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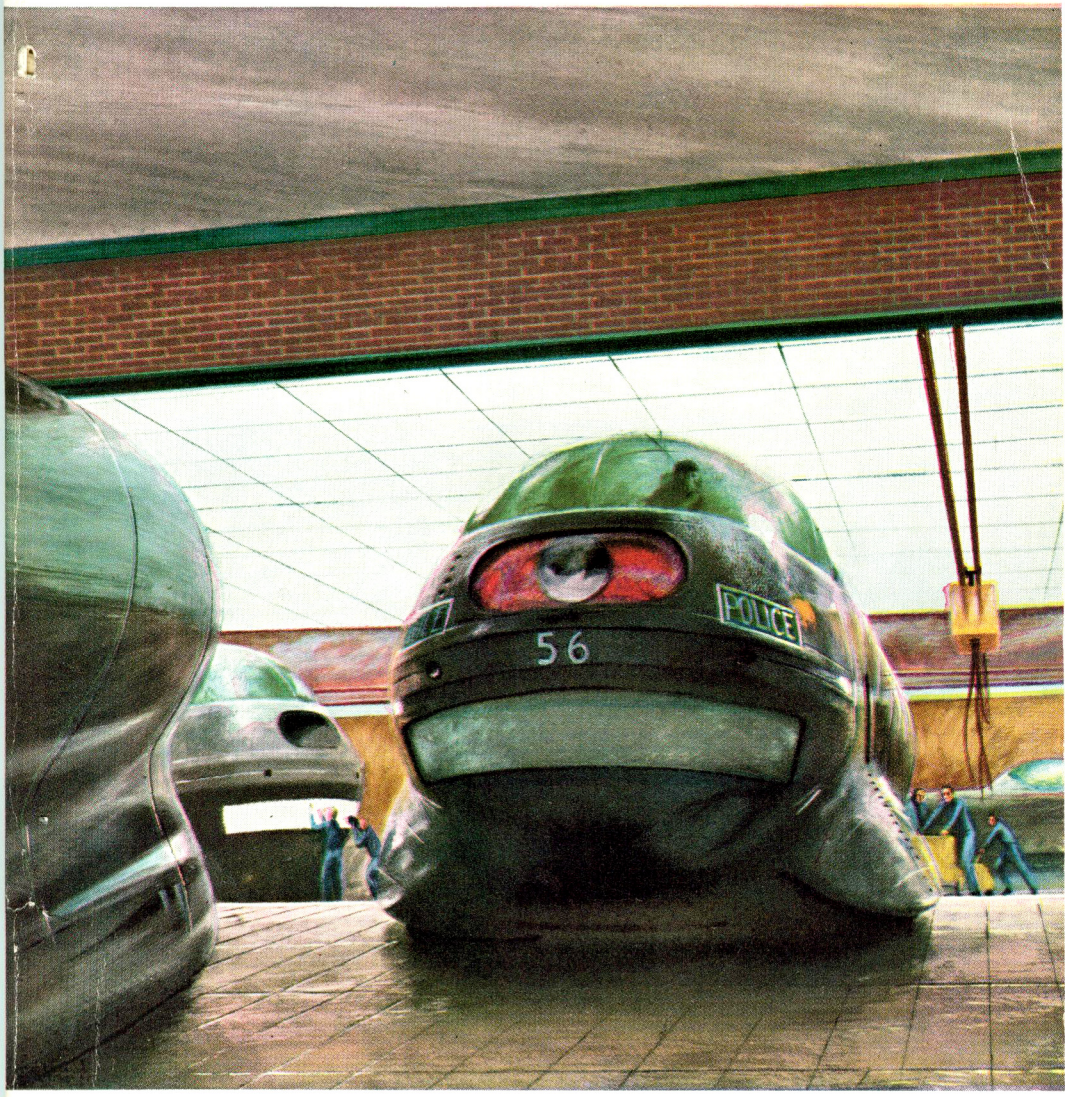

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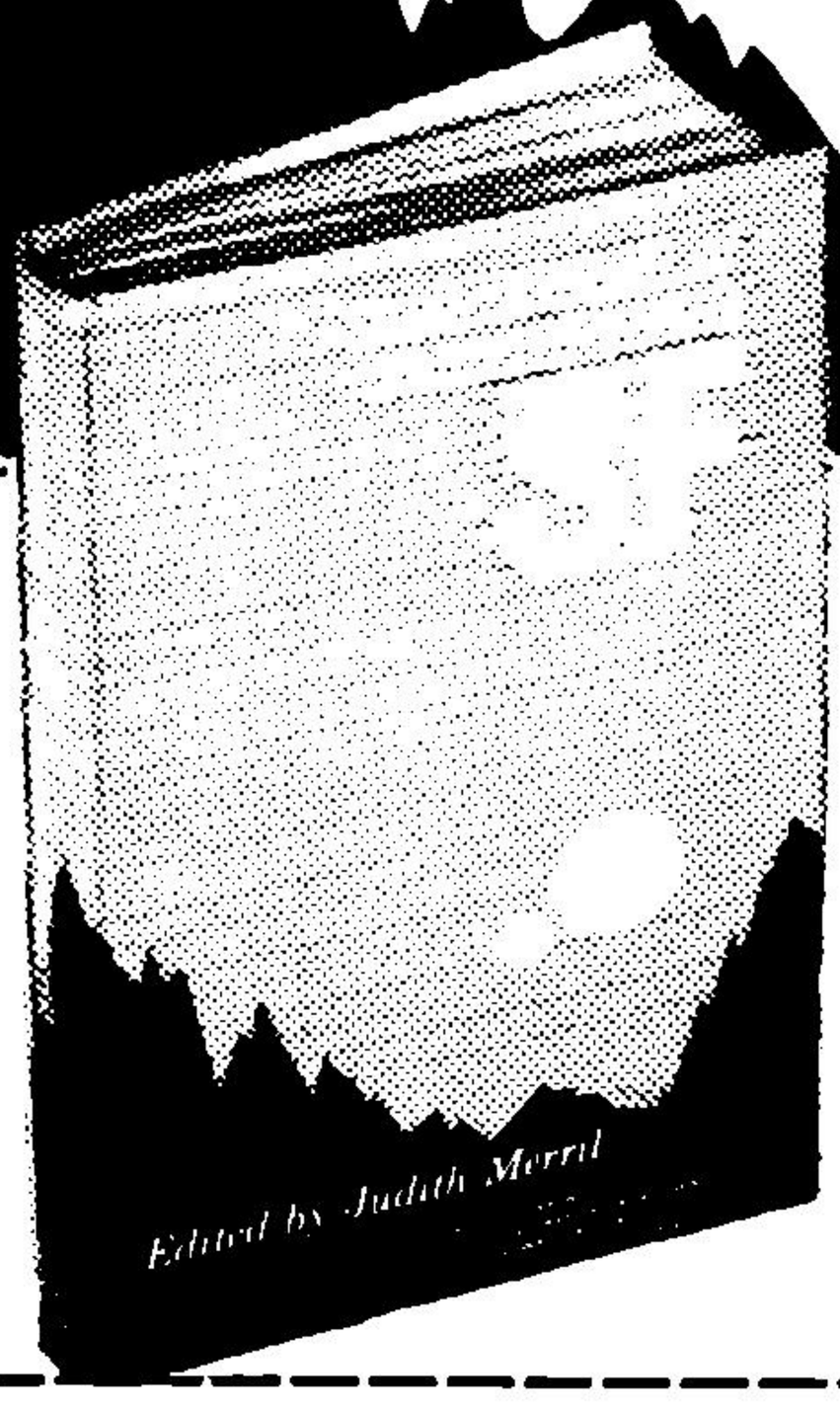

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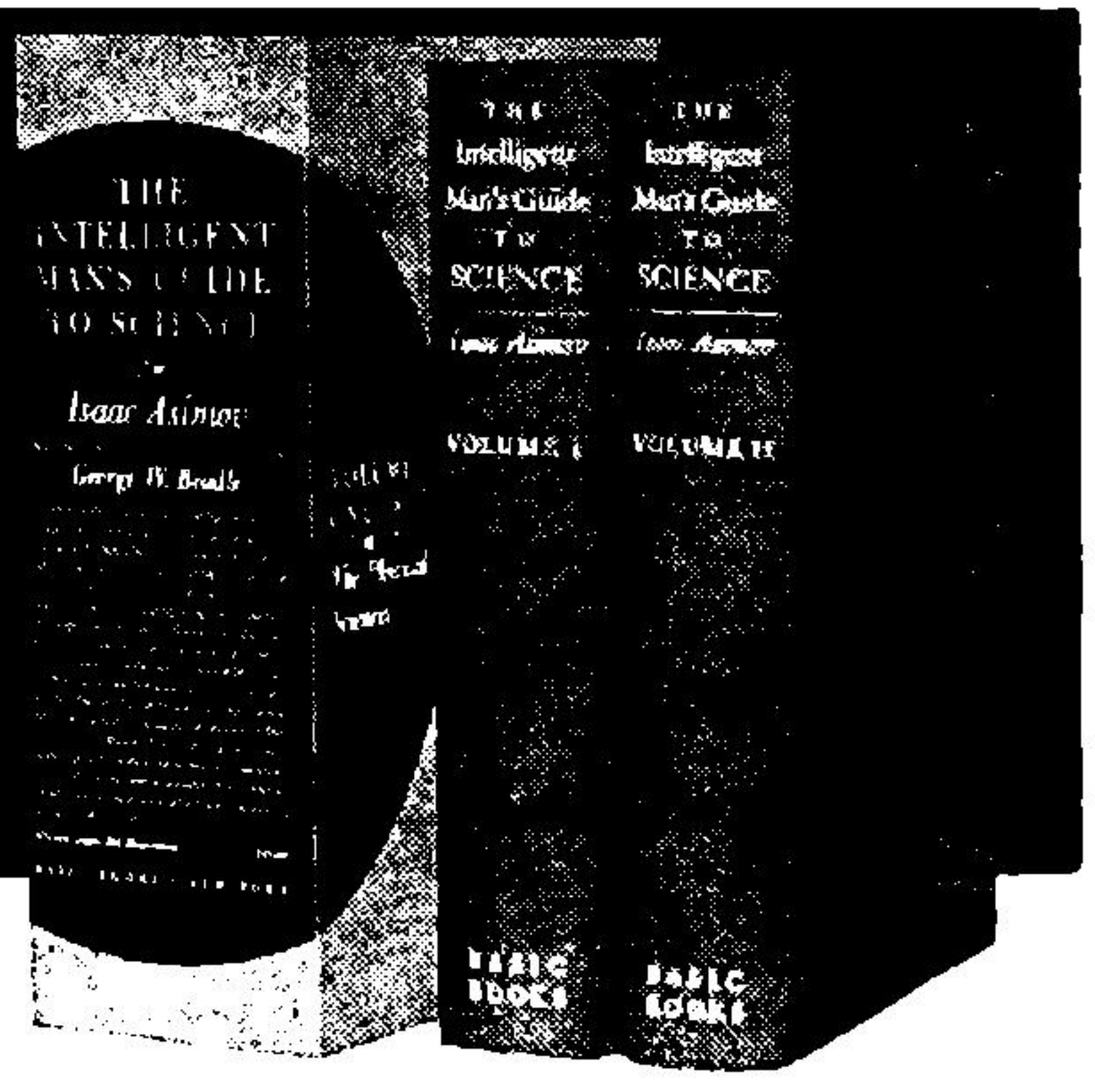

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Finagle's Factory

editorial by
John W. Campbell

■ Humpty Dumpty—in Lewis Carroll's "Alice," of course—asked "Who is the master—me, or the word?"

Well, so far as I can make out, anyone who says the United States is a democracy, doesn't know what he's talking about. Doesn't know, because the word "democracy" is as semantically sense-free a "meaningless noise" as the popular double-talk word "framis." It means anything you want it to mean, and usually turns out to mean "what I think things should be —that's 'democracy', see?"

And nobody can say "The United States is a democracy," and know what he's talking about, unless he knows what "democracy" is. Like saying "The United States is a framisery." Heck, for all I know, maybe it is!

The dictionary doesn't help a bit, either. It says that "democracy" comes from Greek roots meaning "rule of the people," and it says *"democracy* as opposed to *aristocracy."*

Now that latter is interesting, because during WWII, the Nazi soldiers were fighting for—in their opinion, in the way *they* meant "democracy"—democracy and national socialism.

Opposed to them, quite properly, were the British soldiers, who were fighting for King and country—for, just like the dictionary says, "democracy as opposed to aristocracy," and obviously a King is the head of an aristocracy. Right?

Meanwhile, of course, the Russian soldiers were fighting for democracy and national socialism in *their* terms, and were stubbornly resisting the Nazis fighting *(Continued on page 7)*

IN TIMES TO COME

■ The March, 1938 issue of this magazine was the first to have the title Astounding **Science Fiction,** the preceding issue being the last Astounding **Stories.**

Twenty-five years have passed; ANALOG has replaced Astounding—and things that were sheer science-fiction speculation in 1938 are routine ads in technical journals today.

Next month, ANALOG undergoes another change —a major change of format. The March, 1963 ANALOG will be "flat" size, instead of present pocket size —the size of a standard sheet of typewriter paper.

The first sixteen pages, and the last sixteen pages will be "slick" paper; the sixty-four pages in between will be what is known as "Antique stock." Fiction, and fiction-illustrations, don't belong on slick stock—the "Antique" is similar to book paper, a non-glossy, smooth-textured, slightly yellowed paper. Those of you who have saved the issues from 1938—or even from 1930!—undoubtedly wish we'd used that stock back then—for standard pulp paper oxidizes and embrittles slowly but inevitably. The "Antique" stock doesn't.

The total wordage will not be changed, the policy will not be changed—only the format will change.

That change is being made for a very good and simple reason; technical advertisers make up their advertisement plates for standard-size magazines—and they didn't fit our small-size pages.

They've been using our themes, our authors, and our artists.

It's time they started using our pages!

So . . . henceforth look, on your favorite newsstand, for the new, large-size ANALOG. Same price, same material, same policy—but considerably better paper.

THE EDITOR

(Continued from page 5) for the same word-goals.

So . . . what does "democracy" mean?

Quite obviously, "democracy" means "what I say things ought to be —*that's* 'democracy'!"

Political Science isn't a science, because the first, basic requirement to start the beginning of the first steps of a true Science is to *define the terms you start with.* Try doing any logical thinking about geometry using definitions like "A triangle is a kind of angular shape, with several sides," and "Parallel lines are like lines that don't meet, at least not often, and are usually pretty straight." And "An angle is when a couple of lines go some place, and then go away in a different direction."

These are the kind of "definitions" Political Science insists on working with. This leads to insanity—like Hitler—and murder and misery and war, as is to be expected when people don't know what they're talking about and won't yield their absolute conviction that they are right.

Perhaps the reason Politcal Science insists on these indefinite definitions is the popularity of the Finagle Factor that they make possible. The Finagle Factor, you know, also called "Finagle's Variable Constant," is "that factor which, when added to, subtracted from, multiplied by, or divided into the Wrong Answers always gives the Right Answer. Finagle Factors permit you to be *certain* you have the Right Answer, the Good, the Just, the Righteous and the Liberal—or Conservative, depending on which is in style at the moment—Truth.

If we let the symbol * stand for "operated on by a Finagle factor," then the great equations of Political Science are readily written down in mathematical form:

If J stands for Justice, and T stands for Truth, and W stands for "what I want," then it is quite clear to any Political Scientist that

$$W = J^* + T^*$$

The Finagle Factor, however, can also operate on a process-symbol. That is, we have the Political Science equation

$$W =^* J + T$$

as an equally valid version. In fact, that term "$=^*$" is one of the most used and highly regarded of all the Political Science tools.

And remember—this isn't just a modern system. It's been in use for centuries, for millennia! Take that line about "all men are created equal," for instance. The proper Political Mathematics equation is, obviously

$$A =^* I$$

where A is "all men" and "I" has its usual meaning. Remember that the Founding Fathers who inscribed those noble words were predominantly slave owners, so obviously they were using the term "equal" in the Finagled sense.

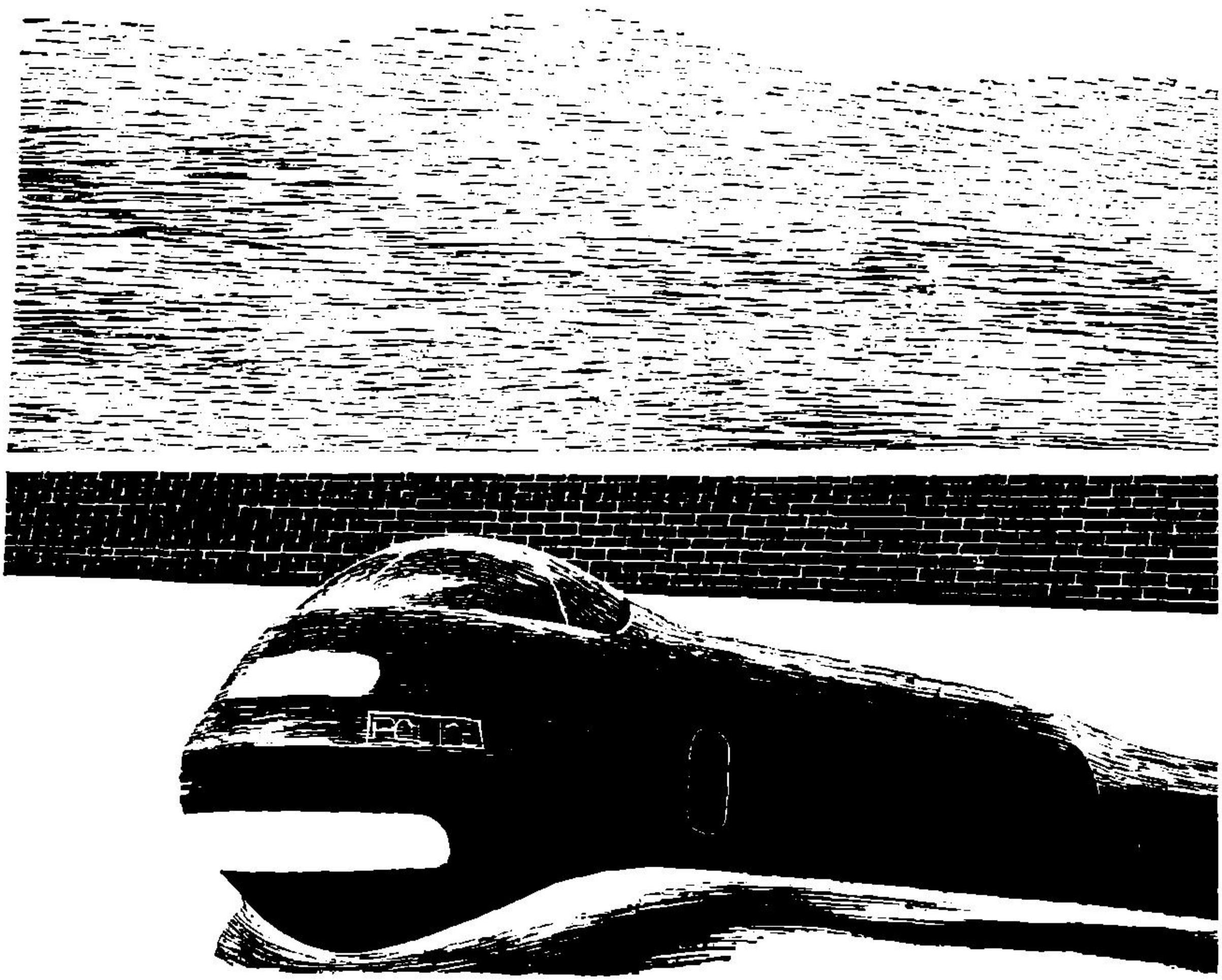
There are, also, Finagle factors in such things as the matter of Rights. They *(Continued on page 168)*

Code Three

The cars on high-speed highways
must follow each other like sheep.
And they need shepherds.
The highway police cruiser of tomorrow
however must be massively different—
as different as the highways themselves!

by Rick Raphael

Illustrated by Schoenherr



■ The late afternoon sun hid behind gray banks of snow clouds and a cold wind whipped loose leaves across the drill field in front of the Philadelphia Barracks of the North American Continental Thruway Patrol. There was the feel of snow in the air but the thermometer hovered just at the freezing mark and the clouds could turn either into icy rain or snow.

Patrol Sergeant Ben Martin stepped out of the door of the barracks and shivered as a blast of wind hit him. He pulled up the zipper on his loose blue uniform coveralls and paused to gauge the storm clouds building up to the west.

The broad planes of his sunburned face turned into the driving cold wind for a moment and then he looked back down at the weather report secured to the top of a stack of papers on his clipboard.

Behind him, the door of the barracks was shouldered open by his junior partner, Patrol Trooper Clay Ferguson. The young, tall Canadian officer's arms were loaded with paper sacks and his patrol work helmet dangled by its strap from the crook of his arm.

Clay turned and moved from the doorway into the wind. A sudden gust swept around the corner of the building and a small sack perched atop one of the larger bags in his arms blew to the ground and began tumbling towards the drill field.

"Ben," he yelled, "grab the bag."

The sergeant lunged as the sack bounced by and made the retrieve. He walked back to Ferguson and eyed the load of bags in the blond-haired officer's arms.

"Just what is all this?" he inquired.

"Groceries," the youngster grinned. "Or to be more exact, little gourmet items for our moments of gracious living."

Feguson turned into the walk leading to the motor pool and Martin swung into step beside him. "Want me to carry some of that junk?"

"Junk," Clay cried indignantly. "You keep your grimy paws off these delicacies, peasant. You'll get yours in due time and perhaps it will help Kelly and me to make a more polished product of you instead of the clodlike cop you are today."

Martin chuckled. This patrol would mark the start of the second year that he, Clay Ferguson and Medical-Surgical Officer Kelly Lightfoot had been teamed together. After twenty-two patrols, cooped up in a semiarmored vehicle with a man for ten days at a time, you got to know him pretty well. And you either liked him or you hated his guts.

As senior officer, Martin had the right to reject or keep his partner after their first eleven-month duty tour. Martin had elected to retain the lanky Canadian. As soon as they had pulled into New York Barracks at the end of their last patrol, he had made his decisions. After eleven months and twenty-two patrols on the Continental Thruways, each team had a thirty-day furlough coming.

Martin and Ferguson had headed for the city the minute they put their signatures on the last of the stack of

reports needed at the end of a tour. Then, for five days and nights, they tied one on. MSO Kelly Lightfoot had made a beeline for a Columbia Medical School seminar on tissue regeneration. On the sixth day, Clay staggered out of bed, swigged down a handful of antireaction pills, showered, shaved and dressed and then waved goodby. Twenty minutes later he was aboard a jet, heading for his parents' home in Edmonton, Alberta. Martin soloed around the city for another week, then rented a car and raced up to his sister's home in Burlington, Vermont, to play Uncle Bountiful to Carol's three kids and to lap up as much as possible of his sister's real cooking.

While the troopers and their med officer relaxed, a service crew moved their car down to the Philadelphia motor pool for a full overhaul and refittng for the next torturous eleven-month-tour of duty.

The two patrol troopers had reported into the Philadelphia Barracks five days ago—Martin several pounds heavier courtesy of his sister's cooking; Ferguson several pounds lighter courtesy of three assorted, starry-eyed, uniform-struck Alberta maidens.

They turned into the gate of the motor pool and nodded to the sentry at the gate. To their left, the vast shop buildings echoed to the sound of body-banging equipment and roaring jet engines. The darkening sky made the brilliant lights of the shop seem even brighter and the hulls of a dozen patrol cars cast deep shadows around the work crews.

The troopers turned into the dispatcher's office and Clay carefully placed the bags on a table beside the counter. Martin peered into one of the bags. "Seriously, kid, what do you have in that grab bag?"

"Oh, just a few essentials," Clay replied. *"Pate de foie gras,* sharp cheese, a smidgen of cooking wine, a handful of spices. You know, stuff like that. Like I said—essentials."

"Essentials," Martin snorted, "you give your brains to one of those Alberta chicks of yours for a souvenir?"

"Look, Ben," Ferguson said earnestly, "I suffered for eleven months in that tin mausoleum on tracks because of what you fondly like to think is edible food. You've got as much culinary imagination as Beulah. I take that back. Even Beulah turns out some better smells when she's riding on high jet than you'll ever get out of her galley in the next one hundred years. This tour, I intend to eat like a human being once again. And I'll teach you how to boil water without burning it."

"Why you ungrateful young—" Martin yelped.

The patrol dispatcher, who had been listening with amused tolerance, leaned across the counter.

"If Oscar Waldorf is through with his culinary lecture, gentlemen," he said, "perhaps you two could be persuaded to take a little pleasure ride. It's a lovely night for a drive and it's just twenty-six hundred miles to the next service station. If you two aren't cooking anything at the moment, I

know . that NorCon would simply adore having the services of two such distinguished Continental Commandos.

Ferguson flushed and Martin scowled at the dispatcher. "Very funny, clown. I'll recommend you for trooper status one of these days."

"Not me," the dispatcher protested. "I'm a married man. You'll never get me out on the road in one of those blood-and-gut factories."

"So quit sounding off to us heroes," Martin said, "and give us the clearances."

The dispatcher opened a loose-leaf reference book on the counter and then punched the first of a series of buttons on a panel. Behind him, the wall lighted with a map of the eastern United States to the Mississippi River. Ferguson and Martin had pencils out and poised over their clipboards.

The dispatcher glanced at the order board across the room where patrol car numbers and team names were displayed on an illuminated board. "Car 56—Martin-Ferguson-Lighfoot," glowed with an amber light. In the column to the right was the number "26-W." The dispatcher punched another button. A broad belt of multi-colored lines representing the eastern segment of North American Thruway 26 flashed onto the map in a band extending from Philadelphia to St. Louis. The thruway went on to Los Angeles in its western segment, not shown on the map. Ten bands of color—each five separated by a narrow clear strip, detailed the thruway. Martin and Ferguson were concerned with the northern five bands; NAT 26-westbound. Other unlighted lines radiated out in tangital spokes to the north and south along the length of the multi-colored belt of NAT 26.

This was just one small segment of the Continental Thruway system that spanned North America from coast to coast and crisscrossed north and south under the Three Nation Road Compact from the southern tip of Mexico into Canada and Alaska.

Each arterial cut a five-mile-wide path across the continent and from one end to the other, the only structures along the roadways were the turretlike NorCon Patrol check and relay stations—looming up at one-hundred-mile intervals like the fire control islands of earlier-day aircraft carriers.

Car 56 with Trooper Sergeant Ben Martin, Trooper Clay Ferguson and Medical-Surgical Officer Kelly Lightfoot, would take their first ten-day patrol on NAT 26-west. Barring major disaster, they would eat, sleep and work the entire time from their car; out of sight of any but distant cities until they had reached Los Angeles at the end of the patrol. Then a five-day resupply and briefing period and back onto another thruway.

During the coming patrol they would cross ten state lines as if they didn't exist. And as far as thruway traffic control and authority was concerned, state and national boundaries actually didn't exist. With the growth of the old interstate highway system

and the Alcan Highway it became increasingly evident that variation in motor vehicle laws from state to state and country to country were creating impossible situations for any uniform safety control.

With the establishment of the Continental Thruway System two decades later, came the birth of the supra-cop—The North American Thruway Patrol, known as NorCon. Within the five-mile bands of the thruways—all federally-owned land by each of the three nations—the blue-coveralled "Continental Commandos" of NorCon were the sole law enforcement agency and authority. Violators of thruway law were cited into NorCon district traffic courts located in the nearest city to each access port along every thruway.

There was no challenge to the authority of NorCon. Public demand for faster and more powerful vehicles had forced the automotive industry to put more and more power under the touch of the ever-growing millions of drivers crowding the continent's roads. Piston drive gave way to turbojet; turbojet was boosted by a modification of ram jet and air-cushion drive was added. In the last two years, the first of the nuclear reaction mass engines had hit the roads. Even as the hot Ferraris and Jags of the mid-'60s would have been suicide vehicles on the T-model roads of the '20s so would today's vehicles be on the interstates of the '60s. But building roads capable of handling three hundred to four hundred miles an hour speeds was beyond the financial and engineering capabilities of individual states and nations. Thus grew the continental thruways with their four speed lanes in each direction, each a half-mile wide separated east and west and north and south by a half-mile-wide landscaped divider. Under the Three Nation Compact, the thruways now wove a net across the entire North American continent.

On the big wall map, NAT 26-west showed as four colored lines; blue and yellow as the two high and ultra-high speed lanes; green and white for the intermediate and slow lanes. Between the blue and yellow and the white and green was a red band. This was the police emergency lane, never used by other than official vehicles and crossed by the traveling public shifting from one speed lane to another only at sweeping crossovers.

The dispatcher picked up an electric pointer and aimed the light beam at the map. Referring to his notes, he began to recite.

"Resurfacing crews working on 26-W blue at milestone Marker 185 to Marker 187, estimated clearance 0300 hours Tuesday—Let's see, that's tomorrow morning."

The two officers were writing the information down on their trip-analysis sheets.

"Ohio State is playing Cal under the lights at Columbus tonight so you can expect a traffic surge sometime shortly after 2300 hours but most of it will stay in the green and white. Watch out for the drunks though.

They might filter out onto the blue or yellow.

"The crossover for NAT 163 has painting crews working. Might watch out for any crud on the roadway. And they've got the entrance blocked there so that all 163 exchange traffic is being re-routed to 164 west of Chillicothe."

The dispatcher thumbed through his reference sheets. "That seems to be about all. No, wait a minute. This is on your trick. The Army's got a priority missile convoy moving out of the Aberdeen Proving Grounds bound for the west coast tonight at 1800 hours. It will be moving at green lane speeds so you might watch out for it. They'll have thirty-four units in the convoy. And that is all. Oh, yes. Kelly's already aboard. I guess you know about the weather.

Martin nodded. "Yup. We should be hitting light snows by 2300 hours tonight in this area and it could be anything from snow to ice-rain after that." He grinned at his younger partner. "The vacation is over, sonny. Tonight we make a man out of you."

Ferguson grinned back. "Nuts to you, pop. I've got character witnesses back in Edmonton who'll give you glowing testimonials about my manhood."

"Testimonials aren't legal unless they're given by adults," Martin retorted. "Come on, lover boy. Duty calls."

Clay carefully embraced his armload of bundles and the two officers turned to leave. The dispatcher leaned across the counter.

"Oh, Ferguson, one thing I forgot. There's some light corrugations in red lane just east of St. Louis. You might be careful with your souffles in that area. Wouldn't want them to fall, you know."

Clay paused and started to turn back. The grinning dispatcher ducked into the back office and slammed the door.

The wind had died down by the time the troopers entered the brilliantly lighted parking area. The temperature seemed warmer with the lessening winds but in actuality, the mercury was dropping. The snow clouds to the west were much nearer and the overcast was getting darker.

But under the great overhead light tubes, the parking area was brighter than day. A dozen huge patrol vehicles were parked on the front "hot" line. Scores more were lined out in ranks to the back of the parking zone. Martin and Ferguson walked down the line of military blue cars. Number 56 was fifth on the line. Service mechs were just re-housing fueling lines into a ground panel as the troopers walked up. The technician corporal was the first to speak. "All set, Sarge," he said. "We had to change an induction jet at the last minute and I had the port engine running up to reline the flow. Thought I'd better top 'er off for you, though, before you pull out. She sounds like a purring kitten."

He tossed the pair a waving salute and then moved out to his service

dolly where three other mechs were waiting.

The officers paused and looked up at the bulk of the huge patrol car.

"Beulah looks like she's been to the beauty shop and had the works," Martin said. He reached out and slapped the maglurium plates. "Welcome home, sweetheart. I see you've kept a candle in the window for your wandering son." Ferguson looked up at the lighted cab, sixteen feet above the pavement.

Car 56—Beulah to her team—was a standard NorCon Patrol vehicle. She was sixty feet long, twelve feet wide and twelve feet high; topped by a four-foot-high bubble canopy over her cab. All the way across her nose was a three-foot-wide luminescent strip. This was the variable beam headlight that could cut a day-bright swath of light through night, fog, rain or snow and could be varied in intensity, width and elevation. Immediately above the headlight strip were two red-black plastic panels which when lighted, sent out a flashing red emergency signal that could be seen for miles. Similar emergency lights and back-up white light strips adorned Beulah's stern. Her bow rounded down like an old-time tank and blended into the track assembly of her dual propulsion system. With the exception of the cabin bubble and a two-foot stepdown on the last fifteen feet of her hull, Beulah was free of external protrusions. Racked into a flush-decked recess on one side of the hull was a crane arm with a two-hundred-ton lift capacity. Several round hatches covered other extensible gear and periscopes used in the scores of multiple operations the NorCon cars were called upon to accomplish on routine road patrols.

Beulah resembled a gigantic offspring of a military tank, sans heavy armament. But even a small stinger was part of the patrol car equipment. As for armament, Beulah had weapons to meet every conceivable skirmish in the deadly battle to keep Continental Thruways fast-moving and safe. Her own two-hundred-fifty-ton bulk could reach speeds of close to six hundred miles an hour utilizing one or both of her two independent propulsion systems.

At ultra-high speeds, Beulah never touched the ground—floating on an impeller air cushion and driven forward by a pair of one hundred fifty thousand pound thrust jets and ram jets. At intermediate high speeds, both her air cushion and the four-foot-wide tracks on each side of the car pushed her along at two hundred-mile-an-hour-plus speeds. Synchro mechanisms reduced the air cushion as the speeds dropped to afford more surface traction for the tracks. For slow speeds and heavy duty, the tracks carried the burden.

Martin thumbed open the portside ground-level cabin door.

"I'll start the outside check," he told Clay. "You stow that garbage of yours in the galley and start on the dispensary. I'll help you after I finish out here."

As the younger officer entered the car and headed up the short flight of

steps to the working deck, the sergeant unclipped a check list from the inside of the door and turned towards the stern of the big vehicle.

Clay mounted to the work deck and turned back to the little galley just aft of the cab. As compact as a spaceship kitchen—as a matter of fact, designed almost identically from models on the Moon run—the galley had but three feet of open counter space. Everything else, sink, range, oven and freezer, were built-ins with pull-downs for use as needed. He set his bags on the small counter to put away after the pre-start check. Aft of the galley and on the same side of the passageway were the double-decked bunks for the patrol troopers. Across the passageway was a tiny latrine and shower. Clay tossed his helmet on the lower bunk as he went down the passageway. At the bulkhead to the rear, he pressed a wall panel and a thick, insulated door slid back to admit him to the engine compartment. The service crews had shut down the big power plants and turned off the air exchangers and already the heat from the massive engines made the compartment uncomfortably warm.

He hurried through into a small machine shop. In an emergency, the troopers could turn out small parts for disabled vehicles or for other uses. It also stocked a good supply of the most common failure parts. Racked against the ceiling were banks of cutting torches, a grim reminder that death or injury still rode the thruways with increasing frequency.

In the tank storage space between the ceiling and top of the hull were the chemical fire-fighting liquids and foam that could be applied by nozzles, hoses and towers now telescoped into recesses in the hull. Along both sides and beneath the galley, bunks, engine and machine-shop compartments between the walls, deck and hull, were Beulah's fuel storage tanks.

The last after compartment was a complete dispensary, one that would have made the emergency room or even the light surgery rooms of earlier-day hospitals proud.

Clay tapped on the door and went through. Medical-Surgical Officer Kelly Lightfoot was sitting on the deck, stowing sterile bandage packs into a lower locker. She looked up at Clay and smiled. "Well, well, you DID manage to tear yourself away from your adoring bevies," she said. She flicked back a wisp of golden-red hair from her forehead and stood up. The patrol-blue uniform coverall with its belted waist didn't do much to hide a lovely, properly curved figure. She walked over to the tall Canadian trooper and reached up and grabbed his ear. She pulled his head down, examined one side critically and then quickly snatched at his other ear and repeated the scrutiny. She let go of his ear and stepped back. "Damned if you didn't get all the lipstick marks off, too."

Clay flushed. "Cut it out, Kelly," he said. "Sometimes you act just like my mother."

The olive-complexioned redhead grinned at him and turned back to her stack of boxes on the deck. She bent over and lifted one of the boxes to the operating table. Clay eyed her trim figure. "You might act like ma sometimes," he said, "but you sure don't look like her."

It was the Irish-Cherokee Indian girl's turn to flush. She became very busy with the contents of the box. "Where's Ben?" she asked over her shoulder.

"Making ouside check. You about finished in here?"

Kelly turned and slowly scanned the confines of the dispensary. With the exception of the boxes on the table and floor, everything was behind secured locker doors. In one corner, the compact diagnostican—capable of analyzing many known human bodily ailments and every possible violent injury to the body—was locked in its riding clamps. Surgical trays and instrument racks were all hidden behind locker doors along with medical and surgical supplies. On either side of the emergency ramp door at the stern of the vehicle, three collapsible auto-litters hung from clamps. Six hospital bunks in two tiers of three each, lined another wall. On patrol, Kelly utilized one of the hospital bunks for her own use except when they might all be occupied with accident or other kind of patients. And this would never be for more than a short period, just long enough to transfer them to a regular ambulance or hospital vehicle. Her meager supply of personal items needed for the ten-day patrol were stowed in a small locker and she shared the latrine with the male members of the team.

Kelly completed her scan, glanced down at the checklist in her hand. "I'll have these boxes stowed in five minutes. Everything else is secure." She raised her hand to her forehead in mock salute. "Medical-Surgical Officer Lightfoot reports dispensary ready for patrol, sir."

Clay smiled and made a checkmark on his clipboard. "How was the seminar, Kelly?" he asked.

Kelly hiked herself onto the edge of the operating table. "Wonderful, Clay, just wonderful. I never saw so many good-looking, young, rich and eligible doctors together in one place in all my life."

She sighed and smiled vacantly into space.

