understands that he can't bump me off the way he was planning to."

"He was goin' to murder one of *my* researchers?" exploded Kenny. "Why, you fat, yellow slob, you—"

The department head had not yet run out of expletives when Guja Singh entered, and almost immediately afterward Kenny's operator announced that the call to Delhi was through.

Dualler was still silently smiling, though in a dark and dangerous manner. The screen winked, and in place of Kenny appeared a bald, brown, hook-nosed man in a dimly lit booth.

"Whozh calling me from Texas thish time of night?" yawned the newcomer.

Osborn, still keeping an eye on Dualler, asked: "That your old man, Guja?"

"Guja!" cried the image, suddenly wide awake; it rattled a string of questions in Hindustani.

"Easy, mister," said Osborn. "Guja, how many votes does you father control in the Assembly?"

"Three."

"Let's see—three from thirty-seven is thirty-four; that'll do it. Fine. You, Dualler, move over this way. Guja, you take Dualler's place." Osborn slid off the end of the bench to remove himself and his gun from the field of the ike. He lowered his voice to a murmur to Dualler. "You tell Mr. Arjan Singh that you'll bump off his son if he doesn't switch those votes in favor of repeal tomorrow. Get it?"

Dualler did so. Arjan Singh's eyes popped; he cried an agonized question at Guja. After some Hindustani dialogue, Arjan Singh announced in a voice of brave despair: "If it is God's will that my son shall die, he shall die. He will not betray the family honor."

"Then tell him," Osborn ordered Dualler *sotto voce*, "that when he arrived here you got him drunk so he ate a steak, and you've got a movie record of it, and will publish it if the votes aren't changed. That for the family honor!"

This threat finally broke down father and son. "I'll do it," said Arjan Singh, "but how do I know you will go through with your part?"

"Why shouldn't I?" smiled Dualler. "It is nothing to me if this one eats a whole steer at one sitting."

"But what is your object? This is a strange piece of black—"

Osborn reached over and pushed the switch.

Harmodio Dualler turned a puzzled face up to Osborn. He said softly: "I don't understand, my friend. The other, yes, but not this, unless it is to cause that funny vaccacide law to be repealed . . . that is it!"

"Yep," said Osborn. "Now—"

"So," interrupted Dualler, "we *rancheros* will no longer enjoy our position, eh? Those obscenities in Mexico City will not be afraid of us, and they will steal our ranches to divide among the peons, as they did under Cárdenas? The critter business of Mexico will again be destroyed? Very well, you have ruined me, Mr. Osborn, but you won't live to—" And Dualler hurled himself on Homer.

For a big man, he moved with rattlesnake speed; one hand caught Osborn's right wrist and twisted it violently before Osborn had the presence of mind to shoot. The other caught Osborn's neck in a vise.

"Guja! Catch!" cried Osborn, wriggling in this grizzly-bear hug. He flipped the pistol toward the Sikh, who caught it, stuck the muzzle into Dualler's ribs, and fired three times, the sharp crack muffled by the critter king's clothing.

Then there was a knock on the door, and Jesus-Maria's anxious voice: "Is all well with thee, boss?"

"Lock it," said Osborn, and he began searching furiously about the room for inflammables.

Guja Singh shot the bolt home, whereat there were heavier knocks and loud demands for admittance.

"Mr. Osborn," said Guja Singh, "how will you get those films out of the safe?"

"Think this place will burn?"

"Why, with all those oak beams, yes. I see!" The patrolman fell to work building the bonfire. Osborn lit the pile of crumpled papers at the base, and a tremendous bang on the door announced that the gang were trying to batter their way in.

The fire crackled and roared upward; the heat and smoke became nauseating.

Osborn told Guja Singh: "You pick up Dualler and make as if you were carrying him out from an accident. Lucky those bullet holes didn't bleed much."

Guja Singh heaved the massive body over his shoulder in a fireman's carry. Then Osborn threw the bolt, to confront a lot of amazed Mexicans with guns in their hands.

"The machine exploded," he announced. "Your boss is hurt, and the place is on fire." The last statement was not strictly necessary, as the communications room was a roaring oven.

The gang scattered with cries of alarm, yelling contradictory directions at each other to fetch water, fetch blankets, run for their lives.

Osborn and Guja strolled to the front door and out, through the courtyard, out the gate, and toward the truck park before somebody yelled: "Hey, you, where do you theenk you are going with our boss?"

Guja dropped the corpse, and the two dashed to the nearest truck. The key was in the ignition lock and the fuel tank was full. With gunfire crashing behind them, they whirled the vehicle around on two wheels and streaked down the road toward Cuatro Cienegas.

At 5:00 p. m. they arrived at the San Antonio laboratories. Somebody spotted them, and before they reached the Administration Building Charley Kenny rushed out to greet them on the front steps.

"Where's Gladys?" gasped Osborn.

"She went home; when we didn't hear from you all day—"

"We've been driving like bats from hell—"

"Yes; how did you escape—"

"Did the repeal act pass?"

"Sure, by one vote. Hey, George! Run in and phone Mrs. Osborn that Homer's back—"

"I'll phone her myself—"

"But wait, you haven't told me—"

While this was going on, people began streaming gradually up as if drawn by a magnet. They paid little attention to anybody save Guja Singh. The tall patrolman became visibly uneasy under their regard. He muttered: "What is this, another lynching? I think I'd better go."

He started to walk dignifiedly off; the crowd closed in on him and followed. He began to run, but the mob, with one Texan roar, pounced on him.

"Hey!" cried Osborn.

"It's all right," said Kenny.

"The hell it's all right! Gimme a gun or something—"

He broke off as he observed the actions of the crowd, which, instead of tearing the Sikh to pieces, had hoisted him on their shoulders and were parading him down the street with deafening cheers. Guja Singh looked bewildered.

Kenny explained: "Our switchboard operator listened in on your conversation with that guy in India, and she got it sort of mixed up, but reckoned as how your patrolman friend was makin' his old man swing the repeal vote. Anyway, that's her story, and all San Antone thinks he's responsible. Was he, or did you have a hand in it? Cain't imagine Harmodio Dualler doin' it of his own accord."

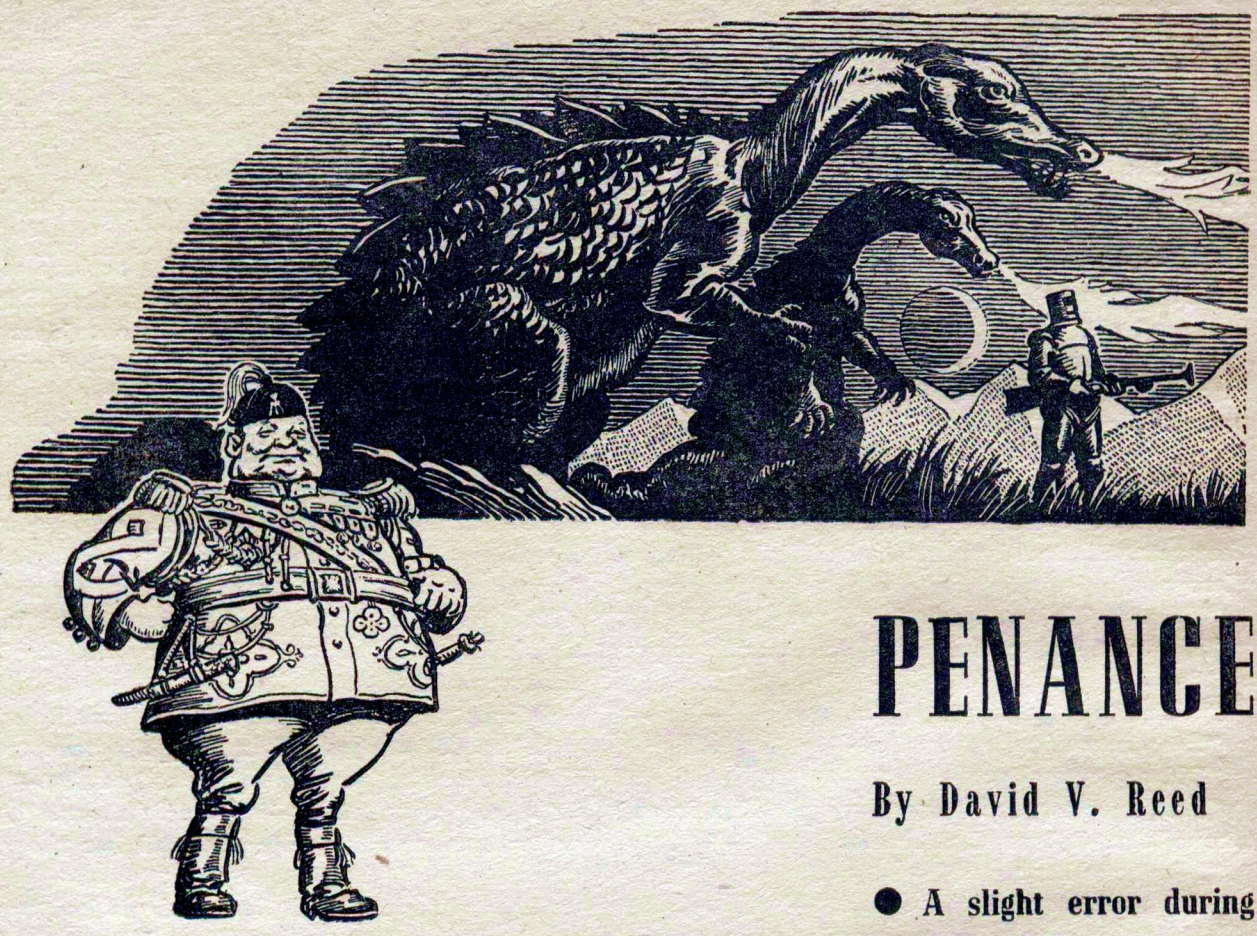
Osborn explained what had happened.

"Then it was your doin'! We'll have to see that the credit goes to you, instead of that—"

"I don't want the credit!" said Osborn. "All I want is to call my wife and tell her the good news!"

"What good news?" But Osborn had broken away and run into the building. Kenny followed as fast as his bulk allowed. He reached the phone booth in time to hear Osborn shout: "—Gladys? I got the greatest news in the world! *We're going back to Brooklyn!*"

THE END.



PENANCE

By David V. Reed

● A slight error during Jones and Bascomb into General Cheroot's orange can gendarmery. So they ance cruise. And

Well, we've been swapping yarns long enough for you to kind of admit I know a few. Maybe some of them are just all right, and some are better than others, but one of the best I know is that one about Fletcher Jones and his strange voyage to Forelle, the land of the fire monsters. It's a romantic story, I suppose, but what story about Jones could be otherwise?

It began in Exotica, on one of those incredibly lovely evenings they have in that far-away world. You know, warm south wind sweeping up from the sultry Para Bay, tropical trees transplanted from every planet in the System weaving like native dancers in that warm south wind, and three moons—count 'em: just as advertised by the Exotican Chamber of Commerce—three moons, friends, shining in the night sky like pools of silver. I might have brought back some beautiful memories from a place like that, but I didn't.

Our ship, the USICS destroyer *Star Swallow,* bound for war games and maneuvers, had space-anchored off Exotica long enough to refuel and take aboard Lieutenant Commander Ransom, our squadron commander. But since we had come all the way from the Tonda base on Mars in one jump, Lieutenant Haddock, executive officer of the ship, decided to let a large liberty party ashore. A commendable idea, especially since I was to take the party in myself. Ensign Jones, however, held another opinion, which he expressed in his own enigmatic way.

"Mr. Bascomb," he said to me, "in the short time that you have been aboard this ship I have come to regard you as more than a brother officer, carelessly assigned by fate to share my quarters. I feel a deep affection for you, Mr. Bascomb, an affection and an abiding—"

"Not a chance," I said. "Nothing doing, Mr. Jones. Orders is orders. Affectionately yours, Mr. Bascomb."

"—an abiding trust in your natural gentility of nature. So it is without hesitation that I ask you to weigh your orders against the innate nobility of your instincts."

"A fond farewell. Instinctively yours, Brother Officer B."

"Have you a cigarette?" said Jones, changing pace abruptly. "My nerves are shot. Captain Castle and Haddock ashore somewhere in a winery, you going down with the liberty party—and me, a pox on my young head, left to nurse this vessel through a lonely night. Below, loveliness in

CRUISE

Illustrated by Orban

overcelebration got trouble—that, and fat uniform of the Exoti- were sent on a pen- what a cruise!

abundance, merriment, soothing liquids, cascades of melody—and here a stony vigil, a rendezvous with silence."

He took a light from me, arranging for his hands to tremble, while he simultaneously choked back a sob and gave me a brave, fleeting Suicide Patrol smile. I was through. In the end I countersigned his liberty pass, a necessary business, though we were of equal rank, because Lieutenant Haddock had grimly informed me that the Exotican gendarmery had been instructed to honor only my signature. Haddock had anticipated Jones' craving for loveliness in abundance, Jones had anticipated Haddock, and I had anticipated Jones. I ask you, did it help?

We left the ship in the launch, with Peters, oiler extraordinary, currently afflicted with a bad headache, in charge. Castle and Haddock would return to the *Star Swallow* by morning, in time for blast-off. We would be back at least an hour before them. Castle and Haddock were at the Genii Room, their favorite retreat, but we would shun the place. Also, we would drink no more than two; avoid heated discussions with strangers; failing that, refrain from hitting back; recoil from conversation with any escorted ladies, no matter how beautiful. The rigid enforcement of these rules left to Mike Connally, Bos'n First Class, faithful vassal of Jones, and pledged to sobriety for the duration.

I mention this weary catalogue of good intentions only because it figured prominently in our court-martial the next morning.

By then the *Star Swallow* had overstayed long enough to be joined by three more destroyers, a cruiser and a ship of the line. This sad event, together with rampant exaggerated versions of our activities the night before, honored our court-martial with the presence of Admiral Stone and the commanding officers of our division, flotilla and squadron. It was an instructive affair for everyone, including Jones and myself, because we couldn't remember much of what had really happened. Let me quote several passages from the record.

Admiral Stone: Let me get this straight. You, Mr. Bak-bak, were the bartender for the party all evening. They arrived, in your judgment, quite sober. Ensign Jones had no more than two drinks, Ensign Bascomb had one, and Bos'n Connally had none—yet all three men, according to other witnesses, were in a state of

complete intoxication within fifteen minutes. How do you account for it?

Bak-bak: (translated from Exotican) The incantations, perhaps.

Admiral Stone: What incantations?

Bak-bak: Mr. Jones insisted on them.

Captain Castle: Mr. Bak-bak, most of the members of this court are unacquainted with the procedure involved in mixing the drink which Ensign Jones called for. Will you explain it, please?

Bak-bak: Delighted. You must know, gentlemen, that we do not serve this drink to anyone. In order to procure it, a password is absolutely required. You must say, *"Gabo esri mattana."* (Approximate translation: "Gabriel sent me.") After this I try to talk the customer out of it. If I do not succeed, I adorn myself with a special pair of smoked glasses, put on my rubber gloves and begin. This drink, which has many names, among them *Chetatta*—Witches Epitaph—and *Fuoresa del Karbaf Onos*—Carnivorous Flower of Interstellar Civilization—is made from twenty-one ingredients. It is usually brewed by our natives deep in the jungle. The ingredients combine to form a flame of many colors which is allowed to die. Then add two parts of soda. Immediately a cloud of green steam forms, which is captured in a special bottle, allowed to settle, and served with a sprig of graveyard moss. This drink then performs mirages, minor miracles and cures ulcers. Sometimes a customer insists on the accompanying incantations, in which case he is required to sign a release, since the incantations undoubtedly—

Admiral Stone: I see. Do the natives drink this brew?

Bak-bak: Never.

Commander Ransom: Mr. Connally, you believe you were sober during the altercation at the Sirocco Club, do you not?

Connally: I didn't say that, sir. I said that if there was any justice in this world, I would have remained sober. Because I didn't so much as take a sip of the drinks, sir. All I did was inhale that green steam. It was enough, sir.

Commander Ransom: Then what happened?

Connally: I died, sir.

Commander Ransom: You did what?

Connally: I died, sir. Instantaneous.

Admiral Stone: How do you account for your presence here now?

Connally: It must be one of them miracles Bak-bak mentioned.

Admiral Stone: And what did you do when Mr. Jones insisted that General Cheroot was a floating mine, sir?

Ensign Bascomb: I expressed my doubts, sir.

Admiral Stone: Nothing more, Mr. Bascomb?

Ensign Bascomb: Well, sir, truthfully speaking, I wasn't certain about anything I saw. I had no idea it was General Cheroot or any other Exotican gendarmery officer. At first I saw what appeared to be a man about five feet tall and about four feet wide, dressed in a bright-orange uniform, and it seemed to me that he was escorting three very pretty girls. Then Mr. Jones shouted that he saw a beautiful girl marooned in space alongside an explosive floating space mine.

Admiral Stone: That convinced you?

Ensign Bascomb: Yes, sir. You see, I decided there couldn't be anybody five feet tall and four feet wide. And he was wearing orange, which unfortunately coincided with the standard color for mines. When Jones shouted there was only one girl, I decided I was drunk and seeing triple, especially because everything else was blurred. So it seemed quite logical at the time that Mr. Jones shouted. I tried to help him, but I couldn't move. My limbs seemed to be melting.

Admiral Stone: Your larynx, however, remained in good shape, according to these other witnesses who have testified that you sat at the bar and clamored for Mr. Jones to hack the general with an ax.

Ensign Bascomb: I have been misquoted, sir. I merely cheered Mr. Jones on with the old Academy yell —"Brackety-ax-co-ax-co-ax, brackety-ax-co-ax: kill 'em!"

Commander Ransom: The rest of the particulars, please.

Sergeant Potho: (translated from Exotican) Ensign Jones then escaped with the three ladies, committing several assaults on my fellow members of the gendarmery on the way. He stole a motorcycle and sidecar, ran into a passenger vehicle, assaulted the driver and two of the passengers. He then appeared at the spaceport, where he claimed the launch of the *Star Swallow*, which was waiting for the crew to return, and led the three ladies into it. He was observed flying away in a southeasterly direction, and was finally found hovering over the local reservoir, demonstrating fancy diving. At this time Ensign Bascomb was summoned, and he persuaded Ensign Jones to land.

Commander Ransom: That ended the affair?

Sergeant Potho: No, sir. He landed the launch on top of five of my men.

Admiral Stone: You are entitled to plead your own defense.

Ensign Jones: I have no defense, sir. My only excuse, if I may call it such, is an overwhelming love of beauty. My one regret is that I never learned to harness my disastrous yearning for romance. I need affection, sir, and I need love, precisely the way the *Star Swallow* needs fuel. In common parlance, sir, I am a sucker for romance. I throw myself at the mercy of the court.

Admiral Stone: Ah-h-h-h-h-h.

Well, the court-martial recessed and arrived at a verdict within ten minutes. Only it didn't reconvene to pass sentence. After the officers left the gendarmery building, where all this had taken place, Captain Castle and Lieutenant Haddock came out and sat down beside us. The large room was empty now except for us, and it was as silent as a tomb. Captain Castle stared thoughtfully out of a window, looking like a great, calm lion, and now, as he licked his lips before speaking, the picture assumed a macabre perfection.

"Well, Jones," he sighed, "I did what I could."

"Thank you, sir."

"I tried my best, Jones, believe me."

"I know you did, sir."

"I tried not to think of your past regrettable interludes. The time you kidnaped that Tyuionian princess, for instance, or that episode where you sold the admiral's dory to pay a band for serenading a girls' school, or your amusing adventure with that troupe of native dancers in Kayam. Or was it Azberib? Yes, it was Kayam; I was confusing it with that religious dance festival where

the marines found you getting married. Anyway, I tried not to think of the past, Jones."

"I am deeply grateful, sir."

"I'm glad to hear you say that, Jones. Frankly, there have been times when I imagined you felt your superior officers were not quite . . . ah . . . fond of you. Like last night, for instance, when you were assigned late watch while the crew went ashore. I wondered if you understood the motives behind that. Be honest now, Jones. Have you ever thought that either Lieutenant Haddock or I didn't like you?"

"Yes, sir."

"You see, lieutenant? I told you he thought so." The captain mused a moment, then added, reflectively, "Well, Jones, I can't imagine where you got that idea, except for the fact that we loathe you, cannot abide the sight of you, and frequently feel ill at the mention of your name."

"I used to lie awake nights," said Haddock, "conjuring up visions of you being devoured by some unspeakably weird animal."

"At this very moment," said Castle, "some thirty or forty sorcerers in my employ are sticking pins into images of you." Surfeited with pleasantries, he smiled a gentle, leonine smile. "So let me tell you what the court-martial decided. It appears that the Exotican authorities asked Admiral Stone to detail a ship for a special, local mission. Because of the war games, no ship is available. However, you will be glad to hear that the gendarmery recently purchased a military vessel, and is perfectly willing to undertake this mission except for a dearth of trained officers.

"Do you follow me, gentlemen?" the captain sighed with a glance at Jones. "You see, General Cheroot himself proposed that we make a deal. Seeing that he will personally command this expedition, *and* in view of your recent close contact with him . . . I see you understand. Both of you have been assigned to courtesy duty as navigation and gunnery officers in the Exotican Navy, or whatever they call it."

"Both of us!" I cried out. "Sir, you can't mean that—"

"But I do, Mr. Bascomb, believe me. You're the one who let Mr. Jones loose, a crime of considerable magnitude."

"But, sir!" I said. "Cheroot—"

"General Cheroot, sir. Your superior officer."

"Yes, sir. General Cheroot, after last night . . . putting us in with him on this . . . it's . . . isn't it . . . he must be furious!"

"Far from it. As a matter of fact he seemed quite amiable when he proposed dropping charges. Of course, he *is* rather a peculiar man, as you may discover, and he may have been pretending. These Exoticans are sometimes difficult to fathom."

Captain Castle's smile had slowly dissolved as he answered me. During his pronouncement he had carefully regarded Jones, waiting for his reaction. He seemed nettled by the fact that he had elaborately staged this for Jones—and, make no mistake about it, he had—and I had done the yelling.

"Come now, Jones," he said, half bitterly, "you're soon to be off on a secret mission with a remarkable man, under conditions which must be regarded as unusual. Surely you have some questions?"

I'll say this for Jones: he didn't bat an eye. I knew what it meant to him to miss the war games. He had kept me awake night after night talking about them, eager and anticipating, and he had spent most of his free time brushing up on his navigation, because Captain Castle had promised to let him act as navigator during the games. But he calmly folded his arms and regarded Castle, like a veteran, clever fish that was being offered irresistible bait.

"Yes, sir," Jones nibbled. "May I ask whether this duty is to constitute the full penalty imposed upon us by the court-martial?"

"Yes and no, Jones," the captain played the line. "No further penalties, and restoration to active duty and all privileges upon satisfactory completion of this assignment. However, you will be required to keep a log which will be added to your service record and submitted to Admiral Stone, thereafter subject to all rewards and penalties—precisely as if you were on duty with the fleet."

"Thank you, sir. And how long are we to be gone?"

The captain smiled. "Only General Cheroot can answer that."

"Thank you, sir," said Jones, swimming away.

The captain seemed startled. "Well," he said abruptly, "aren't you surprised at any of these conditions? Don't you wonder at the singular generosity of the court-martial?"

"No, sir. You told me you had tried your best. I think you succeeded admirably. Thank you again, sir."

Did you ever have a fish come up, eat your bait, chew up your hook, swallow the sinker, line and pole, and then belch in your eye? The captain grew the least bit crimson around his collar. He stood up, and we all stood with him, and he smiled at Jones. So I knew that somewhere in the little tidy vessel that Captain Castle had come fishing with, there was a harpoon.

"My success," he said, "will undoubtedly impress you more, in good time. Because there's no romance on this trip, Jones, no romance at all. Believe me."

With that, and a round of smart saluting by all hands, Captain Castle and Lieutenant Haddock left. I wanted to say something, but I was in a daze. Jones' visored cap was lying overturned on a chair near me, and I could make out the little

letters inside: *Ensign F. Jones.* Idly, I thought, *F* for Flamboyant, Foolhardy—a man with a monstrous weakness for all things Feminine. I asked myself what I was doing there, and the answer seemed quite clear: Fathead.

II.

A minute later, a gendarme came in and told us that General Cheroot was waiting outside. We went out into a sunny morning just as the surface wagons that carried the fleet officers back to the port were disappearing into their own dust. And there, sitting in a taxiflier that had evidently been built for him, was the general.

I looked at him and I didn't believe it. You really had to be drunk the first time you saw him. He was a round, enormous mass of smiling man, swathed in billowing yards of green and crimson uniform, blazing with medals, sashes and small daggers. He waved to us and the daggers jingled, and his reddish-tan face creased beautifically as he let his smile out. When we were fifteen feet away, we caught the first waft of the amalgam of perfumes that rose from his body, withering the atmosphere with a faint haziness like heat waves.

"How do, gents!" he cried, cordially.

I gulped, as I recall it. "You mean you ain't mad?" I said.

"Why I should be mad?" the general demanded. "For last night? What has happen last night is water in the britches! Let gonebys be good-by! I am so joyous to have two nize officers, young mans, in such fine uniforms blue as the sky. Such a wonderful day! But come—you will please to amble along with me on an errand of inspection, hey?"

"Hey!" said Jones.

We climbed into the taxiflier and it took off. All the way to the Para blastport General Cheroot spattered us with his unorthodox idioms. "I have learned the English from correspondence school," he confided once, "and the rest I raise from the magazines I read."

When we got to the port, there were dozens of gendarmes milling about. High overhead we could see the misting forms of fleet launches returning to their ships, and distant, flat smashes of thunder told us that rockets were testing far away. Jones turned his head away sharply and we followed the general as he waddled out on the field.

In one corner of a huge blasting pit a battered old hulk of a spaceship reclined. It was so incredibly rusty and ancient and begrimed that it looked as if it had staggered into port to wheeze a little and die, if only someone would let it.

"Behold!" the general gurgled, proudly. "This is *La Pochata Eggrimmaggratta!* In English this is mean, 'The Bird with the Magnificent Wings Like the Morning Sun'!"

"Did you say mourning?" said Jones.

"La Pochata Eggrimmaggratta," said General Cheroot, wagging his head vigorously, "is the Navy of Exotica and I am the admiral."

"I thought you were a general," I said.

"I am," Cheroot agreed, "but in this boat I am also the admiral. Also, in the mountains behind Para, I am the sheriff. Hey!"

Jones was about to answer with a similar shout when he perceived it had been meant to call out a squad of gendarmes. They came pouring out of a hangar, little men as brown as Cheroot, grinning merrily. At this moment, someone inside the ship opened the crew lock, and with a sweeping bow, invited us all to enter.

The inner door of the lock was about a yard wide, a normal enough door, but when I juxtaposed it against the general's girth, I found myself with an absorbing problem. Something would have to give way if Cheroot really intended boarding the vessel, and sizing the opponents up again, I figured it thirteen to five on Cheroot or even money for an Exotican stand-off.

When the gendarmes reached us, there was a mutual exchange of bows—and suddenly the general made a dash for the open door. He charged down on it, his head lowered, his breath like the trumpeting of an anguished bull, and he plunged into the lock. The outer door was wide; unpausing he charged through. I remember the way the ship shuddered from the impact of that mortal blow, and when the dust cleared, there was General Admiral Cheroot, firmly, inexorably, unhappily wedged in the inner door, half in and half out, coughing and puffing and squirming.

"Hey!" he shouted.

The squad of gendarmes swarmed around the exposed portion of the general's body, pushing and tugging while they chanted a native work song, cheerfully sweating away and admitting no defeat, until, inch by inch, they had stowed their chief inside. He immediately turned around, smiling and out of breath, and beckoned us to follow.

"Somehow," said Jones, as we stepped easily across the sill and into the boat, "I begin to get a strange feeling, Mr. Bascomb."

If the vessel's exterior had given the impression that she was dying, the interior furnished a more explicit diagnosis. The insides were worn and rotten, as if some metallic fever had laid waste to it. Fragments of clothing, some six-month-old Venus funny papers, a can of paint, a telephone directory from Jupiter, and somebody's tennis shoes littered the deck. The overhead was covered with a fine gray coat of dust that hung there in unconscious defiance of gravity, and everything else about the vessel seemed to disprove most of the other natural laws.

The ship was a mere hundred and fifty feet long,

a veritable cigar butt, as Jones had observed, but her crew numbered no less than a score of men. Their uniforms, in contrast to the general's splendid circusy affair, looked like they had come in with a recent tide. One of the crew, who was asleep in the navigation cranny—it was no more than that—was enveloped in a long, sleezy nightshirt, and several others, grinning and chattering, clung together in a companionway like a cluster of bats, attired, to suit the unbearable heat of the blistered interior, in nothing more than underwear.

General Cheroot, crying out hearty greetings, led us forward, moving in the tubular confines of the companionway like a fat piston in a cylinder. Just before he reached the bow, he managed to open a door and disappeared inside. We followed him in and found ourselves in a spotless, luxurious room, faced by mirrors that lined every square inch of the bulkheads. Cheroot struck a heroic pose before the battery of mirrors and said, "This is my bunk, gents! Take a burden away from your feet and sit down."

We sank down. There was a huge, circular couch in the center of the room, and wherever one sat, he was constantly faced by a reflection that stared back at him; in our case, by bewildered reflections.

"Nize, cozy joint, hey?" said the general, happily.

"Yezz," said Jones.

All I said was: *"What's that?"* Meaning the sounds I heard of ports being closed, and a sudden rush of air that indicated locks shut.

"We are off!" cried Cheroot.

He plumped down on the couch before the ship could roll him off his feet. The deck lurched, and somewhere, something made of metal buckled and snapped. A horrible, ear-splitting roar, then another, and I knew by then what Cheroot meant. I knew it from the heavy pressure against my chest and the ache in my ears. We had blasted into space.

As soon as the ship righted itself, Jones gasped, "General, we can't undertake a trial run until we're sure she's spaceworthy!"

"But that is a surely," the general gayly responded. "I have many times employed her on excursions. Come, I exhibit the controls."

There was nothing to do but follow him. We swung up to the bow where the bridge was, and there we were greeted by a sight that made our blood congeal. Two of three braking stays, twisted and shattered at some past date, had been repaired with a few unraveling strands of cheap twine. The gravity disk stood at .0003, a logical reading for a deep-sea expedition, and the navigation wheels were performing a rumba.

I took one look and leaped to the amberglass ports. Far below, and still dropping away, was the little golden ball that was Exotica. I made this out only after I had found a clean spot in the amberglass, which was so filthy and oil-stained that vision remained something vaguely desirable, if impossible.

"This is insane!" I chattered at the general. "We've got to go down immediately, before this damned tub falls apart from exhaustion."

"So?" said the general, arching a brow. "I think it is too late, but I will call the captain."

He leaned back into the companionway and shouted something, and in a few moments, a nut-brown little man attired in a long oilskin coat and thick-shelled goggles appeared. Barefoot, he pattered up to the bridge and listened attentively to the general. Then, suddenly, the little captain loosed a torrent of unintelligible Exotican phrases.

"What does he say?" Jones said, impatiently.

General Cheroot cleared his throat. "You want to know what he say? He say the windows are too dirty on the bridge, so he like to stay in the tail and watch the scenery. He likes scenery."

Jones' shout drowned out my groan. "What does he say about landing the ship?"

"I must find this out," replied the general, energetically. Again he spoke to the captain. Again the captain replied with a tirade, finishing with a flourish and showing his tongue. The general turned back to us. "You want to know what he say? He say I have been going with his sister too long, and his mother say I should marry her."

"But what about the ship?" Jones bellowed.

"He don't talk about the ship." Cheroot shrugged, helplessly. "He don't like her, so he don't talk about her." He gestured with his hands again and sighed, "Sometimes I decide he is nuts."

Maybe this sounds funny now, but as Captain Castle would say, believe me, it wasn't then. It was like beating one's head against a pliable wall, and the wall kept contracting, closing in. I felt that I had to remember to keep breathing or I would stop. And Jones must have felt the same way. He had quieted down, as if to take firm hold of the remnants of his sanity, and he looked from the ball of perfumed meat that was the general to the apparition that was the captain. Then, without a word, he turned to the controls himself and began to manipulate them, trying each of the control buttons in turn.

The ship made no response. Jones faced Cheroot and said, very quietly, "How does this ship land?"

"Land?" the general repeated. "Oh, to land! I begin to spot a mistake I have made." He laughed good-naturedly at himself. "All the time I think you just want to go down, not to land. To answer this question I do not require the captain. The answer is: we do not land until we depart at our destination."

I said, "you mean 'arrive'—not 'depart,' don't you, sir?"

"The same difference," Cheroot nodded. "If we do not depart, we do not arrive. So let be your way. We do not land now until we arrive at our destination."

"You mean we're already on our way?" Jones asked. "You mean this isn't just a trial run? Not even a trial run?"

"It is a surely it is a trial run," said the general, vigorously. "You are here because you have been on trial at the court-martial, no? So, you are assigned to this voyage! Yes, we are on our way!"

"Where?" said Jones, breathing hard.

"I do not know. The orders are seals."

"Sealed orders? Whose orders?"

"My orders."

"And you don't know what they are?" I said, incredulously.

"It is a surely I know!" the general cried, happily. "But once I read some place that a navy is always going to dangerous places under seals orders, so I make seals! And soon, when you have decide I am a peacock's dimension, I unseal the orders for you, just like Captain Castle say."

"What was that last remark?" said Jones, swallowing. "I thought I heard something about a peacock. Would you mind repeating that last statement in reference to unsealing orders?"

"You want to unseal the orders, Ensign Jones? Yes?"

"General Cheroot, I am dying to unseal the orders. Yes!"

"So you have decided I am the dimension of a fine peacock?"

"Mr. Bascomb," said Jones to me, "did you hear it, too?"

"Keep me out of this," I said, hoarsely.

Jones decided the only way he could stop his hands from trembling was to put them into his pockets. "General," he said, trying to control his voice, "you have the dimension of a fine herd of buffalo. Now will you unseal the orders?"

"Is too bad. Impossible to unseal orders. Impossible."

"Are you kidding?" Jones cried out. "You want to be a peacock? All right, you're a peacock!"

The general nodded compassionately. "I am afraid you do not understand," he said. "I am overhear what your Captain Castle is say to Lieutenant Haddock. He say by the time I am ready to unseal orders—are you listening?—by the time I am ready for this, you must have decide I am a fine dimension of a peacock. But since you have not decide yet, it is not time to unseal orders."

Jones looked at me, but I broke first. I sobbed and blubbered a little, and then I saw the wild gleam of inspiration in Jones' eyes.

"General" he burst out. "Do you mean *dementia praecox?*"

"It is surely! Dimension peacock!"

An interminable moment of silence dragged by. Presently, Jones said, with fearsome sincerity, "General, at the peril of being an accomplice to the most masterly understatement of the last decade, I agree with Captain Castle. You're the finest dementia I ever saw."

"How nize," the general murmured. "What that means, hey?"

"It means that you're a repellent mass of fetulant putrescence. That means: The Man with the Soul Like an Angel. And now, the orders."

"You are too nize," the general laughed, and his several bellies rolled like some cadaverous sea anenome shaking itself. "Your Captain Castle, he say when the time is come to unseal orders, for me to give you this letter. He say this letter is make clear everything."

Feverishly, Jones grabbed the envelope which Cheroot produced from under his crimson sash. There were two folded sheets inside, one of them the official maroon of the Service. I read them with Jones, trying to keep the words from spinning with my head.

FROM: Admiral Stone, aboard *Aurelia*, Exotica Base HQ.

FROM: Lieutenant-commander Castle; Captain *Star Swallow*, EBHQ.

TO: Ensign Richard Bascomb; Ensign Fletcher Jones.

Proceed aboard flagship of Exotican Navy, gunboat *La Pochata Eggrimmaggratta*, to planetoid Forelle, located in Ghort planetoid group. Upon arrival, you will take into custody Captain Littlejohn Place, who is under indictment for murder and is wanted by the government of Exotica. You will deliver Captain Place to the Gendarmery of Exotica upon your return.

The other piece of paper had two scrawled messages on it. One, in the handwriting of Captain Castle, said:

Remember the motto of the Academy: IT CAN BE DONE.

Yours in romance,

C. C.

P. S. Brackety-ax-co-ax! Haddock!

"Your Captain Castle also gave to me a book and some mops," the general was saying. "He say you will need them."

But I wasn't listening to the general. I was watching Jones. His face was the darkest white I had ever seen, and I knew why, because I knew what our orders meant, or thought I did. Possibly, if I had really understood what was involved, I would have—

What's the use of talking? There was nothing I could have done, and I did nothing. I just followed Jones back to the general's couch and lay down for a while.

III.

But I learned, little by little. I compared what I knew with what Jones told me, and I read the book that Castle had thoughtfully left—"A Short History of the Ghort Planetoids." And from the "mops," which turned out to mean maps, and from the frenzied intelligence which the general imparted, I began to understand what our mission meant.

I had only one doubt. "Captain Littlejohn Place," I mused aloud, while Jones read the book. "Do you suppose there could be two of them?"

"They would have met in a bloody duel and killed each other," Jones observed somberly. "No, there was only one Place. Haddock knew him. He said he was so tough he shaved with a heat gun."

As I knew well enough. I discovered I knew more than I thought, whenever I could summon up the courage to think about it. Place's voyages had provided more than one thrilling chapter in the textbooks I had used as a cadet. He had almost achieved the status of a legend, blasting a hundred trails through the System, and then he had retired to a peaceful life, to a little planetoid named Forelle, in the distant, forsaken Ghort group.

Did I say peaceful? What I meant was profitable, though it was quiet enough, I imagine. In the years while Tyuio was becoming a great trading center, Place had foreseen what would happen. The increasing traffic of liners and freighters that made the long Jupiter-Tyuio hop had naturally used a large part of their stowage for food and water. Just about that time, Place, cashing in on his merited reputation as a daring navigator and pioneer, was making bales of money escorting scientific expeditions to the Ghort group, which had become famous for its indigenous beasts, the fire monsters. Nosing around, Place chanced on Forelle, which alone among the entire group of planetoids possessed a sizable body of fresh water.

He claimed Forelle, probably passing it off as frontier whimsy, and none of the governments near the group—the nearest was Exotica, nine days away, and busy staging refined orgies for its tourist festivals—contested his acquisition. Wild, treacherous land, they assumed, inhabited only by fabulous, fiery mammoths they had seen only in films or museums—a suitable abode for Littlejohn Place. No one apparently noticed that where Forelle lay was almost halfway between Jupiter and Tyuio.

With the result that soon afterward, the entire Jupiter-Tyuio traffic was stopping at Forelle for water, and buying provisions from Place at interesting prices. Now the liners and freighters could save half the stowage they had formerly devoted to these necessities, and use the space for paying freight. Place adjusted prices accordingly.

Well, there was more to it than that, but what was important to us was the alleged fact that Captain Place had committed murder. The story of that murder was as unreasonable as everything about the voyage had become. General Cheroot, dining with us in the tiny wardroom next to his private quarters, elaborated on this story.

"I decide he is nuts," said the general, devouring a pastry. "Captain Place is a total nuts. He live with himself for three years. Maybe he make too much money. Maybe the quiet life is too much. Anyway, I hear pretty soon he don't like nobody and he kill anyone he don't like. You know Captain Place."

"I don't get it," said Jones. "Not that I doubt his talent for homicide, but he was supposed to be a nice guy most of the time, and—"

"The case is close," the general stated. "If a hunter want to take the fire mounsters, Captain Place have no right to stop them, even if he is boss of Forelle."

Which brought us again to the enormously interesting dossier of facts concerning the fire monsters, culled from Dr. R. L. Andrews' book, "Short History," a lousy nine hundred fifty-four pages. The Ghort group, as I said, had first achieved fame as the home of these monsters. Learned scholars inclined to the theory that the group had once been a single body, which, as it broke up several billion years ago, scattered the entire species among the group. The monsters were fifteen-ton animals, supposedly capable of breathing fire on suitable occasions, and described as a cross between prehistoric dinosaurs and legendary dragons.

In the years following discovery, many expeditions tried to make off with some of these monsters. The results were peculiar. Invariably, after the monsters had been lured into specially constructed vessels, large enough to transport them to the London Zoo, they died within a few days. Moreover, immediately upon their death, decomposition set in at such a furious pace that scarcely a carcass remained by the time it had been brought back. Nothing had ever succeeded in arresting this queer, perverse decomposition.

Dr. Andrews, in his factual dragnet, commented on this in the following plaint: "It was as if a bewildered Nature, having suffered the living animal to exist longer than any of its brothers in the Universe, decided, upon its death, to hurry it to its original dust as quickly as it could, thus hoping to hide the cosmic error."

Well, the reconstructed specimens were worth enough to send a swarm of hunters after them. Again the results were startling. No one was able to kill a fire monster. Possibly a gun of military caliber could have done the trick, but it would also have destroyed the specimen. Nothing else worked. The monster had to be enticed aboard a ship large

enough to house it, and shortly after the ship left Forelle the monster died in its own way, presumably of its own volition.

After a decade or so of this practice, the fire monsters became alarmingly scarce. An interplanetary convention, while reaffirming the law that the animals belonged to the public domain, enacted a clause forbidding the hunting of any save adult specimens, offering a lengthy chart of weights and measurements. The last of the known adults had been killed about the time Captain Place had taken Forelle, and the poor monsters, on the verge of extinction, had presumably drawn fiery breaths of relief.

