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# TAKEOFF

By Cyril M. Kornbluth

Part Two of Three Parts

**NEW WORLDS**  
**Science Fiction**

VOLUME 8  
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## FOREWORD

*Michael Novak, ceramic engineer, working in the Nuclear Energy for the Propulsion of Aircraft (NEPA), Division of the U.S. Atomic Energy Commission, is inexplicably transferred to the Argonne National Laboratory in Chicago where his particular talents are entirely wasted in the field of pure nuclear theory. Attempting in vain to get a suitable transfer he forcibly resigns and attempts to get a job elsewhere. The fact that he had struck the Research Director when handing in his resignation goes against him wherever he applies, and he is getting more than despondent when he receives a curious letter from a Los Angeles office offering him full-time work in refractories research and development with high-altitude jet aircraft.*

*Intrigued by the apparent mystery he travels to Los Angeles and is appalled to find that the office belongs to an obscure amateur organisation known as the American Society for Space Flight. He meets Mr. Friml, the Secretary, and Mr. MacIlheny the President, who assure him that the Society has a progressive programme of development, plus laboratories and a proving ground and unlimited capital, but refuse to disclose where their funds are obtained. Sceptical but still intrigued, Novak goes with Friml to the Society's launching ground and is amazed to find a full-scale steel mock-up of a space ship standing on the field.*

*He is introduced to Clifton the engineer in charge of construction and Friml explains that the one thing lacking is a suitable fuel. He has already been to see Daniel Holland, chief of the U.S. Atomic Energy Commission, in Washington, but the Government were not interested in producing a fuel for the Society. Their plan, states Friml, is to complete the ship and then the Government would be forced to do something about the propulsion unit before any other World power became too interested in the project.*

*Novak accepts the position, is assigned a workshop and laboratory, and commences work on the firing chambers and throat linings for the Prototype, as the rocket had been named. He soon finds out that most of the 'technicians' working on the project are part-time enthusiasts, and meets Amelia Stuart, daughter of the chief of Western Aircraft, who, apart from being attractive, also holds numerous scientific degrees.*

*Studying the plans for the fuel chambers, Novak gets the idea that the Society is being financed by foreign backers and tells his suspicions to Clifton. The two of them make a report to Anheier of the A.E.C. Security Office in the local Federal Building, who seems to know more about everyone concerned in the space project than could be expected.*

*The mock-up Moon rocket being built by the American Society for Space Flight is nearing completion, but Clifton's murder complicates the final details and Michael Novak takes over. From here on it is success or failure for the Society--with the espionage net drawing tighter about Novak's neck every hour.*

*He infers that they mind their own business.*

*In the evening, having spent a pleasant afternoon with Clifton and his wife Lilly at their home, Novak goes with them to a meeting of the Rocket Society where he is introduced and makes a speech. During the science fiction film which follows Cliff leaves Lilly and Novak for a few minutes. As he doesn't return Novak goes to look for him. He finds Cliff's gold ring on a basin in the washroom and is then horrified to discover a thread of crimson blood seeping under a closed toilet door.*

## VII.

Novak fell on his hands and knees to peer through the six-inch gap between the bottom of the door and the floor. He saw two shod feet, oddly lax, a dangling hand, a little pool of blood, and a small pistol.

He went to pieces and pounded on the door, shouting. It was latched. Novak darted from the washroom to the main hall; Anheier was there, who didn't believe there was anything to their story. He blundered into the darkness where, on the screen, two silvery space ships of the impossible future were slashing at each other with many-coloured rays that cracked and roared on the sound track.

"Anheier!" Novak yelled hysterically. "Where are you?" Dark heads turned to stare at him. Somebody stumbled his way across a row of knees and hurried to him.

"Dr. Novak?" asked the Security man. "What's the matter?" People shushed them loudly, and Anheier took Novak's arm, drawing him into the corridor.

Novak said: "There's somebody in a booth in the washroom. I saw blood. And a gun. I'm afraid it's Clifton."

Anheier hurried down the corridor without a word. In the washroom he went into an adjoining booth and climbed up on its bowl to peer over the partition.

"Bad," he said flatly, hopping down. He took a long nail file from his pocket, inserted it between the door edge and jamb and flipped up the latch. The door swung open outwards. "Don't touch anything," Anheier said.

Clifton was in the booth. His clothes were arranged. He was sprawled on the seat with his head down on his chest and his shoulders against the rear wall. There was a great hole in the back of his head, below the crown.

"Get to a phone," Anheier said. "Call the city police and report a homicide here."

Novak remembered a pay phone in the lobby downstairs and ran. Just like a magazine cartoon he crazily thought, when he found a woman talking in it on the other side of the folding glass door. He rapped on the glass imperatively and the woman turned. It was Amy Stuart. She smiled recognition, spoke another few words into the phone, and decisively hung up.

"I'm sorry to be such a gossip," she said, "but that bloody movie—"

"Thanks," he said hastily, and ducked into the phone booth. He saw Lilly coming down the stairs, looking more than a little worried.

The police switchboard took his call with glacial calm and said not to do anything, there would be a car there in less than five minutes.

Lilly and the Stuart girl were waiting outside. "Mike," Lilly burst out, "what's wrong? I sent you out to look for Cliff, you come back and holler for that A.E.C. feller, and you run to the phone. You talk straight vit' me please, Mike."

"Lilly," he said, "Cliff's dead. Shot to death. I'm—I'm sorry—"

She said something in a foreign language and fainted on his arm. Amy Stuart said sharply: "Here. Into this chair." He lugged her clumsily into a deep, leather club chair.

"Was what you said true?" she demanded angrily, doing things to Lilly's clothes.

"Quite true," he said. "There's an A.E.C. Security man there now. I was calling the police. Do you know Mrs. Clifton?"

"Fairly well. How horrible for her. They loved each other. What could have happened? *What could have happened?*" Her voice was shrill.

"Take it easy," he told her flatly. "I think you're getting hysterical and that won't do any good."

She swallowed. "Yes—I suppose I was." She fussed efficiently over Lilly for a moment or two. "That's all," she said. "Nothing else you can do for a faint. God, how horrible for her! God, how I hate killers and killing. That bloody movie. World of tomorrow. Death rays flash the life out of five hundred people aboard a ship—call them Space Pirates and it's all right. Call them Space Navy and it's all right too, as long as you kill Space Pirates to match. They're sitting up there laughing at it. What'll they think when they come out and find somebody's really dead? Who could have done it, Dr. Novak? It's unbelievable."

"I believe it. Miss Stuart, what'll we do with Mrs. Clifton? She and Cliff live alone—lived alone. Could you get a nurse \_\_\_\_\_"

"I'll take her to my place. Father has a resident doctor. I think perhaps I'd better start now. The police would want to question her. It'd be inhuman."

"I think you'd better wait, Miss Stuart. It's—homicide, after all."

"That's absurd. All they could do is badger her out of her wits with questions, and what could she have to tell them about it?"

"Look—poor little rich girl," Novak snarled, angry, nasty, and scared. "Cliff was killed and I may be killed, too, if the cops don't figure this thing out. I'm not going to handicap them by letting witnesses disappear. You just stay put, will you?"

"Coward!" she flared.

The argument was broken up by the arrival of four policemen from a radio car.

Novak said to the one with stripes on his sleeve: "I'm Dr. Michael Novak. I found a man named August Clifton in the washroom, dead. An A.E.C. Security man I know was here, so I put it in his hands. He's upstairs with Clifton now. This is Clifton's wife."

"All right," said the sergeant. "Homicide cars'll be here any minute. Wykoff, you and Martinez keep people from leaving. Don't let 'em use that phone. Sam, come with me." He stumped up the stairs with a patrolman.

It must have been Martinez, small and flat-faced, who asked Novak: "What's going on here, anyway, Doc? Ain't this the Cheskies' place? We never have any trouble with the Cheskies."

"It's rented for the night. By the American Society for Space Flight."

"Uh," said Martinez doubtfully. "Borderline cases. Did the guy kill himself?"

"He did not!"

"Aw-*right*, Doc? You don't have to get nasty just because I asked." And Martinez, offended, joined Wykoff at the door. Novak knew he had sounded nasty, and wondered how close he was to hysteria himself.

Anheier came down the stairs slowly, preoccupied. "What's this?" he asked.

"Clifton's wife. I told her. And Miss Stuart. Mr. Anheier from the A.E.C. Security and Intelligence Office."

"Los Angeles regional agent in charge," Anheier said automatically.

"Mr. Anheier," said the girl, "can't I take Mrs. Clifton out of this? Before the other police and the reporters get here?"

"I'm not in charge," he said mildly, "but if you ask me it wouldn't be a good idea at all. Best to take our medicine and get it over with. What do you two think of Clifton's emotional stability?"

"He was brilliant, but——" Amy Stuart began, and then shut her mouth with a snap. "Are you suggesting that he took his own life?" she asked coldly. "That's quite incredible."

Anheier shrugged. "The sergeant thought so. It's for the coroner to say finally, of course."

"Look," said Novak, laboring to keep his voice reasonable. "You and I know damned well——"

"*Novak*," said Anheier. "Can I talk to you for a minute?"

Novak stared at him and they went to the foot of the stairs. The Security man said quietly: "I know what you think. You think Clifton was murdered in connection with the—stuff—you told me this afternoon."

"I think there's an espionage angle," Novak said. "And I know you had your mind made up that Clifton and I were cranks. Man, doesn't this change anything? He's *dead!*"

Anheier considered. "I'll meet you halfway," he said. "When you tell your story to the cops, keep it straight. Don't babble to reporters about your suspicions. Just leave out your opinion that Clifton was murdered. *If* there's an espionage angle, this is no time to give it to the papers."

"How does that add up to meeting me halfway?" Novak asked bitterly.

"I want to see you after tonight's fuss is over. I'll fill you in on the big picture. Meanwhile, don't prejudice our position with loose talk. Here's Homicide now. Watch yourself."

Homicide was three sedans full of photographers, detectives, and uniformed police. Reporters and press photographers were at their heels. A Lieutenant Kahn was the big wheel. Novak watched Anheier brief Kahn calmly and competently and felt a charge of resentment. The big picture—what was it? Perhaps smoothly meshing crews of agents were preparing tonight to seize members of a conspiracy ramified far beyond his small glimpse——

The lieutenant was firing orders. "Nobody, but nobody, leaves the building until I say so. You, yank that press guy out of the phone booth; that line's for us. Sergeant, make an announcement to the movie audience upstairs. Doc, bring Mrs. Clifton to and let her cry it out. I'll want to talk to her later. No reporters past the stairs for now. Where's this Novak? Come on, let's view the remains."

Now there were two white-faced A.S.F.S.F. kids in the washroom as well as the radio-car sergeant and patrolman. The sergeant saluted and said: "They came in a minute ago, lieutenant. I hold them. Didn't want a stampede."

"Good. Take them down to the lobby with a bull to watch them. Start taking your pictures, Ivy. Let's *go*, you fingerprint men! Where's Kelly? Dr. Novak, you found the body, didn't you? Tell us just what happened while it's still fresh in your mind." A uniformed policeman stood at Novak's elbow with an open stenographic pad.

*Don't prejudice our position.* Fine words; did they mean anything? Fumblingly, Novak went over it all, from Lilly's first worried request to the end. Halfway through he remembered about the ring, went through his pockets, and produced it. Through it all, Anheier's calm eyes were on him. In deference to the big picture and the unprejudiced position he said nothing about foreign powers, space-ship fuel, or espionage—and wondered if he was a fool.

The scene blended into a slow nightmare that dragged on until 1:00 a.m. Parts of the nightmare were: glaring lights from the Homicide photographers' power packs, Lilly conscious again and hysterical, Amy Stuart yelling at the police to leave her alone, Friml clutching him to ask shakily whether he thought Clifton had been embezzling, sly-eyed reporters hinting about him and Lilly, MacIlheny groaning that this would set back the A.S.F.S.F. ten years and telling his story to the police again and again and again.

Finally there was quiet. The names of A.S.F.S.F. members present had been taken and they had been sent home, kids and engineers. Amy had taken Lilly home. The police had folded their tripods, packed their fingerprint gear and gone. Last of all an ambulance whined away from the door with a canvas bag in its belly.

Left in the lobby of Slovak Sokol Hall were Novak, Anheier, and a stooped janitor grumbling to himself and turning out the building lights.

"You said you wanted to talk to me," Novak said wearily.

Anheier hesitated. "Let's have a drink. I know a bar up the street." Novak, wrung out like a dishrag, followed him from the hall. The waiting janitor pointedly clicked off the last light.

The bar was dim and quiet. Half a dozen moody beersippers were ranged on its stools. Anheier glanced at them and said: "Table okay? I have a reason."

"Sure." The Security man picked one well to the rear.

"Watch the bartender," he said softly.

"Eh?" Novak asked, startled, and got no answer. He watched. The bartender, old and fat, deliberately mopped at his bar. At last he trudged to the end of the bar, lifted the flap, plodded to their table, and said: "Yuh?"