Clay snorted. "I thought you were supposed to be learning something new about tissue regeneration," he said.

"Generation, regeneration, who cares," Kelly grinned.

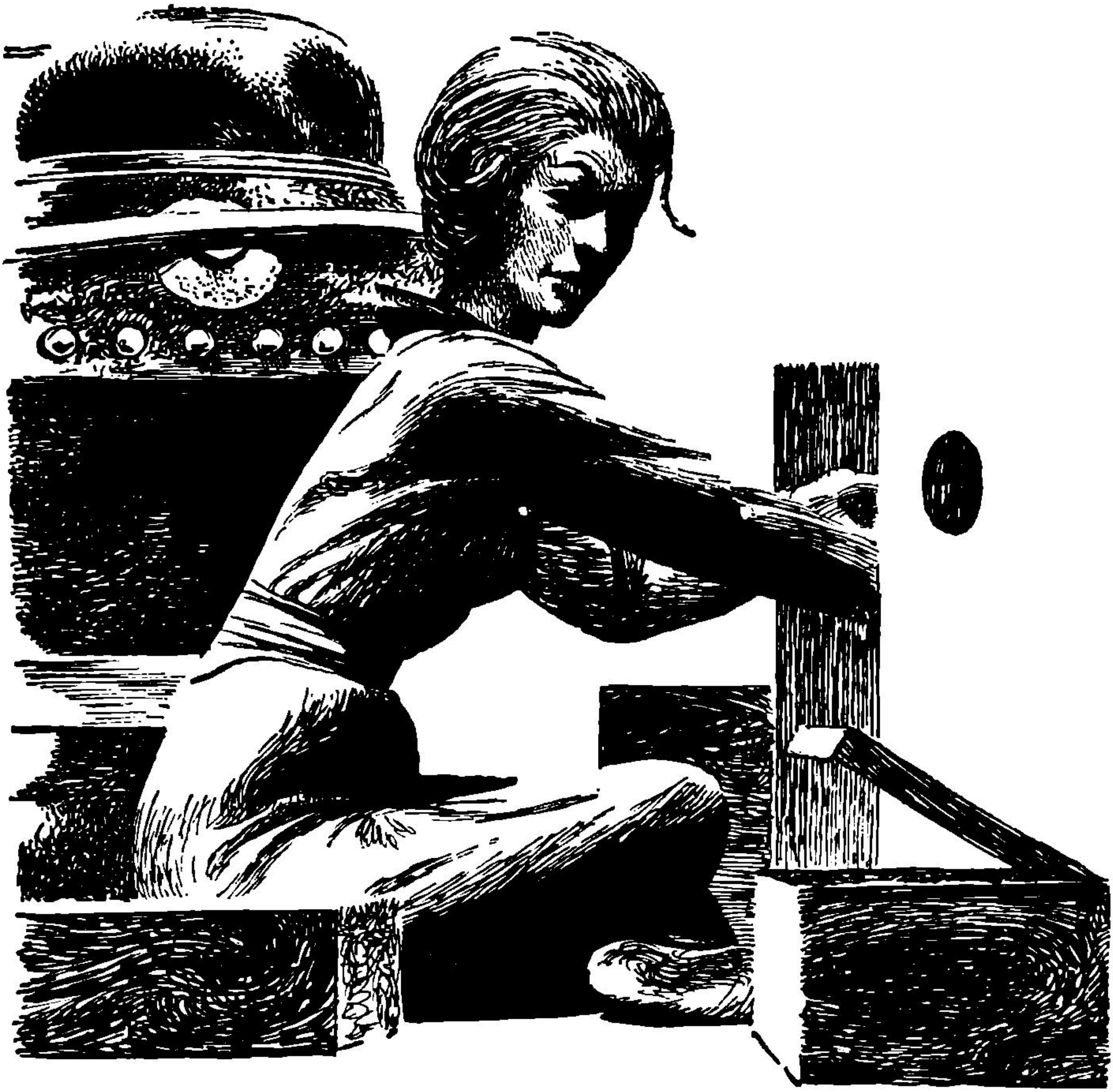
Clay started to say something, got flustered and wheeled around to leave —and bounded right off Ben Martin's chest. Ferguson mumbled something and pushed past the older officer.

Ben looked after him and then turned back to Car 56's combination doctor, surgeon and nurse. "Glad to see the hostess aboard for this cruise. I hope you make the passengers more comfortable than you've just made the first mate. What did you do to Clay, Kelly?"

"Hi, Ben," Kelly said. "Oh, don't worry about junior. He just gets all fluttery when a girl takes away his masculine perograti ve to make cleverly lewd witticisms. He'll be all right. Have a happy holiday, Ben? You look positively fat."

Ben patted his stomach. "Carol's good cooking. Had a nice restful time. And how about you. That couldn't have been all work. You've got a marvelous tan."

"Don't worry," Kelly laughed, "I had no intention of letting it be all



study. I spent just about as much time under the sun dome at the pool as I did in class. I learned a lot though."

Ben grinned and headed back to the front of the car. "Tell me more after we're on the road," he said from the doorway. "We'll be rolling in ten minutes."

When he reached the cab, Clay was already in the right-hand control seat and was running down the instrument panel check. The sergeant lifted the hatch door between the two control seats and punched on a light to illuminate the stark compartment at the lower front end of the car. A steel grill with a dogged handle on the upper side covered the opening under the hatch cover. Two swing-down bunks were racked up against the walls on either side and the front hull door was without an inside handle. This was the patrol car brig, used for bringing in unwilling violators or other violent or criminal subjects who might crop up in the course of a patrol tour. Satisfied with the appearance of the brig, Ben closed the hatch cover and slid into his own control seat on the left of the cab. Both control seats were molded and plastiformed padded to the contours of the troopers and the armrests on both were studded with buttons and a series of small, finger-operated, knobs. All drive, communication and fire fighting controls for the massive vehicle were centered in the knobs and buttons on the seat arms, while acceleration and braking controls were duplicated in two footrest pedals beneath their feet.

Ben settled into his seat and glanced down to make sure his work-helmet was racked beside him. He reached over and flipped a bank of switches on the instrument panel. "All communications to 'on,'" he said. Clay made a checkmark on his list. "All pre-engine start check complete," Clay replied.

"In that case, the senior trooper said, "let's give Beulah some exercise. Start engines."

Clay's fingers danced across the array of buttons on his seat arms and flicked lightly at the throttle knobs. From deep within the engine compartment came the muted, shrill whine of the starter engines, followed a split-second later by the full-throated roar of the jets as they caught fire. Clay eased the throttles back and the engine noise softened to a muffled roar.

Martin fingered a press-panel on the right arm of his seat.

"Car 56 to Philly Control," Ben called.

The speakers mounted around the cab came to life. "Go ahead Five Six."

"Five Six fired up and ready to roll," Martin said.

"Affirmative Five Six," came the reply, "You're clear to roll. Philly Check estimates white density 300; green, 840; blue 400; yellow, 75."

Both troopers made mental note of the traffic densities in their first one-hundred-mile patrol segment; an estimated three hundred vehicles for each ten miles of thruway in the white or fifty to one hundred miles an hour low lane; eight hundred

forty vehicles in the one hundred to one hundred fifty miles an hour green, and so on. More than sixteen thousand westbound vehicles on the thruway in the first one hundred miles; nearly five thousand of them traveling at speeds between one hundred fifty and three hundred miles an hour.

Over the always-hot intercom throughout the big car Ben called out. "All set, Kelly?"

"I'm making coffee," Kelly answered from the galley. "Let 'er roll."

Martin started to kick off the brakes, then stopped. "Ooops," he exclaimed, "almost forgot." His finger touched another button and a blaring horn reverberated through the vehicle.

In the galley, Kelly hurled herself into a corner. Her body activated a pressure plant and a pair of mummy-like plastifoam plates slid curvingly out the wall and locked her in a soft cocoon. A dozen similar safety clamps were located throughout the car at every working and relaxation station.

In the same instance, both Ben and Clay touched another plate on their control seats. From kiosk-type columns behind each seat, pairs of body-molded crash pads snapped into place to encase both troopers in their seats, their bodies cushioned and locked into place. Only their fingers were loose beneath the spongy substance to work arm controls. The half-molds included headforms with a padded band that locked across their foreheads to hold their heads rigidly against the backs of their reinforced seats. The instant all three crew members were locked into their safety gear, the bull horn ceased.

"All tight," Ben called out as he wiggled and tried to free himself from the cocoon. Kelly and Clay tested their harnesses.

Satisfied that the safety cocoons were operating properly, Ben released them and the molds slid back into their recesses. The cocoons were triggered automatically in any emergency run or chase at speeds in excess of two hundred miles an hour.

Again he kicked off the brakes, pressed down on the foot feed and Car 56—Beulah—rolled out of the Philadelphia motor pool on the start of its ten-day patrol.

The motor pool exit opened into a quarter-mile wide tunnel sloping gently down into the bowels of the great city. Car 56 glided down the slight incline at a steady fifty miles an hour. A mile from the mouth of the tunnel the roadway leveled off and Ben kicked Beulah up another twenty-five miles an hour. Ahead, the main tunnel ended in a series of smaller portal ways, each emblazoned with a huge illuminated number designating a continental thruway.

Ben throttled back and began edging to the left lanes. Other patrol cars were heading down the main passageway, bound for their assigned thruways. As Ben eased down to a slow thirty, another patrol vehicle slid alongside. The two troopers in the cab waved. Clay flicked on the "car-to-car" transmit.

The senior trooper in Car 104 looked over at Martin and Ferguson. "If it isn't the gruesome twosome," he called. "Where have you two been? We thought the front office had finally caught up with you and found out that neither one of you could read or write and that they had canned you."

"We can't read," Ben quipped back. "That's why we're still on the job. The front office would never hire anyone who would embarrass you two by being smarter than either of you. Where're you headed, Eddie?"

"Got 154-north," the other officer said.

"Hey," Clay called out, "I've got a real hot doll in Toronto and I'll gladly sell her phone number for a proper price."

"Wouldn't want to hurt you, Clay," the other officer replied. "If I called her up and took her out, she'd throw rocks at you the next time you drew the run. It's all for your own good."

"Oh, go get lost in a cloverleaf," Clay retorted.

The other car broke the connection and with a wave, veered off to the right. The thruway entrances were just ahead. Martin aimed Beulah at the lighted orifice topped by the number 26-W. The patrol car slid into the narrower tunnel, glided along for another mile and then turned its bow upwards. Three minutes later, they emerged from the tunnel into the red patrol lane of Continental Thruway 26-West. The late afternoon sky was a covering of gray wool and a drop or two of moisture struck the front face of the cab canopy. For a mile on either side of the police lane, streams of cars sped westward. Ben eyed the sky, the traffic and then peered at the outer hull thermometer. It read thiry-two degrees. He made a mental bet with himself that the weather bureau was off on its snow estimates by six hours. His Vermont upbringing told him it would be flurrying within the hour.

He increased speed to a steady one hundred and the car sped silently and easily along the police lane. Across the cab, Clay peered pensively at the steady stream of cars and cargo carriers racing by in the green and blue lanes—all of them moving faster than the patrol car.

The young officer turned in his seat and looked at his partner.

"You know, Ben," he said gravely, "I sometimes wonder if those oldtime cowboys got as tired looking at the south end of northbound cows as I get looking at the vanishing tail pipes of cars."

The radio came to life.

"Philly Control to Car 56."

Clay touched his transmit plate. "This is Five Six. Go ahead."

"You've got a bad one at Marker 82," Control said. "A sideswipe in the white."

"Couldn't be too bad in the white," Ben broke in, thinking of the one-hundred mile-an-hour limit in the slow lane.

"That's not the problem," Control came back. "One of the sideswiped vehicles was flipped around and

bounded into the green, and that's where the real mess is. Make it code three."

"Five Six acknowledge," Ben said. "On the way."

He slammed forward on the throttles. The bull horn blared and a second later, with MSO Kelly Lightfoot snugged in her dispensary cocoon and both troopers in body cushions, Car 56 lifted a foot from the roadway, and leaped forward on a turbulent pad of air. It accelerated from one hundred to two hundred fifty miles an hour.

The great red emergency lights on the bow and stern began to blink and from the special transmitter in the hull a radio siren wail raced ahead of the car to be picked up by the emergency receptor antennas required on all vehicles.

The working part of the patrol had begun.

Conversation died in the speeding car, partly because of the concentration required by the troopers, secondly because all transmissions whether intercom or radio, on a code two or three run, were taped and monitored by Control. In the center of the instrument panel, an oversized radiodometer was clicking off the mileage marks as the car passed each milestone. The milestone posts beamed a coded signal across all five lanes and as each vehicle passed the marker, the radiodometer clicked up another number.

Car 56 had been at MM 23 when the call came. Now, at better than four miles a minute, Beulah whipped past MM 45 with ten minutes yet to go to reach the scene of the accident. Light flurries of wet snow bounced off the canopy, leaving thin, fast-drying trails of moisture. Although it was still a few minutes short of 1700 hours, the last of the winter afternoon light was being lost behind the heavy snow clouds overhead. Ben turned on the patrol car's dazzling headlight and to the left and right, Clay could see streaks of white lights from the traffic on the green and blue lanes on either side of the quarter-mile wide emergency lane.

The radio filled them in on the movement of other patrol emergency vehicles being routed to the accident site. Car 82, also assigned to NAT 26-West, was more than one hundred fifty miles ahead of Beulah. Pittsburgh Control ordered Eight Two to hold fast to cover anything else that might come up while Five Six was handling the current crisis. Eastbound Car 119 was ordered to cut across to the scene to assist Beulah's crew, and another eastbound patrol vehicle was held in place to cover for One One Nine.

At mile marker 80, yellow caution lights were flashing on all westbound lanes, triggered by Philadelphia Control the instant the word of the crash had been received. Traffic was slowing down and piling up despite the half-mile wide lanes.

"Philly Control this is Car 56."

"Go ahead Five Six."

"It's piling up in the green and

white," Ben said. "Let's divert to blue on slowdown and seal the yellow."

"P'hilly Control acknowledged," came the reply.

The flashing amber caution lights on all lanes switched to red. As Ben began de-acceleration, diagonal red flashing barriers rose out of the roadway on the green and white lanes at the 85 mile marker and lane crossing. This channelled all traffic from both lanes to the left and into the blue lane where the flashing reds now prohibited speeds in excess of fifty miles an hour around the emergency situation. At the same time, all crossovers on the ultra high yellow lane were sealed by barriers to prevent changing of lanes into the over-congested area.

As Car 56's speed dropped back below the two hundred mile an hour mark the cocoon automatically slid open. Freed from her safety restraints, Kelly jumped for the rear entrance of the dispensary and cleared the racking clamps from the six auto-litters. That done, she opened another locker and reached for the mobile first-aid kit. She slid it to the door entrance on its retractable casters. She slipped on her work helmet with the built-in transmitter and then sat down on the seat by the rear door to wait until the car stopped.

Car 56 was now less than two miles from the scene of the crash and traffic in the green lane to the left was at a standstill. A half mile farther westward, lights were still moving slowly along the white lane. Ahead, the troopers could see a faint wisp of smoke rising from the heaviest congregation of headlights. Both officers had their work helmets on and Clay had left his seat and descended to the side door, ready to jump out the minute the car stopped.

Martin saw a clear area in the green lane and swung the car over the dividing curbing. The big tracks floated the patrol car over the two-foot high, rounded abutment that divided each speed lane. Snow was falling faster as the headlight picked out a tangled mass of wreckage smoldering a hundred feet inside the median separating the green and white lanes. A crumpled body lay on the pavement twenty feet from the biggest clump of smashed metal, and other fragments of vehicles were strung out down the roadway for fifty feet. There was no movement.

NorCon thruway laws were strict and none were more rigidly enforced than the regulation that no one other than a member of the patrol set foot outside of their vehicle while on any thruway traffic lane. This meant not giving any assistance whatsoever to accident victims. The ruling had been called inhuman, monstrous, unthinkable, and lawmakers in the three nations of the compact had forced NorCon to revoke the rule in the early days of the thruways. After speeding cars and cargo carriers had cut down twice as many do-gooders on foot at accident scenes than the accidents themselves caused, the law was reinstated. The lives of the many were more vital than the lives of a few.

Martin halted the patrol vehicle a few feet from the wreckage and Beulah was still rocking gently on her tracks by the time both Patrol Trooper Clay Ferguson and MSO Kelly Lightfoot hit the pavement on the run.

In the cab, Martin called in on the radio. "Car 56 is on scene. Release blue at Marker 95 and resume speeds all lanes at Marker 95 in—" he paused and looked back at the halted traffic piled up before the lane had been closed "—seven minutes." He jumped for the steps and sprinted out of the patrol car in the wake of Ferguson and Kelly.

The team's surgeon was kneeling beside the inert body on the road. After an ear to the chest, Kelly opened her field kit bag and slapped an electrode to the victim's temple. The needle on the encephalic meter in the lid of the kit never flickered. Kelly shut the bag and hurried with it over to the mass of wreckage. A thin column of black, oily smoke rose from somewhere near the bottom of the heap. It was almost impossible to identify at a glance whether the mangled metal was the remains of one or more cars. Only the absence of track equipment made it certain that they even had been passenger vehicles.

Clay was carefully climbing up the side of the piled up wrecks to a window that gaped near the top.

"Work fast, kid," Martin called up. "Something's burning down there and this whole thing may go up. I'll get this traffic moving."

He turned to face the halted mass of cars and cargo carriers east of the wreck. He flipped a switch that cut his helmet transmitter into the remote standard vehicular radio circuit aboard the patrol car.

"Attention, please, all cars in green lane. All cars in the left line move out now, the next line fall in behind. You are directed to clear the area immediately. Maintain fifty miles an hour for the next mile. You may resume desired speeds and change lanes at mile Marker 95. I repeat, all cars in green lane . . ." he went over the instructions once more, relayed through Beulah's transmitter to the standard receivers on all cars. He was still talking as the traffic began to move.

By the time he turned back to help his teammates, cars were moving in a steady stream past the huge, red-flashing bulk of the patrol car.

Both Clay and Kelly were lying flat across the smashed, upturned side of the uppermost car in the pile. Kelly had her field bag open on the ground and she was reaching down through the smashed window.

"What is it Clay?" Martin called.

The younger officer looked down over his shoulder. "We've got a woman alive down here but she's wedged in tight. She's hurt pretty badly and Kelly's trying to slip a hypo into her now. Get the arm out, Ben."

Martin ran back to the patrol car and flipped up a panel on the hull. He pulled back on one of the several levers recessed into the hull and the big wrecking crane swung smoothly out of its cradle and over the wreckage. The end of the crane arm was

directly over Ferguson. "Lemme have the spreaders," Clay called. The arm dipped and from either side of the tip, a pair of flanges shot out like tusks on an elephant. "Put 'er in neutral," Clay directed. Martin pressed another lever and the crane now could be moved in any direction by fingertip pulls at its extremity. Ferguson carefully guided the crane with its projecting tusks into the smashed orifice of the car window. "O.K., Ben, spread it."

The crane locked into position and the entire arm split open in a "V" from its base. Martin pressed steadily on the two levers controlling each side of the divided arm and the tusks dug into the sides of the smashed window. There was a steady screeching of tearing and ripping metal as the crane tore window and frame apart. "Hold it," Ferguson yelled and then eased himself into the widened hole.

"Ben," Kelly called from her perch atop the wreckage, "litter."

Martin raced to the rear of the patrol car where the sloping ramp stood open to the lighted dispensary. He snatched at one of the autolitters and triggered its tiny drive motor. A homing beacon in his helmet guided the litter as it rolled down the ramp, turned by itself and rolled across the pavement a foot behind him. It stopped when he stopped and Ben touched another switch, cutting the homing beacon.

Clay's head appeared out of the hole. "Get it up here, Ben. I can get her out. And I think there's another one alive still further down."

Martin raised the crane and its ripper bars retracted. The split arms spewed a pair of cables terminating in magnalocks. The cables dangled over the ends of the autolitter, caught the lift plates on the litter and a second later, the cart was swinging beside the smashed window as Clay and Kelly eased the torn body of a woman out of the wreckage and onto the litter. As Ben brought the litter back to the pavement, the column of smoke had thickened. He disconnected the cables and homed the stretcher back to the patrol car. The hospital cart with its unconscious victim, rolled smoothly back to the car, up the ramp and into the dispensary to the surgical table.

Martin climbed up the wreckage beside Kelly. Inside the twisted interior of the car, the thick smoke all but obscured the bent back of the younger trooper and his powerful handlight barely penetrated the gloom. Blood was smeared over almost every surface and the stink of leaking jet fuel was virtually overpowering. From the depths of the nightmarish scene came a tortured scream. Kelly reached into a coverall pocket and produced another sedation hypo. She squirmed around and started to slip down into the wreckage with Ferguson. Martin grabbed her arm. "No, Kelly, this thing's ready to blow. Come on, Clay, get out of there. Now!"

Ferguson continued to pry at the twisted plates below him.

"I said 'get out of there' Ferguson," the senior officer roared. "And that's an order."

Clay straightened up and put his hands on the edge of the window to boost himself out. "Ben, there's a guy alive down there. We just can't leave him."

"Get down from there, Kelly," Martin ordered. "I know that man's down there just as well as you do, Clay. But we won't be helping him one damn bit if we get blown to hell and gone right along with him. Now get outta there and maybe we can pull this thing apart and get to him before it does blow."

The lanky Canadian eased out of the window and the two troopers moved back to the patrol car. Kelly was already in her dispensary, working on the injured woman.

Martin slid into his control seat. "Shut your ramp, Kelly," he called over the intercom, "I'm going to move around to the other side."

The radio broke in. "Car 119 to Car 56, we're just turning into the divider. Be there in a minute."

"Snap it up," Ben replied. "We need you in a hurry."

As he maneuvered Beulah around the wreckage he snapped orders to Ferguson.

"Get the foam nozzles up, just in case, and then stand by on the crane."

A mile away, they saw the flashing emergency lights of Car 119 as it raced diagonally across the yellow and blue lanes, whipping with ponderous ease through the moving traffic.

"Take the south side, 119," Martin called out. "We'll try and pull this mess apart."

"Affirmative," came the reply. Even before the other patrol vehicle came to a halt, its crane was swinging out from the side, and the ganged magnalocks were dangling from their cables.

"O.K., kid," Ben ordered, "hook it."

At the interior crane controls, Clay swung Beulah's crane and cable mags towards the wreckage. The magnalocks slammed into the metallic mess with a bang almost at the same instant the locks hit the other side from Car 119.

Clay eased up the cable slack. "Good," Ben called to both Clay and the operating trooper in the other car, "now let's pull it . . . LOOK OUT! FOAM . . . FOAM . . . FOAM," he yelled.

The ugly, deep red fireball from the exploding wreckage was still growing as Clay slammed down on the fire-control panel. A curtain of thick chemical foam burst from the poised nozzles atop Beulah's hull and a split-second later, another stream of foam erupted from the other patrol car. The dense, oxygen-absorbing retardant blanket snuffed the fire out in three seconds. The cranes were still secured to the foam-covered heap of metal. "Never mind the caution," Ben called out, "get it apart. Fast."

Both crane operators slammed their controls into reverse and with an ear-splitting screech, the twisted

frames of the two vehicles ripped apart into tumbled heaps of broken metal and plastics. Martin and Ferguson jumped down the hatch steps and into ankle-deep foam and oil. They waded and slipped around the front of the car to join the troopers from the other car.

Ferguson was pawing at the scum-covered foam near the mangled section of one of the cars. "He should be right about," Clay paused and bent over, "here." He straightened up as the others gathered around the scorched and ripped body of a man, half-submerged in the thick foam. "Kelly," he called over the helmet transmitter, "open your door. We'll need a couple of sacks."

He trudged to the rear of the patrol car and met the girl standing in the door with a pair of folded plastic morgue bags in her hands. Behind her, Clay could see the body of the woman on the surgical table, an array of tubes and probes leading to plasma drip bottles and other equipment racked out over the table.

"How is she?"

"Not good," Kelly replied. "Skull fracture, ruptured spleen, broken ribs and double leg fractures. I've already called for an ambulance."

Ferguson nodded, took the bags from her and waded back through the foam.

The four troopers worked in the silence of the deserted traffic lane. A hundred yards away, traffic was moving steadily in the slow white lane. Three-quarters of a mile to the south, fast and ultra high traffic sped at its normal pace in the blue and yellow lanes. Westbound green was still being rerouted into the slower white lane, around the scene of the accident. It was now twenty-six minutes since Car 56 had received the accident call. The light snow flurries had turned to a steady fall of thick wet flakes, melting as they hit on the warm pavement but beginning to coat the pitiful flotsam of the accident.

The troopers finished the gruesome task of getting the bodies into the morgue sacks and laid beside the dispensary ramp for the ambulance to pick up with the surviving victim. Car 119's MSO had joined Kelly in Beulah's dispensary to give what help she might. The four patrol troopers began the grim task of probing the scattered wreckage for other possible victims, personal possessions and identification. They were stacking a small pile of hand luggage when the long, low bulk of the ambulance swung out of the police lane and rolled to a stop. Longer than the patrol cars but without the non-medical emergency facilities, the ambulance was in reality a mobile hospital. A full, scrubbed-up surgical team was waiting in the main operating room even as the ramps opened and the techs headed for Car 56. The team had been briefed by radio on the condition of the patient; had read the full recordings of the diagnostican; and were watching transmitted pulse and respiration graphs on their own screens while the transfer was being made.

The two women MSOs had un-

locked the surgical table in Beulah's dispensary and a plastic tent covered not only the table and the patient, but also the plasma and Regen racks overhead. The entire table and rig slid down the ramp onto a motor-driven dolly from the ambulance. Without delay, it wheeled across the open few feet of pavement into the ambulance and to the surgery room. The techs locked the table into place in the other vehicle and left the surgery. From a storage compartment, they wheeled out a fresh patrol dispensary table and rack and placed it in Kelly's miniature surgery. The dead went into the morgue aboard the ambulance, the ramp closed and the ambulance swung around and headed across the traffic lanes to eastbound NAT-26 and Philadelphia.

Outside, the four troopers had completed the task of collecting what little information they could from the smashed vehicles.

They returned to their cars and One One Nine's medical-surgical officer headed back to her own cubbyhole.

The other patrol car swung into position almost touching Beulah's left flank. With Ben at the control seat, on command, both cars extended broad bulldozer blades from their bows. "Let's go," Ben ordered. The two patrol vehicles moved slowly down the roadway, pushing all of the scattered scraps and parts onto a single great heap. They backed off, shifted direction towards the center police lane and began shoving the debris, foam and snow out of the green lane. At the edge of the police lane, both cars unshipped cranes and magnalifted the junk over the divider barrier onto the one-hundred-foot-wide service strip bordering the

police lane. A slow cargo wrecker was already on the way from Pittsburgh barracks to pick up the wreckage and haul it away. When the last of the metallic debris had been deposited off the traffic lane, Martin called Control.

"Car 56 is clear. NAT 26-west green is clear."

Philly Control acknowledged. Seven miles to the east, the amber warning lights went dark and the detour barrier at Crossover 85 sank back into the roadway. Three minutes later, traffic was again flashing by on green lane past the two halted patrol cars.

"Pitt Control, this is Car 119 clear of accident," the other car reported.

"Car 119 resume eastbound patrol," came the reply.

The other patrol car pulled away. The two troopers waved at Martin and Ferguson in Beulah. "See you later and thanks," Ben called out. He switched to intercom. "Kelly. Any ID on that woman?"

"Not a thing, Ben," she replied. "About forty years old, and she had a wedding band. She never was conscious, so I can't help you."

Ben nodded and looked over at his partner. "Go get into some dry clothes, kid," he said, "while I finish the report. Then you can take it for a while."

Clay nodded and headed back to the crew quarters.

Ben racked his helmet beside his seat and fished out a cigarette. He reached for an accident report form from the work rack behind his seat and began writing, glancing up from time to time to gaze thoughtfully at the scene of the accident. When he had finished, he thumbed the radio transmitter and called Philly Control Somewhere in the bloody, oil and foam covered pile of wreckage were the registration plates for the two vehicles involved. When the wrecker collected the debris, it would be machine sifted in Pittsburgh and the plates fed to records and then relayed to Philadelphia where the identifications could be added to Ben's report. When he had finished reading his report he asked, "How's the woman?"

"Still alive, but just barely," Philly Control answered. "Ben, did you say there were just two vehicles involved?"

"That's all we found," Martin replied.

"And were they both in the green?"

"Yes, why?"

"That's funny," Philly controller replied, "we got the calls as a sideswipe in white that put one of the cars over into the green. There should have been a third vehicle."

"That's right," Ben exclaimed. "We were so busy trying to get that gal out and then making the try for the other man I never even thought to look for another car. You suppose that guy took off?"

"It's possible," the controller said. "I'm calling a gate filter until we know for sure. I've got the car number on the driver that reported the accident. I'll get hold of him and see if he can give us a lead on the third car. You go ahead with your patrol and I'll let you know what I find out."

"Affirmative," Ben replied. He eased the patrol car onto the police lane and turned west once again. Clay reappeared in the cab, dressed in fresh coveralls. "I'll take it, Ben. You go and clean up now. Kelly's got a pot of fresh coffee in the galley." Ferguson slid into his control seat

A light skiff of snow covered the service strip and the dividers as Car 56 swung back westward in the red lane. Snow was falling steadily but melting as it touched the warm ferrophalt pavement in all lanes. The wet roadways glistened with the lights of hundreds of vehicles. The chronometer read 1840 hours. Clay pushed the car up to a steady 75, just about apace with the slowest traffic in the white lane. To the south, densities were much lighter in the blue and yellow lanes and even the green had thinned out. It would stay moderately light now for another hour until the dinner stops were over and the night travelers again rolled onto the thruways.

Kelly was putting frozen steaks into the infra-oven as Ben walked through to crew quarters. Her coverall sleeves were rolled to the elbows as she worked and a vagrant strand of copper hair curled over her forehead. As Martin passed by, he caught a faint whisper of perfume and he smiled appreciatively.

In the tiny crew quarters, he shut the door to the galley and stripped out of his wet coveralls and boots. He eyed the shower stall across the passageway.

"Hey, mother," he yelled to Kelly, "have I got time for a shower before dinner?"

"Yes, but make it a quickie," she called back.

Five minutes later he stepped into the galley, his dark, crew-cut hair still damp. Kelly was setting plastic, disposable dishes on the little swing-down table that doubled as a food bar and work desk. Ben peered into a simmering pot and sniffed. "Smells good. What's for dinner, Hiawatha?"

"Nothing fancy. Steak, potatoes, green beans, apple pie and coffee."

Ben's mouth watered. "You know, sometimes I wonder whether one of your ancestors didn't come out of New Egnland. Your menus always seem to coincide with my ideas of a perfect meal." He noted the two places set at the table. Ben glanced out the galley port into the headlight-triped darkness. Traffic was still light. In the distance, the night sky glowed with the lights of Chambersburg, north of the thruway.

"We might as well pull up for dinner," he said. "It's pretty slow out there."

Kelly shoved dishes over and began laying out a third setting. About half the time on patrol, the crew ate in shifts on the go, with one of the patrol troopers in the cab at all times. When traffic permitted, they pulled off to the service strip and ate together. With the communications system always in service, control stations could reach them anywhere in the big vehicle.

The sergeant stepped into the cab and tapped Ferguson on the shoulder. "Dinnertime, Clay. Pull her over and we'll try some of your gracious living."

"Light the candles and pour the wine," Clay quipped, "I'll be with you in a second."

Car 56 swung out to the edge of the police lane and slowed down. Clay eased the car onto the strip and stopped. He checked the radiodometer and called in. "Pitt Control, this is Car 56 at Marker 158. Dinner is being served in the dining car to the rear. Please do not disturb."

"Affirmative, Car 56," Pittsburgh Control responded. "Eat heartily, it may be going out of style." Clay grinned and flipped the radio to remote and headed for the galley.

Seated around the little table, the trio cut into their steaks. Parked at the north edge of the police lane, the patrol car was just a few feet from the green lane divider strip and cars and cargo carriers flashed by as they ate.

Clay chewed on a sliver of steak and looked at Kelly. "I'd marry you, Pocahontas, if you'd ever learn to cook steaks like beef instead of curing them like your ancestral buffalo robes. When are you going to learn that good beef has to be bloody to be edible?"

The girl glared at him. "If that's what it takes to make it edible, you're going to be an epicurean delight in just about one second if I hear another word about my cooking. And that's also the second crack about my noble ancestors in the past five minutes. I've always wondered about the surgical techniques my great-great-great grandpop used when he lifted a paleface's hair. One more word, Clay Ferguson, and I'll have your scalp flying from Beulah's antenna like a coontail on a kid's scooter."

Ben bellowed and nearly choked. "Hey, kid," he spluttered at Clay, "ever notice how the wrong one of her ancestors keeps coming to the surface? That was the Irish."

Clay polished off the last of his steak and reached for the individual frozen pies Kelly had put in the oven with the steaks. "Now that's another point," he said, waving his fork at Kelly. "The Irish lived so long on potatoes and prayers that when they get a piece of meat on their menu, they don't know how to do anything but boil it."

"That tears it," the girl exploded. She pushed back from the table and stood up. "I've cooked the last meal this big, dumb Canuck will ever get from me. I hope you get chronic indigestion and then come crawling to me for help. I've got something back there I've been wanting to dose you with for a long time."

She stormed out of the galley and slammed the door behind her. Ben grinned at the stunned look on Clay's face. "Now what got her on the warpath?" Clay asked. Before Ben could answer the radio speaker in the ceiling came to life.

"Car 56 this is Pitt Conrtol."

Martin reached for the transmit switch beside the galley table. "This is Five Six, go ahead."

"Relay from Philly Control," the speaker blared. "Reference the accident at Marker 92 at 1648 hours this date; Philly Control reports a third vehicle definitely involved."

Ben pulled out a pencil and Clay shoved a message pad across the table.

"James J. Newhall, address 3409 Glen Cove Drive, New York City, license number BHT 4591 dash 747 dash 1609, was witness to the initial impact. He reports that a white over green, late model Travelaire, with two men in it, sideswiped one of the two vehicles involved in the fatal accident. The Travelaire did not stop but accelerated after the impact. Newhall was unable to get the full license number but the first six units were QABR dash 46 . . . rest of numerals unknown."

Ben cut in. "Have we got identification on our fatalities yet?"

"Affirmative, Five Six," the radio replied. "The driver of the car struck by the hit-and-run vehicle was a Her-

man Lawrence Hanover, age forty-two, of 13460 One Hundred Eighty-First Street South, Camden, New Jersey, license number LFM 4151 dash 603 dash 2738. With him was his wife, Clara, age forty-one, same address. Driver of the green lane car was George R. Hamilton, age thirty-five, address Box 493, Route 12, Tucumcari, New Mexico."

Ben broke in once more. "You indicate all three are fatalities. Is this correct, Pitt Control? The woman was alive when she was transferred to the ambulance."

"Stand by, Five Six, and I'll check."

A moment later Pitt Control was back. "That is affirmative, Five Six. The woman died at 1745 hours. Here is additional information. A vehicle answering to the general description of the hit-and-run vehicle is believed to have been involved in an armed robbery and multiple murder earlier this date at Wilmington, Delaware. Philly Control is now checking for additional details. Gate filters have been established on NAT 26-West from Marker-Exit 100 to Marker-Exit 700. Also, filters on all interchanges. Pitt Control out."

Kelly Lightfoot, her not-too-serious peeve forgotten, had come back into the galley to listen to the radio exchange. The men got up from the table and Clay gathered the disposable dishware and tossed them into the waste receiver.

"We'd better get rolling," Ben said, "those clowns could still be on the thruway, although they could have got off before the filters went up."

They moved to the cab and took their places. The big engines roared into action as Ben rolled Car 56 back onto the policeway. Kelly finished straightening up in the galley and then came forward to sit on the jump seat between the two troopers. The snow had stopped again but the roadways were still slick and glistening under the headlights. Beulah rolled steadily along on her broad tracks, now cruising at one hundred miles an hour. The steady whine of the cold night wind penterated faintly into the sound-proofed and insulated cabin canopy. Clay cut out the cabin lights, leaving only the instrument panel glowing faintly along with the phosphorescent buttons and knobs on the arms of the control seats.

A heavy express cargo carrier flashed by a quarter of a mile away in the blue lane, its big bulk lit up like a Christmas tree with running and warning lights. To their right, Clay caught the first glimpse of a set of flashing amber warning lights coming up from behind in the green lane. A minute later, a huge cargo carrier came abreast of the patrol car and then pulled ahead. On its side was a glowing star of the United States Army. A minute later, another Army carrier rolled by.

"That's the missile convoy out of Aberdeen," Clay told Kelly. "I wish our hit-runner had tackled one of those babies. We'd have scraped him up instead of those other people."

The convoy rolled on past at a steady one hundred twenty-five miles

an hour. Car 56 flashed under a crossover and into a long, gentle curve. The chronometer clicked up to 2100 hours and the radio sang out. "Cars 207, 56 and 82, this is Pitt Control. 2100 hours density report follows . . ."

Pttsburgh Control read off the figures for the three cars. Car 82 was one hundred fifty miles ahead of Beulah, Car 207 about the same distance to the rear. The density report ended and a new voice came on the air.

"Attention all cars and all stations, this is Washington Criminal Control." Thc new voice paused, and across the continent, troopers on every thruway, control station, checkpoint and relay block, reached for clipboard and pen.

"Washington Criminal Control continuing, all cars and all stations, special attention to all units east of the Mississippi. At 1510 hours this date, two men held up the First National Bank of Wilmington, Delaware, and escaped with an estimated one hundred seventy-five thousand dollars. A bank guard and two tellers, together with five bank customers were killed by these subjects using automatic weapon fire to make good their escape. They were observed leaving the scene in a late model, white-over-green Travelaire sedan, license unknown. A car of the same make, model and color was stolen from Annapolis, Maryland, a short time prior to the holdup. The stolen vehicle, now believed to be the getaway car, bears USN license number QABR dash 468 dash 1113 . . ."