This was the curious background of the mission which now stared us balefully in the puss, and which understandably baffled Jones a bit.

"Let me just try to get this straight," said Jones. "This party of hunters discovered that there were two adult fire monsters on Forelle. They were within their legal rights in attempting to take them, but Captain Place shot their leader dead. Right?"

"It is a surely."

"Who was it?" I asked. "Anybody well known among scientists?"

General Cheroot smiled broadly. "Oh, he was well known. It was this man Claude Ponteret."

"What?"

"But it is a surely!"

This was a strange development. Ponteret, who had accumulated a tidy fortune through a variety of shady enterprises, was hardly the man to have gone after such game. There was money in it, but not enough. It was too dangerous a project, especially with Place around.

"Well," said Jones, "if it was Ponteret, there's probably a question as to whether or not the monsters were adults. Not that it makes much difference," he added, thoughtfully. "Place had no right to stop him, no matter what he did. But I still can't see Ponteret investing in a special ship and equipment for the job."

"He don't have no ship," said Cheroot. "He come in a small ship and I see it have no place for the mounsters."

"But how could he possibly have come after the monsters if he had no room for them?" said Jones.

After some prodding, it turned out that the general had personally spoken to the survivors of the hunting party. They claimed that Ponteret had secured a revolutionary new preservative which would enable him to bring back intact specimens, worth plenty. But to use the preservative, it was necessary to kill the monsters quickly, instead of waiting for them to die of whatever they died from.

"I suppose," I asked, "that Ponteret had that worked out, too? He knew how to kill these monsters?"

The general nodded as he prepared to mangle a fresh pastry. "He have special bullets made. After he kill the mounsters, he stick in the new presergative. Then he wait a few days and another ship, a big one, come for the dead mounsters."

"Hah!" Jones scoffed. "A likely story! Did you get to see any of these special bullets?"

"Yes, I see one. Captain Place, he grab one of the hunters' guns and kill Ponteret with it. The hunters bring back Ponteret's body to Exotica and the doctor is make an . . . an . . . how you say? . . . autopsy. Well, he take out this bullet which kill him and I see it."

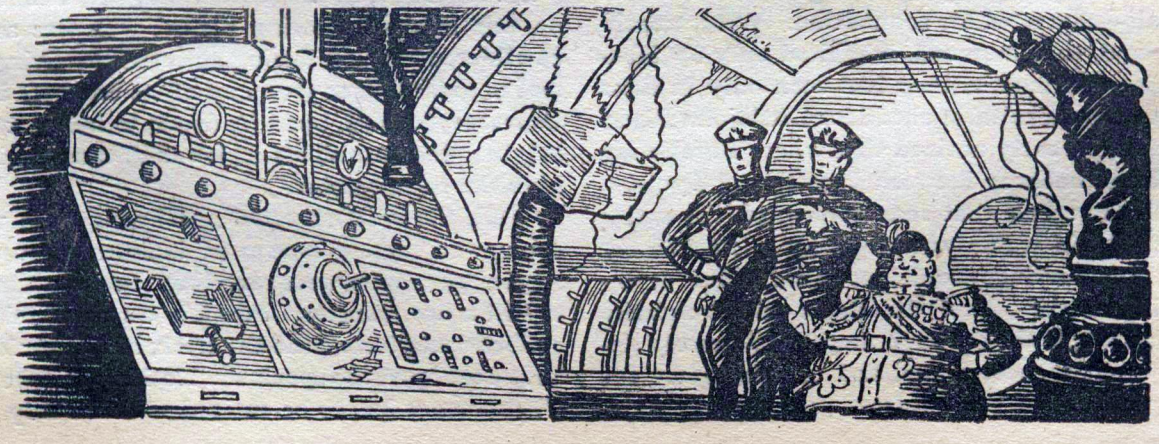
Jones directed his puzzled stare at me. I shrugged.

"Also," said the general, "I have take along one hundred of this special bullets with me in this ship."

"Really?" cried Jones, delighted. "May we see them?"

"As soon as I am finish with this cake."

The general authoritatively dispatched his cake and produced a heavy wooden case, carefully bound. The bullets were five-inch-long projectiles, deadly, dull-gleaming blue-steel alloy. Apparently they had been designed to pierce the armor of the monsters, but despite this specialized task they fitted into the breach of ordinary projectile rifles,



the kind used to shatter amberglass windows, and of which the general had several.

Jones balanced one of these heavy rifles in his hands, as if he were weighing it, and his puzzled grimace returned.

"Odd," he muttered, "that Place should use one of Ponteret's rifles to kill him. Why didn't he use his heat gun, with which he is supposed to be a fiendish marksman? Again, Place supposedly grabbed the rifle from one of the party, but how did he get that close to them? Assuming that Place did grab it, and swung it into firing position before anyone could stop him, how did he escape the others? It seems to me that his activities should have produced more casualties."

"Bloodthirsty reasoning," I said, "but sound."

"What's more," Jones added, "in view of the haphazard way this vessel is managed, doesn't it strike you as queer that this blob of flaccid bull-beef who commands it should have had the foresight to bring along these bullets and rifles?"

Jones had taken to speaking in obscure or polysyllabic words when he wanted to keep General Cheroot out of our conversations, with excellent results.

"Let's ask," I said. "General, why did you bring these along?"

"Because you will need them if Captain Place is get mad."

"But we've got our heat guns," I said, "and they're certainly more effective, if it comes to that."

"But what you will do with the mounsters?" the general demanded. "The heat gun she is no good for the mounsters."

"What have the confounded mounsters got to do with this?" said Jones. "We're going to keep away from the mounsters."

"But maybe they will not keep away from you!"

"The fire monsters never bothered anyone first," I said.

"Not these mounsters!" cried the general, bursting into a wild fit of laughter. "Captain Place, he have the control of these mounsters! They do what he say!" He wagged a forefinger at us. "The mounsters is watch the water for him, and if Place he say to kill, they chase and kill! Why you think the gendarmery is bother to go after Place?" the general inquired. "Because he is murder Ponteret? No, no. That is a sad business, but it is the business of the fleet, not for us.

"But we go because since Place is kill Ponteret, he let no one land on Forelle any more. If they land, he send the mounsters after the ship, so now, for three weeks, all ships is come to Exotica, and the beautiful towns is fill with drunken sailors. We want the ships to go back to Forelle, so we do not wait for the fleet; we take Captain Place away quick." The general smiled a smile of pathos. "But, my nize officers, remember—he have the absolute control of the mounsters!"

At this point, the captain of the ship, whose name we had learned was Effluvio, appeared at the doorway to the general's quarters, still attired in his natty oilskin coat. He stared at the general, suddenly began to babble at a prodigious rate, sighed, and wandered forlornly away.

"You want to know what he say?" said the general, taking it as a matter of course that we did. "He say he have been chewing a whole plug tobacco and he swallow it. He don't feel so good." He laughed.

And then, all at once, Jones and I were laughing with him. We had been completely overwhelmed by his story of Captain Place's control over the fire monsters, not only because if it had been true then Place could easily have wiped out Claude Ponteret and his whole company, but because the very stature of the idea had been too much to view all at once.

But Captain Effluvio's appearance had changed things again, had returned us to the world of insane perspective, where nothing was what it seemed to be, where we had come to feel most comfortable. Here we had been talking to Cheroot as if he were a normal person. Effluvio and his plug-tobacco tragedy had saved us, reminded us that we were in a madhouse, that everything we heard and saw had to be considered on its own terms—the terms of General Cheroot, who, by virtue of Captain Castle's orders, was our superior officer.

Who was it first made that crack about method in madness?

IV.

That was our first day in free space, and the only time we ever had a long conversation with General Cheroot, though now and then I would hear Jones addressing the general at considerable length. Meeting him in a companionway, and forced to retreat to where the general could pass, Jones would smile gloomily and say, "Ah, there, you malodorous fungus, a mephitic plague upon you." He could continue indefinitely, fascinating the general.

But for the first time since I had known him, I could see that Fletcher Jones wasn't the same man. Something was burning in him, something that gave him no peace.

It wasn't just his job, either, though it nearly drove him wild with grief. He was navigation officer, and he plotted our course from a hopeless tangle of outdated charts—two of the larger charts had to be torn away from the chief engineer, who had been using them to resole his shoes—only to find, at his next reading, that Captain Effluvio had let the ship drift completely off course. Jones would sit down quietly, enter our new position in the log, and get us back through

instinct and magic. Or the blasters clogged, and we had to repair them ourselves. You couldn't get the crew. If they weren't fighting or gambling, they got together and smoked some vile weed, after which they would sleep, six in a bed, and be impossible to rouse. Or the fuel compartment—

But there's no sense continuing. Jones took it all and was ready for more. Then, on the seventh day, something happened that I thought had finally broken him down.

Late in the afternoon, far off beyond our vision's horizon, our instruments picked up a ship. For an hour she kept coming closer, and then, briefly, she flashed before us and was gone. She was a ship from the fleet, a slender, fiercely beautiful gray destroyer, undoubtedly executing a scouting assignment during the war games. We never got her name; she was too far off and too soon gone for that, but she had seen us, and she shot out a single white rocket in salute.

Jones stood on the bridge and stared at that salute a long time. He seemed very tired, and when he looked at me, somehow it seemed to me that I knew what he was going to say.

"Forget it," I said. "There'll be other times. And I don't mind being here with you, really I don't. The games meant nothing to—"

"No, I can't forget it," said Jones, wearily. "It isn't only you, Dick. It's this whole abominable mess. When I think of what's waiting for us on Forelle, if we ever get there—when I look around this foul tub—when I think of what we're in, and the other fixes I've been in, a kind of despair gets me—" He hammered his hands together and I turned away. I couldn't listen to him talking that way. "Lord, what a mess," Jones sighed. "If only—"

"If only what?" I said, quietly. "Tell me about it."

"If only we had a couple of dames aboard," Jones sighed again. "What's the matter?"

"Swallowed wrong," I choked.

So Jones sat down and gazed pensively through the stained amberglass. He was too worn out to sleep, and he frequently shared my watch, but now, momentarily, he seemed relaxed at last. Watching the utterly fatigued smile that occasionally came to his lips, I wondered in what Elysian fields his mind was gamboling. As if I didn't know. Presently he wandered out, down the companionway.

Suddenly I heard him yelling. I ran aft to the signal room, and I was frozen by the sight before me. There, lying on the deck, was the remains of half the AV communications system, and our AV operator, who hadn't reported for an hour, nowhere in sight!

"Look at this!" Jones yelled. The AV receiver had started chattering and he pulled out the overlong scroll. He had received messages in every code, in six languages including Exotican and English, and the same message was coming over now.

ATTENTION: FLAGSHIP, LA POCHATA EGGRIMMAGGRATTA, EXOTICAN NAVY: WHY DONT YOU ANSWER? STANDING BY. EBHQ.

And we couldn't answer. Someone had taken the AV transmitter apart, wrecked it completely. We woke up Captain Effluvio and began a search of the ship, to no avail. The AV man was gone.

"Wake up the general," Jones mumbled, stunned by the disaster.

We didn't have to wake the general. He was sitting in his quarters, enveloped in electric-green pajamas, spraying himself with perfume, and with him was our AV man—and our AV man was working over the motor he had taken from our transmitter. He had attached it to four crude blades and fastened the whole contraption to the overhead in the room.

"Why you make a fuss?" the general smiled at us. What with the color scheme and the overpowering odor, he was like some hideous flower. "This nize fellow is take out the motor and make me a fan. Is too hot in this place."

"A fan! *A fan!*" Jones shouted, beside himself. "This fermented squash disembowels our transmitter to make himself a fan!"

The general seemed undismayed. He reached for a book from one of the shelves and opened it. "But why you need it?" he murmured, absently. "We know where we have to go, what we have to do. If something important is happen, they tell us. We say nothing. You know the remark: Keep Quiet Is Gold?" And he pored through the volume.

"Spare me the epigrams, buffoon!" Jones roared. "We want that—"

"Oh, mamma," I said, and one of my hands came up—spontaneous levitation, as I recall it—and pointed to the book the general held.

"It is a surely," Cheroot nodded. "I have here a dictionary."

The pages turned gently as he spoke. "For a long time I wait to have you in the same place with this dictionary. Most times I am forget the words too quick . . . ah—*squash!* And here, *buff*—How many foofs in buffoon? Well, look what I find here! You remember—*buffalo?* Very interesting—"

He closed the book and chuckled. "Is so nize when people is understand each other, hey?" He regarded us warmly, his eyes sparkling with unabashed fondness for us. In the gloomy silence that followed, Jones leaned back against the door and ran his fingers through his hair with a certain desperate calmness. "Well," said Cheroot, presently, "why you don't say something?"

"Got nothing to say," said Jones. "Not while you have that dictionary."

"But I see you do not understand *me*," said the general, smiling. "You think I am mad at you?" He tossed the dictionary across the room to Jones. "Here, for you. For me this is most educational. We forget the whole thing! What has happen is water in the britches!"

Frankly, the events of the past few moments had affected me to the point where I had personal reasons for admiring this image, as well as the general's strange forbearance. But not Jones. Not Ensign Fletcher Jones, the melancholy scourge of the spaceways. He stood there in a funk, staring a little wild-eyed at Cheroot. Finally he spoke.

"You going to give us that motor?" said the scourge.

"No," said the general, casually. "I am the boss of *La Pochata*. I will keep the fan. Is too hot in this place. Good night."

Later, sitting in this signal room with Jones, listening to the receiver chatter away, I said, "Why didn't you mention the handy information contained in Article 12 of the Navigation Code?"

"What about Article 12?"

"Nothing, except that it says this: 'Vessels in transit, unable either to receive or transmit via AudiVisor, shall immediately return to their port of origin, unless they have already traversed more than half the distance to such ports where repairs may be made, or unless adequate repairs are possible within twelve hours en route—'"

"So what?" said Jones. "We could make adequate repairs in an hour if the general returned the motor, couldn't we?"

"But you know damn well he won't return it!"

"That hardly alters matters much. If our superior officer wants to keep repairs from being made, that's his business. This is one time I've got the orders right by the— Anyway, we're going to stick to the exact letter of the orders. We'll go on to Forelle."

"Are you kidding? Do you *want* to keep going?"

He looked at me with mocking eyes. "It is a surely," he said.

"But why?"

Jones lit a cigarette and threw me the pack. "I'll tell you why," he said, taking a deep drag. "Because they sent us to bring back Captain Littlejohn Place. Because no one thought it important enough to check the cockeyed story behind it. Because they stuck us into this suicidal tub, with no crew and no instruments and no sane officers. Because when I try to sleep I remember Captain Castle's remarks about the court-martial's generosity, and I hear everyone of those Gold Stripes laughing— That's why, come hell or high water, we're going on to Forelle to get Captain Place and bring him back!"

V.

We raised Forelle three days later.

Early in the morning we had come upon the outlying bodies of the Ghort group. There were more than a hundred of the little planetoids, lying in the sky like bright islands. We skimmed over them slowly, checking their topography, and by afternoon we found Forelle.

Forelle was an imperfect globe, with a diameter of no more than forty miles. Its hilly, uneven ground was covered with brilliant green forests and lush vegetation, and facing the sun was its lake, a clear white diamond set in emeralds. There had been no sign of life anywhere in the group and there was none here, but not far from the lake was a sandy stretch of earth marked by the deep characteristic gashes of blasting ships, presumably the spot where ships had landed to take on water.

Jones was standing between me and Effluvio, gauging our approach. He hadn't had more than two hours' sleep on each of the last three days, bringing the ship through dangerous short routes and uncharted areas, handling her fatigued hulk with the consummate skill and finesse of a swordsman, now parrying the rush of a liner, now riposting a clear area. But with Forelle below, he shook off weariness.

"Coming in," said Jones. "All hands to— Sorry, I forgot where I was. See if you can get the crew to hang on to safety belts."

"They're asleep," I said. "I tied them to their beds."

The landing was going to be quite a business, not only because the available space was fairly small, and our ship its usual sluggish self, but Effluvio alone seemed to know how to manipulate the control board. Wrapped in his oilskins, he peered through his goggles at Jones and commented on each signal with a moan. He touched the control buttons gingerly, as if he were afraid they might explode. It was a thought worth conjuring with.

The general chose this moment to arrive.

"Hey!" he cried, enthusiastically. "Why no one is tell me? I, the general of the boat, is land the boat myself!"

"Back in your cage," said Jones, tersely. "Effluvio, will take her—"

"But I am the general!"

Jones turned his attention to the amberglass in time to wave Effluvio into a frantic climb. The blasters spluttered and a row of treetops came up and smashed against our bow. A mile ahead our landing space loomed.

The general barked an order to Effluvio, and the captain immediately removed his goggles and abandoned the board.

"Hold those controls!" Jones shouted.

"I am the general!" Cheroot shouted back, and before we could attempt to stop him, he was at the board. Then, like a steamroller smoothing out a gravel road, he rolled his splendid circumference across the control board, pressing every button! The ship roared in anguish, gave up the struggle and slid neatly to earth. It landed not fifty feet from where Jones had been aiming.

"Is nothing," the general chortled. "I am the general. I am all the time land *La Pochata* this way."

It was a considerably older Jones who murmured, "Sure," in a voice of demented misery. We went aft, armed ourselves with heat guns, opened the air lock and stepped out on Forelle.

It was lovely, lovely to be alive and to be there. Luxuriant grass, three feet high, myriads of strange, delicately perfumed flowers, birds that had evidently been imported from many places, a soft, cool breeze; I took a grateful breath and I could almost feel the cobwebs in my head blowing away. The earth was as soft as a bed, I thought, and so thinking, I looked carefully at Jones. At an appreciably younger Jones, I might add. His eyes were like embers. He caught me observing him and he sighed.

"So?" he said. "Let me dream my beautiful, impossible dreams—"

"Indeed," I grunted, turning to the commotion from the ship. "See what you can do with this impossible dream—the general wants to get out of the ship."

The general was standing before the lock, the lock that was some two feet too small for him to pass through, and he was hurling orders at the drowsy crew.

"How will he do it?" I mused aloud. "He needed a long run to get wedged in, and a platoon of soldiers to push the rest of him through. Still, he—What's that sound?"

There was a hissing noise coming from the ship. The general had pressed himself against the lock, filling it completely, making the entrance perfectly air-tight. He kept pressing closer as the hissing increased, his face red with exertion, looking like a wad of gummy substance that someone had pushed into a leak.

"I know what they're doing!" Jones cried, his fascinated gaze on the general. "They've closed the lock behind him—and they're pumping air into it!"

"I don't get it."

But I did within ten seconds, because suddenly there was a loud, popping explosion and General Cheroot flew out of the ship! They had fired him out of the lock with compressed air! He flew for some twenty feet, arms flailing the air, head tucked away in such fashion that he seemed to be a marvelous winged tortoise, landed on his shoulders, and continued rolling until he came to the beginning of a hillock. Even before he had stopped rolling, members of the crew jumped out of the ship to follow their general. Each of them was armed with a whiskbroom. When they reached Cheroot, he was standing impatiently, wheezing and waiting to be brushed clean. The entire operation took about a minute.

"He got out," I said.

"A shrewd observation," said Jones, crawling away.

"Where we going?"

"Look around a bit—observation tour, sort of."

"What about the fire monsters, in case—"

"I prefer 'em to this."

So I sneaked after him into the tall grass while the whiskbroom brigade was still busy with the general. We climbed the hill and looked around. The lake lay to our left, while on our right rose a towering line of trees. The rolling country stretched ahead, mounting gradually to a high stone peak. Halfway up the sides of this miniature mountain stood a long, low rambling structure of spurious Mexican architecture, formidably protected on three sides by huge stone outcroppings. The fourth side lay open, with a steep, winding path leading up from the far shore of the lake.

When I had finished surveying the scene through binoculars, Jones summed it up thus: "We can't get to Place's house except by circling the lake and taking that path up. If we start walking toward the house, we'll be exposed all the way. On the other hand, we're in uniform, and I don't think Place would try anything unless we did—so I'm for a try at talking to him. You with me?"

"I'm behind you," I said. "Lead on."

We had gone about half a mile, refusing to be disarmed by the apparent serenity of the country, when the silence was torn apart by a high-pitched, whistling noise.

Jones and I hit the ground together. We knew what that noise was—the sound of a heat gun! We lay rigid a moment, then Jones took his binoculars and swept the near horizon. He stopped when he faced the house, another half mile away, and passed me the glasses.

Standing on the veranda of the house, one leg swung up on an ornamented rail, was a tall figure clothed in green. The green was a suit of fighting armor, heat-proof, bulky, clumsy-looking, and damned effective. On his head, the green-clad figure wore a dull, tubular helmet. But it was what the figure held across his knees that interested me most. It was a slender, murderous heat-ray rifle, probably the Webley Express rifle, though I couldn't be sure. I focused the glasses a little better—in time to see the rifle coming up!

I gasped a warning to Jones and ducked my

head, and the next instant the high whine of the gun came over and the ground around us began to leap up in tiny spurts. I knew then that we were positively dead pigeons, but coincident with that first frozen instant of alarm, I saw that Place hadn't tried to hit us. He had fired his rifle all around us, inclosing us with a circle of scorched earth—as gaudy a display of shooting as I had ever seen.

"Very gaudy," I said, exhaling.

"Very funny," Jones muttered.

We waited a few minutes, then stood up. Immediately the rifle sang out again, kicking up a spray of gray dust some ten yards to our right. We didn't know it then, of course, because we had dived back to the ground, but after a while, with the rifle regularly hitting the same spot, we looked up and saw it.

"You think it's a signal of some kind?" I said.

Jones nodded and started edging toward the spot, and the shooting stopped; it had been a signal after all. There on a flat rock, weighted by a smaller stone, lay a white sheet of paper. The edges of the flat rock had been peppered away into that fine dust we had seen.

On the paper was a single, flowing line:

Forelle is private property. Get off.

L. P.

"Short and sweet," said Jones, scowling. "Got a— Never mind, I've got one." He pulled a small, stubby pencil out of a pocket, and from his large breast pocket he took out a folded maroon sheet. It was our orders from the admiral and Captain Castle, instructing us to take Place into custody and bring him to Exotica.

Jones wetted the pencil, and in a bold script, wrote across the face of the maroon sheet:

Leaving within twenty-four hours. You're invited.

Fletcher Jones, USICS.

He held the pencil out to me, and I signed my name under his, misspelling it, for some reason.

"That'll show him," I said, hoping what I had on my face was a reckless grin. "Meanwhile, let's go back. My stomach feels kind of empty and I want to find out if I'm hungry."

"There's nothing to be frightened about," said Jones. "I hope—"

"You take care of your knees and I'll take care of mine," I said.

"He can't stand watch forever, you know," said Jones.

"What about the fire monsters?"

"What about them? You don't see them, do you?"

"I can hardly see you," I said. "I got a mist over both eyes."

Jones favored me with a reproachful glance and put the maroon sheet, together with Place's note, back under the stone. "We've got to plan a course of action," he said, thoughtfully.

"Sure thing," I said. "What are we hanging around here for?"

We looked back at the house again for a moment, but Place was gone.

Twilight caught us halfway back, and by the time we had reached the ship, it was quite dark. In this strange hush of sudden evening, we heard only those certain sounds to which eleven days with the crew had accustomed us—their sonorous snoring. They were all huddled together, fast asleep around an open, blazing fire in the clearing.

We had been gone less than two hours, but, somehow, in that time, they had managed to stage a barbecue. Close by the fire lay a pile of roast bones, sizable monument to their bacchanal. In the center, his hands clutching a jug of wine, lay our guide and mentor, the estimable General Cheroot, snoring and belching like a captive volcano.

"Where do you suppose they got this kind of food?" said Jones, almost plaintively. "These bones are enormous."

"Maybe they ate one of the crew," I ventured. "And don't look at me that way. You said yourself you thought they drank the fuel."

"You know," said Jones, "as cockeyed as we think this whole business is, it's even more cockeyed than that—"

He was still pondering when he came out of the ship again, with some food and stale water. He munched the suetty meat he pried out of a can and stared into the fire, deeply troubled.

"I dunno," he muttered. "I can't figure this voyage out. Basically, this is a reasonable world. Things just don't happen the way— Anyway, not the kind of things we've seen—cockeyed, all right, but before it's finished, I'm going to find some answers if I have to—" His head was nodding now, his eyes closing. "—even more cockeyed than that—" he said, and then he was asleep.

I finished eating and covered him with a blanket that I yanked out from under the crew. The Forellean night would last a brief six hours. Jones was worn out, more than he knew, and I would stand watch until morning. I didn't know how safe it was, sleeping in the open this way, but I felt that if there had been any danger, Jones wouldn't have fallen asleep. That was the way I'd gotten to feel about Jones.

Anyway, I got another blanket away from the crew, wrapped myself in it, and sat close to the fire. After a while, I heard Jones snoring along with the others, a talented performer in the symphonic orchestra that surrounded me.

It seemed as if long tongues of fire had detached themselves and floated away to the edge of

the clearing. The curling streamers of light appeared in midair, to hang an instant and wither away, and suddenly lashing out again in fierce new life, feeding on the air alone.

Then Captain Place came walking stealthily into the clearing. The whips of fire thirty feet over his head came from the nostrils of two tremendous animals whose bulk loomed vaguely in the uneven shadows, whose eyes were sparkling red-hot globes that seemed fixed on the tall, armor-clad figure who had stood between them, and who now drew closer to me. Fire flashed fitfully in the air, and fire gleamed dully on the green armor as Place carefully came forward. In one hand he carried his rifle, swinging it easily.

He stopped not ten feet from me, surveying the sleepers. He must have thought I was asleep, too, from the relaxed way I was lying. Once, as his searching eyes swept over those before him, I felt our glances had met. I could almost see through his clouded helmet, and, somehow, I knew that his eyes were cold and hard, though, of course, it was too dark and his helmet was frosted too deeply for me to see much.

His free hand dipped into the gauntlet of the rifle hand and came out with a crumpled ball of paper. He walked past me, and though I closed my eyes, I knew he was looking at me. When I looked again, he was standing over Jones. His rifle was at ready, set in the crook of his elbow. For an interminably long minute he just stood there, looking down at Jones. Then he bent over and dropped the ball of paper on Jones' chest, inside the blanket.

Before he left, he walked to where our ship lay. After a brief examination, he turned, crossed the clearing again, and disappeared into the darkness between the two fire monsters.

For several moments longer, I continued to lie quietly. The earth under me trembled ever so slightly; the thin orange flames receded from the clearance. Then, as I started crawling toward him, suddenly Jones sprang to his feet. Motioning me to silence with a finger on his lips, he ran into the ship. I picked up the crumpled ball of paper that had fallen from his blanket and waited. Jones came out with two heat-ray rifles and thrust one at me. He jerked his head in the direction Place had taken and we started to follow.

We went on for a quarter of an hour in silence, and then we were no more than a hundred and fifty yards behind Place. Or, I should say, behind one of the fire monsters, for, unbelievable as it seemed to us, Place and the fire monsters were walking in single file—first, one of the monsters, then Place, then the other monster. And even if Jones had wanted to take a close-range shot at Place—and I would have staked anything that he had no such idea—it was impossible. Somehow, the nonsense that Cheroot had given us about Place and his control of the monsters was true. The huge animals kept a docile pace with him, shielding him from any chance of surprise attack.

They stopped when they came to the nearest shore of the lake. The faint haze of a moon below the horizon, which had covered the landscape with a blush diffused light, grew brighter now; the first of Forelle's ten moons was coming up. We lay on the ground and saw Place continue on around the lake, accompanied by one of the monsters. The other stayed behind, and presently it began to patrol the lake shore, moving ponderously along for a few hundred yards, then swinging about and walking the other shore.

The second moon came up, the third, very swiftly, and still we lay there. After a long while, the house on the mountainside came to life. Lights flared in three of its windows, then two of them went off, and not longer afterward the house was dark again.

As if it had been a signal, the beast near us left off its crescent-shaped patrol and continued along the lake to the far shore, where the pathway leading to Place's house began. The second monster, waiting there, relinquished its post to start circling the lake in turn.

Jones turned to me with haggard eyes. "I wouldn't have believed it if I hadn't seen it. He's tamed them sufficiently to have them—"

He broke off as the beast slowly approached. There was light enough to see it fairly clearly now. Serpentine head swayed slowly from side to side as it searched its environs. The light threw the spines along its back into jagged relief, and its great, horny scales shone like polished steel. As it lumbered past us, its tail threw up a furrow in the sand.

When we had started back, Jones asked, "Were you awake all the time he was in the clearing? What do you suppose he came for?"

"I don't know," I said. "I looked up and there he was, and those damned things with him. Wait a minute—he dropped this paper into your blanket while he was looking at you!"

"Looking at me? When was this?"

"He took a look at me, too, but he went by and took a really long look at you. I had my hand on my pistol all the while, but he could have finished you for all the good I was. You didn't see him?"

"I must have wakened after that. First I knew he was standing beside the ship. Why didn't he kill all of us then and there?" He smoothed out the crumpled ball and held it up. It was a sheet like the first one we had found, and the handwriting was the same. Jones read:

Whatever your game is—you have until tomorrow night to get off or get buried.

L. P.

"Getting to be quite a correspondence," said Jones, thoughtfully.

"What does he mean by that word 'game'?"

"I don't think he believes we're . . . ah . . . officers of the law," said Jones, slowly. "Certainly he's acting as if he didn't know what it was all about. Maybe that's why he gave *La Pochata* the once-over. One look at those rusty plates and he knew she wasn't from the USICS—"

"Then why is he acting the way he *is* acting?"

"Huh?" said Jones, lost in thought. "Yeah, that's it—but it still doesn't add up. Those monsters of his were adults, all the same. We'll have to get at him in spite of those monsters—huh? You say something?"

"You're the one who said something—and I mean something! How are we going to get around those monsters?"

"Hm-m-m," said Jones, staggering a little from fatigue. "Huh?"

We got back to the ship without further talking. The general and his crew hadn't stirred. Jones sat down near the embers of the fire, reading Place's note again, as if he were fascinated by it. He sat there, hm-m-ming to himself and frowning, and fighting to stay awake. And when at last he fell asleep, he mumbled and tossed, the frown still etched on his forehead, the note still in his hand.

I watched the moons come up.

VI.

Early next morning, Jones and I stood on a hill and saw the fire monsters, still standing guard at the lake. We could see their immobile reflections in the water, gray against gray, and the dawn behind them. And because I had no alternative suggestions, I said nothing after Jones had finished outlining what I considered an implausible plan, and went into the ship with him.

"Let's get it done before the general gets up," said Jones. "I hate to think what he'll say." So we began taking apart the mirrors that formed the bulkheads of the general's quarters. There were fifteen of them, measuring about three by six feet. We stacked them up in the air lock and went back to dress.

"You know," I said, climbing into the metallic tunic, "I've been thinking it's funny that all the fighting equipment aboard seems to come in pairs, no more and no less. Two heat-ray rifles, two pistols and two suits of armor. Suppose we wanted someone—"

"My looking glasses! Who has take out my nize looking glasses?" cried the general, storming into the ship. We ducked down lower in the signal room and continued putting on our armor, and soon enough, Cheroot found us there. "Ah-hah! So you revenge for my fan with the looking glasses!" he shouted in anger.

"Knock off, general," said Jones, picking up his helmet. "Did you take a look at those fire monsters of yours standing at the lake? How do you expect us to get Place with them around?"

"What have the looking glasses to do—" He broke off abruptly and swallowed. "Mounsters?" he gasped. "You have seen the mounsters?" His head nodded automatically with Jones, and he wheeled around and pushed his way out of the ship, crying, "Mounsters by the lake!"

We adjusted out gauntlets, strapped the heat-ray rifles on, and followed him. The entire crew was standing on the hill with him, all of them gazing apprehensively into the distance. Hearing the clatter of the mirrors as we began to pick them up, the general turned around and waddled down the hill to us, the crew streaming after him.

"Where you are taking my looking glasses?" he shouted. "Put down! We leave this place after breakfast!"

"But what about Place?" I said, bewildered. "Don't you want to bring him back?"

"Never mind Place! Is a job for the Fleet with the mounsters?"

"But you knew the monsters were here!" I exclaimed.

"Is one thing to know! Is another thing to see!"

"Yeah," said Jones, dryly. "You weren't by any chance figuring that the monsters would scare us, too, were you? Well, they haven't. We've got a plan to get them out of the way."

"A plan?" said the general, subdued a little. "What plan?"

We explained the plan to him. We were going to take the mirrors into the forest, advancing parallel to the lake. We would then set up the mirrors in a semicircle on the wood's edge, so that it reflected the lake. Then, through some ruse which we would presently figure out, we would maneuver the monsters close enough to the mirrors to confuse them. If everything went according to plan, the monsters would remain on guard over the mirrored lake—

"Not with my looking glasses!" cried the general.

"—and that'll give us enough leeway to try sneaking up the mountain path to Place's house," Jones finished.

"Oh," said the general, and was silent. He puckered his face up and added, "You are going to fight Place with the guns?"

"He's good," said Jones, "but we have two guns to his one."

"Hm-m-m," said the general softly. "Is a nize plan."

"I don't agree with you, general," I began. "For one thing, if it fails, you won't have any navigation officer to get you home."

"The dangers of the military life," Cheroot shrugged. "I am prepare to make the sacrifice. You will have breakfast with me?"

We sat around the fire and had breakfast with him. The bones of the previous night's feast had disappeared, and we made no comment. During the meal I had an inspiration. I remembered the hundred-odd special steel bullets that the general had brought with him, and it occurred to me that they might have special nuisance value, if nothing else, in maneuvering the monsters about. The general, politely agreeing with us, brought the bullets to us.

He even got the crew to help us transport the mirrors, and after breakfast our caravan started through the forest. Peering now and then through the outermost fringe of trees, we caught glimpses of the monsters. Occasionally one of them made a tour of the lake, but for the most part they grazed. The general marveled at the jets of flame that issued from their mouths now and again, flame that traveled twenty feet.

"What do they eat?" he asked. "Somebody knows?"

"Garlic," said Jones. "According to Dr. Lao's researches on the chimera, these fire monsters have no provision for disposing of waste matter, so they burn it up instead."

Finally we reached a position which I judged was just beyond the range of a heat-ray rifle. The crew backed away while Jones and I adjusted our helmets, leaving only the mouthpiece open. Then, completely clad in armor, we came out of the woods and stood up the first mirror, backing it with forked boughs. We set the angle and went in for the next mirror, and when we came out, Captain Place was standing on the veranda of his house.

I looked at him through binoculars, and before I got them focused, Jones snatched them away. "He's in armor, dammit," said Jones.

"What'd you expect?" I said. "Pajamas?"

"He's looking at us through binoculars, too," said Jones.

I waited a few minutes, then I said, "What is this—a mutual-admiration society? Let's get busy before he sends his friends over to break this up."

"If he does," said Jones, "duck behind the mirrors."

We got all the mirrors up within the next hour, then we went back into the woods and waited. Place hadn't made many moves. Once or twice he went into his house, only to return and continue watching us. And the monsters continued grazing like lambs.

Another hour went by, and I began sweating in the armor. The monsters had come fairly close more than once, but not close enough. We monkeyed with the angles of the mirrors and it didn't help.

"Maybe these monsters know they're mirrors," I ventured, mopping my brow.

"They know something," said Jones sourly, "and my guess is that Place is going to wait until our time is up and then—*wham!*"

"Our time is up?" the general caught up Jones' words.

"He left us a note last night while you were asleep," said Jones grinning at Cheroot. "Said he'd kill the lot of us if we didn't clear out by tonight. But we're not going to wait—"

"No!" the general shouted, getting to his feet. "We are not going to wait! The plan is stink! We leave right now! Take back my looking glasses!" He shouted orders at the crew in Exotican, and they started hopping around, getting ready to rush out for the mirrors.

Jones got up slowly, one hand on his rifle, and if they didn't understand his words, the gesture was enough. "I'll fry the first one who touches those mirrors," he said, "and I'm the guy to do it."

"You read that some place," I muttered, under my breath.

Jones covered up his grin with his helmet. "Come on," he said to me. "We can't just sit here all day. Let's try the bullets."

We started for the monsters and stopped when we were five hundred yards away, well within range of a heat-ray rifle. We had covered our mouthpieces, and communicating by signal, we got down on one knee and replaced our heat capsules with the steel bullets.

I fired first. The sound of that bullet was something close to an admiral's salute. The gun kicked back and sent me sprawling, and just as I was getting up, Jones let his gun go and the sound waves, ricocheting off the mountain, knocked me flat again. There was enough explosive in each shell to parcel out and make a revolution.

I peered through my helmet into Jones' and saw, from what I could make out of his expression, that he had come to respect the bullets. But only in this limited capacity, because they hadn't even been noticed by the monsters! One of them shook its head, looked around until it saw us, let out a sheet of flame, and continued eating vegetables.

And there was Place again, sitting on the railing of his house, rifle across his knees, as unperturbed as his beasts.

Jones waved me forward, and we got up and went in another hundred yards. Maybe the close range would do it. We braced ourselves and let the guns go again. This time, before I fell, I saw a cloud of dust rise from one of the monster's backs, and my guess was that we had disturbed a colony of ants that had made a home there. Both the monsters looked up this time and went back to their eating with a single-mindedness that was reminiscent of the general.

Again Jones waved an arm for me to advance. I shook my head, not to disagree, but because sound waves had sneaked into my helmet and my head damned well needed shaking, so Jones went on alone and I had to run to catch up. But he didn't know I was so close behind him; he dropped quickly and fired from two hundred yards before I could get set. Anticipating the blast, I must have gripped the trigger too tightly. My gun went off ten yards behind Jones—and the next thing I knew, Jones had torn off his helmet and he was running full tilt to the rear.

I took one look and I followed. The monsters were after us! We had finally aroused their interest, but too suddenly and too well.

Ahead of us the crew and General Cheroot came tearing wildly out of the woods, the safest place for miles around, plunging into the tall grass in their panic. I was still a little deaf from the thunder of the guns, but I heard enough to spur me on. Jones was shouting for them to return and they were screaming Exotican prayers, and I think I was asking Jones to wait for me. And then, all at once, over this horrendous noise, over the roaring of the monsters, a shrill whistle tore the air, and, abruptly, the ground stopped shaking.

Place had called off the monsters!

There was no other explanation; there could have been none other. We realized that later, however. At the moment, initial velocity alone threatened to keep us running for days. I overtook Jones, and together we caught up to the general, who was being pushed along by the crew. And when we turned to see where the monsters were, we saw that they had resumed eating.

At this point the general collapsed, and I nearly did the same thing when I took a look at the helmet Jones held up for me. My bullet had left a deep dent near the top of his helmet. Jones kept looking from me to the helmet, then finally he sat down in the midst of that group of panting, fear-stricken Exoticans and blew out his breath.

"What a bullet!" he breathed. "If you'd been in any closer—" He jumped up and grabbed me by the arm. "I got it!" he said. "I got it! Listen. These bullets are strong enough to tear through those monsters' hides if we get close enough! If they can do that to one of these helmets, they'll go through the monsters!"

"Without me!" I yelled. "If you think—"

"Shut up and listen! We'll gather up some of these plants and grass the monsters eat, and we'll stuff the salad full of these bullets. The monsters eat the bullets—and what happens?"

"I won't know. I'll be miles from here."

"The flames!" cried Jones triumphantly. "The flames will explode the bullets right inside them! Is that close enough?"

I tried to keep protesting, but he had me. It was a brilliant idea, one of a long line of Jones' brilliants, with a tragic trail behind most of them. "No," I said feebly.

"You mean you'll let these monsters win out over us?"

"Who says they won? We're all alive yet. It's a draw."

The general groaned and opened his eyes, and Effluvio stopped his wailing. Jones looked down at the general, then he said to me, "He'll be here for a while yet. Let's go finish this off."

So back we went to finish the monsters. It took us fifteen minutes to cover the ground we had forsaken in three and a half. Captain Place had come down part of the way along the mountain, and he was sitting on a boulder, scrutinizing us through his glasses. There was no sign of his rifle, and I commented on it to Jones.

"I don't know," Jones said, not bothering to close the mouthpiece. "He could have blown my head off when I took off my helmet. One thing is certain—either he's got other plans, or the stories about him never killing in cold blood are true. Or—"

"Or what?"

"I don't know," said Jones, with an oddly bemused quality in his voice. "Let's start making salads. Bunch them up, like this."

We bunched up a dozen salads and started creeping closer to the monsters again. I closed my

mouthpiece to keep my chattering teeth from startling the animals, but I doubt if it made any difference. The monsters must have seen us after a while—we were within a hundred yards of them—but they seemed placid enough. Then we threw out our bunches of food and started running back. They had seen the food.

First one monster, then the other, approached the bulky tangles of grass. Their little heads swooped down and we could see the visible effort they made to swallow. They went on to the next bunch.

Then it happened. One monster jerked his head up suddenly and yawned, and, kicking up his forelegs, choked on his own flames. In a split instant several muffled roars rolled out together, and bullets started shooting out in all directions! They plowed up the earth, they whistled around our heads, and two bullets cracked against my chest armor with enough force to throw me back several steps. It was a pitiful head start, but I needed it.

The monsters weren't dying at all. They erupted for another minute, but when they could keep their heads in position, the position pointed directly at us. One of them took a tentative step toward us, stopped while a few more bullets shot out, and started forward again.