"You got double-shot glasses?" Anheier asked.

The bartender glared at him. "Yuh."

"I want a double scotch. You got Poland Water?"

The bartender compressed his mouth and shook his head.

"I want soda with it then. Novak?"

"Same for me," Novak said.

The bartender turned and plodded back to the bar, limping a little. Novak watched him as he slowly went through the ritual of pouring. "What's all this about?" he asked.

"Watch him," Anheier said, and laughed. The bartender's head immediately swiveled up and at their table. His glare was frightening. It was murderous.

He brought them their drinks and Novak noticed that his limp had grown more marked. His fingers trembled when he set the tray down and picked up Anheier's bill.

"Keep the change," Anheier said easily, and the bartender's hand tremor grew worse. Wordlessly the man trudged from the table, rang up the sale, and resumed mopping.

"Would you mind telling me——" Novak began, picking up his double-shot glass.

"Don't drink that," Anheier said. "It may be poison."

Novak's heart bounded. This, by God, was it! Poison, spies, the papers, and Anheier was admitting he'd been right all along!

"Let's get out of here," the Security man said. He got up, leaving his own glass untouched, and they left. Novak's back crawled as he walked out behind Anheier. A thrown stiletto—a bullet——

They made it to the street, alive, and Novak waited to be filled in on the big picture while they walked: he apprehensively and Anheier with icy calm.

"I noticed that old boy come on duty while I was having a beer before the meeting," the Security man said. "He made me think of you. Paranoia. A beautifully developed persecution complex; one of these days he's going to kill somebody."

Novak stopped walking. "He's not a spy?" he asked stupidly.

"No," Anheier said with surprise. "He's a clinical exhibit, and a hell of a man to hire for a bartender. While I was finishing my beer, somebody complained about the weather and he took it as a personal insult. Two luses were lying about how much money they made. He told them to cut out the roundabout remarks; how much money he made was his business and no cheap jerks could horn in on it. You noticed the limp? We were picking on him by making him walk to the table. I laughed and he *knew* I was laughing at him. Knew I was one of his enemies plotting against him right under his nose."

"You're telling me that I have a persecution complex, Anheier? That I'm crazy?" Novak asked hoarsely.

The Security man said: "Don't put words in my mouth. I am saying you've got a fixed idea about espionage which makes no sense at all to me—and I'm a pro about espionage; you're a grass-green amateur.

"What have you *got*? A drawing that doesn't look right to you. Why the devil should it? Mysterious financial backing of the rocket club. All corporate financing is mysterious. The big boys divulge exactly as much as the law forces them to—and a lot of them try to get away with less. Every S.E.C. order issued means somebody tried just that. And Clifton got shot through the head; that's supposed to be the clincher that should convince even me. Do you think suicides don't occur?"

Automatically they were walking again and the Security man's reasonable, logical voice went on. "I didn't go to that meeting tonight to investigate your allegations; I went for laughs and to see the movie. Novak, it's always tragic to see a person acquiring a fixed idea. They never realise what's happening to them. If you try to set them right, you only succeed in giving them more 'evidence.' You know the job I have. Lord, the people I have to see! A week doesn't go by without some poor old duffer turning up and asking me to make the A.E.C. stop sending death rays through him. If they get violent we call the city police ..."

"That sounds like a threat, Anheier."

"It wasn't meant to. But I'm not surprised that you thought it did. Frankly, Novak, have you considered what your record for the past year is like? I looked you up."

Novak considered, in a cold fury. A transfer—an idiotic transfer. Unsuitable work. Hurlbut's vicious memorandum. The blowup. Affiliating with a bunch of space hounds. Superficially Anheier might look right. Inside himself he knew better.

"It won't wash," he said evenly. "You're not talking me out of anything. There's going to be an inquest on Clifton and I'm going to speak my piece."

*"Better not. And this time it is a threat."*

It was exhilarating. "So it's out in the open now. Good. You'll do what?"

"I want very badly to talk you out of your mistaken notion," Anheier said broodingly. "But if I can't, I've got to warn you that you're monkeying with the buzz saw. If the opposition papers get hold of your allegations, there will be hell to pay in the A.E.C. We'll have a spy scare. Security and Intelligence will look bad. Research and Development will look bad because the headlines say another country has beaten us to the punch on rocket fuel. We'll be judged by millions not on the strength of what we do for the nation's security but on what the headlines say we don't do. And all because one Dr. Michael Novak spoke his piece. Novak, do you think we won't counter-punch?"

Novak snorted. "What could you do? I happen to be right."

The Security man gave him a pitying look and muttered: "If you smear us, we'll smear you."

Novak suddenly no longer felt exhilarated. It was a frightening word. "That's blackmail," he said angrily, but his knees had gone weak.

"Please don't put it that way." The Security man sounded genuinely pained. "You think you're right and I think you're wrong. If you want to talk to me and give me your side, okay. I'll talk to you and give you my side.

"But if you speak up at the inquest or go to the papers in any other way—we'll have to fight you in the papers. It's your choice of weapons. You can damage A.E.C. terribly with an unfounded spy scare. Naturally we'll hit back. And what can we do except try and impeach your credibility by spreading unfavourable facts about you on the record?"

In a low, embarrassed voice he went on: "Everybody's done things he's ashamed of. I know I have. I know you have. Boyhood indiscretions—adventures. Girls, traffic summonses. Friends of friends of friends who were Communists. And there were imaginative or inaccurate people who knew you slightly, maybe disliked you, and told our interviewers anything they pleased. We have a deposition in your file from a fellow you beat out on a scholarship exam. He says he saw you cheating in the examination room. Our evaluators disregarded it, but will the headline-readers? What about your inefficiency at Argonne? Your fight with Dr. Hurlbut?"

Novak was feeling ill. "If you people libel me," he said, "I can sue. And I will."

Anheier slowly shook his head. "What with?" he asked. "Who would hire the man whom the headlines called a lunatic, a pervert, a cheat, a drunkard, a radical, and heaven-knows-what-else? None of it *proved*, but—'where there's smoke there's fire,' and the 'Indefinable Something behind the Mysterious All This.'" Anheier's voice became strangely compassionate. "I mean it about the buzz saw," he said. "Surely you know of people who fought a smear and wound up in jail for perjury ..."

He did.

"All right, Anheier," Novak said softly and bitterly. "You've made up my mind for me. I was going to speak my piece at the inquest and get out of town. Now it seems I've got to do your work for you.

"A foreign power's operating under your nose and they've just murdered an American as a minor detail of a plan to bring America to its knees. So I'll keep my mouth shut and stick with the A.S.F.S.F. If I live, I'll blow this thing open. And then God help you, Anheier; I'm going to throw you to the wolves."

He walked unsteadily down a side street away from the Security man. Anheier stared after him, poker-faced.

## VIII.

Afternoon of a bureaucrat.

Daniel Holland wished he were in the privacy of his office where he could swallow some soda and burp. He was lunching with the commissioners, four trenchermen, and had taken aboard too much duck with wild rice. And the commissioners were giving him hell, in a nice, extroverted way, for the slow—in fact, almost negligible—progress of A.D.M.P., the Atomic Demolition Material Program. A.D.M.P. was scheduled to provide very shortly atomic explosives that would move mountains in the American Southwest, sculpture watersheds into improved irrigation patterns, and demonstrate to a politically shaky area which elected six senators that the current Administration was the dry-farmer's guide, philosopher, and friend. In actual fact, A.D.M.P. had provided only a vast amount of dubious paper work, and some experimental results which only an insanely optimistic evaluator would describe with even so cautious a word as "promising."

The chairman of the Commission, a paunchy, battered veteran of thirty years in county, state, and national politics, told Holland gently: "Interior's pushing us hard, Dan—very hard. You know he's got the Chief's ear, of course. And it's our opinion that he's not being unreasonable. All he wants is a definite date—give or take a month—that they can start blasting in the Sierras with our stuff. He doesn't care whether the date's a month from now or a year from now, but he needs it for planning and publicity. Of course the work's got to get going before the nominating conventions, but that's absolutely the only restriction on the program. Now, what are we going to tell him?"

"I don't just now offhand, Bill," Holland grumbled. "No doubt about it, A.D.M.P.'s bogged down. I have some suggestions about getting it out of the mud, but they involve basic policy."

The first commissioner was a handsome, muscular man who had gracefully lived down the tag of "wonder boy" pinned on him when he became a university president at the age of thirty-six. He was currently on leave from the executive directorship of a great foundation dedicated to the proposition that visual education is on the beam and all else is dross. He roared jovially at the general manager: "Well, spill your guts, Dan. That's our little old job, you know. Let's canvass your suggestions informally right now. If they click we can programme them for an on-the-record session."

"You asked for it, Cap," Holland said. "First, we need—I mean *need*—about a dozen good men who happen to be teaching or working in industry around the country right now. One's a Yugoslav refugee with relations left in the old country. Another was a Young Communist League member, fairly active, in 1937 and '38. Another was once tried and acquitted on a morals charge—some little girl got mad at him and told lies. Another—well, I won't bother listing them all. You get the idea."

The second commissioner was a spare, white-headed ex-newspaper man: Pulitzer Prize, *Times* Washington Bureau chief, author, diplomatic correspondent, journalism-school dean, intimate of the great, recipient of very many honorary degrees. He shook his head more—to use a cliché that never would have appeared in his copy—in sorrow than in anger.

"Now Dan," he said, "this is no time to tinker with the machinery. If there's one thing about A.E.C. that's smooth-running now, it's clearance. Congress is mostly happy—except for Hoyt's gang; the papers are happy—except for the opposition rags; and the public's got confidence in the personnel of their A.E.C. We simply can't start *that* fight all over again. What else did you have in mind?"

"Second," Holland said impassively, "we're being slowed down by declassification and down-classification. I've drummed into the boys that most material should be merely *Restricted*, *Confidential* covers most of what's left, and the *Secret* classification should be sparingly used. But they're scared, or conservative, or only human, or taking the safest way or whatever you want to blame it on. Every time I give them hell there's a little flurry of *Confidential* and *Restricted* and then the *Secret* begins to mount up again and we're back in the same old rut: boys in Los Alamos doing work that's been done in Hanford and not knowing about it. Maybe because of the limited distribution of *Secret* material. Maybe because the Los Alamos boys aren't in high enough grade for access to it. Gentlemen, I think something basic is required to correct this condition."

The third commissioner was a New York investment banker who had doubled his family fortune in ten legendary years on Wall Street and served his country for the next ten as a diplomatic trouble shooter in the Near East. He was still a formidable welterweight boxer and—to the dismay of the first commissioner—could speak Arabic, Turkish, and Court Persian. Alone on the current Commission, he had thought it his duty to master what he could of nuclear physics and its mathematical tools. Diffidently he said: "That's a tough one, Dan. But I don't see what choice we had or have. Our policy, arrived at in the best interests of the national security, is to 'classify all A.E.C. data to the extent required to prevent it from being of use to potential enemies of the United States.' It's broad, I grant you. But the demands of national security won't be satisfied with anything narrower."

"Neither will Congress," said the second commissioner.

"Neither will the voters," grunted the chairman. "Dan, we'll just have to leave that one in your lap for you to lick as an administrative problem—*within the limits of our policy*. Just a suggestion: what about setting up a special classifications-review unit charged with checking the point-of-origin classifications on new data under a directive to declassify or down classify whenever possible? You'd be able to keep a single unit here in Washington under your thumb easier than the assorted managers and directors out in the field. About how much would an outfit like that cost?"

Embarrassing moment. How to tell them that Weiss had worked on such a plan for three months and found it impracticable? "Well, Bill, it would stand us maybe two million a year in salaries and overhead. But I see a lot of complications. The personnel in the new unit would have to be scientists or they wouldn't know what they were doing. God knows where we'd get enough of them to keep up with all the data A.E.C. grinds out—you know the scientific manpower picture. And you'd have a hell of a turnover because scientists like to do science and not paper work. And *quis custodit*? The safest thing for them to do would still be to stamp everything *Secret*; they'll never get in trouble that way even if it does slow A.E.C. down to a crawl. I'll explore the idea and give you a report, but I think it's a policy matter."

The second commissioner said flatly: "We can't change the classifications policy, Dan. There hasn't been a spy scare worth mentioning in three years. The public's on our side. We've built up a favourable press and congressional attitude slowly and painfully and we're not going to wreck it now. Sure, we'd make a short-term gain if we published all data. But come the appropriations bill debate! Congress would cut our funds fifty per cent across the board—nail us to the cross to show us who's boss. You've got to do the best you can with what you've got, and never forget the political climate. What else did you have up your sleeve?"