"That's our baby," Ben murmured as he and Clay scribbled on their message forms.

". . . Motor number ZB 1069432," Washington Criminal Control continued. "This car is also now believed to have been involved in a hit-and-run fatal accident on NAT 26-West at Marker 92 at approximately 1648 hours this date.

"Subject Number One is described as WMA, twenty to twenty-five years, five feet, eleven inches tall, medium complexion, dark hair and eyes, wearing a dark-gray sports jacket and dark pants, and wearing a gray sports cap. He was wearing a ring with a large red stone on his left hand.

"Subject Number Two is described as WMA, twenty to twenty-five years, six feet, light, ruddy complexion and reddish brown hair, light colored eyes. Has scar on back left side of neck. Wearing light-brown suit, green shirt and dark tie, no hat.

"These subjects are believed to be armed and psychotically dangerous. If observed, approach with extreme caution and inform nearest control of contact. Both subjects now under multiple federal warrants charging bank robbery, murder and hit-and-run murder. All cars and stations acknowledge. Washington Criminal Control out."

The air chattered as the cars checked into their nearest controls with "acknowledged."

"This looks like it could be a long night," Kelly said, rising to her feet. "I'm going to sack out. Call me if you need me."

"Good night, princess," Ben called.

"Hey, Hiawatha," Clay called out as Kelly paused in the galley door. "I didn't mean what I said about your steaks. Your great-great-great grandpop would have gone around with his bare scalp hanging out if he had had to use a buffalo hide cured like that steak was cooked."

He reached back at the same instant and slammed the cabin door just as Kelly came charging back. She slammed into the door, screamed and then went storming back to the dispensary while Clay doubled over in laughter.

Ben smiled at his junior partner. "Boy, you're gonna regret that. Don't say I didn't warn you."

Martin turned control over to the younger trooper and relaxed in his seat to go over the APB from Washington. Car 56 bored steadily through the night. The thruway climbed easily up the slight grade cut through the hills north of Wheeling, West Virginia, and once more snow began falling.

Clay reached over and flipped on the video scanners. Four small screens, one for each of the westbound lanes, glowed with a soft red light. The monitors were synchronized with the radiometer and changed view at every ten-mile marker. Viewing cameras mounted on towers between each lane, lined the thruway, aimed eastward at the on-coming traffic back to the next bank of cameras ten miles away. Infra-red circuits took over from standard scan at dark. A selector system in the cars gave the troopers the option of viewing either the block they were currently patroling; the one ahead of the next ten-mile block; or, the one they had just passed. As a rule, the selection was based on the speed of the car. Beamed signals from each block automatically switched the view as the patrol car went past the towers. Clay put the slower lane screens on the block they were in, turned the blue and yellow lanes to the block ahead.

They rolled past the interchange with NAT 114-South out of Cleveland and the traffic densities picked up in all lanes as many of the southbound vehicles turned west on to NAT 26. The screens flicked and Clay came alert. Some fifteen miles ahead in the one-hundred-fifty-to-two-hundred-mile an hour blue lane, a glowing dot remained motionless in the middle of the lane and the other racing lights of the blue lane traffic were sheering around it like a racing river current parting around a boulder.

"Trouble," he said to Martin, as he shoved forward on the throttle.

A stalled car in the middle of the highspeed lane was an invitation to disaster. The bull horn blared as Beulah leaped past the two hundred mile an hour mark and safety cocoons slid into place. Aft in the dispensary, Kelly was sealed into her bunk by a cocoon rolling out of the wall and encasing the hospital bed.

Car 5 slanted across the police lane with red lights flashing and edged into the traffic flow in the

blue lane. The great, red winking lights and the emergency radio siren signal began clearing a path for the troopers. Vehicles began edging to both sides of the lane to shift to crossovers to the yellow or green lanes. Clay aimed Beulah at the motionless dot on the screen and eased back from the four-mile-a-minute speed. The patrol car slowed and the headlight picked up the stalled vehicle a mile ahead. The cocoons opened and Ben slipped on his work helmet and dropped down the steps to the side hatch. Clay brought Beulah to a halt a dozen yards directly to the rear of the stalled car, the great bulk of the patrol vehicle with its warning lights serving as a shield against any possible fuzzy-headed speeders that might not be oberving the road.

As Martin reached for the door, the Wanted bulletin flashed through his head. "What make of car is that, Clay?"

"Old jalopy Tritan with some souped-up rigs. Probably kids," the junior officer replied. "It looks O.K."

Ben nodded and swung down out of the patrol car. He walked quickly to the other car, flashing his handlight on the side of the vehicle as he went up to the driver. The interior lights were on and inside, two obviously frightened young couples smiled with relief at the sight of the uniform coveralls. A freckled-faced teenager in a dinner jacket was in the driver's seat and had the blister window open. He grinned up at Martin. "Boy, am I glad to see you, officer," he said.

"What's the problem?" Ben asked.

"I guess she blew an impeller," the youth answered. "We were heading for a school dance at Cincinnati and she was boiling along like she was in orbit when blooey she just quit."

Ben surveyed the old jet sedan. "What year is this clunker?" he asked. The kid told him. "You kids have been told not to use this lane for any vehicle that old." He waved his hand in protest as the youngster started to tell him how many modifications he had made on the car. "It doesn't make one bit of difference whether you've put a first-stage Moon booster on this wreck. It's not supposed to be in the blue or yellow. And this thing probably shouldn't have been allowed out of the white —or even on the thruway."

The youngster flushed and bit his lip in embarrassment at the giggles from the two evening-frocked girls in the car.

"Well, let's get you out of here." Ben touched his throat mike. "Drop a light, Clay and then let's haul this junk pile away."

In the patrol car, Ferguson reached down beside his seat and tugged at a lever. From a recess in Beulah's stern, a big portable red warning light dropped to the pavement. As it touched the surface, it automatically flashed to life, sending out a bright, flashing red warning signal into the face of any approaching traffic. Clay eased the patrol car around the stalled vehicle and then backed slow into position, guided by Martin's radioed instructions. A tow-bar extruded from the back of the police vehicle and a

magnaclamp locked onto the front end of the teenager's car. The older officer walked back to the portable warning light and rolled it on its four wheels to the rear plate of the jalopy where another magnalock secured it to the car. Beulah's two big rear warning lights still shone above the low silhouette of the passenger car, along with the mobile lamp on the jalopy. Martin walked back to the patrol car and climbed in.

He slid into his seat and nodded at Clay. The patrol car, with the disabled vehicle in tow moved forward and slanted left towards the police lane. Martin noted the mileage marker on the radiodometer and fingered the transmitter. "Chillicothe Control this is Car 56."

"This Chillicothe. Go ahead Five Six."

"We picked up some kids in a stalled heap on the blue at Marker 382 and we've got them in tow now," Ben said. "Have a wrecker meet us and take them off our hands."

"Affirmative, Five Six. Wrecker will pick you up at Marker 412."

Clay headed the patrol car and its trailed load into an emergency entrance to the middle police lane and slowly rolled westward. The senior trooper reached into his records rack and pulled out a citation book.

"You going to nail these kids?" Clay asked.

"You're damn right I am," Martin replied, beginning to fill in the violation report. "I'd rather have this kid hurting in the pocketbook than dead. If we turn him loose, he'll think he got away with it this time and try it again. The next time he might not be so lucky."

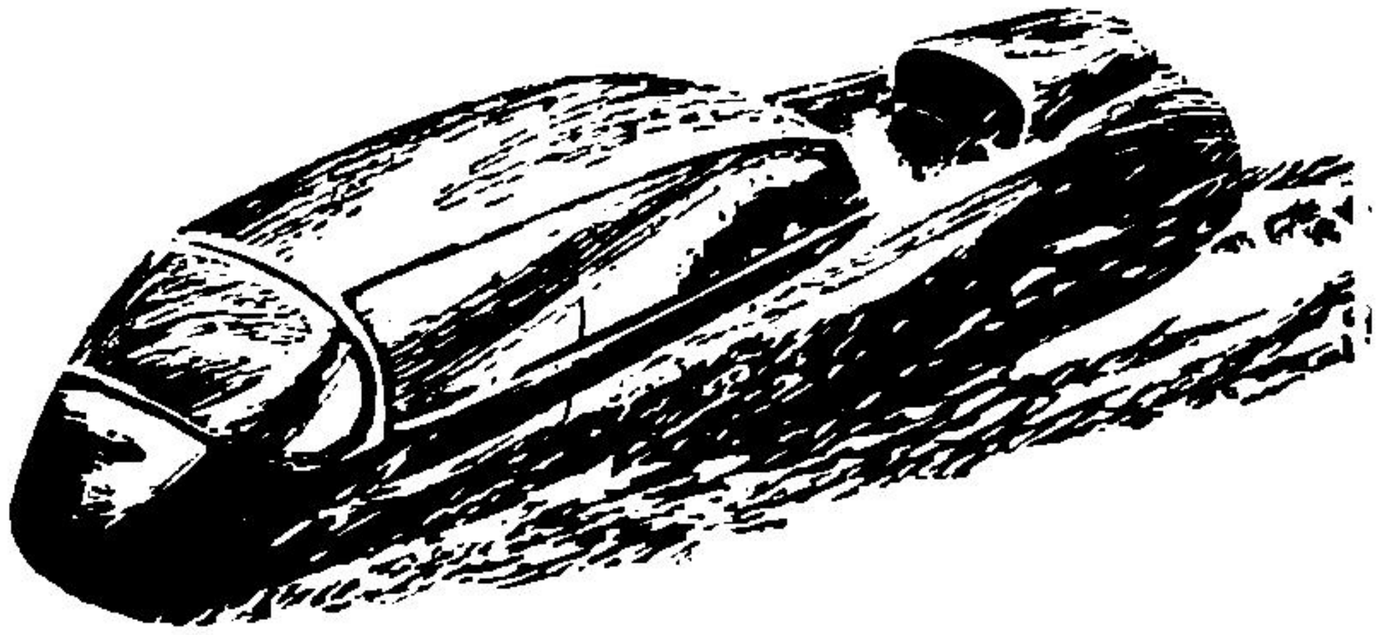
"I suppose you're right," Clay said, "but it does seem a little rough."

Ben swung around in his seat and surveyed his junior officer. "Sometimes I think you spent four years in the patrol academy with your head up your jet pipes," he said. He fished out another cigarette and took a deep drag.

"You've had four solid years of law; three years of electronics and jet and air-drive engine mechanics and engineering; pre-med, psychology, math, English, Spanish and a smattering of Portuguese, to say nothing of dozens of other subjects. You graduated in the upper tenth of your class with a B.S. in both Transportation and Criminology which is why you're riding patrol and not punching a computer or tinkering with an engine. You'd think with all that education that somewhere along the line you'd have learned to think with your head instead of your emotions."

Clay kept a studied watch on the roadway. The minute Ben had turned and swung his legs over the side of the seat and pulled out a cigarette, Clay knew that it was school time in Car 56. Instructor Sergeant Ben Martin was in a lecturing mood. It was time for all good pupils to keep their big, fat mouths shut.

"Remember San Francisco de Borja?" Ben queried. Clay nodded. "And you still think I'm too rough on them?" Ben pressed.



Ferguson's memory went back to last year's fifth patrol. He and Ben with Kelly riding hospital, had been assigned to NAT 200-North, running out of Villahermosa on the Guatamalan border of Mexico to Edmonton Barracks in Canada. It was the second night of the patrol. Some seven hundred fifty miles north of Mexico City, near the town of San Francisco de Borja, a gang of teenage Mexican youngsters had gone roaring up the yellow at speeds touching on four hundred miles an hour. Their car, a beat-up, fifteen-year-old veteran of less speedy and much rockier local mountain roads, had been gimmicked by the kids so that it bore no resemblance to its original manufacture.

From a junkyard they had obtained a battered air lift, smashed almost beyond use in the crackup of a ten-thousand dollar sports cruiser. The kids pried, pounded and bent the twisted impeller lift blades back into some semblance of alignment. From another wreck of a cargo carrier came a pair of 4000-pound thrust engines. They had jury-rigged the entire mess so that it stuck together on the old heap. Then they hit the thruway—nine of them packed into the jalopy—the oldest one just seventeen years old. They were doing three hundred fifty when they flashed past the patrol car and Ben had roared off in pursuit. The senior officer whipped the big patrol car across the crowded high

speed blue lane, jockeyed into the ultra-high yellow and then turned on the power.

By this time the kids realized they had been spotted and they cranked their makeshift power plant up to the last notch. The most they could get out of it was four hundred and it was doing just that as Car 56, clocking better than five hundred, pulled in behind them. The patrol car was still three hundred yards astern when one of the bent and re-bent impeller blades let go. The out-of-balance fan, turning at close to 35,000 rpm's, flew to pieces and the air cushion vanished. At four hundred miles an hour, the body of the old jalopy fell the twelve inches to the pavement and both front wheels caved under. There was a momentary shower of sparks, then the entire vehicle snapped cartwheeling more than eighty feet into the air and exploded. Pieces of car and bodies were scattered for a mile down the thruway and the only whole, identifiable human bodies were those of the three youngsters thrown out and sent hurtling to their deaths more than two hundred feet away.

Clay's mind snapped back to the present.

"Write 'em up," he said quietly to Martin. The senior officer gave a Satisfied nod and turned back to his citation pad.

At marker 412, which was also the

Columbus turnoff, a big patrol wrecker was parked on the side strip, engines idling, service and warning lights blinking. Clay pulled the patrol car alongside and stopped. He disconnected the tow bar and the two officers climbed out into the cold night air. They walked back to the teenager's car. Clay went to the rear of the disabled car and unhooked the warning light while Martin went to the driver's window. He had his citation book in hand. The youngster in the driver's seat went white at the sight of the violation pad. "May I see your license, please," Ben asked. The boy fumbled in a back pocket and then produced a thin, metallic tab with his name, age, address and license number etched into the indestructible and unalterable metal.

"Also your car registration," Ben added. The youth unclipped similar metal strip from the dashboard.

The trooper took the two tabs and walked to the rear of the patrol car. He slid back a panel to reveal two thin slots in the hull. Martin slid the driver's license into one of the slots, the registration tab into the other. He pressed a button below each slot. Inside the car, a magnetic reader and auto-transmitter "scanned" the magnetic symbols implanted in the tags. The information was fed instantly to Continental Headquarters Records division at Colorado Springs. In fractions of a second, the great computers at Records were comparing the information on the tags with all previous traffic citations issued anywhere in the North American continent in the past forty-five years since the birth of the Patrol. The information from the driver's license and registration tab had been relayed from Beulah via the nearest patrol relay point. The answer came back the same way.

Above the license recording slot were two small lights. The first flashed green, "license is in order and valid." The second flashed green as well, "no previous citations." Ben withdrew the tag from the slot. Had the first light come on red, he would have placed the driver under arrest immediately. Had the second light turned amber, it would have indicated a previous minor violation. This, Ben would have noted on the new citation. If the second light had been red, this would have meant either a major previous violation or more than one minor citation. Again, the driver would have been under immediate arrest. The law was mandatory. One big strike and you're out—two foul tips and the same story. And "out" meant just that. Fines, possibly jail or prison sentence and lifetime revocation of driving privileges.

Ben flipped the car registration slot to "stand-by" and went back to the teenager's car. Even though they were parked on the service strip of the police emergency lane, out of all traffic, the youngsters stayed in the car. This one point of the law they knew and knew well. Survival chances were dim anytime something went wrong on the highspeed thruways. That little margin of luck vanished once outside the not-too-much-better security of the vehicle body.

Martin finished writing and then slipped the driver's license into a pocket worked into the back of the metallic paper foil of the citation blank. He handed the pad into the window to the driver together with a carbon stylus.

The boy's lip trembled and he signed the citation with a shaky hand.

Ben ripped off the citation blank and license, fed them into the slot on the patrol car and pressed both the car registration and license "record" buttons. Ten seconds later the permanent record of the citation was on file in Colorado Springs and a duplicate recording of the action was in the Continental traffic court docket recorder nearest to the driver's hometown. Now, no power in three nations could "fix" that ticket. Ben withdrew the citation and registration tag and walked back to the car. He handed the boy the license and registration tab, together with a copy of the citation. Ben bent down to peer into the car.

"I made it as light on you as I could," he told the young driver. "You're charged with improper use of the thruway. That's a minor violation. By rights, I should have cited you for illegal usage." He looked around slowly at each of the young people. "You look like nice kids," he said. "I think you'll grow up to be nice people. I want you around long enough to be able to vote in a few years. Who knows, maybe I'll be running for president then and I'll need your votes. It's a cinch that falling apart in the middle of two-hundred-mile an hour traffic is no way to treat future voters.

"Good night, Kids." He smiled and walked away from the car. The three young passengers smiled back at Ben. The young driver just stared unhappily at the citation.

Clay stood talking with the wrecker crewmen. Ben nodded to him and mounted into the patrol car. The young Canadian crushed out his cigarette and swung up behind the sergeant. Clay went to the control seat when he saw Martin pause in the door to the galley.

"I'm going to get a cup of coffee," the older officer said, "and then take the first shift. You keep Beulah 'til I get back."

Clay nodded and pushed the throttles forward. Car 56 rolled back into the police lane while behind it, the wrecker hooked onto the disabled car and swung north into the crossover. Clay checked both the chronometer and radiodometer and then reported in. "Cinncy Control this is Car 56 back in service." Cincinnati Control acknowledged.

Ten minutes later, Ben reappeared in the cab, slid into the left-hand seat. "Hit the sack, kid," he told Ferguson. The chronometer read 2204. "I'll wake you at midnight—or sooner, if anything breaks."

Ferguson stood up and stretched, then went into the galley. He poured himself a cup of coffee and carrying it with him, went back to the crew quarters. He closed the door to the galley and sat down on the lower

bunk to sip his coffee. When he had finished, he tossed the cup into the basket, reached and dimmed the cubby lights and kicked off his boots. Still in his coveralls, Clay stretched out on the bunk and sighed luxuriously. He reached up and pressed a switch on the bulkhead above his pillow and the muted sounds of music from a standard broadcast commercial station drifted into the bunk area. Clay closed his eyes and let the sounds of the music and the muted rumble of the engines lull him to sleep. It took almost fifteen seconds for him to be in deep slumber.

Ben pushed Beulah up to her steady seventy-five-mile-an-hour cruising speed, moved to the center of the quarter-mile-wide police lane and locked her tracks into autodrive. He relaxed back in his seat and divided his gaze between the video monitors and the actual scene on either side of him in the night. Once again the sky was lighted, this time much brighter on the horizon as the road ways swept to the south of Cincinnati.

Traffic was once again heavy and fast with the blue and green carrying almost equal loads while white was really crowded and even the yellow "zoom" lane was beginning to fill. The 2200 hour density reports from Cinncy had been given before the Ohio State-Cal football game traffic had hit the thruways and densities now were peaking near twenty thousand vehicles for the one-hundred-mile block of westbound NAT 26 out of Cincinnati.

Back to the east, near the eastern Ohio state line, Martin could hear Car 207 calling for a wrecker and meat wagon. Beulah rumbled on through the night. The video monitors flicked to the next ten-mile stretch as the patrol car rolled past another interchange. More vehicles streamed onto the westbound thruway, crossing over and dropping down into the same lanes they held coming out of the north-south road. Seven years on patrols had created automatic reflexes in the trooper sergeant. Out of the mass of cars and cargoes streaming along the rushing tide of traffic, his eye picked out the track of one vehicle slanting across the white lane just a shade faster than the flow of traffic. The vehicle was still four or five miles ahead. It wasn't enough out of the ordinary to cause more than a second, almost unconscious glance, on the part of the veteran officer. He kept his view shifting from screen to screen and out to the sides of the car.

But the reflexes took hold again as his eye caught the track of the same vehicle as it hit the crossover from white to green, squeezed into the faster lane and continued its sloping run towards the next faster crossover. Now Martin followed the movement of the car almost constantly. The moving blip had made the cutover across the half-mile wide green lane in the span of one crossover and was now whipping into the merger lane that would take it over the top

of the police lane and drop down into the one hundred fifty to two hundred mile an hour blue. If the object of his scrutiny straightened out in the blue, he'd let it go. The driver had been bordered on violation in his fast crossover in the face of heavy traffic. If he kept it up in the now-crowded high-speed lane, he was asking for sudden death. The monitors flicked to the next block and Ben waited just long enough to see the speeding car make a move to the left, cutting in front of a speeding cargo carrier. Ben slammed Beulah into high. Once again the bull horn blared as the cocoons slammed shut, this time locking both Clay and Kelly into their bunks, sealing Ben into the control seat.

Beulah lifted on her air cushion and the twin jets roared as she accelerated down the police lane at three hundred miles an hour. Ben closed the gap on the speeder in less than a minute and then edged over to the south side oft he police lane to make the jump into the blue lane. The red emergency lights and the radio siren had already cleared a hole for him in the traffic pattern and he eased back on the finger throttles as the patrol car sailed over the divider and into the blue traffic lane. Now he had eyeball contact with the speeding car, still edging over towards the ultra-high lane. On either side of the patrol car traffic gave way, falling back or moving to the left and right. Car 56 was now directly behind the speeding passenger vehicle. Ben fingered the cut-in switch that put his voice signal onto the standard vehicular emergency frequency—the band that carried the automatic siren-warning to all vehicles.

The patrol car was still hitting above the two-hundred-mile-an-hour mark and was five hundred feet behind the speeder. The headlamp bathed the other car in a white glare, punctuated with angry red flashes from the emergency lights.

"You are directed to halt or be fired upon," Ben's voice roared out over the emergency frequency. Almost without warning, the speeding car began braking down with such deceleration that the gargantuan patrol car with its greater mass came close to smashing over it and crushing the small passenger vehicle like an insect. Ben cut all forward power, punched up full retrojet and at the instant he felt Beulah's tracks touch the pavement as the air cushion blew, he slammed on the brakes. Only the safety cocoon kept Martin from being hurled against the instrument panel and in their bunks, Kelly Lightfoot and Clay Ferguson felt their insides dragging down into their legs.

The safety cocoons snapped open and Clay jumped into his boots and leaped for the cab. "Speeder," Ben snapped as he jumped down the steps to the side hatch. Ferguson snatched up his helmet from the rack beside his seat and leaped down to join his partner. Ben ran up to the stopped car through a thick haze of smoke from the retrojets of the patrol car and the friction-burning braking of

both vehicles. Ferguson circled to the other side of the car. As they flashed their handlights into the car, they saw the driver of the car kneeling on the floor beside the reclined passenger seat. A woman lay stretched out on the seat, twisting in pain. The man raised an agonized face to the officers. "My wife's going to have her baby right here!"

"Kelly," Ben yelled into his helmet transmitter. "Maternity!"

The dispensary ramp was halfway down before Ben had finished calling. Kelly jumped to the ground and sprinted around the corner of the patrol car, medical bag in hand.

She shoved Clay out of the way and opened the door on the passenger side. On the seat, the woman moaned and then muffled a scream. The patrol doctor laid her palm on the distended belly. "How fast are your pains coming?" she asked. Clay and Ben had moved away from the car a few feet.

"Litter," Kelly snapped over her shoulder. Clay raced for the patrol car while Ben unshipped a portable warning light and rolled it down the lane behind the patrol car. He flipped it to amber "caution" and "pass." Blinking amber arrows pointed to the left and right of the halted passenger vehicle and traffic in the blue lane began picking up speed and parting around the obstructions.

By the time he returned to the patrol car, Kelly had the expectant mother in the dispensary. She slammed the door in the faces of the three men and then she went to work.

The woman's husband slumped against the side of the patrol vehicle.

Ben dug out his pack of cigarettes and handed one to the shaking driver.

He waited until the man had taken a few drags before speaking.

"Mister, I don't know if you realize it or not but you came close to killing your wife, your baby and yourself," Ben said softly, "to say nothing of the possibility of killing several other families. Just what did you think you were doing?"

The driver's shoulders sagged and his hand shook as he took the cigarette from his mouth. "Honestly, officer, I don't know. I just got frightened to death," he said. He peered up at Martin. "This is our first baby, you see, and Ellen wasn't due for another week. We thought it would be all right to visit my folks in Cleveland and Ellen was feeling just fine. Well, anyway, we started home tonight—we live in Jefferson City—and just about the time I got on the thruway, Ellen started having pains. I was never so scared in my life. She screamed once and then tried to muffle them but I knew what was happening and all I could think of was to get her to a hospital. I guess I went out of my head, what with her moaning and the traffic and everything. The only place I could think of that had a hospital was Evansville, and I was going to get her there come hell or high water." The young man tossed away the half-smoked cigarette and looked up at the closed dispensary door. "Do you think she's all right?"

Ben sighed resignedly and put his

hand on the man's shoulder. "Don't you worry a bit. She's got one of the best doctors in the continent in there with her. Come on." He took the husband by the arm and led him around to the patrol car cab hatch. "You climb up there and sit down. I'll be with you in a second."

The senior officer signaled to Ferguson. "Let's get his car out of the traffic, Clay," he directed. "You drive it."

Ben went back and retrieved the caution blinker and re-racked it in the side of the patrol car, then climbed up into the cab. He took his seat at the conrtols and indicated the jump seat next to him. "Sit down, son. We're going to get us and your car out of this mess before we all get clobbered."

He flicked the headlamp at Ferguson in the control seat of the passenger car and the two vehicles moved out. Ben kept the emergency lights on while they eased carefully cross-stream to the north and the safety of the police lane. Clay picked up speed at the outer edge of the blue lane and rolled along until he reached the first "patrol only" entrance through the divider to the service strip. Ben followed him in and then turned off the red blinkers and brought the patrol car to a halt behind the other vehicle.

The worried husband stood up and looked to the rear of the car. "What's making it so long?" he asked anxiously. "They've been in there a long time."

Ben smiled. "Sit down, son. These things take time. Don't you worry. If there were anything wrong, Kelly would let us know. She can talk to us on the intercom anytime she wants anything."

The man sat back down. "What's your name?" Ben inquired.

"Haverstraw," the husband replied distractedly, "George Haverstraw. I'm an accountant. That's my wife back there," he cried, pointing to the closed galley door. "That's Ellen."

"I know," Ben said gently. "You told us that."

Clay had come back to the patrol car and dropped into his seat across from the young husband. "Got a name picked out for the baby?" he asked.

Haverstraw's face lighted. "Oh, yes," he exclaimed. "If it's a boy, we're going to call him Harmon Pierce Haverstraw. That was my grandfather's name. And if she's a girl, it's going to be Caroline May after Ellen's mother and grandmother."

The intercom came to life. "Anyone up there?" Kelly's voice asked. Before they could answer, the wail of a baby sounded over the system. Haverstraw yelled.

"Congratulations, Mr. Haverstraw," Kelly said, "you've got a fine-looking son."

"Hey," the happy young father yelped, "hey, how about that? I've got a son." He pounded the two grinning troopers on the back. Suddenly he froze. "What about Ellen? How's Ellen?" he called out.

"She's just fine," Kelly replied. "We'll let you in here in a couple of

minutes but we've got to get us gals and your new son looking pretty for papa. Just relax."

Haverstraw sank down onto the jump seat with a happy dazed look on his face.

Ben smiled and reached for the radio. "I guess our newest citizen deserves a ride in style," he said. "We're going to have to transfer Mrs. Haverstraw and er, oh yes, Master Harmon Pierce to an ambulance and then to a hospital now, George. You have any preference on where they go?"

"Gosh, no," the man replied. "I guess the closest one to wherever we are." He paused thoughtfully. "Just where are we? I've lost all sense of distance or time or anything else."

Ben looked at the radiodometer. "We're just about due south of Indianapolis. How would that be?"

"Oh, that's fine," Haverstraw replied.

"You can come back now, Mr. Haverstraw," Kelly called out. Haverstraw jumped up. Clay got up with him. "Come on, papa," he grinned, "I'll show you the way."

Ben smiled and then called into Indianapolis Control for an ambulance.

"Ambulance on the way," Control replied. "Don't you need a wrecker, too, Five Six?"

Ben grinned. "Not this time. We didn't lose one. We gained one."

He got up and went back to have a look at Harmon Pierce Haverstraw, age five minutes, temporary address, North American Continental Thruway 26-West, Mile Marker 632.

Fifteen minutes later, mother and baby were in the ambulance heading north to the hospital. Haverstraw, calmed down with a sedative administered by Kelly, had nearly wrung their hands off in gratitude as he said good-by.

"I'll mail you all cigars when I get home," he shouted as he waved and climbed into his car.

Beulah's trio watched the new father ease carefully into the traffic as the ambulance headed down the police-way. Haverstraw would have to cut over to the next exchange and then go north to Indianapolis. He'd arrive later than his family. This time, he was the very picture of careful driving and caution as he threaded his way across the green.

"I wonder if he knows what brand of cigars I smoke?" Kelly mused.

The chrono clicked up to 2335 as Car 56 resumed patrol. Kelly plumped down onto the jump seat beside Ben. Clay was fiddling in the galley. "Why don't you go back to the sack?" Ben called.

"What, for a lousy twenty-five minutes," Clay replied. "I had a good nap before you turned the burners up to high. Besides, I'm hungry. Anyone else want a snack?"

Ben shook his head. "No, thanks," Kelly said. Ferguson finished slapping together a sandwich. Munching on it, he headed into the engine room to make the midnight check. Car 56 had now been on patrol eight hours. Only two hundred thirty-two

hours and two thousand miles to go.

Kelly looked around at the departing back of the younger trooper. "I'll bet this is the only car in NorCon that has to stock twenty days of groceries for a ten-day patrol," she said.

Ben chuckled. "He's still a growing boy."

"Well, if he is, it's all between the ears," the girl replied. "You'd think that after a year I would have realized that nothing could penetrate that thick Canuck's skull. He gets me so mad sometimes that I want to forget I'm a lady." She paused thoughtfully. "Come to think of it. No one ever accused me of being a lady in the first place."

"Sounds like love," Ben smiled.

Hunched over on the jump seat with her elbows on her knees and her chin cupped in both hands, Kelly gave the senior officer a quizzical sideways look.

Ben was watching his monitors and missed the glance. Kelly sighed and stared out into the light streaked night of the thruway. The heavy surge of football traffic had distributed itself into the general flow on the road and while all lanes were busy, there were no indications of any overcrowding or jam-ups. Much of the pattern was shifting from passenger to cargo vehicle as it neared midnight. The football crowds were filtering off at each exchange and exit and the California fans had worked into the blue and yellow—mostly the yellow—for the long trip home. The fewer passenger cars on the thruway and the increase in cargo carriers gave the troopers a breathing spell. The men in the control buckets of the three hundred and four hundred-ton cargo vehicles were the real pro's of the thruways; careful, courteous and fast. The NorCon patrol cars could settle down to watch out for the occasional nuts and drunks that might bring disaster.

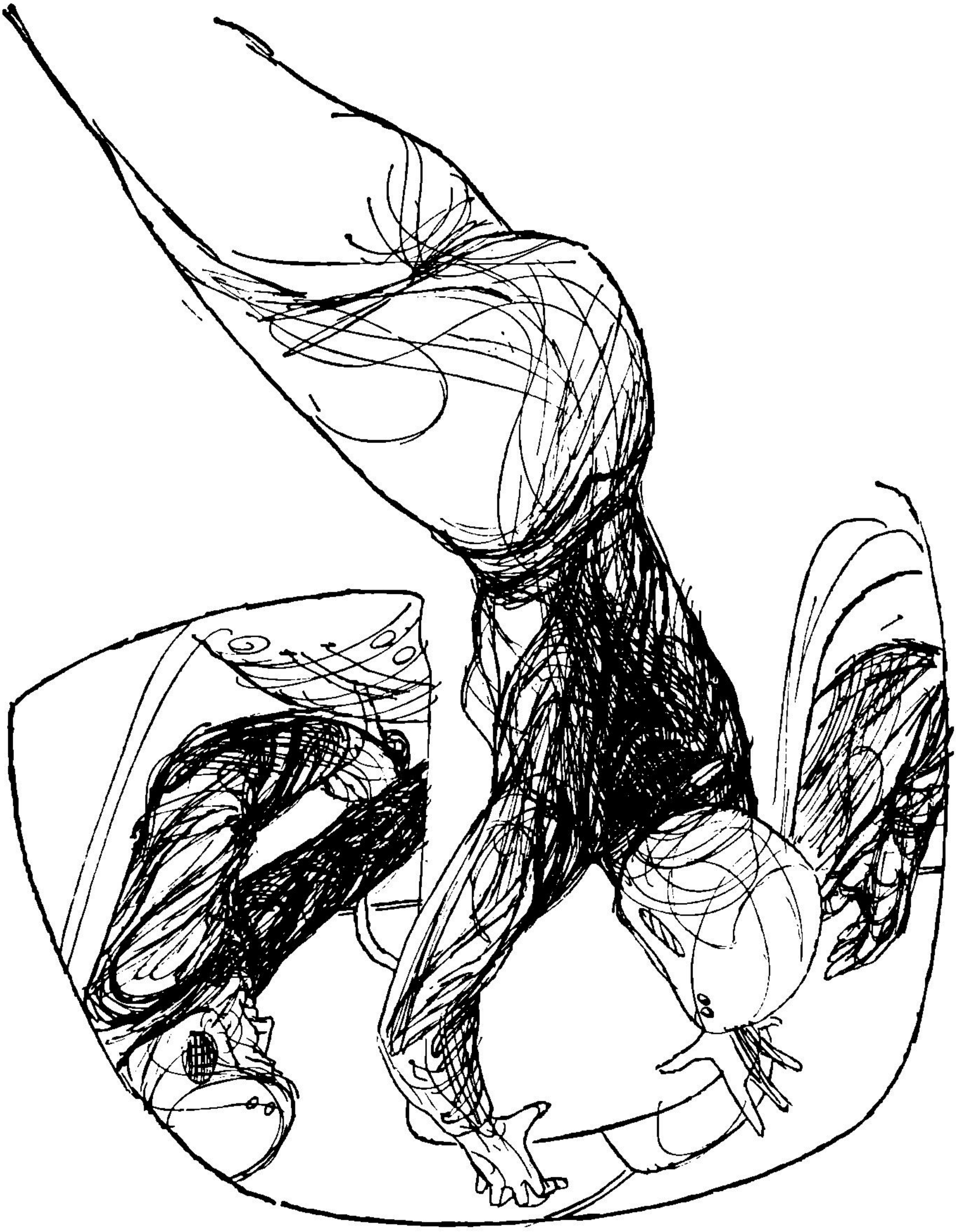
Once again, Martin had the patrol car on auto drive in the center of the police lane and he steeled back in his seat. Beside him, Kelly stared moodily into the night.

"How come you've never married, Ben?" she asked. The senior trooper gave her a startled look. "Why, I guess for the same reason you're still a maiden," he answered. "This just doesn't seem to be the right kind of a job for a married man."

Kelly shook her head. "No, it's not the same thing with me," she said. "At least, not entirely the same thing. If I got married, I'd have to quit the Patrol and you wouldn't. And secondly, if you must know the truth, I've never been asked."

Ben looked thoughtfully at the copper-haired Irish-Indian girl. All of a sudden she seemed to have changed in his eyes. He shook his head and turned back to the road monitors.

"I just don't think that a patrol trooper has any business getting married and trying to keep a marriage happy and make a home for a family thirty days out of every three hundred sixty, with an occasional weekend home if you're lucky enough to draw your hometown for a terminal point. This might help the popula-



tion rate but it sure doesn't do anything for the institution of matrimony."

"I know some troopers that are married," Kelly said.

"But there aren't very many," Ben countered. "Comes the time they pull me off the cars and stick me behind a desk somewhere, then I'll think about it."

"You might be too old by then," Kelly murmured.

Ben grinned. "You sound as though you're worried about it," he said.

"No," Kelly replied softly, "no, I'm not worried about it. Just thinking." She averted her eyes and looked out into the night again. "I wonder what NorCon would do with a husband-wife team?" she murmured, almost to herself.

Ben looked sharply at her and frowned. "Why, they'd probably split them up," he said.

"Split what up?" Clay inquired, standing in the door of the cab.

"Split up all troopers named Clay Ferguson," Kelly said disgustedly, "and use them for firewood—especially the heads. They say that hardwood burns long and leaves a fine ash. And that's what you've been for years."

She sat erect in the jump seat and looked sourly at the young trooper.

Clay shuddered at the pun and squeezed by the girl to get to his seat. "I'll take it now, pop," he said. "Go get your geriatrics treatment."

Ben got out of his seat with a snort. "I'll 'pop' you, skinhead," he snapped. "You may be eight years younger than I am but you only have one third the virility and one tenth the brains. And eight years from now you'll still be in deficit spending on both counts."

"Careful, venerable lord of my destiny," Clay admonished with a grin, "remember how I spent my vacation and remember how you spent yours before you go making unsubstantiated statements about my virility."

Kelly stood up. "If you two will excuse me, I'll go back to the dispensary and take a good jolt of male hormones and then we can come back and finish this man-to-man talk in good locker room company."

"Don't you dare," Ben cried, "I wouldn't let you tamper with one single, tiny one of your feminine traits, princess. I like you just the way you are."

Kelly looked at him with a wide-eyed, cherubic smile. "You really mean that, Ben?"

The older trooper flushed briefly and then turned quickly into the galley. "I'm going to try for some shut-eye. Wake me at two, Clay, if nothing else breaks." He turned to Kelly who still was smiling at him. "And watch out for that lascivious young goat."

"It's all just talk, talk, talk," she said scornful. "You go to bed Ben. I'm going to try something new in psychiatric annals. I'm going to try and psychoanalyze a dummy." She sat back down on the jump seat.

At 2400 hours it was Vincennes

Check with the density reports, all down in the past hour. The patrol was settling into what looked like a quiet night routine. Kelly chatted with Ferguson for another half hour and then rose again. "I think I'll try to get some sleep," she said. "I'll put on a fresh pot of coffee for you two before I turn in."