Well, it's no secret, I guess. We ran. We'd run before, but this time we *ran*. We heard that shrill whistle behind us again, and it might have been Captain Place, and it might have been the air billowing in our wake, but if it was Captain Place, the monsters weren't paying any attention to him. They were rather single-minded, as I said before.

The lucky part of it, or so I assumed at the time, was that Cheroot and the crew hadn't waited. They had gone back to the ship, and even then we would have reached the clearing before them, but they heard us coming. Good Peter himself must have heard us coming!

The general uttered one piercing wail and plunged for the air lock. He went in more than halfway, but no dam ever stopped a flood more effectively. Ineffective waves of Exoticans beat against him, screaming and pounding. And then Jones and I, never pausing, arrived like elemental furies, sweeping through the crew, hitting the general in one mighty surge that sent him tumbling in, the rest of the crew sucked in after us like spray that settles on the sheen of a breaker.

And after us the monsters arrived—before we had had time to close the locks fully. They stamped and pounded their mighty legs on the hinges, beating against the doors, smashing their flanks on the ancient sides of *La Pochata*. They hit the bow and the stern, they rocked the ship again and again, roaring and flaming, and they cracked the amberglass so many times it seemed a miracle that it held—and it might not have held much longer if Place hadn't come.

Because when the destruction ended, there was Captain Place, standing on the edge of the clearing, whistling to his monsters. And now, their rage ebbing, the monsters turned and walked meekly to him, and presently the trio was gone.

We came out of the ship then and looked at her. We had only to look at the air lock to know that she could never blast off again. The rest of her was battered, but, having had severe trials in her day, she would have been all right—but not with that air lock. The monsters had broken the hinges and pounded the lock out of shape. With our air constantly escaping into space, we would face slow death soon afterward.

There was nothing to do now. We had failed. We would have to take down the general's fan—no objections would stop us now—and repairing the transmitter, send out a call for help. And what Place would do, with us remaining past his deadline, was something to be faced later on. Meanwhile, the transmitter.

But when we went back in we couldn't find the general! We knew he was in the ship, but we couldn't find him! We searched his quarters—and there we saw that our transmitter—and his fan—were gone.

Jones' face went hard. He began a systematic search of the ship again, opening every door, peering into every closet. When he opened one of the closets in the crew's quarters, we found the general. And we found something else.

It wasn't an easy thing, seeing what we saw. Not after those first moments of confusion, after we had figured it out.

Half of the crew's quarters, more than half, was sheltering a concealed space craft. She was no more than twenty feet long, slim as a projectile, glistening in the dark hold from the lights Cheroot and Effluvio held. She might have been a raft, a launch, any one of the numerous emergency vessels a spaceship would hold, but she wasn't; she was a spaceship herself, fitted out to hold three people.

We didn't know this at first. When we entered the blind closet, the general spun around, and facing us with him was Captain Effluvio, and a man we hadn't seen before among the crew. The man was small and dark, like all Exoticans, but he was neatly dressed in a pilot's uniform, and his face was furtive but intelligent.

The general didn't say anything when Jones pushed past him into the small craft. He didn't try to stop Jones or me from going over every inch of her.

Jones spoke only once before he went back to Cheroot, and that was when he found the wires that connected this smaller ship's controls to the control board of *La Pochata*. He said: "You

remember the way the general landed the ship? We had nothing to be afraid of. This pilot here was the one who really landed her."

Then he went out and said to Cheroot, "I see why you didn't care about the space-worthiness of the ship. You had this ace tucked all the time, and no matter what happened to us, three of you could always get away—you, Effluvio, and your pilot."

The general shrugged. He might have looked disinterested except for the fact that in his hands a heat pistol had materialized. He backed away while the pilot came over and gently removed our holsters. We had left our rifles somewhere in the ship. By now they were gone, too.

"All right," said Jones, quietly. "You'll be going soon enough. Just give us back that transmitter so's we can call for—"

The general's disappointed pout cut him short. "Unfortunately, I destroy it," he said. "I have no use for the fan even when I take it, but I say to myself, maybe will come a time when it will be in the way. Some stories is better if no one hear. So I destroy it."

"But why?" said Jones, fighting to keep the pain out of his voice. "Why did you do all this? What made you bring us all the way out here on a mission you had no interest in? Why?"

"I see you still do not understand me," said the general. "You think I have forget everything—the things you do that night in Exotica, the things you say about me—" His little eyes glittered with a strange light, fearsome and vengeful. Hatred had made him eloquent, almost. "But I do not forget! I take you here not because I am interest in Captain Place for the murder—that is the reason I give to your Captain Castle. My reason is mine. I take you here to do to you what you do to me—to give you the pain you give to me. I think later we come back together, but if not, I know I come back alone."

"But you can only take three people," said Jones. "Even if I deserve this . . . leave me, but what about the others—your crew?"

"Not important," the general smiled sullenly. "I am the general. I leave you these people, these ignorant, sleepy people. They do not understand these things. And now, get out. We are going."

VII.

We sat in the clearing and watched the small craft emerge from the stern of *La Pochata*. It had been carefully planned, from start to bitter finish. There were special sliding doors built into the sides of the old ship, doors that had been camouflaged by the grime and rust of her age. And when, finally, the new vessel lay on the earth beside *La Pochata*, shining in the sunlight that was fading slowly, she seemed less beautiful than the old ship that had housed her and carried her to this wilderness that would be the last resting place of *La Pochata*. The old ship had never given up. Exhausted, battered, still strong—she would have taken us back if we had been able to seal her air lock effectively.

No, in the end it was we who had failed the ship. I looked out across the plains of Forelle, wondering how long it would be before— That was when I saw Captain Place almost at the edge of the woods, where we had placed the mirrors. He was alone, and I might not have seen him if the sunlight had not reflected his brilliant, swift-moving figure, outlined against the horizon far away. I raised my binoculars and watched him, and then I turned to Jones. It seemed odd, somehow.

"Place is out there again," I said. "He's taking away one of the mirrors—"

Slowly, at first, Jones looked at me, as if he didn't understand what I was saying. Suddenly he snatched the glasses from my hands and swept the horizon. I could see that tiny figure returning, carrying the mirror he had taken.

"Lord," Jones muttered feverishly. He couldn't stop his hands from trembling. "I was right . . . I was right—" he breathed, and he jumped to his feet, his eyes blazing. "Listen to me," he said quickly. "Don't ask any questions—there's no time now. I've got to get there before it's dark. There's one thing you must do. Everything depends on it. You've got to keep Cheroot from leaving until I get back! Do you understand? You've got to work it out! Keep him here until I'm back!"

"But how?" I said, half afraid of him, the way he looked, and in sudden alarm I cried out, "Where are you going? You can't—"

"Keep him here!" said Jones. He held his helmet in his hand as he started running toward Place.

Later, when the image of his flushed, eager face returned to me, I didn't know why I hadn't run after him, dragged him back, somehow. He had gone out across the plains, unarmed, and I had looked after him until, in the gathering darkness, he was lost to the naked eye.

I felt alone then, more alone than I had ever felt before. As long as he had been with me, it had all seemed bearable. But now there were thoughts I didn't dare think. He'll come back, I told myself. It'll wear off in time. This madness that had seized him before I could do anything to counteract it would pass; he would remember the people who were being left with him, remember his responsibilities to them. He would come back to stay to the end, whatever it would be.

I had to keep myself busy until then. That was the answer. Activity, any kind of activity. Then I remembered what he had told me to do. There was no meaning in it because there was no chance.

Keep the general from leaving, he had said. Soon the general would be gone. He was supervising the execution of one of his trumps even now.

The pilot and Captain Effluvio had started taking out food from *La Pochata,* not the food on which Jones and I had lived, but the kind of things of which we had found evidence the night before; sides of beef, birds, venison, all well preserved, all taken now from the secret cache the general's foresight had provided. But he had no more than started the transfer than the crew gathered around and began talking among themselves, their voices rising in conjecture and dismay.

The general had destroyed the possibility of mutiny at once. He sent for long coils of hempen rope, and now he was tying one end of the rope to the bow of *La Pochata;* the other end had already been secured to the stern of his smaller ship. Evidently he was explaining to the pleased crew that the smaller craft would tow the larger, disabled ship after it. The crew, ignorant as he knew, smiled and congratulated each other, without the remotest realization that the rope would snap in two the instant after the small vessel blasted off.

And the general was safe because the crew spoke nothing but Exotican, and in their simple joy they were helping him secure the ropes. After that the fuel would be pumped out of—but there *was* a chance! There was a chance while he and his crew were at the bow of the old ship, before they would turn their attention to the fuel.

I flattened myself against the side of the ship, obscure in the growing shadows, and crept back to the stern. The metal hoses, linking the small ship's empty compartments to *La Pochata's* fuel, were already in place. A turn of the pumps would start the transfer. Quickly, I stuck my hand into the pump and unscrewed a valve. I was ready to take another, but I stopped. One valve might have been lost, loosely attached it might have fallen off; two valves meant another thing—and the general had all the weapons. He would know how to deal with sabotage.

I buried the valve in the sandy earth close to the ship, and as unobtrusively as I could, went back and joined the milling crew in time to hear their cheering as the last rope was knotted in place.

The general was doing a good job. He now made a little speech, and only after several more cheers did he and his two aids start for the fuel pumps. I straggled along and watched him turn the pump. The motor coughed and sparks flew, but the pump didn't work.

It was ten minutes before the general began to realize that some serious mishap had occurred. I watched his annoyance blossom to anger while his pilot fussed and toyed with the motor, and more than once he turned his baleful eyes on me. Finally the pilot attacked the valve section, and cried out in Exotican to Cheroot.

The general advanced toward me. "Where is the valve?" he said.

"What valve?"

"You understand what I speak. The valve. The one from—" A crafty smile lit up his face. He pulled his pistol out and said, "Hold up your hands! No, not this. Hold out your hands."

I held my hands out for him and tried to look puzzled. If he thought he was going to find the slightest trace of oil or grease on my hands, he was sadly in error. "Well?" I said. His smile had long since faded. He turned away and shouted to the crew, and they scurried into the ship, evidently to search for the missing valve.

"Where is Jones?" said the general.

"I don't know. You saw him run away an hour ago."

"Where he went?"

"I don't know."

The general turned away. He had come to some decision.

Hours later, after the crew had given up the futile search, I found out what it was. A new fire had been built, and the general had again brought out his excellent food. He not only offered me all I wanted, but he passed it out among the crew, and from their surprised whoops I understood that this was a new experience for them. The pile of bones of the previous night had belonged entirely to the general. It wasn't hard to believe after I watched him eat again.

"You know," said the general, speaking very quietly, so that he couldn't be overheard, "I make a mistake. Jones is a smart fellow, very smart. He have take the valve away. Oh, don't say me no! I know this! Well, you think I am mad?" His little eyes glittered anxiously as he regarded me. I didn't answer. "I tell the truth," he decided reluctantly. "I am mad. But not so mad I do not understand that I must do something for him. You understand? I make . . . how you say . . . a deal?"

"What kind of deal?"

"I take you both with me," he whispered, looking out of the corner of his eyes at Effluvio and the pilot, busy eating. "These people are too ignorant. I do not know about valves anything, but was their job to make sure. So now I punish them. I leave them and take you."

Wretched as the proposal was, it offered a glimmer of hope. If we could get away with the general, we could bring back help to those the general was prepared to desert. But Jones was gone. There wasn't any sense talking to the general. I had to keep telling myself that he was coming back. I didn't believe it any more. I

couldn't speak to the general, and he took my silence for acceptance.

Suddenly the general yanked out his heat pistol and fired across the clearing. Instantly there was pandemonium. The general fired several more blasts before the capsule gave out, and then, while he was shouting at the crew, he broke off and said to me, "I am so excite I forget what I do. I don't mean to shoot him." He had changed his plans.

"Who were you shooting at?" I cried.

"Jones. You don't see him when he come out just now?"

"Get this!" I cried. "Jones hasn't got that valve on him. If you try shooting him you'll kiss your last chance good-by!"

I ran across the clearing in the direction the general had fired, shouting Jones' name. Climbing over the hillock, I had gone no more than a few feet when a hand reached up, grabbed my ankle and sent me tumbling down.

It was Jones. He was still in armor, and he was wearing his helmet. And in one hand he clutched a Webley Express heat-ray rifle, a duplicate of the one I had seen in Captain Place's hands. He opened the mouthpiece and I could barely make out his face. It was smeared with blood, but there was a grin on his lips, a savage grin.

"Why, that bloated beetle!" he exclaimed angrily. "I should have fried his wormy heart for him! What is he shooting at me for?"

I couldn't believe it was him. I just kept holding on to him for a minute until I became embarrassed. "He thinks you've got the valve I stole," I said, and quickly I told him everything that had happened.

"Dirtier and dirtier," said Jones when I gave him the general's proposal. "That grotesque lump of suet! I'll fix that maggoty blob of beef! When I get through with that walking hamburger—"

I knew Jones was all right then. "Where've you been?" I said, interrupting. "What have you been—"

"Don't interrupt me," said Jones. "I haven't much time—got to get back right away. Never mind where! Just get this straight: we're leaving in the morning in *La Pochata*. I said no questions. Just listen to what you've got to do. I'll give you a signal early in the morning. You leave a sheet of paper lying at the edge of the clearing. When I'm set I'll burn a hole through it with this gun. Then you get the whole crew into *La Pochata* —everybody, Effluvio and the pilot included. But not the general! Not him, understand? You stay outside with him until you see me coming. Then you'll know what to do. Got it? So long."

"Don't give me that 'so long' routine!" I said. "Where you going? What are you up to? You've got to explain this to me."

"There's no time to explain!" said Jones. "I've got to get back in a hurry." A second moon had come up, and I could see how intense he was, how set his bloodstained face was. He gripped my hand and started off, only to return and give me a small heat pistol that he took out of one of his boots. "Stay as clever as you are and you won't need it," he said, "but maybe it'll make you feel better. See you soon!"

He was gone, running quickly through the tall grass. Minutes later I glimpsed him as he crossed the beach and was lost against the gray of the lake. I hid the heat pistol inside my tunic.

When I got back to the fire, General Cheroot was waiting anxiously. The crew stared at me, filled with instinctive misgivings.

"You find him?" the general asked.

"Yes," I said, stalling for time.

"What he say?"

"He doesn't trust you."

"Is too bad—for him! What he will do when Place come? What he will do with the mounsters? What he will eat meantime?"

I didn't know the answers. "You shouldn't have shot at him," I said. "He won't come out until morning now." Quickly, I added, "He won't come until it's light enough for him to see you. He agrees to the deal. He wants you to get the whole crew into *La Pochata* when he gives me a signal. You and I are to stay outside to wait for him. We all go into the small ship together."

"Is fine, is fine!" the general agreed nervously. "But what we will do about Place? The time he say for us to leave is now!"

"I don't think we have to worry about Place," I said.

"Why not?"

"I don't know."

And that, at least, was true—

The night passed slowly. Several times I got up and walked around. Place's house was lit, and even in the flooding moonlight the windows were like tiny vertical beacons. Once I saw a little streak of flame come into being and disappear. It was far away from the pathway that led up the mountain. The general sat by the fire, wrapped in blankets, dozing off now and then, and waking to eat a little more. Without him the crew's snoring was bereft of feeling.

I must have fallen asleep for a while myself. When I opened my eyes it was morning. The general was still sitting not far away, and he had two heat pistols in his lap. He was loading them with fresh capsules. Jones was going to get a rousing welcome if anything went wrong, I knew, and maybe he would get it anyway, and I with him. The general saw my eyes open and smiled self-consciously, and he put the offending weapons away without haste, as if he hadn't been up to much.

I got up quickly and fumbled around in my

tunic for a sheet of paper, then I started climbing the hill. After a dozen yards or so I started to put the paper down—and while I was doing it, while the paper was still inches from the ground—a rifle sang out and a small hole instantly appeared in the paper!

I dropped it with a curse. No matter how much in a hurry he was, Jones had no right taking a shot like that. Maybe, I thought, it wasn't Jones. It was superb shooting, on a par with shooting I had seen once before on Forelle.

Before I hurried back I scanned the rolling plains. There was no sign of life anywhere. The monsters were gone. The woods to my right were still. Still, somewhere within rifle range, was Jones. Or so I hoped.

The crew was already awake and on its bewildered way into the broken lock of *La Pochata* when I got back. Effluvio, unquestioning was going with them, but the pilot lingered behind. He conversed quietly with Cheroot, and, seemingly satisfied, went into the ship. It was even money as to whom the general was going to double-cross.

They were all in now. Only the general and I remained outside, some fifty feet from the ship. I wondered which of us was more nervous.

Without a word of warning, an armored, helmeted figure appeared over the brow of the hillock, running swiftly for *La Pochata.* Within a split second, another armored figure came after it—and I saw that the second figure was Jones! One hand waved me toward the ship. Before the general could turn around, I was running with them.

The first armored figure—it could only have been Place—reached the ship first. I followed and Jones jumped in after me. Then Place snapped open his mouthpiece, leaned out of the lock, and, putting his fingers to his mouth, let out a shrill whistle.

A series of mighty roars thundered in the air. Out of the woods, a hundred yards away, the two fire monsters came lumbering at rapid gait, swinging their heads, shooting out flame!

And now the general, eyes popping out of his head, came galloping with all his might and main for the lock! He had no energy to waste in wailing. Silently, terribly, the monsters gaining on him, Cheroot came plunging forward, his head already bent for the impact. Fifteen feet away the horrible realization must have hit him, but it was too late. On and on he came, inexorably, the flames almost upon hm.

With one last surge, the general plunged into the lock—and stuck there! A rush of air, a sound like *SQUISH!* Sudden darkness and nothing more. Nothing but the general's terror-stricken countenance and his tremendous roars of anguish as the fire monsters outside gave him warm assurance of friendship. And they were friendly—no mistake about that—for while they could have broiled Cheroot to an all-over tenderness, they contented themselves rather easily. When, over the wild sounds of Jones' uncontrollable laughter, Captain Place whistled at them, the monsters raised their massive legs and kicked the bent plates of the air lock back into position.

It was several moments before I could think coherently about things, and by then Captain Effluvio, faced with Jones' heat gun, had blasted *La Pochata* into space, homeward bound.

The general's magnificent bulk, caught between the doors of the air lock, filled most of the available space in the tiny lock. He couldn't get enough of a start to jam himself through the smaller inner-lock doors. And the ancient vessel, its outer door shut and sealed as it were, by fire, was spaceworthy once more!

I staggered forward to the bridge, and there I found Jones lying weakly in a corner, his face contorted with pain, bloodier than ever, and Place nowhere in sight.

I rolled him over. He caught his breath, and sobbing gusts of laughter blew out of him, until the pain became too much again and he had to hold his belly. I thought he was literally going to die laughing, which is probably going to be true some day, and I couldn't stop him. And then, wiping his face—wiping those bloodstains—everything began to reel before me, because when I began to clean off those red smears—

"LIPSTICK!" I screamed.

Like a man in a dream, no longer able to feel emotion, I looked up and saw Captain Place in the companionway. He was taking off his helmet. And when he took it off, and in that suit of armor I saw a lovely girl, a young, lovely girl who stood there and shook her long chestnut hair, smiling at me, it didn't seem the least bit odd. You just have to take my word for it. It didn't seem odd at all.

"You must be Bascomb," she said. "Hello."

"Hello," I said. "What's your name?"

"Lila," she smiled. "Lila Place. You know—the L. P. who wrote you those pretty letters yesterday."

Later, when I had had several cups of broth, and was some semblance of the carefree lad who had shipped with Jones, the three of us sat in the general's quarters and I asked questions, and Jones and Lila together answered them.

"Naturally," said Jones, "I began discounting the murder story immediately after Lila abstained from shooting us that first time she spotted us. But it wasn't until the monsters chased us to the ship that I had the answer to the supposed murder. Lila herself didn't completely understand it even then.

"You see, when the bullets exploded inside the monsters and came shooting out, I realized that the identical accident was what must have hap-

pened to Claude Ponteret and his gang! Ponteret hadn't hoped to shoot the monsters at all. He knew very well that they couldn't possibly penetrate those armored hides—and he had the fatal salads all planned when he came! It was more or less in the natural course of events for us to hit on the same idea eventually. See?"

"I don't see," I said.

"Of course he doesn't see," said Lila. "Let me tell him. First, you really ought to know that dad, the terrible Captain Place, hasn't been at Forelle for months. It's too dull for him there. He's off somewhere now, and I don't expect him back for weeks. I went to Forelle for a rest, and I took care of the ships when they came in for supplies and water. I used to go around in armor whenever there was anyone around, just to play it safe. Not that I was afraid of anything really happening, not after the way dad taught me to handle a rifle, and with Babs and Jake with me—"

"Babs and Jake?" I asked.

"Those precious fire monsters. They're really quite tame: they're in love, you see. But this man, this Ponteret, did you say? . . . he seemed to have found out that dad wasn't at Forelle. Maybe he ran across him somewhere. Anyway, he came to Forelle once, found the monsters there, and then came back with his explosive bullets. I took a few warning shots at his bunch just to make them jump, but I didn't pay much attention to them. I knew they couldn't hurt Babs and Jake, and they didn't have a ship large enough to take them away, so I didn't—"

"Pardon me once again," I said. "What did Ponteret want?"

"What Ponteret probably wanted," said Jones, "was Forelle itself. The planetoid is worth a hundred Babs and Jakes. He wanted Forelle, and with Place off somewhere and an unknown quantity left there, he saw his chance. So he cooked up this scheme that we hit on accidentally.

"And it backfired, so to speak. Lila never went near them, but she saw them making up bunches of grass, just as we did. And then she saw one of the men fall dead. That was Ponteret, when one of the bullets hit him. They hit you, too, but luckily you were wearing armor. So, adding two and two, the gang figured they could pin a murder charge on whoever was at Forelle, and the firm of Ponteret and company would stay in business without its late president. Ergo—the story they gave the Exotican gendarmery, which the general used. Clear now?"

"Oh, that poor little fat man!" said Lila compassionately. "I really ought to bring him some broth again. He must be terribly cold, cooped up in that air lock."

"Only a third of him is cold," said Jones. "Another third is furious. And the last third is warm as toast. Dark toast."

Smiling tolerantly, the loveliest chunk of femininity I'd seen in years went out and left us. Her eyes, her hair, her figure, her voice—

"Well," said Jones, "now that it's all been explained to your—"

"It hasn't been explained at all!" I shouted. I'd been saving my new strength for that shout and it was a beauty. "You think this minor folderol about Ponteret is what I'm waiting to hear? You're not dealing with the general, my dear Scourge! This is Bascomb, the man who went through that hell and high water you mentioned, and you're the one who got Place! Who went places, I might add!"

"What d'you want to know?" said Jones weakly.

"You knew it wasn't Captain Place up on that mountain! You knew plenty that you kept to yourself, and not because I had access to a dictionary! I demand to know *when* you knew *what* you knew and *when* you knew you *knew* it! Is *that* perfectly clear?"

"Ahhhh," said Jones with a luxurious smile, "that comes under the heading of secrets of the trade, but you deserve it, my boy, and you shall have it." And he wallowed a moment longer in the secret delight of his thoughts.

"The first clue," he expounded, "was the handwriting on that first letter. Long, flowing lines—they looked rather feminine to me immediately, but after that exhibition of shooting we'd seen, it didn't seem possible. Then the captain came to

our camp, sparing our lives a second time. The second note he left was the second clue: the same beautiful handwriting. The sentiments were harsh, but the writing—"

"You didn't do it on handwriting!" I said. "Don't sit there and tell me you did it on handwriting!"

"I didn't say so, did I? They were merely clues, like the captain's not shooting us. But then we stopped playing around and went after the monsters in earnest. Now the captain had reason to be both alarmed and angry. But did he shoot my head off when he had an excellent chance? *NO!*"

"I'll do the yelling!" I yelled. "You mean to say that fact of your life being spared convinced you?"

"Why not?" Jones demanded. "Why not, may I ask? Who but a woman endowed with excellent eyes and cultivated judgment, would spare my life in such a situation?" He puckered his lips and looked at me and sighed. "All right, I confess. It didn't convince me. It was just another clue, emphatic this time. But then came the devastating blow, just when twilight was beginning to merge with gloomy—"

"What was it?"

"The mirrors!" said Jones, delightedly. "There was Captain Place sneaking out to take back a full-length mrror! What would a man want with a mirror? Don't you see? That clinched it! When I saw that armored person taking back a mirror I *knew* it was a woman! So off I ran."

"Fearlessly," I added bitterly. "Off you ran to be welcomed by eager arms. And it couldn't have taken you long to reach a reasonable understanding with the beauteous Lila—" I mused quietly. "So tell me this: isn't it true that when you came back you had already worked out the plan to get *La Pochata* back in space? Sure, you had me prepare everything for it. Therefore, isn't it likewise true that you could have worked the plan then and there? Isn't it? So what was that business you gave me about the urgent need for you to get back? Huh?"

Jones looked genuinely hurt.

"What a thing to say," he said. "You know damn well the Forellean nights are short. I had to get back to make the most of it. Ten moons, man. Ten big, gorgeous moons and Lila and Fletcher. Picture it, man!"

"I am picturing it," I groaned.

"You don't begrudge me last night, do you?"

I shook my head. "No," I said, honestly. "All I'm picturing is what you're going to have to put into that log. But I don't begrudge you a thing," I said as Lila returned and sat down very close to Jones. "It couldn't have happened to a better guy."

I ate those last words several times on our way back to Exotica. He and Lila would lock themselves up for hours in the general's quarters, playing cribbage. I don't play cribbage, as Jones well knew, and the game seems to require intense concentration, as everyone knows. So what I did most of the time was play with the general and the crew. We made paper airplanes from the dictionary pages and threw them at the air lock from fifteen paces, the object being to miss the general, who filled the space quite well. The crew gambled on every throw, but I was lonely—

Well, we got back three days ago. The fleet was in a day before us, and two days ago we had a big review and Jones and I were decorated. The publishable parts of the log are being reprinted in the next issue of the *Service Manual*. I suppose we're heroes. Everyone says we're heroes, and a cinch for Lieutenant, Second Class, on the next list. Captain Castle has been sick for two days and today he went off to see a psychiatrist. Lieutenant Haddock is running the *Star Swallow*, but his mind isn't on his work, and our crew is going wild all over Exotica. We're going to be here a few days more.

The general? They demoted him from sheriff of the Para hills to deputy sheriff, that's all. The doctors who are treating him for scorch and mildew say that his is a deep-seated ailment, and that for the next few years, whenever he sits down, a slight tinkling noise will be manifest. It is hoped that polite people will ignore it, since he is, after all, a general, and entitled to more than the usual frailties.

And Jones? Hah! Jones hasn't been seen since ten minutes after the decoration ceremonies, at which Lila Place was an enthusiastic spectator. Oddly enough, she's missing, too.

THE END.

SPACE CAN

By L. Ron Hubbard

● Boarding cutlasses went out with sail ships—but if men refuse to be licked, even when their ship's a hopeless ruin, it can be done—

Illustrated by Kolliker

Lancing through space, slammed along by a half million horses, the United States destroyer *Menace* anxiously sought the convoy which had been wailing to all the Universe for aid but now was still, still with an ominous quiet which could mean only its defeat.

She was only one, the *Menace* and "they" would be more than one, but the little space can charged ahead, knowing well that she was a pebble from the mighty slingshot of the embattled fleet, a pebble where there should have been a shower of stones. Gracefully vicious, a bundle of frail ferocity, a wasp of space designed for and consecrated to the kill, the *Menace* flamed pugnaciously onward; she had her orders, she would carry them out to the last ounce of her fuel, the last charge in

her guns and the last man within her complex and multiple compartments. She carried the Stars and Stripes upon her side, gold lace upon her bridge and infinite courage in her heart, for upon her belligerent little nose rested the full tradition of four-hundred-odd years of navy, a tradition which took no dares, struck no colors and counted no odds.

She should have been a flotilla in this lonely cube of space, but with the fleet embattled off Saturn no flotilla could be spared. She had done other jobs, hard ones in this long war. There was faith in her, too much perhaps, and so she was here alone, raking the black with her detectors, bristling with impatience to engage the enemy, be he cruiser or battleship or just another destroyer; she was a terrier who had no eyes for the size of her rats.

On her bridge a buzzer sawed into the roar of her motion and her executive officer stood aside to permit her summoned captain a view of the detector. Her captain, Lieutenant Carter, steadied himself with a hand on Ensign Wayton's shoulder, and his face, usually young and efficient, became weary as he looked at the message which registered there.

In the detector, the supply ships were colorless spots, unmoving, without order. Among them were fainter dots which gruesomely indicated ships which were growing cool, having been emptied of air. Because spacesuits might mean desertion of crews near the first port, there were few in naval vessels unless they were crack ships like the *Menace*. This battle was almost over and there would be many, many dead.

One spot began to turn violet, which meant that a vessel, friend or foe, was heading toward the *Menace*.

Second-class Petty Officer Barnham was already training an analoscope on the red spot. He shuffled the spectrum plates of all navies until he had one which would compare with the lines on his screen.

"Saturn destroyer, sir," said Barnham matter-of-factly.

Lieutenant Carter shook himself into the fighting machine he was trained to be. The situation was a plain one, a simple one. The convoy had been set upon by a raiding fleet, the existence of which had not been suspected. Bravely the train's escorts had flashed into battle and had fought their ships to the last pound of air; that they had not done badly was indicated by the fact that only two Saturn vessels remained in action; that the entire escort was dead was plain in the silence of the battle communicator; that the supply ships were paralyzed and already half destroyed was to be found in the garble which spewed and gibbered from the all-channel speaker.

Another spot which had evidently been traveling parallel to their course and so had showed white, now glowed dull-red and Barnham said in a flat voice, "Another Saturn vessel, sir."

They were coming up now into action. They had perhaps thirty minutes of strain in store before the first searching blasts of flame came to them and their own guns began to seek the vitals of the enemy. The captain pushed a thumb down upon the battle-stations' button and the clanging roar broke the tight lines which had invisibly stretched through the little destroyer.

It was a matter of seconds until Lieutenant Carter had his battle plan. Plainly, he wanted nothing to do with this first destroyer, for he could feel from across black space the eagerness of hope in it that he would attack it and disregard the second ship, while that vessel, with all the brutal efficiency of a thing which knows nothing but destruction, blasted the life from the remainder of the supply vessels.

Abruptly, Lieutenant Carter understood a thing, which in his inevitable resentment at being detached from the great battle had escaped him, and he understood, too, that insufficient weight had been given to this mission. He should have been started early. He should have the rest of his flotilla in a comfortable V behind him. For now the detector gave out information in shape instead of light and disclosed that this supply train consisted of the majority of fuel vessels possessed by the navy. Someone had blundered. Intelligence had failed to discover that an enemy raiding fleet had slipped away from Saturn; guard ships had blundered in letting it through; flag had erred by not suspecting the possibility. For in those big hulks was the blood of the fleet and without it victory or destruction were the only alternatives. The battle fleet, already far beyond its radius, had no reserve. And from the state of his own bunkers, Lieutenant Carter knew that no one had sufficient fuel to return to Earth!

Everywhere through the ship men were strapping themselves at their posts or donning the heavy padding which would protect them against the violent course changes which would throw the complement about like dice in a cup.

"Aloft ten, right rudder nineteen," said the captain.

The *Menace* leaped as the steering jets slammed her into her new course as though she was unwilling to even countenance a thing which sought to avoid battle.

The screens of the enemy showed the action without much lag, and an instant later, the Saturn vessel was killing her speed on her old course and blasting into a new one which would again intercept the *Menace*.

The Saturnian, grudged Ensign Wayton, was

well handled. Getting by her to engage the second, was not going to be simple.

Lieutenant Carter leaned back in his deep command seat and apparently lost interest in the whole thing, for there was a vague look in his eyes and a relaxed expression about his mouth. Seeing this, the quartermaster let out a small explosive sigh, for he knew that they would engage the first enemy.

Actually, the captain was examining the vast panel of meters which gave the small bridge the appearance of being set in diamonds and gold. When he saw that all guns were ready, that all tubes were firing, that the air pressure was even throughout the ship and the new tanks broached to give the men more energy and courage, he turned slightly to the blue-and-gold figure in the other wing and said quietly, "We will engage, Mr. Wayton."

Ensign Wayton's hands tensed over the panel above his knees and then fluttered for an instant as though he needed to test the buttons which would fire the batteries.

"Aye, aye, sir," said Ensign Wayton. He was breathing quickly, as though to supercharge his body with oxygen and hurl himself rather than flame projectiles at the enemy.

On the after bridge, before a similar but less complete board, Ensign Gates stood a lonely watch. He could look down the hatch just behind him and see the tense crew around the base of the Burmingham jet of the starboard engine. Ensign Gates swept his eyes back to the control panel, checked the telltales there and then glanced at his own quartermaster. The man, a heavy-set sailor from Iowa, who still bore, after twenty years in space, the stamp of his State upon him, looked impersonally into the sphere compass which mirrored the stars and planets. He felt the officer's eyes on him and edged his appearance with a sharp professionalism, as though this might communicate a greeting to the placid little ensign, of whom the quartermaster was fond in a shy, defiant way.

Ensign Gates grinned to himself, for he knew the meaning of the change in his quartermaster. He said something to the man, but the remark was engulfed in the crashing shudder of the port twenty-nines. They were engaged.

Time stood still and two vicious dots of ferocity slashed at each other in an immense black cube of vacuum. Shells burst like tiny flowers when they missed, or flashed like yellow charges of electricity when they struck. The *Menace* became filled with acridity. Somewhere in her a man was screaming an insane battle cry, and elsewhere blue blots of profanity hung thickly around guns and tubes and stoke ports.

Compartment 21 was holed and sealed from the rest of the ship between the beats of a chronometer. Compartment 16 turned into a blazing furnace and was sealed alike.

In the exact center of the ship, which was the after bridge, Ensign Gates placidly kept track of the enemy in the event that his firing panel had to take over. His active duty here was the overseeing of the engineering force, aft and below, but two tough chiefs were cursing themselves into a comfortable berth in Hades around the molten breaches of the tubes and needed no help.

"Hulled her!" barked the annunciator. Forward, Ensign Wayton sounded like a man cheering a baseball game rather than the director of that deadly blast. And then an instant later, "Hulled her!"

There was a crash topside and a man, bellowing agony and rage, hurled himself down a ladder. He was a mass of flames. The emergency squad member there smothered him swiftly in a blanket. Compartment 6 was sealed and everyone in her.

A small amount of Ensign Gates' placidity left his face. They were being severely knocked about by a vessel which had a longer range and a faster steering system, which was landing four hits to their two.

"Hulled her!" cried Ensign Wayton, an invisible source of death forward and above. Evidently something had happened to the Saturnian, for an instant later, in a steady stream, Wayton began to chant the *Menace's* hits.

Examining the panel before him, Ensign Gates believed that a lucky shot had penetrated the steering jets of the enemy, for he was now traveling in a straight line through the remaining three vessels of the convoy as if to help out the other Saturnian in the convoy's destruction before this raging little wasp of space put an end to everyone. Just as the *Menace* flashed by a halted supply vessel, it bloomed into a sphere of scarlet death, the ammunition and highly explosive fuel igniting all at once.

Lieutenant Carter gazed calmly at the fleeing enemy, but the calmness was an official sort of thing, for there was sorrow for the supply ships and anger for the Saturnian snarled into a lump behind his gray eyes. Each time the *Menace* got a salvo home the captain twitched forward and a contraction of muscles above his mouth made him grin a split second at a time. His role was that of spectator so long as the ship was on her target, for then her steering was wholly between the gunnery officer and the helmsman.

With a blast close aboard, the Saturnian folded itself like a smashed tin can, and what had been an efficient fighting ship an instant before, was now a scrap of volitizing metal.

"Well done, Mr. Wayton," said Lieutenant Carter.

Ensign Wayton turned glowing eyes and battle-reddened cheeks upon his captain and didn't see

him at all. He was already seeking the other Saturnian on his screen, was the gunnery officer, as though this first ship had merely served to calibrate his guns.

"Engage the second enemy, Mr. Wayton," said Lieutenant Carter.

The *Menace*, bristling and sure of herself, shot a streak of power from her starboard bow and stabbed into a new course, three quick jets on the port bow and one below, settling her into this.

Telepathically, Lieutenant Carter was aware of his enemy's abrupt distaste for combat with him, now that the first Saturnian had been blasted from the action, but there was nothing in the action of the second vessel to indicate its dislike, for it turned now away from the supply vessel it had intended to spear, and streaked in a wide bank to bring her into a broadside parallel with the *Menace*.

Ensign Wayton adjusted his screen with the motor button and gave a swift check to the computator and then, because he was already ranged, sent all six guns of the port battery into a furious crescendo.

The *Menace*, dancing sideways from the recoils and being jabbed back by the adjusters, shivered with some vague premonition.

The Saturnian destroyer passed through the cone of concentration, sliding sideways to the *Menace* at a swift pace to throw off range and for some other purpose which was not to be fathomed for several seconds. The Saturnian's guns were winking bright spots and her flame wake, as it turned to white powdery smoke, curved and feathered. She was a well-built little vessel, a few feet longer than the *Menace* and thicker through.

Lieutenant Carter scanned space with his detector but found no sign of reinforcement for the remaining destroyer.

The *Menace* shivered as she was knocked off course. The check board blinked and Compartment 26 vanished from it. Then, in terrifyingly swift order, the lights, indicating Compartments 27, 28, 29 and 30, went black.

An annunciator above the captain's post said in a calm voice, "Starboard magazine gone. Fire spreading."

The quartermaster's eyes flicked to the captain. Ensign Wayton hesitated for an instant over his firing buttons and then his gold stripe flashed as he located and aimed all three space torpedoes on the starboard. He launched them and said in a tightly casual voice to the quartermaster, "Roll a hundred and eighty." Ensign Wayton, having no starboard batteries, was in action with the port.

Compartments 31, 25 and 36 went out in order. The air in the ship was unbreathable.

"Spacesuits," said Lieutenant Carter into the annunciator. "All hands."

The space torpedoes were sped, but only one had struck. This in the after section of the Saturnian where it had caused a vast fan of bright fireworks. It had wiped out the stern balancing jets, but that vessel's main propulsions were apparently without harm.

A new crash shook the *Menace* and the big light which marked the after bridge went black.

There was the smallest hint of concern in Lieutenant Carter's voice. "Mr. Gates!"

Silence answered.

With steel bands on his nerves, his voice carefully steady, Lieutenant Carter said, "Mr. Gates. Please report."

There was silence which hung for a heartbeat throughout the entire vessel.

Dead-white, Ensign Wayton glanced at his captain. It was an appeal of dependence, shot without thought, an agonized hope that something could be done, a last belief in the impossibility that anything could ever happen to placid, easy, Ensign Gates.

Lieutenant Carter did not look at his executive officer. In a flat, official voice he said, "Grapple the enemy."

The heat was so intense in the dying *Menace* that men felt it through their spacesuits. They were unwilling to begin upon their private stores of oxygen until smoke was too thick in the hull to be breathed. Now they were in communication with helmet phones.

Space-garbed, a relief came to the quartermaster to allow him to climb into his suit. He had been standing there, strangling and sweating at the helm and he would have stood there until he had melted if his relief had not come. The captain took the firing panel while Ensign Wayton slid into his suit. And then Lieutenant Carter dropped into his own ready covering. The captain gasped with relief as he sucked in air.

There was a clatter in the phones as arms were being issued out. Though the batteries were firing still, the helmet cut down their roaring to a tremble, which one felt with his body. There was something ominous and horrible in this silence for every man on the ship, for each was affected alike in the connection of the silence to a sudden surge of loneliness. For perhaps three minutes there was irregularity in the smoothness of the execution of duties, and then the first shock of quiet wore away and men began to talk to each other on the individual battery frequencies, began to swear anew, began to revile and damn this enemy who was destroying the sleek little *Menace*.

Still firing, Ensign Wayton was adjusting his ranges so as to sweep them in closer and closer to the attacking ship. The Saturnian was suffused with superiority and satisfaction, for the burning wake of the *Menace* was plainly visible as were

the gaping holes in her skin, and this feeling, knowing it existed, Lieutenant Carter utilized by ordering unsteady leaps and veering as though the vessel were not quite under complete control.

Confident and disdainful, the Saturnian welcomed the closing. She even swept to starboard, little by little, to aid the action. It was her belief that gunnery was the only concern of the *Menace* and this, from a blasted vessel with only two guns still going, she could amply risk.

Further punishment awaited the navy ship, for she could not come so close without being struck repeatedly. Her bow vanished to within twenty feet of the bridge and she was steering now with her guns alone, having two amidships port and one forward starboard as well as her one-inch batteries on the bridge itself. She was rolling, tortured, nearly out of control, darting up and back and even tumbling when she came within a quarter of a mile of the Saturnian. And then what happened was swiftly done. The grapnels were still in action as they had been designed to be, and the one last ace of the gallant little vessel was played.

With a shuddering stab which tightened and held, the invisible claws of the *Menace* fastened upon the Saturnian and sucked them together with a swiftness which could only end in a numbing crash.

The shock of collision further crumpled the nose and drove a deep bulge into the side of the Saturnian. The latter had been panicked upon the instant of realization that something was amiss and had sought to charge away into space and get free, momentarily forgetful that she still possessed a superior force of men. But now that the adhesion was achieved, she ceased blasting and prepared for the fury which would come—which was already on its way.

Disintegrators in the hands of a burly C. P. O. and his gang ate a hole into the Saturnian at the point of contact as though that hull consisted of cheese.