Holland glanced at the chairman and looked away. Then he said slowly: "Third, something I don't understand at all has come up. A.D.M.P. was set up personnel-wise and equipment-wise to handle one ton of thorium metal a month." The chairman coughed nervously. "I learned yesterday," Holland went on, "that for two months they've been getting only .75 tons a month from Raw Materials. They thought the reduction came from me. I checked with R.M. and found that the office of the chairman ordered a monthly quota of .25 tons of thorium to the Air Force Experimental Station with a priority overriding A.D.M.P. So R.M. quite correctly diverted the A.F.E.S. quota from A.D.M.P.'s quota. I haven't checked so far on what the Air Force has been doing with our thorium." He didn't mention his anger at being by-passed, or his weary disgust at realizing that some fifteen hundred A.D.M.P. personnel had been idle as far as their primary mission was concerned for one sixth of a year because they lacked material to work with.

"Dan," said the chairman slowly, "I owe you an apology on that one. You recall how General McGovern came to bat for

us at the last joint Committee hearings. Praised us to the skies for our grand co-operation, said we were all patriots, gentlemen, and scholars he was proud to work with? Half the Committee members at least are red-hot Air Force fans, so it did us a lot of good. Well, McGovern's price for that was the thorium allotment. His boys at A.F.E.S. think they can use thorium war heads in air-to-air guided missiles. The Weaponizing Advisory Committee tells me it's a lot of nonsense and furthermore A.F.E.S. hasn't got anybody who could do the work even if it were possible, so Air's not really fishing in our lake."

"Can we get their thorium quota back to A.D.M.P.?" Holland asked.

"No. I'd be afraid to try it. McGovern's been talking about a bigger quota, to serve notice on me that he's not going to be whittled down. And I live in fear that the Navy will find out about it and demand a thorium allotment of their own. That's why I was so damned secretive about it—the fewer people know about these deals, the better. Maybe we ought to have Raw Materials set up a new group to expedite thorium-ore procurement and refining—but my point was, no; the Air Force has got it and they won't let go. We've got to get along with the military, Dan. You know that. They can make us look awfully bad if they've a mind to."

"Well," said Holland, "that's that. I'll get you a report you can show Interior by tomorrow morning. Were there any other points for me?"

"Gentlemen?" asked the chairman, looking around the table. There were no other points, and the general manager left them.

The third commissioner said: "I'm a little worried about Holland. He seems to be going cynical on us."

The chairman said: "He's a little stale from overwork. He refuses to take a vacation."

"Like an embezzler," said the ex-banker, and they laughed.

"He doesn't see the big picture," said the second commissioner, and they nodded thoughtfully and got up to go their various ways:

The chairman to weigh the claims of two areas pleading to be the site of the next big A.E.C. plant;

The first commissioner to polish a magazine article on "Some Lessons of Aquinas for the Atomic Age";

The second commissioner to lobby three congressmen in connection with the appropriations bill coming up in eight months;

The third commissioner to confer with the Secretary of State on the line that State's overseas propaganda broadcasts should take concerning A.D.M.P. as proof of America's peace-loving nature.

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Holland, in the privacy of his office, took four soda-mint tablets and burped luxuriously. He phoned his assistant Weiss, and passed him the job of drafting tomorrow morning's report for the Secretary of the Interior.

His "While You Were Out" pad said:

"12:15—Senator Hoyt's office called for an appointment 'as soon as possible.' Said I would call back.

"12:20—Mr. Wilson Stuart called from Los Angeles and asked you to call back today 'on the private number.'

"12:45—Senator Hoyt's office called again. Said I would call back.

"12:48—the Associated Press called asking for an interview at your convenience. I said you were occupied for the coming week and referred them to the P. & T.I. Office.

"1:15—Senator Hoyt's office called again. Said I would call back."

He sighed and knocked down an intercom button. "Charlie, tell Hoyt's people he can come right over. Get me Stuart on—"

no, I'll place it."

"Yes, Mr. Holland."

The general manager didn't have a phone on his desk, but he did have one in a drawer. It had a curiously thickened base, the result of some wire-pulling in A.T. & T. The curiously thickened base housed a "scrambler" of the English type which matched one in Wilson Stuart's bedroom phone. It was a fairly effective measure against wire taps. He pulled out the phone and placed the call.

His old friend must have been waiting by his own phone in the big white Beverly Hills house. "Hello?" said the voice of Wilson Stuart.

"Hello, Wilson. How is everything?"

"Let's scramble."

"All right." Holland pushed a button on the phone. "Can you hear me all right?"

"I hear you." The quality of the transmission had taken an abrupt drop—the result of Wilson Stuart's voice being torn into shreds by his scrambler, hurled in that unintelligible form across the continent, and reassembled by Holland's device.

"Dan, things are going sour out here. They're trying to take Western Air away from me—a nice little phony stockholders' revolt. One of my rats in the Oklahoma Oil crowd tipped me today. I don't know how far they've got in lining up their proxies, but it could be bad."

"What's the squawk?"

"I stand accused of running the board of directors like a railroad—which, God knows, I do, and a good thing for Western. Also, and this is the part that scares me, I'm supposed to be squandering the company's resources."

"Um. It isn't a real rank-and-file thing, is it?"

"Act your age, Dan! It's the old Bank of California programme: kick Stuart out of Western Air and integrate it with their other holdings. This time they've met Oklahoma Oil's terms."

"Who's fronting?"

"That's the only cheerful part. They've got some squirt Air Force two-star general named Reeves. He commands Great Falls A.F.B. in Montana. They've sounded him out and he's supposed to be willing to take over as board chairman after I get the boot. Such patriotism."

"I can do something about that. Know Austin?"

"I was thinking of him—he'd put the screws on the fly-boy. Will you get in touch with him?"

"Sure. Fast."

"Another thing ... I'll be in a lot stronger position for the showdown if I can pull a big, big A.E.C. contract out of my hat. What have you got?"

Holland thought for a moment. "Well, Reactor Programme's got some big orders coming up. Die-cast one-inch rods, aluminum cans, and some complicated structural members. It might all come to twenty-five million dollars. You set up for die-casting?"

"Hell no, but what's the difference? We can subcontract it to anybody who is set up. All I want is the money to show those monkeys on the board."

"You'll get it. How's Amy?"

"No complaints. She brought Clifton's widow home. Too bad about that. You never knew the guy, but he used to work for me—a real character."

"That so? Tell Amy to drop in and say hello next time she's East. I haven't seen her for months."

"I sure will, Dan. Take care of yourself. *And* the fly-boy. *And* the contract. Good-bye."

Holland hung up and put the phone back in its drawer. He said over his intercom: "Tell Fallon from Reactor Programme Procurement that I want to see him. And get me Undersecretary Austin on the phone—the Air Force Austin."

The Air Force Austin was only an acquaintance, but he had a low boiling point, and handles that stuck out a yard. There were many things that he hated, and one of them was military men who used their service careers as springboards to high-pay civilian jobs.

"Naturally I don't want to meddle in your area, Austin," Holland was telling him a minute later, "but we're all working for the same boss. Can you tell me anything about a Major General Reeves—Great Falls A.F.B.?"

Austin's suspicious New England voice said: "Supposed to be a brilliant young man. I don't know him personally. What about him?"

"I hear he's getting involved in a big-business crowd. If you want me to stop talking and forget about it, just say so."

Austin snapped: "Not at all. I'm glad you called me. What exactly did you hear?"

"The people are supposed to be Oklahoma Oil and Bank of California. The way the story went, they want to hire him as a front for the reorganization of some aircraft company or other."

"Nothing illegal? No hint of cumshaw?"

"None whatsoever. Just the usual big-salary bait."

"Glad of *that*. Thanks, Holland. If Reeves thinks he can use the Air Force, he's got a great deal to learn. I'll have this investigated very thoroughly. If you're right, he'll be A.F. Liaison officer in Guam before he knows what hit him."

Holland grimaced at the thought. It was punishing a man for exercising his freedom of contract; as a lawyer he couldn't be happy about it. Unfortunately, Austin was right too. Industry cheerfully fished the armed-forces and civil-service pond for able and underpaid executives; it had to be discouraged. Carry the process far enough and industry would hire away the best military and Government brains, leaving the nation—and itself—defended by an army of knuckleheads and administered by a bureaucracy of nincompoops ...

And of course there were other reasons for lowering the boom on Reeves.

"Mr. Fallon to see you," said his secretary.

"Send him in." Fallon was in his early thirties, but there was something about him that made him look younger to Holland. The general manager thought he could guess what it was. "Is this your first public-service job, Fallon?"

"Yes, Mr. Holland."

"What did you do before this?"

"I was with General Motors. Up in Detroit Purchasing, assistant to the department head."

"That was a good job. Why'd you leave it for us?"

He knew why. The itch you can only scratch with service, the uncomfortable feeling that they needed you, the half-conscious guilt that you owed more than your taxes. He knew why. It had ridden him all his life. Fallon tried to put it into words, and didn't succeed. There were glib hacks who could talk your ear off about it, and there were sincere guys like this who couldn't make themselves a case. "I guess I just thought I'd be happier here, Mr. Holland."

"Well. I wanted to talk to you about the upcoming contracts for breeder cans, moderator rods, and retaining-wall members. Five-nineteen, twenty, and twenty-one, I believe. Are you going to invite Western Aircraft to bid?"

Fallon was puzzled. "I'd swear they haven't got die-casting facilities on that scale, Mr. Holland. I wasn't figuring on it, but of course I'll include them if they can swing it."

"They can handle part of it as prime contractor and subcontract the rest."

"But the procurement policy is——"

"This is a special case. I want you to understand that their bid may seem high, but that they deserve very serious consideration. It's essential that we have no holdup on these castings, and I've practically decided that Western Air can do a better job of seeing them through to delivery than any other outfit that's likely to bid. They're a very able, deadline-minded outfit, and the over-all picture at this time indicates that we need their talent."

Fallon was getting upset. "But we've never had any trouble with Inland Steel or G.E., to name just two fabricators who might bid, Mr. Holland. They come through like clockwork, they know our procedure, we know the people there, they know us—it greases the ways."

"Really, Fallon, I think my suggestion was clear enough. I can't be expected to fill you in on the reasons for it. Some of them are military secrets, others are policy matters, and none of them is any particular business of yours."

Fallon looked at him, no longer wide-eyed. "Sure," he said woodenly. "How is Mr. Stuart? I hear he's a good friend of yours."

Well, this was it. The cat was clawing at the bag; the beans were about to spill. Coldly Holland channelled the fear that was exploding through him into artificial rage. He was on his feet, and his chair crashed to the floor behind him. In one stride he was towering over Fallon in the deskside chair. Holland thrust his face almost into the face of the man from Purchasing. His voice was a low, intense growl.

"*Watch your language, son.* I've been taking a beating for twenty-eight years in public service." *Talk.* Keep him off balance, make him feel young and raw, make him ashamed, make him unhappy. "They've called me a Communist and a fascist and a bureaucrat and a bungler but they've never called me a crook. My worst enemies admit that if I wanted money I've got the brains to get it honestly. If I wanted money, I could quit A.E.C. today, open a law office tomorrow and have half a million dollars in retainers by next month."

Fallon was beginning to squirm. "I didn't——"

"Shut up. If you think you've turned up evidence of dishonesty, I'll tell you what to do. Pick up your hat and run right over to the Senate Office Building. There's a crowd there that's been trying to nail my hide to the wall ever since you were in knee pants. Maybe you've succeeded where they failed."

"I meant——"

"Shut up, Fallon. You told me what you meant. You meant that I've got nothing to show for twenty-eight years of trying to help run the purest democracy left in the world. That was news to me. I've known for a long time that I wasn't going to get rich out of the Government service. I decided long ago that I couldn't marry, because either the marriage or the work would suffer. I know I haven't got any pride left; I stand ready at any hour of the day or night to get my teeth kicked in by those county-ring Solons up on the Hill. But I thought I had the loyalty of my own kind of people. It seems I was wrong."

"Mr. Holland——"

He didn't interrupt, but the youngster didn't go on. Holland stared him down and then straightened to sit on the edge of his desk. "Go on over to the Senate Office Building, Fallon," he said quietly. "Get your name in the paper. I can stand one more kicking-around and you can use the publicity. Maybe they'll ghostwrite a series of articles for you in the Bennet rags."

But Fallon was almost blubbering. "That's not fair!" he wailed. "I tried to tell you I was sorry. I can't help it if I have an Irish temper and a big mouth. I know what your record is, Mr. Holland. It's a——it's a wonderful record." He pulled himself together and got up. "Mr. Holland," he said formally and mournfully, "I feel I should submit my resignation."

Holland slugged him on the bicep and said gruffly: "Not accepted. I could use a hundred more like you. I've got a thick hide—usually. Just that crack ... but don't let it worry you. Clear about that bid?"

"Clear at last, Mr. Holland," Fallon said with a melancholy smile. "I'll try not to make a damned fool of myself again. You have troubles enough."