She rattled around in the galley for some time. "Whatcha cooking?" Clay called out. "Making coffee," Kelly replied.

"It take all that time to make coffee?" Clay queried.

"No," she said. "I'm also getting a few things ready so we can have a fast breakfast in case we have to eat on the run. I'm just about through now."

A couple of minutes later she stuck her head into the cab. "Coffee's done. Want some?"

Clay nodded. "Please, princess."

She poured him a cup and set it in the rack beside his seat.

"Thanks," Clay said. "Good night, Hiawatha."

"Good night, Babe," she replied.

"You mean 'Paul Bunyon,' don't you?" Clay asked. "'Babe' was his blue ox."

"I know what I said," Kelly retorted and strolled back to the dispensary. As she passed through the crew cubby, she glanced at Ben sleeping on the bunk recently vacated by Ferguson. She paused and carefully and gently pulled a blanket up over his sleeping form. She smiled down at the trooper and then went softly to her compartment.

In the cab, Clay sipped at his coffee and kept watchful eyes on the video monitors. Beulah was back on auto drive and Clay had dropped her speed to a slow fifty as the traffic thinned.

At 0200 hours he left the cab long enough to go back and shake Ben awake and was himself re-awakened at 0400 to take back control. He let Ben sleep an extra hour before routing him out of the bunk again at 0700. The thin, gray light of the winter morning was just taking hold when Ben came back into the cab. Clay had pulled Beulah off to the service strip and was stopped while he finished transcribing his scribbled notes from the 0700 Wahington Criminal Control broadcast.

Ben ran his hand sleepily over his close-cropped head. "Anything exciting?" he asked with a yawn. Clay shook his head. "Same old thing. 'All cars exercise special vigilance over illegal crossovers. Keep all lanes within legal speed limits.' Same old noise."

"Anything new on our hit-runner?"

"Nope."

"Good morning, knights of the open road," Kelly said from the galley door. "Obviously you both went to sleep after I left and allowed our helpless citizens to slaughter each other."

"How do you figure that one?" Ben laughed.

"Oh, it's very simple," she replied. "I managed to get in a full seven hours of sleep. When you sleep, I

sleep. I slept. Ergo, you did likewise."

"Nope," Clay said, "for once we had a really quiet night. Let's hope the day is of like disposition."

Kelly began laying out the breakfast things. "You guys want eggs this morning?"

"You gonna cook again today?" Clay inquired.

"Only breakfast," Kelly said. "You have the honors for the rest of the day. The diner is now open and we're taking orders."

"I'll have mine over easy," Ben said. "Make mine sunny-up," Clay called.

Kelly began breaking eggs into the pan, muttering to herself. "Over easy, sunny-up, I like 'em scrambled. Next tour I take I'm going to get on a team where everyone likes scrambled eggs."

A few minutes later, Beulah's crew sat down to breakfast. Ben had just dipped into his egg yolk when the radio blared. "Attention all cars. Special attention Cars 207, 56 and 82."

"Just once," Ben said, "just once, I want to sit down to a meal and get it all down my gullet before that radio gives me indigestion." He laid down his fork and reached for the message pad.

The radio broadcast continued. "A late model, white over green Travelaire, containing two men and believed to be the subjects wanted in earlier broadcast on murder, robbery and hit-run murder, was involved in a service station robbery and murder at Vandalia, Illinois, at approximately 0710 this date. NorCon Criminal Division believes this subject car escaped filter check and left NAT 26-West sometime during the night.

"Owner of this stolen vehicle states it had only half tanks of fuel at the time it was taken. This would indicate wanted subjects stopped for fuel. It is further believed they were recognized by the station attendant from video bulletins sent out by this department last date and that he was shot and killed to prevent giving alarm.

"The shots alerted residents of the area and the subject car was last seen headed south. This vehicle may attempt to regain access to NAT-26-West or it may take another thruway. All units are warned once again to approach this vehicle with extreme caution and only with the assistance of another unit where possible. Acknowledge. Washington Criminal Control out."

Ben looked at the chrono. "They hit Vandalia at 0710, eh. Even in the yellow they couldn't get this far for another half hour. Let's finish breakfast. It may be a long time until lunch."

The crew returned to their meal. While Kelly was cleaning up after breakfast, Clay ran the quick morning engine room check. In the cab, Ben opened the arms rack and brought out two machine pistols and belts. He checked them for loads and laid one on Clay's control seat. He strapped the other around his waist. Then he flipped up a cover in the front panel of the cab. It exposed the

breech mechanisms of a pair of twin-mounted 25 mm auto-cannon. The ammunition loads were full. Satisfied, Ben shut the inspection port and climbed into his seat. Clay came forward, saw the machine pistol on his seat and strapped it on without a word. He settled himself in his seat. "Engine room check is all green. Let's go rabbit hunting."

Car 56 moved slowly out into the police lane. Both troopers had their individual sets of video monitors on in front of their seats and were watching them intently. In the growing light of day, a white-topped car was going to be easy to spot.

It had all the earmarks of being another wintery, overcast day. The outside temperature at 0800 was right on the tweny-nine-degree mark and the threat of more snow remained in the air. The 0800 density reports from St. Louis Control were below the 14,000 mark in all lanes in the one-hundred-mile block west of the city. That was to be expected. They listened to the eastbound densities peaking at twenty-six thousand vehicles in the same block, all heading into the metropolis and their jobs. The 0800, 1200 and 1600 hours density reports also carried the weather forecasts for a five-hundred-mile radius from the broadcasting control point. Decreasing temperatures with light to moderate snow was in the works for Car 56 for the first couple of hundred miles west of St. Louis, turning to almost blizzard conditions in central Kansas. Extra units had already been put into service on all thruways through the midwest and snow-burners were waging a losing battle from Wichita west to the Rockies around Alamosa, Colorado.

Outside the temperature was below freezing; inside the patrol car it was a comfortable sixty-eight degrees. Kelly had cleared the galley and taken her place on the jump seat between the two troopers. With all three of them in the cab, Ben cut from the intercom to commercial broadcast to catch the early morning newscasts and some pleasant music. The patrol vehicle glided along at a leisurely sixty miles an hour. An hour out of St. Louis, a big liquid cargo carrier was stopped on the inner edge of the green lane against the divider to the police lane. The trucker had dropped both warning barriers and lights a half mile back. Ben brought Beulah to a halt across the divider from the stopped carrier. "Dropped a track pin," the driver called out to the officers.

Ben backed Beulah across the divider behind the stalled carrier to give them protection while they tried to assist the stalled vehicle.

Donning work helmets to maintain contact with the patrol car, and its remote radio system, the two troopers dismounted and went to see what needed fixing. Kelly drifted back to the dispensary and stretched out on one of the hospital bunks and picked up a new novel.

Beulah's well-equipped machine shop stock room produced a matching

pin and it was merely a matter of lifting the stalled carrier and driving it into place in the track assembly. Ben brought the patrol car alongside the carrier and unshipped the crane. Twenty minutes later, Clay and the carrier driver had the new part installed and the tanker was on his way once again.

Clay climbed into the cab and surveyed his grease-stained uniform coveralls and filthy hands. "Your nose is smudged, too, dearie," Martin observed.

Clay grinned, "I'm going to shower and change clothes. Try and see if you can drive this thing until I get back without increasing the pedestrian fatality rate." He ducked back into the crew cubby and stripped his coveralls.

Bored with her book, Kelly wandered back to the cab and took Clay's vacant control seat. The snow had started falling again and in the mid-morning light it tended to soften the harsh, utilitarian landscape of the broad thruway stretching ahead to infinity and spreading out in a mile of speeding traffic on either hand.

"Attention all cars on NAT 26-West and east," Washington Criminal Control radio blared. "Special attention Cars 56 and 82. Suspect vehicle, white over green Travelaire reported re-entered NAT 26-West on St. Louis interchange 179. St. Louis Control reports communications difficulty in delayed report. Vehicle now believed . . ."

"Car 56, Car 56," St. Louis Control broke in. "Our pigeon is in your zone. Commercial carrier reports near miss sideswipe three minutes ago in blue lane approximately three miles west of mile Marker 957.

"Repeating. Car 56, suspect car

Ben glanced at the radiodometer. It read 969, then clicked to 970.

"This is Five Six, St. Louis," he broke in, "acknowledged. Our position is mile marker 970 . . ."

Kelly had been glued to the video monitors since the first of the bulletin. Suddenly she screamed and banged Ben on the shoulder. "There they are. There they are," she cried, pointing at the blue lane monitor.

Martin took one look at the white-topped car cutting through traffic in the blue lane and slammed Beulah into high. The safety cocoons slammed shut almost on the first notes of the bull horn. Trapped in the shower, Clay was locked into the stall dripping wet as the water automatically shot off with the movement of the cocoon.

"I have them in sight," Ben reported, as the patrol car lifted on its air pad and leaped forward. "They're in the blue five miles ahead of me and cutting over to the yellow. I estimate their speed at two twenty-five. I am in pursuit."

Traffic gave way as Car 56 hurtled the divider into the blue.

The radio continued to snap orders.

"Cars 112, 206, 76 and 93 establish roadblocks at mile marker crossover 1032. Car 82 divert all blue and yellow to green and white."

Eight Two was one hundred fifty miles ahead but at three-hundred-mile-an-hour speeds, 82's team was very much a part of the operation. This would clear the two high-speed lanes if the suspect car hadn't been caught sooner.

"Cars 414, 227 and 290 in NAT-26-East, move into the yellow to cover in case our pigeon decides to fly the median." The controller continued to move cars into covering positions in the area on all crossovers and turn-offs. The sweating dispatcher looked at his lighted map board and mentally cursed the lack of enough units to cover every exit. State and local authorities already had been notified in the event the fugitives left the thruways and tried to escape on a state freeway.

In Car 56, Ben kept the patrol car roaring down the blue lane through the speeding westbound traffic. The standard emergency signal was doing a partial job of clearing the path, but at those speeds, driver reaction times weren't always fast enough. Ahead, the fleeing suspect car brushed against a light sedan, sending it careening and rocking across the lane. The driver fought for control as it swerved and screeched on its tilting frame. He brought it to a halt amid a haze of blue smoke from burning brakes and bent metal. The white over green Travelaire never slowed, fighting its way out of the blue into the ultra-high yellow and lighter traffic. Ben kept Beulah in bulldog pursuit.

The sideswipe ahead had sent other cars veering in panic and a cluster inadvertently bunched up in the path of the roaring patrol car. Like a flock of hawk-frightened chickens, they tried to scatter as they saw and heard the massive police vehicle bearing down on them. But like chickens, they couldn't decide which way to run. It was a matter of five or six seconds before they parted enough to let the patrol car through. Ben had no choice but to cut the throttle and punch once on the retrojets to brake the hurtling patrol car. The momentary drops in speed unlocked the safety cocoons and in an instant, Clay had leaped from the shower stall and sped to the cab. Hearing, rather than seeing his partner, Martin snapped over his shoulder, "Unrack the rifles. That's the car." Clay reached for the gun rack at the rear of the cab.

Kelly took one look at the young trooper and jumped for the doorway to the galley. A second later she was back. Without a word, she handed the nude Ferguson a dangling pair of uniform coveralls. Clay gasped, dropped the rifles and grabbed the coveralls from her hand and clutched them to his figure. His face was beet-red. Still without speaking, Kelly turned and ran back to her dispensary to be ready for the next acceleration.

Clay was into the coveralls and in his seat almost at the instant Martin whipped the patrol car through the hole in the blue traffic and shoved her into high once more.

There was no question about the fact that the occupants of the fugitive car knew they were being pursued. They shot through the crossover into

the yellow lane and now were hurtling down the thruway close to the four-hundred-mile-an-hour mark.

Martin had Beulah riding just under three hundred to make the crossover, still ten miles behind the suspect car and following on video monitor. The air still crackled with commands as St. Louis and Washington Control maneuvered other cars into position as the pursuit went westward past other units blocking exit routes.

Clay read aloud the radiodometer numerals as they clicked off a mile every nine seconds. Car 56 roared into the yellow and the instant Ben had it straightened out, he slammed all finger throttles to full power. Beulah snapped forward and even at three hundred miles an hour, the sudden acceleration pasted the car's crew against the back of their cushioned seats. The patrol car shot forward at more than five hundred miles an hour.

The image of the Travelaire grew on the video monitor and then the two troopers had it in actual sight, a white, racing dot on the broad avenue of the thruway six miles ahead.

Clay triggered the controls for the forward bow cannon and a panel box flashed to "ready fire" signal.

"Negative," Martin ordered. "We're coming up on the roadblock. You might miss and hit one of our cars."

"Car 56 to Control," the senior trooper called. "Watch out at the roadblock. He's doing at least five hundred in the yellow and he'll never be able to stop."

Two hundred miles east, the St. Louis controller made a snap decision. "Abandon roadblock. Roadblock cars start west. Maintain two hundred until subject comes into monitor view. Car 56, continue speed estimates of subject car. Maybe we can box him in."

At the roadblock forty-five miles ahead of the speeding fugitives and their relentless pursuer, the four patrol cars pivoted and spread out across the roadway some five hundred feet apart. They lunged forward and lifted up to air-cushion jet drive at just over two hundred miles an hour. Eight pairs of eyes were fixed on video monitors set for the ten-mile block to the rear of the four vehicles.

Beulah's indicated ground speed now edged towards the five hundred fifty mark, close to the maximum speeds the vehicles could attain.

The gap continued to close, but more slowly. "He's firing hotter," Ben called out. "Estimating five thirty on subject vehicle."

Now Car 56 was about three miles astern and still the gap closed. The fugitive car flashed past the site of the abandoned roadblock and fifteen seconds later all four patrol cars racing ahead of the Travelaire broke into almost simultaneous reports of "Here he comes."

A second later, Clay Ferguson yelled out, "There he goes. He's boondocking, he's boondocking."

"He has you spotted," Martin broke in. "He's heading for the median. Cut, cut, cut. Get out in there ahead of him."

The driver of the fugitive car had seen the bulk of the four big patrol cruisers outlined against the slight rise in the thruway almost at the instant he flashed onto their screens ten miles behind them. He broke speed, rocked wildly from side to side, fighting for control and then cut diagonally to the left, heading for the outer edge of the thruway and the unpaved, half-mile-wide strip of landscaped earth that separated the east and westbound segments of NAT-26.

The white and green car was still riding on its airpad when it hit the low, rounded curbing at the edge of the thruway. It hurtled into the air and sailed for a hundred feet across the gently-sloping snow-covered grass, came smashing down in a thick hedgerow of bushes—and kept going.

Car 56 slowed and headed for the curbing. "Watch it, kids," Ben snapped over the intercom, "we may be buying a plot in a second."

Still traveling more than five hundred miles an hour, the huge patrol car hit the curbing and bounced into the air like a rocket boosted elephant. It tilted and smashed its nose in a slanting blow into the snow-covered ground. The sound of smashing and breaking equipment mingled with the roar of the thundering jets, tracks and air drives as the car fought its way back to level travel. It surged forward and smashed through the hedgerow and plunged down the sloping snowbank after the fleeing car.

"Clay," Ben called in a strained voice, "take 'er."

Ferguson's fingers were already in position. "You all right, Ben?" he asked anxiously.

"Think I dislocated a neck vertebra," Ben replied. "I can't move my head. Go get 'em, kid."

"Try not to move your head at all, Ben," Kelly called from her cocoon in the dispensary. "I'll be there the minute we slow down."

A half mile ahead, the fugitive car plowed along the bottom of the gentle draw in a cloud of snow, trying to fight its way up the opposite slope and onto the eastbound thruway.

But the Travelaire was never designed for driving on anything but a modern superhighway. Car 56 slammed through the snow and down to the bottom of the draw. A quarter of a mile ahead of the fugitives, the first of the four roadblock units came plowing over the rise.

The car speed dropped quickly to under a hundred and the cocoons were again retracted. Ben slumped forward in his seat and caught himself. He eased back with a gasp of pain, his head held rigidly straight. Almost the instant he started to straighten up, Kelly flung herself through the cab door. She clasped his forehead and held his head against the back of the control seat.

Suddenly, the fugitive car spun sideways, bogged in the wet snow and muddy ground beneath and stopped. Clay bore down on it and was about two hundred yards away when the canopy of the other vehicle

popped open and a sheet of automatic weapons fire raked the patrol car. Only the low angle of the sedan and the nearness of the bulky patrol car saved the troopers. Explosive bullets smashed into the patrol car canopy and sent shards of plastiglass showering down on the trio.

An instant later, the bow cannon on the first of the cut-off patrol units opened fire. An ugly, yellow-red blossom of smoke and fire erupted from the front of the Travelaire and it burst into flames. A second later, the figure of a man staggered out of the burning car, clothes and hair aflame. He took four plunging steps and then fell face down in the snow. The car burning and crackled and a thick funereal pyre of oily, black smoke billowed into the gray sky. It was snowing heavily now, and before the troopers could dismount and plow to the fallen man, a thin layer of snow covered his burned body.

An hour later, Car 56 was again on NAT 26-West, this time heading for Wichita barracks and needed repairs. In the dispensary, Ben Martin was stretched out on a hospital bunk with a traction brace around his neck and a copper-haired medical-surgical patrolwoman fussing over him.

In the cab, Clay peered through the now almost-blinding blizzard that whirled and skirled thick snow across the thruway. Traffic densities were virtually zero despite the efforts of the dragonlike snow-burners trying to keep the roadways clear. The young trooper shivered despite the heavy jacket over his coveralls. Wind whistled through the shell holes in Beulah's canopy and snow sifted and drifted against the back bulkhead.

The cab communications system had been smashed by the gunfire and Clay wore his work helmet both for communications and warmth.

The door to the galley cracked open and Kelly stuck her head in. "How much farther, Clay?" she asked.

"We should be in the barracks in about twenty minutes," the shivering trooper replied.

"I'll fix you a cup of hot coffee," Kelly said. "You look like you need it."

Over the helmet intercom Clay heard her shoving things around in the galley. "My heavens, but this place is a mess," she exclaimed. "I can't even find the coffee bin. That steeplechase driving has got to stop." She paused.

"Clay," she called out, "Have you been drinking in here? It smells like a brewery."

Clay raised mournful eyes to the shattered canopy above him. "My cooking wine" he sighed. ■

☆ ☆ ☆ ☆ ☆

■ It was locked—from the outside.

Not only that, but the mechanical latch handle that would override the button lock on the tiny tourist cabin aboard the *Star Of The North* was hidden by the very bed on which Cully When sat cross-legged, like some sinewy mountain man out of Cully's own pioneering ancestry. Cully grinned at the image in the mirror which went with the washstand now hidden by the bed beneath him. He would not have risked such an expression as that grin if there had been anyone around to see him. The grin, he

Hilifter

Taking a person away against their will is kidnapping...but if she likes it afterward, is it a crime...?

by Gordon Dickson

Illustrated by Schoenherr

knew, gave too much of him away to viewers. It was the hard, unconquerable humor of a man dealing for high stakes.

Here, in the privacy of this locked cabin, it was also a tribute to the skill of the steward who had imprisoned him. A dour and cautious individual with a long Scottish face, and no doubt the greater

part of his back wages reinvested in the very spaceship line he worked for. Or had Cully done something to give himself away? No. Cully shook his head. If that had been the case, the steward would have done more than just lock the cabin. It occurred to Cully that his face, at last, might be becoming known.

"I'm sorry, sir," the steward had said, as he opened the cabin's sliding door and saw the unmade bed. "Off-watch steward's missed making it up." He clucked reprovingly. "I'll fix it for you, sir."

"No hurry," said Cully. "I just want to hang my clothes; and I can do that later."

"Oh, no, sir." The lean, dour face of the other—as primitive in a different way as Cully's own—looked shocked. "Regulations. Passengers gear to be stowed and bunk made up before overdrive."

"Well, I can't just stand here in the corridor," said Cully. "I want to get rid of the stuff and get a drink." And indeed the corridor was so narrow, they were like two vehicles on a mountain road. One would have to back up to some wider spot to let the other past.

"Have the sheets in a moment, sir," said the steward. "Just a moment, sir. If you wouldn't mind sitting up on the bed, sir?"

"All right," said Cully. "But hurry. I want to step up for a drink in the lounge."

He hopped up on to the bed, which filled the little cabin in its down position; and drew his legs up tailor-fashion to clear them out of the corridor.

"Excuse me, sir," said the steward, closed the door, and went off. As soon as he heard the button lock latch, Cully had realized what the man was up to. But an unsuspecting man would have waited at least several minutes before hammering on the locked door and calling for someone to let him out. Cully had been forced to sit digesting the matter in silence.

At the thought of it now, however, he grinned again. That steward was a regular prize package. Cully must remember to think up something appropriate for him, afterwards. At the moment, there were more pressing things to think of.

Cully looked in the mirror again and was relieved at the sight of himself without the betraying grin. The face that looked back at him at the moment was lean and angular. A little peroxide solution on his thick, straight brows, had taken the sharp appearance off his high cheekbones and given his pale blue eyes a faintly innocent expression. When he really wanted to fail to impress sharply discerning eyes, he also made it a point to chew gum.

The present situation, he considered now, did not call for that extra touch. If the steward was already even vaguely suspicious of him, he could not wait around for an ideal opportunity. He would have to get busy now, while they were still working the spaceship out of the

solar system to a safe distance where the overdrive could be engaged without risking a mass-proximity explosion.

And this, since he was imprisoned so neatly in his own shoebox of a cabin, promised to be a problem right from the start.

He looked around the cabin. Unlike the salon cabins on the level overhead, where it was possible to pull down the bed and still have a tiny space to stand upright in—either beside the bed, in the case of single-bed cabins, or between them, in the case of doubles—in the tourist cabins once the bed was down, the room was completely divided into two spaces—the space above the bed and the space below. In the space above, with him, were the light and temperature and ventilation controls, controls to provide him with soft music or the latest adventure tape, food and drink dispensers and a host of other minor comforts.

There were also a phone and a signal button, both connected with the steward's office. Thoughtfully he tried both. There was, of course, no answer.

At that moment a red light flashed on the wall opposite him; and a voice came out of the grille that usually provided the soft music.

"We are about to maneuver. This is the Captain's Section, speaking. We are about to maneuver. Will all lounge passengers return to their cabins? Will all passengers remain in their cabins, and fasten seat belts. We are about to maneuver. This is the Captain's Section—"

Cully stopped listening. The steward would have known this announcement was coming. It meant that everybody but crew members would be in their cabins and crew members would be up top in control level at maneuver posts. And that meant nobody was likely to happen along to let Cully out. If Cully could get out of this cabin, however, those abandoned corridors could be a break for him.

However, as he looked about him now, Cully was rapidly revising downward his first cheerful assumption that he—who had gotten out of so many much more intentional prisons—would find this a relatively easy task. On the same principle that a pit with unclimbable walls and too deep to jump up from and catch an edge is one of the most perfect traps designable—the tourist room held Cully. He was on top of the bed; and he needed to be below it to operate the latch handle.

First question: How impenetrable was the bed itself? Cully dug down through the covers, pried up the mattress, peered through the springs, and saw a blank panel of metal. Well, he had not really expected much in that direction. He put the mattress and covers back and examined what he had to work with above-bed.

There were all the control

switches and buttons on the wall, but nothing among them promised him any aid. The walls were the same metal paneling as the base of the bed. Cully began to turn out his pockets in the hope of finding something in them that would inspire him. And he did indeed turn out a number of interesting items, including a folded piece of notepaper which he looked at rather soberly before laying it aside, unfolded, with a boy scout type of knife that just happened to have a set of lock picks among its other tools. The note would only take up valuable time at the moment, and—the lock being out of reach in the door—the lock picks were no good either.

There was nothing in what he produced to inspire him, however. Whistling a little mournfully, he began to make the next best use of his pile of property. He unscrewed the nib and cap of his long, gold fountain pen, took out the ink cartridge and laid the tube remaining aside. He removed his belt, and the buckle from the belt. The buckle, it appeared, clipped on to the fountain pen tube in somewhat the manner of a pistol grip. He reached in his mouth, removed a bridge covering from the second premolar to the second molar, and combined this with a small metal throwaway dispenser of the sort designed to contain antacid tablets. The two together had a remarkable resemblance to the magazine and miniaturized trigger assembly of a small handgun; and when he attached them to the buckle-fountain-pen-tube combination the resemblance became so marked as to be practically inarguable.

Cully made a few adjustments in this and looked around himself again. For the second time, his eye came to rest on the folded note, and, frowning at himself in the mirror, he did pick it up and unfold it. Inside it read: "O wae the pow'r the Giftie gie us" Love, Lucy. Well, thought Cully, that was about what you could expect from a starry-eyed girl with Scottish ancestors, and romantic notions about present-day conditions on Alderbaran IV and the other new worlds.

". . . But if you have all that land on Asterope IV, why aren't you back there developing it?" she had asked him.

"The New Worlds are stifling to death," he had answered. But he saw then she did not believe him. To her, the New Worlds were still the romantic Frontier, as the Old Worlds Confederation newspapers capitalized it. She thought he had given up from lack of vision.

"You should try again . . ." she murmured. He gave up trying to make her understand. And then, when the cruise was over and their shipboard acquaintance—that was all it was, really—ended on the Miami dock, he had felt her slip something in his pocket so lightly only someone as self-trained as he would have noticed it. Later he had found it to be this note—which he had kept now for too long.

He started to throw it away, changed his mind for the sixtieth time and put it back in his pocket. He turned back to the problem of getting out of the cabin. He looked it over, pulled a sheet from the bed and used its length to measure a few distances.

The bunk was pivoted near the point where the head of it entered the recess in the wall that concealed it in Up position. Up, the bunk was designed to fit with its foot next to the ceiling. Consequently, coming up, the foot would describe an arc—

About a second and a half later he had discovered that the arc of the foot, ascending, would leave just enough space in the opposite top angle between wall and ceiling so that if he could just manage to hang there, while releasing the safety latch at the foot of the bed, he might be able to get the bed up past him into the wall recess.

It was something which required the muscle and skill normally called for by so-called "chimney ascents" in mountain climbing—where the climber wedges himself between two opposing walls of rock. A rather wide chimney—since the room was a little more than four feet in width. But Cully had had some little experience in that line.

He tried it. A few seconds later, pressed against walls and ceiling, he reached down, managed to get the bed released, and had the satisfaction of seeing it fold up by him. Half a breath later he was free, out in the corridor of the Tourist Section.

The corridor was deserted and silent. All doors were closed. Cully closed his own thoughtfully behind him and went along the corridor to the more open space in the center of the ship. He looked up a steel ladder to the entrance of the Salon Section, where there would be another ladder to the Crew Section, and from there eventually to his objective—the Control level and the Captain's Section. Had the way up those ladders been open, it would have been simple. But level with the top of the ladder he saw the way to the Salon section was closed off by a metal cover capable of withstanding fifteen pounds per square inch of pressure.

It had been closed, of course, as the other covers would have been, at the beginning of the maneuver period.

Cully considered it thoughtfully, his fingers caressing the pistol grip of the little handgun he had just put together. He would have preferred, naturally, that the covers be open and the way available to him without the need for fuss or muss. But the steward had effectively ruled out that possibility by reacting as and when he had. Cully turned away from the staircase, and frowned, picturing the layout of the ship, as he had committed it to memory five days ago.

There was an emergency hatch leading through the ceiling of the

end tourist cabin to the end salon cabin overhead, at both extremes of the corridor. He turned and went down to the end cabin nearest him, and laid his finger quietly on the outside latch-handle.

There was no sound from inside. He drew his put-together handgun from his belt; and, holding it in his left hand, calmly and without hesitation, opened the door and stepped inside.

He stopped abruptly. The bed in here was, of course, up in the wall, or he could never have entered. But the cabin's single occupant was asleep on the right-hand seat of the two seats that an upraised bed left exposed. The occupant was a small girl of about eight years old.

The slim golden barrel of the handgun had swung immediately to aim at the child's temple. For an automatic second, it hung poised there, Cully's finger half-pressing the trigger. But the little girl never stirred. In the silence, Cully heard the surge of his own blood in his ears and the faint crackle of the note in his shirt pocket. He lowered the gun and fumbled in the waistband of his pants, coming up with a child-sized anesthetic pellet. He slipped this into his gun above the regular load; aimed the gun, and fired. The child made a little uneasy movement all at once; and then lay still. Cully bent over her for a second, and heard the soft sound of her breathing. He straightened up. The pellet worked not through the blood stream, but immediately through a reaction of the nerves. In fifteen minutes the effect would be worn off, and the girl's sleep would be natural slumber again.

He turned away, stepped up on the opposite seat and laid his free hand on the latch handle of the emergency hatch overhead. A murmur of voices from above made him hesitate. He unscrewed the barrel of the handgun and put it in his ear with the other hollow end resting against the ceiling which was also the floor overhead. The voices came, faint and distorted, but understandable to his listening.

". . . Hilifter," a female voice was saying.

"Oh, Patty!" another female voice answered. "He was just trying to scare you. You believe everything."

"How about that ship that got hilifted just six months ago? That ship going to one of the Pleiades, just like this one? The *Queen of Argyle*—"

"*Princess of Argyle*."

"Well, you know what I mean. Ships do get hilifted. Just as long as there're governments on the pioneer worlds that'll license them and no questions asked. And it could just as well happen to this ship. But you don't worry about it a bit."

"No, I don't."

"When hilifters take over a ship, they kill off everyone who can testify against them. None of the passengers or ship's officers from

the *Princess of Argyle* was ever heard of again."

"Says who?"

"Oh, everybody knows that!"

Cully took the barrel from his ear and screwed it back onto his weapon. He glanced at the anesthetized child and thought of trying the other cabin with an emergency hatch. But the maneuver period would not last more than twenty minutes at the most and five of that must be gone already. He put the handgun between his teeth, jerked the latch to the overhead hatch, and pulled it down and open.

He put both hands on the edge of the hatch opening; and with one spring went upward into the salon cabin overhead.

He erupted into the open space between a pair of facing seats, each of which held a girl in her twenties. The one on his left was a rather plump, short, blond girl who was sitting curled up on her particular seat with a towel across her knees, an open bottle of pink nail polish on the towel, and the brush-cap to the bottle poised in her hand. The other was a tall, dark-haired, very pretty lass with a lap-desk pulled down from the wall and a handscriber on the desk where she was apparently writing a letter. For a moment both stared at him, and his gun; and then the blonde gave a muffled shriek, pulled the towel over her head and lay still, while the brunette, staring at Cully, went slowly pale.

"Jim!" she said.

"Sorry," said Cully. "The real name's Cully When. Sorry about this, too, Lucy." He held the gun casually, but it was pointed in her general direction. "I didn't have any choice."

A little of the color came back. Her eyes were as still as fragments of green bottle glass.

"No choice about what?" she said.

"To come through this way," said Cully. "Believe me, if I'd known you were here, I'd have picked any other way. But there wasn't any other way; and I didn't know."

"I see," she said, and looked at the gun in his hand. "Do you have to point that at me?"

"I'm afraid," said Cully, gently, "I do."

She did not smile.

"I'd still like to know what you're doing here," she said.

"I'm just passing through," said Cully. He gestured with the gun to the emergency hatch to the Crew Section, overhead. "As I say, I'm sorry it has to be through your cabin. But I didn't even know you were serious about emigrating."

"People usually judge other people by themselves," she said expressionlessly. "As it happened, I believed you." She looked at the gun again. How many of you are there on board?"

"I'm afraid I can't tell you that," said Cully.

"No. You couldn't, could you?" Her eyes held steady on him. "You

know, there's an old poem about a man like you. He rides by a farm maiden and she falls in love with him, just like that. But he makes her guess what he is; and she guesses . oh, all sorts of honorable things, like soldier, or forester. But he tells her in the end he's just an outlaw, slinking through the wood."

Cully winced.

"Lucy—" he said. "Lucy—"

"Oh, that's all right," she said. "I should have known when you didn't call me or get in touch with me, after the boat docked." She glanced over at her friend, motionless under the towel. "You have the gun. What do you want us to do?"

"Just sit still," he said. "I'll go on up through here and be out of your way in a second. I'm afraid—" he reached over to the phone on the wall and pulled its cord loose. "You can buzz for the steward, still, after I'm gone," he said. "But he won't answer just a buzzer until after the maneuver period's over. And the stairway hatches are locked. Just sit tight and you'll be all right."

He tossed the phone aside and tucked the gun in the waistband.

' Excuse me," he said, stepping up on the seat beside her. She moved stiffly away from him. He unlatched the hatch overhead, pulled it down; and went up through it. When he glanced back down through it, he saw her face stiffly upturned to him.

He turned away and found himself in an equipment room. It was what he had expected from the ship's plans he had memorized before coming aboard. He went quickly out of the room and scouted the Section.

As he had expected, there was no one at all upon this level. Weight and space on interstellar liners being at the premium that they were, even a steward like the one who had locked him in his cabin did double duty. In overdrive, no one but the navigating officer had to do much of anything. But in ordinary operation, there were posts for all ships personnel, and all ships personnel were at them up in the Captain's Section at Control.

The stair hatch to this top and final section of the ship, he found to be closed as the rest. This, of course, was routine. He had not expected this to be unlocked, though a few years back ships like this might have been that careless. There were emergency hatches from this level as well, of course, up to the final section. But it was no part of Cully's plan to come up in the middle of a Control room or a Captain's Section filled with young, active, and almost certainly armed officers. The inside route was closed.

The outside route remained a possibility. Cully went down to the opposite end of the corridor and found the entry port closed, but sealed only by a standard lock. In an adjoining room there were out-

side suits. Cully spent a few minutes with his picks, breaking the lock of the seal; and then went in to put on the suit that came closest to fitting his six-foot-two frame.

A minute later he stepped out onto the outside skin of the ship.

As he watched the outer door of the entry port closing ponderously in the silence of airless space behind him, he felt the usual inner coldness that came over him at times like this. He had a mild but very definite phobia about open space with its myriads of unchanging stars. He knew what caused it—several psychiatrists had told him it was nothing to worry about, but he could not quite accept their unconcern. He knew he was a very lonely individual, underneath it all; and subconsciously he guessed he equated space with the final extinction in which he expected one day to disappear and be forgotten forever. He could not really believe it was possible for someone like him to make a dent in such a universe.

It was symptomatic, he thought now, plodding along with the magnetic bootsoles of his suit clinging to the metal hull, that he had never had any success with women—like Lucy. A sort of bad luck seemed to put him always in the wrong position with anyone he stood a chance of loving. Inwardly, he was just as starry-eyed as Lucy, he admitted to himself, alone with the vastness of space and the stars, but he'd never had much success bringing it out into the open. Where she went all right, he seemed to go all wrong. Well, he thought, that was life. She went her way and he would go his. And it was probably a good thing.

He looked ahead up the side of the ship, and saw the slight bulge of the observation window of the navigator's section. It was just a few more steps now.

Modern ships were sound insulated, thankfully, or the crew inside would have heard his dragging footsteps on the hull. He reached the window and peered in. The room he looked into was empty.

Beside the window was a small, emergency port for cleaning and repairs of the window. Clumsily, and with a good deal of effort, he got the lock-bolt holding it down, unscrewed, and let himself in. The space between outer and inner ports here was just enough to contain a spacesuited man. He crouched in darkness after the outer port had closed behind him.

Incoming air screamed up to audibility. He cautiously cracked the interior door and looked into a room still empty of any crew members. He slipped inside and snapped the lock on the door before getting out of his suit.

As soon as he was out, he drew the handgun from his belt and cautiously opened the door he had previously locked. He looked out on a short corridor leading one way to the Control Room, and the other, if his memory of the

memorized ship plans had not failed him, to the central room above the stairway hatch from below. Opening off this small circular space surrounding the hatch, would be another entrance directly to the Control Room, a door to the Captain's Quarters, and one to the Communications Room.

The corridor was deserted. He heard voices coming down it from the Control Room; and he slipped out the door that led instead to the space surrounding the stairway hatch. And checked abruptly.

The hatch was open. And it had not been open when he had checked it from the level below, ten minutes before.

For the first time he cocked an ear specifically to the kinds of voices coming from the Control Room. The acoustics of this part of the ship mangled all sense out of the words being said. But now that he listened, he had no trouble recognizing, among others, the voice of Lucy.

It occurred to him then with a kind of wonder at himself, that it would have been no feat for an active girl like herself to have followed him up through the open emergency hatch, and later mount the crew level stairs to the closed hatch there and pound on it until someone opened up.

He threw aside further caution and sprinted across to the doorway of the Captain's Quarters. The door was unlocked. He ducked inside and looked around him. It was empty. It occurred to him that Lucy and the rest of the ship's complement would probably still be expecting him to be below in the Crew's section. He closed the door and looked about him, at the room he was in.

The room was more lounge than anything else, being the place where the captain of a spaceship did his entertaining. But there was a large and businesslike desk in one corner of the room, and in the wall opposite, was a locked, glassed-in case holding an assortment of rifles and handguns.

He was across the room in a moment and n a few, savage. seconds, had the lock to the case picked open. He reached in and took down a short-barreled, flaring-muzzled riot gun. He checked the chamber. It was filled with a full thousand-clip of the deadly steel darts. Holding this in one hand and his handgun in the other, he went back out the door and toward the other entrance to the control room—the entrance from the central room around the stairway hatch.

". . . He wouldn't tell me if there were any others," Lucy was saying to a man in a captain's shoulder tabs, while eight other men, including the dour-faced steward who had locked Cully in his cabin, stood at their posts, but listening.

"There aren't any," said Cully,

harshly. They all turned to him. He laid the handgun aside on a control table by the entrance to free his other hand; and lifted the heavy riot gun in both hands, covering them. "There's only me."

"What do you want?" said the man with the captain's tabs. His face was set, and a little pale. Cully ignored the question. He came into the room, circling to his right, so as to have a wall at his back.