There was no more on the bridge for Lieutenant Carter. Here his responsibility was done. Ensign Wayton was already gone from the panel and the quartermaster, a huge machete he favored in close quarters, gripped competently in his hand, was just vanishing through the hatch.

"Boarders away!" the captain barked at the annunciator in his helmet. He was through the hatch before the yell had ceased to beat against his own ears.

Ahead he saw a knot of men launching itself against another knot which barred the ragged circle of emptiness which led into the Saturnian. Flame was spitting back into the boarders from viciously wielded jets and here and there a spacesuit was giving way to the heat. And then Carter threw himself through the group, jet pistol in hand, and torpedoed himself into the mob just within the Saturnian. With a howl of approval, the sailors followed their captain.

The mass in which he found himself cut at him, shot at him, grabbed at him and Carter, spinning around and around and firing a space clear, yelled defiantly but incoherently at them.

For several seconds the captain did not realize that the Saturnian had been too contemptuous to don spacesuits—if they had them—for, at best, it was difficult to use them at the guns. It had never occurred to the enemy destroyer that a thing as mad as a boarding would be attempted by such a mauled ship, particularly since the odds in men against such a ship would be three to one.

The curiously pointed heads of the repelling sailors ducked back from the fury of the pistol and then the mass swept deeper into the ship, evidently in receipt of an order which was calculated to draw the invaders into passageways where fast-firing small arms could be brought into play upon them.

Swirling about their captain, the seamen of the *Menace* cut down the stragglers and slipped in their blood. Few guns were here, for the sailors uniformly preferred steel when close quarters were to be had.

Suddenly the front rank of the invaders was swept back, driving their followers to cover. Two of the bodies were dead and projectiled toward the *Menace* by the fury of the fire they had met.

Ensign Wayton, a furiously moving monster in his spacesuit, shot to their fore, insane for an instant in the belief that his captain had been killed. When he saw Lieutenant Carter, he stopped screaming into his helmet. He halted.

"Spread into cover," said Carter quickly. "Try to filter up into the ship through those hatches. But don't press them closely and don't risk your men."

"Aye, aye, sir," said Ensign Wayton. He spent no time in wondering why his captain went back through the crowd, for he had received his orders and he would carry them out to the last word and with his last breath. He looked around him at the shining walls of the gun room in which they had arrived and crisply told off a chief petty officer to burn out a section of its wall. If the passages were covered, there would be other ways of getting through the ship. He had an instant's wonder about their fate, for he knew very well that this handful, less than twenty—less than fifteen he saw with a shock—were pitted against at least fifty well-armed in their own ship.

"Lively, now," said Ensign Wayton.

As captain, Lieutenant Carter had no questions to answer or reasons to give. He was glad of that.

He had a competent officer in Ensign Wayton, who knew what to do if anything happened to his commander. And this was a job Lieutenant Carter could not relegate to anyone.

He faltered for an instant on the threshold of the burning *Menace*. It was not the heat which repelled him so much as the unwillingness to see again this dying little vessel which had been, until such a short time before, a well-ordered, shipshape example of what a United States navy destroyer should be. Here, for two years, he had gone through the routines, the problems and the alternating bursts of good and bad news which had marked this campaign. He had been one with an alive, sensitive creature of steel and chromium and flame, and to enter her now was like walking upon the corpse of one's friend. He had a feeling that she should be left alone, as she was, to die, still facing the enemy.

Lieutenant Carter stepped over the jagged sill of the hole which had been carved in the Saturnian. The need of haste was upon him now, both because the possibility of his getting through the flames before him required speed and because this was a hideous job, the better to be done quickly.

The first blast struck him when a gun charge fired somewhere on the deck nearby. He was catapulted against the steel bulkhead and stood there for an instant in the swirling yellow gloom, shaking his head and trying to recall what he was about. Anxiously, he gripped at the illusive facts, for he was badly stunned. Then, with clearing sight, he sped aft and up through the curling tongues which had already stripped the paint from the walls.

There was no resemblance to the trim little *Menace* in this twisted, blackened mess through which he drove himself. He tried to think there was not. He knew there was.

He fumbled in his bag for a grenade as he lurched through the painful fog and when he had it in his thick glove, it required much of his nerve to keep it with him, for tongues of fire were reaching at it, heating it.

He found the ladder to the engine room. The grease had burned away, and because it was hot, his shoes stuck tenaciously to the rungs as though the *Menace*, lonely, was trying for the company of her master in a last shiver of her death throes.

Lieutenant Carter could feel a throb which did not come from flames. He worked toward it. He seemed to be taking forever for this task. The air in his tank was already scalding his lungs. The ship's oxygen tanks must be feeding these flames, and if that were so, then they might explode at any instant. They were close above him now.

He found the generators, still running furiously in all this heat, fed by the treble-protected batteries which made a boarding possible after a ship was in ruins. He hauled a plate from the first layer of armor and then groped through the second and third. That he tried to pull the pin of the grenade with his teeth, recalled him into a calm and orderly chain of thought. He plucked at the pin with his glove-thick fingers and got it out. He dropped it upon the batteries and in the same motion, spun about and staggered toward the ladder. The heat inside his suit was so intense now that he had to will himself to breathe, and each time he did he flinched as he felt his lungs shrink away.

He clawed through a hatch and scrambled down a passageway. Blind and groping, he found the door in the yellow smoke and stumbled through.

The jagged hole in the side of the Saturnian was just ahead of him, he knew. He could not see it. He sought along the plates with anxious fingers.

Abruptly, he was tumbling forward, breath knocked out of him by another exploding charge. Dazedly, he lifted his helmeted head.

There was a great, sighing rush of smoke and fire and a mighty hand snatched him from the deck and slammed him against plates. Groggily, he fought again to rise and then fought even harder, for it would have been very comforting to slump and go out, with the hands of his sailors supporting him.

The smoke of the *Menace* had filled this compartment of the Saturnian. But there was no smoke here now. And there was no air. The empty vacuum was greedy and swelled out the spacesuits to their normal proportions. Where the *Menace* had been there was now only a gaping black hole. Once her generators, which kept the grapnels alive, had been shorted out the furious efforts of upper gunners in the Saturnian had at last succeeded in blowing her away from the side.

Ensign Wayton was grinning through his transparent helmet when he had at last ascertained that his captain was safe and not seriously hurt.

Through the phones, Ensign Wayton said, "Sir, we have carved our way through the bulkheads into their after bridge. We have lost but three men. Your orders?"

"Yes," said Lieutenant Carter. "Yes, of course." He shook his head vigorously to clear it. "Well done, Mr. Wayton." Then thought took over from mechanical form and with a glad surge he gripped his officer by the shoulder. "Quick! Open their compartments! Open their compartments!"

The idea flooded in upon Ensign Wayton. It was less than twenty feet up to the hole their jets had carved into the bridge deck. The one dead sailor from the *Menace* and the officer and two quartermasters of the Saturnian were bloated, even exploded, into no semblance of humanity or

saturnity. The C. P. O., who held the fort there belligerently, cut away at the bulkhead with his jet and suddenly a great gust of air and equipment shot him back.

Ensign Wayton steadied himself at the compartment board and began to open the switches. Some of them were frozen and he realized that the master panel was on the forward bridge. The compartments went shut and their lights began to go out. An officer up there was thinking fast. Ensign Wayton thought faster. He snatched at the auxiliary voice tube caps and yanked them. Into the holes he poured a dozen flame shots. A scream of air, loud enough to penetrate the thick space helmets, greeted his action. The hurricane which came through the voice tubes from the forward bridge, knocked him backward. The master panel had been cut in. Suddenly all panel lights glowed on the auxiliary board as lack of air pressure on the forward bridge threw control aft. With swift hands, Ensign Wayton switched the compartments open throughout the ship and a shuddering wail went through the vessel, every plate trembling as the life poured from her. Those suits, denied the Saturnians to insure their fighting to the last compartment, had cost her, finally and forever, her crew.

Lieutenant Carter, beside his officer, spoke on the general-order frequency of his helmet. "Attention. Proceed carefully through the vessel and clean out anyone left in her." He turned to Ensign Wayton. "Take over, Mr. Wayton."

Seating himself at the communicator, Lieutenant Carter's eyes were vague with thoughtfulness. Absently, he commented that Washington's one-time predilection for trading patents was not without benefit, for this communicator panel might have borne the stamp of Bell Radiophone for its similarity.

He knew he should feel jubilant, knew that he should savor this report to the battle fleet, knew that victory and triumph were personally his. But, somehow, he had ashes on his tongue and the words he tried to arrange in his mind were dull, gray things.

He was thinking now of the *Menace*. In the let-down which had followed this battle, he knew he would think of her more and more. Proud, arrogant little space can, smashed by the insensate hates of a space war, drifting a derelict, a battered sacrifice to her pride, a dead cold thing lost in the immensity to be shunned by all vessels who sighted her as a navigational risk.

There was victory but there was no victory. He could not think of a proper report, one which would measure up to the little scrap of history they had made. This story would be told in wardrooms for many years, how the little space can took on two larger than she, how she had saved the supply vessels of the battle fleet and how she had died in the saving. Lieutenant Carter could not see the panel clearly and was annoyed with himself. He flung away from it and the reports which were coming to him now concerning the state of the Saturnian, reports which were good, had only a routine meaning. They reached his ears, his official mind, but they went no deeper.

There was a slight jar through the ship, a thing which required no explanation but which seemed to herald something electric. Lieutenant Carter glanced about him. He swung down the ladder to the lower gun room and glanced questioningly at the sentry stationed by the jagged hole in the Saturnian's hull.

And then Carter froze.

For the hole was no longer empty! Had he dreamed that he got the *Menace* away from there? Had it been possible that she would not have herself abandoned?

There she was, the *Menace!* With her shattered bow pushed up into position and the fire-scarred depths of her clear of flame, she bumped gently against her conquered enemy.

And as Lieutenant Carter stared, he saw a man in spacesuit moving toward him out of the shattered ship, followed by yet another.

Lieutenant Carter started and then quickly composed himself by pushing away the surge of elation which coursed through him.

The man in the spacesuit saluted. "Ensign Gates, sir. Fire shorted our conduits and cut us off. As soon as we dressed and opened the after bridge, we had things under control there. When the air went out of her hull, the fires stopped. She isn't in such bad shape, sir. Your orders?"

Lieutenant Carter saw through a strange mistiness and carefully pitched his voice for calmness. "Very good, Mr. Gates. You will take charge of the repair parties as soon as we get air back into these ships." He returned his engineering officer's salute with unusual smartness.

Gently, the little *Menace* nudged her battered nose against the hull of her conquered enemy as though to remind the Saturnian that a ship, even when shot half to hell, should never be considered in any light save that of a dangerous adversary. For an instant Carter was startled into a belief that the *Menace* was laughing and then he saw that the sound issued from his phones and was sourced aloft where Gates and Wayton were gladly greeting each other. It amused him to think that his ship could laugh, for the fact was most ridiculous. Or was it?—he asked himself suddenly. Or was it?

THE END.

STARS ALSO HAVE RINGS

● It is a physical impossibility, due to the properties of light, to make a telescope capable of revealing the geography of another stellar system. We'll never be able to see planets, or any such small, dark structures about other suns. No electronic amplifier can magnify detail that the light itself doesn't contain. But there is one type of amplifier that works—brain-power!

By R. S. Richardson

How many times have you seen this statement in the textbooks: "Saturn is unique among all the heavenly bodies in that it is surrounded by an extensive ring system."

Dozens of times, no doubt. But those books are all out of date now. For it isn't true any more. Announcement has just been made of the discovery of a star surrounded by a thin luminous ring of hydrogen gas in rapid rotation. Seen by the naked eye from a distance of a billion miles, it would closely resemble the planet Saturn when viewed through a small telescope.

The object in question is the eclipsing binary RW Tauri. The more massive component of the system is a brilliant, intensely hot star of spectral class B9; the secondary is a much fainter and cooler star of type KO. The KO star is roughly twice the diameter of the B9 and eclipses it once every two days, eighteen hours.

Only during totality can the presence of the KO star be detected. At all other times its faint light is completely drowned out by its blazing companion.

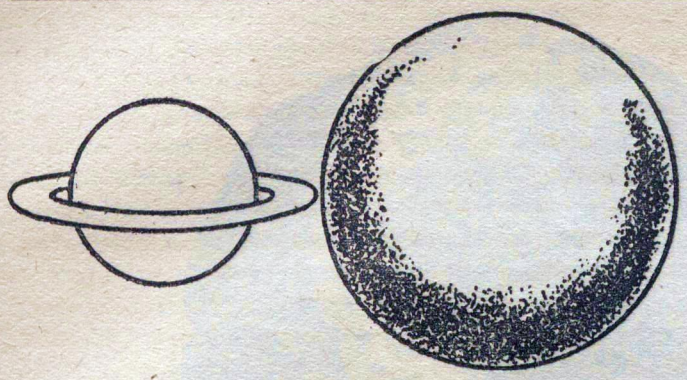
Many eclipsing pairs are similar to this one and behave in much the same way—except for one very curious circumstance. If spectrograms are taken in rapid succession as the eclipse comes on, they show only the usual characteristics of a B9 star up until the moment of second contact when the KO star has totally blocked out the B9. Then a most extraordinary phenomenon occurs. The spectrum suddenly does a complete change-over from that of a hot star with dark hydrogen absorption lines to one showing bright hydrogen lines only. (Weak emission lines of ionized Mg, Ca, and Fe can also be detected.) What is more, these bright hydrogen lines are much displaced to the *red* side of their normal positions in the spectrum, indicating a Doppler shift corresponding to a velocity of two hundred ten miles per second *away* from the observer.

The brght hydrogen lines soon fade away, leaving only the faint dark-line absorption spectrum of the KO star. But thirty minutes later the bright lines flash out again, only this time displaced toward the *violet* by an amount indicating a velocity of two hundred ten miles per second *toward* the observer. As the KO star passes on, the dazzling light from the B9 star predominates at once and the spectrum becomes that of an ordinary hot star.

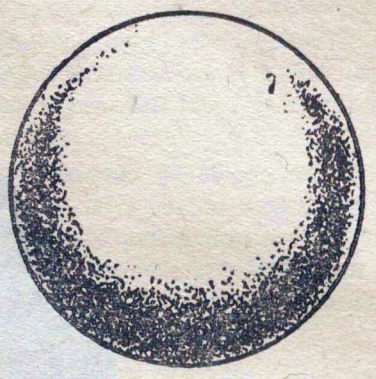
To produce an effect of this kind, there must be some sort of an extension from opposite sides of the B9 star. A huge prominence seems out of the question since it could hardly be so obliging as to remain there for weeks at precisely the right position. About the only feature that fills the bill is a thin, luminous ring surrounding the star in the region of its equator.

Although many details remain to be investigated, there can be little doubt as to the main facts in the case. The ring is believed to have a diameter about four times that of the sun and make a rotation once every fourteen hours.

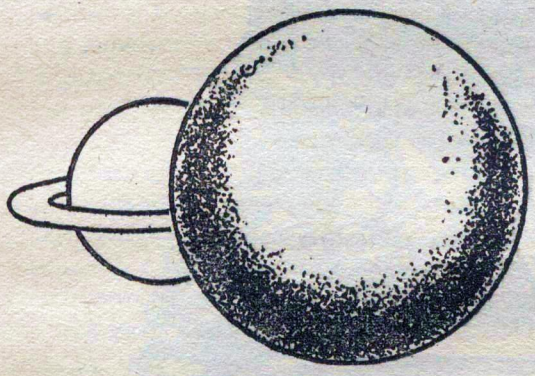
A. H. Joy, who discovered the existence of the rings from spectrograms taken with the one-hundred-inch reflector on Mount Wilson, plans to explore the dynamics of this peculiar double-star system.



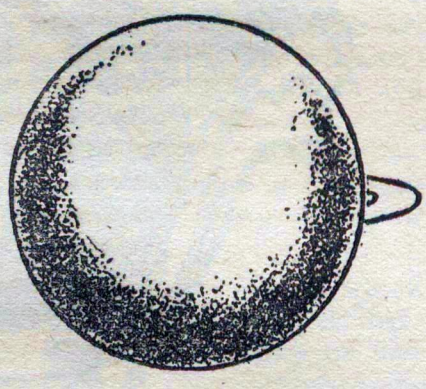
I. Large, faint KO type star about to eclipse smaller, more brilliant B9 star with luminous ring of hydrogen gas surrounding it. Spectroscopic analysis of light shows only presence of B9 star.



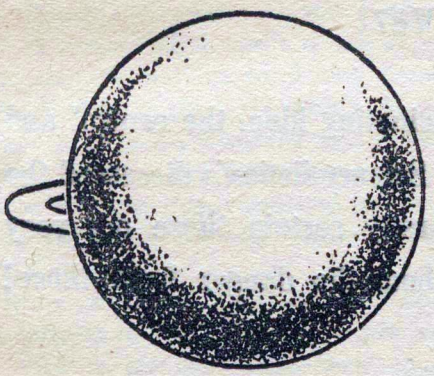
IV. The B9 star and its ring are both totally eclipsed for thirty minutes. During this phase, spectroscope shows only very faint solarlike spectrum of the KO star.



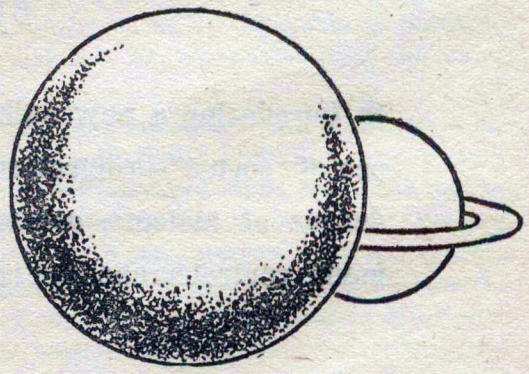
II. The B9 star, although partially eclipsed, still so far outshines KO star that spectroscope reveals only usual B9 spectral characteristics.



V. At third contact, ring on other side is revealed and spectroscope now shows bright hydrogen lines again, but this time shifted to the *violet* by an amount indicating velocity of 210 miles per second *toward* the observer.



III. At moment when B9 star is completely blocked out, brilliant bright lines of hydrogen gas flash out. These bright lines show Doppler shift to *red* side of normal position, indicating velocity away from observer of 210 miles per second.



VI. Spectrum is now same as that in I., a typical hot B9 star only. Entire process repeated in two days, eighteen hours.

COLLISION ORBIT

By Will Stewart

● Introducing a new author and a fascinating idea: the control and use of "seetee"—contraterrene matter. Science-fiction's discussed the danger of meteors; astronomers are pretty certain there are very many contraterrene meteors. How about the danger from those! •

Illustrated by Orban

A young man spoke the scornful words—he was Kurt von Sudenhort, the blond, ray-burned Martian-German subaltern, in command of the small base of the High Space Guard on the tiny asteroid's polar plateau. Strutting down the quiet old street, he was loud with a young man's arrogance.

"Excitement, you say?" Hard heels clacked impatiently on the worn sidewalk, as he kept step with another trim young officer in black. "Ex-

citement—in a one-street ghost town, on a pint-size planet?" He used careful English idioms, in a harsh metal voice. "You can walk around Obania in an hour—and all you will find are a few fossil asterites, petrified alive since the Treaty of Space."

Contemptuously, he jerked his close-clipped military head at a sign they passed. Above an open first-floor window, in the tall false front of a rusted old sheet-metal building, faded letters glowed with pale luminescence:

Drake & McGee
Spatial Engineers

"Spatial engineers, so?" echoed the young commander, scornfully. "You will meet those two old birds, sipping their bitter tea and gabbing about the days before the war and dreaming their crazy dreams—extinct as the archaeopteryx."

The heels rapped on down the single sleepy street, squeezed between the black barren cliffs. The young subaltern's voice receded, in the direction of a place that helped bored men endure the stagnation of Obania—the ancient Meteor Palace Bar.

"Excitement, *nein!*" He seldom used a German word. "Nothing ever happens on Obania."

The hard young voices faded, but one old man had overheard. Beyond the open window, old Jim Drake was sprawled at his battered desk. Once he had been as mighty as his bronze-haired son, and he was still a blue-eyed giant who seemed too big for the shabby little office. But sixty years had bent his powerful shoulders, and his once-red hair was thin and roan. His big stiff fingers were cramped on a pencil, drawing plans for the magnetic tongs and bed plates and relays—that other men called a crazy dream.

The loud passing voices stopped old Drake's work. A tired, awkward giant, in a shabby gray coat and rough miner's boots, he looked out the window with hollow blue eyes. It was true.

The Treaty of Space had ended the world—the frontier world that he and his kind had wrested from the cold eternal night. He didn't fit into the new bureaucratic order, enforced by the High Space Mandate. Neither did his pioneer friends. It was true that nothing important had happened on Obania for twenty years—not since the war ended, in 2171.

But a slow brown smile softened old Jim Drake's rugged, space-burned face, and the old, eager light came slowly back to his eyes. He took up the pencil again, with stiff brown fingers that seemed too big for a pencil. His mind returned to the machines he planned to build.

A sense of urgency drove Drake on. The task was vast for any man, and his time was running out. Once he had hoped that Rick would come back to help—for Rick was big enough for any task. But Rick had taken a job with Interplanet. The task was left for old Jim Drake, and he had no time to waste.

After four decades of effort, he was used to scornful voices. His dream was mighty enough to make any man a giant, and he was too big to mind a little laughter. He had even patiently accepted a nickname first used in mockery. He let men call him Seetee Drake.

For "seetee," to the engineer's mind of old Jim Drake, meant power. Terror to others, to him it was atomic energy, priceless and illimitable. The whole meteor belt was rich in contraterrene drift; matter inside out, with electrons and positrons in reverse positions. It was the dangerous debris of that terrific cataclysm, before the time of man, when a strange stellar wanderer of contraterrene matter shattered the trans-Martian planet. When it touched common matter, the result was a spectacular blaze of gamma radiation; and mutual annihilation—unlike forms of matter canceled out, to leave free neutrons and pure energy. In the words of the ordinary spaceman, it was simply hell in chunks. But old Jim Drake dreamed of something else—he was designing machines to turn that frightful energy to serve the needs of men.

He was an engineer, not a politician—he mistrusted politicians. Yet he had seen that atomic power meant political power. The past had tested that historic equation. For a hundred years and longer, the monopoly of uranium power had made Interplanet Corp. the master of all the planets. Even the war, when all the colonies except the Moon broke free, had merely shaken that old power.

Not a politician, Drake still could see that his success would balance the scales again. It would end the selfish and arbitrary oppression of the Mandate commissioners—the High Space Mandate was a device set up by the treaty of peace, to parcel the riches of the asteroids among the major planets.

But success was far away. One politician—his pioneer friend, old Bruce O'Banion, now twenty years out of politics—had often reminded him of the great obstacle. He had no laboratory—nor any site for one. For a contraterrene laboratory, there was a singular requirement: it had to be situated beyond the last trace of atmosphere. Molecules of any gas reacted with seetee, in deadly flame. Of course there were millions of airless asteroids, but the Mandate held title to them all, since the war. The commissioners knew that their proper function was to discourage every sort of enterprise, among the native asterites.

The dream was all on paper.

Today, despite the young commander's scornful plaint, a stir of excitement came to Obania. A few minutes after von Sudenhorst had passed, Ann O'Banion burst into old Jim Drake's small rusty office.

"Seetee!" She was breathless, her gray eyes shining. "Guess what?"

Drake pushed away his papers, with awkward space-burned hands. Obania was a forgotten little world, since the war; a world of old and futile men. Ann O'Banion was almost the only young person left, except the strutting guardsmen at the base. His tired face smiled to see her slim and vital youth.

Ann was the dark-haired daughter of stout, ruddy old Bruce O'Banion. He had been the original claimant of Obania, forty years ago; and Drake was the young spatial engineer he employed to terraform the little rock, only two kilometers through—by sinking a shaft to its heart for the paragravity installation, generating oxygen and water from mineral oxides, releasing absorptive gases to trap the feeble heat of the far-off Sun.

The times had changed, Drake thought wistfully. Before the war, Bruce O'Banion had been a wealthy and important figure, the natural political leader of the rugged little democracy he had helped to plant on this far frontier against the stars. But now the old assembly hall, where the pioneers had gathered for their simple government, was an Interplanet warehouse. Von Sudenhorst ruled Obania, by military decree. The mines were closed, because O'Banion refused to sell out to one of the great planet monopolies. All but ruined, the old statesman clung to the empty shell of his past—as he did to the empty, old-fashioned magnificence of his mansion at the south pole of Obania, opposite the busy Guard base.

Ann O'Banion had stayed to keep her father's house, while most young people left to take good jobs with Interplanet and the other corporations. But Drake knew that she hoped brightly for the future. He even suspected that she was a secret supporter of the Free Space Party—that stubborn little group, now outlawed by the commissioners, who still fought to keep alive the forbidden ideal of independence.

"No, I couldn't guess." He saw the excited flush under the space tan on her cheeks. "Unless maybe the subaltern has proposed?"

He knew that Ann was much admired by the bored young men at the base. Once he had hoped that Rick would come back to Obania—they were the same pioneer stock, and he thought they would make a fortunate couple. But that was another old man's dream. Rick hadn't been on Obania since he was ten years old. And Drake had not tried to persuade him—let the boy make his own life.

"He has." Ann's intense brown face made a pleasant little grimace. "But I don't like Martians." She caught her breath. "No, Seetee—this is lots more exciting. I was just up at the base, to take a pie to Cap'n Rob. And he says there's a seetee blinker, near. It's a swarm beacon—there's danger we'll strike a fire storm!"

If there was danger, Ann O'Banion didn't seem appalled by it. Her bright animation might easily have been mistaken for joy. She was a native asterite, accustomed to the annihilating threat of contraterrene matter. Like the young men at the base, she was thirsty for something new.

Yet the danger, Drake realized instantly, might be serious. While all the Sun's vast family of asteroids, seetee and terrene alike, circled in the same direction, the orbits of the contraterrene drift were often highly eccentric. Glancing collisions were not uncommon.

The seetee blinker was Drake's own invention, made many years ago. It was a necessary task of the Guard to mark the contraterrene bodies, whenever they were identified, so that ships and miners might avoid them—yet no man, or work of man, could touch them unconsumed. Young Jim Drake had solved the problem.

The blinker was a spiderlike frame of meteoric iron, set to circle in a narrow planetary orbit about the body to be marked. The whirling arms carried mirrors of sodium foil, tilted to reflect the Sun's rays through colored filters in a sequence of warning flashes. The signals were listed, with data on the objects marked, in the "Ephemeris and Register." The oldest beacons had been spinning for nearly forty years, perfect machines, requiring neither fuel nor attention.

A few contraterrene bodies were many kilometers in diameter. Smaller boulders were far more numerous, however, and there were occasional clouds of contraterrene dust—formed no doubt when larger bodies were blown almost literally to atoms by the insane violence of explosions following collision with common terrene matter. Such particles had caused the dazzling display of meteor showers in Earth's atmosphere. When they hailed against a ship or an asteroid, the flame of atomic destruction was, not surprisingly, called a fire storm.

Fire storms, Drake knew, could be deadly.

"Cap'n Rob's in the pilothouse of the *Good-by Jane.*" Ann's voice was clear and eager. "He's keeping an eye on the blinker—he wouldn't even stop to eat the pie I brought him. He said you would want to know about it."

Rob McGee was Drake's partner; a short, space-beaten man, with gentle voice and shy, kindly smile. His invincible calm he seemed to have learned from the stars he knew so well. Rob was short for Robot—an allusion to his almost un-

canny mathematical perception. With one glance of his deeply squinted red-brown eyes, Rob McGee could give the position and velocity of a meteor a thousand kilometers away—exactly.

Times had changed, even for Rob McGee. Although keenly aware of his lack of formal education, he had been a famous and successful pilot, before the war. He had bought the *Good-by Jane* out of his own savings, with only a little aid from Drake, and built up a good salvage and towing business. But now, since the war, only the great monopolies could afford to buy salvage and towing permits from the Mandate government. There were no more jobs for independent spatial engineers. Rick had offered McGee a pilot's berth with Interplanet. But the quiet little asterite had a stubborn independence, and he believed in Drake's magnificent dream. He was waiting for better times to come—living aboard the little space tug to save the cost of lodgings.

"Yes, I'm glad to know about the blinker." Drake felt a consuming interest in everything about seetee. So little was known of its dangerous riddles! Difficult to study a thing you could never touch, not even with any tool. But some random observation might yield the vital clue, toward a method of safe control. "I'll go right over."

Jim Drake surged to his feet; an awkward, aged giant—but eager now, his deep-sunken eyes electric with new-kindled hope. He swept up his papers, with space-burned hands too big for paper work, and locked them in the rusty safe that he and Rob McGee had bought before the war.

"Let me take you," Ann offered quickly. She drove a battered little electric car, that she had stripped down from an impressive machine her father had imported before she was born; and she kept it repaired herself.

The seat was too small for Drake, but he squeezed in beside her, awkwardly. She turned the car in the middle of the deserted, straggling street of rust-streaked buildings—imported wood was precious on the asteroids; the houses were metal and glass, paintless and neglected since the war.

The car spun along the old gravel road toward the Guard base on the polar plateau. Obania was closer to the sphere than most asteroids—with natural gravity far too weak to round them, they could be any shape at all—but the iron-walled canyon that sheltered the town would have been a thousand-kilometer chasm in the Earth.

Obania's horizon was always absurdly near, precipitous. Every elevation seemed a lonely peak, jutting insecurely into the blue-black sky. The Earthman's instinctive dread of falling off must have made the pioneers locate their town under the comforting cliffs—though Bruce O'Banion, characteristically, had set his mansion on the highest peak of all.

The rusting town stood across the equator. A kilometer north, the road dropped abruptly, so it seemed, toward the plateau. Before the war this had been a free port, busy with ore barges, tugs and traders. Now there was little traffic, except for supply vessels and the warships stationed at the base.

But here was new paint, efficiency, youth. A great six-sided building, at the center of the field, housed offices, shops, supply depot, and Guard headquarters. From its center, on the polar axis of the planetoid, lifted the steel-ribbed dome of the control tower, photophone transmitter-light flickering above it. From a pole beside the building hung the limp Mandate flag—a black circle upon the quartered colors of the major planets, the crescent-and-stripes of the Earth-Moon Union, the golden dragon of Venus, the red-black-and-yellow of the Martian Reich, the hammer-and-sickle of Jupiter's moons. Young men in fatigue uniforms were spraying black camouflage paint on the tall, leanly tapered hull of a Guard cruiser.

Unpainted, the square nose of the *Good-by Jane* was visible across the steeply convex field, at the end of a row of rusting ore barges. The space tug was somewhat larger than a twentieth-century railroad box car turned on end and stripped of wheels. The angular, neglected hull, pocked with meteor blisters stood five decks high. With only a few instruments protruding, it looked very much like a rectangular ingot of rust-reddened steel.

Ann O'Banion swung the little roadster to a skillful stop against a freshly black-and-yellow-painted railing. The sentry beneath the flag recognized her, with an admiring grin. Drake was extricating himself from the too-small seat, with an awkward, anxious haste—when something happened. A sudden seam of hot blue fire split the frigid blue-black sky.

II.

Instinctively, old Jim Drake moved his long, gaunt frame to shelter the girl. He waited for the shocking impact, the shattering blast and the searing blaze of a seetee explosion. But that didn't follow.

The tiny world was breathless. He heard only the frightened shouts of the painters slung high against the cruiser's hull—high-pitched and remote, in the thin air of Obania. Soon his blinded eyes could see again. Dim stars came back into the somber sky ahead, and the low Sun behind burned small and hot and blue.

Ann O'Banion smiled, unfrightened, asking, "What was that?"

All the phenomena of space were real and immediate, to the native asterite, as they had never been to his Earth-born forebears. Even a terra-

formed planetoid, such as Obania, had no safe hundreds of kilometers of insulating atmosphere, but only a thin gaseous envelope. Meteors falling here were something more than mysterious streaks of distant fire; here they were grim dice of life and death.

"I don't know what it was." Drake started across the field's level convexity. "That flash had the color of a seetee explosion, but nothing hit Obania. Out at space, I guess. Maybe Rob will know."

Ann had to run to keep up with his gigantic strides. Panting, her nostrils felt the dry sting of ozone—a gaseous armor, against too much ultraviolet. Above the rusty ground gear of the *Good-by Jane*, the air lock stood open. Drake sent a booming hail up the ladder well inside, and Ann followed him up to the pilothouse.

A sturdy, utilitarian craft, the tug had no broad and dangerous ports. The low walls and bulging roof of the tiny pilothouse, lined with spongy gray plastic, were cut only with thin tubes for the instruments. Beside the dial-topped case of the pilot-robot, Captain Rob McGee pulled his square leather face out of a black periscope hood, and looked at them with mild, squinted eyes. His shoulders were broad in an ancient space coat of mildewed green. He had a rather large head, with a thick mat of yellow hair; very little neck; and inconsequential legs. Altogether, he was as sturdy, ready and ugly as his ship.

"Did you see, Cap'n Rob?" The girl was breathless. "That terrible flash—what was it?"

With the frontiersman's awkward native courtesy, Drake pushed toward her the only seat in the little gray room, the astrogator's stool. But she was far too excited to sit.

"Was it seetee?" she demanded.

Deliberate as always, the short, space-beaten little captain was tamping an ancient pipe with Earth-grown tobacco, his one luxury. Sometimes it seemed to Drake that he had learned the timeless calm of the stars—when he was too calm, however, it usually meant danger.

"I happened to be looking." His voice was very gentle. "I was watching that blinker, when an asteroid came into the periscope field."

"Eh?" Drake made a muted sound of astonishment. "What asteroid?"

"I got the orbit, and looked it up in the 'Ephemeris.'" McGee was still unhurried. "Number T-89-AK-44. Listed as unnamed, undeveloped, unclaimed. Diameter nine hundred meters. Density and albedo indicate nickel-iron."

Impatience overcame Ann. "But what happened?"

"A piece of seetee collided with the asteroid." McGee smiled at her excitement. "Probably the one that had the blinker, because that has gone out. Quite a smash." Still his voice was softly unemphatic. "The safety shutter tripped, in the periscope, and saved my eyes."

Old Jim Drake took a quick step forward, in that tiny crowded room. He had known McGee for nearly forty years, and he could see through that calm restraint.

"Tell us, Rob!"

Rob McGee held a lighter to his pipe. He could be quick when speed was needed, but he had never learned the frantic hurry of men in cities. Sometimes his lack of haste was almost maddening.

"Quite a smash," he repeated. "Couple thousand tons of seetee, dropping toward the Sun on the usual crazy orbit. It must have burned a pit a hundred meters deep in the asteroid, before it was used up. Vaporized a lot of iron. Made a sort of natural rocket."

"What will happen now?" Ann burst out again. "Is the fire storm coming to Obania?"

"Obania will miss the dust," the little man said softly. "What's coming is the asteroid. The impact and reaction of that first collision was just enough to push it into a new collision orbit. Now it's coming toward Obania."

Ann uttered a startled little "oh," and her gray eyes looked anxiously from McGee to old Jim Drake. With an awkward haste, stooped because he was too tall for that low gray room, Drake went to the periscope. McGee drew slowly on his pipe.

In the dark field of the instrument, the asteroid

was only a tiny mote. Swinging back again, to question McGee, Drake saw that Ann looked tense and pale. He knew that she must be picturing the collision—grinding ruin, dust and flame; a billion tons of hard nickel-iron crashing into Obania.

"You don't have to put on your dead-pan for me, Cap'n Rob." Her voice was tight. "Of course, Obania's home—it's all I know. But I can take it. Don't try to shield me." Her anxious fingers caught his arm. "When will it strike? Do we have time to do anything about it?"

With his dark leather smile, McGee nodded at Drake.

"Jim's the engineer," McGee said softly. "I only had a glimpse. I haven't touched the calculator. Maybe I'm wrong."

"Don't, Rob." Ann's impatience was almost anger. "You know a glance is all you need. You never touch the calculator. I don't think you're ever wrong."

"Give us the data, Rob," the patient giant said humbly. Drake had seen McGee study the hands of a chronometer for a few moments, with those mild, squinted eyes, and then tell how many seconds it would gain or lose in a day—exactly. For himself, he needed no chronometer. Perhaps he was no different from many another mathematical prodigy; but sometimes Drake felt that evolution had created a new sense in him, adapted to fit the harsh and sudden needs of life upon these hurtling bits of iron and stone. Drake had learned to trust that sense.

"Naturally I wanted to see for myself, Rob," he added, in apology. "But you know it would take me hours of observation and computation to check a collision orbit. That rock must be half a million kilometers away."

"Nearly a million." McGee ignored the tone of apology, with his usual blindness to the puzzling, nonmathematical world of human emotions. "To be exact, nine hundred seventy-one thousand five hundred eighty kilometers. The time of impact is forty-one days, seven hours and twelve minutes—from the moment I looked."

Drake's haggard roan head nodded slowly. He didn't question the figures. Astronomical magnitudes and relations were as clearly self-evident to McGee as the sum of four apples to the Earth-born.

"Forty-one days?" exclaimed Ann O'Banion. "That's not long!" Her tanned face was anxious. "Can we move Obania out of the way?"

McGee shook his straw-colored thatch.

"No time for that, I'm afraid. The peegee installation is old-type, you know—nondirectional. Obania's too large to move with tugs—its weight in tons would surprise you." He laid down his pipe. "No, the other's the one to move."

With the white pinch of apprehension on her freckled nose, Ann looked quickly at old Jim Drake. Something had frozen him into a deaf gigantic statue of bronze.

"Smaller," McGee explained softly. "Less than a tenth the mass. There's plenty of time to land a terraforming crew, to install a new-type directional drive. It's a job for the Guard." His square face furrowed into a leather grin. "Give von Sudenhorst a chance to burn some of that new paint off his ships, in the fire storm."

Ann O'Banion stopped biting her pale lip.

"I'd better call the base?" McGee looked at the motionless giant, with some question in his squinted eyes. "Probably they wouldn't find out about the collision orbit for some time yet. And I'm afraid that seetee drift will make it a ticklish job, even for our dashing young subaltern. He'll need all the time there is."

He reached for the photophone receiver—out along the spatial frontiers, where there was no atmosphere to carry sound or to distort and absorb a beam of modulated light, the photophone was almost the universal means of communication, from ship to ship and rock to rock.

But Jim Drake stopped him.

"Wait!" The haggard giant moved suddenly, so that his lifted roan head almost struck the low gray roof. Under bushy reddish brows, his deep-set eyes turned electric blue. A sudden driving voice of purpose quivered in his voice. "*We'll* move that rock."

"We?" McGee stepped back on nimble feet, astonished. "How can we?"

Drake's voice was booming now, no longer weary.

"We need a site for the seetee lab—and that rock is it."

"If we could!" whispered Ann. "But—how?"

"I just remember a law," the patient giant explained. "A perfectly good law, on the books of the Mandate. In case of imminent collision, when an unclaimed asteroid threatens an improved one, any property holder on the improved asteroid can take the necessary steps to avert collision, and claim the asteroid in recompense."

Drake's rugged bronze face looked almost young.

"A few formalities, of course. It's necessary to file notice of intention, at Pallasport, with data to establish the collision orbit. You're required to show proof of ability to avert the collision, unless you have already averted it, thirty days before the predicted impact—otherwise the Guard will take over." Muffled, his deep voice came back from the periscope hood. "But that's our lab."

McGee shook his large ugly head. "Maybe."

III.

Half an hour later, old Jim Drake was in the big, rhodium-paneled library of Bruce O'Banion's tarnished metal mansion. Ann's housekeeping had the long room immaculately clean, but even the glowing electric grate failed to banish a sense of empty chill. Beside precious shelves of faded books, a huge window gave a giddy view of the bare black hill slope tumbling sharply down into the blacker gulf of star-shot space. Drake had come, still intense with purpose, to put his idea up to Bruce O'Banion.

Ann was brewing tea—the common drink of the asterites, perhaps because it had served so often to cover the staleness of synthetic water in rusting tanks. She made a graceful hostess, slim in a bright print dress, pouring the tea in small, fragile cups her mother had brought from Earth.

But Drake had no time for tea. Pacing the thin-worn rug, he fought O'Banion's stubborn skepticism. "We've got to have you with us, Bruce. Rob and I have no property here. If we claim this rock, we'll have to do it in your name."

Bruce O'Banion sat in his favorite chair—almost a throne, hammered out of dull massive copper, it stood where he could look down through that vast window, down beyond that sheer precipice of iron, into the black and splendid gulf of space.

O'Banion was a heavy man, red-faced, thick-jowled, big-featured, with a white impressive mane. He wore an old blue-and-silver uniform, altered to fit his paunch, and the Iron Cross the Martians had given him for the part the little asterite fleet had played in the space blockade of Earth. But men no longer called him commodore. He had lost much, since the war—wealth, prestige, his faithful wife. The drag of his heavy lips showed bitterness. Gray like Ann's, his eyes were a little bloodshot—sometimes he drank too much.

But he was sober, now. He followed the striding awkward giant, with his heavy statesman's head. Drake could feel his skepticism, like a stubborn inertia. O'Banion had the shrewd practical sense of the self-made man—and the smug self-confidence, too. Like most veteran spacemen, he knew that contraterrene matter was hell in chunks.