When he was alone, the general manager set up the kicked-over chair, leaned back, and lit a cigarette with fingers that

shook. It had been a very near thing. Lord, how long could a man be expected to keep this up? The perpetual sweat about wire tappers, loose talkers, shrewd newsmen who might put two and two together, the political opposition relentlessly stalking every hint of irregularity.

Once in T.V.A. he had turned in a friend and classmate for trying to recruit him into a footling little Communist industrial-espionage apparatus. The revelation had been shattering; his duty had seemed clear. But that had been a long time ago ...

His intercom said: "Senator Hoyt is here, Mr. Holland."

"Send him in, Charlie." He sprang from behind his desk to shake the senator's hand. "Good to see you again, Bob," he burred cheerfully.

The senator's meaty face broke into an actor's smile. "Mighty nice of you to find time for us, Dan," he said. It was a reminder that he'd had to wait on Holland's convenience to make the appointment and a threat that some day Holland would sweat for it. The senator did not forget slights, real or imaginary.

"How're you, Mary?" asked Holland, a little dampened.

"So—so," Mary Tyrrel, the senator's secretary, said vaguely. It was odd that she was Hoyt's five-thousand-per secretary, because until last year she had been a twenty-thousand-per Washington by-liner for the Bennet newspapers. But lots of odd things happen in Washington.

"Well, Bob, what can I do for you?"

"I'm collecting a little information, Dan. Normally my investigating staff would handle it. But out of respect for your high position I thought I ought to ask you straight out myself."

Cat and mouse, thought Holland. What's he got?

The senator lit a cigar deliberately. "I like to consider myself a member of the loyal opposition," he said. "Our democracy has kept its vigour because of constant, intransigent criticism and pressure by reformers—realistic, practical reformers—against the abuses of an entrenched bureaucracy. I've been in some good scraps, Dan, and I've loved them. I fought the A.E.C. when it tried to give jobs to foreigners of doubtful loyalty. I've fought when you people tried to give moral lepers and degenerates control of our most precious military secrets. I've fought to root out loose-tongued drunkards from the A.E.C."

"It hasn't done you any harm, Bob," Holland said.

The senator wasn't thrown off his stride. "No," he said. "It hasn't. I've enjoyed the rewards of good citizenship. I have the respect of my constituents, and on a national scale I have the backing of a great chain of patriotic newspapers. But Dan, I'm on the track of something that—God willing—will lead to the highest office in the land."

"Dewey didn't make it," Holland said.

The senator waved his cigar expansively. "He got to be governor at least. If he didn't have the imagination to make the jump to the presidency, it was his fault. Of course in his day the techniques weren't as developed as they are now. I know you take the old-fashioned, strict-construction view of politicking: work hard, improve yourself in knowledge and skill, one day you'll get the nomination on a silver platter. With all respect to you as a student of government, Dan, that theory is as dead as the Lincoln-Douglas debates.

"This is an era of high-level energy in science, industry—government. The nervous tensions under which we all live and work rules out leisurely reflection on the claims of this candidate or that. You've got to electrify people. Make them know who you are. Keep dinning your name at them so it drowns out any other candidate's name. Immerse them in your personality. Have it drummed at them twenty-four hours a day, inescapably. The standing machinery of the press and broadcasting will do it for you if you just give them a news peg to hang it on."

The senator—and his secretary—were watching him narrowly.

Holland said: "You figure you've got a news peg?"

The senator tapped cigar ash to the floor. "I might come up with one," he said. "A scandal and an investigation—the biggest ever, Dan. A blowup that will be on every tongue for a solid month. Housewives, factory hands, professional people, children—there'll be something in it for everybody. Dan! What would you think of a public servant who ignored a great discovery instead of promulgating it for the use of the people of the United States? Wouldn't it be—treason?"

"I thought you used to be a lawyer, Bob," Holland said. "It sounds like malfeasance to me."

"What if every indication was that this public servant behaved in no way different from an enemy agent, Dan?"

"Look," said Holland. "If you're going to denounce any of my A.E.C. boys for incompetence or malfeasance or moperly with intent to gawk, go ahead and do it. We've screened and processed our people to the utmost limit of practicability. You're hinting that a spy got through in spite of it. So all I can say is, that's too bad. Tell me who he is and I'll have Security and Intelligence grab him. Is that what you came to see me about?"

"Oh," the senator said mildly, "we just wanted your general reaction to the situation. Thanks for hearing me out so patiently. If anything else turns up I'll let you know."

He smiled and gave Holland a manly handshake. The general manager saw them to the door of his office, closed the door and latched it. He leaned against the oak panels with sweat popping from his brow. Somebody at Hanford had been talking to a Bennet reporter.

They didn't seem to have anything yet on the fiscal or personnel angles.

Time was getting very short.

## IX.

The story on page four of Novak's morning paper said:

### SPACE SHIP ENGINEER FOUND SHOT TO DEATH AT ROCKET CLUB MEET

*The soaring interplanetary dreams of 146 rocket-club members turned to nightmare at Slovak Sokol Hall last night when the body of engineer August Clifton, trusted employee of the American Society for Space Flight, was found in a washroom of the hall as a meeting of the society was in full swing on the same floor. Assistant medical examiner Harry Morales said death apparently was caused by a head wound from a single .25-calibre bullet. A Belgian automatic of that calibre was found lying near Clifton's right hand, with one shot fired according to Homicide Bureau Lieutenant C. F. Kahn.*

*The victim's attractive blonde wife Lilly, 35, was taken in a state of collapse to the Beverly Hills home of aircraft manufacturer Wilson Stuart by his daughter Amelia Stuart, a friend of the Cliftons and a member of the rocket club.*

*The club secretary, Joe Friml, 26, said Clifton had been authorized to spend "sizable" sums of club money in the course of his work, which was to build a pioneer space ship that club members hoped would go to the Moon. Friml said he did not know of any irregularities in Clifton's accounts but added that he will immediately audit club financial records for the past year with an eye to any bearing they may have on the death.*

*Other friends of Clifton said he was in good health but "moody" and "eccentric."*

*Lieutenant Kahn said he will not comment until police fingerprint and ballistics experts have analyzed the evidence. An inquest will be held Wednesday morning.*

*The body was discovered by Dr. Michael Novak, 30, an engineer also employed by the club, when he slipped out of the meeting room during the showing of a film. Novak immediately called in the aid of A.E.C. security agent J. W. Anheier, who was attending the meeting as a visitor. Anheier stood guard in the washroom to prevent evidence from being disturbed until police arrived. He later told reporters: "There is no security angle involved. It was just a coincidence that I happened to be there and Dr. Novak called on me."*

Two one-column photographs flanked the story. One was of Amy Stuart, very society-page looking, captioned:

"Socialite shelters stricken wife." The other was a view of the *Prototype*: "Dead engineer's unfinished 'moon rocket.'"

All tied up in a neat little package with a bow, Novak thought bitterly. Without saying it, the newspaper told you that Clifton had blown his brains out, probably after embezzling A.S.F.S.F. money. If you didn't know Clifton, you'd believe it of course. Why not? "They wouldn't print it if it wasn't true."

He went from the lobby newsstand to the hotel coffee shop and ordered more breakfast than he thought he could eat. But he was a detective now; he'd have to act unconcerned and unsuspecting while he was slowly gathering evidence——

Oh, what the hell.

It wasn't real. None of it had been real, for months. Assignment to Neutron Path Prediction, when he didn't know whether neutrons should take paths or four-lane super-highways. Slugging his boss, quitting his job under a cloud—research and development men didn't *act* like that. Going to work for the A.S.F.S.F., an organization as screw-ball as Clifton himself.

He wanted to laugh incredulously at the whole fable, finish his coffee, get up and walk into the job he should be holding at N.E.P.A.: a tidy salary, a tidy lab, and tidy prospects for advancement. But the climax had eclipsed even the lunacy of the past months. Somehow he had talked himself into pretending he was a detective. Detectives were hard-eyed, snap-brimmed, trench-coated, heroic. On all counts he fell down badly, Novak thought.

But a man was dead, and he thought he knew why.

And he had been threatened cold-bloodedly with a smear backed up by all A.E.C.'s prestige, and perhaps with a perjury frame-up, if he tried to get help. Novak looked helplessly at his scrambled eggs, gulped his coffee, and got up to call on the A.S.F.S.F. business office. There was a disagreeable, uncontrollable quiver in his knees.

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Friml and MacIlheny were there. It was incredible that they might be spies or killers—until he remembered the bewildered, ashamed, ordinary faces of spies on the front pages of tabloid newspapers.

"Hello, Dr. Novak," the president of the A.S.F.S.F. said. "Friml and I were discussing the possibility of you taking over Clifton's job as engineer in charge."

There was no time to stop and think of what it might mean. Friml and MacIlheny might be innocent. Or they might be guilty but not suspicious of him. There was no time. He forced surprise: "Me? Oh, I don't think so; I'll be busy enough on my own. And I don't think I could handle it anyway."

"I see you had some years of aeronautical engineering."

"Well, yes—undergraduate stuff. Still, Clifton did say there wasn't a lot of work left."

"He did that much for us," MacIlheny said bitterly. "The damned fool."

"Mr. MacIlheny!" said Friml, with every appearance of outrage.

"Yes, Mr. Friml," said the insurance man sardonically. "*De mortuis nil nisi bonum*, as you B.B.A.s and C.P.A.s put it. If he was so nuts he had to kill himself why didn't he resign first? And if he didn't have time to resign, *why* did he have to do it at a meeting? Everything happens to the poor old A.S.F.S.F. Clifton's death is going to set us back ten years in getting public recognition. And our industrial sponsors——" MacIlheny buried his head in his hands.

"I never thought he was a very stable person——" Friml began smugly.

"Oh, shut up!" MacIlheny snarled. "Just stick to your knitting. If I want your learned opinion I'll ask for it."

Novak was appalled at the naked enmity that had flared between the two men. Or the pretence of enmity? Nothing would hold still long enough to be examined. You had to keep talking, pretending. "Could I see," he asked conciliatingly, "just where we stand with respect to structural work on *Proto*?"

"Show him the cumulatives, Friml," said the president, not looking up. With his lips compressed, Friml pulled a folder

from the files and handed it to Novak. It was lettered: "Engineering Cumulative Progress Reports."

Novak sat down and forced himself to concentrate on the drawings and text. After a few minutes he no longer had to force it. The papers told what was to a technical man the greatest story in the world: research and development; cool, accurate, thoughtful; bucking the cussedness of inanimate nature, bucking the inertia of industrial firms; bucking the conservatism, ignorance, and stupidity of hired hands—and getting things done. It was the story of *Prototype's* building told by the man who could tell it best, Clifton.

It started about one year ago. "Contacted Mr. Laughlin of the American Bridge Company. I don't think he believed a word I said until Friml took out the A.S.F.S.F. passbook and showed him our balance. After that, smooth sailing."

Sketches and text showed how the American Bridge Company, under Clifton's anxious, jealous eyes, executed ten-year old A.S.F.S.F. blue prints for the skeleton of *Prototype*. The tower of steel girders rose in the desert to six times the height of a man, guyed down against the wind. There was a twelve-foot skeleton tetrahedron, base down, for its foot. From the apex of the tetrahedron rose the king post, a specially fabricated compound member exactly analogous to the backbone of a vertebrate animal. It bore the main stresses of *Proto's* dead weight; it was calculated to bear the strains of *Proto* in motion; and it was hollow: through its insulated core would run the cables of *Proto's* control systems. Structural members radiated laterally from the king post to carry the weight of *Proto's* skin, and from its top sprouted girders over which the nose would be built.

Reports from Detroit: "I been going the rounds for a solid week and still no dice. If a plant's got the forming presses, its toolroom stinks. If its toolroom is okay, the superintendent won't let me barge in to stand over their die-makers and tell them what to do. But that's the way it's going to be; those hull plates are too tricky to order on an inspect-or-reject basis."

Later: "I found a good little outfit named Allen Body Company that does custom-built jobs. They got one Swedish-built forming press 40 × 40 (very good), a great toolroom with a wonderful old kraut named Eichenberg heading it up who's willing to work closely with me, and a good reputation in the trade. Told them to submit bid to Friml fast and suggest he fires back certified check without haggling. These guys are real craftsmen."

Later: "Oskar and me finished the forming and trimming dies for first tier of plates today. Twenty-four tiers of plates to go, plus actually stamping and machining them. I guess ninety days tops."

Eighty-five days later: "Mr. Gowan of the Union Pacific says he'll have a sealable freight car at the Allen siding tomorrow, but that it's out of the question for me to ride aboard with the plates. That's what he thinks. I bought my folding cot, Sterno stove and beans already."

Sketches showed what "the plates" were like: mirror-finished steel boxes, formed and machined to exact curvature. The basic size was 36" × 36" × 6", with some larger or smaller to fit. The outer, convex wall of the box was of three-quarter-inch steel; the inner, concave wall was one-inch armour plate. Each box was open along one of its narrow 6" × 36" faces, and each was stuffed with compressed steel wool—the best shock absorber A.S.F.S.F. brains had devised to slow down and stop a pebble-sized meteorite if one should punch through the outer shell. There were six hundred and twenty-five of the plates, each numbered and wrapped in cotton wool like the jewel it was.