"You're one man short," said Cully as he moved. "Where is he?"

"Off-shift steward's sleeping," said the steward who had locked Cully in his room.

"Move back," said Cully, picking up crew members from their stations at control boards around the room, and herding them before him back around the room's circular limit to the very entrance by which he had come in. "I don't believe you."

"Then I might as well tell you," said the captain, backing up now along with Lucy and the rest. "He's in Communications. We keep a steady contact with Solar Police right up until we go into overdrive. There are two of their ships pacing alongside us right now, lights off, a hundred miles each side of us."

"Tell me another," said Cully. "I don't believe that either." He was watching everybody in the room, but what he was most aware of were the eyes of Lucy, wide upon him. He spoke to her, harshly. "Why did you get into this?"

She was pale to the lips; and her eyes had a stunned look.

"I looked down and saw what you'd done to that child in the cabin below—" her voice broke off into a whisper. "Oh, Cully—"

He laughed mournfully.

"Stop there," he ordered. He had driven them back into a corner near the entrance he had come in. "I've got to have all of you together. Now, one of you is going to tell me where that other man is—and I'm going to pick you off, one at a time until somebody does."

"You're a fool," said the captain. A little of his color had come back. "You're all alone. You don't have a chance of controlling this ship by yourself. You know what happens to Hilifters, don't you? It's not just a prison sentence. Give up now and we'll all put in a word for you. You might get off without mandatory execution."

"No thanks," said Cully. He gestured with the end of the riot gun. "We're going into overdrive. Start setting up the course as I give it to you."

"No," said the captain, looking hard at him.

"You're a brave man," said Cully. "But I'd like to point out something. I'm going to shoot you if you won't co-operate; and then I'm going to work down the line of your officers. Sooner or later somebody's going to preserve his life by doing what I tell him. So getting yourself killed isn't going

to save the ship at all. It just means somebody with less courage than you lives. And you die."

There was a sharp, bitter intake of breath from the direction of Lucy. Cully kept his eyes on the captain.

"How about it?" Cully asked.

"No brush-pants of a colonial," said the captain, slowly and deliberately, "is going to stand in my Control Room and tell me where to take my ship."

"Did the captain and officers of the *Princess of Argyle* ever come back?" said Cully, somewhat cryptically.

"It's nothing to me whether they came or stayed,"

"I take it all back," said Cully. "You're too valuable to lose." The riot gun shifted to come to bear on the First Officer, a tall, thin, younger man whose hair was already receding at the temples. "But you aren't, friend. I'm not even going to tell you what I'm going to do. I'm just going to start counting; and when I decide to stop you've had it. One . . . two . . ."

"Don't! Don't shoot!" The First Officer jumped across the few steps that separated him from the Main Computer Panel. "What's your course? What do you want me to set up—"

The captain began to curse the First Officer. He spoke slowly and distinctly and in a manner that completely ignored the presence of Lucy in the Control Room. He went right on as Cully gave the First Officer the course and the First Officer set it up. He stopped only, as—abruptly—the lights went out. and the ship overdrove.

When the lights came on again—it was a matter of only a fraction of a second of real time—the captain was at last silent. He seemed to have sagged in the brief interval of darkness and his face looked older.

And then, slamming through the tense silence of the room came the sound of the Contact Alarm Bell.

"Turn it on," said Cully. The First Officer stepped over and pushed a button below the room's communication screen. It cleared suddenly to show a man in a white jacket.

"We're alongside, Cully," he said, "We'll take over now. How're you fixed for casualties?"

"At the moment—" began Cully. But he got no further than that. Behind him, three hard, spaced words in a man's voice cut him off.

"Drop it, Hilifter!"

Cully did not move. He cocked his eyebrows a little sadly and grinned his untamable grin for the first time at the ship's officers, and Lucy and the figure in the screen. Then the grin went away.

"Friend," he said to the man hidden behind him. "Your business is running a spaceship. Mine is taking them away from people who run them. Right now you're figuring how you make me give up

or shoot me down and this ship dodges back into overdrive, and you become a hero for saving it. But it isn't going to work that way."

He waited for a moment to hear if the off-watch steward behind him—or whoever the officer was—would answer. But there was only silence.

"You're behind me," said Cully. ' But I can turn pretty fast. You may get me coming around, but unless you've got something like a small cannon, you're not going to stop me getting you at this short range, whether you've got me or not. Now, if you think I'm just talking, you better think again. For me, this is one of the risks of the trade."

He turned. As he did so he went for the floor; and heard the first shot go by his ear. As he hit the floor another shot hit the deck beside him and ricocheted into his side. But by that time he had the heavy riot gun aimed and he pressed the firing button. The stream of darts knocked the man backward out of the entrance to the control room to lie, a still and huddled shape, in the corridor outside.

Cully got to his feet, feeling the single dart in his side. The room was beginning to waver around him, but he felt that he could hold on for the necessary couple of minutes before the people from the ship moving in alongside could breach the lock and come aboard. His jacket was loose and would hide the bleeding underneath. None of those facing him could know he had been hit.

"All right, folks," he said, managing a grin. "It's all over but the shouting—" And then Lucy broke suddenly from the group and went running across the room toward the entrance through which Cully had come a moment or so earlier.

"Lucy—" he barked at her. And then he saw her stop and turn by the control table near the entrance, snatching up the little handgun he had left there. "Lucy, do you want to get shot?"

But she was bringing up the little handgun, held in the grip of both her hands and aiming it squarely at him. The tears were running down her face.

"It's better for you, Cully—" she was sobbing. "Better . . ."

He swung the riot gun to bear on her, but he saw she did not even see it.

"Lucy, I'll have to kill you!" he cried. But she no more heard him, apparently, than she saw the muzzle-on view of the riot gun in his hands. The wavering golden barrel in her grasp wobbled to bear on him.

"Oh, Cully!" she wept. "Cully—" And pulled the trigger.

"Oh, *hell!*" said Cully in despair. And let her shoot him down.

When he came back, things were very fuzzy there at first. He

heard the voice of the man in the white jacket, arguing with the voice of Lucy.

"Hallucination—" muttered Cully. The voices broke off.

"Oh, he said something!" cried the voice of Lucy.

"Cully?" said the man's voice. Cully felt a two-finger grip on his wrist in the area where his pulse should be—if, that was, he had a pulse. "How're you feeling?"

"Ship's doctor?" muttered Cully, with great effort. "You got the *Star Of The North?*"

"That's right. All under control. How do you feel?"

"Feel fine," mumbled Cully. The doctor laughed.

"Sure you do," said the doctor. "Nothing like being shot a couple of times and having a pellet and a dart removed to put a man in good shape."

"Not Lucy's fault—" muttered Cully. "Not understand." He made another great effort in the interests of explanation. "Stars'n eyes."

"Oh, what does he mean?" wept Lucy.

"He means," said the voice of the doctor harshly, "that you're just the sort of fine young idealist who makes the best sort of sucker for the sort of propaganda the Old World's Confederation dishes out."

"Oh, you'd say that!" flared Lucy's voice. "Of course, you'd say that!"

"Young lady," said the doctor, "how rich do you think our friend Cully, here, is?"

Cully heard her blow her nose, weakly.

"He's got millions, I suppose," she said, bitterly. "Hasn't he hilifted dozens of ships?"

"He's hilifted eight," said the doctor, dryly, "which, incidentally, puts him three ships ahead of any other contender for the title of hilifting champion around the populated stars. The mortality rate among single workers—and you can't get any more than a single 'lifter aboard Confederation ships nowadays—hits ninety per cent with the third ship captured. But I doubt Cully's been able to save many millions on a salary of six hundred a month, and a bonus of one tenth of one per cent of salvage value, at Colonial World rates."

There was a moment of profound silence.

"What do you mean?" said Lucy, in a voice that wavered a little.

"I'm trying," said the doctor, "for the sake of my patient—and perhaps for your own—to push aside what Cully calls those stars in your eyes and let a crack of surface daylight through."

"But why would he work for a salary—like that?" Disbelief was strong in her voice.

"Possibly," said the doctor, "just possibly because the picture of a bloodstained hilifter with a knife between his teeth, carousing in Colonial bars, shooting down Confederation officers for the fun of it, and dragging women passengers

off by the hair, has very little to do with the real facts of a man like Cully."

"Smart girl," managed Cully. "S'little mixed up, s'all—" He managed to get his vision cleared a bit. The other two were standing facing each other, right beside his bed. The doctor had a slight flush above his cheekbones and looked angry. Lucy, Cully noted anxiously, was looking decidedly pale. "Mixed up—" Cully said again.

"Mixed up isn't the word for it," said the doctor angrily, without looking down at him. "She and all ninety-nine out of a hundred people on the Old Worlds." He went on to Lucy. "You met Cully Earthside. Evidently you liked him there. He didn't strike you as the scum of the stars, then.

"But all you have to do is hear him tagged with the name 'hi-lifter' and immediately your attitude changes."

Lucy swallowed.

"No," she said, in a small voice, "it didn't . . . change."

"Then who do you think's wrong—you or Cully?" The doctor snorted. "If I have to give you reasons, what's the use? If you can't see things straight for yourself, who can help you? That's what's wrong with all the people back on the Old Worlds."

"I believe Cully," she said. "I just don't know why I should."

"Who has lots of raw materials—the raw materials to support trade—but hasn't any trade?" asked the doctor.

She frowned at him.

"Why . . . the New Worlds haven't any trade on their own," she said. "But they're too undeveloped yet, too young—"

"Young? There's three to five generations on most of them!"

"I mean they haven't got the industry, the commercial organization—" she faltered before the slightly satirical expression on the doctor's face. "All right, then, you tell me! If they've got everything they need for trade, why don't they? The Old Worlds did; why don't you?"

"In what?"

She stared at him.

"But the Confederation of the Old Worlds already has the ships for interworld trade. And they're glad to ship Colonial products. In fact they do," she said.

"So a load of miniaturized surgical power instruments made on Asterope in the Pleiades, has to be shipped to Earth and then shipped clear back out to its destination on Electra, also in the Pleiades. Only by the time they get there they've doubled or tripled in price, and the difference is in the pockets of Earth shippers."

She was silent.

"It seems to me," said the doctor, "that girl who was with you mentioned something about your coming from Boston, back in the United States on Earth. Didn't they

have a tea party there once? Followed by a revolution? And didn't it all have something to do with the fact that England at that time would not allow its colonies to own and operate their own ships for trade—so that it all had to be funneled through England in English ships to the advantage of English merchants?"

"But why can't you build your own ships?" she said. Cully felt it was time he got in on the conversation. He cleared his throat, weakly.

"Hey—" he managed to say. They both looked at him; but he himself was looking only at Lucy.

"You see," he said, rolling over and struggling up on one elbow, "the thing is—"

"Lie down," said the doctor.

"Go jump out the air lock," said Cully. "The thing is, Honey, you can't build spaceships without a lot of expensive equipment and tools, and trained personnel. You need a spaceship-building industry. And you have to get the equipment, tools, and people from somewhere else to start with. You can't get 'em unless you can trade for 'em. And you can't trade freely without ships of your own, which the Confederation, by forcing us to ship through them, makes it impossible for us to have.

"So you see how it works out," said Cully. "It works out you've got to have shipping before you can build shipping. And if people on the outside refuse to let you have it by proper means, simply because they've got a good thing going and don't want to give it up—then some of us just have to break loose and go after it any way we can."

"Oh, Cully!"

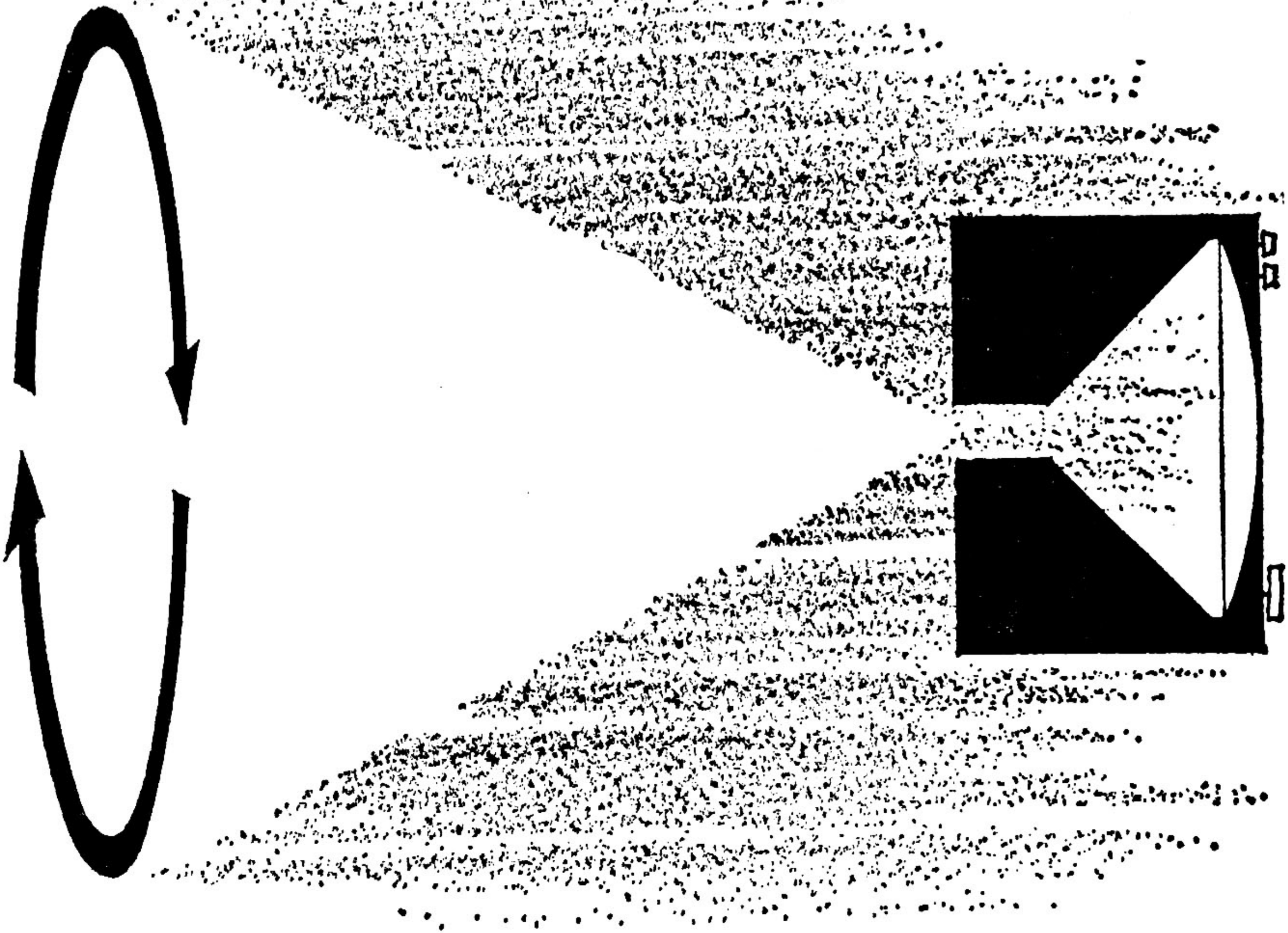
Suddenly she was on her knees by the bed and her arms were around him.

"Of course the Confederation news services have been trying to keep up the illusion we're sort of half jungle-jims, half wild-west characters," said the doctor. "Once a person takes a good look at the situation on the New Worlds, though, with his eyes open—" He stopped. They were not listening.

"I might mention," he went on, a little more loudly, "while Cully here may not be exactly rich, he does have a rather impressive medal due him, and a commission as Brevet-Admiral in the upcoming New Worlds Space Force. The New Worlds Congress voted him both at their meeting just last week on Asterope, as soon as they'd finished drafting their Statement of Independence—"

But they were still not listening. It occurred to the doctor then that he had better uses for his time—here on this vessel where he had been Ship's Doctor ever since she first lifted into space—than to stand around talking to deaf ears.

He went out, closing the door of the sick bay on the former *Princess of Argyle* quietly behind him. ■



Something Will Turn Up

Err... maybe it had to do with this being a non-Parity universe; perhaps? Some things can't be simply inverted, after all...

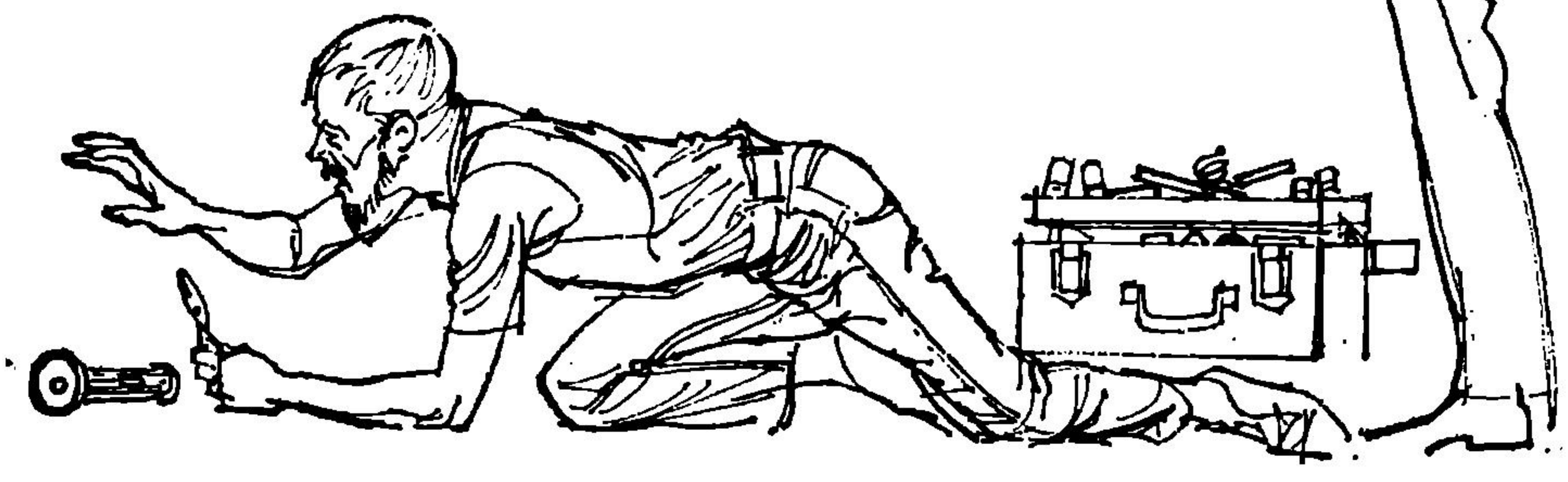
David Mason

Illustrated by Brotman

■ "You, Mr. Rapp?"

Stanley Rapp blinked, considering the matter. He always thought over everything very carefully. Of course, some questions were easier to answer than others. This one, for instance. He had very few doubts about his name.

"Uh," Stanley Rapp said. "Yes. Yes."



He stared at the bearded young man. Living in the Village, even on the better side of it, one saw beards every day, all shapes and sizes of beard. This one was not a psychoanalyst beard, or a folk singer beard; not even an actor beard. This was the scraggly variety, almost certainly a poet beard. Mr. Rapp, while holding no particular prejudice against poets, had not sent for one, he was sure of that.

Then he noticed the toolcase in the bearded young man's hand, lettered large LIGHTNING SERVICE, TV, HI-FI.

"Oh," Stanley said, nodding. "You're the man to fix the TV set."

"You know it, Dad," the young man said, coming in. He shut the door behind him, and stared around the apartment. "What a wild pad. Where the idiot box, hey?"

The pleasantly furnished, neat little apartment was not what Mr. Rapp had ever thought of as a "wild pad." But the Village had odd standards, Mr. Rapp knew. Chacun a son gout, he had said, on moving into the apartment ten years ago. Not aloud, of course, because he had only taken one year of French, and would never have trusted his accent. But chacun a son gout, anyway.

"The television set," Mr. Rapp said, translating. "Oh, yes." He went to the closet door and opened it. Reaching inside, he brought out an imposingly large TV set, mounted on a wheeled table. The bearded repairman whistled.

"In the closet," the repairman said, admiringly. "Crazy. You go in there to watch it, or you let it talk to itself?"

"Oh. Well, I don't exactly watch it at all," Mr. Rapp said, a little sadly. "I mean, I can't. That's why I called you."

"Lightning's here, have no fear," the bearded one said, approaching the set with a professional air. "Like, in the closet, hey." He bent over the set, appraisingly. "I thought you were a square, Pops, but I can see you're . . . Hey, this is like too much. Man, I don't want to pry, but why is this box upside down?"

"I wish I knew," Mr. Rapp said. He sat down, and leaned back, sighing. This was going to be difficult, he knew. He had already had to explain it to the last three repairmen, and he was getting tired of explaining. Although he thought, somehow, that this young man might understand it a little more quickly than the others had.

"I've had a couple of other repairmen look it over," Mr. Rapp told the bearded one. "They . . . well, they gave up."

"Dilettantes," commented the beard.

"Oh, no," Mr. Rapp said. "One of them was from the company that made it. But they couldn't do anything."

"Let's try it," the repairman said, plugging the cord into a wall socket. He returned to the set, and switched it on, without changing

its upside down position. The big screen lit almost at once; a pained face appeared, with a large silhouetted hammer striking the image's forehead in a rhythmic beat.

". . . Immediate relief from headache," a bland voice said, as the pictured face broke into a broad smile. The repairman shuddered, and turned down the sound, staring at the image with widened eyes as he did so.

'Dad, I don't want to bug you," the repairman said, his eyes still on the screen, "only, look. The set is upside down, right?"

"Right," said Mr. Rapp.

'Only the picture—" the repairman paused, trying to find the right phrase. "I mean, the picture's flipped. Like, it's wrong side up, too. Only, right side up, now."

"Exactly," said Mr. Rapp. "You see, that's the trouble. I put the set upside down because of that."

"Cool," the repairman said, watching the picture. "I mean, so why worry? You got a picture, right? You want me to turn the picture around I can do that with a little fiddling around inside the set . . uh-oh. Dad, something's happening."

The repairman bent closer, staring at the picture. It was now showing a busty young woman singer, her mouth opened, but silent, since the sound was turned down. She was slowly rotating as Rapp and the bearded repairman watched, turning until her face, still mouthing silent song, hung upside down on the screen.

"It always does that," Rapp said. "No matter which way I put the set, the picture's always upside down."

"No, man," the repairman said, pleadingly. "Look, I took a course. I mean, the best school, you dig? It don't work that way. It just can't."

"It does, though," Rapp pointed out. "And that's what the other repair people said, too. They took it out, and brought it back, and it still did it. Not when they had it in their shops, but the minute it came back here, the picture went upside down again."

'Wow," the repairman said, backing slowly away from the set, but watching it with the tense gaze of a man who expected trouble. After a minute, he moved toward it again, and took hold of the cabinet sides, lifting.

"I don't want to put you down, Pops," he said, grunting. "Only, I got to see this. Over she goes." He set it down again, right side up. The picture, still the singer's face, remained in a relatively upright position for another moment, and then slowly rolled over, upside down again.

"You see," Mr. Rapp said, shrugging. "I guess I'll have to buy another set. Except I'd hate to have it happen again, and this one did cost quite a lot."

"You couldn't trade it in, either," the repairman agreed. "Not

to me, anyway." Suddenly he snapped his fingers. "Hey now. Sideways?"

"You mean on its side?"

"Just for kicks . . ." the repairman gripped the set again. "On the side . . ." He set the cabinet down, on one side, and stepped back, to regard the picture again.

Slowly, the picture turned once more, and once again, relative to the usual directions of up and down, the picture was stubbornly, completely inverted.

"It's onto that, too," the repairman said, gloomily. He sat down on the floor, and assumed a kind of Yoga posture, peering between his legs. "You could try it this way, Pops."

"I'm pretty stiff," Mr. Rapp told him, shaking his head.

"Yeah," the repairman said, reinverting himself. For a long while he sat, pulling his beard thoughtfully, a look of deep thought on his face. The reversed singer faded out, to give place to an earnestly grinning announcer who pointed emphatically to a large, upside down sign bearing the name of a product.

"Watching it this way could get to be a fad," the repairman said, at last, almost inaudibly. He fell silent again, and Mr. Rapp, sadly, began to realize that even this bearded and confident young man had apparently been stopped, like the others.

"The way I look at it. like, there's a place where science hangs up," the bearded one spoke, finally.

"Like, I don't want to put down my old Guru at the Second Avenue School of Electronics," he added, solemnly. "But you got to admit that there are things not dreamed of in your philosophy, Horatio. You dig?"

"My name isn't Horatio," Mr. Rapp objected.

"I was quoting," the repairman told him. "I mean, this is a thing like, outside material means. Supernatural, sort of. Did you cross up any witches lately, Pops?"

"Oh, dear," Mr. Rapp said sadly. He shook his head. "No, I haven't . . . er, offended any witches. Not that I know of." He regarded the inverted picture for a moment. Then, as the repairman's words began to sink in, Mr. Rapp looked at him apprehensively.

"Witches?" Mr. Rapp asked. "But . . . I mean, that's all superstition, isn't it? And anyway . . . well, television sets!"

"They used to dry up cows, but who keeps cows?" the bearded one said ominously. "Why not television sets? Like, I happen to be personally acquainted with several witches and like that. The Village is full of them. However—" He rose, and stalked toward the set, his eyes glittering in a peculiar way. "You're a lucky one, Daddyo. Back in my square days, I did some reading up on the hookups between poetry and magic. Now, I'm a poet. Therefore, and to wit, I'm also a magician. On this hangup, I'm

going to try magic. Electronics won't work, that's for sure."

'But . . ." Mr. Rapp was not quite sure why he disapproved, but he did. On the other hand, the repairman appeared to be very definitely sure of what he was doing, as he peered into the back of the television set.

"Have you ever tried . . . ah, this method before?"

"Never ran into any hexed TV sets before," the repairman said, straightening up. "Don't worry, though. I got the touch, like with poetry. Same thing, in fact. All magic spells rhyme, see? Well, I used to rhyme, back before I really started swinging. Anybody can rhyme. And the rest is just instinct."

He had been scribbling something on a notepad, as he spoke. Now he bent down, to take another look at the back of the set, and nodded with an air of assurance.

"The tube layout," the repairman told Mr. Rapp, exhibiting his notebook. "That, and Ohm's Law, and a couple of Hindu bits I picked up listening to the UN on the radio . . . makes a first-class spell."

Mr. Rapp backed away, nervously. "Look, if it's all the same to you . . ."

"Don't flip." The repairman consulted his notebook, and moved to stand in front of the screen. The picture showed a smiling newscaster, pointing to a map which indicated something ominous.

"Cool, man," the repairman said. "Here we go." He lifted his hands in an ecclesiastical gesture, and his voice became a deep boom.

"6SN7, 6ac5, six and seven millivolts are running down the line, E equals R times A, that's the way it goes, go round the other way, Subhas Chandra BOSE!"

Afterward, Mr. Rapp was never quite sure exactly what happened. He had an impression of a flash of light, and an odd, indefinite sound rather like the dropping of a cosmic garbage can lid. But possibly neither the light nor the sound actually happened; at any rate, there were no complaints from the neighbors later on. However, the lighted screen was certainly doing something.

"Crazy!" the repairman said, in awed tones.

Mr. Rapp, his view partly blocked by the repairman, could not see exactly what was happening on the screen. However, he caught a brief glimpse of the newscaster's face. It was right side up, but no longer smiling Instead, the pictured face wore a look of profound alarm, and the newsman was apparently leaning far forward, his face almost out of focus because of its nearness to the lens. Just for a moment, Mr. Rapp could have sworn he saw a chair floating *up*, past the agonized expression on the screen.

Then the screen want gray, and

a panel of lettering appeared, shaking slightly.

OUR PICTURE HAS BEEN TEMPORARILY INTERRUPTED. NORMAL SERVICE WILL BE RESTORED AS SOON AS POSSIBLE. PLEASE STAND BY.

"I was going to give you a bill," the repairman said. "Only maybe we better just charge it up to customer relations."

The letters remained steady on the screen, and Mr. Rapp studied them. They were right side up.

"You fixed it," Mr. Rapp said, a little uncertainly "I mean, it's working. I ought to pay . . ."

"I goofed," the repairman said. He picked up his tools, and moved toward the door "Like, I won't mention it to anybody if you won't. But I goofed, all right. Didn't you see the picture?"

"But whatever you did . . . it worked," Mr. Rapp said. "The picture's right side up."

"I know," the repairman said. 'Only somewhere . . there's a studio that's upside down. I just goofed, Pops, that's all."

He closed the door behind him, leaving Mr. Rapp still staring at the immobile, right-side-up message on the glowing screen. ■

The Analytical Laboratory

This department was made up early enough for the authors you selected for first and second place to receive bonus checks right before Christmas. Of course authors like bonus checks any time of the year, so keep your votes coming.

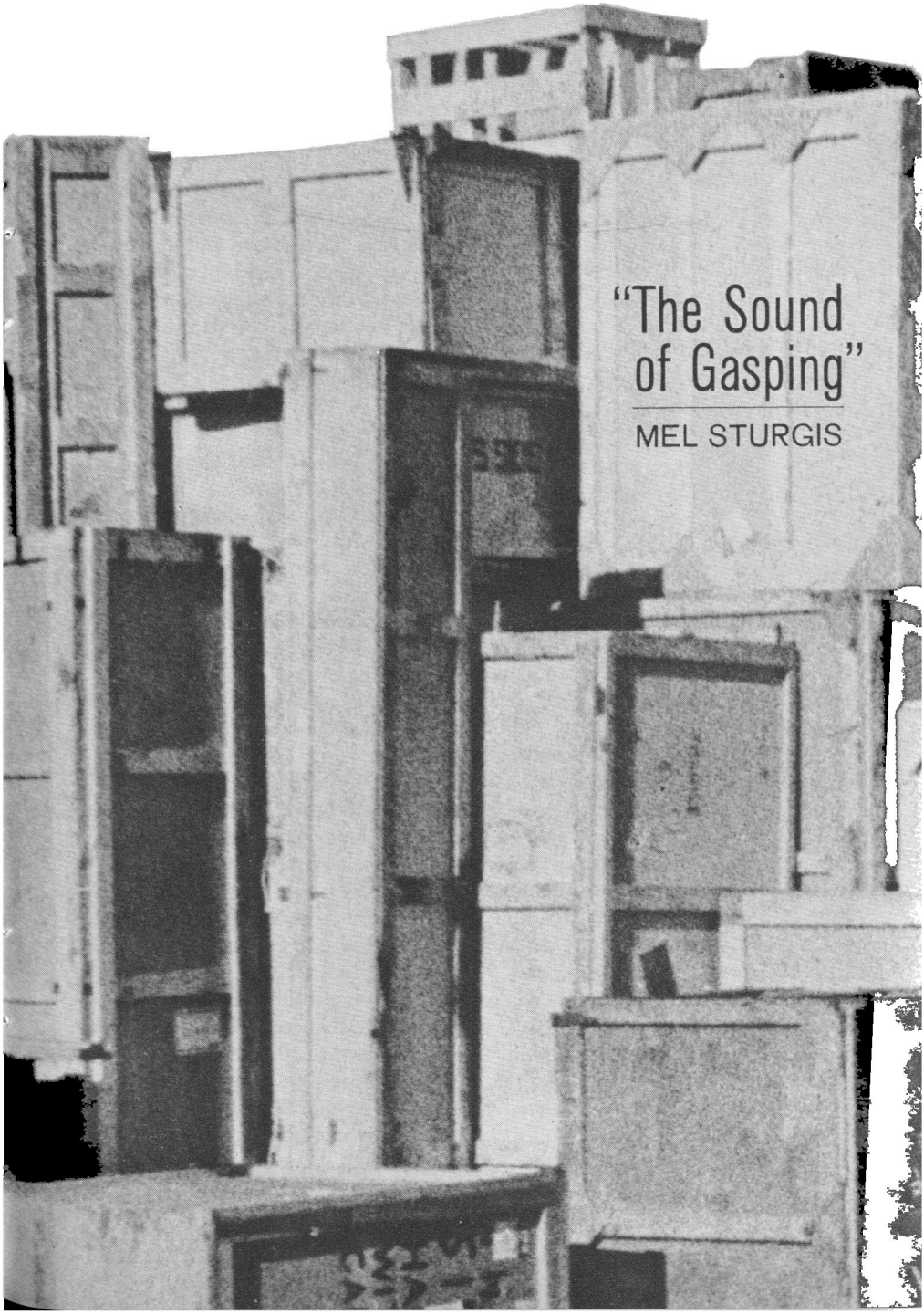
October 1962

PLACE	TITLE	AUTHOR	POINTS
1.	A Life for the Stars (Conclusion)	*James Blish*	1.77
2.	Ethical Quotient	*John T. Phillifent*	1.83
3	Gadget vs. Trend	*Christopher Anvil*	2.38
4	. . After a Few Words . . .	*Seaton McKettrig*	3.94

November 1962

1.	Anchorite	*Johnathan Blake MacKenzie*	1.72
2.	The Servant Problem	*Robert F. Young*	2.63
3.	Space Viking (Pt. 1)	*H. Beam Piper*	2.72
4.	Untechnological Employment	*E. M. Clinton, Jr.*	3.63
5.	Solomon's Orbit	*William Carroll*	4.27

THE EDITOR


"The Sound
of Gasping"
MEL STURGIS

Some while back, Isaac Asimov in his article "The Sound of Panting" discussed the problem of the pure-scientist in "keeping up with the literature." Sturgis discusses an even more acute problem—that of the engineer trying to keep up with the "state of the art!"

■ Somewhere on an isolated mountain or in a desert retreat, uninvaded by newspapers, magazines, radio, television, or other means of modern communication, dwells an antisocial citizen who has never heard of—is actually totally unaware of—the class of facts known as the polyunsaturates.

As a quick guess, ninety-nine per cent of the rest of us are cognizant, at least in varying degrees, of the amazing dietary benefits of "100% pure corn oil" or other natural or synthetic alternates.

Where did the knowledge of this bit of chemicana originate?

"From studious delving into the mysteries of agriculture, chemistry, and medicine?" you hazard.

No, indeed!

Those of us blessed with daily exposure to mass communications would have to show the agility of a laser beam to escape even a portion of the knowledge. For the polyunsaturates, like many an innocent before them, have become almost the exclusive province of a group of dedicated, harassed, imaginative, hard-working people whose only purpose in life is thus to educate you. A-n-d, at the same time, of course, acquaint you with *their* brand of margarine.

"The Hucksters." "The Men in the Gray Flannel Suits." "The Hidden Persuaders." Call them what you will, they have changed the face of America. With billboards and ads, slogans and jingles, they have so permeated the American Way Of Life that all of us are profoundly influenced by their actions. These actions, from the Pacific to the Atlantic, are personified in the average citizen's mind as that geographical and religious mecca of the advertising fraternity: Madison Avenue.

Never-never land. The home of the martini luncheons and deductible filet mignons. Inventors of the three-button coat and the natural shoulders. The umbrageous half-world where legendary figures, armed with consumer indexes and statistical analysis charts, put filters on your cigarettes, decaffeinate your coffee, and fill the deep freeze they encouraged you to buy with everything from frozen orange juice to TV dinners.

This is the face of advertising, *Circa* 1962.

Fig. 1. Because the state-of-the-art in our Satellite Program changes rapidly in drastically short periods of time, some advertisers find it beneficial to provide background engineering data concurrently with more standard advertising. Sometimes the product has outstripped the design data needed to use it!

CANNON

engineering notes:

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As the Space Program has expanded, there has been an increasing need for more sophisticated RF subminiature electronic circuitry to meel the exacling demands of satellites and spacecraft. This subminiaturized circuitry is used in many new design applications which require more ideally matched RF electrical connectors with very low VSWR and superior performance characteristics. To meet these needs we have developed the Cannon CX Series of subminiature RF Coaxial Plugs. This 50-ohm, matched-impedance series introduces a VSWR of less than 1.08:1 from dc up to 2000 mc, and does not exceed 1.25:1 up to 6000 mc.

Because the total VSWR of a system is a function of several characteristics, with a high degree of probability of the phasing of many discontinuities, the individual electrical connector and its cable junction must be designed to exhibit extremely low reflections.

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MICROPIN AND CX COAXIAL PLUG (ACTUAL SIZE)

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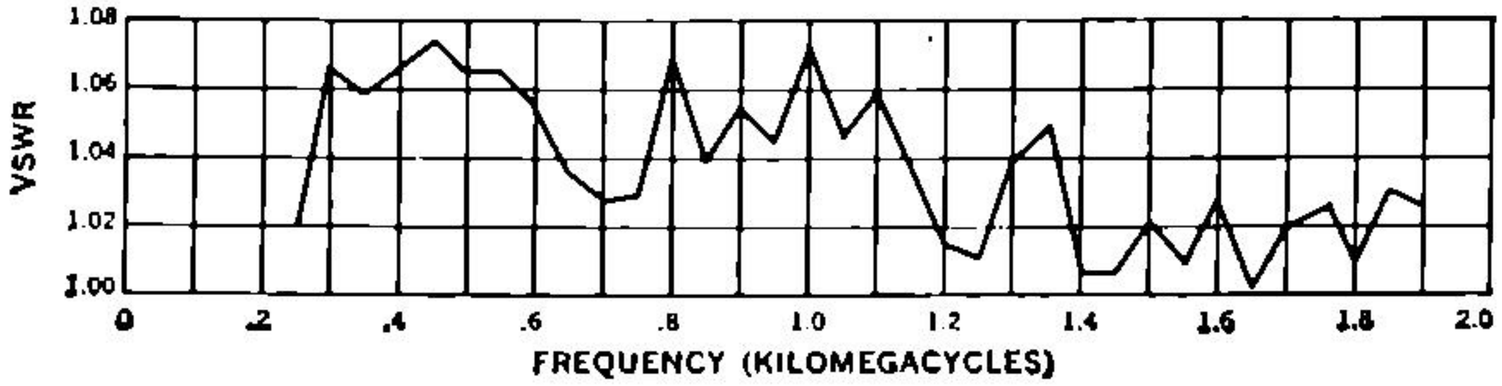

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CANNON PLUGS

CANNON ELECTRIC COMPANY, 3208 Humboldt St., Los Angeles 31, Calif.