"If you had uranium on that rock, I'd say yes." The bitterness was dull in his voice. "The commissioners might let you get away with a claim. Interplanet might even pay you a tenth what the claim was worth."

Drake protested patiently, "But it's just the site we need, for the seetee lab."

"Seetee lab!" O'Banion snorted. "You're the biggest fool in the Mandate, Jim—I've told you so a thousand times. Listen—suppose you had your seetee lab, all nice and shiny. Suppose you had a pretty little seetee pebble—caught nice and safe in some kind of imaginary tongs that wouldn't explode into neutrons and gamma rays the instant they touched it."

He paused, with an orator's effort for drama. "What would you do with it?"

Patiently, still, Drake launched into the boundless possibilities of conquered contraterrene matter. The years of failure had dropped away; his voice was quick and strong.

"There's nothing mysterious about seetee. It's composed of the same three fundamental particles as our common terrene matter: electrons, positrons, neutrons. The only difference is the way they are arranged. Instead of orbital electrons, the seetee atom has orbital positrons. Instead of binding electrons, in the nucleus, it has binding positrons. Instead of nuclear protons, each formed of a neutron-positron couple, it has nuclear negatrons—neutron-electron couples.

"The only difference is that the electric signs of the charged particles are all reversed. Contraterrene atoms form the same series of elements as terrene atoms. They obey identical laws of chemistry and physics. If you had been born on a seetee planet—like the one that smashed into our system, maybe a million years ago, to form the seetee drift—you would never know the difference. The only test is contact."

O'Banion's broad red face remained a heavy mask of doubt. Drake strode up to him, across the clean faded rug, his voice throbbing deep with the awakened power of his dream.

"What can you do with it?" he echoed the question. "You can make seetee tools, to work seetee. When you have a complete machine shop—on some airless asteroid like this one—you can do anything."

Drake's lean space-burned finger stabbed the air.

"You can feed it into a power generator. Seetee will yield thousands of times the power of uranium—because the atomic breakdown is far more complete, and because native uranium is only one part in two hundred U-235 to begin with. Any kind of seetee will react with any kind of terrene matter. You won't need any complicated separators."

Drake leaned over him, gigantic.

"You can machine it into rods, for welding terrene matter. You can use a jet of seetee gas, even seetee nitrogen, for a cutting torch—that would be a handy gadget, when you have to cut a shaft to the heart of a nickel-iron rock, to terraform it. A million possible uses!"

Massive and inert in the huge copper chair, O'Banion shrugged with ponderous skepticism.

"I've heard all that before, Jim—and I still think you're crazy. Maybe you can work seetee with seetee tools—but how are you going to make them,

without seetee tools to begin with?"

He gave Drake no time to answer.

"Suppose you had your seetee machine shop, all set up on magical foundations and oiled with seetee oil and running on power from a seetee plant—and then you had the bad luck to stumble against a lever? Your own body would blow the whole works to hell!"

The awkward, anxious giant kept the patience in his voice. That iron skepticism was an old familiar barrier, that he had never learned to overcome. But he tried to be convincing.

"I know it's difficult—dangerous," he admitted. "That's why it hasn't been done before. But you can move seetee without touching it—with as simple a thing as a magnet. Once the machine shop is built, it can be run by remote control. With time and effort, Bruce, every problem can be solved."

For all Drake's awkward urgency, O'Banion remained a heavy bulk of unyielding doubt. Drake stepped a little back and dropped his shrunken ray-burned hands. His deep voice grimly lower, he tried another argument.

"There's one more use for seetee, Bruce—though it's one I don't like to think of. If you had another war to fight, you could make seetee into demolition bombs. I imagine that even an operating machine shop and power plant would be an economic weapon strong enough to set us free of the Mandate, without much actual fighting."

O'Banion sat up in the big red metal chair, with a dim gleam of hope in his bleary eyes. He had helped to organize the vigorous war effort of the asterites—whose men and metal had contributed a good deal to the victory. As Commodore O'Banion, he had thought he was fighting for a free High Space Union. Like his fellow pioneers, he felt that the Mandate arrangement was a heartless betrayal, by the allied planets.

"I used to hope." He shook his white, leonine head, bitterly. "You both know that I supported the Free Space Party—until the commissioners began arresting the leaders. But it's no use. If you did manage to build your seetee machine shop, they would find a way to take it from you—or blow it up with a terrene bomb and build another for themselves." He shrugged, in the sagging uniform. "A handful of us can't defeat four united planets, Jim."

That might be true, Drake knew—but, to him, it didn't really matter. He was not a politician. His primary enemy was not the organized and ruthless human selfishness that the Mandate represented—it was contraterrene matter, with its danger-guarded prize of human usefulness. Once conquered, the benefit would descend to all mankind.

Paragravity was the triumph of another engineer, but it illustrated the same process. Certainly it had been the tool of politicians; the Interplanet shareholders had used it to make themselves the ruling aristocracy of an interplanetary empire. But the larger benefits, he thought, had more than balanced that. Paragravity had burst the prison of a million years, to set men free of Earth.

Not even an engineer could foresee all the consequences of his work—for either good or harm. Maxim-Gore, when he discovered paragravity, was merely seeking a selective force to extract the power isotope from native uranium. The force-fields of Sunspots, hurling out jets of flaming hydrogen for hundreds of thousands of kilometers against solar gravitation, gave him the clue to paragravity—a force existing in the unexplored region between the phenomena of magnetism and gravitation, and sharing some of the characteristics of each.

Maxim-Gore felt completely triumphant, Drake supposed, when he discovered that the peegee effect could be tuned to separate the atoms of U-235 from molten uranium. He had found something better than the vapor-centrifuge. But the directional space drive; the negative safety field, to guard a ship's hull from spatial drift; the peegee reducer, that broke up compounds by direct selective attraction, yielding oxygen to breathe and iron for construction out of common hematite; the peegee terraforming unit, that held man and his precious blanket of air to any tiny rock—those

were all unexpected gifts, amazing even the engineer.

"It won't hurt you, Bruce, to let me try." Urgently, Drake sought to use the tiny advantage he had gained. "There's not often an opportunity for anybody to claim an asteroid, under the laws of the Mandate—anybody except the corporations. This may be the last chance I'll ever have."

The lines in Drake's brown face bit deep again; for a moment his hollow eyes were tired. The conquest of seetee had been a long race with time, and time was winning out. But he lifted his gaunt shoulders, in the worn gray coat, and launched another argument.

"Interplanet has a big engineering staff, with millions to spend." His patient voice held no bitterness. "I know, because Rick is working for them—under a contract to sign over his patents for a dollar each. Mars and Venus and the Jovians have plenty of engineers. Some of them are bound to be working on seetee—because it's the biggest thing in sight. Suppose one of them beats us out?"

Drake gestured, with a gaunt, arresting arm.

"Suppose the Martian Reich wins out? The Germans are good engineers and better strategists—and their victories in the revolution gave them ambitious ideas. They wanted to carry on the war, remember, to total victory. Venus and the Jovians let Earth into the Mandate, just to hold them down. But suppose they had seetee, now?"

O'Banion nodded his white impressive head.

"That would be unfortunate." He seemed half convinced. "But it isn't true that we can try this without risk, Jim. Perhaps we haven't much left—but we do have our lives. How far do you think the commissioners will let you go, with a project that threatens the Mandate? Don't you realize that they can decree that seetee research is treason—and order all of us shot?"

"I do." Drake's hollow eyes were sober. "But people have called me a fool for forty years," he argued. "The commissioners aren't going to take me seriously, all at once. We don't have to tell everything we're doing. We can call it a metallurgic lab, and apply for patents on a few alloys—not that the commissioners ever grant a patent to an asterite. Seetee will keep till we need it, for a political surprise."

"I don't know." O'Banion was doubtful. "Plenty of native asterites have sold out to the Mandate. That's why I dropped the Free Space Party—there's nobody you can trust. And you know that the Guard keeps a pretty close watch on all of us."

"We'll have to solve those problems when they come up." Drake's big roan head lifted confidently. "Now let's get back to this rock. Are we going to take it for a lab—or give up everything, and report it to the Guard?"

O'Banion rose from the copper chair.

"You win, Jim." He smiled—a politician's bland and willing smile. "I'm willing to take the chance that your attempt will keep the Guard from averting the collision in time. I'll sign the papers, to make you and McGee my agents."

"Thanks, Bruce." Drake extended his brown, gigantic hand. "The rock is ours!"

But O'Banion stepped back, with a heavy gesture. The flowing white hair and dense black brows made him a commanding figure. Standing by the thronelike seat, against the giddy gulf of space, he struck an orator's pose.

"You have my permission, Jim." His voice was rich with an orator's eloquence. "But now, before we settle any conclusions, let's look at the difficulties from your point of view."

Drake's hollow eyes went dark with disappointment. Defeat bit into his space-burned cheeks. He remembered that O'Banion had been a politician, and he had never learned to deal with politicians.

"First, there is the question of time." O'Banion spoke in a ringing public voice, as if that empty metal room had held a hundred men. "You have just eleven days to file notice and show proof. The Guard isn't likely to be satisfied with any mere proof of ability—you'll have to show the orbit already changed. That's mighty little time—and they won't give you a second more."

"Time enough," Drake said. "If we get busy."

"Second, there's the question of money." O'Banion still addressed an imaginary multitude. "Money will be required, for your filing fees, labor, equipment and fuel-uranium. Unfortunately, I am . . . er . . . frankly, all but bankrupt. Have you and McGee any money?"

Drake paused on the threadbare rug, his confident stride interrupted.

"No," he admitted awkwardly. "It's true we had hoped to borrow from you, Bruce—on the *Good-by Jane*. This job shouldn't cost so much—including five thousand for the peegee unit, a fair estimate would be nine thousand Mandate dollars." His big hands clenched helplessly. "I don't know where we can get even that."

Ann O'Banion slipped out of her chair, beside the neglected tea urn. Her tanned hand lifted quickly to her throat. Something held her for a breathless moment before she made a decisive little toss of her dark, lustrous hair.

"I have money, Seetee." Her voice was low, vibrant. "Nearly ten thousand dollars—mother left it to me, to spend a year on Earth." The bright voice seemed to catch, but she smiled. "I want you to use it."

"I couldn't," Drake protested. "I know how you've been planning on that trip." His roan head

shook wearily. "After all, things might go wrong."

"Please." The lightness was back in her voice. "Don't you believe in your own proposition? You've sold me. Can't I buy a share in your lab?"

"Thanks, Ann." The giant grew tall again. "We won't fail."

O'Banion turned heavily. "Daughter, have you considered—"

"The money's mine, dad," she said quietly. "That's what I want to do with it." She made a malicious little smile. "Unless you can persuade Seetee to give the whole thing up."

O'Banion gulped and tried to recover his oratorical stance.

"Jim, I was begging you to reconsider the difficulties of your project." His tone was somewhat chastened. "Besides the matters of time and money—and the unfriendly attitude of the government—I want you to think of the danger.

"I understand that the asteroid is crossing a drift area. That first collision doubtless made a lot more dust—and there's no blinker, now, to mark it. Maybe you know a lot more about seetee than anybody else. But even you are not immune to gamma burns."

Ann saw the pain of memory on his face, and flashed her father a look of silent protest. But Drake's time-bent shoulders shrugged, with the same weary patience.

"That's just a chance we've got to take."

Yielding to his daughter's glance, O'Banion bowed his leonine head. "Then go on." He offered his hand. "I think you are both reckless fools, but I'll say no more. What are your plans?"

"We have drilling machinery." Drake's voice went deep with relief. "Old, but it will have to do. We'll round up a crew, and go straight to the rock. I'll start drilling, while McGee goes on to Pallasport to buy the peegee unit. He can file the notice of intention, before he leaves. Pallas is only eighteen million kilometers, now—lucky it's so close. He should be back with the unit in six or seven days. We should have it installed and working, with any luck at all, two or three days before the limit. But I must be moving."

He strode toward the door, purpose once more a lifting, driving force within his gaunt and awkward frame. Ann ran after him, calling eagerly:

"Wait, Seetee! Have you a name for it—our new planet?" Drake's brain was already full of engineering problems—questions of meters a day, in hard nickel-iron; of liters of expensive water for the drill, and kilograms of precious fuel-uranium; of paragravity thrust, against some five billion tons of mass. His roan head shook vaguely, and Ann cried: "Then I have. Its destiny is to liberate us all from the Mandate. Let's call it Freedonia!"

Drake nodded absently. He liked the name, but his mind was full of more important things. The problem of averting the collision seemed suddenly overwhelming, now that he was face to face with it. Hastening toward the door, he stumbled awkwardly on his bad left knee. The old gamma burn seemed to cause more frequent twinges, now, than it had for many years. The needle stab of burning pain made him conscious of the burden of his age.

IV.

The frosty black of space struck Drake with a cold impact, when he limped out between the tarnished chromium veranda columns that O'Banion had set up nearly forty years ago. The bleak landscape tumbled dizzily out of sight, so that the world of open space loomed shockingly near—a hostile world, never meant for men.

Drake regarded that spatial world with emotions as complex as its own changing aspects of dark danger and glittering promise. He knew it well. Perhaps he even loved its stark, illimitable freedom, for the safety of any conquered planet was apt to become a weary prison to him. Yet long familiarity had filled its empty gulf with a thousand conditions of invincible hostility. He seldom feared it, but he had learned a deep and patient respect for the laws of its foreign, inexorable nature. After all the triumphs of the spatial engineers, the void's dark and splendid face still leered with the endless threats of sucking vacuum, probing cold, burning radiation, deadly meteor-drift.

Suddenly, Drake felt too old to meet those familiar and ruthless enemies alone. He wanted to call his son—tall, bronzed Rick Drake, with all the youthful strength that he had lost. A job like this should be no more than play for him, as it once had been for the roan and haggard giant.

It wouldn't be hard to call. Pallas was eighteen million kilometers away—so far that it was only a point in the ominous sky; but the photophone's quick finger of modulated light, carrying the small vibrations of the human voice, could span that hostile gulf in something like a minute. Rick himself had called from Pallas, half a dozen times, with cheerful, incoherent greeting. It would be simple enough to call—yet still it was impossible.

Drake's troubled thoughts dropped for a moment into the past. Back to Earth, with its boundless wealth of air, with its oceans that seemed vast and invincible as space itself; back to the huge, dazzling concrete spaceport at Panama City, just before the war; to palms and hibiscus and incredible sea beaches; to the towering white, air-conditioned city that housed the home offices of Interplanet, then master of all the planets.

His dream was youthful, then, nearly thirty years ago. He was a lank, young, red-haired giant, mighty with its power. He had gone to Earth to

interest the directors of Interplanet in contraterrene research, and he was almost successful. He found one influential man, alive enough to see that the corporation's ancient supremacy was far gone in decay, great enough to sense the greatness of his dream. But the war broke out, with the stunning treachery of the Martian raid on Deimos Station; Director Rogers was ordered to join the fleet, and he died in the Battle of Eros; Drake found himself a suspect alien, threatened with internment.

The daughter of Director Rogers, however, used her influence to help him get passage on the last ship for Pallas, before the asterites were openly involved in the war. And she came with him.

Evadne Rogers believed in the dream. She had lived a saga of her own, not without its splendor. She was brave enough to follow him out of the aristocratic luxury of Interplanet's capital, out to meet the savage hostility of the frontier against the stars. Rick was born on Obania, forty million kilometers from the nearest doctor. She saw their dream defeated, first by the war's disasters, and even after victory, again by the greater disaster of peace under the Mandate. Her loyalty never yielded to the letters of her wealthy relatives on Earth, inviting her back to the luxury she had left—though she insisted on sending Rick back to them, when he was ten years old, to be prepared for the great school of spatial engineering at Panama City. Even her death had a hint of the epic. Wearing dirigible space-armor, she was helping Drake survey a bare little rock where they hoped to build the long-delayed contraterrene laboratory, when she was killed by the same seetee meteor that had burned his knee.

It was five years ago that Rick, twenty-one, came back from Earth with his new degree. Drake and Rob McGee met him at Pallasport, with the *Good-by Jane*. They had planned to take him into their partnership at once.

A dull, throbbing ache came into old Jim Drake's throat, even now, when he thought of that meeting. The Interplanet liner was a splendid, tapered silver column, standing on the broad busy field at Pallasport. The locks yawned open, in the mighty base of it. The gangways clattered into place, and Rick came bounding down. He was the awkward friendly giant that Drake had longed to see, with a crushing handclasp and a joyous grin. He was thrilled to be returned to the frontier world of his boyhood, and he showed a shy delight in his father and Rob McGee. Nothing marred the reunion—until they came to speak of the future.

McGee had taken them into a little bar, to celebrate with a round of drinks. Rick was impressed to discover that Pallas, capital of all the Mandate, was not yet completely terraformed—although the city and a score of mining centers had their own paragravity units a few miles beneath the surface, there was as yet no peegee installation at the center of gravity.

"That's the sort of job I want to do!" Rick pushed a big, eager hand through his stiff, bronze hair—it was the same color, Drake noted fondly, as his mother's had been. "That would open up the whole planet—make room for millions of settlers. I'll talk to Mr. Vickers about it."

Vickers, Drake recalled with a faint unease, was the new branch manager of Interplanet. But he was deeply stirred to see his son's enthusiasm for the science of spatial engineering. Rick could help mightily to forge his old and difficult dream into reality.

With a shy and awkward gesture, the youthful giant was talking on. "Don't you see what we can do? Build a new world, almost! A modern paragravity cracking plant could supply chemicals for great hydroponic plantations—make the asteroids independent of food imports."

"Hold on, son—I'm afraid they didn't teach you much practical politics, to go with your engineering," Drake told him soberly. "The Mandate commissioners don't want too many people out here, or too much independence. They do want the food situation like it is, for a club."

Rick's face showed a surprised, half-indignant protest. Already a little frightened, Drake decided it was time to speak of the future. He began to lead up to it, anxiously:

"Besides, Rick, it would be too difficult and expensive to open a shaft to the center of Pallas, with present equipment—through two hundred and fifty kilometers of solid nickel-iron." His voice began to ring. "Now, as soon as we've mastered seetee, such things will be easier. With a seetee nitrogen torch—"

Drake stopped himself, painfully. He saw the look on Rick's face. No words were necessary. He could see what his tall son thought about the dream. Awkwardly he turned to order another drink, trying to hide the heartbreak on his face.

Rob McGee hadn't noticed—the complexities of space and time were all transparent to his odd perception, but human beings refused to obey any such beautiful laws as ruled celestial motions, and their stubborn irrationality often baffled him.

"Rick, you remember the *Good-by Jane?*" McGee spoke gently, obliviously, into that aching pause. "We've brought her, to take you back to Obania. From now on, we're Drake, McGee & Drake."

Rick didn't say very much. His untanned face showed trouble, and he fumbled awkwardly with his whiskey-soda glass. "I'm sorry, dad—but I'd better tell you now." Incoherently, he was trying to be as gentle as he could. "I've signed a con-

tract, to go to work for Interplanet."

Numbed with the hurt of it, Drake spilled his drink and paid no heed. Suddenly he understood many things that his son didn't say. He could see the pity, on Rick's troubled face, for two old and futile men. The *Good-by Jane,* in Rick's modern expansive scheme of things, was only an antiquated joke. Obania was only a funny little ghost planet; Drake & McGee, spatial engineers, were quaint, unfortunate relics of another era.

Drake could even understand what had happened to his son. Eleven years had made an Earthman of him. Rick felt the Earthman's pride in the splendid ancient might of Interplanet, and the cultured Earthman's superiority to the native asterite. His mother's aristocratic relatives had taught him their belief that Drake had squandered his life, and hers, upon a crazy chimera—Drake knew that Evadne had been happy with him, for all their misfortune, but the relatives had never accepted that.

Nor could Drake blame his son. After all, his influential connections would assure Rick of a successful career in Interplanet, and Drake knew well enough that the road outside was hard. In the end, contraterrene power might turn out to be the chimera the relatives believed it—for forty years of effort had brought the goal no nearer.

Drake made no attempt to persuade Rick to break the contract. He knew it would be futile, and he didn't want a quarrel. Rick shyly presented a girl he had met on the liner—a pretty redhead, who was somebody's niece. Drake and McGee took them for a hop around Pallas, in the oh-so-quaint little *Good-by Jane,* and then went back alone to Obania.

Rick had called several times, in the five years since. He seemed less shy and incoherent. Drake knew, proudly, that he was making good. Awkwardly he had tried to learn if Drake needed money—and Drake managed to conceal the need.

Now, the photophone's slender ray could carry his voice to Rick in something like a minute—but that call was quite impossible. For Rick was loyal to Interplanet, and the conquest of contraterrene matter was still a crazy dream.

Pausing to rest his aching knee, between those tarnished chromium pillars in front of old Bruce O'Banion's mansion, Drake tried to square his gaunt and weary shoulders; he lifted his blue, hollow eyes to meet the dark and hostile leer of space, alone.

But he was not alone. Ann O'Banion came out to drive him back to the one-street town under the black metallic cliffs. She didn't say that she had seen him stumble; she spoke only of the urgency of time.

In Interplanet's shining new branch office—all rhodium-plate and blue fluorescent glass, it was the only new building in the town—she wrote him a check for nine thousand Mandate dollars. Interplanet, even since the war, was still banker for all the Mandate; slowly the corporation was shaping military defeat into economic victory.

Rob McGee was waiting at the rusty little office. They signed an agreement, making Ann a silent partner in the firm of spatial engineers. McGee found a dusty bottle of synthetic rum, and they drank a toast to the future of Freedonia.

"Now, let's talk as little as we can," Drake cautioned. "It may be several days before anybody else finds out about the collision orbit—that's all that gives us a chance. Say we're going prospecting—that's near enough to the truth."

Ann nodded, asking, "Who are you afraid of?"

"Your friend, von Sudenhorst." Drake smiled briefly at her grimace. "He's young, ambitious, and extremely bored with Obania. He's itching for a chance at a conspicuous bit of duty—that might get him promoted to a bigger post."

"But we aren't breaking any laws," Ann protested.

"Laws have to be interpreted," Drake reminded her. "And the Guard doesn't often interpret them in favor of us asterites. If von Sudenhorst finds out about the orbit, he might take over Freedonia before we get the notice filed."

"He won't find out from me," Ann said positively.

They parted then, on separate errands. Ann returned to the gleaming Interplanet building, which was general store as well as bank and shipping office, with Drake's scrawled list of supplies to be delivered aboard the *Good-by Jane*.

Rob McGee had been sorting over the ancient mining tools stored in the back room behind the little office. He went down to the secondhand store at the foot of the street, to look for spare cutter-heads for the antique oxyhydrogen drill.

Drake went in search of men. He wanted an experienced foreman, at least three hard-rock drillers and terraformers, and four swampers. Since the mines shut down, however, most of the skilled and the youthful had left Obania. Combing the Meteor Palace Bar, the domino parlor, and the Mandate relief office, Drake collected only five men—two elderly miners, a discharged guardsman, a Venusian-Chinese cook, and a one-legged hard-rock man named Mike Moran.

"A disappointing lot," he told Ann O'Banion, back at the office. "But they're the best I can find."

"Then I'm going along, to help," she quietly announced.

"No you aren't." Drake made a shocked protest. "We'll be left on the rock, while Rob is gone to Pallasport. If a fire storm comes, we'll just have to take it."

"Can't I take it?" Her tanned face was determined. "I can handle a dirigible suit as well as anybody, and the men in dad's mines taught me how to run a drill when I was twelve years old." She added, gayly triumphant: "I'm a partner, now—I must take care of my investment."

Drake suggested that her father wouldn't let her go. But she had long ago learned how to deal with Bruce O'Banion's stubborn statesmanship, and she reminded Drake that she was now of age. Drake yielded at last, uneasily—remembering how Evadne had died in dirigible armor on another airless rock.

Small and blue, in the long golden spindle of the misty zodiacal light, the Sun hurried down the somber sky, came up and dropped again—the day of Obania was only four hours long; all clocks kept standard Earth-time, of the Panama City meridian.

They were almost ready. The shabby crew had straggled aboard, grimy space bags shouldered. Rob McGee had moved the pipes and pajamas out of his tiny cabin, under the pilothouse, to make a place for Ann. The lower hold was filled with the mining machinery and drums of water. Under the profane supervision of Mike Moran, the men were loading fuel-uranium from an Interplanet delivery truck—heavy costly ingots of the stable concentrate, ten percent U-235, sealed in cadmium cans because uranium has a vigorous chemical appetite. Ann had just gone up the ladder, boyish and capable in space breeches, when a man in uniform asked for Drake.

"The subaltern's greetings, Mr. Drake. You and Captain McGee are requested to call at his office—right away."

Drake tried to conceal his puzzled alarm. He called up the ladder well to Rob McGee. They crossed the convex field to the big six-sided building beyond the tall war cruiser. Although Commander von Sudenhorst spoke carefully unaccented English, his manner betrayed the smug, deep-grained arrogance and the precise efficiency encouraged by Martian military training. He received Drake and McGee with a stiff curtsy, which scarcely veiled his contempt for civilians and, particularly, native asterites.

"Be seated, gentlemen." The austere metal room rang to his domineering voice. They sat uncomfortably on hard metal chairs, while he searched them with slatelike eyes. "I am told that you are preparing for a mining expedition. All ship movements must be reported. Where are you going?"

McGee answered innocently:

"Our papers are quite in order, sir. They have already been stamped by your field officer. We are clearing for an unnamed rock, HSM T-89-AK-44."

"Thank you, captain." The Martian's dull, shallow eyes came back to Drake, and his hard voice rapped, "And what is your object?"

Drake tried not to hesitate. He refused to lie, but he knew that it was sheer disaster to tell all the truth. "Call it prospecting," he said. "According to the 'Ephemeris,' that rock is going to make a fairly close approach. Business is dull, and there's a chance we may find it valuable."

"Valuable?" the officer echoed harshly. "It's nickel-iron!"

"That's the 'Ephemeris' listing," Drake agreed. "Based on instrument readings of specific mass and albedo. Possibly a surface survey will reveal something more."

The stubby hands of von Sudenhorst rattled a paper on his immaculate metal desk. "I have here a list of your crew, equipment and supplies." His blank eyes looked suddenly accusing. "An elaborate list, for a prospecting trip!"

Drake felt an unpleasant sensation in his middle. "We're taking men and equipment to work a prospect hole," he said desperately. "The government has not yet outlawed prospecting."

"I'm aware of that." Von Sudenhorst rose, a black-uniformed automaton. "Thank you for calling, gentlemen. I have no right to delay you. However I advise you to keep in mind that the restricted license of your craft does not include

mining, salvage or towing operations. Good day."

As they hurried back to the ship, McGee's leather face was furrowed with apprehension. "We aren't planning any mining, salvage or towing—not exactly. Do you think he'll make us trouble?"

"He's not exactly cordial." The giant's bent shoulders shrugged away the High Space Guard. "The *Jane* is ready to go."

V.

Nine people were too many for the little space tug, but it was only twenty hours to Freedonia. Mike Moran and the ex-guardsman, named Biggs, swung their hammocks in the midships drive room. The rest of the crew slept in the holds, and played dominoes endlessly in the narrow wardroom.

Fifteen hours out, they struck the first ominous whiff of contraterrene dust. A dozen particles strafed the hull, clanging like rifle bullets. Drake, in the pilothouse, heard a scream of fear from the ladder well. Sounds of a scuffle; Mike Moran cursing. Then Ann's head came up the ladder, unfrightened.

"Mutiny." Her voice was calm. "Better come down, Seetee."

Mike Moran was leaning on the ladder in the tiny wardroom, holding back the others with his lifted crutch. Biggs stood before the two old miners and the frightened Venusian. He was flushed with alcohol, threatening.

"Turn 'er around!" he blustered up at Drake. "We ain't drivin' into no bloody fire storm—not in this rusty old can. We signed to work a prospect—not to be burned alive!" His red-eyed glare shifted to Mike Moran. "Make him put down that damn crutch, and give me back my bottle."

Drake dropped down the ladder, beside Moran. With a deep and patient voice, he tried to stop the panic that a few microscopic grains of seetee dust had roused.

"Listen, men. You're being paid to do a dangerous job, and you'll get a bonus when it's done. But it's not unreasonably dangerous—not unless you lose your heads, and make it so yourselves. Perhaps the ship is old, but she's spaceworthy. Let me tell you about our protection—"

Krrrang!

At that loud reverberation, the Venusian turned pasty-yellow. One of the miners squalled a curse; the other dropped on his knees, clutching a crucifix, silently praying.

"Turn 'er around," shouted Biggs, "before we do it for you."

"That was an alarming sound," Drake admitted patiently. "But the particle that made it was smaller than the head of a pin. It struck three inches of good steel. We have a layer of lead, to absorb the gamma ray, and a seal of compressed plastifoam, to save the air if one comes through."

The faces still were white and ominous.

"Only the particles with freak velocities can touch us," Drake went on. "We have up a negative safety-field, that will stop everything under ten kilometers a second, and deflect a good deal of the rest."

The ugly face of Biggs showed a stubborn disbelief, and he tried to explain: "You can feel the peegee field, here in the ship, that holds you against the deck and keeps you from being spacesick? Well, there's a similar field around the hull, pushing away—you couldn't hit us with a rifle, from fifty meters."

Trying to relax the dangerous tension, he added casually: "Men lifted the first ships off the Earth, two hundred years ago, with that same negative field—and shut it off, midway of the voyage, to fall toward the destination. That was before our directional peegee drive, which reacts against the constant force of cosmic repulsion."

"Cut the lecture, mister!" snarled the drunken guardsman. "Suppose a big rock gets through your safety-field?"

"We've got another gadget, for the big ones," Drake assured him. "The heat radiation of anything larger than a pea will trip the thermalarm relays, in time for the pilot-robot to change our course."

"Satisfied, brother?" Mike Moran rapped his crutch on the deck. "Better be!"

Biggs retreated. Sullenly, he accepted Moran's profane challenge to a game of dominoes. Drake went back to the pilothouse. A few more explosive contraterrene atoms smashed against the hull; but Biggs soon dropped into an alcoholic sleep, and the one-legged foreman kept the two old miners, Hale and Galloway, busy with the dominoes. Five hours later, they came to Freedonia.

Drake studied it through the periscope. Slowly rolling against the mighty panorama of open space—against the empty, illimitable darkness, the silver dust and ghostly green of nebulae remote beyond man's imagination, the hard hot points of many-colored stars that sometimes seemed near enough to be scooped up in a glittering handful—Freedonia was a jagged black cube, like a monstrous rolling die of iron.

Ann O'Banion came up into the pilothouse, eager to see the new world she had named. Drake gave her his place at the periscope. For a little time she was silent, breathless. She turned from the black hood, with a faint shudder.

"So that thing would strike Obania?"

"It would," Drake assured her. "I've just been checking the orbit, to have it on paper for the claims office—and it is a collision orbit, actual as well as legal."

"Freedonia seems a strange name for it." She

managed a hopeful smile. "It's so far from Obania, just a nudge ought to be enough to turn it aside."

"Some five billion tons of iron isn't easy to move," Drake told her. "And the legal definition of a collision orbit is a good deal broader than necessary—especially if von Sudenhorst is going to be judge. We'll have to swing it pretty wide."

They slowly circled the asteroid, while Drake studied its dark, forbidding contours. At last he turned back to Rob and Ann, with a frown gathering around his hollow eyes.

"The shape is unusually compact," he said. "That makes it very suitable for the laboratory site. But the tunnel will have to be a good deal deeper than I estimated, to reach the center of gravity. I'm afraid it will be hard to get it finished in time."

He had selected a camp site—a shallow, iron-walled depression, near the south pole, which would afford some slight protection from meteoric drift. Rob McGee dropped the ship to a perfect landing, and made fast with the paragravity anchor.

All hands, except McGee, donned dirigible armor. These suits, intended for heavy work under dangerous open space conditions, were of steel, lined with lead and plastifoam, and equipped with small peegee drive units, which propelled them like miniature ships.

Leaving the others to set up the camp, Drake set out with a transit and Ann O'Banion for his flagman, to make a quick survey of the nickel-iron mass. After an hour they came to the abrupt rim of a steep black chasm that Drake had seen from above.

"What's this?" As he faced Ann, the photocells above the lenses of his bucket-shaped helmet picked up the red flicker of the photophone light on the crown of hers. Her voice was slow with wonder. "It's a weird-looking pit!"

She moved back from the brink of it, awed with the evidence of some flaming cataclysm. All about the lip of it, fused iron had congealed again in grotesque snaky gouts. Lower, streaks and traces of other minerals burned with lurid phosphorescence.

"This is where that seetee fragment struck," Drake told her. "Quite a little atomic blowup—that glow is from temporary radioactivity, from the absorbed radiation." His awe gave way to eager purpose. "But this is the spot we're looking for—the bottom of this pit is already burned nearly halfway to the center of gravity."

By the time they returned to the little polar cup, the shelters were pitched—igloo shapes of woven metal, lined with lead foil and self-sealing plastic, fastened down with cables welded to the living iron, and inflated with oxyhelium. Small cylindrical air locks gave entrance. Standing at the end of a short taut cable, above the crown of each shelter, was a small peegee unit. Set to negative polarity, these provided a comfortable pressure against the floor, and some protection against meteor drift. When they were turned on, it was necessary to climb to the shelters against their repulsion. A small uranium motor-generator, in the mess tent, supplied light, heat and paragravity power. There was a common shelter for the crew, beyond the smaller silver-painted igloos for Drake and Ann.

They moved the ship to the edge of that black, phosphorescent chasm, to unload the drilling equipment—which had to be secured with nets and cables, for the natural gravity of Freedonia was too weak to hold it safely. Then the air lock closed again. The ship's photophone, like a small searchlight above the stubby bow, swung down to Drake and Ann, standing in their armor like clumsy robots beside the antiquated machinery.

"Luck," said Rob McGee. "Back as soon as I can."

"Buy the peegee unit first," Drake warned him. "Don't talk—and don't file the notice till you're ready to start back. Something might go wrong." He added, trying to hide the catch in his voice: "You'll see Rick. Tell him . . . tell him we're all doing fine."

"Right," said Rob McGee. "Good luck."

Biggs, the guardsman, had called the two old miners around behind the ship. Now he led them back, his helmet photophone flashing red—the suits all looked alike, but their names were stenciled on them with green-glowing fluorescent paint.

"Let us back aboard!" Biggs was frightened and truculent; his glaring lenses swung to Mike Moran. "Are you going to stay here, marooned—and maybe get trapped in a fire storm?"

"I am—and so are you," retorted the one-legged driller. "You signed a contract to work here two weeks. It's my job to see you do it." Lifting a steel-gloved hand to shield his helmet lamp from Ann, he added a few emphatic comments.

Biggs swung on Drake, lifting steel-mailed fists. "To hell with your contract!" he blustered. "Tell McGee to open that valve—or we'll smash the lenses out of your damn helmet!"

"Wait, Biggs." Drake could understand the fear of space, of its dark and fiery monotony of danger, of its cold, unbounded vastness that shrank the human ego. He knew that the danger here was real enough, but it was necessary for the ship to leave them. Patiently, he began to explain the situation. "Listen, men—"

Mike Moran, however, took the matter out of his hands. Agile as a fish in the dirigible suit, he needed no crutch now. When Biggs advanced again, with threatening fists, Moran dived at him

and hauled him away by the neck strap of his armor.

Ann waved a troubled farewell; and the *Good-by Jane* lifted, silent as a shadow, for the long voyage to Pallasport. Rust-red in the glancing Sun, it dwindled and was swiftly lost in the dark chasm of space. They were alone.

VI.

Drake shook off a brief unease. He still could feel the sullen, fearful hostility of the man Biggs; but he was used to facing the dangers of space as they appeared, and he expected others to do the same. After all, they had safety devices. And any meteor miner had to take his share of seetee when it fell.

Patiently he tried to explain that to the uneasy men, and then they began to set up the drill. The battered old machine had a mass of twenty tons. Hauling on cables, they pulled it over the pit, and let it slowly sink between the dark, fire-streaked walls of iron. Ann swam to it, and opened the thick lead hood over the uranium motor-generator.

"Better keep clear." Drake's head lamp flashed the warning. "The machine seems light, here, but it has the same mass as always. It might catch you against the walls."

"I'm no baby, Seetee." Her clumsy, bright-painted suit stood up, on the side of the floating machine, and he could imagine her making a childish face of protest. "I was just going to heat the separator manifold." And her voice challenged: "Just see if I don't know how to run the drill?"

She pointed with a confident armored hand.

"You pump water into that little seetee refiner, to get oxygen and hydrogen. They burn again, in the cutter-head—till the iron gets hot, and you turn off part of the hydrogen. Those gears turn the cutter around a core of iron. When you have cut a four-meter section, you take it out with the section-head and the magnetic hoist. And then you go down with the cutter again, and take another bite. Isn't that right?"

Drake nodded, though his massive helmet didn't yield to nods. He heard the admiring voice of Mike Moran, for once unprofane, "Ma'am, I take you for a real hard-rock man!"

The machine was leveled, in the rounded bottom of that fire-streaked pit, and welded into place. Ann began to prove her skill, starting the little uranium motor. At last the drill began to turn. Airless space, like an ocean of cotton wool, muffled all sound of machinery, but Drake could feel the vibration of the gears through his boots. Moving points of blinding incandescence cut a slow one-meter circle into the hard black iron.

"Now I feel like it's Freedonia!" Ann's small voice held elation. "I feel like it's ours."

Drake said nothing to discourage her. On the driller's seat, turning with the slow spiral movement of the cutter-head, he moved heavily to adjust the economy screens, which collected the particles of ice and iron oxides blown back from the cutting flames—oxides were precious, on this iron world, and they had brought the very minimum of water. He didn't want to depress her spirits, but he knew that Freedonia was far indeed from safely won.

When the drill was running smoothly he divided the party into two shifts. Drake, with Ann and old Galloway, stayed with the drill. Mike Moran took Biggs and Hale back to camp, to rest for the second shift.

"Very good!" On that first twelve-hour shift they had hoisted out four thick four-meter cores, and Ann was jubilant. "At sixteen meters a shift, we'll have the foundation ready by the time Cap'n Rob gets back."

The second shift, however, failed to keep up that rate of progress. Biggs had inspired old Hale with his grumbling resentment. Drake refused to suspect them of deliberate sabotage; he thought they merely lacked the knack of calling the last impossible ounce of service from worn-out equipment. But somehow Biggs let the separator manifold freeze, on the uranium engine—which happened at about 1850° C. That cost hours of delay. In all the shift, they cut only two "bites."

Drake took the whole crew into his confidence, in an effort to speed the work. Standing before them in the mess shelter, a tired and aged giant, he spoke with a patient urgency:

"Men, this is not just an ordinary prospect hole." He waited for the fat yellow cook to pour hot tea. "I'd better tell you, we're trying to terraform this rock—to steer it off a collision orbit. We had ten days, from the time we landed, before the legal limit—"

"Bitter swill!" Biggs spat his tea at the cook's feet, and snarled at Drake: "Are you crazy, mister? This bloody rock ain't worth terraforming!"

"You'll get a bonus, if the job is done in time." Drake said nothing of his dream. "But we're eight meters behind schedule, already. We've got to have the foundation ready, to install that unit at the center of gravity, when McGee gets back with it." His voice dropped humbly. "Will you help us make up that eight meters?"

The rest all cheerfully pledged their efforts, with the bitter tea. But Biggs had never learned to like that spaceman's drink, and he sat ominously silent.

Although Drake and Ann cut five sections on their next shift, it proved impossible to make up the missing eight meters. Shift after shift, disaster continued to haunt Mike Moran and his crew. Drake and the girl were unexpectedly called to help with emergency repairs, until they both were drawn with need of sleep.

First, the cutter head stuck. For want of proper adjustment of the oxyhydrogen jets, to burn the iron cleanly from the cut, molten metal congealed about the cutter-head, welding it fast. It required seven hours to cut the stem free, install a spare head, and start the drill again.

The next day Biggs, working as swamper, somehow let a twenty-ton core roll back into the pit. It fell very slowly, to the slight gravitation. The men had time to get out of the way. But its silent impact smashed the section cutter. Repairs again consumed the rest of the shift.

By that time the shaft was twenty meters behind schedule. Drake and Ann managed to gain one section, but the other crew lost it again—because of a fall of contraterrene dust.

The tiny particles fell invisibly, exploding against the black iron with small, instantaneous puffs of blinding blue flame, silent and deadly. None fell into the pit, but Biggs and the other miner, frantic, fled to the rather more dangerous location of the camp.

The fall soon ceased, and Drake went back with Ann and old Galloway to begin the next shift. They found Mike Moran still tending the engine. But the abandoned cutter-head was stuck again, and it took them half the shift to replace it with their last spare.

McGee was overdue.

Seven days were gone, and all this weary shift Drake had anxiously watched the mouth of the pit, looking for the photophone light of the *Good-by Jane*. He had seen only the ragged patch of stars and nebula, sliding across in remote splendor as the rock turned.

Beneath those glowing fire-hewn walls, Drake and Ann stood beside the little rusty derrick. A winch spun silently, and a thin racing cable hauled up the last section they had cut. At the levers, Drake was glad that the stiff bulk of oversize armor concealed his bitter fatigue. The red head lamp brought Ann's cheerful voice:

"Just thirteen bites left, to the center of gravity." She marked a tally on the iron wall, with a blue fluorescent pencil. "That isn't so far, Seetee!"

"Too far!" His voice was dull. "We should have been done. Rob should have been back with the unit yesterday. I don't know what—" He checked the words; he didn't want to break her gay, determined optimism.