Three days later Clifton arrived aboard his freight car in the Barstow yards. When a twenty-four-hour guard of A.S.F.S.F. volunteers was mounted over the freight car, he located a trucking company that specialized in fine furniture removals. "Not a scratch and not a hitch. We got them stacked in order under the tarps at the field. I think it will be okay to use some volunteers on the welding. I checked with the Structural Ironworkers, the Shipbuilders, and the Regional C.I.O. people. It seems nobody has union jurisdiction on building space ships, so Regional said we could use unpaid helpers so long as they don't touch the welding torches while they're hot. Tomorrow I go down to the shipyards to get myself the six best damn master welders on the Coast. I figure on letting them practice two—three days at beadless welding on scrap before I let them start tacking *Proto's* hide on. Meanwhile I rent a gantry crane. It'll make a better platform for the welders than scaffolding and cut down your chance of spoilage. Also we'll need one later when we come to installing heavy equipment."

He got his master welders and his gantry crane. Two of the welders grinned behind their hands, refusing to follow his rigid specifications on the practice work; he fired them and got two more. The fired welders put in a beef with the union and the others had to down their torches. Clifton lost a day. "I went down to the hall and gave the pie cards hell. I brought some of the junk those two bums did and I threw it on their desks and they said they'd kill the beef and let them

know if there's any more trouble, which I don't think there will be with the new boys."

There wasn't. The first tier of plates went on, and fitted to a thousandth of an inch. Volunteer kids working at the field were horrified to see the latticework skeleton of the *Prototype* sag under their weight, and Clifton told them it was all provided for down to the last hairsbreadth of sag.

As the shining skin of *Proto* rose from the ground in yard-high tiers, the designers of the A.S.F.S.F. passed through the acid test and came out pure gold. Nameless aero-engineers, some long gone from the Society and some still with it, engineering professors and students at U.C.L.A., Cal Tech and Stanford, girl volunteers punching calculators in batteries, had done their job. The great equation balanced. Strength of materials, form of members, distributed stresses and strains, elasticities and compressibilities added and equaled one complete hull: a shinningly perfect bomb shape that could take escape velocity. Six plates equally spaced around the eleventh tier and one plate in the eighth tier were not welded in. The six were to be fitted with deadlights and the one with a manhole.

The welders crawled through the eighth-tier hole for their last job: two bulkheads which would cut the ship into three sections. The first cut off *Proto's* nose at the ninth tier. It was the floor of her combined living quarters and control room—a cramped, pointed dome some ten feet in diameter and twelve feet high at the peak. From this floor protruded the top of the king post, like a sawed-off tree stump sprouting girders that supported the nose. The second bulkhead cut *Proto* at the seventh tier. It made a cylindrical compartment aft of the control room that could store five hundred cubic feet of food, water, and oxygen. This compartment also doubled as the airlock. The outside manhole would open into it, and from it a second manhole would open into the control room above.

Aft of the bulkhead was two-thirds of the ship—an empty shell except for structural members radiating from the king post. It was reserved territory; reserved for a power plant. The stiff paper rattled in Novak's hands for a moment before he could manage them. He had almost been lost in cool, adult satisfaction, as he followed the great engineering story, when fear struck through. This triumph—whose? MacIlheny and Friml glanced briefly at him, and he sank into the reports again.

"Sorry to say ... repeated twelve times ... seems conclusive ... obviously a bonehead play ... some of the new silicones may ... deadlight gaskets ..." Novak's heart beat slower and calmer, and the words began to arrange themselves into sense. Clifton's report on the six planned deadlights was negative. Vacuum-chamber tests of the proposed gasketing system showed that air leakage would be prohibitive. There simply wasn't a good enough glass-to-metal seal. The ring of deadlights was *out*, but a single deadlight in the nose was indispensable. Air leakage from the nose deadlight was cut to an almost bearable minimum by redesigning the assembly with great, ungainly silicone gaskets.

This meant blind uncertainty for any theoretical occupants of *Proto* during a theoretical ascent. The nose deadlight, an eighteen-inch optical flat at the very tip of the craft, was to be covered during the ascent by an "aerodynamic nose" of sheet metal. In space the false nose would be jettisoned by a power charge.

The next series of reports showed Clifton in his glory—control devices, his specialty.

In one month, working sometimes within A.S.F.S.F. specifications and quite often cheerfully overstepping them, he installed: an electric generator, manhole motors, lighting and heating systems, oxygen control, aerodynamic nose jettison, jato igniters, jato jettison, throat vane servos (manual), throat vane servos (automatic, regulated by a battery of fluid-damped plumb bobs). Controls for these systems were sunk into the head of the king post that jutted from the control-room floor. There was nothing resembling a driver's seat with a console of instruments and controls.

And there were two other control systems indicated in the drawings. At the input end they had provisions for continuous variation of voltage from zero to six, the power plant's maximum. At the output end there was—nothing. The two systems came to dead ends in *Proto's* backbone, one at the third tier and one at the fifth.

Novak had a short struggle with himself. Play dumb, or ask about it? They say they think you're smart enough to take over ... He asked.

"Fuel-metering systems," MacIlheny said. "We assumed of course that something of the sort would be needed eventually, so we had Clifton put in dead-end circuits."

"I see."

He was nearing the end of the sheets. The last report said acceleration-couch tests were proceeding satisfactorily with no modifications yet indicated. And then the folder came to an end.

"I think," Novak said slowly, "that I can handle it after all. He's just about finished the job—as far as any private outfit can take it."

MacIlheny looked up and said evenly: "There's some more construction work to be done—on the same basis as the dead-end control systems. Naturally there's got to be a fuel tank, so we're going to put one in. Here's the drawings——" He had them ready in a blue-print file.

It was another of the "J. MacI" jobs, with the same date as the too-specific drawings for the throat liner and chamber. Novak wondered crazily whether MacIlheny or Friml had a gun in his pocket, whether the wrong reaction meant he'd be shot down on the spot. He studied the sheet and decided on his role. The "fuel tank" was a fantastic thing. It filled almost the rear two-thirds of the Prototype and made no sense whatever.

There was one section forward that consisted of stainless steel. A section aft, much smaller, was quartz-lined lead, with a concrete jacket. Atomic. There was a lead wall indicated between the stainless-steel tank and the *Proto's* aft bulkhead. Atomic. This was a tank for a fuel that burned with atomic fire.

He told them, businesslike: "It's going to cost a hell of a lot of money but that's your business. I can install it. Just don't blame me if it has to be ripped out again when A.E.C. comes out with an atomic fuel that doesn't fit it."

MacIlheny said into the air, slowly and with burning emphasis: "*Can't* people understand that *Proto's* not a moon ship? Can't they get it through their heads that she's just a dummy to study construction problems? What the hell difference does it make if the fuel A.E.C. comes up with doesn't fit her system? All we're after is the experience we'll need to build a system that does fit."

Novak said hastily: "Of course you're right." Lord, but MacIlheny was convincing! "But it gets a grip on you. Half the kids think it's a moon ship——"

"All right for kids," said MacIlheny grimly. "But we're all adults here. I'm sick of being ribbed for doing something I'm not doing at all. Good—and—sick." He stared at the engineer challengingly, and then his grimness vanished as he added: "I wish it *was* a moon ship, Novak. I wish it very much. But——" He shrugged.

"Well," said Novak uncertainly, "maybe I'll feel that way about it after a year or so of the ribbing. By the way, can you tell me where Miss Stuart lives? I ought to go and see Mrs. Clifton if I can be spared today, and I suppose things are still in a state of flux."

"Thirty-seven twenty-four Rochedale," said Friml, and he jotted it down.

"I suppose it's all right," said MacIlheny. "God, what a headache. Just when things were going smoothly. Suppose you check in tomorrow morning and we may have some plans made for you."

"Won't the membership have to——"

"The membership," said MacIlheny impatiently, "will do as it's told."

## X.

Novak thought he should phone the Wilson Stuart residence before he tried to pay a call. He couldn't find the number in the book and naively asked Information. Information sharply told him that the number was unlisted.

Well, he tried.

He got a downtown cab and enjoyed a long ride into the rolling country lying north of Los Angeles. "Pretty classy," he said.

"I should know?" asked the cabby blandly, and added in a mutter something that sounded like: "Stinking rich."

A mile farther on, the cab stopped. "Check point," the driver said. Novak saw a roadside booth, all chrome and glass,

with two cops in beautifully fitting uniforms. One of them came out to the car, the driver gave him the address, and they rolled on.

"What was that about?" Novak asked.

"A trifling violation of our civil liberties," the cabby said. "Nothing to get upset about. At night, now, they take your name, and phone on ahead if they don't know you."

"California!"

"All over," the cabby corrected him. "Grosse Pointe, Mobile, Sun Valley—all over. I guess this is it."

Thirty-seven twenty-four Rochedale was extreme California modern: a great white albatross of a house that spread its wings over a hilltop. "Well, go on up the driveway," Novak said.

"Nope. If you had any business with folks like that you'd have your own limousine. *You* go in and get arrested for trespassing. These people don't fool around." He turned down the meter flag and Novak paid him.

"I hope you're wrong," the engineer said, adding a half dollar. He started up the driveway.

It was a confusing house. He couldn't seem to find a place where it began, or a doorbell to ring. Before he knew it, he seemed to be inside the Stuart home, unannounced, after walking through a row of pylons into a patio—or was it a living room? They didn't build like that in Brooklyn or Urbana.

A shock-haired old man rolled into the living room—or patio—in a wheel chair pushed by a burly, Irish-looking fellow in a chauffeur's dark uniform. "I'm sorry," Novak exploded jumpily. "I couldn't find——"

"Who the devil are you?" demanded the old man, and the chauffeur took his hands from the chair, standing exactly like a boxer about to put up his fists.

"My name's Novak. I'm a friend of Mrs. Clifton's. I understand she's here—if this is the Wilson Stuart residence."

"I'm Wilson Stuart. Do you know my daughter?"

"We've met."

"I suppose that means she didn't invite you. Did she give you the address?"

"No—she's a member of the A.S.F.S.F., the space-flight society. I got it from the secretary."

The old man swore. "Keep it to yourself. A person has no damned privacy in one of these places and I can't build a wall because of the zoning laws or covenants or whatever they are. Grady, get Miss Amelia." The chauffeur gave Novak a no-funny-business look and left.

"Uh, how is Mrs. Clifton?" Novak asked.

"I don't know; I haven't seen her. I'm not surprised by any of this, though. I thought Clifton's mind was giving way when he took that job with the rocket cranks. Not that I'd keep him on my pay roll. He told my V.P. for Engineering that he didn't know enough to build an outhouse on wheels. That tore it." The old man chuckled. "He could really ram things through, though. Didn't give a damn whose floor space he muscled in on, whose men he gave orders to, whose material he swiped for his own projects. Where are they going to find another lunatic like that to build their rocket?"

"I'm taking it over, Mr. Stuart." What a callous old beast he was!

"You are? Well, be sure you have nothing to lose, Novak. What are they paying you?"

"Rather not say."

It made Wilson Stuart angry. "Well, isn't that too bad! I can tell you one thing. Whatever it is, you're putting a blot on your record that no responsible firm can afford to ignore." He spun the chair to present his back to Novak and scowled through the pylons that formed one wall of the ambiguous room.

Novak was startled by the burst of rage, and resentful. But you didn't tell off a cardiac patient at will—or a multi-millionaire.

The chauffeur and Amy Stuart came in. "Hello, Dr. Novak," she said. The old man silently beckoned over his shoulder to the chauffeur and was wheeled out.

"How's Mrs. Clifton?" Novak asked.

"Father's doctor says she should rest for a day or two. He's given her some sedatives. After that—I don't know. She's talking about going back to her family in Denmark."

"May I see her?"

"I think so. Dr. Morris didn't say anything about it, but it should do her good. Come this way."

Crossing large, glass-walled rooms he said: "I don't think I should have come at all. Your father was upset by my knowing the address. Mr. Friml gave it to me."

"Mr. Friml should have known better," she said coolly. "My father has no reserves of energy for anything beyond his business and necessary recreation. It's cruel discipline for him ... he's held speed and altitude records, you know."

Novak uttered a respectful mumble.

The girl asked: "What are they going to do about a replacement for Cliff?"

"I think I get the job. I've done some aero-engineering and there's very little structural work left to be done. I suppose if there's anything I simply can't handle, they'll hire a consultant. But I can probably swing the load."

"You can if you're checked out by MacIlheny. The man's a——" She started to say "fanatic" and then interrupted herself. "That's the wrong word. I admire him, really. He's like—not Columbus. Prince Henry the Navigator of Portugal. Henry stuck close to his desk and never went to sea, but he raised the money and did the paperwork."