Fig. 2. This is a typical example of an advertisement combining both technical data and the answer to a design problem: how to integrate the operations of six separate components into a single unit without sacrificing quality or reliability. The race to space depends upon our ability to trim these pounds.

That is, this is the commonly accepted face of advertising. However, generally hidden from public view, there exists a far more serious form of advertising whose messages are read by a limited few, but whose impact is already providing benefits beyond the awareness of most Americans. This is a highly specialized and esoteric kind of advertising. It is still in its swaddling clothes, but it is a lusty, bawling baby.

This is the face of the motivating force that will soon introduce the products of the technical revolution to the public-at-large.

Shortly following Russia's first successful space-flight orbit, John Campbell suggested that we could win back some of the lost propaganda ground and at the same time deflate the Russians by diverting a portion of a soft drink company's advertising budget and orbiting a satellite in the form of the familiar Coca-Cola bottle.

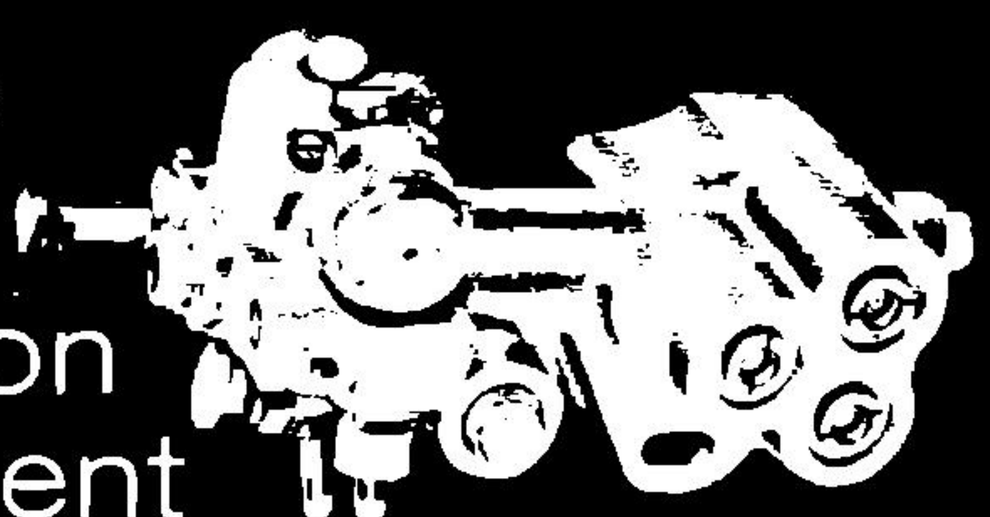
Although Mr. Campbell was only half serious, that indeed would have been an eye-popping symbol of American ingenuity to the rest of the world, and probably could have been easily accomplished. Advertising expenditures in the free world rose to about $19-billion in 1961. Considering that our entire space program costs less than $5-billion annually, there was enough money in the advertising pot to have placed billboards from here to the moon.

To those of you who equate Madison Avenue with toothpaste and razor blades, it may be somewhat surprising to learn that that is exactly where a decent portion of these billions went: to put an advertising message into outer space.

Our first manned orbital space vehicle was a most expensive advertising message, but in true Madison Avenue tradition the message was dramatic and powerful and reached the widest possible audience at the lowest cost-per-thousand. The message of the *Friendship* 7 was also brief and to the point: the American people were at last committed to space.

Grant me that John Glenn's flight *could* be considered an advertising message to the rest of the world. But what did *advertising* have to do with it? The answer is that advertising had a great deal to do with the launching of the *Friendship* 7, and will exert even more influence on future projects as our space program gains momentum. Many millions of advertising dollars have been spent by facilities concerned with our space projects. What is strange about this expenditure is that although these

the new dimension in component packaging!



Weston's Pneumatic Actuator Control Valve Package Combines 6 Components in a Single 6.4 lb. Unit!

While controlling the pneumatic actuator, this weight and space saving valve also provides for snubbing pressure at the oppos te end of the stroke. It affords extremely fast operation (maximum at .04 seconds) and low leakage (10 cubic inches per hour). The selector va ve is non-interflow and detented to maintain position. If you have a weight and space problem, let Weston s team of specialized package engineers solve your specific application.

weston BW a subsidiary of Borg-Warner Corporation

HYDRAULICS LIMITED [illegible] BURBANK BLVD. NORTH HOLLYWOOD, CALIF. DEPT

Export Sales: Borg-Warner International 36 South Wabash Ave. Chicago 3, Illinois
Eastern Representative: Mr. W. R. Beckerle 14 South Boro Lane, Glen Rock, New Jersey. Telephone: Gilbert 4-2094
Midwest Representative: Mr. E. A. Polowniak, 11767 Fawnridge Drive, Kirkwood, Missouri. Telephone: YOrktown 6-4861

dollars have been of tremendous value in forcing ever greater scientific and technical achievements in the field, the importance of advertising, *per se,* to our space effort is generally overlooked—even by a large segment of the advertising profession itself.

This seeming paradox is largely due to the gulf that exists between "consumer" advertising and the relatively new "technical" advertising that has resulted from the quickened pace of activity in the space field during the past few years. Although these two forms of advertising have a common denominator—to influence a buying decision—they are totally different in format and concept.

Advertising is a logical outgrowth of our free-enterprise system. Our populace shares the same resistance-to-change that is common with mass-man. However, our free-enterprise system demands that new products be consumed. Products will be consumed only if they are available *and* if the populace is desirous of consuming them. This desire is a variable and is a function of the *acceptance level* of the populace. It is precisely to increase this acceptance level that $19-billion were spent in advertising last year.

So successful has Madison Avenue been in overcoming all forms of resistance, that the old bromide "Build a better mousetrap and the world will beat a path to your door" is almost accepted as a tautology. In truth, the proposition is an implication, and should be stated "Build a better mousetrap *implies* the world will beat a path to your door." If you wish to dissolve the implication into an equivalence, the proposition is true only if: (a) it is true that you have built a better mousetrap; *and* (b) if it is true that the world knows you have built a better mousetrap; *and* (c) if it is true that the world accepts the need for a better mousetrap. The proposition is true only if each term is true.

Now it is demonstrable that selling a better mousetrap is duck soup to Madison Avenue. But what if the mousetrap manufacturers were being deluged with so many advancements in the state-of-the-art that they had to utilize almost one hundred per cent of their productive capacity just to stay within sight of the rising threshold of mousetraps. This slows the process down considerably if they are trying to get a mousetrap off the production line and into the market. In fact, the word can't be passed at all until some manufacturer reaches a threshold and gets into production a product that can be exploited.

This problem doesn't exist in consumer advertising, but has become so acute in the technical field that it has forced Madison Avenue into an amoebalike split, and has introduced

Fig. 3. Dramatic "fallout" from our Space Program. As our program accelerates, the civilian population will benefit in direct proportion.

DO YOU NEED A 0.090" DIAMETER PRESSURE TRANSDUCER?

Medical researchers did. So, Statham designed a new transducer so incredibly small it can be inserted through a human vein directly into the heart, for accurate measurements of blood pressure at its source. You will find this tiny transducer also useful for precise aerospace and industrial pressure measurements. Statham Instruments, Inc., Los Angeles 64.

a new professional to scientific and technical circles—the advertising Engineering Account Executive.

This new professional espouses a form of advertising that is a radical departure from time-honored techniques. He has nothing in common with and is little understood by his nontechnical advertising contemporaries. The converse is also true. In fact, technical advertising is almost a profession within a profession, dependent entirely upon its parent, yet raising a number of barriers due to the nature of its subject matter. The result is a classic example of the right hand not knowing what the left hand is doing, although the two factions of advertising will ultimately converge to their and the public's mutual advantage.

The little known and unpublicized Engineering Account Executive plays a dual role. The copy in his ads is indecipherable to the average layman, and is read by few of them; however, his work is not only of inestimable value in accelerating our space program, but also is helping Mr. and Mrs. Mass America eat better, live better, and enjoy better health, to name but a few of the benefits. Both of these roles are worthy of exploration; technical advertising will be a prime motivating force for the foreseeable future.

To explore the first of these roles, let's go back ten short years.

In 1952 the number of commercial jets in operation were: *zero;* the number of ballistic missiles capable of even intermediate range were: *zero;* the number of artificial Earth satellites were: *zero.* However, work on all these projects was under full swing in 1952, although details of the latter two were hidden in the shrouds of secrecy except in nontechnical articles in Sunday Supplements and in highly technical stories in science-fiction magazines.

During this time thousands of manufacturers, both large and small, who were selling the myriad components, sub-assemblies, and systems for aircraft, missiles, and rocket usage suddenly found that our technology was expanding at such a rate that they were faced with two extremely difficult problems: (1) they had to keep up with and stay competitive with the large-scale technical breakthroughs that were occurring almost daily; and (2) things were becoming so complex that they had to establish better lines of communication between buyer and seller on all levels if they were to even stay in business.

As in Soviet Russia, at that time the only customer for jets, missile components, and rockets, was the government. Unlike Russia, however, one hundred per cent of our production was being accomplished in the highly competitive free enterprise system. From a complete weapons system to the smallest item, the door was truly open to anyone who could "build the better mousetrap," from the government to the primes to the sub-primes to the component manufacturers to the suppliers of the simplest fastening device. The resultant

scramble produced a remarkable number of scientific breakthroughs in a very short time, but it also resulted in it being more difficult to get a new product in use than it was to design and engineer the product in the first place.

Clearly, an advanced product is of little use to either our space program or to the seller unless it can be moved out of the back door and into the hands of the intended user. It is integral to our free enterprise system that this job of moving goods is the total responsibility of a company's sales force, whether that force be a single sales engineer peddling a pressure transducer to sense pounds-per-square-inch-absolute, or a one-hundred-man proposal team peddling the advantages of solid propellant versus liquid propellant for a space flight system. The rate of accomplishment of our space activities is directly proportional to the rate that new developments can be absorbed by industry.

However, the same technical explosion that brought us in less than twenty years from single-engine props to the *Friendship 7* has also brought us a king-size communications headache. Today's engineer finds that keeping up with the state-of-the-art is analogous to Alice's predicament, and though he runs at full speed he finds it hard to maintain his position even if he limits his activities to his own speciality.

Government, science, and industry have approached this growing problem with understandable concern, and in every conceivable fashion. From elaborate trade shows, such as the limited-participation Institute of Radio Engineers annual IRE show in New York, to government symposiums, every resource at hand is utilized to acquaint the engineer with ever-mounting technical problems and their proposed solutions.

With all the techniques at our disposal, the best method of dissiminating the amount and type of information which is absolutely necessary to our survival seems to be the printed word. During the past decade a little known branch of the publishing business, the technical journal, has also come of age. It is the purpose of these journals to collect, edit, and present in a concise package all the newest theories, techniques, and developments pertinent to a chosen technical field.

These technical journals perform a function without parallel. So great is the amount of information available —and increasing rapidly—on any technical subject, that without the editorial and writing efforts of the tech journals a very large percentage of our scientists and engineers would be faced with an almost hopeless jumble.

But as worthwhile as this editorial content is, it still leaves a very important gap. Although most technical articles, *et al,* do a very good job in defining techniques and developments, they do a very poor job—at best a limited job—of defining

Fig. 4. The "Wescon" referred to was held last August in Los Angeles, and some 45,000 electronics-interested people registered for this IRE show. The exhibits could not be contained even in the huge Sports Arena; a gigantic circus tent was erected as an annex to the left of the Arena.

sources. So complex is the flow of material, and so rapid is the pace of activity in the space field, that qualified sources must be continuously available to the enginer if we are to close the vast gap in knowledge that must be spanned in the next few years. It is patently impossible for all the nation's sales engineers to call upon the nation's purchasing engineers within any usable time. Even if it were possible, it would be so time-consuming that nothing else would get done. Yet communication must be continuous.

Communication between one branch of science or engineering and another branch has always been more or less of a problem, but in the last ten years it has become critical. The sheer mass of available technology is overwhelming. Today, technical advertising is generally accepted by industry as an important adjunct to marketing, although it is of such recent vintage that only a minority of those most needful of its benefits utilize it to the proper extent. The rest either misinterpret its real purpose, or use it so sparingly that it is a wasted effort.

A portion of the foregoing is the result of the effects that regular advertising has on our day-to-day lives. Many of those entrusted with the marketing function of their respective companies, especially in the newer disciplines which seem to spring up continually, tend to discount any kind of an advertising campaign as being of dubious value. This is usually because the marketing man is either relatively new in his function and still views advertising in the image of the radio or television pitch-man, the full color spread in *Life*, and the singing commercial, or he has had inadequate results with an Agency that lacked the technical competence to do a proper job.

It is true that the average technical marketing man knows very little about advertising, and the ordinary advertising account executive knows even less about engineering problems. Unfortunately, there are far too many advertising agencies who are incompetent in the technical field; on the other hand, a great many agencies have solved the problem and are contributing materially to the success of their clients and our overall technical excellence. These agencies have recognized that although it is all but impossible to train an account executive in the rigors of engineering, it is relatively simple to train *certain* types of engineers in the intricacies of advertising. Ergo: the Engineering Account Executive.

These agencies are creating the different kind of advertising that is rapidly assuming major importance in our space efforts. And strange as it may seem, this different kind of advertising is contributing the largest amount of technical information that is available to the engineer on a "quick-look" basis today.

For unlike consumer advertising, it should not be and is not the purpose of technical advertising to sell anything. Although economics dictate

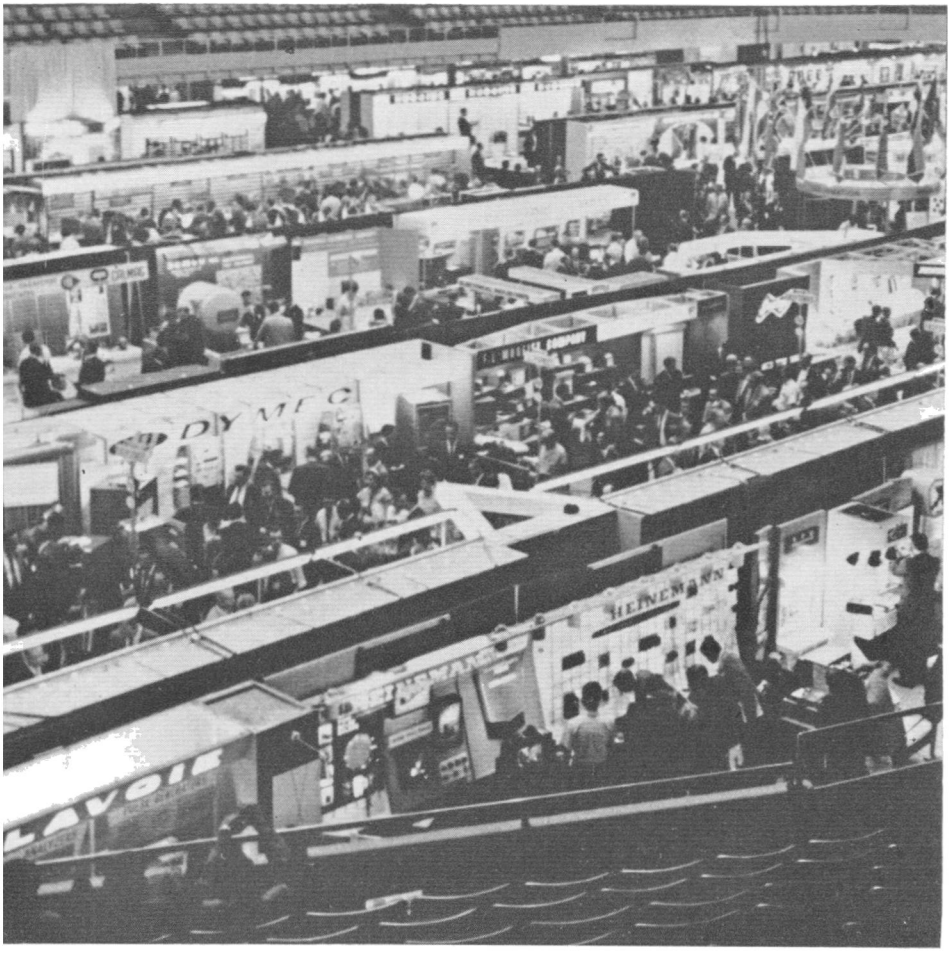


Fig. 5. These two views—taken with extreme wide-angle lens—suggest the number of exhibitors. Four days of diligent, foot-wrecking effort didn't reach them all.

Fig. 6. Backstage at the Wescon. All exhibits came carefully crated . . . and all have to be carefully dismantled, recrated, and moved to the next IRE show somewhere else. These shows are hard for all concerned, expensive—and essential to communication. One immense parking lot is covered with these mountains of crates.

that sales eventually be made, such sales are usually far downstream of any advertising effort. The one and only purpose of technical advertising is to qualify a product or service.

Technical advertisements are naturally highly specific and are directed to a specific audience: the engineer or his equivalent. Engineers are problem solvers. It is a curse of the profession that solutions are often found only at the expense of creating a greater problem, which in turn demands a solution. (This is a well-known portion of Finagle's Law. And it is interesting to note that Engineering Account Executives are as harassed by the Law as are regular engineers.)

The problem inherent in this little go-around, gentlemen, is a dilly. It is truly an effort to qualify a simple, solid-state, analog-to-digital converter with a resolution of fourteen bits to an engineer, when the dynamics of his computer system are already perfectly satisfied with an a-d converter with a resolution of ten bits. Thus the technical advertiser, in most cases, if he is to qualify his product, must not only convince the engineer that he has a solution to his problem, but must at the same time convince the engineer *that he even has a problem.*

It would be extremely advantageous if all the components utilized in a given system were to achieve technical excellence at the same time. But such is not the case. It is one of the miracles of present technology that manufacturers, working independently and competitively, continually offer breakthroughs that obsolete a system that was itself a major breakthrough a few months before. Systems, of every description for every purpose—from digital computers to the present controversy of liquid-propellant rocket engines *versus* solid-propellant rocket engines, are also highly competitive. Our space program eventually *has* to outstrip the Russian's if for no other reason than because our competitive system *demands* such a multitude of different solutions to the same problem.

Technical advertising is in the thick of this competition. In hundreds of technical publications, with tens of thousands of advertisements, the technical advertising fraternity is making available *simultaneously* to everyone concerned in our science and technology the greatest panoramic showcase of technical know-how in the world. The effort must be continued. So rapidly are we progressing all up the line that each new product or design is literally accepted with the reservation that "If it works, it must be obsolete." Thus research, design, development, and packaging engineers must continuously peruse the showcase for even more startling exhibits.

No better method of getting specifics to the public in the shortest possible time has ever been devised than a hard-hitting advertising campaign. Technical advertising provides no exception. By wedding the techniques for which it is known with the newly

found ability to present scientific and technical disciplines in a language understood by all, Madison Avenue is keeping the showcase full.

It is relatively easy to convince an engineer, if it is true, that you have the solution to any given problem. But only by displaying *simultaneously* the full spectrum of many of our endeavors can an engineer gain the perspective which forces him to *invent* a problem needful of a pertinent solution. This is the function of technical advertising.

By reducing tons of technical data to simple advertising messages, by getting these messages into the right hands at the right time, by presenting qualified and competitive sources at a glance, advertising is helping to release millions of creative man-hours to our space program. It goes without saying that this effort also makes considerable contribution to the overall sales aims of the companies who advertise freely.

However, as important as the technical advertising man is to his clients and to the space industries, he has yet to fulfill an equally important role, although he is about to make an entrance from stage left. A few paragraphs back we mentioned that the work of the Engineering Account Executive was not only of inestimable value to our space program, but was also helping Mr. and Mrs. America eat better, live better, and enjoy better health, to name but a few of the benefits. Because these contributions, too, are mostly hidden from mass-view, they deserve to be explored.

When the technical advertising man penetrates the mass-consumer market he is largely ignored. This is because, from the mass-outlook, he deals mostly with *concepts,* and the consumer is interested mostly in *products*. Contrary to popular opinion, no amount of advertising has ever been effective in introducing a new concept. In fact, free enterprise won't let advertising work at all until it is presented with a *fait accompli.* But whenever this happens, advertising gets the results of the new concept off the ground in a hurry.

As an example, when Henry Ford upset his contemporaries by introducing the *concept* of really modern mass transportation, he was considered a prime candidate for the nearest giggle-factory. Regardless of Ford's latent capability to manufacture hundreds of thousands of automobiles at a price that almost everyone could afford, plenty of people wanted to impede his progress. Hardly anyone who could mold public opinion came out foursquare in favor of this first mass-transportation vehicle. Oh, they wanted one, but they weren't ecstatic about the idea of upsetting a very beautiful horse-and-buggy *status quo* by making automobiles available to just *any-one.* Even those who recognized Ford's potential still believed the majority of the populace would prefer the horse for a long time to come. Not until Ford had his product rolling, and was really competitive with the horse, could he engage in a little opinion molding of his own. The resultant clamor introduced the great-

est social reform of the last hundred years, and both the clamor and the advertising have increased in geometric proportion to this day.

Today's market differs from that in Ford's time only in that a properly advertised-to populace are more than ready to accept the products of new concepts—once they are on the market. The technical advertising man is helping get these products into the market place.

One of the really amazing dividends of our space program is the tremendous amount of "civilian fallout" that is accruing daily. A multitude of items originally designed and developed for space research are finding some quite unexpected usages in the commercial markets.

For instance:

- As a result of space experimentation with algae, a process has been developed for making flour of a high nutritive value.
- A new Teflon-coated cloth filter designed for use in space research will probably result in a better coffee.
- Ultraviolet phototubes developed for space probes may be effective flame detectors in a home alarm system.
- Solar cells originally designed for spacecraft power may power portable radios.
- Photochromic material for space use may be adaptable for sunglasses and antiglare windows.

And on, and on, and on.

As these concepts, and more like them, reach thresholds that allow them to be manufactured and exploited, the Engineering Account Executive is again called upon to bridge the gap between technology and an intended user. He keeps the showcase full so that manufacturers of consumer goods can realize the full benefit of scientific achievements. He puts technology into the language of medicine, agriculture, and nutrition; behind the scenes he helps appliance manufacturers, builders, and craftsmen plan better products for the future—so that his counterpart on Madison Avenue can present the final result to the public.

Until we have the polyunsaturates.

The Engineering Account Executive seldom appears on television, or is heard on radio. He doesn't write singing commercials. But he is rapidly becoming as important to Madison Avenue as Madison Avenue is to the space effort and to the American public. Advertising has been extremely important to our way of life since the founding of our Republic; the technical advertising man is only now beginning to make his presence felt.

However, advertising being what it is, he is already becoming almost indistinguishable from his consumer brethren. He shares the same quarters, and affects the same creativity. Only his badge of office is different. He isn't identified by a gold fountain pen and an attaché case.

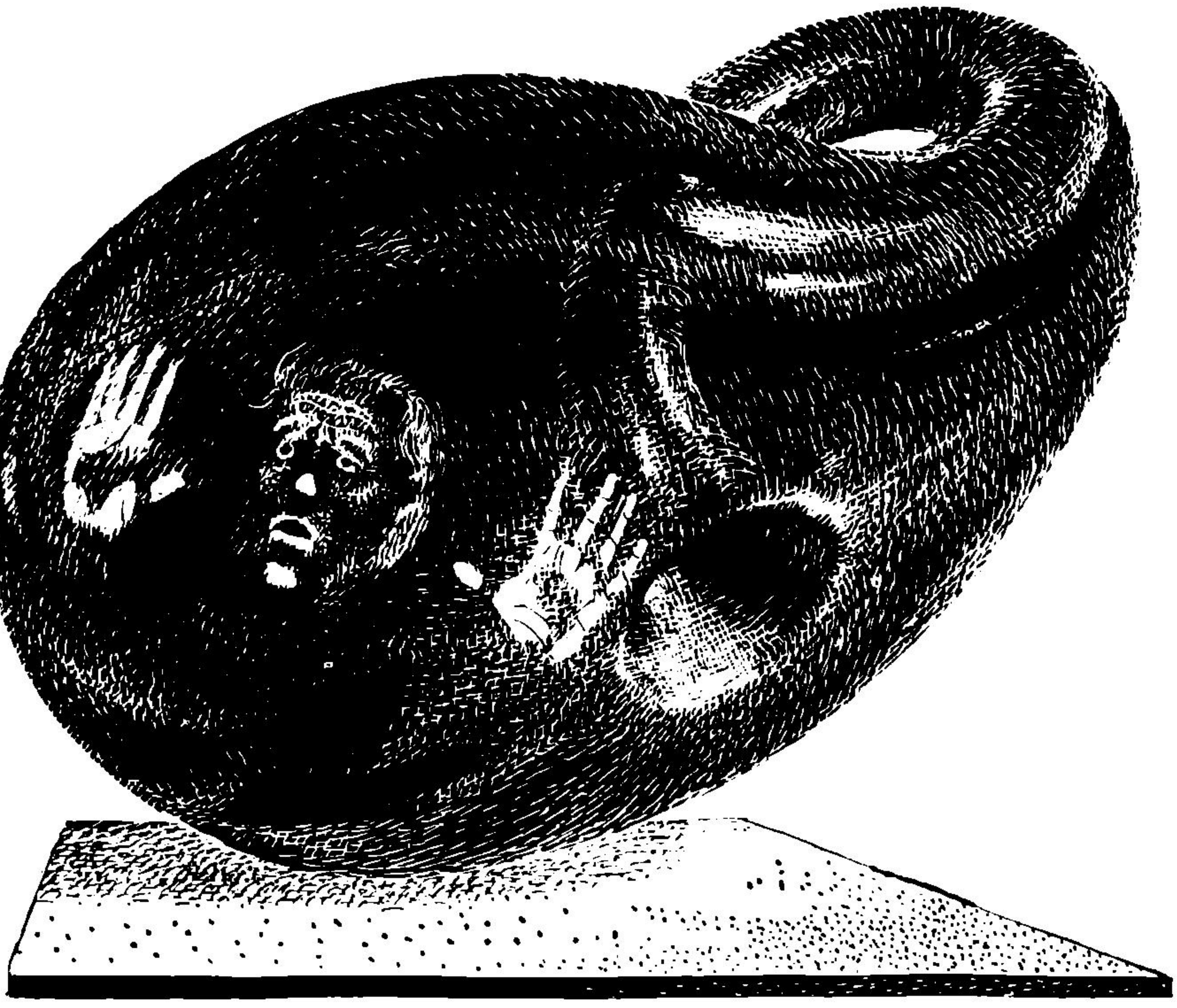
He carries a slipstick and converses in polynomials. ■

The Topper

Response to a challenge is one of the most basic of motivations—whether in science or that other area that is uniquely human...

by Arthur Porges

Illustrated by Schoenherr



If I hadn't been at the meeting myself, nobody, not even a committee composed of Albert Schweitzer, Bernard Baruch, and Winston Churchill, could have sold me the story of what happened.

Almost every Friday, our chief engineer on the project, Dr. Corman, held a briefing session. He's a first-rate man, one of the best Cal Tech ever turned out, so we were glad to listen. All except Nils Larsen, that is. Corman is his boss, too, but Larsen hates to admit it. His specialty is miniaturization, and according to rumor, inscribing the Lord's Prayer on the head of a pin would be too simple for him; he would prefer to write "Gone With the Wind" there, instead.

But the queerest thing is that the two men can't find enough to fight about in engineering; they have to be amateur biologists for that. Corman has always maintained that some other form of intelligent life, besides man, was bound to turn up, either by mutation here on earth, or on a neighboring planet. Larsen thought this was crazy; maybe he had some religious bias against the idea, or more likely he felt that way because opposition to the chief engineer was the spice of existence to him.

Ordinarily Dr. Corman would never have dreamed of using his Friday briefing period for anything else, but last night we knew something was up that had no connection with the Loki rocket.

There was the Chief with a powerful overhead projector, and on it a great, glass-topped box, thick-bottomed and sturdy. A few of us, before the meeting got going, tried to come on stage for a peek, but Corman scowled us away. Clearly, he had planned a surprise, and didn't want anybody in the know ahead of time.

When everybody had arrived, and all were seated, with Nils Larsen right in the front row, as usual, Corman came up to the lectern. He's a big man, well over six feet, and broad in proportion, but oddly enough, his voice is a sort of shaky soprano. Larsen, small and chunky, sounds like a bullfrog by comparison.

"Gentlemen," Corman squeaked, sticking out his rocklike chin, "I know you will forgive me if I use this time for something other than the project. An event so startling and incredible has occurred that nothing else has any importance compared to it." He paused for a moment, fixing members of the first row with his glacial blue eyes. "I have discovered an intelligent form of life, right here in this community—in fact, in my own house."

"It can't be his wife," Jerry Noble muttered to me. "Her waist measurement exceeds her I. Q."

"Here in this box," Corman went on, glaring at Jerry, "are the first specimens of nonhuman, intelligent life. I must infer that as you have often heard me tell Larsen, they are mutants created almost

certainly by the unusually high level of radiation from the proving ground."

I stole a glance at Nils; his face was twitching, as if he fought to suppress a grin.

Meanwhile a murmur of wonder had swept the group. They thought very highly of Corman's engineering skills; he was tops at theory as well as practice; the kind of man who could use matrix algebra or machine tools with equal facility. But this talk about a really astonishing discovery in another field had them puzzled.

The hum of conversation grew louder, and Corman raised a hand. When the audience was quiet again, he said: "I'm trying to prepare you for this gradually; otherwise it could be quite a shock. You see, the intelligent animals are—at least in appearance—very much like ordinary roaches." Here Larsen sputted uncontrollably, his shoulders shaking. Corman gave him a single cryptic glance, then went on. "I found them in my own kitchen; you can imagine my amazement on seeing that they actually wore clothes of a sort—boots and garments." The hard-bitten group of engineers, mathematicians, and physicists gasped audibly at this. Larsen's neck was purple; he continued to shake.

"Before going on, let me show you," Corman said calmly. He switched on the projector, and dimmed the lights. Quickly he brought the contents of the glass-topped box into sharp focus on the screen.

This time you could almost hear all the eyeballs click to attention. It was the damndest thing to see about a hundred large roaches, the German kind sometimes called croton-bugs, rushing around in there, with each one wearing six little black boots and a brightly-colored Indian-type blanket fastened across its black, shiny back.

"Just look, gentlemen," Corman cried triumphantly. "If the use of such clothing doesn't prove their intelligence, I don't know what could. You have often heard me argue this point with Larsen; now you can judge who is right."

Instantly Nils was on his feet.

"Do you seriously maintain, Dr. Corman, that those insects are intelligent—mutants who have learned the use of clothing?"

"Absolutely."

"Will you stake your professional reputation on that?" the smaller man croaked.

"Without hesitation. '

"Mr. Kellog," Larsen said, turning to a man three rows away. "Do you remember the sealed letter I gave you last week? The one I asked you to bring tonight?"

"Yes," Kellog admitted. "I have it here."

"Has it ever been out of your hands in the interval?"

"No. I kept it on me, as you suggested."

"Will you open it now, and read the contents to this group," Larsen asked him, his lips twitching in a series of abortive grins.

"Of course," Kellog said.

He took a letter from his pocket, opened it, and read: "October 5th. Today I finished dressing nearly a hundred large roaches in tiny boots and bits of colored cloths. I used a syringe full of epoxy cement to make them stick. The roaches have complete freedom of movement. I intend to start planting them, twenty at a time, in Dr. Corman's house as a test of his gullibility." Kellog was smiling now. "It's signed by Larsen," he added.

"I think," Nils purred, "that the gullibility has been proved to the hilt. Your professional reputation I think you said, Dr. Corman," he said more maliciously.

Some of the people started to chuckle, and soon a ripple of mirth was spreading through the audience. But again Dr. Corman raised a hand for silence, and got it, so strong was his personality.

'Gentlemen," he said in a level voice several tones below his normal pitch. "This is a fantastic story Larsen is telling us." He looked squarely at the smirking Nils. "Do you remember how far up those boots extended?"

"Of course. Exactly two millimeters."

"In a moment you'll see that these are cockroach hip boots, almost five millimeters long."

'Absurd!" Larsen exclaimed.

"Did you put anything else on the roaches besides boots and blankets? Think carefully."

"I don't have to think—there was nothing else."

"The insects I found also wear little pouches. Inside them," he added meaningly, "is a set of most unusual tools."

"I don't believe it," Larsen snapped.

"Very well; look for yourself."

Once more he dimmed the lights and snapped on the projector. There was no doubt about it; each roach wore half a dozen boots extending well up its legs; and now we could see the tiny pouches on belts around their middles.

"It's a trick," Larsen yelled. "You did that yourself." Then his face fell. He was in a bind. Either way he lost. If he admitted Corman was capable of such miniaturization, his one superiority was lost. On the other hand, if the chief hadn't done it, these were different, and possibly intelligent animals. But Corman wasn't through with his surprises.

"I had no idea Larsen was playing tricks," he said blandly, "but these can't be his roaches, because this bunch"—here he paused for effect—"can *communicate!*"

By this time we were all in a daze, but Nils looked really wild. Somehow his cute trick had been turned inside out trapping him within, like a weird Klein's Bottle.

"You're crazy!" he gulped.

"We'll see," Dr. Corman told him, his tone almost sinister.

He rapped on the box sharply; it was obviously a code message. I know Morse, and read it easily. He was ordering the roaches to give their mathematical demonstration. To the utter amazement of the whole pop-eyed group, the insects skidded and tumbled over each other to form a perfect right-angled triangle. Squares on the three sides, blackly shaded with shiny backs, demonstrated clearly the Pythagorean Theorem. Larsen dropped into his seat, his face the color of yogurt. The rest of us simply gaped.

Once more the chief engineer rapped on the glass. This time I heard him tell the roaches to say hello. Quickly, in the same frantic way, they spelled out with their bodies the phrase: "Hi, out there."

After that it was bedlam, with the whole group of men applauding, whistling, laughing, and stamping their feet. As for poor Larsen, he slumped in his chair, looking like a grape that's been stepped on by a rhino.

You may not want to give me credit, but I just didn't believe any of this. I've known Corman longer than the others; went to Cal Tech with him. Not many are aware of his sense of humor, which is far out, and seldom practiced. He's a virtuoso who performs only when a masterpiece is involved.

I was sure, naturally, that he'd amended the clothing of Larsen's roaches; it was the rest of the show —the "communication"—that baffled me. And yet it was so simple, as he demonstrated to the rest of us after Larsen went out, talking to himself and shaking his head. Simple, but ingenious, like all masterpieces.

Corman fed the roaches on starch paste with the finest iron filings mixed in. Electro magnets, carefully arranged and wired, did the rest. When that electric field formed a triangle, or a phrase, it really snatched those bewildered insects into line!

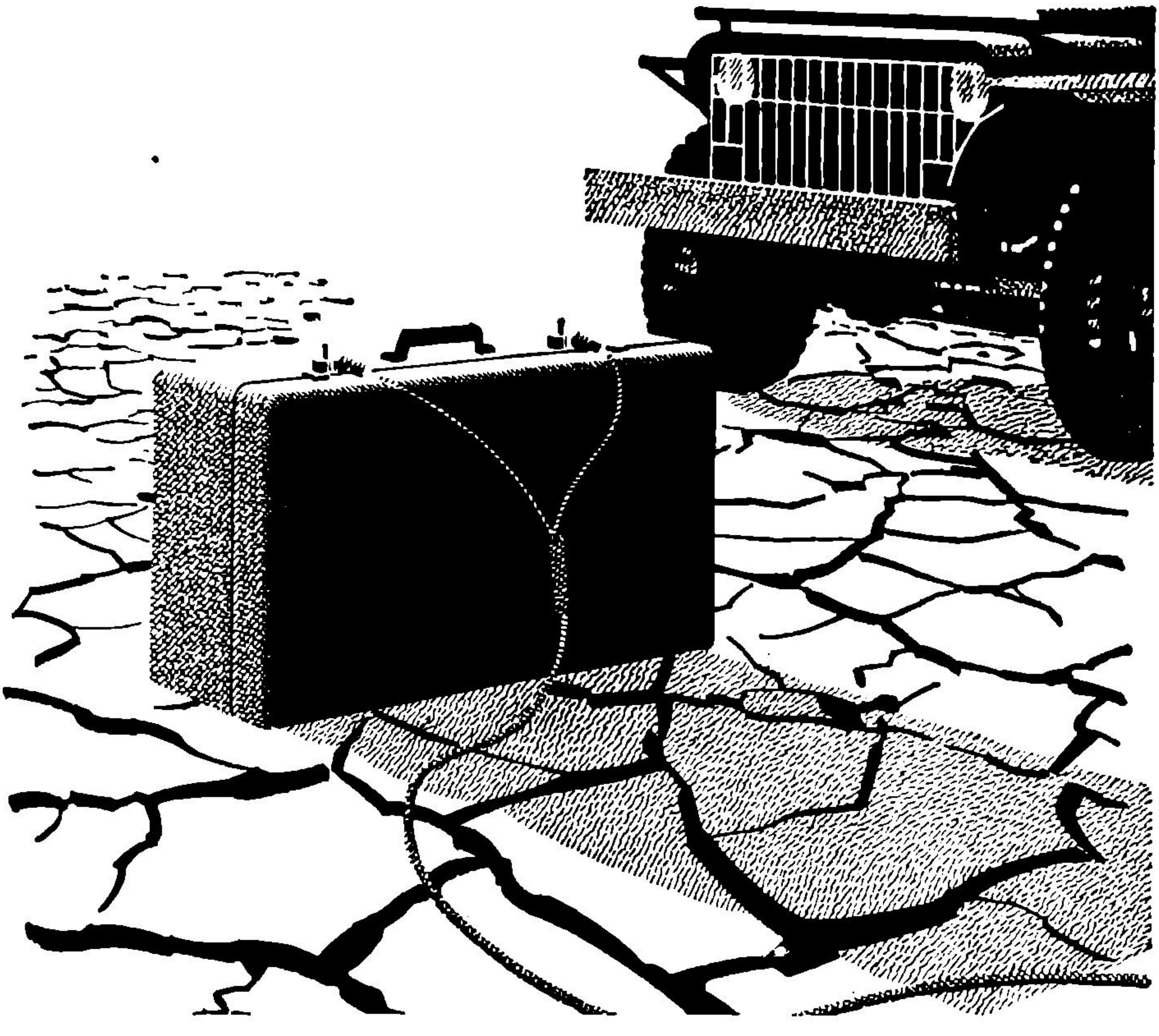
By today Larsen probably knows how he was taken. His idea was good, but no ordinary talent is a match for genius. Who remembers Wallace along with Darwin? ■

With No Strings Attached

A man will always be willing to buy something
he wants, and believes in, even if it is impossible,
rather than something he believes is impossible.
So . . . sell him what he thinks he wants!