"We still have three days," she reminded him hopefully, "before the Guard can put us off."

Drake didn't answer. He knew of nothing they could do, in three days, to move five billion tons of iron. He intended to keep on trying, simply because he wasn't used to quitting. But he could see no hope.

The heavy core came out of the shaft, fast to the powerful little electromagnet. Ann stepped on the iron cylinder, to ride it out of the pit. The swamper's task had a pleasant spice of danger, and she enjoyed it. Drake hadn't wanted her to take it, but Ann knew how to get her way.

Mike Moran and his crew came out for the next shift. That turned out to be the last—for old Hale doubled up with a sudden agony of spaceman's colic, and had to go back to the shelter; and Biggs, taking his place on the drill, somehow let the cutter-head freeze fast again.

The foreman woke Drake with that bad news. Drake went down the shaft to try to free the drill. Hour after hour he labored, his oversize armor too big for that cramped pit. He accomplished nothing. The cutter-head was fused to the living iron, and there were no more spares.

"Seetee—come up!" Ann's head lamp flashed at the top of the pit; her voice was breathless. "There's a ship—coming in to land beside the camp."

He thought the ship would be the *Good-by Jane*. Rob McGee ought to have repairs for the drill, and even two or three fresh men, to help with the heavy task of installing the drive unit. Perhaps they could still get it in place before their time expired; von Sudenhorst might be generous enough to let them go ahead.

Soaring over cragged iron horizons, they hurried back to camp. Out of frosty, glittering night, they came into the cold, pallid glare of a shrunken sun that struck out of that same dark sky, harshly

across the lonely little cluster of white-painted igloos in the iron-walled cup.

The ship had landed near them, but it was not the *Good-by Jane*. Drake caught a painful gasp of thin oxyhelium, and the hope flowed out of him. The ship standing on a ledge of iron had the lean, tall, torpedo shape of a war cruiser, and its black, tapered hull glowed with the four-quartered flag of the High Space Guard.

VII.

Drake and Ann O'Banion dropped to a ridge of iron, shaken and deflated. A photophone light tipped down, above the cruiser's ugly nose. The flickering beam brought them the harsh metal voice of Kurt von Sudenhorst.

"Good day, Mr. Drake—and Miss O'Banion." He could see the names painted on their armor. His greeting held no warmth, not even when he spoke to Ann—nothing else must interfere with the duty of a guardsman. "What's your business here?"

Drake tried to keep the alarm out of his tired patient voice. "We told you before we left Obania. We've been drilling a prospect hole."

"Perhaps!" Loud and strident on the trembling ray, the Martian-German's voice carried a triumphant accusation. "Perhaps you didn't know that this rock is on a collision orbit, with the Guard base at Obania?"

Drake clung to his patient calm.

"As a matter of fact, we did know. Captain McGee left for Pallasport seven days ago, to file legal notice of our intention to avert the collision. We are expecting him now, with our drive unit."

"Then you lied!" It was a metal rasp. "You are guilty of concealing a danger to the Guard."

"Legally the danger of collision does not exist until thirty days before the time of predicted impact," Drake said patiently. "Thirty days is presumed to be ample time for the Guard to avert a collision. And our legal notice, filed in Pallasport, gave sufficient warning."

The flickering beam brought a harsh, uncertain sound.

"Anyhow, your scheme has failed," observed von Sudenhorst. "Your notice was duly reported to me, but my observations show that the asteroid is still on a collision orbit. The thirty-day limit is only sixty hours away. We have a work ship en route from Pallas to take over the job."

"We still have sixty hours." Drake stood straight in his massive suit. "We still have a chance."

"A chance, *ja!*" Derision made von Sudenhorst careless about his English. Drake waited uneasily through a little silence. The steady ray brought no hint of the officer's thoughts.

"You have sixty hours," he agreed abruptly. "However, I now give you notice that we shall be forced to evacuate all civilians from this asteroid, when that time is up—unless you have successfully altered the orbit."

"Kurt!" protested Ann. "You wouldn't!"

"That is for your own safety, Miss O'Banion," the Martian told her stiffly. "If your ship does not return, we have space for your party aboard the cruiser—including a nice stateroom for you."

"Thank you, Kurt." Ann's voice was tense. "We won't be needing it."

"We shall be waiting for you, Miss O'Banion," returned von Sudenhorst, a hint of mockery behind his formality. "I know that you are not magicians."

They returned to the little cluster of white igloos. The cruiser loomed above them, ominous as a tall, ebon tombstone. Drake looked hopefully past it, into the dark splendor of space. He found the dim gray point of Pallas, but there was no hint of the returning *Good-by Jane*.

Ann waited until they were in his shelter before she whispered desperately, "That's the last straw—I simply can't give in to von Sudenhorst." Strong teeth bit her pale lip. "What can we do?"

"Wait for Rob . . . good to know he got there." Drake sounded incoherent. "Nothing else to do."

He dropped across his cot—he was a stooped and shrunken giant, but still it looked too small. Ann spoke to him anxiously, and then realized that he had gone to sleep. She hadn't realized how tired he was.

She turned up the electric heater, and spread a blanket over him. Stopping to set the little peegee air machine, that drew fresh oxygen out of exhaled carbon dioxide and water, she saw a photograph propped on the cabinet—a picture in color of Drake's tall son, smiling a bronze, magnificent smile. Ann made a quick little face of disapproval.

"You ought to be here, Rick," she gravely advised, "instead of off working for the enemy. I can just remember you, before you left Obania—a nasty little body with grubby fingernails. But your dad tells me you've grown up to be a shining paragon of strength and manly virtue. Don't you know he's getting too old for jobs like this? If you're so all-fired splendid, why aren't you here to lend him a hand?"

The photograph continued to smile—she thought, with disgusting conceit. Impatiently she slipped back into her armor and went to the mess shelter. The men were playing dominoes. Their idleness annoyed her, but she knew there was nothing they could do. She scolded the bland Venusian for the not uncommon sin of his grease-spotted apron, and returned to her own shelter.

She tried to read a novel and found it impossible. She knew that the men would tell her at

once if the *Good-by Jane* came back. Yet she kept getting up, against her will, to peer out through the tiny lead-glass peepholes in the thick, inflated fabric.

Somehow, it was difficult to keep her eyes off the tall black cenotaph of von Sudenhorst's cruiser, standing its ominous guard above. An appalling idea had come to keep her company. She was afraid she would marry the Martian-German—if they failed to win Freedonia.

The idea surprised her, because she had always privately laughed at his stiff and formal suit. But she would be penniless if they failed; and she thought he would take advantage of such a circumstance. She was astonished to realize that von Sudenhorst, stupid and arrogant as he might be, was yet masculine enough to have a certain unpleasant attraction. She disliked him, and knew she always would. The idea frightened her, but she couldn't put it out of her mind.

Three hours later there was another sudden fall of seetee dust. Watching anxiously from her shelter, Ann saw the little silent splashes of fire, blue and painful, scattered all across the little iron depression—except in a little circle about the standing cruiser, which was protected by its safety field.

Shrrrap!

At that sudden report behind her, she jumped and choked back a nervous scream. Burned paint made a sharp reek, and she turned up the air machine to clear it out. She listened for a leak, but if the grain of dust had pierced the fabric the hole had already sealed itself.

The red photophone light above the cruiser began blinking furiously again. But she didn't connect the shelter photophone—no doubt von Sudenhorst was offering her the safety of the cruiser, but she thought she couldn't endure his metal voice, just now.

After a few minutes, when the fall of dust had slackened, she saw three men leave the mess shelter and plunge furiously into the cruiser's open lock. Mike Moran followed more deliberately—she recognized his graceful handling of the flying armor—and presently brought back the empty suits. He saw the burn on her shelter, and stopped to see if she had been injured.

"That was Biggs and his two stooges," he told her. "They've quit the job." He sounded worried. "I tried to call Mr. Drake, ma'am, but he don't answer."

"Let him sleep." The flood of despair came into her voice. "It doesn't matter about the men—there's nothing left for them to do."

At last, after Ann had abandoned all hope, the *Good-by Jane* returned. The rusty little tug dropped softly between the white igloos and the cruiser. Ann got into her armor and dived eagerly toward its air lock. Drake reached it with her.

They left the armor below and climbed into the little pilothouse. Rob McGee met them, with mute tragedy in his squinted eyes. In the green-mildewed space coat, his weary shoulders made a helpless shrug of failure.

"What happened?" Ann cried urgently. "What kept you?"

"They beat us, that's all." McGee shook his tangled yellow head. "I couldn't buy a new-type terraforming unit—not from Interplanet or anybody else in Pallasport."

"But why?" Ann gasped.

"Because we are asterites." McGee's voice was gentle as ever, but his leather face showed bitter lines. "Because we're trying to work for ourselves, instead of for a monopoly with a whole independent planet behind it. Because the Mandate government is trying to keep us down."

"But what did they do?" demanded Ann.

"Nothing." McGee shrugged. "They didn't refuse to sell the unit outright—none of them. They just put me off, with red tape and delay. They made me fill out applications, and wait for permits. They didn't know about the collision orbit, but of course von Sudenhorst had reported our expedition to Guard headquarters, and Interplanet must have been tipped off that we were up to something. I filed the notice of intention, just before I left—though I don't see how it will do us any good."

A bitter silence filled the little gray-walled room till Drake broke in with an eager question of his own: "Rick? Did you see my boy?"

Little McGee looked quickly at Drake's gaunt, tense face, and quickly away; he began to fumble aimlessly with the dials of the pilot robot. "Yes, I went to Rick." His voice was very soft. "I told him all about it, Jim. He said it was a dirty shame. He promised to see Mr. Vickers, and have Interplanet cut the red tape and get us a terraforming permit and sell us a unit—I saw a dozen crated units, at the Interplanet docks."

Fidgety and uncomfortable, McGee clicked a switch on and off.

"I waited all day, but Rick couldn't do anything." He gulped. "Rick was awfully sorry, Jim. He wanted you to understand that he couldn't do anything. He told me to explain how it was."

Drake didn't speak. He merely sat down on the metal stool and dropped his big roan head in his folded arms on the case of the pilot robot. He wasn't a giant any longer, Ann thought. He was just a broken old man.

She saw little Rob McGee move nimbly to the ship's photophone and take up the receiver. Dully, without interest at first, she heard his gentle voice. It sounded far away.

"Yes, von Sudenhorst. McGee speaking. . . . All right, then, Commander von Sudenhorst. . . .

Another beacon? What are its bearings? . . . We've been expecting a fire storm. . . . Very well, commander, you can go ahead and evacuate any of our men who wish to go. . . . Miss O'Banion? I'll see."

Ann shook her head emphatically.

"No, commander, she doesn't seem to," McGee said gently. "No, I think we'll stay with the *Good-by Jane*. . . . Well, if it's suicide, it's our suicide. . . . No, sir, I don't believe Miss O'Banion will change her mind. . . . Very well, I'll speak to Mr. Drake."

Drake's grizzled head lifted out of his folded arms. Ann bit her lip, for his face was terrible to see. It was so shrunken and so gray, the wrinkles so terribly bitter and deep. Tears were burning in the dark, hollow eyes. Drake said nothing. He merely shook that dreadful head.

"No, commander," Rob McGee said very softly, "we won't evacuate—not till that sixty hours is up." He replaced the receiver, and added in that same gentle voice, "And *verdamnt* to you, von Sudenhorst."

VIII.

Ann's anxious face spoke a voiceless question.

"Yes, von Sudenhorst says there's more seetee on the way." McGee's over-quiet showed his disturbed emotion. "There's a swarm-blinker coming down across our orbit. The subaltern is only doing his duty. He wants to evacuate us from the track of the fire storm."

Silence fell, thick and breathless in the narrow, gray-padded pilothouse. Drake sat with his big, red-gray head on his folded arms. He didn't move and he made no sound. But Ann felt as if all his being, his old gigantic strength and his old splendid dream, his love for Rick and his very wish to live, all had crumbled and fallen to dust before her eyes. Teeth in her lip, she turned jerkily away from him. This terrible moment was too private for anyone to see. She ached to help him, but there was nothing she could do.

"Let's have a look for that blinker." Rob McGee seemed to understand. With a wan, grateful smile, she turned with him toward the periscope. Presently he took his head out of the black hood to let her see.

One greenish star was splendid on the black field. The blinker was hard to find, but at last she discovered its small, hurried signal, red-blue-and-yellow, red-blue-and-yellow. It seemed tiny and remote, its meaning difficult to grasp. Looking back, she saw that McGee was consulting the worn black volume of his "Ephemeris."

"It's the Theseid Swarm." His voice was too quiet. "The one that destroyed the liner *Theseus*, back before Jim invented the blinker. It contains many large fragments of drift, as well as dust. One of the worst in the system. It will be here in two hours."

Ann glanced at Drake's bowed, unmoving head. It was strange to be reminded that an invention of his had saved so many lives, that he had been a giant among the mighty race of spatial engineers, when now he seemed so futile and so broken. She looked away again.

"Suppose another big fragment hits Freedonia?" Her dry voice tightened with a desperate hope. "Wouldn't that carry us off the collision orbit?"

"Not likely," said McGee. "There aren't so many as big as the one that hit before, and space gives them lots of room to miss." He shook his head, adding softly: "Wouldn't help us, if that happened. We have no legal claim to Freedonia, unless we change the orbit ourselves."

Her tanned hands clenched with a futile tension.

"Then I guess there's no more use—"

It surprised her into silence when Drake stood up. The tears were gone. His haggard face was stiff and strange. He stalked awkwardly to the periscope. Turning from it, he began to question Rob McGee about the relative motions of Freedonia and the approaching cloud of contraterrene drift. His voice was dull and low, as if disaster had drained him of all emotion.

"Only ninety-three meters a second, but that's plenty for seetee." Little McGee answered very softly, at first. "The blinker itself will miss Freedonia, by twenty-one kilometers. But the front covers a wide area. Von Sudenhorst is right—we ought to take off pretty soon if we're going to get out of the path—"

Something happened, then. Something made McGee catch his breath. For once his voice was startled and high, protesting:

"You're crazy, Jim—you can't do that!"

Tense with wonder, Ann turned to old Jim Drake. Something had happened to him. Still his haggard face was set and gray, but his hollow eyes were burning. Despair had turned to some grim purpose. What it was, she couldn't tell. But McGee had read it from Drake's questions—and she could see that he was frightened.

"What is it, Seetee?" She caught at Drake's gaunt arm. "What are you going to do?"

But he didn't seem to hear. His hollow eyes were far away. She could almost see the strength of this new purpose growing in him, lifting his head, filling out his shrunken frame, making him once more gigantic. Again he had become the spatial engineer, boldly shaping hostile forces with brain and brawn and daring, rebuilding the foreign world of space to fit the needs of men.

"Don't try it, Jim!" McGee was urging softly. "You know it's all theory, paper work—you never had a lab. You know the spacemen are right—the stuff is hell in chunks. You know a man can't

live outside, in the fire storm that's coming. You were nearly killed by one gamma burn—isn't that enough?"

Drake smiled a little. Now he was a calm and patient giant, unvanquishable, sure of the power of his brain and his hands. McGee yielded to the conquering purpose in his slow brown smile.

"Good luck, Jim," he said softly. "What do you want me to do?"

"Get the shaft ready for me." Drake's voice was deep and confident again. "Drag the derrick and the cables out of the way—so I can get in without touching anything. We'll need two or three of the cores—tow them down and leave them ready by the shaft. Then I'll want you to take me out to meet the drift."

"Done, Jim," said Rob McGee.

Ann wanted to know what he meant to do, and she was pretty well accustomed to getting what she wanted. But the mighty purpose visible in Drake had inspired a kind of awe in her, so that she didn't ask again. She noticed that McGee was answering the buzzing photophone again.

"The subaltern." He had covered the receiver with his hand. "The final warning, he says. He demands that we come along out of the drift front—or else let him evacuate the men and Ann."

"The men must go," Drake said instantly. "Call Moran, and tell him to take the cook; the others are already aboard." He looked gravely at Ann. "You had better go—this won't be any picnic."

"Not with Kurt von Sudenhorst," she said. "Besides, I want to stay and help—with whatever you're going to do."

To her relief, Drake seemed to understand about von Sudenhorst. "We're going to move Freedonia," he said grimly. "Tell von Sudenhorst to wait for the other men—Ann isn't coming. And tell him to watch us change the orbit!"

McGee told him—very gently. Ann heard an ungentle metal rasping in the receiver before he hung up. She made a pleased little face, and then turned quickly to listen to Drake.

"You can help." His voice was quick and vibrant now, powerful. "You're a good mechanic. I want you to tear the batteries out of four of those spare suits and make them into a pack that I can carry. Connect them in parallel—I want amperage, for a magnet. Wire in the best rheostat you can find—I've got to have control, on that magnet! You've about an hour for the job."

She asked no questions. "Let me at it!"

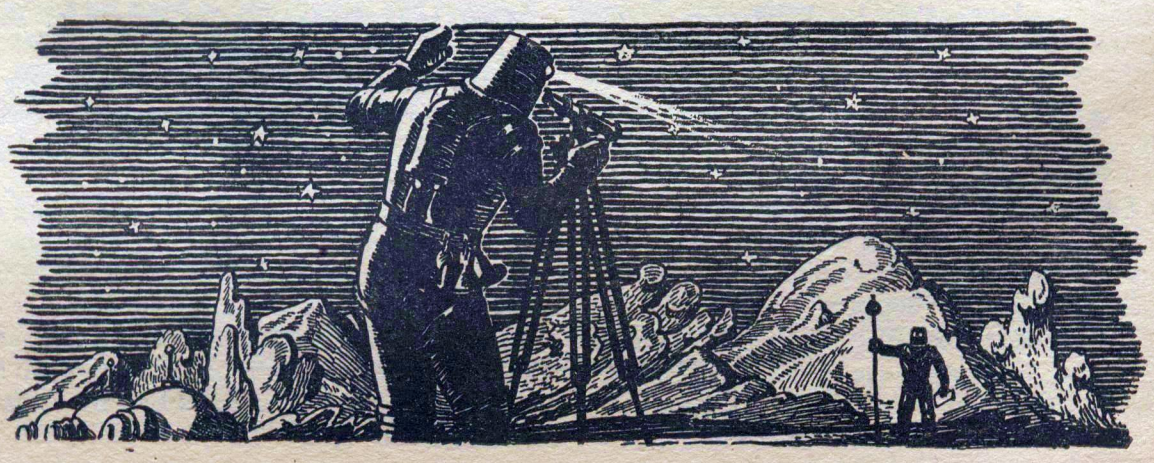
The beginning of the fire storm was no more spectacular or alarming than any of the previous falls of contraterrene dust. It was only a scattered shower of incandescent splashes, tiny and silent. In the deserted mess shelter, busy with pliers and parts of the dismantled suits, Ann scarcely noticed the beginning.

All the other falls, however, had quickly passed. This steadily increased. It became a rain and a terrible hail of fire. The shelter was struck a dozen times. Escaping oxyhelium made a thin slow hissing, from some hole not completely sealed. Across the inside of the thick inflated fabric, ominous blue letters began to stand out, spelling DANGER.

The warning fluorescence of those stenciled signs meant that deadly gamma rays were leaking through the fabric. Ann left her task to put on her dirigible armor—leaving the gloves detached, so that her hands would be free to work the pliers. She meant to marry, some day—though not von Sudenhorst; and she didn't want to bear any ray-shaped monstrosities. She paused a moment, by a tiny peephole, to watch the inferno outside.

Hot blue splashes were dancing all across the shallow iron depression, except where the low black cliffs stopped the slanting fall. She saw a wide rent in the shelter the men had used, though the stiff fabric had not collapsed. It was fortunate that they had gone with the cruiser.

Larger fragments were falling now. She saw a dark, jagged boulder strike glancingly. It made a steak of searing, intolerable fire, everywhere it touched the iron. It skittered across the crater, bounding on the cushion of its own fury some-



what like a water droplet on a red-hot stove, and finally dissolved in a vast curtain of silent, blinding fire against the farther cliffs.

She hurried back to her task. The shelter seemed dark to her dazzled eyes, and she was numbed with an icy dread. Twisting feverishly at the wires, she vaguely wondered again what Drake meant to do. She didn't see how even such a capable giant as he could do anything at all, in the midst of this storm of consuming fire.

In a few minutes more the heavy little power pack was done. She put on her gloves and fastened the face plate of her helmet. Carrying the pack, she scrambled out through the air lock and lifted the suit across the flame-spattered crags of iron, toward the shaft.

A particle struck the back of her helmet with a sudden dazing force that set her to spinning wildly. But it must have been a very small one, for she lived. She kept her grasp on the power pack. She righted her flying armor and went on.

When she came in view of the black-walled pit, the stubby little *Good-by Jane* was dropping into it. Rob McGee was moving the iron cores, as Drake had asked. He opened the air lock for her. She gasped with relief to escape that fall of deadly fire—though she knew there was danger yet, even to the ship.

Now that her own effort was ended she felt chilled and shaken. Inside the valves, she opened her face plate and clung to the foot of the ladder, too exhausted even to hail Rob McGee. In a few minutes Drake came through the lock and pushed up his own face plate.

"You aren't hurt?" His voice was quick and anxious. "Better keep your armor on. This drift looks pretty thick, even for the *Jane*." His voice went deep again, with driving purpose. "You have the battery pack?"

She nodded breathlessly, and then saw the gadget that he had brought. He had cut the powerful little electromagnet off the magnetic hoist they had used to lift the cores from the shaft and welded a convenient handle to it. She helped him connect the power leads, and strap the rheostat in his glove, and secure the batteries to the shoulders of his armor.

"Finished, Rob?" his deep voice pealed up the ladder well. "Then take us out to meet that blinker."

IX.

Contraterrene drift flowed about the battered little space tub, a black and silent rain of danger. The repulsion of the safety field stopped most of the dust. The thermalarm relays snatched the ship aside, again and again, in random mechanical efforts to escape some fragment on a stationary collision bearing. Little Rob McGee used the best of his curious skill. Although the old hull rang, time and again, to the crash of debris, he took Drake out to meet the blinker.

Drake was waiting by the valves at the bottom of the ladder well. A gigantic robot, in the silver-painted armor, he was busy getting the feel of the rheostat strapped under his steel-gloved thumb.

Ann O'Banion stood beside him, and she felt a sense of awe. He was going into frightful danger, but he didn't seem afraid. She was still with a new respect for human greatness, for the human might it took to conquer these frontiers, that were never planned for men.

Still he hadn't told her the thing he was going to do—not in words. But she could see the terrible outline of it, in his preparations. She felt cold and ill with dread. But she could see that he was not afraid, and that queer awe stopped any protest.

McGee's quiet voice came down the ladder well:

"Ready, Jim? Here's a bit of seetee that fits all your specifications. Nearly pure nickel-iron, from the color. It will fit into a one-meter shaft, with twenty centimeters to spare."

"Ready," answered Drake.

"One minute," called McGee. "I have to match velocity, and then I'll cut the safety field." That was a necessary precaution, Drake knew; the negative field would have hurled him away from the ship, as impartially as if he had been another meteor. But the drift was not so dangerous, now that the ship was moving with it. "All ready, Jim." McGee's voice was very soft. "Good luck."

Ann gulped. A throbbing ache in her throat wouldn't let her speak. Chilled and trembling, she helped that serene and awkward giant close the inner valve behind him. She lifted her glove against the thick little window in a tense, hopeful gesture.

Drake emerged from the air lock into the still, dark splendor of open space. He saw the blinker—a tiny, spidery wheel, spinning eternally against a bright Galactic star cloud, flashing its hurried, tireless warning. It was only a few kilometers away; this was the swarm's very heart.

In a moment he discovered the contraterrene meter that McGee had chosen for him, not a hundred meters distant. Even without his partner's mathematical eye he could see that it was well selected—its black, rugged mass was long, compact, narrow enough to slide easily down the shaft.

With teeth set on the plastic-cushioned helmet stick of his armor—for the magnet and its rheostat occupied both his hands—Drake made two or three preliminary practice circles. He approached the dark chunk of contraterrene iron, gingerly.

Collision with it might not be instantly fatal. But he knew that a fending arm could be swallowed into flame and nothingness. He knew that the tissue-burning gamma rays of that matter-consuming reaction could leak even through his unharmed suit, to kill with an ugly, lingering

death. Cramped in the armor, his bad knee gave another monitory twinge.

He swam up cautiously behind that dark and deadly ingot, and brought the case of the magnet carefully within a few inches of it. Slowly he moved the rheostat, to energize the magnet and draw the meteor toward him. Carefully, at the same time, he pushed up the control stick with his teeth, to draw away from danger.

The meteor followed. He fled, and it pursued. The flight required a nerve-draining precision of control. The inverse-square law became almost an edict of death. If he drew the magnet an inch too far away, its force snapped like a rotten string; if he let it slip too near, its attraction was instantly redoubled, jerking him toward that pursuing deadly mass. Again and again he had to stop the current, with a convulsive jerk of his thumb. And twice, for all his care, the case of the magnet touched a point of the meteor, with blinding silent fire.

Rob McGee was helpful. He followed close—still with the little tug's safety field recklessly off, so that its unequal thrust would not impede Drake's exacting task. On the ship's photophone, he gave soft-voiced directions—he always knew exactly how far ahead Freedonia was, and exactly how much of that ninety-three meters a second of relative velocity remained for Drake to conquer.

As they slowed toward Freedonia's pace, the remainder of the drift began to move about them again, with an increasing threat. McGee came to the rescue, holding the ship for a shield between Drake and that deadly rain. In spite of that, a few small stray particles struck his armor, their jolting, unexpected impacts increasing the peril of his task.

Yet Drake remained the spatial engineer. Even during those most desperate moments, a part of his trained mind was detached from the task that seemed to call for every faculty—busy trying to design a new relay, that would somehow circumvent the inverse-square law.

At last he saw the black and jagged cube of Freedonia, rolling against the field of stars ahead. Still the fire storm raged against it, for he could see the unending dance of hot blue points against the crags of naked iron. The photophone brought a final gentle word from Rob McGee:

"Here we are, Jim. Now, ignoring rotation, your velocity is matched exactly with the rock. I guess the rest is up to you."

With the helmet stick in his teeth, Drake didn't try to speak. He merely bobbed the suit. The little tug slipped silently away. Now McGee could use the safety field again, and even take shelter from the drift in Freedonia's lee. Drake knew the rest was up to him—and it was the trickiest part of a ticklish job.

Swimming underneath the seetee meteor, he tugged it gently downward, hastening the acceleration of Freedonia's tiny gravity. With a gentle pull to overtake the asteroid's rotation, he drew it over the dimly glowing pit where they had drilled the shaft.

He tipped the meteor upright, upon its longest axis. Tugging at projecting knobs, he imparted a slow spin that would help to hold it there. He let it continue to fall—and steered it carefully into the one-meter shaft that they had drilled.

He had to follow it.

That necessity was the reason he had not tried to explain his plan in words, to Ann and Rob McGee. Very soon that shaft was going to become a volcano, erupting frightful atomic fire. He thought he would have time to get out before that happened; but his understanding of the seetee reaction was based on paper work—he had never had a laboratory. He had not dared to trust them, to let him take the chance.

He had to go down with the meteor, because of Freedonia's axial spin. Rotation would tend to fling the falling meteor continually against the forward side of the shaft as it approached the center of gravity. He had seen that it could stand a few accidental knocks, without catastrophe. But that steady thrust, he knew, would be enough to precipitate the full explosive reaction, long before it fell to the bottom of the shaft.

He swam down close behind it, headforemost, with his photophone head lamp snapped on for illumination. He thrust the magnet far down on the sunset side of the pit, to hold the slowly turning meteor off the opposite wall.

Several times, in spite of Drake's cautious tugs, some jagged point of it came against the smooth dark walls—with a silent burst of terrible flame. But he managed to keep those accidental nudges gentle enough to avoid catastrophe, and he was relieved to see that the meteor rebounded from the wall.

That effect he was not quite prepared to explain—perhaps the reaction had a temperature factor. But he had observed it before—he had seen seetee pebbles skittering across terrene matter, like droplets of water riding their cushions of steam across hot metal. He had counted on it to save his life.

The narrow walls of iron came up about him endlessly. His gaunt body was cold with the sweat of nervous strain. His knee ached. A dull discomfort in his middle became an uneasy threat of spaceman's colic.

And still the meteor fell.

He couldn't see beyond it. He couldn't see the bottom of the shaft. But the broken drill stem burned with a white and warning fury when the meteor touched it. He managed to check his own descent, just short of death.

The meteor rebounded a little from the bottom

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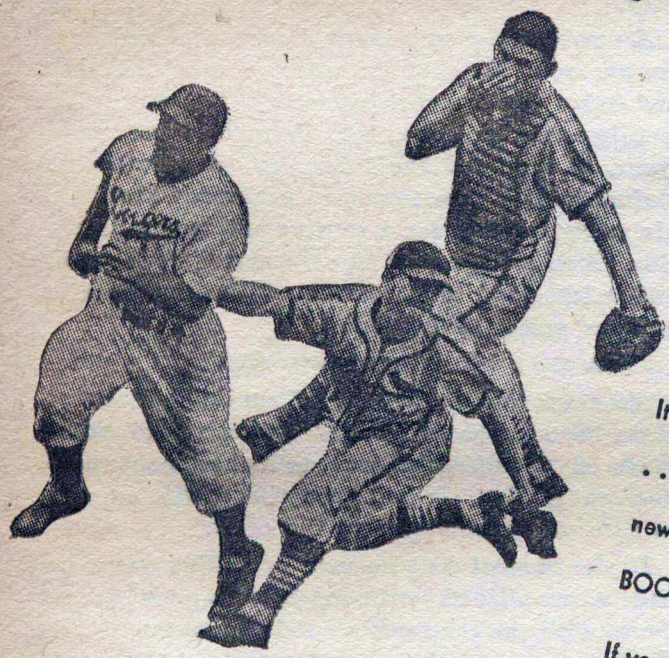

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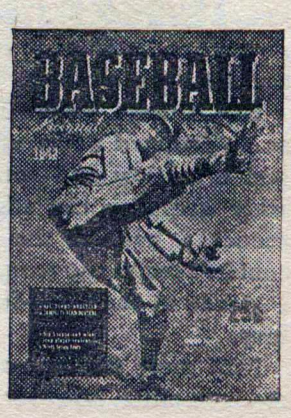


of the shaft. The magnet grazed it with a flash of searing light. But Drake was still alive, and the magnet wasn't ruined. He tried to steady the meteor, scarcely daring to leave it.

It hung in the bottom of the shaft, the dark tons of it moving in a slow and ominous dance, supported upon the incandescent fury of its own dissolution. The reaction, as yet, was slow. Here, near the center of gravity, there was only a tiny pull upon it. But the rebounds might swiftly increase. Of course the temperature was swiftly rising, and, when it melted, things would happen.

In his stiff and bulky armor, Drake was too big to turn in the shaft. He fled heels uppermost, elbows striking harmless sparks from the iron. The glare beneath him dwindled to a small, intolerable point.

At the top of the shaft—but still in the iron funnel of that larger pit, still in the path of the coming blast—he slammed the magnet recklessly against one of the great iron cores that Rob McGee had placed ready for him.

There was no need for caution now—for anything but haste. The thick iron cylinder was almost weightless here, but still its mass of many tons made it slow and difficult to move. He hauled it laboriously over the shaft, and started it home with all the thrust of his flying armor's drive.

It was wadding for his rocket gun. It would hold back the fury of the contraterrene charge, make sure that it didn't blow itself out of the shaft before it had been fused and vaporized and utterly consumed, to release its full atomic might. And its impact would certainly be enough to crush the suspended charge into ignition.

For good measure, however, he dropped another core after the first—he thought he had time enough for that. Then he fled out of the glowing funnel—chance had shaped it well enough, he thought, into the bell-flare of an efficient rocket muzzle—and retreated over the near horizon.

He had time to reach the asteroid's lee. He found the *Good-by Jane*, standing at anchor in an iron-walled hollow. The photophone greeted him, with a red and anxious flicker. But he had no time to listen or to answer. He dived headlong for the open air lock.

But it came, before he could get aboard. Even as he dropped down upon the iron his feet could feel a mighty and soundless vibration. Desperately gripping the edges of the open valve, he crouched against the rusty hull. However, he couldn't resist the temptation to risk his eyes with a glance at the sky—for this rock was his laboratory.

Still there was no sound. Beyond the ship and the iron cliffs, however, a white and mighty plume came up. It was magnificent and blinding. It flooded the sky and drowned the Sun. Drake bent his helmet, to shield his eyes against the deluge of terrible radiation.

He heard a sighing, as if a thin wind passed. The living iron quivered under him. Something tugged at his armor. He clung desperately to the valve. A hail of freezing iron rattled against his back and he felt a parching heat.

And then it was over.

Silence came back, an insulating ocean. He dared to look again, and his dazzled eyes saw a sky of fading red—a veil of dull flame that ripped and came to shreds and swiftly dissolved from before the black, eternal face of spatial night. The storm of iron was gone, and the Sun came back.

An awed and weary giant, Drake stumbled into the air lock. He shut the outer valve behind him, and heard the grateful hiss of air, and struggled hastily out of his hot armor. A numbed and heavy giant, he mounted the ladder to the pilothouse. Before he had time to speak, Ann made him bare his gaunt forearm for a routine antigamma injection. Rob McGee gave him the astrogator's stool, and it felt good to sit down. With a hoarse and anxious voice, he gasped:

"Was the orbit changed—enough?"

He knew that the energy of annihilated matter must have fused and boiled and expelled thousands of tons of nickel-iron, to make that stupendous rocket jet. It had been timed well enough to react at right angles to the orbit.

Drake himself had no way of telling what he had accomplished without spending laborious hours with the instruments and the methods that Earth-born man had invented to extend the range of feeble senses never adapted to space. But he knew that any change would be self-evident to Rob McGee, as obvious as one plus one.

"Was it changed?" McGee turned nimbly from the periscope with a gentle smile creased into his leather face. "About a hundred times as much as necessary!"

Ann clapped her hands together. "Then Freedonia's ours!"

"I don't know." The victorious giant was doubtful. "We've moved the rock, but the title to it is a thing to be settled by the officers of the Guard and the lawyers and politicians at Pallasport—and they're all about as tricky as seetee itself."

The first brief elation was ebbing, and the reaction of effort and strain came back upon him in crushing fatigue. All the buoyant force of that mighty purpose was drained out of him. He was old again. But still the job wasn't done.

"Can you get von Sudenhorst?" A slow, heavy giant, he turned to Rob McGee. "We must report

what we've done. The change in the orbit doesn't mean a thing, unless they know we did it."

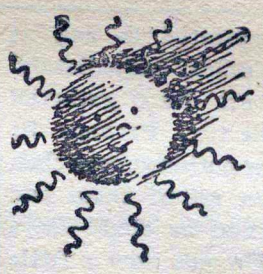
Hours later, still too tense and tired to sleep, Drake was resting on the bunk in Rob McGee's cabin, when the photophone picked up the cruiser. Quietly, Rob McGee reported how they had moved Freedonia. And Ann relented enough to speak to Kurt von Sudenhorst—for she no longer felt afraid. Drake heard her voice, through the open ladder well.

"Oh, yes, Kurt, we're all safe. . . . Of course we did—can't you see how much it's changed? . . . Didn't Captain McGee just tell you how we did it? . . . That's the way it was. Mr. Drake used the shaft for a rocket motor, and about five tons of contraterrene iron for fuel. . . . Of course it made a thousand-kilometer jet, and altered the orbit very suddenly! What else would you expect? . . . Certainly! Mr. Drake always said there was power in seetee. You don't seem to realize it, Kurt, but you have just seen a historic event—the first successful use of contraterrene matter. Now seetee is going to make a lot of changes—just wait and see! . . . And this report will say we were successful? . . . Don't be stupid, Kurt! We changed the orbit, didn't we? We averted the collision. That's all the notice of intention said we were going to do. . . . Of course you'll do your duty, Kurt. That's all we want. . . Naturally you can't grant us the title. That's up to the claims office, in Pallasport. . . . Then good-by, Kurt. . . . Yes, we're coming back to Obania. . . . No, I'm afraid not. . . . No. . . . Good-by!"

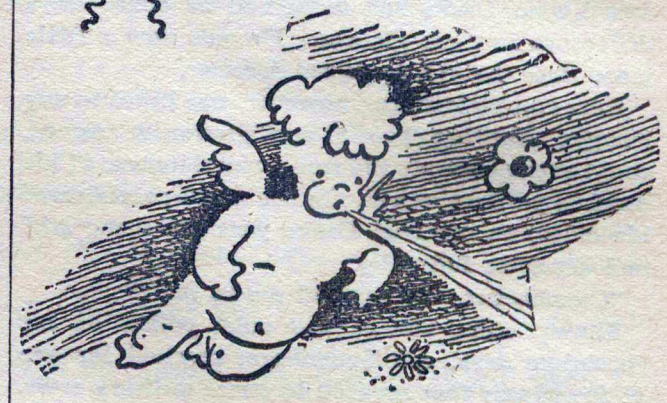
By that time the fire storm had completely ceased. They stayed on the asteroid long enough to salvage the undamaged supplies and equipment from the battered camp. McGee found one of the iron cores from the shaft, and towed it to a high point near the smoking, glowing pit. They welded it upright there, for a legal monument, and posted upon it a copy of the notice of intention. Ann herself took green fluorescent paint to splash it with tall, hopeful letters, spelling *Freedonia.*

The return to Obania took only sixteen hours, for it was not so distant now. Drake slept a dozen hours. He rose once more a giant, lifted with the triumph of his purpose. He couldn't see into the future. He had no way of knowing how long the real conquest of contraterrene matter would take, or who would be the final victor. But he knew that his old dream had turned a page of history. The moving of Freedonia had opened a new era.

The Guard cruiser had returned to the base on Obania, long ahead of them. As the *Good-by Jane* came in to land on the tiny, convex field, the photophone flashed above the control tower, an-



LOVE
is in the air...



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nouncing that Drake was requested to call at Commander von Sudenhorst's office, immediately.

A few young guardsmen, off duty, gathered about the lock of the rusty little tug. Perhaps the most of them were interested in nothing more than another glimpse of Ann. But all of them had heard what Drake had done, and he could see a difference in their glances. He was now a little more than the old, hopeless dreamer.

Kurt von Sudenhorst, however, was blind to any change. Nothing short of annihilation, it seemed, could ever penetrate the smug completeness of his ordered military world. In the metal precision of his office, he received Drake with the same stiff and arrogant formality.

"Commander, you wanted me to call?"

Sitting erect behind the cold polish of his chromium desk, von Sudenhorst reached for one of the papers that reposed in strict military rows, and looked up at Drake with hard blank eyes. His flat voice lifted, as if giving a command.

"Mr. Drake, my report of your unexpected success in safely altering the collision orbit of HSM T-89-AK-44 has been duly made to Pallasport. I have received a reply. The Guard has been instructed by the Mandate claims office to inform you and Captain McGee, acting as the legal agents of Mr. Bruce O'Banion, that your claim to said asteroid has been recognized, in consequence of your service. The title will be granted to you."

Drake swayed a little, gulping, "Thank you, commander!"

"No thanks are necessary," von Sudenhorst told him shortly. "I am merely acting in the line of duty." His stiff face frowned, and he caught his breath as if to add something else. But his iron jaw closed, and he rose like a black automaton. "That is all, Mr. Drake. I understand that Pallasport is calling you, if you will go to the photophone office."

Drake thanked him again, out of habit, and hurried to receive his call. Seated in the little booth, he waited breathlessly. It took an endless minute for his voice to span the eighteen million kilometers to Pallasport, to say that he was ready. The light-winged reply took another eternal minute before he heard the eager, slightly incoherent voice of Rick:

"Hello, dad! I've just heard about it, and I think it's wonderful—what you did, I mean. You've showed the System that you were right about seetee, all the time. As for me, I wish I had seen it sooner—I mean, when I came back to the Mandate, and went to work for Interplanet."

His deep young voice hurried on, filling up the two precious minutes: "But what I called to tell you, dad—I'm through with Interplanet. I guess you were right about them. They won't let me do anything—real, I mean, and big—like terraforming Pallas. And it made me plenty sore the way they kept Cap'n Rob from getting that unit."

Tears stung Drake's hollow eyes, and he heard the quick, eager voice through a sudden distant roaring in his ears. "I hear you've got title to the asteroid, dad. I'm awfully glad. Say, dad—Cap'n Rob told me you wanted the rock to use for a seetee lab. I want to come out and help you build it—I mean, if you still want me. How about it, dad?"

Rick's two minutes were gone. Alone in the stuffy little booth, Drake was suddenly weak and trembling. There was a roaring in his ears. At first he didn't hear the operator say that he could speak. He wasted half a precious minute. Then his voice came queer and hoarse—but still he managed to tell Rick how about it.

A tall and mighty giant, years lifted from him with the power of his proven dream, Drake strode back to the rusty little office in the town. Things were going to be different, now. They would need a new sign, now, with Rick's name on it. Seetee was doomed to yield at last, to the spatial engineers.

The next evening, Ann O'Banion gave a modest little banquet in the long glass-and-silver dining room of her father's ancient mansion. It was to celebrate the winning of Freedonia. She even asked Kurt von Sudenhorst, out of sheer elation. But old Jim Drake forgot to come. He was busy at his desk, designing the induction furnace and magnetic hammer with which he hoped to make the first successful forging of contraterrene iron.