"Um. Yes. Has Lilly—Mrs. Clifton—been asking for a biomathematicist, I wonder? She has such faith in them that it might do her good at a time like this, when it's a matter of psychological strain."

The girl looked startled. "That's very odd," she said. "As a matter of fact she hasn't. I suppose recreations like that show up in their true light when the pressure is on. Not that it would do her any good to ask for one. Dr. Morris would break the neck of any biomathematicist who showed up here."

She pushed open a flush door of blonde wood and Novak saw Clifton's widow in the middle of a great modern bed with sickroom paraphernalia on a side table. "Visitor, Lilly," Amy Stuart said.

"Hallo, Mike. It was good of you to come. Amy, you mind if I speak alone vit' Mike?"

"Not at all."

"Sit down," she said with an unhappy smile as the girl closed the door. "Mike, what's gonna happen now? You don't think Cliff kill himself, do you?" She was fighting back tears with a heartbreaking effort. "He act cra-a-azy. But that was just because he enjoy life and didn't give a damn for nobody. He wasn't no crazy man to kill himself, was he, Mike?"

"No, Lilly," Novak said. "I don't think he killed himself." And he bit his lip for saying it. The woman was under sedation, she might babble anything to anybody——

"Mike," she said, "I'm glad you say so." She sniffed and dried her brimming eyes, as a child would do, on the hem of her bed sheet.

"How're you fixed for money, Lilly?" he asked. "I thought you might need a little ready cash for—expenses and things."

"T'anks, Mike, no need. We had a yoint bank account vit' couple t'ousand dollars in. Mike, honestly you don't believe Cliff kill himself?"

He thought it over. "Have you taken any medicine?"

"Last night the doc gave me couple pink pills and he tol' me to take couple more today—but I don't. You know I don't t'ink much of doctors."

"I don't want to tell you what I think about Cliff's death if you're full of medicine or if you're going to be. You might talk to somebody about what I tell you. It might mean my life too." It was her business, he told himself silently.

After a stupefied pause, Lilly slowly asked: "Please tell me all about it, Mike. Who'd kill Cliff? Who'd kill you? Those few crazy kids in the Society, they don' like Cliff ever, but they wouldn't kill him. You tell me what it's all about, Mike. Even if somebody tear the eyes out of my head I don' talk."

He pulled his chair to the bedside and lowered his voice. "Yesterday Cliff and I thought we found something fishy about one of the A.S.F.S.F. blue prints. I thought it meant that a foreign country was using the Society to build it a rocket ship. Maybe with Friml or MacIlheny or both fronting, and nobody else in on it. We went to the A.E.C. Security office downtown and saw that man Anheier. He brushed us off—didn't believe a word of it. Last night Cliff got killed and it looked like suicide. But it could have been murder by anybody who could have sneaked into the washroom when he was there—and that's anybody off the street and practically anybody who was at the meeting.

"I don't know how—whoever did it—got wise to his visit to Security or why nobody's taken a shot at me that I know of. Maybe spies keep a twenty-four-hour watch on the Security office to see who visits it. Maybe Cliff's visit was the signal for his death. Maybe I wasn't identified because I'm new in town.

"But none of that matters right now. What matters is that Anheier wouldn't let me tell the police about my idea. He tried to convince me that I was a paranoid. When that didn't work, he threatened to ruin me for life and jail me for perjury if I talk, now or ever."

"You not gonna tell the po-lice, Mike?"

"No, I'm afraid of the smear and—it probably wouldn't do any good. The A.E.C. would make countercharges and any foreign agents would escape in the fuss. I told Anheier the hell with him, I'd nail them alone."

"No," she said, pale-faced. "Not alone, Mike. Vit' me."

"Thanks, Lilly," he said softly, and she was crying at last.

"Don' mind me," she said. "T'anks for coming to see me and now you please go. I cry better by myself ..."

He left in silence. She was with him—it felt better. The morning with MacIlheny and Friml, every question a step on a tightrope over the abyss, had told on him.

Amy Stuart laid down a magazine and got up from a blocky chair. "How is she, Dr. Novak?"

"I'm afraid I made her cry."

"It's good for a woman to cry at a time like this. Have you a car?"

"No; I came in a taxi. If I could phone for one——"

"You're downtown, aren't you? I'll drive you; I have some shopping."

Her car was a two-seater English sports job. It looked like a toy in the garage between the big Lincoln and a suburban wagon.

As they went winding through the scrubbed-clean roads he broke the silence. "To me it's just an interesting job, you know. I'm not a Prince Henry like MacIlheny is and maybe Cliff was. Or—what was her name? The girl who raised sand at the meeting. The one you stepped on."

"Gingrich?" Amy Stuart said dispassionately. "She's not particularly interested in space flight and she's a bloody fool besides. If Gingrich and her friends had their way, there'd be a full-dress membership vote by secret ballot on where to put each rivet in the *Prototype*."

The little two-seater rolled past the police sentry box and Amy Stuart waved pleasantly to the two policemen. They

saluted with broad smiles and Novak abandoned himself to bitter thoughts for a moment.

"Jeffersonians, they think they are," the girl brooded. "But wouldn't Jefferson be the first man to admit that things have changed since his day? That there's a need for something beyond sheer self-regulating agrarian democracy?" The question was put with an intensity that startled him. It was overlaid with a portentous air that made him think of nothing so much as a doctor's oral where, literally, your career is made or unmade by a few score words spoken in a minute or two. What was the girl driving at.

"People are always accusing engineers of not thinking about social problems," he said carefully. "In my case, I'm afraid they're right. I've been a busy man for a long time. But I wonder—are you by any chance flirting with fascism or Communism?"

"No," she said scornfully, and fell silent.

It was some minutes before she spoke again. "You were in A.E.C. Did you ever read anything by Daniel Holland? He's a friend of father's. And mine."

*There* was something he could talk about. "I didn't know he wrote, but your friend runs a hell of a silly organization. You know what my field is. Believe me or not, but I swear I was transferred out of it and into a highly specialized branch of mathematical physics. I was absolutely helpless, I was absolutely unable to get back to my own work. Finally I—I had to resign."

She said patiently: "That's exactly the sort of thing Holland fights. In his books he analyzed the warped growth of modern public administration under the influence of the Jeffersonian and Jacksonian mistrust of professionals. He calls it the 'cincinnatus complex.'"

He recognized the allusion and felt pleased about it. Cincinnatus was the Roman citizen who left his plowing to lead the army to victory and then returned to his plow, turning down glory and rewards. "Interesting concept," he said. "What does he suggest?"

The girl frowned. "If you'd thought about it, you'd know that's damn-all he could suggest. His books were only analytical and exploratory, and he nearly got booted out of public service for daring to raise the problem—challenging the whole structure of bureaucracy. He thought he could do more good in than out, so he stopped publishing. But he'd stepped on some toes. In *Red Tape Empires* he cited a case from the Nevada civil service. The Senator from Nevada on the joint A.E.C. Committee badgered him from then on. Wonderful irony. He was a master of all the parliamentary tricks that were originally supposed to carry out the majority will without infringing on minority rights."

He was worried about Lilly and getting shot and future long, precarious talks with MacIlheny. "I suppose," he said absently, "you're bound to have a rotten apple in every barrel."

Amy Stuart said flatly but emphatically, with her eyes on the road: "You scientists deserve exactly what you got." And she said nothing more until she dropped him off at his hotel and proceeded to her shopping. Novak had a queasy, unreal feeling that he'd just failed his doctor's oral.

## XI.

The high-temperature lab was built, and its equipment installed by the able construction firm that had done the field layout. During this time Novak worked on the manhole problem, and licked it. Studebaker *had* ungreased its titanic boring mill and for a price had cheerfully put a super finish on the manhole and its seating. In an agony of nervousness for the two priceless chunks of metal, Novak had clocked their slow progress by freight car across the country from South Bend to Barstow.

It was one of those moments when Lilly Clifton or Amy Stuart was helpfully by his side, and this time it happened to be Amy. They stood outside the machine-shop prefab, squinting into the glare of the *Prototype's* steel skin, and at an intenser, bluer glare that was being juggled by a hooded welder on the gantry-crane platform, twenty feet up. The manhole cover and seating assembly were being beadlessly welded into the gap in the ninth tier of plates. It was a moment of emotional importance. *Proto* externally was an unbroken whole.

Novak's pulse pounded at the thought, while the matter-of-fact welder up there drew his hell-hot point of flame like an artist's brush along the gleaming metal. The engineer couldn't be matter-of-fact about it any more. He had plunged into the top-boss job at the Barstow field determined to give a realistic imitation of a space hound, and had become one.

There was no reason not to. In theory, he told himself, he was waiting for a break but one never came. There were no further irregularities beyond the four on which he had committed himself: money, secrecy, the "J. MacI." drawings, and the death of Clifton.

MacIlheny never offered any surprises. He was an insurance man and a space-flight crank. He had cloudy industrial contributors in his pocket and he used them as a club to run the Society his way. His way was to get *Proto* built as a symbol and rallying point for those who demanded a frontal smash by the Government into the space-flight problem instead of the rudimentary, unco-ordinated, and unimaginative efforts that were all the United States could show, for whatever reason.

Friml continued to be—Friml. Bloodless, righteous, dollar-honest, hired-hand, party-of-the-second-partish Friml. A reader of the fine print, a dweller in the Y.M.C.A., a martyr to constipation, a wearer of small-figured neckties which he tied in small, hard knots.

The engineer members of the A.S.F.S.F. continued to be hobbyists, hard to tell one from the other, showing up on weekends, often with the wife and kid, for an hour or so of good shop-talk and connoisseurs' appreciation of *Proto* as the big, handsome jigsaw puzzle that she was—to them.

The A.S.F.S.F. youngsters continued to be hagridden kids escaping from humdrum jobs, unhappy families, or simply the private hell of adolescence by actually helping to pay for and work on and dream over *Proto*. Some day it would carry them on wings of flame to adventurous stars where they'd be all broad-shouldered males six feet tall or slim but luscious girls with naturally curly hair. They worked like dogs for the new engineer in charge and didn't even ask for a dog's pat on the head; all they wanted was to be near enough to *Proto* to dream. They fought ferociously with words on occasion over this detail or that, and Novak eventually realized that their quarrels symbolized a fiercer squabble they hoped was coming over the passenger list of man's first moon ship.

Novak stood comfortably midway between the engineers and the kids—he hoped. *Proto* was big medicine. The dream of flight which has filled the night lives of countless neurotics since, probably, the Eolithic era, had been no dream since the balloons of Montgolfier. This new wish fulfillment of space flight had been for fifty years standard equipment on your brilliant but dreamy youngster. It soaked into you from earliest childhood that some day—not quite in your time, but some day—man would reach the planets and then the stars. Being around *Proto*, putting your hands on her, tinkering with her equipment, smelling her hot metal in the desert sun, hearing her plates sing as they contracted in the desert-night chill, did something to you, and to the "some day" reservation about space flight. Novak had become a true believer, and with each passing week wondered more feverishly what in hell's name he was doing: building a moon ship for China? Running up dummy? Or just honest engineering? Each week he told himself more feverishly: one week more; just get the manhole licked, or the silicone gaskets, or the boron carbides.

The blue, hard twinkle of the welding torch twenty feet up snapped off; the welder shoved back his hood and waved genially. The platform of the gantry crane descended.

"That does it," Novak said hazily to Amy. He lit a cigarette. "You want to push the button?"

"If it doesn't work, don't blame me," she said. There was a six-volt line run from the machine shop into *Proto's* sewerpipe stern and up through the king post to feed the electric systems. She snapped the control for the manhole motor to open, and they stared up again. The dark disk against the shiny steel plate developed a mirror-bright streak of microfinish bearing surface along one edge. Noiselessly and very slowly the wire-fine streak grew to a new moon; the manhole slowly stood out in profile and halted, a grotesque ear protruding from the ship.

"Okay, Amy. Close it." She snapped the switch to *Shut*, and very slowly the disk swung back and made *Proto* an unbroken whole again. The welder stepped from the gantry platform and asked: "She all right, Mr. Novak?"

"Fine, Sam. Fine. Was there any trouble fitting the lug into the receptacle?"

"Nope. Only one way to do it, so I did it. It surely is a fine piece of machinery. I used to work at the Bullard Works in

Hartford and they didn't make their custom-built machine tools any prettier than your—thing. Confidentially, Mr. Novak, is——"

He held up his hand protestingly. "It's a full-scale mock-up for structural study and publicity purposes. Does that answer the question, Sam?"

The welder grinned. "You people are really going to try it, aren't you? Just don't count on me for a passenger is all I ask. It's pretty, but it won't work."

As they walked to Novak's refractory lab, Amy said: "I worry about everything Cliff installed, like the manhole motor, until it's tested. I know that verdict, 'while of unsound mind' and so on is just legal mumbo jumbo, but ... why should the manhole have opened that slowly? It was like a movie, milking it for suspense."