David Gordon

Illustrated by Schelling



■ The United States Submarine *Ambitious Brill* slid smoothly into her berth in the Brooklyn Navy Yard after far too many weeks at sea, as far as her crew were concerned. After all the necessary preliminaries had been waded through, the majority of that happy crew went ashore to enjoy a well-earned and long-anticipated leave in the depths of the brick-and-glass canyons of Gomorrah-on-the-Hudson.

The trip had been uneventful, in so far as nothing really dangerous or exciting had happened. Nothing, indeed, that could even be called out-of-the-way—except that there was more brass aboard than usual, and that the entire trip had been made underwater with the exception of one surfacing for a careful position check, in order to make sure that the ship's instruments gave the same position as the stars gave. They had. All was well.

That is not to say that the crew of the *Ambitious Brill* were entirely satisfied in their own minds about certain questions that had been puzzling them. They weren't. But they knew better than to ask questions, even among themselves. And they said nothing whatever when they got ashore. But even the novices among submarine crews know that while the nuclear-powered subs like *George Washington*, *Patrick Henry*, or *Benjamin Franklin* are perfectly capable of circumnavigating the globe without coming up for air, such performances are decidedly rare in a presumably Diesel-electric vessel such as the U.S.S. *Ambitious Brill*. And those few members of the crew who had seen what went on in the battery room were the most secretive and the most puzzled of all. They, and they alone, knew that some of the cells of the big battery that drove the ship's electric motors had been removed to make room for a big, steel-clad box hardly bigger than a foot locker, and that the rest of the battery hadn't been used at all.

With no one aboard but the duty watch, and no one in the battery room at all. Captain Dean Lacey felt no compunction whatever in saying, as he gazed at the steel-clad, sealed box: "What a battery!"

The vessel's captain, Lieutenant Commander Newton Wayne, looked up from the box into the Pentagon representative's face. "Yes, sir, it is." His voice sounded as though his brain were trying to catch up with it and hadn't quite succeeded. "This certainly puts us well ahead of the Russians."

Captain Lacey returned the look. "How right you are, commander. This means we can convert every ship in the Navy in a tenth the time we had figured."

Then they both looked at the third man, a civilian.

He nodded complacently. "And at a tenth the cost, gentlemen," he said mildly. "North American Carbide & Metals can produce these units cheaply, and at a rate that will enable us to convert every ship in the Navy within the year."

Captain Lacey shot a glance at Lieutenant Commander Wayne. "All this is strictly Top Secret you understand."

"Yes, sir; I understand," said Wayne.

"Very well." He looked back at the civilian. "Are we ready, Mr. Thorn?"

"Anytime you are, captain," the civilian said.

"Fine. You have your instructions, commander. Carry on."

"Aye, aye, sir," said Lieutenant Commander Wayne.

A little less than an hour later, Captain Lacey and Mr. Thorn were in the dining room of one of the most exclusive clubs in New York. Most clubs in New York are labeled as "exclusive" because they exclude certain people who do not measure up to their standards of wealth. A man who makes less than, say, one hundred thousand dollars a year would not even qualify for scrutiny by the Executive Committee. There is one club in Manhattan which reaches what is probably close to the limit on that kind of exclusiveness: Members must be white, Anglo-Saxon, Protestant Americans who can trace their ancestry as white, Anglo-Saxon, Protestant Americans back at least as far as the American Revolution *without exception*, and who are worth at least ten millions, and who can show that the fortune came into the family at least four generations back. No others need apply. It is said that this club is not a very congenial one because the two members hate each other.

The club in which Lacey and Thorn ate their dinner is not of that sort. It is composed of military and naval officers and certain civilian career men in the United States Government. These men are professionals. Not one of them would ever resign from government service. They are dedicated, heart, body, and soul to the United States of America. The life, public and private, of every man Jack of them is an open book to every other member. Of the three living men who have held—and the one who at present holds—the title of President of the United States, only one was a member of the club before he held that high office.

As an exclusive club, they rank well above England's House of Peers and just a shade below the College of Cardinals of the Roman Catholic Church.

Captain Lacey was a member. Mr. Richard Thorn was not, but he was among those few who qualify to be invited as guests. The carefully guarded precincts of the club were among the very few in which these two men could talk openly and at ease

After the duck came the brandy, both men having declined dessert. And over the brandy—that ultra-rare Five Star Hennessy which is procurable only by certain people and is believed by many not to exist

at all—Captain Lacey finally asked the question that had been bothering him for so long.

"Thorn," he said, "three months ago that battery didn't exist. I know it and you know it. Who was the genius who invented it?"

Thorn smiled, and there was a subtle wryness in the smile. "Genius is the word, I suppose. Now that the contracts with the Navy have been signed, I can give you the straight story. But you're wrong in saying that the thing didn't exist three months ago. It did. We just didn't know about it, that's all."

Lacey raised his bushy, iron-gray eyebrows. "Oh? And how did it come to the attention of North American Carbide & Metals?"

Thorn puffed out his cheeks and blew out his breath softly before he began talking, as though he were composing his beginning sentences in his mind. Then he said: "The first I heard about it was four months ago. Considering what's happened since then, it seems a lot longer." He inhaled deeply from his brandy snifter before continuing. "As head of the development labs for NAC&M, I was asked to take part as a witness to a demonstration that had been arranged through some of the other officers of the company. It was to take place out on Salt Lake Flats, where—"

It was to take place out on Salt Lake Flats, where there was no chance of hanky-panky. Richard Thorn—who held a Ph.D. from one of the finest technological colleges in the East, but who preferred to be addressed as "Mister"—was in a bad mood. He had flown all the way out to Salt Lake City after being given only a few hours notice, and then had been bundled into a jeep furnished by the local sales office of NAC&M and scooted off to the blinding gray-white glare of the Salt Flats. It was hot and it was much too sunshiny for Thorn. But he had made the arrangements for the test himself, so he couldn't argue or complain too loudly. He could only complain mildly to himself that the business office of the company, which had made the final arrangements, had, in his opinion, been a little too much in a hurry to get the thing over with. Thorn himself felt that the test could have at least waited until the weather cooled off. The only consolation he had was that, out here, the humidity was so low that he could stay fairly comfortable in spite of the heat as long as there was plenty of drinking water. He had made sure to bring plenty.

The cavalcade of vehicles arrived at the appointed spot—umpteen miles from nowhere—and pulled up in a circle.

Thorn climbed out wearily and saw the man who called himself Sorensen climb out of the second jeep.

From the first time he had seen

him, Thorn had tagged Sorensen as an Angry Old Man. Not that he was really getting old; he was still somewhere on the brisk side of fifty. But he wore a perpetual scowl on his face that looked as though it had been etched there by too many years of frustration, and his voice always seemed to have an acid edge to it, like that of an old man who has decided, after decades of observation, that all men are fools. And yet Thorn thought he occasionally caught a glimpse of mocking humor in the pale blue eyes. He was lean and rather tall, with white hair that still showed traces of blond, and he looked as Scandinavian as his name sounded. His accent was pure Minnesota American.

As he climbed out of the jeep, Sorensen brought with him the Black Suitcase.

Ever since he had first seen it, Thorn had thought of it as "the Black Suitcase," and after he had seen some of the preliminary tests, he had subconsciously put capitals to the words. But Richard Thorn was no fool. Too many men had been suckered before, and he, Richard Thorn, did not intend to be another sucker, no matter how impressed he might be by the performance of an invention.

If this was a con game, it was going to have to be a good one to get by Richard Thorn, Ph.D.

He walked across the few feet of hard, salt-white ground that separated him from Sorensen standing beside the second jeep with the Black Suitcase in his hand. It was obvious to anyone who watched the way Sorensen handled the thing that it was heavy—seventy-five pounds or better.

"Need any help?" Thorn asked, knowing what the answer would be.

"Nope," Sorensen said. "I can handle it."

The suitcase wasn't really black. It was a dark cordovan brown, made even darker by long usage, which had added oily stains to the well-used leather. But Thorn thought of it as the Black Suitcase simply because it was the perfect example of the proverbial Little Black Box—the box that Did Things. As a test question in an examination, the Little Black Box performs a useful function. The examiner draws a symbolic electronic circuit. Somewhere in the circuit, instead of drawing the component that is supposed to be there, he draws a Little Black Box. Then he defines the wave-form, voltage, and amperage entering the circuit and defines whatever is coming out. Question. What is in the Little Black Box?

Except in the simplest of cases, there is never an absolute answer. The question is counted as correct if the student puts into the Little Black Box a component or subcircuit which will produce the effect desired. The value of the answer depends on the simplicity and relative controllability of the com-

ponent drawn in the place of the Little Black Box.

Sorensen's Black Suitcase was still a problem to Thorn. He couldn't quite figure out what was in it.

"Hotter'n Billy Blue Blazes!" Sorensen said as he put the Black Suitcase down on the gleaming white ground. He grinned a little, which dispelled for a moment his Angry Old Man expression, and said: "You ready to go, Mr. Thorn?"

"I'm ready any time you are," Thorn said grumpily.

Sorensen looked at the NAC&M scientist sideways. "You don't sound any happier'n I am, Mr. Thorn."

Thorn looked at him and thought he could see that flash of odd humor in his light blue eyes. Thorn exhaled a heavy breath. "I'm no happier than you are to be out in this heat. Let's get on with it."

Sorensen's chuckle sounded so out of place that Thorn was almost startled. "You know the difference between you and me, Mr. Thorn?" Sorensen asked. He didn't wait for an answer. "You think this test is probably a waste of time. Me, on the other hand, I *know* it is."

"Let's get on with it," Thorn repeated.

It took two hours to set up the equipment, in spite of the fact that a lot of the circuits had been prefabricated before the caravan had come out from Salt Lake City. But Richard Thorn wanted to make certain that all his data was both correct and recorded. Sorensen had nothing to do but watch. He had no hand in setting up the equipment. He had brought the Black Suitcase, and that was all he was going to be allowed to do.

From the top of the Black Suitcase projected two one-inch copper electrodes, fourteen inches apart. The North American Carbide & Metals technicians set up the circuits that were connected to the electrodes without any help from Sorensen.

But just before they started to work, Sorensen said: "There's just one thing I think you ought to warn those men about, Mr. Thorn."

"What's that?" Thorn asked.

"If any of 'em tries to open that suitcase, they're likely to get blown sky high. And I don't want 'em getting funny with me, either."

He had his hand in his trouser pocket, and Thorn was suddenly quite certain that the man was holding a revolver. He could see the outlines against the cloth.

Thorn sighed. "Don't worry, Mr. Sorensen. We don't have any ulterior designs on your invention." He did not add that the investigators of NAC&M had already assumed that anyone who was asking one million dollars for an invention which was, in effect, a pig in a poke, would be expected to take drastic methods to protect his gadget. But there would be no point in telling Sorensen that his

protective efforts had already been anticipated and that the technicians had already been warned against touching the Black Suitcase any more than necessary to connect the leads. Giving Sorensen that information might make him even more touchy.

Thorn only hoped that the bomb, or whatever it was that Sorensen had put in the suitcase, was well built, properly fused, and provided with adequate safeties.

When everything was set up, Sorensen walked over to his device and turned it on by shoving the blade of a heavy-duty switch into place. "O.K.," he said.

One of the technicians began flipping other switches, and a bank of ordinary incandescent light bulbs came on, four at a time. Finally there were one hundred of them burning, each one a hundred-watt bulb that glowed brightly but did not appear to be contributing much to the general brightness of the Utah sun. The technicians checked their recording voltmeters and ammeters and reported that, sure enough, some ten kilowatts of power at a little less than one hundred fifteen volts D.C. was coming from the Black Suitcase.

Sorensen and Thorn sat in the tent which had been erected to ward off the sun's rays. They watched the lights shine.

One of the technicians came in, wiping his forehead with a big blue bandana. "Well, there she goes. Mr. Sorensen, if that thing is dangerous, hadn't we better back off a little way from it?"

"It isn't dangerous," Sorensen said. "Nothing's going to happen."

The technician looked unhappy. "Then I don't see why we couldn't've tested the thing back in the shop. Would've been a lot easier there. To say nothing of more comfortable."

Thorn lit a cigarette in silence.

Sorensen nodded and said, "Yes, Mr. Siegel, it would've been."

Siegel sat down on one of the camp stools and lit a cigarette. "Mr. Sorensen," he asked in all innocence, "have you got a patent on that battery?"

The humorous glint returned to Sorensen's eyes as he said, "Nope. I didn't patent the battery in that suitcase. That's why I don't want anybody fooling around with it."

"How come you don't patent it?" Siegel asked. "Nobody could steal it if you patented it."

"Couldn't they?" Sorensen asked with a touch of acid in his voice. "Do you know anything about batteries, Mr. Siegel?"

"A little. I'm not an expert on 'em, or anything like that. I'm an electrician. But I know a little bit about 'em."

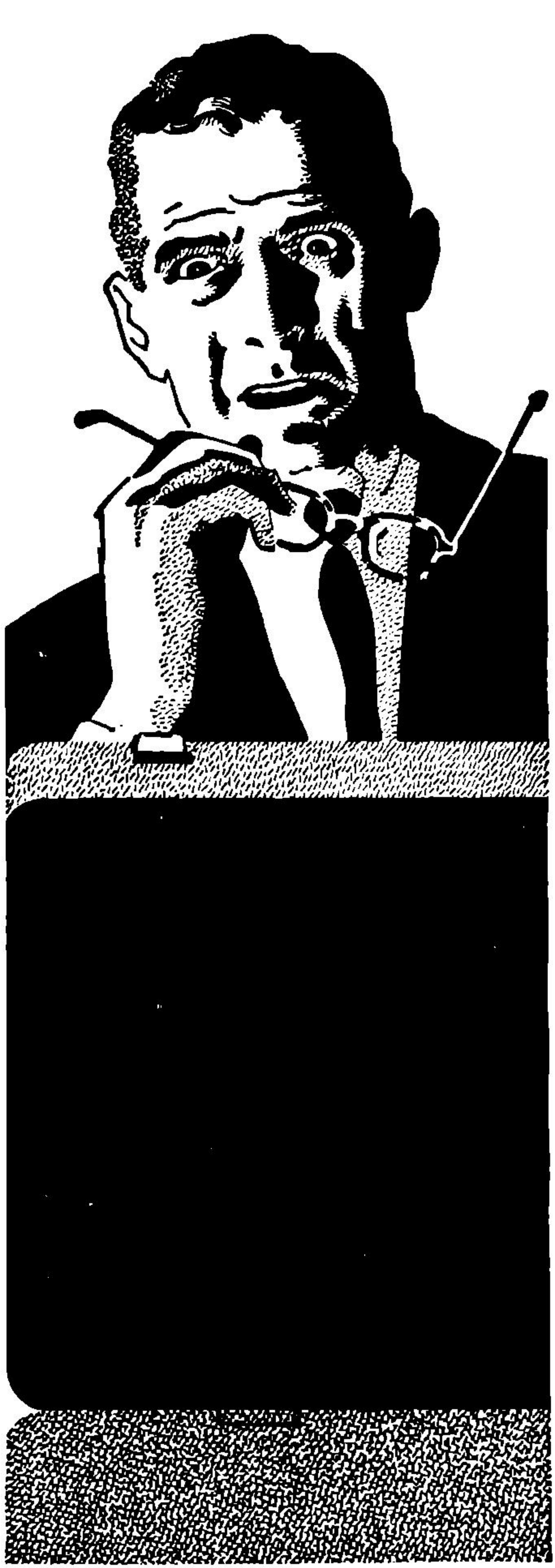
Sorensen nodded. "Then you should know, Mr. Siegel, that battery-making is an art, not a science. You don't just stick a couple of electrodes into a solution of electrolyte and consider that

your work is done. With the same two metals and the same electrolyte, you could make batteries that would run the gamut from terrible to excellent. Some of 'em, maybe, wouldn't hold a charge more than an hour, while others would have a shelf-life, fully charged, of as much as a year. Batteries don't work according to theory. If they did, potassium chlorate would be a better depolarizer than manganese dioxide, instead of the other way around. What you get out of a voltaic cell depends on the composition and strength of the electrolyte, the kind of depolarizer used, the shape of the electrodes, the kind of surface they have, their arrangement and spacing, and a hundred other little things."

"I've heard that." Siegel said.

Thorn smoked in silence. He had heard Sorensen's arguments before. Sorensen didn't mind discussing his battery in the abstract, but he was awfully close-mouthed when it came to talking about it in concrete terms. He would talk about batteries-in-general, but not about this-battery-in-particular.

Not that Thorn blamed him in the least. Sorensen was absolutely correct in his statements about the state of the art of making voltaic cells. If Sorensen had something new—and Thorn was almost totally convinced that he did—then he was playing it smart by not trying to patent it.



"Now then," Sorensen went on, "let's suppose that my battery is made up of lead and lead dioxide plates in a sulfuric acid solution, except that I've added a couple of trifling things and made a few small changes in the physical structure of the plates. I'm not saying that's what the battery is, mind you; I'm saying 'suppose'."

"O.K., suppose," said Siegel. "Couldn't you patent it?"

"What's to patent? The Pb-PbO_2-H_2SO_4 cell is about half as old as the United States Patent Office itself. Can't patent that. Copper oxide, maybe, as a depolarizer? Old hat; can't patent that. Laminated plates, maybe? Nope. Can't patent that, either."

Siegel looked out at the hundred glowing light bulbs. "You mean you can't patent it, even if it works a hundred times better than an ordinary battery?"

"Hell, man," Sorensen said, "you can't patent performance! You've got to patent something solid and concrete! Oh, I'll grant that a top-notch patent attorney might be able to get me some kind of patent on it, but I wouldn't trust its standing up in court if I had to try to quash an infringement.

"Besides, even if I had an iron-bound patent, what good would it do me? Ever hear of a patent pool?"

"No," said Siegel. "What's a patent pool?"

"I'll give you an example. If all the manufacturers of a single product get together and agree to form a patent pool, it means that if one company buys a patent, all of them can use it. Say the automobile companies have one. That means that if you invent a radical new design for an engine—one, maybe that would save them millions of dollars—you'll be offered a few measly thousand for it. Why should they offer more? *Where else are you going to sell it?* If one company gets it, they all get it. There's no competition, and if you refuse to sell it at all, they just wait a few years until the patent runs out and use it for free. That may take a little time, but a big industry has plenty of time. They have a longer life span than human beings."

"North American Carbide & Metals," said Thorn quietly, "is not a member of any patent pool, Mr. Sorensen."

"I know," Sorensen said agreeably. "Battery patents are trickier than automotive machinery patents. That's why I'm doing this my way. I'm not selling the gadget as such. I'm selling results. For one million dollars, tax paid, I will agree to show your company how to build a device that will turn out electric power at such-and-such a rate and that will have so-and-so characteristics, just like it says in the contract you read. I guarantee that it can be made at the price I quote. That's all."

He looked back out at the bank of light bulbs. They were still burning. They kept burning—

". . . They kept burning for ten solid hours," said Thorn. "Then he went out and shut off his battery."

Captain Lacey was scowling. "That's damned funny," he muttered.

"What is?" asked Thorn, wondering why the naval officer had interrupted his story.

"What you've been telling me," Lacey said. "I'll swear I've heard—" He stopped and snapped his fingers suddenly. "Sure! By golly!" He stood up from the table. "Would you excuse me for a minute? I want to see if a friend of mine is here. If he is, he has a story you ought to hear. Damned funny coincidence." And he was off in a hurry, leaving Thorn staring somewhat blankly after him.

Three minutes later, while Thorn was busily pouring himself a second helping of Five-Star Hennessy, Captain Lacey returned to the table with an army officer wearing the insignia of a bird colonel.

"Colonel Dower," the captain said, "I'd like you to meet a friend of mine—Mr. Richard Thorn, the top research man with North American Carbide & Metals. Mr. Thorn, this is Colonel Edward Dower." The men shook hands. A third brandy snifter was brought and a gentleman's potation was poured for the colonel.

"Ed," said Captain Lacey as soon as his fellow officer had inhaled a goodly lungful of the heady fumes, "do you remember you were telling me a couple of years ago about some test you were in on out in the Mojave Desert?"

Colonel Dower frowned. "Test? Something to do with cars?"

"No, not that one. Something to do with a power supply."

"Power supply. Oh!" His frown faded and became a smile. "You mean the crackpot with his little suitcase."

Thorn looked startled, and Captain Lacey said: "That's the one."

"Sure I remember," said the colonel. "What about it?"

"Oh, nothing," Lacey said with elaborate unconcern, "I just thought Mr. Thorn, here, might like to hear the story—that is, if it isn't classified."

Colonel Dower chuckled. "Nothing classified about it. Just another crackpot inventor. Had a little suitcase that he claimed was a marvelous new power source. Wanted a million dollars cash for it, tax free, no strings attached, but he wouldn't show us what was in it. Not really very interesting."

"Go ahead, colonel," said Thorn. "I'm interested. Really I am."

"Well, as I said, there's nothing much to it," the colonel said. "He showed us a lot of impressive-looking stuff in his laboratory, but it didn't mean a thing. He had this suitcase, as I told you. There were a couple of thick copper electrodes coming out of the side of it, and he claimed that they could be tapped for tremendous amounts of power.

Well, we listened, and we watched his demonstrations in the lab. He ran some heavy-duty motors off it and a few other things like that. I don't remember what all."

"And he wanted to sell it to you sight-unseen?" Thorn asked.

"That's right," said the colonel. "Well, actually, he wasn't trying to sell it to the Army. As you know, we don't buy ideas; all we buy is hardware, the equipment itself, or the components. But the company he was trying to sell his gadget to wanted me to take a look at it as an observer. I've had experience with that sort of thing, and they wanted my opinion."

"I see," Thorn said. "What happened?"

"Well," said the colonel, "we wanted him to give us a demonstration out in the Mojave Desert—"

". . . Out in the Mojave Desert?" the inventor asked. "Whatever for, Colonel Dower?"

"We just want to make sure you haven't got any hidden power sources hooked up to that suitcase of yours. We know a place out in the Mojave where there aren't any power lines for miles. We'll pick the place."

The inventor frowned at him out of pale blue eyes. "Look." He gestured at the suitcase sitting on the laboratory table. "You can see there's nothing faked about that."

Colonel Dower shook his head. "You won't tell us what's in that suitcase. All we know is that it's supposed to produce power. From what? How? You won't tell us. Did you ever hear of the Keely Motor?"

"No. What was the Keely Motor?"

"Something along the lines of what you have here," the colonel said dryly, "except that Keely at least had an explanation for where he was getting his power. Back around 1874, a man named John Keely claimed he had invented a wonderful new power source. He called it a breakthrough in the field of perpetual motion. An undiscovered source of power, he said, controlled by harmony. He had a machine in his lab which would begin to turn a flywheel when he blew a chord on a harmonica. He could stop it by blowing a sour note. He claimed that this power was all around, but that it was easiest to get it out of water. He claimed that a pint of his charged water would run a train from Philadelphia to New York and back and only cost a tenth as much as coal."

The inventor folded his arms across his chest and looked grimly at Colonel Dower. "I see. Go on."

"Well, he got some wealthy men interested. A lot of them invested money—big money—in the Keely Motor Company. Every so often, he'd bring them down to his lab and show them what progress he was making and then tell them how much more money he needed. He

always got them to shell out, and he was living pretty high on the hog. He kept at it for years. Finally, in the late nineties, *The Scientific American* exposed the whole hoax. Keely died, and his lab was given a thorough going over. It turned out that all his marvelous machines were run by compressed air cleverly channeled through the floor and the legs of tables."

"I see," repeated the inventor, narrowing his eyes. "And I suppose my invention is run by compressed air?"

"I didn't say your invention was a phony," Colonel Dower said placatingly. "I merely mentioned the Keely Motor to show you why we want to test it out somewhere away from your laboratory. Are you willing to go?"

"Any time you are, colonel."

A week or so later, they went out into the Mojave and set up the test. The suitcase—

". . . The suitcase," said the colonel, "was connected up to a hundred hundred-watt light bulbs. He let the thing run for ten hours before he shut it off." He chuckled. "He never would let us look into that suitcase. Naturally, we wouldn't buy a pig in a poke, as the saying goes. We told him that any time we could be allowed to look at his invention, we'd be glad to see him again. He left in a huff, and that was the last we saw of him."

"How do you explain," Thorn said carefully, "the fact that his suitcase *did* run all those lights?"

The colonel chuckled again. "Hell, we had that figured out. He just had a battery of some kind in the suitcase. No fancy gimmick for deriving power from perpetual motion or anything like that. Nope. Just a battery, that's all."

Captain Dean Lacey was grinning hugely.

Thorn said: "Tell me, colonel—what was this fellow's name?"

"Oh, I don't recall. Big, blond chap. Had a Swedish name—or maybe Norwegian. Sanderson? No. Something like that, though."

"Sorensen?" Thorn asked.

"That's it! Sorensen! Do you know him?"

"We've done business with him," said Thorn dryly.

"He didn't palm his phony machine off on you, did he?" the colonel asked with a light laugh.

"No, no," Thorn said. "Nobody sold us a battery disguised as a perpetual motion device. Our relations with him have been quite profitable, thank you."

"I'd say you still ought to watch him," said Colonel Dower. "Once a con man, always a con man, is my belief."

Captain Lacey rubbed his hands together. "Ed, tell me something. Didn't it ever occur to you that a battery which would do all that—a battery which would hold a hundred kilowatt-hours of energy in a suitcase would be worth the

million he was asking for it?"

Colonel Dower looked startled. "Why . . . why, no. The man was obviously a phony. He wouldn't tell us what the power source was. He—" Colonel Dower stopped. Then he set his jaw and went on. "Besides, if it were a battery, why didn't he say so? A phony like that shouldn't be—" He stopped again, looking at the naval officer.

Lacey was still grinning. "We have discovered, Ed," he said in an almost sweet voice, "that Sorensen's battery will run a submarine."

"With all due respect to your rank and ability, captain," Thorn said, "I have a feeling that you'd have been skeptical about any such story, too."

"Oh, I'll admit that," Lacey said. "But I still would have been impressed by the performance." Then he looked thoughtful. "But I must admit that it lowers my opinion of your inventor to hear that he tells all these cock-and-bull stories. Why not just come out with the truth?"

"Evidently he'd learned something," Thorn said. "Let me tell you what happened after the contracts had been signed—"

. . . The contracts had been signed after a week of negotiation. Thorn was, he admitted to himself, a little nervous. As soon as he had seen the test out on Salt Flats, he had realized that Sorensen had developed a battery that was worth every cent he had asked for it. Thorn himself had pushed for the negotiations to get them through without too much friction. A million bucks was a lot of loot, but there was no chance of losing it, really. As Sorensen said, the contract did not call for the delivery of a specific device, it called for a device that would produce specific results. If Sorensen's device didn't produce those results, or if they couldn't be duplicated by Thorn after having had the device explained to him, then the contract wasn't fulfilled, and the ambitious Mr. Sorensen wouldn't get any million dollars.

Now the time had come to see what was inside that mysterious Little Black Suitcase. Sorensen had obligingly brought the suitcase to the main testing and development laboratory of North American Carbide & Metals.

Sorensen put it on the lab table, but he didn't open it right away. "Now I want you to understand, Mr. Thorn," he began, "that I, myself, don't exactly know how this thing works. That is, I don't completely understand what's going on inside there. I've built several of them, and I can show you how to build them, but that doesn't mean I understand them completely."

"That's not unusual in battery work," Thorn said. "We don't completely understand what's going on in a lot of cells. As long as the thing works accord-

ing to the specifications in the contract, we'll be satisfied."

"All right. Fine. But you're going to be surprised when you see what's in here."

"I probably will. I've been expecting a surprise," Thorn said.

What he got was a *real* surprise.

There was a small pressure tank of hydrogen inside—one of the little ones that are sometimes used to fill toy balloons. There was a small batch of electronic circuitry that looked as though it might be the insides of an FM-AM radio.

All of the rest of the space was taken up by batteries.

And every single one of the cells was a familiar little cannister. They were small, rechargeable nickel-cadmium cells, and every one bore the trademark of North American Carbide & Metals!

One of the other men in the lab said: "What kind of a joke is this?"

"Do you mean, Mr. Sorensen," Thorn asked with controlled precision, "that your million-dollar process is merely some kind of gimmickry with our own batteries?"

"No," said Sorensen. "It's—"

"Wait a minute," said one of the others, "is it some kind of hydrogen fuel cell?"

"In a way," Sorensen said. "Yes, in a way. It isn't as efficient as I'd like, but it gets its power by converting hydrogen to helium. I need those batteries to start the thing. After it gets going, these leads here from the reactor cell keep the batteries charged. The—"

He was interrupted by five different voices all trying to speak at once. He could hardly—

". . . He could hardly get a word in edgewise at first," said Thorn. He was enjoying the look of shocked amazement on Colonel Dower's face. "When Sorensen finally did get it explained, we still didn't know much. But we built another one, and it worked as well as the one he had. And the contract didn't specifically call for a battery. He had us good, he did."

"Now wait—" Colonel Dower said. "You mean to say it wasn't a battery after all?"

"Of course not."

"Then why all the folderol?"

"Colonel," Thorn said, "Sorensen patented that device nine years ago. It only has eight years to run. But he couldn't get anyone at all to believe that it would do what he said it would do. After years of beating his head against a stone wall, years of trying to convince people who wouldn't even look twice at his gadget, he decided to get smart.

"He began to realize that 'everybody knew' that hydrogen fusion wasn't that simple. It was his *theory* that no one would listen to. As soon as he told anyone that he had a hydrogen fusion device that could be started with a handful of batteries and could be packed into a suitcase, he was instantly dismissed as a nut.

"I did a little investigating after he gave us the full information on what he had done. (Incidentally, he signed over the patent to us, which was more than the contract called for, in return for a job with our outfit, so that he could help develop the fusion device.)

"As I said, he finally got smart. If the theory was what was making people give him the cold shoulder, he'd tell them nothing.

"You know the results of that, Colonel Dower. At least he got somebody to test the machine. He managed to get somebody to look at what it would do.

"But that wasn't enough. He didn't have, apparently, any legitimate excuse for keeping it under wraps that way, so everyone was suspicious."

"But why tell *you* it was a battery?" asked Captain Lacey.

"That was probably suggested by Colonel Dower's reaction to the tests he saw," Thorn said. "Somebody — I think it was George Gamow, but I'm not certain—once said that just having a theory isn't enough; the theory has to make sense.

"Well, Sorensen's theory of hydrogen fusion producing electric current didn't make sense. It was *true*, but it didn't make sense.

"So he came up with a theory that *did* make sense. If everyone wanted to think it was 'nothing but a battery', then, by Heaven, he'd sell it as a battery. And *that*, gentlemen, was a theory we were perfectly willing to believe. It wasn't true, but it did make sense.

"As far as I was concerned, it was perfectly natural for a man who had invented a new type of battery to keep it under wraps that way.

"Naturally, after we had invested a million dollars in the thing, we *had* to investigate it. It worked, and we had to find out why and how."

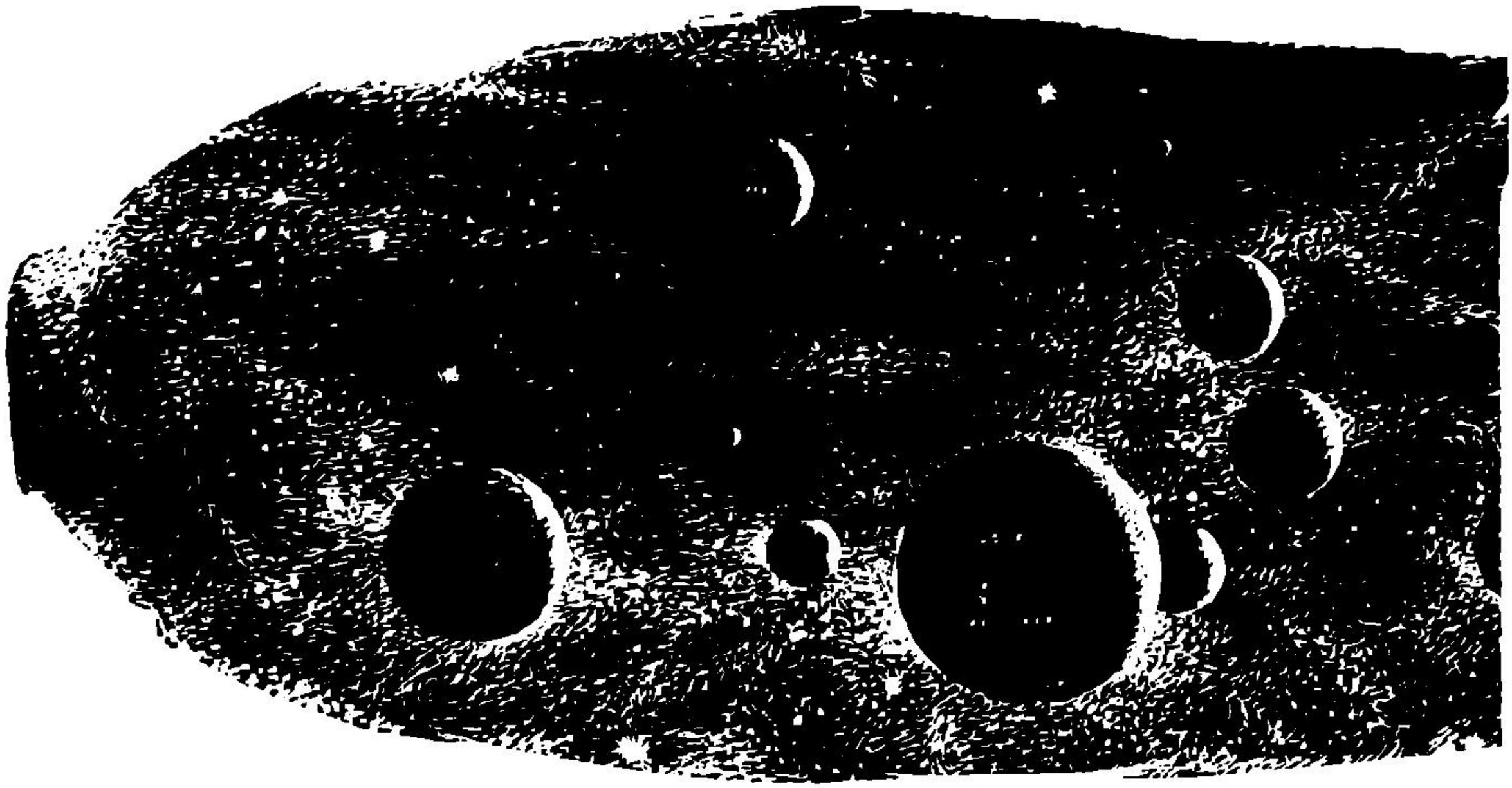
"Naturally," said Colonel Dower, looking somewhat uncomfortable. "I presume this is all under wraps, eh? What about the Russians? Couldn't they get hold of the patent papers?"

"They could have," Thorn admitted, "but they didn't. They dismissed him as a crackpot, too, if they heard about him at all. Certainly they never requested a copy of his patent. The patent number is now top secret, of course, and if anyone does write in for a copy, the Patent Office will reply that there are temporarily no copies available. And the FBI will find out who is making the request."

"Well," said Colonel Dower, "at least I'm glad to hear that I was not the only one who didn't believe him."

Captain Lacey chuckled. "And Mr. Thorn here believed a lie."