THE END.

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IN TIMES TO COME

"Waldo," one of the last Anson MacDonald stories we're apt to get for some time, will lead off the August Astounding. It was, as a matter of fact, a pleasant surprise to get this manuscript —completed during the interim between going up for active duty and receiving an assignment. MacDonald is now, very definitely, engaged full-time in pounding Japs and Nazis instead of typewriter keys.

The story has some nicely unusual set-ups—as is to be expected of a MacDonald story—including one that certainly sounds as though the yarn had strayed from its proper pasture, *Unknown Worlds.* The main problem of the yarn is: Just what is it that a certain Pennsylvania hex doctor did to a "broomstick" that made it fly, when the best technicians had failed. It may occur to you that that isn't science-fiction, and definitely not science; definitely, it is. The "broomstick" isn't quite the usual kind; it's entirely inclosed in transparent plastic streamlining, and— Well, read the yarn.

For that matter, Waldo isn't the usual sort of hero. He's a fat slob, so weak he can't—literally —lift a hand. All in all, a genuinely unusual set-up.

This issue contains the first series of Probability Zero stories contributed entirely by readers. They began coming in in a very slow trickle about the time the June issue was being set up; in the month interval, a nice supply showed up, and are printed herewith. We want more—a lot more. And we want votes, because the prizes for our best liars will be distributed solely on the basis of reader votes. The prizes are, in case you've forgotten, $20 for the best, $10 for second place, and $5 for third. The contest is open to any and all who think they can string a taller story than the next guy; the sole conditions being that the finished opus be not more than seven hundred fifty words long. (There's no lower limit; if you can outprevaricate most people in ten words, we'll gladly give you a prize equivalent to a $2-a-word rate.) It should be typed, double-spaced—and please don't drive me to fits of futility by leaving your name and address off. I can't use 'em if they can't be assigned a home. And it must, of course, be original, and science-fictional in background.

The general idea is that the little item shall sound plausible on the surface, but contain a flat violation of known scientific law. Malcolm Jameson's story, "Pig Trap," in the April 1942 Astounding, for instance, depended on freezing a shadow; that, definitely and explicitly, lived up to the department title of "Probability Zero." And all—professional or amateur—are invited to do likewise!

The Editor.

THE ANALYTICAL LABORATORY

NOTICE PLEASE—In your Analytical Laboratory notes for the current issue, please be sure to rate the Probability Zero stories in your order of preference. The first prize of $20, second prize of $10 and third prize of $5 will be distributed to the winners selected on the basis of your votes.

The stories in the May issue seem to have had a fight for position, as the concentration of point-scores indicates—they range between 2.0 and 4.5, indicating a real scattering of opinion. As of make-up day, they stand:

Place	*Story*	*Author*	*Point score*
1.	Beyond This Horizon	Anson MacDonald	2.00
2.	Asylum	A. E. van Vogt	2.10
3.	Push of a Finger	Alfred Bester	2.53
4.	Foundation	Isaac Asimov	3.21
5.	Forever Is Not So Long	F. Anton Reeds	4.50

The Editor.

PROBABILITY ZERO!

"THE STRANGE CASE OF THE MISSING HERO"
By Frank Holby

Lucien Hazard, greatest criminologist of the twenty-fifth century, entered the door marked:

Sebastian Lelong
Editor ENCYCLOPEDIA GALACTICA

"Come in, come in, Mr. Hazard," boomed out Mr. Lelong. "You're just as I've always pictured you: tall, thin, dark, and with a lean-and-hungry look," he chuckled.

Lucien smiled dourly. "I assume that you are in need of my analytical ability."

"That is precisely why you are here," nodded Lelong. "Sit down and I will tell you all about my troubles.

"Our company is publishing the decennial set of encyclopedia. Our set is finished, but for a portion of one book—G to GH.

"Naturally, we have devoted several hundred pages to the immortal martyr, Elliot Gallant."

"Naturally," said Lucien.

"We have a summary of the three hundred pages ready," said Sebastian Lelong. "Let me read it to you:

"'Elliot Gallant's early childhood remains a dark mystery. He showed a sign of his great intellect at the age of four, when he defeated Isaac Morphy of Lower New York for the chess championship of the United States. Shortly after, he was registered in the great Earth Orphan Asylum in Los Angeles, California.

"'He attended the State schools, and graduated from the University of Greater California with high honors.

"'Elliot Gallant gained his commission as a gyroplane captain in the second Intermediate War. He fought fearlessly and well for his country, several times opposing formations of enemy draftoships alone and unaided. He was taken prisoner on the Island Fortress of Castleroux, but escaped to lead a group of peasants to freedom and victory.

"'Above all things . . . above all events of this century, the incredible bravery of the man stands out like a beacon light of courage. His feats of heroism in the third War of Salvation are legend.

"'Almost singlehanded, Elliot Gallant's great leadership gave us victory in the, what is to be hoped, final war.

"'After the great war, science progressed rapidly in peaceful fields. A time machine, the first of its kind, was built. Who would go on the perilous journey to previous time? Millions of followers, led by Job Buckley and Woody Jackerman demanded that Elliot Gallant be chosen to go. And so he was.

"'Cheering crowds watched Elliot Gallant climb into the time machine. Elliot saluted the spectators, gazed fondly at the gigantic colossus of the superscience buildings, and pulled the starting lever.

"'He was supposed to return from the past to his people in two years, but mortal man saw no more of Elliot Gallant.'"

"Very interesting," broke in Lucien, "but what has this got to do with me?"

Sebastian Lelong spoke softly. "Our Board wants you to go back into time and discover what became of Elliot Gallant. If you can discover this, we will include the facts in our new set of books. Our books will be the best sellers of all time. Millions of beings want to know what happened to Elliot Gallant, and we propose to tell them. We already have unearthed several facts previously unknown about Elliot Gallant. For instance, only seven people in the Universe, the members of the Board and us, know that Elliot

Gallant's mother was a woman named Mary Moresbe.

"You must be careful, however. The indomitable Elliot Gallant undoubtedly died, fighting scores of bloodthirsty pirates, or slaying some ferocious unearthly monster. It is certain that he died, fighting against insurmountable odds."

"I thought that time travel was forbidden after his disappearance?" queried Lucien.

"We've got the machine for you, never mind how," snapped Lelong.

"Very well, I'll do it," said Lucien.

After six long, dreary, restless months Lucien Hazard stepped into the room, through the door marked:

Sebastian Lelong
Editor ENCYCLOPEDIA GALACTICA

"Did you find out anything?" shouted Lelong.

"Elliot Gallant, strongest of the strong, died by his own hand," said Lucien.

"Impossible," snapped Lelong.

"Elliot Gallant went back into time thirty years. He liked the peaceful days of yesteryear. He married, had a son. He didn't want to come back into the present, and be the hero of the populace."

"But why did he kill himself?" asked Lelong.

"Elliot Gallant's son won the chess championship of the United States at the age of four. Elliot Gallant married a woman named Mary Moresbe. Does that mean anything to you?" whispered Lucien.

"You mean?"

"Exactly. Elliot Gallant killed himself when he found out, with his great mind power, that he was his own father!"

DE GUSTIBUS

By Randall Hale

The fierce glare of the sun beat into his eyes and blinded him so that he could see nothing against its brilliance. After a few moments he turned reluctantly away. There was nothing to be seen, anyway, he knew. It had been only hope —or the desperation of one who is dying—that had brought him out. Resignedly, he trudged back into the air lock of the highly polished tungsten dome and swung the door shut behind him.

As the pressure in the lock hissed up to Earth atmosphere, he thought again of the worn-out spacesuit that, somehow, had gotten packed in what he had believed to be the last crate of food on Mercury. It was now four days since he had discovered it—and the regular supply ship from Earth wasn't due for fifty days more.

The pressure was up, and he stepped slowly out of his spacesuit, leaving it right there on the floor. What good would neatness do him now—he'd be dead before the ship came, anyway. He couldn't contact Earth to tell them of his plight, for Mercury was too close to the magnetic disturbances of the sun for an interplanetary radio to operate. And he was the only man on the planet. Soon, not even he would be alive.

He opened the inner door and stepped into the tiny building in which he had lived for three years. The building in which he was to die. Man can live but forty days without food. He had already lived four. The ship wouldn't come for fifty more. The inescapable mathematics of the situation stared him bleakly in the face.

He walked past the long rows of bottles and jars on the laboratory shelves and into his small living quarters. He sat down on the buna rubber couch, buried his head in his hands, and tried to think the thing through.

The station was well equipped with vitamin and mineral tablets, he knew. But, hang it all, a man couldn't live for fifty days on pills! And there were none of the usual foods in the laboratory. Carbohydrates, fats, proteins—nothing. And that was that.

He tried to analyze the problem from a different standpoint. What essentially did man live on? Just carbon, hydrogen, nitrogen, and oxygen. Hydrogen and oxygen—water. There were three huge buna-lined steel tanks full of water buried in the Mercurian soil, far below the station. That was all right. But the carbon and nitrogen?

Coal and air. And a man couldn't live on either of them. There was his problem—the carbon and nitrogen. How to get them?

Thoughts of the fried chicken his mother had made back on Earth, before he'd ever come to this God-forsaken planet as an observer, came to his mind. He thrust the ideas from him resolutely. He had to think—

He got up and paced nervously about the small room and into the adjoining laboratory.

The supply ship landed with a very slight jar on the arid Mercurian crust, about fifty yards from the observatory. Its glittering praseodymium-vanadium rocket tubes gave one last spurt of bright-orange flame and died. The spacesuited pilot leaped out through the ship's air lock and ran across the strip of hot, dry sand separating the ship from the station.

Just as he was about to press the automatic outside lock control of the station it swung open and another suited figure stepped out to greet him. The two men talked through their helmet phones.

"How are you, old man?" said the pilot.

"Pretty hungry," replied a hollow voice. "Haven't had a meal in eight weeks. Ran out of food and thought you'd never come. Come on in. We'll talk in the station."

As he led the other into the air lock and closed

the outer door, he heard a low whistle from the pilot.

"How under the sun did you manage to stay alive?"

"Simple enough. All man needs to live on besides vitamins and minerals are carbon, hydrogen, nitrogen, and oxygen. I lived on water and potassium cyanide for fifty days."

THAT MYSTERIOUS BOMB RAID

By Bob Tucker

Four or five of us were sitting around in Hinkle's cellar one evening drinking Hinkle's beer, littering Hinkle's floor with cigarette stubs and talking about the war.

We were discussing ways and means of ending the whole mess as quickly as possible, like so many armchair politicians, and getting nowhere fast. Someone always seemed to be able to pick out the weak spots in the most plausible-sounding plan.

One of Hinkle's neighbors, a skinny, red-headed chap I'd never seen before, mentioned the popular theory now making the rounds of the town: that of dumping several loads of the army's biggest bombs into some of their—Japan's—nastiest and noisiest volcanoes and tipping the whole blamed island over into the ocean.

At this, Hinkle glanced across the room at me and raised his eyebrows in question. I nodded assent. He cleared his throat and out of politeness—and Hinkle's stock of beer—everyone else stopped talking.

"It won't be necessary," he announced in the smoke-laden air. "To drop explosives in the volcanoes, I mean. You see, we've already bombed Tokyo itself. Blown it clear off the map!"

The skinny redhead picked up a newspaper off the floor and scanned the front page. He didn't call Hinkle a liar, just dropped the paper after a few seconds and contemplated his beer silently.

"It's the truth!" I seconded Hinkle. "Honest it is. I was with him at the time. Hinkle and von Schach and myself. We bombed Tokyo sometime in 1931. Only it hasn't blown up yet. But it will soon."

"Perhaps"—Hinkle cleared his throat again—"I had better make that clear. You all know von Schach, don't you? He's in charge of the science department at the Unversity.

"Well, sir, right after this war started, the three of us"—he indicated me and the absent von Schach with a wave of the hand—"decided something drastic ought to be done. We didn't like the way the army was running the thing.

"Von has a time machine." The glances thrown his way didn't deter him one whit. "Yessir, he really has. It will travel through space as well. Well, sir, one day Von and I thought of a plan and we decided to put it into operation. We went down into his laboratory one night and filled a fifty-gallon oil drum with the most powerful liquid explosive existent."

He smiled and waved his hand. "Have another beer. I'm sorry I can't reveal the nature of that explosive, but it's Von's secret. The formula is in the hands of the War Department now.

"Anyway, we stowed that oil drum aboard the time traveler and took off. Von handled the controls and Jack was along to help me with the drum. How that little machine could travel! I remember barely catching my breath from the suddenness of the take-off, when Von announced that we were already over the Pacific and speeding through 1938 at a lightning clip!

"Our plan was to go back to about 1900, at which time we thought the bomb would nip in the bud even wishful thoughts of making war on the United States. Well, sir, that little machine traveled so fast that before we could stop it we found ourselves in the last century. Somewhere in the 1890s. We were going to drop our oil drum there but I happened to remember that my grandfather was spending his honeymoon in Tokyo sometime during that decade"—he spread his hands and shrugged—"and, gentlemen, I couldn't very well kill my own grandfather.

"So von Schach started the machine going again, coming forward through time, while Jack and I stood by the open door to push the drum overboard as we sped through a likely-looking year. Again that blamed traveler tricked us!

"'Shove it out, quick!' von Schach yelled in my ear. 'It's already 1930!'

"Jack and I shoved it overboard. Would you believe it, another year had gone by while we were getting it out the door! The last we saw of it, it was falling like a . . . like a . . . like an oil drum, and *drifting forward.*

"That last escaped us as being significant at the time. We didn't think of it until we had returned here to 1942 and read the newspapers. Tokyo was still there, waging war.

"Then the full facts smacked us in the face. Our oil drum hasn't yet landed on Tokyo, chronologically speaking. You see, gentlemen, we were speeding forward through time at so fast a clip that when we dumped the bomb overboard, it not only drifted forward with the motion of the ship according to the laws of gravitation, but drifted through time as well!"

He paused dramatically and swept a beer to his mouth. I leaned back with the satisfied feeling of a good story well told.

"Any day now," Hinkle finished, "you'll read in the papers of Tokyo being blown off the map by a tremendous, mysterious force. That, gentlemen, will be our bomb, picking a place and a time to

land at last. It may be next week or it may be next year. From our calculations we know only that it will land somewhere in this decade."

ABOUT QUARRELS, ABOUT THE PAST

By John Pierce

Quarrels? No, I don't know where Quarrels is. But I suppose the answer is, he isn't. Last I heard of him he was hobnobbing in Egypt. No, he didn't have any trouble with the quota or with tourist restrictions. This was in the past, or a past. It used to be in a past, anyway, even if it isn't any more.

Of course there is more than one past. Hundreds? More like infinity. At least that's what Quarrels told me. They're all a good deal alike a little way back—that is, where not much data is missing. But they're a lot different way back where Quarrels was. It's like the near and far futures.

Well, I can explain it in a way. It fits in with wave mechanics and the uncertainty principle, Quarrels said. You know we can't predict "the" future. We can't gather all the data. It's not only humanly impossible, it's physically impossible, scientfically impossible, that is. Predicting "the" future has no real meaning. Operationally, there is no unique future. There are just a lot of probable ones.

Well, did you realize that this uncertainty holds for the past, too? I hadn't until Quarrels pointed it out. All we have is a lot of incomplete data. Is it just because we're stupid? Not at all. We can't find a unique wave function. Any one we set up fits to a certain degree of approximation, and how closely it can fit is determined by certain limits of observability. That's almost quotes, by the way.

Anyway, you can see what it means. Any past consistent with available data is just as real as any other. That leaves a lot of leeway; that's what Quarrels found when he started time traveling.

Of course Quarrels went time-traveling. How did you think he got to Egypt? I don't know how it worked, and he wouldn't even let me see his stuff. He took it with him, and now it's in Egypt. No, I don't mean that, I mean that the same thing happened to it that happened to Quarrels. Or maybe it didn't happen—it isn't in a past.

You see, Quarrels was sort of romantic. He read, "The Masque of Queen Bersabe," and started out to visit Nephertiti in Egypt. He had to try lots of the pasts before he found one in which she lived up to expectations. And from the notes he shot back to me . . . forward, that is . . . she must have been a honey, and pretty approachable, too.

The notes? Oh, they disappeared when they stopped coming. That's how I guessed what had happened. Otherwise I wouldn't have connected the excavation with Quarrels at all.

Of course I mean Chunken Bey's excavation. Well, I can't explain exactly. But you see what happened. That tomb was of Nephertiti's period, and its contents enlarged our data. Something in it was inconsistent with the particular past Quarrels was in. No, I don't know what. It's hard to say just what happened to Quarrels. I suppose you could put it this way; he was some place that wasn't any more. So he isn't any more.

No, I don't think there'd be any trace left. No, no body.

THE QWERTY OF HROTHGAR

By R. Creighton Buck

We waited patiently as Captain Nadie Esta-Aqui contemplated the three-dimensional chessboard, his white goatee bobbing as he chewed his pipe. Finally, he moved his knight from level two to level four, and leered at his opponent.

"Discovered check, and mate!"

The man across from him nodded sadly; no one ever beat the captain! He began to set up the pieces again.

"As I was saying," the captain went on, "there I was, stranded on the planet Hrothgar, with nothing but my wits and my standard service equipment—no weapons but a knife—and face-to-face with a ferocious, man-eating Qwerty! The enormous six-legged beast at once started toward me. Luckily, I have always been a fast runner, for that alone saved me from instant death! For hours we tore across the barren moor, and the Qwerty steadily gained on me until I could hear its armored snout creaking at the hinge in eager anticipation of a meal. I had but one chance of reaching the outpost of Rollinstane alive—to keep out of the animal's clutches until nightfall."

Captain Nadie stretched out his hand and advanced his king's pawn to attack his opponent's rook.

"As you know, the Qwerty is incapable of action at night. If I could last until nightfall, the beast would fall asleep and I could escape; unfortunately, there was one difficulty. During the short night the temperature drops to—ten Absolute. I would freeze solid before I had gone ten feet! But I had a plan.

"At last the light of the sun began to wane. Instantly, the massive Qwerty skidded to a halt, three of its six legs poised in midair. There was no way I could pierce the four-foot hide of the beast, but at least I could prevent it from following me. In the gathering dusk, I got out my can of aluminum paint and applied a heavy coat to the Qwerty, until every inch of its hide gleamed silver. This done, I turned to the job of making a shelter. I touched a match to the left-over paint, and into

the resulting flame I poured one of my remaining flasks of water. A huge cloud of steam arose, and instantly froze in the icy air, forming a large chunk of hard, crystalline material—perfect for insulation. I soon cut enough blocks to build a small hut. Just as the first flakes of frozen nitrogen began to float down, I crawled into the hut, dragging after me a large slab of the congealed steam. I then proceeded to warm the porous slab until it became spongy, and quite elastic, and upon this improvised mattress, I passed a comfortable night. The next morning, I set out for Rollinstane."

"But what about the Qwerty?" interrupted someone.

"Oh, yes, the Qwerty! Well, you see, the shiny paint prevented the sunlight from striking its hide, and so it continued to sleep!"

Captain Nadie captured the pawn, accepting the gambit.

"Is that all to the story, sir?"

The captain smiled reflectively, and removed the opposing rook.

"Not quite all. Before I'd gone more than ten miles I heard pounding hoofbeats behind me, and turned to see the same Qwerty in the distance, headed straight at me! I realized that one of the sudden rainstorms had blown up and washed off the paint!

"This time it looked like I was cornered. In front of me, my path was blocked by a wide river of molten metal that poured out of a nearby volcano; and, even as I watched, another stream of molten metal began to flow toward me! If I stood still the glowing mass would burn me alive; if I ran, the charging Qwerty would catch me! What was I to do?"

With a sure sense of drama, the captain took time out to tamp his pipe, and make another move before continuing.

"Well, sir, I waited until that stream was almost on top of me, and then I ran as fast as I could toward the river of molten metal, dragging my feet behind me. This scooped out a deep ditch, down which the stream flowed. It poured into the river and there was a loud explosion. I ran across the smoking sand where the molten metal of the river had been, and then turned around just in time to see the Qwerty being cut to mincemeat!"

"I'm afraid I don't quite understand, sir."

"You see," the captain explained with a quizzical grin, "the mixture of the metals formed an alloy that melted at a much lower temperature than either of the metals. As a result the stuff simply boiled away, leaving the river bed dry! The vaporized metal rose several hundred feet, and then solidified into sharp, knifelike crystals that fell on the Qwerty, killing it instantly!

"And," he exclaimed gleefully, "I think that's checkmate again!"

EAT, DRINK AND BE WARY

By Ray Bradbury

Believe me, Doc, believe me. I ain't no ordinary ha-ha, ho-ho, hee-heeby-jeeber. Don't marry me to that straight-jacket. Listen. I got problems. I'm in a bad way. Lemme tell you:

It's like this. On Venus, I'm diplomatic pan-bottom for the Solar. Comes an invitation from the Venusians: "A banquet takes place from August 22nd to September 3rd, inclusive." Being such a high flounder as I am I couldn't refuse. I tried to shove the job off on someone else, but no takers. You see, it's this way; a Venusian banquet lasts a week or ten days, sometimes more, with eight meals a day and twenty courses to a meal. A Venusian's hell-fire metabolism can furnace this stuff. Putting it conservatively, as much as they intended tossing on my platter, would feed a herd of bull elephants. An Earthman just couldn't take it. He'd croak after the second course.

What could I do? Refuse? Not on your tin busbar. Diplomacy, my dear Kinnison. If I crawfished, there'd 'a' been an angular stink and a war between Earth and Venus that would make the cows give bourbon with freckles. I *had* to go. Just like Morgan, Herdon and Merrill before me, in years past. These shindigs are annual riots, with food and officials going down right and left. Every other diplomat has been carried out stiff as a piston rod for twenty years, keeping the Venusians happy.

So there I am going to my own funeral.

But, six weeks before the dinner I bounce over to Professor Klopt. You remember him? Fiddles with all the sciences. Likes investigating geological slime deposits. Maybe that's why they call him the "mud" scientist. Pardon.

Professor Klopt fixes me an invention. He is a specialist with Fitzgerald's Contraction Theory. He makes me a belt with a switch, which I carry around my stomach. It's called a contraction belt.

I go to the banquet. Ten thousand Venusians, with their huge bloated bodies and little pinheads, greet me as I sit at the head of a table ten blocks long. The first course consists of whale on toast. Second and third courses were: Broiled rib of mastodon, pickled dinosaur flanks, and a dozen eggs the size of footballs. They trucked the food in on moving vans and romped out for more. It's the biggest hunk of table-d'hote I ever seen.

I ate it. I ate it all, every bit of it. Fourteen days I crammed down froithboinders, rubber plants, antimacassars and liquor. The Venusians cheered. I came through with flying colors, and Venus signed a peace treaty and called off the banquets for twenty years in my honor.

How'd I do it? Well, Klopt made me that neat little belt around my stomach with a switch control. I flicked this and my stomach slipped into

second, third and then the fourth dimension. Free-wheeling all the way. Only, it wasn't my whole stomach, just the inside vacuum of it.

Now, in the fourth dimension everything travels much faster than here. It's like space, and my stomach hurtled through it like our sun hurtles through our void. Same speed, maybe more. O. K. I'm here, my stomach is there, both places are parallel, only my stomach meets the full force and play and actions of an object falling through space. And, according to the Fitzgerald Theory, it contracts because of the speed. It contracts unbelievably. Not the lining of the stomach, no. But the inside space. It gets so small, and all the junk I'm eating gets so small that at the end of two weeks of stuffing my stomach is just comfortably filled, thanks to Fitzgerald. The food contracted, *I* remained normal. Simple.

That's how I fooled the Venusians, Doc. But I've been worried. Mebbe I need bicarbonate. Lotsa things to consider. Will I have to go around the rest of my life like this? 'Cause, if I do, then I'll have to eat and eat all the time, to make up for the contraction.

I'm afraid to bring my stomach back to the present, 'cause if I did—*KA-WOW!*—all that food, tons and tons of it, would expand again—*BOOM!* Just like that! There wouldn't be nuthin' left of me, would there?

So what'll I do?

Hey, Doc, why you look so funny? Keep away, don't touch me, Doc, I'm telling the truth! Don't undress me, Doc; don't take my contraction belt away; don't take it off me; don't throw that switch! Leave the belt alone! You'll blow us all to Kingdom Come! Don't you believe me, Doc?

Stop. STOP—

THE FLOATER

By Selden G. Thomas

A group of armchair strategists were discussing the relative merits of the new X-23 type light-rocket bomber and the old one that it was superseding. A corpulent gentleman with a neat Vandyke and an atrocious cigar mumbled something inarticulately from the depths of his overstuffed red-leather, and a younger man answered.

"I don't agree with you, George. The X-23 has a vast number of features which make it well worth the higher cost of production. Take, for example, the retractable light-wings. They give it an immense cruising range, compared with the X-22. Of course, if it happens to be caught with those out, it has a much lesser maneuverability, and might find itself out of wingless range of any base and with no workable wings. But then, the new detectors ought to take care of any danger from enemy fighting vessels."

After a moment or two of silence a florid-faced gentleman blew a cigarette ash off the lapel of his expensive coat and countered:

"But think of the weight of the wings! There must be a lot of fuel wasted in take-offs and landings. Then there are the delicate instruments to keep in order—many more in the X-23 than in the X-22. No. If it comes to real fighting, I'd rather be at the controls of an X-22 any day."

The major, whom the uninitiate always accepted as a final authority on such matters because of his slightly superior smile, then cleared his throat and received the floor by tacit recognition.

"These modern rockets," he commenced, "are hardly comparable with the ones we used in the last war. If one of those gadgets goes back on you, you're lost. In the old days it was different. If there were two tubes left, one girder, and a gun, you could still fight. For sheer durability I'd take one of the old L-93s any time.

"Why I remember once I spotted a blockade runner when patrolling in my L-93 and hopped onto his tail. He was armed with about everything you can think of, from dis-rays to nitro-gas guns. In two minutes the ship was riddled like a sieve and the air was whistling out of the cabin twice as fast as the tanks could replace it. But I climbed into my suit and fought on.

"Pretty soon they found that they couldn't get me or any of the manuals, since they were behind the thickest of the armor, in the nose, along with me. And so they started shooting at the tubes. They managed to blast them, one by one, but meanwhile I was doing some fearful execution myself.

"I had the satisfaction of seeing them take the last long dive before I started nosing down myself.

"I was now over the night side, and, what with the blackout, I had no idea where I was. But I balanced her down on her tail, and eventually saw the ocean below me. So I shucked off my suit and used my 'umbrella.' I landed O. K., and swam awhile.

"Meantime the ship hit and went down with a terrific hissing, the hot tubes boiling in the water. But it wasn't ten minutes before it bobbed up to the surface again. I swam over to it and got up on top.

"So I lay there, high and dry on the ship, for five days before I was finally rescued. But anyway, that shows you how the L-93s would stay by you to the last ditch. They had one whale of a lot of durability."

The younger man wasn't completely satisfied, however.

"If the ship was riddled through and through with holes as you say, major," he asked, "how did it stay afloat?"

"It was made of pure potassium, which is lighter than water."

BRASS TACKS

Van Vogt has another Ezwal story coming up.

Dear Mr. Campbell:

"Beyond This Horizon" is one of the most logical and complete presentations of a future civilization I've yet seen.

As for the other stories, van Vogt's variant of his intelligent monster theme places a well-assured second. Refreshingly different from the preceding two of this type, it is almost as good as "Black Destroyer"; the fact that it is only the second best—and not even a close second—shows the degree of Astounding's improvement.

Hubbard's "Strain" takes third place, being just a shade better than "The Eagles Gather." The added touch that gave that yarn a slight superiority was, perhaps, the ironic twist at the end. Kelleam's yarn seemed a disappointment after "Rust," but that was an exceptionally good story, and this one is on the present high average of Astounding's stories. Both of these two tales by Kelleam, curiously enough, contain a certain end-of-civilization quality; almost a mood of defeatism.

"If You're So Smart—" and "Monopoly" are also fairly good, but Shurtleff's tale is not the sort of thing that belongs in ASF. Well-written hack, maybe, but still hack—and that's the sort of thing your magazine has been trying to steer away from.

The article is good as usual, though I found it rather uninteresting—for purely personal reasons. Brass Tacks seems to be gradually improving, though there is still no such general controversy as Author de Camp wistfully wished for in the July, '41, issue. Or is that a minor revolt I see brewing against Skylark Smith? If so, pardon me while I join in. Smith's an excellent writer—there's no argument about that. But I think he overextended himself on his last piece of work. That "vistas unimaginable" stuff can be overdone, and he certainly overdid it in a big way! Yes, his latest was too super, and too much of the same old thing.

The new department, "Probability Zero," is well worth the space devoted to it; that's the sort of thing you have to look at twice to realize its utter implausibility.

Art work? Rogers is incomparable per usual. Schneeman fairly good. But the Isip boys and some new blood would come in handy.

As for the recent change in format: I may be prejudiced, but Astounding looks like—and is, for me—one of the classiest and best magazines on the market.—Bill Stoy, 140-92 Burden Crescent, Jamaica, New York.

NO PRIORITIES ON LOVE!

IT'S still around—and it's twenty-one years old, officially.

For it was in 1921 that LOVE STORY MAGAZINE was born. And now that it has passed its majority, it is still the only weekly in the woman's field. That's a record to be proud of, and one that proves the quality of the magazine.

There'll be plenty of romance to go around—with no shortages—for readers of LOVE STORY MAGAZINE. Make it a weekly habit, fifty-two times a year.

LOVE STORY

10c A COPY AT ALL NEWSSTANDS

By 278,200 A. D. a few million miles more or less won't matter anyway!

Dear Mr. Campbell:

Glad you liked the article about RW Tauri. It is truly an astounding discovery.

Forgot to mention that it is really a triple system. During the eclipse of September 9, 1941, Mr. Joy, using the 100-inch, saw a faint companion. So it consists of the two very close B9 and KO stars and a more distant star about which little is known yet.

If you plan to use any more astronomical covers, I should think the triple system of RW Tauri would be spectacular. The B9 star would presumably be bluish white surrounded by the brilliant scarlet ring of hydrogen.

Here is some information that might interest your readers. I dug it up recently while preparing some data for publication.

Astronomers are always talking about how *far away* everything in the Universe is from everything else. But these are some examples of *how close* together certain celestial bodies have come to one another.

Closest approach of Venus to the Earth. These occur when Venus makes one of its December transits across the Sun's disk. At that time the Earth is near perihelion and the distance is a minimum. At the transit of December 6, 1882, Venus was at a distance of 24,568,000 miles, or about 1,500,000 miles closer than the figure given in most textbooks.

Closest approach of Mars to the Earth. The closest approaches always come in August at intervals of fifteen or seventeen years, when Mars is in opposition and at perihelion. Exceptionally close approaches were in 1877 and 1924 when Mars was at distances of 34,990,000 and 34,637,000 miles, respectively. Opposition of 1877 is famous for discovery of canals and two moons.

The closest imaginable approach of Mars would be for opposition to occur when Mars is at perihelion and Earth at aphelion. The two orbits are so oriented at present that this is impossible, but from the known slow shift in the perihelion of planets' orbits the time of such oppositions can be calculated. There was one 47,600 years ago and there will be another about 278,200 A. D. *This absolute minimum distance of Mars is 33,883,000 miles.*

Closest approach of an asteroid to the Earth: The asteroid Hermes on October 30, 1937, missed the Earth by only 485,000 miles. Computations based upon its rather uncertain orbit indicate it may come as close as 220,000 miles.

Closest approach of a comet. Although about one thousand comets have been recorded, few have made a really close approach to us. The record is still held by Lexell's Comet which was within 1,400,000 miles of the Earth on July 1, 1770. It had no tail, but its head got to be swollen up to five times the diameter of the full moon.

Jupiter had a near collision with a comet on July 20, 1886, when Brooks Comet passed inside the orbit of the fifth satellite and within 55,000 miles of the planet's surface. As a punishment for such unseemly conduct Jupiter shortened the comet's period by twenty-two years.

The fifth satellite of Jupiter revolves only 68,300 miles from the surface of its primary. Mimas, seventh satellite of Saturn, is 76,000 miles from planet and but 27,000 miles from edge of ring system. Record, of course, is Phobos only 3700 miles from Mars—about the distance from Panama to Honolulu.

All stars are commonly supposed to be many light-years apart, but the eclipsing binaries are almost in contact with each other. We even find cases of double, triple, and clusters of island universes; there are cases where one system has penetrated into another.—R. S. Richardson, 1244 North Holliston Avenue, Pasadena, California.

Length helps in science-fiction; the author has to describe a background of a whole culture, something the author of here-and-now stories needn't do.

Dear Mr. Campbell:

Oh, stop it! You're carrying things too far. Four stories and a wordy serial: a fine big May issue!

I grant you, the long novelette does allow the author more "room" to develop atmosphere, finer characterization and a broader canvas for his plot. But this is true only to the extent of the author's ability as a storyteller. A good writer, if he has a worthy story, can tell it just as effectively in fifteen hundred words as in fifteen thousand. And before that objection passes your lips, I give you my clincher: Guy de Maupassant. Perhaps you have read his two tellings of "The Legacy"? The one thousands of words longer than the other, yet each in itself is as nearly perfect as a story—of any length—can be.

My point is not that you discard the novelette for the short story. It is, each being equally effective, that you print more short stories than you are accustomed to. Too many long stories in one issue tend toward dullness. Contrast is needed. You know how it is in writing: intermingle complex sentences with short, simple ones. Unless you want to lose your reader's interest. So how about it? Take out a novelette, add four or five shorts. And at least one or two short-shorts. You can get them if you ask for them.

This might be good in more ways than one.

I note a tendency in your beloved novelettes toward bringing back the complex, galacticlike plot. This should have gone overboard with the editor who preceded you. A story, no matter how well told or plotted, loses its effectiveness in direct ratio to its relation to present-day knowledge.

I hope I make myself clear. E. E. Smith's tales, for all their imaginative greatness, have this failing—and for that reason they become so alien that they lose their interest, and in consequence become dull, absurd and amusing. "Second Stage Lensmen" illustrates this nicely. "Asylum" in the May issue is another example. Ditto "Recruiting Station." These are excellent examples of science-fiction and fantasy at its sophisticated worst; but they are excellent as examples of a certain type of "fantasy" that does have a clique all its own, namely "Campbell"-fantasy. Or science-fiction, if you prefer.

These are just passing thoughts. I'll go no deeper; no doubt I'm in hot water already. I could explain more completely, but that would take time and space—which is valuable to us both. Perhaps a glance at my best-ten of '41 list will give you better insight as to my peculiarities in the judging of a good, competent story over the dull and the trite:

1. "Common Sense"—Heinlein;
2. "By His Bootstraps"—MacDonald;
3. "The Probable Man"—Bester;
4. "Elsewhere"—Saunders;
5. "Sixth Column"—MacDonald;
6. "Mechanical Mice"—Hugi;
7. "And He Built a Crooked House"—Heinlein;
8. "Reason"—Asimov;
9. "Homo Saps"—Craig;
10. "Universe"—Heinlein.

That last story is included only because there was no other story in all twelve issues good enough to take its place: "Universe" was actually no more than a powerfully interesting prologue and introduction to the real story, "Common Sense." And before anyone jumps down my neck for not including "Methuselah's Children" and "The Stolen Dormouse," let me explain. Briefly. The latter, while beautifully written, said nothing and was stinko as a story. Heinlein's serial started out grandly, flopped in the second installment and settled dismally down to a weak and from-the-first-chapter-telegraphed conclusion. So much for it.

No "Probability Zero" in the May issue. Good! Keep it out. Don't advertise that your book is a pack of lies; let the unsuspecting reader find it out for himself.

Rogers' cover for April was superb! As was MacDonald's handling of an alien race in his "Goldfish Bowl."—Kenneth L. Harrison, 1812 Southeast 48th, Portland, Oregon.

FALLING UP!

HERE was someone who chased and exploded airplanes—all the while falling up.

Doc Savage's adventuresome crew thought nothing could be as fantastic as that. But they were to come upon happenings even more mysterious . . . so weird, in fact, that for a while they thought they had lost their minds.

You'll thrill to THE MAN WHO FELL UP—exciting novel in the July issue of.

DOC SAVAGE

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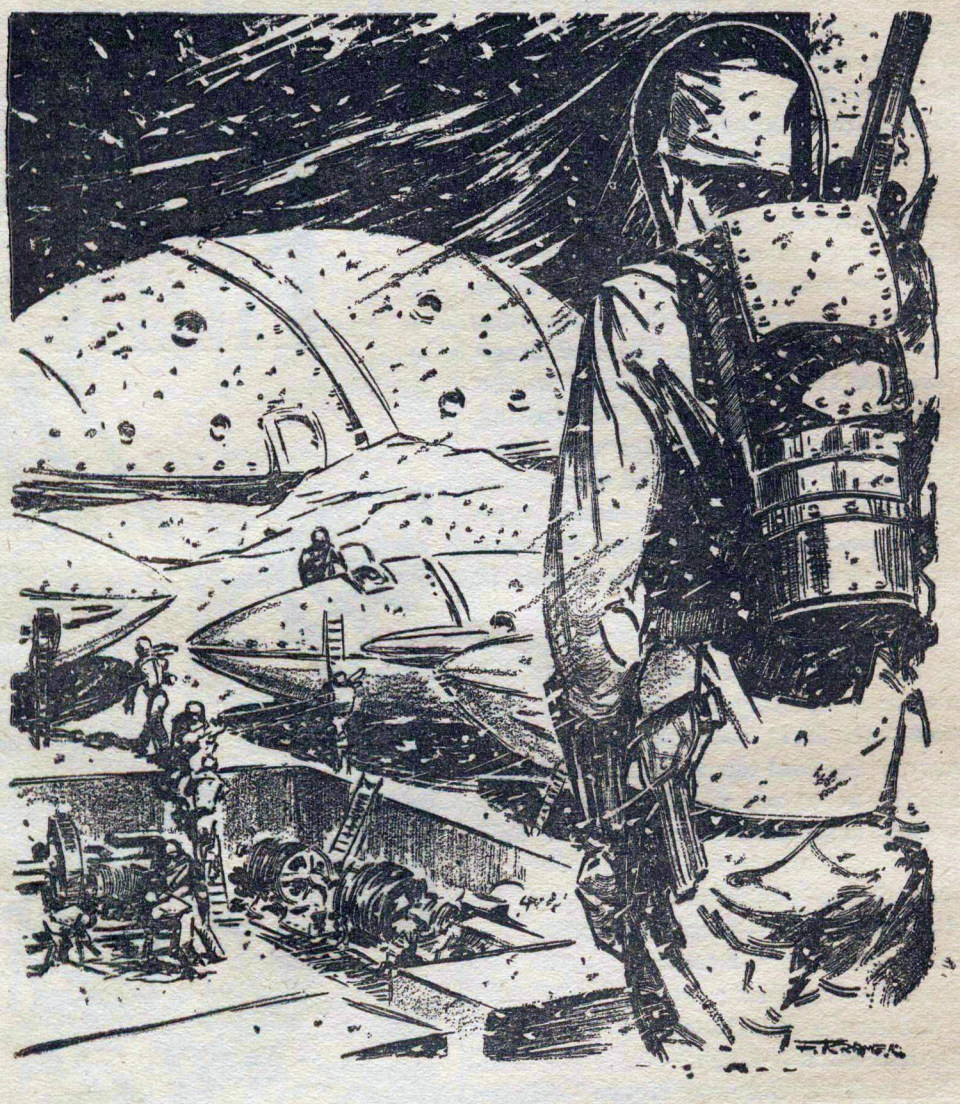

TOOLS

By Clifford D. Simak

● "Life as we know it" is a rather meaningless phrase, really; we know the life forms of one planet, life forms that, almost certainly, started from one particularly successful primal bit of jelly that succeeded in destroying its competitors. On another planet, with terrifically different basic conditions—

Illustrated by Kramer

Venus had broken many men. Now it was breaking Harvey Boone, and the worst of it was that Boone knew it was breaking him and couldn't do a thing about it.

Although it wasn't entirely Venus. Partly it was Archie—Archie, the thing in the talking jar. Perhaps it wasn't right calling Archie just a "thing." Archie might have been an "it" or "they." No one knew. In fact, no one knew much of anything about Archie despite the fact men had talked to him and studied him for almost a hundred years.

Harvey Boone was official observer for the Solar Institute, and his reports, sent back with every rocketload of radium that streaked out to Earth, were adding to the voluminous mass of data assembled on Archie. Data that told almost nothing at all.

Venus itself was bad enough. Men died when a suit cracked or radium shields broke down. Although that wasn't the usual way the planet killed. Venus had a better—perhaps, more accurately—a worse way.

Any alien planet is hard to live on and stay sane. Strangeness is a word that doesn't have much meaning until a man stands face to face with it and then it smacks him straight between the eyes.

Venus was alien—plus. One always had a sense that eyes were watching him, watching all the time. And waiting. Although one didn't have the least idea what they were waiting for.

On Venus, something always stalked a man—something that trod just on the outer edge of shadow. A sense of not belonging, of being out of place, of being an intruder. A baffling psychological something that drove men to their deaths or to living deaths that were even worse.

Harvey Boone huddled on a chair in one corner of the laboratory, nursing a whiskey bottle, while Archie chuckled at him.

"Nerves," said Archie. "Your nerves are shot to hell."