He glanced at her. "Perfectly good reasons. It runs on a worm gear—low speed, power to spare. The motor has to open it against the molecular cohesion of the biggest gauge-block seal ever machined. In space or on the Moon the motor would get an assist from atmospheric pressure in the storeroom, pushing against zero pressure outside."

She laughed. "Of course. I suppose I was being jittery. And there's sometimes melodramatic suspense in real life, too, I suppose."

He cleared his throat. "I've got Lilly in there aging a new boron-carbide series. Want to watch? You can learn enough in a few hours to take some routine off my neck. The volunteer kids are fine and dandy, but they mostly have jobs and school hours. What I need is a few more people like you and Lilly that don't have to watch the clock."

"It must be very handy," she agreed abstractedly. "But you'll have to excuse me. I'm due back in town."

Novak stared after her, wondering what was biting the girl. And he went on into his lab.

It was the dream layout he had sketched not too long ago, turned real by the funds of the A.S.F.S.F. Lilly was in the cooling department clocking temperature drops on six crucibles that contained boron carbides in various proportions. She was looking flushed and happy as she sidled down the bench on which the crucibles were ranged, jotting down the time from the lab clock and temperatures from the thermocouple pyrometers plugged into each sample. Her blonde hair was loose on her creamy neck and shoulders; she wore shorts and a blouse that were appropriate to the heat of the refractories lab but intensely distracting. She turned and smiled, and Novak was distracted to the point of wondering whether she was wearing a brassière. He rather doubted it.

"What are the temperatures now?" he asked.

She read off efficiently: "Seventy-two, seventy-four, seventy-eight, seventy eight point five, seventy eight point five, seventy-nine."

The leveling was unexpected good news. "Interesting. Are you afraid to handle hot stuff?"

"Naw!" she said with a grin. "Yust not vit' my bare hands."

"Okay; we'll let you use tongs. I want you to take the lid off each crucible as I indicate. I'll slap the ingot in the hydraulic press, crush it, and give you the dial reading. Then I'll put it in the furnace. After all the ingots are crushed and in the furnace I'll turn on the heat and watch through the peephole. When they melt I'll call out the number to you, and you note the temperature from the furnace thermocouple. Got it?"

"I t'ink so, Mike."

It went smoothly. The ingots were transferred safely, they crushed under satisfactorily high pressure, and the furnace flashed red and then white in less than five minutes. Staring through the blue glass peephole at the six piles of glowing dust, waiting for them to shimmer, coalesce, and run into liquid, was hypnotically soothing—except that he could sense Lilly at his side, with her eyes on the thermocouple pyrometer and her full hips near him, giving him thoughts that he found alarming.

He stared at the cones of glowing dust and thought bitterly: *I don't want to get any more mixed up in this than I am now.* One of the glowing piles shimmered and looked mirrorlike. Abruptly it shrank from a heap of dust into a cluster of

little globes like an ornamental pile of Civil War cannon balls and an instant later slumped into a puddle.

"Number five!" he snapped.

"Got it, Mike," she said, and her thigh touched him.

*This thing's been coming on for a couple of weeks. I'll be damned if I don't think she's giving me the business. She ought to be ashamed. But what a shape on her. Amy wouldn't pull a stunt like this.* He felt a little regretful and hastily clamped down on that train of thought. "Number three!"

"Got it."

Minutes later he was at his desk with the figures, and she was an interested spectator. He explained laboriously: "The trick is to reduce your unknowns to a manageable number. We have mixing point of the original solution, rate of cooling, final temperature, and melting point. You call them  $T_1$ ,  $dT/dt$ —that's derivative of temperature with respect to time— $T_2$  and  $T_3$ . Do you follow it so far?"

She leaned over his shoulder and began: "I don't see——"

"The hell with it," he said, and kissed her. She responded electrically, and in her candid way indicated that she meant business. The faint voice of Novak's conscience became inaudible at that point, and the business might have been transacted then and there if the lab door hadn't opened.

Hastily she pulled away from him. "You go see what is, Mike," she ordered breathlessly.

"Fine thing," he growled, and slapped her almost viciously on the rump.

"I know how you feel, boy," she grinned.

"Oh—no—you—don't." He cleared his throat and stalked out from the small private office into the lab. One of the machine-shop kids was waiting. The boy wanted to know whether he should use hot-roll or cold-roll steel for the threaded studs of the acceleration couches; the drawings just said "mild steel." Novak said restrainedly that he didn't think it made any difference, and stood waiting for him to leave.

When he got back to the private office Lilly was putting her face on. She said hastily: "No, Mike. Keep the hands off me for a minute while I tell you. This is no place. You wanna come to my house tonight, we do this t'ing right."

"I'll be there," he said a little thoughtfully. Conscience was making a very slight comeback. He hadn't been to the Clifton house since the day of the murder. But the lady was willing, the husband was six feet under, and it concerned nobody else.

"Good boy. You go back to work now."

He watched her drive from the field in the big maroon Rolls and tried to buckle down. He got nothing done for the rest of the afternoon. He tried first to set up matrix equations to relate the characteristics of the six boron carbides and committed howler after howler. He decided he'd better lay off the math until he was feeling more placid. In the machine shop he took over from an uncertain volunteer who was having trouble threading the acceleration-couch studs. Novak, with a single twitch of the lathe's cross-feed wheel, made scrap out of the job.

It wasn't his day. Among the condolences of the machine-shop gang he declared work over and bummed a ride back to Los Angeles in one of the kids' jalopies.

He bolted a meal in the hotel dining room and went upstairs to shower and shave. Not until he was dressed and down in the lobby did he realize that he didn't remember the Clifton address—if he had ever heard it. Cahunga, Cahuenga Canyon, something like that, and he could probably find the house from a taxi window. He went to the phone book to look up Clifton, and found nothing under August. There were three A. Cliftons with middle initials, but none of them lived on anything that sounded like Cahunga, Cahuenga, or whatever it was. He tried Information and got the standard Los Angeles answer—unlisted number. A girl waiting outside the half-opened door of the phone booth turned red and walked away after overhearing part of his comments on that.

Now what the devil did you do? He recalled suddenly that Friml was good on addresses, just the way you'd expect his card-file type to be. He looked up the Downtown Y.M.C.A. and was connected with Friml's room.

"This is Novak, Friml. I hate to bother you after hours, but I wonder if you can give me Clifton's address. I, um, need it for some reports and he isn't in the phone book."

The secretary-treasurer's precise voice said: "Just one moment, Mr. Novak. I have it in a memorandum book. Please hold the line."

Novak held on for some time and then Friml gave him the address and—unsolicited—the phone number. He jotted them down and said: "Thanks. Sorry to be such a nuisance."

Friml said with a martyred air: "Not at all. I'm not good at remembering numbers myself." There was a plain implication of: "So why the hell don't you keep a memorandum book like good little me?"

Mildly surprised at the admission, Novak thanked him again and hung up. Now for a taxi. Walking up the street to a stand where he could climb in without having to tip a doorman, he wondered how he'd got the notion that Friml kept his address book in his head. Probably just the type of guy he was made you think so. Probably he did nothing to discourage you from thinking so. Probably there was a lot of bluff behind any of these ice-water types ...

And then he stopped still in the street, realizing what had made him think Friml was a walking address book. He'd asked once for the Wilson Stuart address, and the secretary-treasurer had rolled it out absently as if it were no great feat to recall offhand where a rank-and-filer of the Society lived. He started walking again, slower and slower.

There was something very wrong. Friml had memorized the Wilson Stuart address, presumably of negligible importance to him. All he could possibly have to do with the Wilson Stuart address was to send a bill for annual dues, meeting notices, the club bulletin—no not even that. All those items were addressographed. Friml had not memorized the August Clifton address or phone number, although presumably he'd be constantly dropping notes and making calls to him for engineering data. If he didn't know the Clifton number and address offhand he was decidedly no good at numbers, as he admitted.

Novak walked slowly past the cab rank and crossed the street. Stepping up to the curb, his right heel caught in the unfamiliar sag of his trouser cuff, and he thought: damn that belt.

It was, clearly, the first break in the Clifton killing. Friml wasn't what he seemed to be. Clearly there was a link of some sort between the secretary-treasurer and Amelia Earhart Stuart—or her father. Now how did you exploit a thing like this? Raid Friml's Y.M.C.A. room looking for the Papers? Tell that fathead Anheier about it and have him laugh in your face? Confront Wilson Stuart with it and have him conk out with a heart attack—or throw you in jail for trespassing? Try to bluff the facts out of Amy?

Friml has even visited the Clifton bungalow—*feller who broke the big mirror and my Svedish glass pitcher and your cat'ode-ray tube. That was Friml, Mike. He gets pretty bad.* It had been a gag—maybe. Nothing strange about a Friml swilling his liquor like a pig and breaking things now and then. And talking ...

He raised his arm for a passing taxi.

"Downtown Y.M.C.A.," he told the driver.

## XII.

He called up from the lobby. "Friml? Novak again. I'm downstairs. I'm at a loose end and I wonder whether you'd care to join me for a drink or two some place. Maybe we can have a general bull session about the Society. I've been working like a dog and I need some unstringing."

The voice said grudgingly: "Well ... come on up, Dr. Novak. I had some work for this evening, but ..."

Friml had a two-room suite, medium-sized and antiseptically clean. He seemed proud of his place. He showed Novak his desk: "Some people tell you it's a sign of inefficiency to take your work home with you. I don't believe that for a minute. You, for instance—I can tell that you don't leave your job behind when you leave the field."

"I don't think any really conscientious person would," Novak agreed with gravity, and Friml glowed dimly at the implied compliment.

"You're right about—unstringing," said the secretary-treasurer. "I'm not a *drinker*, of course. I'll be with you in a minute." He went into the bathroom and Novak heard the lock turn.

He stood undecided over the desk and then, feeling that it was a childish thing to do, tried its drawers. They opened. In the shallow centre drawer where pencils, rulers, paper clips, and blotters are kept, Friml kept pencils, rulers, paper clips, and blotters. In the top left drawer were letterheads, carbon paper, second sheets, and onionskin in a rack. In the second left-hand drawer were card-file boxes and a corduroy-bound ledger with red leather corners and spine. In the bottom drawer were books with brown wrapping-paper covers on them, the kind school children use on text books.

Friml appeared, looking almost cheerful. "There's a quiet little place on Figueroa Street," he said. "The pianist does request numbers. He's pretty good."

"Fine," said the engineer, depressed.

The place on Figueroa Street wasn't a fairy joint, as Novak had half expected it would be. They sat at a table and had a couple of drinks apiece while the pianist played blues. Novak knew vaguely that it was a big blues-revival year. The engineer made conversation about his membership report for the next meeting. "I don't know just what the members expect, because Clifton spoke off the cuff and there aren't any transcripts."

Friml said relaxedly: "Just give 'em the high spots. About fifteen minutes. And don't go by what Clifton did. Some times he used to just get up and joke. Other times he used to be 'way over their heads with math and electronics."

"That sounds like him. I was wondering about visual aids. Do you think I ought to have some easel cards made up? I think the whole trouble is, I don't know whether the membership report is just a formality or whether they really pay attention. If it's just a noise I'm supposed to make so everybody will feel he's getting his money's worth from the Ph.D., then I won't bother with the cards. If they really listen and learn, I ought to have them."

"You ought to just suit yourself, Novak," Friml said rather expansively. "They like you and that's the main thing. How'd you like *my* job, with everybody calling you a son of a bitch?" He took a deep swallow from his drink. He was having blended rye and ginger ale, the drink of a man who doesn't like to taste his liquor.

Novak excused himself and went to the phone booth. He called Lilly Clifton.

"Mike?" she asked. "Ain't you gonna come 'round tonight like you said?"

"Later, I think," he told her. "Listen, Lilly. I think I've found out something about the death of—of your husband." It was an awkward thing to say.

"So? Tell me." Her voice was unexpectedly grim.

It didn't sound like much in the telling, but she was impressed.

"You got somet'ing," she said. "See if you can bring him around here later. I t'ink he goes for me."

He told her about Friml's memory. She said dryly: "I see. I guess maybe he was a liddle bit queer for Cliff. It drived him nuts the time he was out here, the way Cliff played around vit' me affectionate. Every time Cliff gimme a kiss or somet'ing, Friml took a bigger drink. I guess I was flatt'ring myself. You bring him anyway if you can."

He said he'd try, and went back to the table. Friml was a drink ahead of him by then, and said: "No more for me, Mike," when Novak tried to order. He sounded as though he could be talked into it. The pianist, a little black man at a little black piano on a platform behind the bar, was playing a slow, rippling vamp between numbers. "Coffee Blues!" Friml yelled unexpectedly at him, and Novak started.

The vamp rippled into a dragging blues, and Friml listened bleakly with his chin propped in his hand. He signaled their waiter after a few bars and drank his shot of blended rye without mixing or chasing it. "Great number," he said. "*I like my coffee—sweet, black, and hot ... I like my coffee—sweet, black and hot ... won't let no body fool ... with my coffee pot ...* I always liked that number, Mike. You like it?"

"Sure. Great number."

Friml beamed. "*Some folks like—their coffee tan and strong ...* You ever know any coloured girls, Mike?"

"There were a few from Chicago in my classes at Urbana."

"Good-looking?" Friml wouldn't meet his eye; he was turning over in his hands the pack of matches from the table ash tray.

"Some of them yes, some of them no."

Friml gulped his drink. "Could I borrow a cigarette?" he asked. Novak tapped one out of his pack and held the match for the accountant. Friml got his cigarette wet, but didn't cough. From behind a cloud of smoke he asked: "Did any of the white fellows at the university go around with the coloured girls?"

"Maybe some in Liberal Arts College. None that I remember in Engineering."

"I bet," Friml said broodingly, "I bet a fellow could really let himself go with a colored girl. But if a fellow's trying to build up a good solid record and get some place it wouldn't look good if it got out, would it?"

Novak let him have it. "It wouldn't make much difference if a fellow was just fooling away his time on one bush-league job after another."

Friml quivered and stubbed out his cigarette, bursting the paper. "I really ought to be getting out of here," he said. "One more and then let's beat it, okay?"

"Okay." He signaled and told the waiter: "Double shots." And inquiringly to Friml: "All right, isn't it?"

The secretary-treasurer nodded glumly. "Guess so, 'scuse me." He got to his feet and headed for the men's room. He was weaving. Novak thoughtfully poured his own double shot into Friml's ginger ale.

A sad little man, he thought, who didn't have any fun. Maybe a sad little man who had slunk out of the auditorium of Slovak Sokol Hall during the movie and put a bullet through Clifton's head for an obscure reason that had to do with the Stuarts.

Friml came drifting back across the floor and plopped into his chair. "Don't do this often," he said clearly and gulped his double shot, chasing it with the ginger ale. He put a half dollar on the table with a click and said: "Let's go. Been a very pleasant evening. I like that piano man."

The cool night air did it. He sagged foolishly against Novak and a cruising taxi instantly drew up. The engineer loaded him into it. "You can't go to the Y in this shape," he said. "How about some coffee some place? I have an invitation to Mrs. Clifton's. You can get some coffee there and take a nap."

Friml nodded vaguely and then his head slumped on his chest. Novak gave the cabby the Clifton address and rolled down the windows to let a breeze through.

Friml muttered during the ride, but nothing intelligible.

Novak and the cabby got Friml to the small front porch of the Clifton bungalow, and Novak and Lilly got him inside and onto a couch. The engineer noticed uncomfortably that she was wearing the strapless, almost topless, black dinner dress she'd had on the night Cliff died. He wondered, with a faint and surprising touch of anger, if she thought it would excite him because of that. The bungalow inside had been cleared of its crazy welter of junk, and proved to be ordinary without it. One lingering touch: on spread newspapers stood a sketch box and an easel with a half-finished oil portrait of Lilly, full face and somber with green.

She caught his glance. "I make that. Someth'ing to do." She looked down at Friml and asked cheerfully: "How you feeling, boy? You want a drink?"

Incredibly, he sat up and blinked. "Yeah," he said. "Hell with the job."

"The job will keep," she said, and poured him two fingers from a tall bottle of cognac that stood on a coffee table. He

tossed it down in one gulp.

"Don't do this often," he said sardonically. "Not good for the c'reer. The ol' man wouldn't like it."

Wilson Stuart. It had to be. Fighting a tremor in his voice, Novak said: "It's a shame to see a trained man like you tied up with a crackpot outfit like the Society."

"That so?" asked Friml belligerently, "'m doing a better job than anybody thinks. And they all call me a son of a bitch for it. So do you. But *I'm* the guy that sees he gets dollar for dollar. I mean dollar's value for a dollar spent." Friml looked cunning. "I got a c'reer, all right. You may not think so, but I'm gonna be com'troller of a certain big aircraft company one of these days. Not at liberty to tell you which. How's *that* for a c'reer? I'm only twenny-six, but I'm *steady*, 'at's what counts." He fell back on the couch, his eyes still open and glassy, with a little smile on his lips. "Where's 'at drink?" he muttered.

Lilly poured another and put it by his hand. "Here y'are, feller," she said. He didn't move or change expression. She jerked her head at Novak and he followed her to the bedroom.

"What you t'ink?" she asked in a whisper.

"Wilson Stuart and Western Air," he said flatly. "They are the famous 'industrial backers.' Friml is Stuart's man in the A.S.F.S.F. to watch Stuart's money. Stuart gives orders to MacIlheny and Friml's right there to see that they get carried out."

She raised her eyebrows. "Old Stuart don't hire such punks, Mike. Cliff told me."

"He seems to have been hired right out of his graduating class for the sake of secrecy," Novak said. "And he must look like a fireball on paper. Straight A's, no doubt. He's a screwed-up kid, but the pressure has to be right before you realize it." He told her about "Coffee Blues." "Maybe he should be factored by a biomat'ematicist," he said, straight-faced.

She flicked him on the jaw with her fingertips. "Don' tease me," she said crossly. "I'm t'rough vit' them. All they want is you' money. You so smart, tell me what old Stuart wants vit' a moon ship and where he got atomic fuel for it."

"There's no answer," he said. "It's got to be a government working through him. What countries does he sell big orders to? What small countries with atomic energy programmes and dense populations? I guess that narrows the field down a little. And it makes the thing harder than ever to swallow. Wilson Stuart of Western Air a foreign agent." He thought of what Anheier would say to that, and almost laughed. The thing was now completely beyond the realm of credibility. And it was in their laps.

They went silently back into the living room. The brandy glass was empty again and Friml's eyes were closed at last. He was completely out.

"Mike," she said, "I guess you better leave him here."

"But what about——"

"You a sveet boy, but some other time. This yerk depresses me."

She gave him a cool good-night kiss, and he hiked down the road to a shopping street and taxi stand.

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Novak saw, with a pang, that Lilly was not on the field. He asked casually around whether she had phoned or left word with anybody. She hadn't. After last night's fiasco with the drunken secretary-treasurer, he supposed, she felt shy ...

Amy Stuart was there, reporting for assignment, and he savored the mild irony of the situation. Her father, board chairman of Western Air, was funneling money into the A.S.F.S.F. and dictating its policies. And his daughter was reporting for assignment to a hired hand of the Stuart funds. He toyed for a moment with the notion of assigning her to make the lunch sandwiches and dismissed it as silly. She had training and keen intelligence that he needed for *Proto*, whatever *Proto's* destiny was to be.

"Help me in the refractories lab?" he asked.

She said a little woodenly: "I thought that was Lilly's job."

"She didn't show up today. You're not afraid of hot stuff, are you?"

"Hot-radioactive or hot-centigrade?"

He laughed with an effort. She was very boldly playing dumb. "Hot-centigrade. Two thousand degrees of it and up. Tongs, gauntlets, masks, and aprons are furnished. But some people get trembly anyway and drop things."

"I won't," she said. "Not if Lilly didn't."

He taught her routine for an hour and then set her to compounding six more boron carbides by rote. "Call me if there's any doubt at all about a procedure," he said. "And I hope you have a conscience. If you make a mistake, start all over again. A cover-up of a mistake at this stage would introduce a hidden variable in my paper work and wreck everything I'm doing from now on."

"You don't have to impress me with a wild exaggeration like that, Mike. I know my way around a chemistry lab."

The arrogance of the amateur was suddenly too much for him. "*Get out*," he said. "Right now. I'll get by somehow without you."

She stared at him, open-mouthed, and her face became very red. And she left without a word.

Novak strode to the compounding area. His hands deftly did their work with the great precision balance while his mind raged at her insolent assurance. He was letting the beam of the balance down onto the agate knife-edge fulcrum for the sixteenth time when she spoke behind him: "Mike."

His hand, slowly turning a knurled bronze knob, did not twitch. "Minute," he growled, and continued to turn the knob until he felt the contact and the long pointer began to oscillate on the scale. He turned and asked her: "What is it?"

"What the devil do you think it is?" she flared. "I'm sorry I got you sore and in the future I'll keep my mouth shut. Is that satisfactory?"

He studied her indignant face. "Do you still think I was trying to impress you with a wild exaggeration?"

She set her mouth grimly and was silent for a long moment. Then she stubbornly said: "Yes."

Novak sighed. "Come with me," he said, and took her into the small private office. He pulled out yesterday's work sheets and asked: "Know any maths?"

"Up to differential calculus," she said cautiously.

That was a little better than he expected. If she could follow him all the way it would be better for her work—far better than her taking him on faith.

In a concentrated one-hour session he told her about the method of least squares and how it would predictably cut his research time in half, about matrix equations and how they would pin down the properties of the boron carbides, about n-dimensional geometry and how it would help him build a theory of boron carbides, about the virtues of convergent series and the vices of divergent series, and about the way sloppy work at this stage would riddle the theory end of it with divergent series.

"Also," he concluded, "you made me mad as hell."

Laughter broke suddenly through her solemn absorption. "I'm convinced," she said. "Will you trust me to carry on?"

"With all my heart," he grinned. "Call me when the batches are ready for solution."

Cheerfully he tackled yesterday's data and speedily set up the equations that had defied him yesterday.

Amy Stuart called him and he guided her through the rest of the programme on the six new carbides. She was a neat, fast

worker who inked her notes in engineer's lettering. She wasn't jittery about handling "hot-centigrade" material. A spy? A handy one to have around. Lilly didn't have her cool sureness of touch.

They worked through the morning, finishing the batch, had sandwiches, and ran another batch in the afternoon. She left at five with the machine-shop gang and Novak put a third batch through himself. He wrote his weekly cumulative report during the four hours it sat aging. The report included a request for Friml to reserve sufficient time with I.B.M.'s EBIC in New York to integrate 132 partial differential equations, sample enclosed, and to post bond on their estimate at \$100 per hour, the commercial rate. With this out of the way he ran tests on the third batch and phoned Barstow for a cab. The gate guard's farewell was awed. Night hitches were unusual.

Novak had dinner in the desert town while waiting for the Los Angeles bus. He asked at his hotel's desk whether there had been any calls. There had been no calls. Phone her? No, by God! He wanted to be alone tonight and think through his math.

In ten days of dawn-to-dusk labour, he had his 132 partial differential equations. The acceleration couches got finished and installed. He ordered the enigmatic "fuel tanks" and left the fabrication to the vendor, a big Buena Vista machine shop. He was no aero-engineer; all he felt competent to do was give them the drawings and specify that the tanks must arrive sufficiently disassembled to pass through *Proto's* open end for final assembly in place.

Amy Stuart continued to be his right bower; Lilly did not reappear at the field. She phoned him once and he phoned her. Astonishingly, they were on a we-must-get-together-some-time-basis. He asked about Friml and Lilly said vaguely: "He's not such a bad kid, Mike. I t'ink you don't do him justice." Novak wondered fleetingly whether Friml was wearing a belt or suspenders these days, and realized that he didn't care a great deal. Amy Stuart asked after Lilly regularly, and he never had anything to tell her.

On a Friday afternoon he zipped a leather brief case around twenty-two ledger sheets on which were lettered in Amy's best engineer style the 132 equations that EBIC would chew into.

"Drive me to town?" he said to her. "I'd like to get to the office before they close up."

"With—the Papers," she said melodramatically, and they laughed. It came to him with a faint shock that it should be no laughing matter, but for the moment he couldn't persuade himself that there was anything sinister about this pretty girl with the sure, cool hands. The shared research, a common drain on them in progress and a mutual triumph at its end, was too big a thing to be spoiled by suspicion—for the moment. But depression stole over him on the desert road to Los Angeles, as he rode by Amy's side in the little English sportster.

She dropped him in front of the run-down building at 4.30.

He hadn't seen Friml since the secretary-treasurer's brannigan had broken up his plans for an evening. Without a blush, Friml laced into him. He seemed to be trying out a new manner for size: bullying instead of nagging; Friml the Perfect Master instead of Friml the Perfect Servant. "I'm *very* glad to see you again, Dr. Novak. I've tried several times to advise you that you should report regularly, at least once a week, in person, or by telephone if unavoidable."

Nuts. Let him have his fun. "Been pretty busy." He tossed the brief case on Friml's desk. "This is the stuff to send I.B.M. When's our reservation?"

"That's just what I wanted to see you about. Your request—it was fantastic. Who—*who*—is this Mr. Ebic whom you wish to call in as a consultant at *one hundred dollars an hour*?" His voice was a sort of low, horrified shriek.

Novak stared at him in amazement. "Didn't you check to see what it was if you had doubts?"

"Certainly not. It's insane on the face of it. Just what do you think you're up to?"

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To be continued

From: TAKEOFF

[The end of *Takeoff, Part 2* by Cyril M. Kornbluth.]