Boone's hand shook as he tilted the whiskey bottle up. His hate-filled eyes glared at the lead-glass jar even as he gulped.

Boone knew what Archie said was true. Even through his drink-fogged brain, the one fact stood out in bright relief—he was going crazy. He had seen Johnny Garrison, commander of the dome, watching him. And Doc Steele. Doc was the psychologist, and when Doc started watching one it was time to pull up and try to straighten oneself out. For Doc's word was law. It had to be law.

A knock sounded on the door and Boone called out an invitation. Doc Steele strode in.

"Good morning, Boone," he said. "Hello, Archie."

Archie's voice, mechanical and toneless, returned the greeting.

"Have a drink," said Boone.

Doc shook his head, took a cigar from his pocket and with a knife cut it neatly in two. One half he stuck back in his pocket, the other half in his mouth.

"Don't you ever light those things?" demanded Boone irritably.

"Nope," Doc replied cheerfully. "Always dry-smoke them."

He said to Archie: "How are you today, Archie?"

Despite its mechanical whir, Archie's reply sounded almost querulous: "Why do you always ask me that, doctor? You know there's nothing wrong with me. There never could be. I'm always all right."

Doc chuckled. "I seem to keep forgetting about you. Wish the human race was like that. Then there wouldn't be any need for chaps like me."

"I'm glad you came," Archie grated. "I like to talk to you. You never make me feel you're trying to find out something."

"He says that to get my goat," snapped Boone.

"I wouldn't let him do it," Doc declared. To Archie he said: "I suppose it does get tiresome after a hundred years or so. But it doesn't seem to have done much good. No one seems to have found out much about you."

He swiveled the cigar across his face. "Maybe they tried too hard."

"That," said Archie, "might be true. You remind me of Masterson. You're different from the ones who come out to watch me now."

"You don't like them?" Doc winked at Boone and Boone glowered back.

"Why should I like them?" asked Archie. "They regard me as a freak, a curiosity, something to be observed, an assignment to be done. Masterson thought of me as life, as a fellow entity. And so do you."

"Why, bless my soul," said Doc, "and so I do."

"The others pity me," Archie stated.

"You don't catch me pitying you," Doc declared. "Sometimes I catch myself wishing I were you. I suspect I might enjoy your kind of philosophy."

"The human race," protested Archie, "couldn't understand my philosophy. I doubt if I could explain it to them. The language doesn't have the words. Just as I had a hard time understanding a lot of your Terrestrial philosophy and economics. I've studied your history and your economics and your political science. I've kept up with your current events. And sometimes, many times, it doesn't make sense to me. Sometimes I think it's stupid, but I try to tell myself that it may be because I don't understand. I miss something, perhaps. Some vital quirk of mind, some underlying factor."

Doc sobered. "I don't think you miss much, Archie. A lot of the things we do are stupid, even by our own standards. We lack foresight so often."

Doc lifted his eyes to the large oil portrait that hung on the wall above Boone's desk, and he had quite forgotten Boone. From the portrait, kindly gray eyes smiled out of the face. The brows were furrowed, the wavy white hair looked like a silver crown.

"We need more men like him," said Doc. "More men with vision."

The portrait was of Masterson, the man who had discovered intelligent life existing in the great clouds of radon that hung over the vast beds of radium ore. Masterson had been

more than a man of vision. He had been a genius and a glutton for work.

From the moment he had discerned, by accident, what he thought were lifelike properties in some radon he was studying, he had labored unceasingly with but one end in view. In this very laboratory he had carried out his life work, and there, in the lead-glass jar on the table, lay the end product—Archie.

Masterson had confined radon under pressure in a shielded jar equipped with a delicate system of controls. Failing time after time, never admitting defeat, he had taught radon in the jar to recognize certain electrical impulses set up within the jar. And the radon, recognizing these impulses as intelligent symbols, finally had learned to manipulate the controls which produced the voice by which it spoke.

It had not been as easy as it sounded, however. It took many grueling years. For both Masterson and Archie were groping in the dark, working without comparable experience, without even a comparable understanding or a comparable mode of thinking. Two alien minds—

"Does it seem a long time, Archie?" Doc asked.

"That's hard to say," the speaker boomed. "Time doesn't have a great deal of meaning to something that goes on and on."

"You mean you are immortal?"

"No, perhaps not immortal."

"But do you know?" snapped Doc.

Archie did, then, the thing which had driven observer after observer close to madness. He simply didn't answer.

Silence thrummed in the room. Doc heard the click of sliding doors elsewhere in the dome, the low hum of powerful machinery.

"That's the way he is," yelled Boone. "That's the way he always is. Shuts up like a clam. Sometimes I'd like to—"

"Break it up, Archie," commanded Doc. "You don't have to play dead with me. I'm not here to question you. I'm just here to pass the time of day. Is there anything I can do for you?"

"You might bring in the latest newspapers and read to me," said Archie.

"That," declared Doc, "would be a downright privilege."

"But not the funnies," cautioned Archie. "Somehow I can't appreciate the funnies."

Outside the dome, the week-long night had fallen and it was snowing again—great, white sheets driven by gusty blasts of wind. Not real snow, but paraformaldehyde, solidified formaldehyde. For that was the stuff of which the mighty cloud banks which forever shielded the planet from space was composed.

Harvey Boone, clad in space gear, stood on the barren ridge above the dome and looked down at the scene spread before his eyes.

There lay the dome, with the flicker of shadows playing over it as the great batteries of lamps set in the radium pits swung to and fro.

In the pits labored mighty machines—specialized machines operating with "radon brains," using, in simplified form, the same principles of control as were used to communicate with Archie. Brains that could receive and understand orders, execute them through the medium of the machinery which they controlled—but which, unlike Archie, did not hold human knowledge accumulated over the course of a hundred years.

Here and there were men. Men incased in shining crystal armor to protect them against the hell's brew that was Venus' atmosphere. Carbon dioxide and not a trace of oxygen. Once there had been plenty of free oxygen, some water vapor. But the oxygen had gone to form carbon dioxide and formaldehyde, and the water vapor had combined to solidify the formaldehyde.

Harvey Boone shivered as a blast of hot wind swirled a blanket of solidified formaldehyde around him, shutting off the view. For a moment he stood isolated in a world of swirling white and through the whiteness something seemed to stalk him. Something that might have been fear, and yet more stark than fear, more subtle than panic, more agonizing than terror.

Boone was on the verge of cringing horror before the wind whipped the cloud of snow away. The gale hooted and howled at him. The dancing snow made ghostly patterns in the air. The banks of lights in the pits below weaved fantastically against the sweeping, wind-driven clouds of white.

Unaccountable panic gripped him tight. Mocking whispers danced along the wind. The rising wind shrieked malignantly and a burst of snow swished at him.

Harvey Boone screamed and ran, unseen terror trotting at his heels.

But the closing lock did not shut out the horror of the outdoors. It wasn't something one could get rid of as easily as that.

Stripped of space gear, he found his hands were shaking.

"I need a drink," he told himself.

In the laboratory he took the bottle out of his desk, tilted it.

A mocking laugh sounded behind him. Nerves on edge, he whirled about.

A face was leering at him from the glass jar on the table. And that was wrong. For there wasn't any face. There wasn't anything one could see inside the jar. Nothing but Archie—radon under pressure. One doesn't see radon—not unless one looks at it through a spectroscope.

Boone passed his hand swiftly before his eyes and looked again. The face was gone.

Archie chortled at him. "I'm

getting you. I almost got you then. You'll crack up pretty soon. What are you waiting for? Why are you hanging on? In the end I'll get you!"

Boone strangled with rage.

"You're wrong," he mouthed. "I'm the one that's got you." He slapped a pile of notes that lay on his desk. "I'm the one who's going to crack you. I'll bust you wide open. I'll let them know what you really are."

"Oh, yeah!" crowed Archie.

Boone set down the bottle. "Damn you," he said thickly, "I have half a notion to settle you once and for all. You've deviled me long enough. I'm going to let you die."

"You'll do what?" demanded Archie.

"I'll let you die," stormed Boone. "All I have to do is forget to pump more radon in. In another week you'll be polonium and—"

"You wouldn't dare," taunted Archie. "You know what would happen to you then. The Institute would have your scalp for that."

The face was in the jar again. A terrible face. One that sent fear and loathing and terrifying anger surging through the scientist.

With a shriek of rage, Boone grabbed the bottle off the desk and hurled it. It missed Archie, shattered against the wall, spraying the glass jar with liquor.

Archie tittered and a hand materialized before the face, waggling its fingers in an obscene gesture.

With a hoarse whoop, Boone leaped forward and snatched up a heavy stool. Archie's laughter rang through the room—terrible laughter.

Boone screamed in insane rage and babbled. The stool came up and smashed downward. The jar splintered under the crashing impact.

Searing radiations lanced through the room. The spectrographic detectors flamed faintly. Fans whined, rose to a piercing shriek, sweeping the air, throwing the radon outside the dome. Atmosphere hissed and roared.

But Harvey Boone knew none of this, for Harvey Boone was dead. Incredible pain had lashed at him in one searing second and he had dropped, his face and hands burned to a fiery red, his eyes mere staring holes.

Radon, in its pure state, weight for weight, is one hundred thousand times as active as radium.

"But Archie couldn't have had anything to do with it," protested Johnny Garrison. "Hypnotism! That's incredible. He couldn't hypnotize a person. There's nothing to support such a belief. We've observed Archie for a hundred years—"

"Let's not forget one thing," interrupted Doc. "In Archie we were observing something that was intelligent. Just how intelligent we had no way of knowing. But we do know this: His intelligence was not human intelligence. It couldn't be. True, we bridged the gap, we talked with him. But the talk was carried on in human terms, upon a human basis."

Doc's cigar traveled from east to west. "Does that suggest anything to you?"

The dome commander's face was white. "I'd never thought of that. But it means—it would have to mean—that Archie was intelligent enough to force his thought processes into human channels."

Doc nodded. "Could man have done the same? Could man have forced himself to think the way Archie thinks? I doubt it. Archie's thought processes probably would be too alien for us to even grasp. What is more, Archie recognized this. It all boils down to this: We furnished the mechanical set-up, Archie furnished the mental set-up."

"You make it sound frightening," said Garrison.

"It is frightening," Doc assured him.

Garrison stood up. "There's no use beating around the bush. Both of us are thinking the same thing."

Doc said: "I'm afraid so. There's nothing else to think."

"All of them know," said Garrison, "all of them, or it, or whatever is out there—they know as much as Archie knew."

"I'm sure they do," Doc agreed. "Archie never lost his identity, even though we had to pump in new radon every few days. It was always the same Archie. Tests with the radon brains on the machines, however, revealed merely an intelligence very poorly versed in human knowledge. The same radon, mind you, and yet the radon that was used to replenish Archie becomes Archie, while all the other radon remained an intelligence that had none of Archie's human knowledge."

"And now," said Garrison, "it's all Archie. I told Mac he'd have to shut down the machines when the radon ran low in the brains. We simply can't take a chance. There'll be hell to pay. R. C. will blast space wide open. We're behind schedule now—"

He stared out the port with haggard face, watching the snow sweep by.

"Take it easy, Johnny," counseled Doc. "The home office has been riding you again. You're behind schedule and you're getting jumpy. You're remembering some of the things you've seen happen to men who couldn't keep the wheels of industry moving and the banners of Radium, Inc., waving high. You're thinking of R. C.'s secret police and charges of sabotage and God knows what."

"Look, Doc," said Garrison desperately, almost pleadingly, "this is my big chance—my last chance. I'm not too young any more, and this chance has to click. Make good here on Venus and I'm set for life. No more third-rate wilderness posts out on the Jovian moons, no more stinking tricks on the Martian desert. It'll be Earth for me—Earth and an easy-chair."

"I know how it is," said Doc. "It's the old system of fear. You're afraid of the big boys and Mac is afraid of you and the men are afraid of Mac. And all of us are afraid of Venus. Radium, Inc., owns the Solar System, body and soul. The radium monopoly, holding companies, interlocking directories—it all adds up to invisible government, not too invisible at that. R. C. Webster owns us all. He owns us by virtue of Streeter's secret police and his spies. He owns us because radium is power and he owns the radium. He owns us because there isn't a government that won't jump when he snaps his fingers. His father and grandfather owned us before this, and his son and grandson will own us after a while."

He chuckled. "You needn't look so horrified, Johnny. You're the only one that's hearing me, and you won't say a word. But you know it's the truth as well as I. Radium is the basis of the power that holds the Solar System in thrall. The wheels of the System depend on radium from Venus. It was the price the people of Earth had to pay for solar expansion, for a solar empire. Just the cost of wheeling a ship from one planet to another is tremendous. It takes capital to develop a solar empire, and when capital is called on it always has a price. We paid that price, and this is what we got."

Garrison reached out with trembling hands to pick up a bottle of brandy. The liquor splashed as he poured it in a tumbler.

"What are we going to do, Doc?"

"I wish I knew," said Doc.

A bell jangled and Garrison lifted the phone.

The voice of the chief engineer shouted at him.

"Chief, we have to fill those brains again. Either that or shut down. The radon is running low."

"I thought I told you to shut them down," yelled Garrison. "We can't take a chance. We can't turn those machines over to Archie."

Mac howled in anguish. "But we're way behind schedule. Shut them down and—"

"Shut them down!" roared Garrison. "Sparks is trying to get through to Earth. I'll let you know."

He hung the speaker back in its cradle, lifted it again and dialed the communications room.

"How's the call to Earth coming?"

"I'm trying," yelped Sparks, "but I'm afraid. We're nearing the Sun, you know. Space is all chopped. . . . Hey, wait a minute. Here we are. I'll tie you in—"

Static crackled and snapped. A thin voice was shouting.

"That you, Garrison? Hello, Garrison!"

Garrison recognized the voice, distorted as it was, and grimaced. He could envision R. C. Webster, president of Radium, Inc., bouncing up and down in his chair, furious at the prospect of more trouble on Venus.

"Yes, R. C., this is Garrison."

"Well," piped R. C., "what's the trouble now? Speak up, man, what's gone wrong this time?"

Swiftly Garrison told him. Twice static blotted out the tight beam and Sparks worked like a demon to re-establish contact.

"And what are you afraid of?" shrieked the man on Earth.

"Simply this," explained Garrison, wishing it didn't sound so silly. "Archie has escaped. That means all the radon knows as much as he did. If we pump new radon into the brains, we'll be pumping in intelligence radon—that is, radon that knows about us—that is—"

"Poppycock," yelled R. C. "That's the biggest lot of damn foolishness I've ever heard."

"But, R. C.—"

"Look here, young man," fumed the voice, "we're behind schedule, aren't we? You're out there to dig radium, aren't you?"

"Yes," admitted Garrison, hopelessly.

"All right, then, dig radium. Get back on schedule. Fill up those brains and tear into it—"

"But you don't understand—"

"I said to fill up those brains and get to work. And keep working!"

"Those are orders?" asked Garrison.

"Those are orders!" snapped R. C.

Static howled at them derisively.

Garrison watched the ship roar away from the surface, lose itself in the driving whiteness of solidified formaldehyde. Beside him, Mac rubbed armored hands together in exultation.

"That almost puts us on schedule," he announced.

Garrison nodded, staring moodily out over the field. It was night again, and little wind devils of formaldehyde danced and jigged across the ground. Night and a snowstorm, and the mercury at one hundred forty degrees above Fahrenheit. During the week-long day it got hotter.

He heard the clicking of the mighty brain-controlled machines as they dug ore in the pits, the whine of wind around the dome and in the jagged hills, the snicking of the refrigerator units in his suit.

"How soon will you have Archie's jar done, Mac?" he asked. "The new Institute observer is getting anxious to see what he can get out of him."

"Just a few hours more," said Mac. "It took us a long time to figure out some of the things about it, but I've had the robots on it steady."

"Rush it over soon as you get it done. We've tried to talk to some of the radon brains in the machines, but it's no dice."

"There's just one thing bothers me," said Mac.

"What is that?" Garrison asked sharply.

With a roar of rage, he crashed the jar. The radon intelligence fled in a puff of deadly radiation.

"Well, we didn't figure out exactly all the angles on that jar. Some of the working parts are mighty complicated and delicate, you know. But we thought we'd get started at least and let the Institute stooge take over when he got here. But when those robots—"

"Yes?" said Garrison.

"When those robots got to the things we couldn't understand, they tossed the blueprints to one side and went right ahead. So help me, they didn't even fumble."

The two men looked at one another, faces stolid.

"I don't like it," Mac declared.

"Neither do I," said Garrison.

He turned and walked slowly toward the dome, while Mac went back to the pits.

In Garrison's office, Doc had cornered Roger Chester, the new Institute observer.

"The Institute has mountains of reports," Chester was saying. "I tried to go through them before I came out. Night and day almost. Ever since I knew I was

going to replace Boone."

Doc carefully halved a new cigar, tucked one piece in his pocket, the other in his mouth.

"What were you looking for?" he asked.

"A clue. You see, I knew Boone. For years. He wasn't the kind of fellow who would break. It would have taken more than Venus. But I didn't find a thing."

"Boone himself might have furnished that clue," Doc suggested quietly. "Did you look through his reports?"

"I read them over and over," Chester admitted. "There was nothing there. Some of his reports were missing. The last few days—"

"Those last few days can be canceled out," said Doc. "The lad wasn't himself. I wouldn't be surprised he didn't write any reports those last few days."

Chester said: "That would have been unlike him."

Doc wrangled the cigar viciously. "Find anything else?"

"Not much. Not much more than Masterson knew. Even now—after all these years, it's hard to believe—that radon could be alive."

"If any gas could live," said Doc, "it would be radon. It's heavy. Molecular weight of 222. One hundred eleven times as heavy as hydrogen, five times as heavy as carbon dioxide. Not complicated from a molecular standpoint, but atomically one of the most complicated known. Complicated enough for life. And if you're looking for the unbalance necessary for life, it's radioactive. Chemically inert, perhaps, but terrifically unstable physically—"

The door of the office opened and Garrison walked in.

"Still chewing the fat about Archie?" he asked.

He strode to his desk and took out a bottle and glasses.

"It's been two weeks since Archie got away," he said. "And nothing's happened. We're sitting on top of a volcano, waiting for it to go sky high. And nothing happens. What is Archie doing? What is he waiting for?"

"That's a big order, Garrison," declared Chester. "Let us try to envision a life which had no tools because it couldn't make them, would be useless to it even if it did have them because it couldn't use them. Man's rise, you must remember, is largely, if not entirely, attributable to his use of tools. An accident that made his thumb opposing gave him a running start—"

The phone on the desk blared. Garrison snatched it up, and Mac's voice shrieked at him.

"Chief, those damn robots are running away! So are the machines in the pit—"

Cold fingers seemed to clamp around the commander's throat.

Mac's voice was almost sobbing. "—hell for leather out here. But they left Archie's jar. Must have forgotten that."

"Mac," yelled Garrison, "jump into a tractor and try to follow them. Find out where they're going."

"But, chief—"

"Follow them!" shouted Garrison.

He slammed down the hand piece, lifted it and dialed.

"Sparks, get hold of Earth!"

"No soap," said Sparks laconically.

"Damn it, try to get them. It's a matter of life and death!"

"I can't," wailed Sparks. "We're around the Sun. We can't get through."

"Get the ship, then."

"It won't do any good," yelped Sparks. "They're hugging the Sun to cut down distance. It'll be days before they can relay a message."

"O. K.," said Garrison wearily. "Forget it."

He hung up and faced Chester.

"You don't have to imagine Archie without tools any longer," he said. "He has them now. He just stole them from us."

Mac dragged in hours later.

"I didn't find a thing," he reported. "Not a single thing."

Garrison studied him, red-eyed from worry. "That's all right, Mac. I didn't think you would. Five miles from here and you're on unknown ground."

"What are we going to do now, chief?"

Garrison shook his head. "I don't know. Sparks finally got a message through. Managed to pick up Mercury, just coming around the Sun. Probably they'll shoot it out to Mars to be relayed to Earth."

Chester came out of the laboratory and sat down.

Doc swiveled his cigar.

"What has Archie to say?" he asked.

Chester's face grew red. "I pumped the radon into the jar. But there was no response. Practically none, that is. Told me to go to hell."

Doc chuckled at the man's discomfiture. "Don't let Archie get you down. That's what he did to Boone. Got on his nerves. Drove him insane. Archie had to get out some way, you see. He couldn't do anything while he was shut up in one place. So he forced Boone to let him out. Boone didn't know what was going on, but Archie did—"

"But what is Archie doing now?" exploded Garrison.

"He's playing a game of nerves," said Doc. "He's softening us up. We'll be ready to meet his terms when he's ready to make them."

"But why terms? What could Archie want?"

Doc's cigar swished back and forth. "How should I know? We might not even recognize what Archie is fighting for—and, again, we might. He might be fighting for his existence. His life depends upon those radium beds. No more radium, no more radon, no more Archie."

"Nonsense," Chester broke in. "We could have dug those beds for a million years and not made a dent in them."

"A million years," objected Doc, "might be only a minute or two for Archie."

"Damn you, Doc," snapped Garrison, "what are you grinning for? What is so funny about it?"

"It's amusing," Doc explained. "Something I've often wondered about—just what Earthmen would do if they ran up against something that had them licked forty ways from Sunday."

"But he hasn't got us licked," yelled Mac. "Not yet."

"Anything that can keep radium from Earth can lick us," Doc declared. "And Archie can do that—don't you ever kid yourself."

"But he'll ruin the Solar System," shouted Garrison. "Machines will have to shut down. Mines and factories will be idle. Spaceships will stop running. Planets will have to be evacuated—"

"What you mean," Doc pointed out, "is that he'll ruin Radium, Inc. Not the Solar System. The System can get along without Radium, Inc. Probably even without radium. It did for thousands of years, you know. The only trouble now is that the System is keyed to radium. If there isn't any radium, it means the economic framework that was built on radium must be swept away or some substitute must be found. And if no substitute is found, we must start over again and find some other way of life—perhaps a better way—"

Chester leaped to his feet.

"That's treason!" he shouted.

Silence struck the room like a thunderclap. Three pairs of eyes stared at the standing man. The air seemed to crackle with an electric aliveness.

"Sit down," Doc snapped.

Chester sank slowly into his chair. Mac's hands opened and closed, as if he kneaded someone's throat.

Doc nodded. "One of R. C.'s agents. He didn't smell quite like an Institute man to me. He said it was hard to believe radon could be alive. With an Institute man that wouldn't be belief, it would be knowledge."

"A dirty, snooping stooge," said Mac. "Sent out to see what was wrong on Venus."

"But not too good a one," Doc observed. "He lets his enthusiasm for Radium, Inc., run away with him. Of course, all of us were taught that enthusiasm ourselves—in school. But we soon got over it."

Chester ran his tongue over his lips.

"When Radium, Inc., can monkey with the Institute," said Doc, "it means one of two things. R. C. is getting pretty sure of himself or he's getting desperate. The Institute was the one thing that stood out against him. Up to now he hasn't dared to lay a finger on it."

Garrison had said nothing, but now he spoke: "By rights, Chester, we ought to kill you."

"You wouldn't dare," said Chester thinly.

"What difference does it make?" asked Garrison. "If we don't, another one of R. C.'s men will. You've slipped up. And R. C. doesn't give his men a chance to slip a second time."

"But you were talking treason," Chester insisted.

"Call it treason," snarled Garrison. "Call it anything you like. It's the language that's being talked up and down the System. Wherever men work out their hearts and strangle their conscience in hope of scraps thrown from Radium, Inc.'s table, they're saying the same thing we are saying."

The phone blared and Garrison put forth his hand, lifted the set and spoke.

"It's R. C.," Sparks yelled at the other end. "It's sort of weak, but maybe you can hear. Mars

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and Mercury are relaying."

"Hello, R. C.," said Garrison.

Static screamed in deafening whoops, and then R. C.'s voice sifted through, disjointed and reedy.

"—sit tight. We're sending men, ten shiploads of them."

"Men!" yelped Garrison. "What will we do with men?"

"Machines, too," scratched R. C.'s voice. "Manually operated machines—" More howls and screeches drowned out the rest.

"But R. C., you can't do that," yelled Garrison. "The men will die like flies. It'll be mass murder. It'll be like it was before—in the early days, before Masterson developed the radon brains. Men can't work in those radium pits—not work and live."

"That's a lot of damn tripe," raved R. C. "They'll work—"

"They'll revolt!" shrieked Garrison.

"Oh, no, they won't. I'm sending police along."

"Police!" stormed Garrison. "Some of Streeter's bloody butchers?"

"I'm sending Streeter himself. Streeter and some of his picked men. They'll keep order—"

"Look, R. C.," said Garrison bitterly, "you'd better send a new commander, too. I'll be damned if I'll work with Streeter."

"Take it easy, Garrison. You're doing all right. Just a bunch of bad breaks. You'll make out all right."

"I won't work those men," snapped Garrison. "Not the way they'll have to work. Radium isn't worth it."

"You will," yelled R. C., "or I'll have Streeter sock you down in the pits yourself. Radium has to move. We have to have it."

"By the way," said Garrison, suddenly calm, his eyes on Chester, "you remember that Institute chap who came to replace Boone?"

"Yes, I seem to remember—"

"He's lost," said Garrison. "Walked out into the hills. We've combed them, but there's no sign of him."

Chester rose from the chair in a smooth leap, hurling himself at Garrison, one hand snatching at the phone. The impact of his body staggered Garrison, but the commander sent him reeling with a shove.

"What was that you said, R. C.? I didn't hear. The static."

"I said to hell with him. Don't waste time looking for him. There are more important things."

Chester was charging in again on Garrison, intent on getting the phone. Mac moved with the speed of lightning, one huge fist knotted and pulled far back. It traveled in a looping, powerful arc, caught the charging man flush on the chin. Chester's head snapped back, his feet surged clear of the floor, his body smashed against the wall. He slid into a heap, like a doll someone had tossed into a corner.

Doc crossed the room and knelt beside him.

"You hit too hard," he said.

"I meant to hit hard," growled Mac.

"He's dead," said Doc. "You broke his neck."

Outside, the eternal snowstorm howled, sweeping the jagged hills and lamp-lighted pits.

Doc stood in front of a port and watched the scurrying activity that boiled within the mine. Hundreds of armored men and hundreds of laboring machines. Three spaceships, stationed beside the stock pile, were being loaded. Streeter's police, with ready guns, patrolled the sentry towers that loomed above the pits.

The door opened and Garrison came in with dragging feet.

"How many this shift?" asked Doc.

"Seven," Garrison answered hoarsely. "A screen blew up."

Doc sucked at the dead cigar. "This has to stop, Johnny. It has to stop or something is bound to crack. It's a death sentence for any man to be sent out here. The last replacements were criminals, men shanghaied off the street."

Garrison angrily sloshed the liquor in his glass.

"Don't look at me," he snapped. "It's out of my hands now. I'm acting only in an administrative capacity. Those are the exact words. Administrative capacity. Streeter is the works out here. He's the one that's running the show. He's the one that's working the men to death. And when they start to raise a little hell, those babies of his up in the towers open up on them."

"I know all that," admitted Doc. "I wasn't trying to blame you, Johnny. After all, we needn't kid ourselves. If we don't walk the line, Streeter will open up on us as well."

"You're telling me," said Garrison. He gulped the liquor. "Streeter knows that something happened to Chester. That yarn about his being lost out in the hills simply didn't click."

"We never meant it should," Doc declared. "But so long as we serve our purpose, so long as we throw no monkey wrenches, so long as we're good little boys, we can go on living."

Archie's voice grated from beyond the open laboratory door.

"Doctor, will you please come here?"

"Sure, Archie, sure. What can I do for you?"

"I would like to talk to Captain Streeter."

"Captain Streeter," warned Doc, "isn't a nice man. If I were you, I'd keep away from him."

"But nevertheless," persisted Archie, "I would like to talk to him. I have something that I'm sure will interest him. Will you call him, please?"

"Certainly," agreed Doc.

He strode out into the office and dialed the phone.

"Streeter speaking," said a voice.

"Archie wants to talk to you," said the Doc.

"Archie!" stormed Streeter. "Tell that lousy little hunk of gas to go chase himself."

"Streeter," said Doc, "it doesn't make any difference to me what you do; but, if I were in your place, I would talk to Archie. In fact, I'd come running when he called me."

Doc replaced the phone, cutting off the sounds of rage coming from the other end.

"Well?" asked Garrison.

"He'll come," said Doc.

Ten minutes later Streeter did come, cold anger in his eyes.

"I wish you gentlemen would tend to small details yourselves," he snarled.

Doc jerked his thumb toward the open door. "In there," he said.

Boots clumping angrily, Streeter strode into the laboratory.

"What is it?" his voice boomed.

"Captain Streeter," grated Archie's voice, "I don't like your way of doing things. I don't like Radium, Inc.'s way of doing things."

"Oh, so you don't," said Streeter, words silky with rage.

"So," continued Archie, "I'm giving you and your men half an hour to get out of here. Out of the mine and off this planet."

There were strangling sounds as the police captain fought to speak. Finally he rasped: "And if we don't?"

"If you don't," said Archie, "I shall force you to move. If the mine is not vacated within half an hour, I shall start bombardment."

"Bombardment!"

"Exactly. This place is ringed with cannon. It is a barbaric thing to do, but it's the only way you'd understand. I could use other methods, but the cannon probably are the best."

"You're bluffing," shrieked Streeter. "You haven't any cannon."

"Very well," said Archie. "Do what you wish. It's immaterial to me. You have thirty minutes."

Streeter swung around and stamped out into the office.

"You heard?" he asked.

Doc nodded. "If I were you, Streeter, I'd pull stakes. Archie isn't fooling."

"Cannon!" snorted the captain.

"Exactly," said Garrison. "And don't you ever think Archie doesn't have them. When the machines ran away they took along our tools."

Streeter's face hardened. "Let's say he has them, then. All right, he has them. So have we. We'll fight him!"

Doc laughed. "You'll play hell. Fighting Archie is a joke. Where are you going to find him? How are you going to corner him? There isn't any way to hit him, no way to come to grips with him. You can't defeat him. You can't destroy him. So long as there are radium beds there will always be an Archie."

"I'm calling Earth," said Streeter, grimly. "It's time the army took over."

"Call in your army," said Doc, "but remember one thing. The only thing you can fight is Archie's weapons. You may destroy his guns, but you can't hurt Archie. All he has to do is build some more. And those weapons won't be easy to hit. Because, you see, those guns will be intelligent. They won't depend on brass hats and military orders. They'll have brains of

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their own. You'll be fighting deadly intelligent machines. I tell you, Streeter, you haven't got a chance!"

Streeter turned to Garrison with bleak eyes.

"You think the same?" he challenged and the menace in his voice was scarcely hidden.

"Archie isn't bluffing," Garrison insisted. "He can make guns, tanks, ships . . . in fact, he can duplicate anything we have—with improvements. He's got our tools and our knowledge and he's got something we haven't got. That's his knowledge, the knowledge he never shared with us."

"You both are under technical arrest," snapped Streeter. "You will remain inside the dome. If you venture out—"

"Get out of here," yelled Garrison. "Get out of here before I break your neck!"

Streeter got out, with Garrison's laughter ringing in his ears.

Doc glanced at his watch. "Fifteen minutes gone. I wonder what Streeter will do."

"He won't do anything," Garrison predicted. "He's pigheaded. He'll put in a call to Earth, have an expeditionary force sent out as a precautionary measure. But even now he doesn't believe what Archie told him."

"I do," said Doc. "You better put in a call to Mac. Tell him to hustle over here. I'd hate to have him get caught in the fireworks."

Garrison nodded and reached for the phone. Doc got up and walked into the laboratory.

"Well, Archie, how are you feeling now?"

"Why do you always ask me that, doctor?" Archie demanded irritably. "I'm feeling all right. I always feel all right. There's nothing to go wrong with me."

"Thought you might feel a bit different—starting a war."

"It isn't a war," insisted Archie. "It isn't even an adventure. At least, not the kind of an adventure the human race would understand. It is a part of a carefully studied plan."

"But why are you doing it, Archie? Why are you messing into this at all? The human race can't touch you. You could, if you wanted to, just go on disregarding them."

"You might be able to understand," said Archie.

"I sure would try," Doc promised.

"You know about me," said Archie. "You probably can imagine the sort of life I lived before the Earthmen came. For eons I was a thing without physical life. My life was mental. I developed mentally. I specialized in mentality, you see, because I didn't have a body to worry about. I thought and speculated and that was all right, because it was the only kind of life I knew. It was a good life, too, free of so many of the worries and annoyances of physical being. Sometimes I wish it could have continued.

"I didn't have any enemies. I didn't even have neighbors to fight with. For I could be one or I could be many; I was sufficient to myself.

"I realized there was such a thing as physical being, of course, because I observed the few tiny animals that are able to survive on Venus. Pitifully inadequate physical life as compared with the life on Earth, but physical life nevertheless.

"I wondered about that life. I attempted to formulate a behavioristic pattern for such a type of life endowed with my mentality. Starting with small imaginings, I built that idea up into the pattern of a hypothetical civilization, a civilization that paralleled Earth's in some ways, differed from it vastly in others. It couldn't be the same, you know, because my philosophy was a far cry from the kind of thought that you developed."

The grating voice died and then began again—"I, myself, of course, can never live a life like that."

"But Earthmen could," suggested Doc, the cigar dangling in his mouth.

"You're right, doctor," Archie said. "Earthmen could."

"If you could force them to."

"I will force no one to do anything," Archie grated. "I am experimenting."

"But would the experiment be good for Earth? Would your way of life, your hypothetical civilization, be the right one for Earth to follow?"

"Frankly, doctor," said Archie, "I don't give a damn."

"Well, well," said Doc.

"There's something else, doctor," said Archie. "You and Garrison and Mac are in trouble."

"Trouble," admitted Doc. "doesn't rightly express it. We're in a mess clear up to our ears."

"There is a ship waiting for you," said Archie. "Back in the hills north of the dome. It is the fastest thing ever built for space."

"A ship!" cried Doc. "Where did the ship come from?"

"I built it," Archie said.

"You—"

What Doc had meant to say was engulfed by a wave of sound that seemed to rock the dome.

"There it goes!" yelled Garrison.

Doc ran into the office and through the port he saw debris still flying through the air—the tangled wreckage of machines and blasted ore.

The radium pits disrupted in another flash of blue-white flame and again thunder blanketed and rocked the dome. The two remaining watch towers vanished in the upheaval and disintegrated in the blast, losing their identity in the clouts of flung-up earth.

"He's using high explosives," yelled Garrison.

"Of course," gasped Doc. "He wouldn't dare use radioactive stuff or he'd blast the planet to

bits. No one would dare use anything but high explosives in a war on Venus."

The door swung open and Mac stumbled in.

"Thanks for the call," he said.

Men were running now out in the pits, scurrying like frightened ants, heading for the one spaceship which had escaped the shells.

The dust settled slowly over the battered field, now plunged in gloom with the shattering of the lights. And, as if by signal, the howling wind swept a sheet of snow down to blot out the sight.

When the snow cleared, the pits were empty of life—there was no movement in the blasted gouges. Fire spurted from the launching rockets of the one undamaged spaceship, the dome vibrating to the monster's take-off. Momentarily a trail of flame climbed into the clouds and then silence and grayness clamped down over the deserted mine and dome.

"That settles it," Mac commented. "We're left alone. We'll have to wait until the military comes and then—"

"You're wrong," said Doc. "There's a ship waiting out north in the hills for you two fellows. A ship that Archie built. Better take Sparks along with you. He's probably still around."

"For the two of us?" asked Mac. "Why not all of us?"

"I can't go," said Doc, "I have to stay. I have a job to do."

"Forget it, Doc," urged Garrison. "Archie really built that ship for you. You were the one he liked. You were the only one he liked."

Doc shook his head stubbornly. "No, I've thought it out. I can't go along. Archie says the ship is fast. If I were you, I'd head for the asteroids. Stick around there for a while. Maybe after a time you can come out. Things are apt to be different then."

"You're afraid of what R. C. would do to you if he caught you," jeered Mac.

"No. I'm not afraid of that," Doc protested. "He couldn't do any more to me then than if he had me now. And, anyhow, R. C. is through. He doesn't know it yet, but he's through for good and all."

"Mac," said Garrison, "let's tie the stubborn old fool up and take him along whether he wants to go or not."

"Look, Johnny," declared Doc. "I'd never forgive you if you did. Take my word for it. I have to stay."

"O. K.," said Mac. "If the benighted old goat doesn't want to go, let the rest of us get moving. I'll go hunt up Sparks. We don't want to have that war fleet Streeter called for pick us up as they are coming in."

Garrison nodded dumbly and moved toward the door. With the knob in his hand, he turned back.

"I don't suppose I'll be seeing you again, Doc."

"I don't imagine you will. I'm sorry the way things turned out, Johnny. It was a dirty shame. And you so near to Earth and that easy-chair."

"Aw, hell," said Garrison, "who cares for easy-chairs?"

Doc watched through the port until he saw the flare of a ship painting the northern hills. His gaze followed the streak of flame that climbed up and out toward the Sun.

Up and out toward the Sun. Out where one could see the stars. Out to take their place with a race that could conquer those stars. A race that could stretch out its hand and handiwork to the farthest reaches of the Universe. A race that could trace new pathways between the galaxies. A race that could hang its signposts on distant solar systems.

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hate and greed and jealousies.

Perhaps Man had gotten off on the wrong foot. Perhaps his philosophy had been all wrong even from the start. Perhaps a bit of alien philosophy, weird as it might seem at first, would be good for him.

With a sigh, Doc turned back to the room.

A mournful silence hung there. Machinery still throbbed and occasionally there was a whine of fans, but aside from that there was no other sound.

Doc selected a fresh cigar from his vest pocket and carefully cut it in two. One half he stuck in his mouth, the other went back into the pocket.

He headed for the laboratory, shutting the door behind him.

"Howdy, Archie," he said.

"You're a fool," said Archie.

"What's the matter now?"

"I gave you a chance," rasped Archie. "You threw it away. Don't blame me for anything that happens now."

"I had to have a little talk with you," said Doc.

"You could have had it before."

"No," persisted Doc. "This one had to be private. No chance for anyone to hear."

"All right," said Archie, impatiently, "go ahead and spill it."

"I just wanted to tell you something," Doc explained. "Something that might make you easy in your mind. I destroyed those notes Boone made before he died."

"You did what?"

"I destroyed them. I didn't want to see you vulnerable. Because as soon as anything becomes vulnerable to the human race it's a goner, sure as shooting."

"Why didn't you tell me this before?" Archie rumbled.

"Because I couldn't make up my mind," Doc told him. "I had to think it out."

"You had a long time to make it up."

Doc swiveled the cigar from east to west. "Yeah, that's right. But somehow I couldn't seem to do it. I made the decision just a little while ago."

"What decided you?"

"A spaceship," said Doc. "A spaceship that you made."

"I understand," said Archie.

"You aren't as tough as you would like to have us think," declared Doc. "You might not have had them before, but since Masterson found you, you've absorbed some conception of human emotions. The spaceship proved it."

"I like you, doctor," Archie said. "You remind me of Masterson."

"I'm giving you the human race to carry out your experiment," said Doc. "It can be a great experiment. You have good material to work with. All you need to do is handle it right. Point it toward the stars and keep it going straight. I'm backing you against Radium, Inc. I think the human race will get a better break from you. Don't disappoint me, Archie."

"I hadn't thought of that," Archie rumbled. "Maybe your race does deserve a break."

"They aren't such bad folks. And, anyhow," Doc chuckled, "if they don't like the way you do things they can turn their backs on you. If they don't insist on radium, you have no hold on them. But if Radium, Inc., could beat you, there'd be no hope for them. They'd only fall deeper and deeper into slavery."

"Why are you telling me this?" Archie grumbled. "You had the knowledge that would have broken me. You haven't used it. You say you aren't going to. Why not let it go at that?"

"If you were a man," declared Doc, "I'd slap you down for that. I'm not trying to pose as a hero. There is something else."

"Yes?"

"Look, Boone was the only man who stumbled on the clue. Even he, perhaps, didn't realize all he had. But he might have. Given time, he certainly would have. But you killed him first. You had intended to all along as a means of escaping yourself. But his stumbling on the clue made you hurry up the job."

"I was defending myself," Archie declared.

"Those notes were dangerous," said Doc. "They gave the human race an angle for attack."

"But you destroyed the notes. I'm safe now."

Doc shook his head. "No, Archie, you aren't. For, you see, I know."

"But you wouldn't tell."

"Oh, yes, I would," said Doc. "I couldn't help but tell. R. C.'s police have ways to make one talk. Slick ways. Unpleasant ways. I'm a psychologist. I should know. And they suspect I may know more than I've ever told. Chester was curious about Boone's reports—"

"But if you had escaped with the others, you could have hidden—"

"Even then, there would have been the chance they would have found me," Doc declared. "Just an outside chance—but in a thing like this you can't take any chance at all."

He walked across the room, picked up the heavy stool.

"This is the only way to do it, Archie. There's no other thing to do. It's the only way we can fool them—you and I."

Archie's voice was cold, mechanical. "You don't have to do it that way, doctor. There are other ways."

Doc chuckled. "Psychological effect, Archie. First Boone, now me. Makes you sinister. After two accidents like this no one will want to study you too much—or too closely."

He weighed the heavy stool in his hand, getting the feel of it.

His cigar traveled across his face. He lifted the stool and crashed it down.

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