"Only because it made more sense than the truth," Thorn said. "And," he added, "you shouldn't laugh, captain. Remember, we suckered the Navy in almost the same way." ■

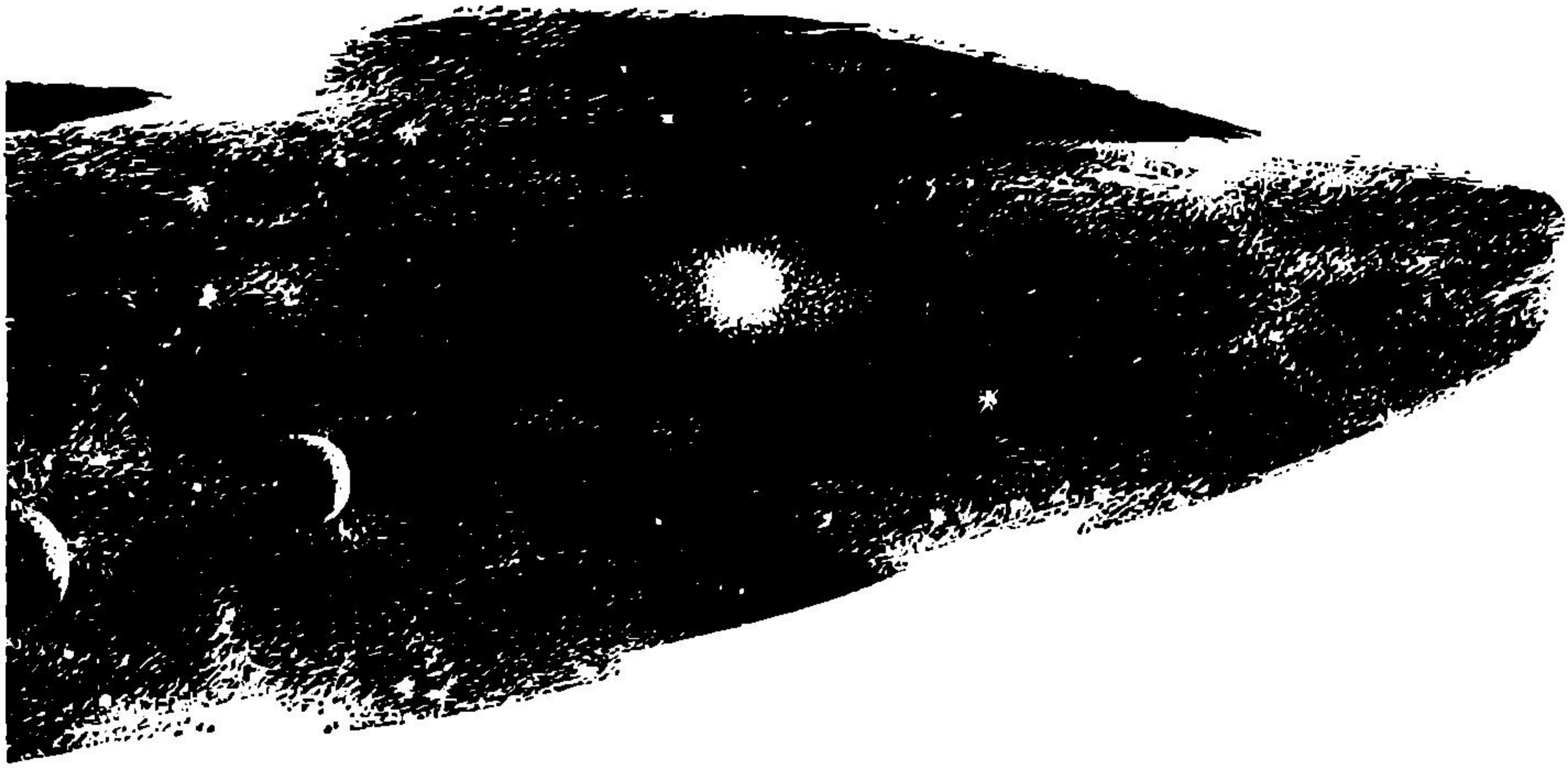


Space Viking

Conclusion. A man's real achievements—
the things that make him important in history—
are quite normally things he didn't plan to do at all—
they happened while he was trying to do
something else that is really unimportant...

by H. Beam Piper

Illustrated by Schoenherr



SYNOPSIS

The Sword-Worlds were colonized by the losers of the System States War in the Ninth Century, Atomic Era. Refusing to surrender to the victorious Terran Federation, the defeated rebel navy fled beyond the farthest outposts of the Federation and occupied a dozen hitherto undiscovered planets, naming them for swords of Old Terran legend—Excalibur, Durendal, Flamberge, Joyeuse, Morglay, Gram—and on them developed a technologically advanced civilization, and a loosely feudal society which seemed quite workable in spite of endemic interbaronial fighting and dynastic wars.

The decline of the Federation began immediately after the war fought to preserve it. The navy deteriorated, and with it Federation authority. Planet after planet fell away, some seceding unchallenged and some abandoned because they could no longer be governed from Terra. Interstellar wars and internal strife and

chaos followed, and finally the Neo-barbarians, the enemies every civilization breeds from among its own masses, rose, and world after world slid down into decivilization.

The decline of the Sword Worlds started when one of their ships ventured back among the Federation planets and returned to report what had happened. There were a few Old Federation planets where civilization had been preserved; they were too strong to raid. There were others which had sunk into Stone Age savagery; they were not worth raiding. Between these extremes were many on which the superior weapons of the Sword-Worlders could win rich booty. Ship after ship goes out to plunder. At first, these Space Vikings come home between raids, but soon they are establishing bases on Old Federation planets, industrializing them, raiding them, and rarely returning. Each ship out of the Sword-Worlds carries away some of the best blood and brains; each succeeding generation is begotten by fathers slightly inferior to the last. The whole level of Sword-World life is slowly sinking.

None realize this better than LUCAS TRASK, wealthy landowning nobleman of Gram, and while he supports Duke Angus of Wardshaven in his plan to make himself King of Gram, he deplores the Duke's project to establish a Viking base of his own on Tanith, a decivilized planet of the Old Federation. However, the Duke's psychopathic nephew, ANDRAY DUNNAN, shoots up Trask's wedding and kills his bride, ELAINE KARVALL, and makes his escape off-planet by pirating the Duke's spaceship, Enterprise. *The death of Elaine leaves Trask with nothing to live for but revenge. He exchanges his barony for another ship which he names the* Nemesis *and takes on a veteran Space Viking, OTTO HARKAMAN, to command her. His only purpose in life is to hunt down and kill Dunnan, and to do this he must turn Space Viking himself.*

Expecting Dunnan to take the Enterprise *to Tanith, he goes there with Harkaman in the* Nemesis. *Instead, he finds on Tanith a disreputable pair of* soi-disant *Space Vikings, BOAKE VALKANHAYN and GARVAN SPASSO, captains, respectively of the* Space-Scourge *and the* Lamia. *They have heard rumors of Duke Angus' Tanith Adventure and have hastened thither to chisel in on it. Confident that Dunnan will come to Tanith sooner or later, Trask decides to establish there the sort of Viking base Duke Angus was contemplating. Valkanhayn and Spasso are taken in on it.*

To finance this, he makes a series of spectacularly profitable raids, on Khepera, where he is sickened by the massacre of ill-armed inhabitants, on Amaterasu, where he plays both ends of a local international situation against the middle, and on Beowulf, where he runs into desperate resistance and brings off a cargo of fissionables and nuclear power-units at cost of heavy casualties and ship-

damage. Valkanhayn, a good man gone to the dogs, rehabilitates himself under Trask and Harkaman, and he is sent back with his ship to Gram to get equipment and financial backing. Spasso, on the other hand, is utterly worthless; he is also sent to Gram, with a request to Duke Angus to give him a title of some sort and keep him there.

When the Space-Scourge *returns to Tanith, her commander is Baron Valkanhayn, Harkaman is Admiral of the Space Navy of Gram, and Trask is a prince and viceroy of Tanith for Angus I, King of Gram. She is accompanied by a chartered freighter, and both ships are crammed with everything Trask needs to begin the industrialization of Tanith.*

The years pass, and at times Trask, building a civilization on Tanith, completely forgets Andray Dunnan, and even the memory of Elaine Karvall grows dimmer and dimmer. There are treaties with Amaterasu and Beowulf as Trask turns gradually from raiding to trading. Amaterasu, with no known sources of fissionables, is rich in gadolinium, essential to the hyperdrive engine, while on Beowulf, where fissionable ores abound, no gadolinium can be found. Mines have been opened on the almost solidly iron Moon of Tanith; factories and shipyards are in operation, and the locals, whom he found on the oxcart and matchlock musket level, are learning to use contragravity and studying in Sword-World type schools.

At other times, he is forcibly reminded of Dunnan. As soon as word spreads about the new Tanith base, independent Space Vikings begin putting in to sell their loot and refit, and so do the ships of Gilgamesh, wandering traders from a quasi-civilized theocracy. From some of them, he picks up bits of news about Dunnan. His enemy has a base of his own —on some non-Terra-type planet, to judge from the fact that he has been collecting hydroponic, carniculture and air-and-water recycling equipment. There are only a few million such planets in the Federation space-volume.

And he is building a fleet; other ships have joined him. Starhopper, *Captain Vaghn, and* Yo-Yo, *Captain Humfort,* Bolide, Eclipse, *all well known Space Vikings. And* Honest Horris, *a ramshackle trader whose captain even the Gilgameshers despise. Trask is worried; if Dunnan attacks, the damage to Tanith would set back his work there for years. He must find Dunnan and destroy him first.*

And the news from Gram is no longer good. Relations between His Majesty, Angus I, and his Viceroy of Tanith have grown strained; corrupted by power and under the influence of an upstart circle of court favorites, including the newly ennobled Baron Spasso, he has been antagonizing the old nobility who helped put him on the throne. Some of these have come out to Tanith in disgust and want Trask to return to Gram with his ships and Space Vik-

ings, depose Angus and make himself King. This Trask refuses even to consider; Tanith, not Gram, is his planet.

Finally, after years of waiting, fresh and reliable news of Dunnan comes in; the Enterprise *and Vann Humfort's* Yo-Yo *have made a wantonly destructive attack on Tetragrammaton only three hundred hours before, and as news travels between stellar systems, this is hot off the stove. Apparently there was no looting done. It looks like a terror-raid—but who is Dunnan trying to terrorize?*

A study of previous reports provides a possible answer. Of late, all the planets Dunnan has been raiding, in the same wantonly destructive manner, are planets with which Marduk, one of the really civilized Old Federation worlds, trades. Is he trying to lure the Mardukan navy away from home to give him an opportunity for a fast raid? Nobody raids a civilized planet and gets away with it; all Space Vikings have learned that lesson. But Dunnan is crazy; maybe crazy enough to try it.

Trask takes the Nemesis *to Tetragrammaton to investigate and learns the names of other nearby planets with which Marduk trades. One of them, Seshat, has been recently blitzed and the entire populated area devastated. They go to another, Audhumla, and arrive in the middle of a battle between the* Enterprise *and* Yo-Yo *and a ship of the Royal Mardukan Navy, the* Victrix, *commanded by PRINCE SIMON BENTRIK, a relative of the Mardukan King. His ship, badly crippled, is fighting gamely when Trask brings the* Nemesis *into the battle. Eventually, both the* Enterprise *and the* Yo-Yo *are destroyed. There are no survivors; both ships and everybody on them are simply blown to Em-See-Square. Trask has found out, in a brief screen-exchange, that Dunnan's henchman, Sir Nevil Ormm, has been on the* Enterprise; *he wonders if he will ever learn whether or not Dunnan was also aboard.*

The Victrix *is too badly mauled to get off the planet; Trask's offer to take Prince Bentrik and his people to Marduk in the* Nemesis *is accepted. On the voyage, the two ships' companies get along very amicably but with considerable mutual incomprehension. The Mardukans are shocked at Sword-World feudalism, which is undemocratic, arbitrary, unprogressive, and everything else nasty; Trask simply can't make sense out of a hereditary monarchy which is also a representative democracy, and wonders if the Mardukan Constitution wasn't really devised by Goldberg, the legendary Old Terran inventor who always did everything the hard way. He also wonders how an unarmed people can keep their liberty and prevent the government they nominally control from enslaving them.*

He hears a great deal about a demogogue named ZASPAR MAKANN, leader of the People's Welfare Party, who is advocating an economically preposterous old-age pension scheme

and screaming invective against capitalists, reactionaries, interstellar bankers and the Gilgameshers, the latter a harmless and insignificant minority on Marduk who make excellent scapegoats. He also has a paramilitary organization, the People's Watchmen; they aren't armed—at least, not visibly.

Trask wishes Otto Harkaman were along. Harkaman's hobby is history, and he is convinced that anything that can happen to a civilized society has already happened to some other society. Maybe he would understand about Makann; wasn't there something, back at the end of the First Century, Pre-Atomic . . . ?

Trask is cordially received at the royal court at Malverton, the planetary capital. He is presented to KING MIKHYL, who likes to relax with his small circle of friends, of whom Trask becomes one, and pretend that he is Goodman Mikhyl, a simple tradesman. His little granddaughter, PRINCESS MYRNA, has a game of make-believe, too; she is Queen, in her own right, of the Royal Bedroom, the Royal Playroom, and the Royal Bathroom. Trask becomes fond of the eight-year-old princess, but he is more attracted to her beautiful companion-lady, VALERIE ALVARATH.

He becomes friendly with CROWN PRINCE EDVARD, an earnest type who talks about making democracy work, and bowing to the will of the people. He wants a treaty of friendship between Marduk and Tanith; this falls through, however, because Zaspar Makann denounces it as part of the Interstellar Gilgamesh Conspiracy and a general election is approaching, and nobody wants to advocate anything controversial. The Mardukan Royal Navy, who have begun to take the Dunnan raids seriously, want Trask's help; neither he nor they can safely assume that Dunnan went to Em-See-Square along with the Enterprise. *The Navy commander, Admiral Shefter, begins at once to make confidential agreements with Trask, without waiting on treaties. For one thing, he tells Trask that one ship on the Dunnan list, the* Honest Horris, *is shuttling between Marduk and Gimli, ostensibly owned by a Mardukan trading company, and promises to investigate.*

Like everybody else, however, Shefter is contemptuous of Makann and his crackpot followers; after the election he'll be gone and forgotten. Only Goodman Mikhyl—or is he speaking as King Mikhyl VIII?—is disturbed. Marduk has started to decivilize like the other Federation planets, and Zaspar Makann is the most dangerous man on Marduk.

Trask thinks so, too, especially as he watches, by screen, a monster demonstration which ends in a massacre of unarmed police by Makann's People's Watchmen. He thinks the man who sent those police out unarmed ought to be hanged for murder. Instead, they should have had machine-guns, and they should have used them. Prince Edvard is shocked.

"That may be the way you do things in the Sword-Worlds, Prince

Trask. It's not the way we do things here on Marduk. Our government does not propose to be guilty of shedding the blood of its people."

Trask is tempted to retort that if they don't, the people will end by shedding theirs. Instead, he says:

"I'm sorry, Prince Edvard. You had a wonderful civilization here. You could have made almost anything out of it. But it's too late now. You've torn down the gates; the barbarians are in."

Part 4

XXIII

■ The colored turbulence faded into the gray of hyperspace; five hundred hours to Tanith. Guatt Kirbey was securing his control-panel, happy to return to his music. And Vann Larch would go back to his paints and brushes, and Alvyn Karffard to the working model of whatever it was he had left unfinished when the *Nemosis* had emerged at the end of the jump from Audhumla.

Trask went to the index of the ship's library and punched for *History, Old Terran.* There was plenty of that, thanks to Otto Harkaman. Then he punched for *Hitler, Adolf.* Harkaman was right; anything that could happen in a human society had already happened, in one form or another, somewhere and at some time. Hitler could help him understand Zaspar Makann.

By the time the ship came out, with the yellow sun of Tanith in the middle of the screen, he knew a great deal about Hitler, occasionally referred to as Schicklgruber, and he understood, with sorrow, how the lights of civilization on Marduk were going out.

Beside the *Lamia,* stripped of her Dillinghams and crammed with heavy armament and detection instruments, the *Space-Scourge* and the *Queen Flavia* were on off-planet watch. There were half a dozen other ships on orbit just above atmosphere; a Gilgamesher, one of the Gram-Marduk freighters, a couple of free-lance Space Vikings, and a new and unfamiliar ship. When he asked the moonbase who she was, he was told that she was the *Sun-Goddess,* Amaterasu. That was, by almost a year, better than he had expected of them. Otto Harkaman was out in the *Corisande,* raiding and visiting the trade-planets.

He found his cousin, Nikkolay Trask, at Rivington; when he inquired about Traskon, Nikkolay cursed.

"I don't know anything about Traskon; I haven't anything to do with Traskon, any more. Traskon is now the personal property of our well loved—very well loved—Queen Evita. The Trasks don't own enough land on Gram now for a family cemetery. You see what you did?" he added bitterly.

"You needn't rub it in, Nikkolay. If I'd stayed on Gram, I'd have helped put Angus on the throne, and it would have been about the same in the end."

"It could be a lot different," Nikkolay said. "You could bring your ships and men back to Gram and put yourself on the throne."

"No; I'll never go back to Gram. Tanith's my planet, now. But I still renounce my allegiance to Angus. I can trade on Morglay or Joyeuse or Flamberge just as easily."

"You won't have to; you can trade with Newhaven and Bigglersport. Count Lionel and Duke Joris are both defying Angus; they've refused to furnish him men, they've driven out his tax collectors, those they haven't hanged, and they're building ships of their own. Angus is building ships, too. I don't know whether he's going to use them to fight Bigglersport and Newhaven, or attack you, but there's going to be a war before another year's out."

The *Goodhope* and the *Speedwell,* he found, had gone back to Gram. They were commanded by men who had come into favor at the court of King Angus recently. The *Black Star* and the *Queen Flavia*—whose captain had contemptuously ignored an order from Gram to re-christen her *Queen Evita*—had remained. They were his ships, not King Angus'. The captain of the merchantman from Wardshaven now on orbit refused to take a cargo to Newhaven; he had been chartered by King Angus, and would take orders from no one else.

"All right," Trask told him. "This is your last voyage here. You bring that ship back under Angus of Wardshaven's charter and we'll fire on her."

Then he had the regalia he had worn in his last audiovisual to Angus dusted off. At first, he had decided to proclaim himself King of Tanith. Lord Valpry, Baron Rathmore and his cousin all advised against it.

"Just call yourself Prince of Tanith," Valpry said. "The title won't make any difference in your authority here, and if you do lay claim to the throne of Gram, nobody can say you're a foreign king trying to annex the planet."

He had no intention of doing anything of the kind, but Valpry was quite in earnest.

So he sat on his throne, as sovereign Prince of Tanith, and renounced his allegiance to "Angus, Duke of Wardshaven, self styled King of Gram." They sent it back on the otherwise empty freighter. Another copy went to the Count of Newhaven, along with a cargo in the *Sun-Goddess,* the first non-Space-Viking ship into Gram from the Old Federation.

Seven hundred and fifty hours after the return of the *Nemesis,* the *Corisande II* emerged from her last microjump, and immediately Harkaman began hearing of the Battle of Audhumla and the destruction of the *Yo-Yo* and the *Enterprise.* At first, he merely reported a successful raiding voyage, from which he was bringing rich booty. Oddly varigated booty, it was remarked, when he began itemizing it.

"Why, yes," he replied. "Secondhand booty. I raided Dagon for it."

Dagon was a Space Viking base

planet, occupied by a character named Fedrig Barragon. A number of ships operated from it, including a couple commanded by Barragon's half-breed sons.

"Barragon's ships were raiding one of our planets," Harkaman said. "Gampat. They looted a couple of cities, destroyed one, killed a lot of the locals. I found out about it from Captain Ravallo of the *Black Star,* on Indra; he'd just been from Ganpat. Beowulf wasn't too far out of the way, so we put in there, and found the *Grendelsbane* just ready to space out." The *Grendelsbane* was the second of Beowulf's ships, sister to the *Viking's Gift.* "So she joined us, and the three of us went to Dagon. We blew up one of Barragon's ships, and put the other one down out of commission, and then we sacked his base. There was a Gilgamesher colony there; we didn't bother them. They'll tell what we did, and why."

"That should furnish Prince Viktor of Xochitl something to ponder," Trask said. "Where are the other ships, now?"

"The *Grendelsbane* went back to Beowulf; she'll stop at Amaterasu to do a little trading on the way. The *Black Star* went to Xochitl. Just a friendly visit, to say hello to Prince Viktor for you. Ravallo has a lot of audiovisuals we made during the Dagon Operation. Then she's going to Jagannath to visit Nikky Gratham."

Harkaman approved his attitude and actions with regard to King Angus.

"We don't need to do business with the Sword-Worlds at all. We have our own industries, we can produce what we need, and we can trade with Beowulf and Amaterasu, and with Xochitl and Jagannath and Hoth, if we can make any sort of agreement with them; everybody agrees to let everybody else's trade-planets alone. It's too bad you couldn't get some kind of an agreement with Marduk." Harkaman regretted that for a few seconds, and then shrugged. "Our grandchildren, if any, will probably be raiding Marduk."

"You think it'll be like that?"

"Don't you? You were there; you saw what's happening. The barbarians are rising; they have a leader, and they're uniting. Every society rests on a barbarian base. The people who don't understand civilization, and wouldn't like it if they did. The hitchhikers. The people who create nothing, and who don't appreciate what others have created for them, and who think civilization is something that just exists and that all they used to do is enjoy what they can understand of it—luxuries, a high living standard, and easy work for high pay. Responsibilities? Phooey! What do they have a government for?"

Trask nodded. "And now, the hitchhikers think they know more about the car than the people who designed it, so they're going to grab the controls. Zaspar Makann says they can, and he's the Leader." He poured a drink from a decanter that had been looted on Pushan; there was a planet where a republic had

been overthrown in favor of a dictatorship four centuries ago, and the planetary dictatorship had fissioned into a dozen regional dictatorships, and now they were down to the peasant-village and handcraft-industry level. "I don't understand it, though. I was reading about Hitler, on the way home. I wouldn't be surprised if Zaspar Makann had been reading about Hitler, too. He's using all Hitler's tricks. But Hitler came to power in a country which had been impoverished by a military defeat. Marduk hasn't fought a war in almost two generations, and that one was a farce."

"It wasn't the war that put Hitler into power. It was the fact that the ruling class of his nation, the people who kept things running, were discredited. The masses, the homemade barbarians, didn't have anybody to take their responsibilities for them. What they have on Marduk is a ruling class that has been discrediting itself. A ruling class that's ashamed of its privileges and shirks its duties. A ruling class that has begun to believe that the masses are just as good as they are, which they manifestly are not. And a ruling class that won't use force to maintain its position. And they have a democracy, and they are letting the enemies of democracy shelter themselves behind democratic safeguards."

"We don't have any of this democracy in the Sword-Worlds, if that's the word for it," he said. "And our ruling class aren't ashamed of their power, and our people aren't hitchhikers, and as long as they get decent treatment they don't try to run things. And we're not doing so well."

The Morglay dynastic war of a couple of centuries ago, still sputtering and smoking. The Oskarsan-Elmersan War on Durendal, into which Flamberge and now Joyeuse had intruded. And the situation on Gram, fast approaching critical mass. Harkaman nodded agreement.

"You know why? Our rulers are the barbarians among us. There isn't one of them—Napolyon of Flamberge, Rodolf of Excalibur, or Angus of about half of Gram—who is devoted to civilization or anything else outside himself, and that's the mark of the barbarian."

"What are you devoted to, Otto?"

"You. You are my chieftain. That's another mark of the barbarian."

Before he had left Marduk, Admiral Shefter had ordered a ship to Gimli to check on the *Honest Horris;* a few men and a pinnace would be left behind to contact any ship from Tanith. He sent Boake Valkanhayn off in the *Space-Scourge.*

Lionel of Newhaven's *Blue Comet* came in from Gram with a cargo of general merchandise. Her captain wanted fissionables and gadolinium; Count Lionel was building more ships. There was a rumor that Omfray of Glaspyth was laying claim to the throne of Gram, in the right of his great-grandmother's sister, who had been married to the great-grandfather of Duke Angus. It was a completely trivial and irrelevant claim, but the story was that it would be

supported by King Konrad of Haulteclere.

Immediately, Baron Rathmore, Lord Valpry, Lothar Ffayle and the other Gram people began clamoring that he should go back with a fleet seize the throne for himself. Harkaman, Valkanhayn, Karffard and the other Space Vikings were as vehement against it. Harkaman had the loss of the other *Corisande* on Durendal to remember, and the others wanted no part in Sword-World squabbles, and there was renewed agitation that he should start calling himself King of Tanith.

He refused to do either, which left both parties dissatisfied. So partisan politics had finally come to Tanith. Maybe that was another milestone of progress.

And there was the Treaty of Khepera, between the Princely State of Tanith, the Commonwealth of Beowulf, and the Planetary League of Amaterasu. The Kheperans agreed to allow bases on their planet, to furnish workers, and to send students to school on all three planets. Tanith, Beowulf and Amaterasu obligated themselves to joint defense of Khepera, to free trade among themselves, and to render one another armed assistance.

That *was* a milestone of progress, and no argument about it.

The *Space-Scourge* returned from Gimli, and Valkanhayn reported that nobody on the planet had ever seen or heard of the *Honest Horris*. They had found a Mardukan Navy ship's pinnace there, manned entirely by officers, some of them Navy Intelligence. According to them, the investigation into the activities of that ship had come to an impasse. The ostensible owners claimed, and had papers to prove it, that they had chartered her to a private trader, and he claimed, and had papers to prove it, that he was a citizen of the Planetary Republic of Aton, and as soon as they began questioning him, he was rescued by the Atonian ambassador, who lodged a vehement protest with the Mardukan Foreign Ministry. Immediately, the People's Welfare Party had leaped into the incident and branded the investigation as an unwarranted persecution of a national of a friendly power at the instigation of corrupt tools of the Gilgamesh Interstellar Conspiracy.

"So that's it," Valkanhayn finished. "It seems they're having an election and they're afraid to antagonize anybody who might have a vote. So the Navy had to drop the investigation. Everybody on Marduk's scared of this Makann. You think there might be some tie-up between him and Dunnan?"

"The idea's occurred to me. Have there been any more raids on Marduk trade-planets since the Battle of Audhumla?"

"A couple. The *Bolide* was on Audhumla a while ago. There were a couple of Mardukan ships there, and they had the *Victrix* fixed up enough to do some fighting. They ran the *Bolide* out."

A study of the time between the destruction of the *Enterprise* and *Yo-Yo* and the appearance of the *Bolide* could give them a limiting radius around Audhumla. It did; seven hundred light-years, which also included Tanith.

So he sent Harkaman in the *Corisande* and Ravallo in the *Black Star* to visit the planets Marduk traded with, looking for Dunnan ships and exchanging information and assistance with the Royal Mardukan Navy. Almost at once, he regretted it; the next Gilgamesher into orbit on Tanith brought a story that Prince Viktor was collecting a fleet on Xochitl. He sent warnings off to Amaterasu and Beowulf and Khopore.

A ship came in from Bigglersport, a heavily armed chartered freighter. There was sporadic fighting in a dozen places on Gram, now—resistance to efforts on the part of King Angus to collect taxes, and raids by unidentified persons on estates confiscated from alleged traitors and given to Garvan Spasso, who had now been promoted from Baron to Count. And Rovard Grauffis was dead; poisoned, everybody said, either by Spasso or Queen Evita or both. Even with the threat from Xochitl, some of the former Wardshaven nobles began talking about sending ships to Gram.

Less than a thousand hours after he had left, Ravallo was back in the *Black Star*.

"I went to Gimli, and I wasn't there fifty hours before a Mardukan Navy ship came in. They were glad to see me; it saved them sending off a pinnace for Tanith. They had news for you, and a couple of passengers."

"Passengers?"

"Yes. You'll see who they are when they come down. And don't let anybody with side-whiskers and buttoned-up coats see them," Ravallo said. "What those people know gets all over the place before long."

The visitors were Lucile, Princess Bentrik, and her son, the young Count of Ravary. They dined with Trask; only Captain Ravallo was also present.

"I didn't want to leave my husband, and I didn't want to come here and impose myself and Steven on you, Prince Trask," she began, "but he insisted. We spent the whole voyage to Gimli concealed in the captain's quarters; only a few of the officers knew we were aboard."

"Makann won the election. Is that it?" he asked. "And Prince Bentrik doesn't want to risk you and Steven being used as hostages?"

"That's it," she said. "He didn't really win the election, but he might as well have. Nobody has a majority of seats in the Chamber of Representatives but he's formed a coalition with several of the splinter parties, and I'm ashamed to say that a number of Crown Loyalist members—Crowd of Disloyalists, I call them—are voting with him, now. They've coined some ridiculous phrase about the 'wave of the future,' whatever that means."

"If you can't lick them, join them," Trask said.

"If you can't lick them, lick their boots," the Count of Ravary put in.

"My son is a trifle bitter," Princess Bentrik said. "I must confess to a trace of bitterness, too."

"Well, that's the Representatives," Trask said. "What about the rest of the government?"

"With the splinter-party and Disloyalist support, they got a majority of seats in the Delegates. Most of them would have indignantly denied, a month before, having any connection with Makann, but a hundred out of a hundred and twenty are his supporters. Makann, of course, is Chancellor."

"And who is Prime Minister?" he asked. "Andray Dunnan?"

She looked slightly baffled for an instant then said, "Oh. No. The Prime Minister is Crown Prince Edvard. No; Baron Cragdale.. That isn't a royal title, so by some kind of a fiction I can't pretend to understand he is not Prime Minister as a member of the Royal Family."

"If you can't . . ." the boy started.

"Steven! I forbid you to say that about . . . Baron Cragdale. He believes, very sincerely, that the election was an expression of the will of the people, and that it is his duty to bow to it.

He wished Otto Harkaman were there. He could probably name, without stopping for breath, a hundred great nations that went down into rubble because their rulers believed that they should bow instead of rule, and couldn't bring themselves to shed the blood of their people. Edvard would have been a fine and admirable man, as a little country baron. Where he was, he was a disaster.

He asked if the People's Watchman had dragged their guns out from under the bed and started carrying them in public yet.

"Oh, yes. You were quite right; they were armed, all the time. Not just smallarms; combat vehicles and heavy weapons. As soon as the new government was formed, they were given status as a part of the Planetary Armed Forces. They have taken over every police station on the planet."

"And the King?"

"Oh, he carries on, and shrugs and says, 'I just reign here.' What else can he do? We've been whittling down and filching away the powers of the Throne for the last three centuries."

"What is Prince Bentrik doing, and why did he think there was danger that you two would be used as hostages?"

"He's going to fight," she said. "Don't ask me how, or what with. Maybe as a guerrilla in the mountains, I don't know. But if he can't lick them, he won't join them. I wanted to stay with him and help him; he told me I could help him best by placing myself and Steven where he wouldn't worry about us."

"I wanted to stay," the boy said. "I could have fought with him. But he said that I must take care of Mother. And if he were killed, I must be able to avenge him."

"You talk like a Sword-Worlder; I told you that once before." He hesitated, then turned again to Princess Bentrik. "How is little Princess Myrna?" he asked, and then, trying to be casual, added, "and Lady Valerie?"

She seemed so clearly real and present to him, blue eyes and space-black hair, more real than Elaine had been to him for years.

"They're at Cragdale; they'll be safe there. I hope."

XXIV

Attempting to conceal the presence on Tanith of Prince Bentrik's wife and son was pushing caution beyond necessity. Admitted that the news would leak back to Marduk via Gilgamesh, it was over seven hundred light-years to the latter and almost a thousand from there to the former. Better that Princess Lucile should enjoy Rivington society, such as it was, and escape, for a moment now and then, from anxiety about her husband. At ten—no, almost twelve; it had been a year and a half since Trask had left Marduk—the boy Count of Ravary was more easily diverted. At last, he was among real Space Vikings, on a Space Viking planet, and he was trying to be everywhere and see everything at once. No doubt he would be imagining himself a Space Viking, returning to Marduk with a vast armada to rescue his father and the King from Zaspar Makann.

Trask was satisfied with that; as a host he left much to be desired. He had his worries, too, and all of them bore the same name: Prince Viktor of Xochitl. He went over with Manfred Ravallo everything the captain of the *Black Star* could tell him. He had talked once with Viktor; the lord of Xochitl had been coldly polite and noncommittal. His subordinates had been frankly hostile. There had been five ships on orbit or landed at Viktor's spaceport beside the usual Gilgameshers and itinerant traders, two of them Viktor's own, and a big armed freighter had come in from Haulteclere as the *Black Star* was leaving. There was considerable activity at the shipyards and around the spaceport, as though in preparation for something on a large scale.

Xochitl was a thousand light-years from Tanith. He rejected immediately the idea of launching a preventative attack; his ships might reach Xochitl to find it undefended, and then return to find Tanith devastated. Things like that had happened in space-war. The only thing to do was sit tight, defend Tanith when Viktor attacked, and then counterattack if he had any ships left by that time. Prince Viktor was probably reasoning in the same way.

He had no time to think about Andray Dunnan, except, now and then, to wish that Otto Harkaman would stop thinking about him and bring the *Corisande* home. He needed that ship on Tanith, and the wits and courage of her commander.

More news—Gilgamesh sources—came in from Xochitl. There were only two ships, both armed merchant-

men, on the planet. Prince Viktor had spaced out with the rest an estimated two thousand hours before the story reached him. That was twice as long as it would take the Xochitl armada to reach Tanith. He hadn't gone to Beowulf; that was only sixty-five hours from Tanith and they would have heard about it long ago. Or Amaterasu, or Khepera. How many ships he had was a question; not fewer than five, and possibly more. He could have slipped into the Tanith system and hidden his ships on one of the outer uninhabitable planets. He sent Valkanhayn and Ravallo microjumping their ships from one to another to check. They returned to report in the negative. At least, Viktor of Xochitl wasn't camped inside their own system, waiting for them to leave Tanith open to attack.

But he was somewhere, and up to nothing even resembling good, and there was no possible way of guessing when his ships would be emerging on Tanith. The only thing to do was wait for him. When he did, Trask was confident that he would emerge from hyperspace into serious trouble. He had the *Nemesis,* the *Space-Scourge,* the *Black Star* and *Queen Flavia,* the strongly rebuilt *Lamia,* and several independent Space Viking ships, among them the *Damnthing* of his friend Rogerfan-Morvill Esthersan, who had volunteered to stay and help in the defense. This, of course, was not pure altruism. If Viktor attacked and had his fleet blown to Em-See-Square, Xochitl would lie open and unprotected, and there was enough loot on Xochitl to cram everybody's ships. Everybody's ships who had ships when the Battle of Tanith was over, of course.

He was apologetic to Princess Bentrik:

"I'm very sorry you jumped out of Zaspar Makann's frying pan into Prince Viktor's fire," he began.

She laughed at that. "I'll take my chances on the fire. I seem to see a lot of good firemen around. If there is a battle you will see that Steven's in a safe place, won't you?"

"In a space attack, there are no safe places. I'll keep him with me."

The young Count of Ravary wanted to know which ship he would serve on when the attack came.

"Well, you won't be on any ship, Count. You'll be on my staff."

Two days later, the *Corisande* came out of hyperspace. Harkaman was guardedly noncommittal by screen. Trask took a landing craft and went out to meet the ship.

"Marduk doesn't like us, any more," Harkaman told him. "They have ships on all their trade planets, and they all have orders to fire on any, repeat any, Space Vikings, including the ships of the self-styled Prince of Tanith. I got this from Captain Garravay of the *Vindex.* After we were through talking, we fought a nice little ship-to-ship action for him to make films of. I don't think anybody could see anything wrong with it."

"This order came from Makann?"

"From the Admiral commanding. He isn't your friend Shefter; Shefter retired on account of quote ill-health unquote. He is now in a quote hospital unquote."

"Where's Prince Bentrik?"

"Nobody knows. Charges of high treason were brought against him, and he just vanished. Gone underground, or secretly arrested and executed; take your choice."

He wondered just what he'd tell Princess Lucile and Count Steven.

"They have ships on all the planets they trade with. Fourteen of them. That isn't to catch Dunnan. That's to disperse the Navy away from Marduk. They don't trust the Navy. Is Prince Edvard still Prime Minister?"

"Yes, as of Garravay's last information. It seems Makann is behaving in a scrupulously legal manner, outside of making his People's Watchmen part of the armed forces. Protesting his devotion to the King every time he opens his mouth."

"When will the fire be, I wonder?"

"Huh? Oh yes, you were reading up on Hitler. That I don't know. Probably happened by now."

He just told Princess Lucile that her husband had gone into hiding; he couldn't be sure whether she was relieved or more worried. The boy was sure that he was doing something highly romantic and heroic.

Some of the volunteers tired of waiting, after another thousand hours, and spaced out. The *Viking's Gift* of Beowulf came in with a cargo, and went on orbit after discharging it to join the watch. A Gilgamesher came in from Amaterasu and reported everything quiet there; as soon as her captain had sold his cargo, with a minimum of haggling, he spaced out again. His behavior convinced everybody that the attack would come in a matter of hours.

It didn't.

Three thousand hours had passed since the first warning had reached Tanith, that made five thousand since Viktor's ships were supposed to have left Xochitl. There were those, Boake Valkanhayn among them, who doubted, now, if he ever had.

"The whole thing's just a big Gilgamesher lie," he was declaring. "Somebody—Nikky Gratham, or the Everrards, or maybe Viktor himself—paid them to tell us that, to pin our ships down here. Or they made it up themselves, so they could make hay on our trade-planets."

"Let's go down to the Ghetto and clean out the whole gang," somebody else took up. "Anything one of them's in, they're all in together."

"Nifflheim with that; let's all space out for Xochitl," Manfred Ravallo proposed. "We have enough ships to lick them on Tanith, we have enough to lick them on their own planet."

He managed to talk them out of both courses of action—what was he, anyhow; sovereign Prince of Tanith, or the non-ruling King of Marduk, or just the chieftain of a discipline-

less gang of barbarians? One of the independents spaced out in disgust. The next day, two others came in, loaded with booty from a raid on Braggi, and decided to stay around for a while and see what happened.

And four days after that, a five-hundred-foot hyperspace yacht, bearing the daggers and chevrons of Bigglersport, came in. As soon as she was out of the last microjump, she began calling by screen.

Trask didn't know the man who was screening, but Hugh Rathmore did; Duke Joris' confidential secretary.

"Prince Trask; I must speak to you as soon possible," he began, almost stuttering. Whatever the urgency of his mission, one would have thought that a three-thousand-hour voyage would have taken some of the edge from it. "It is of the first importance."

"You are speaking to me. This screen is reasonably secure. And if it's of the first importance, the sooner you tell me about it . . ."

"Prince Trask, you must come to Gram, with every man and every ship you can command. Satan only knows what's happening there now, but three thousand hours ago, when the Duke sent me off, Omfray of Glaspyth was landing on Wardshaven. He has a fleet of eight ships, furnished to him by wife's kinsman, the King of Haulteclere. They are commanded by King Konrad's Space Viking cousin, the Prince of Xochitl."

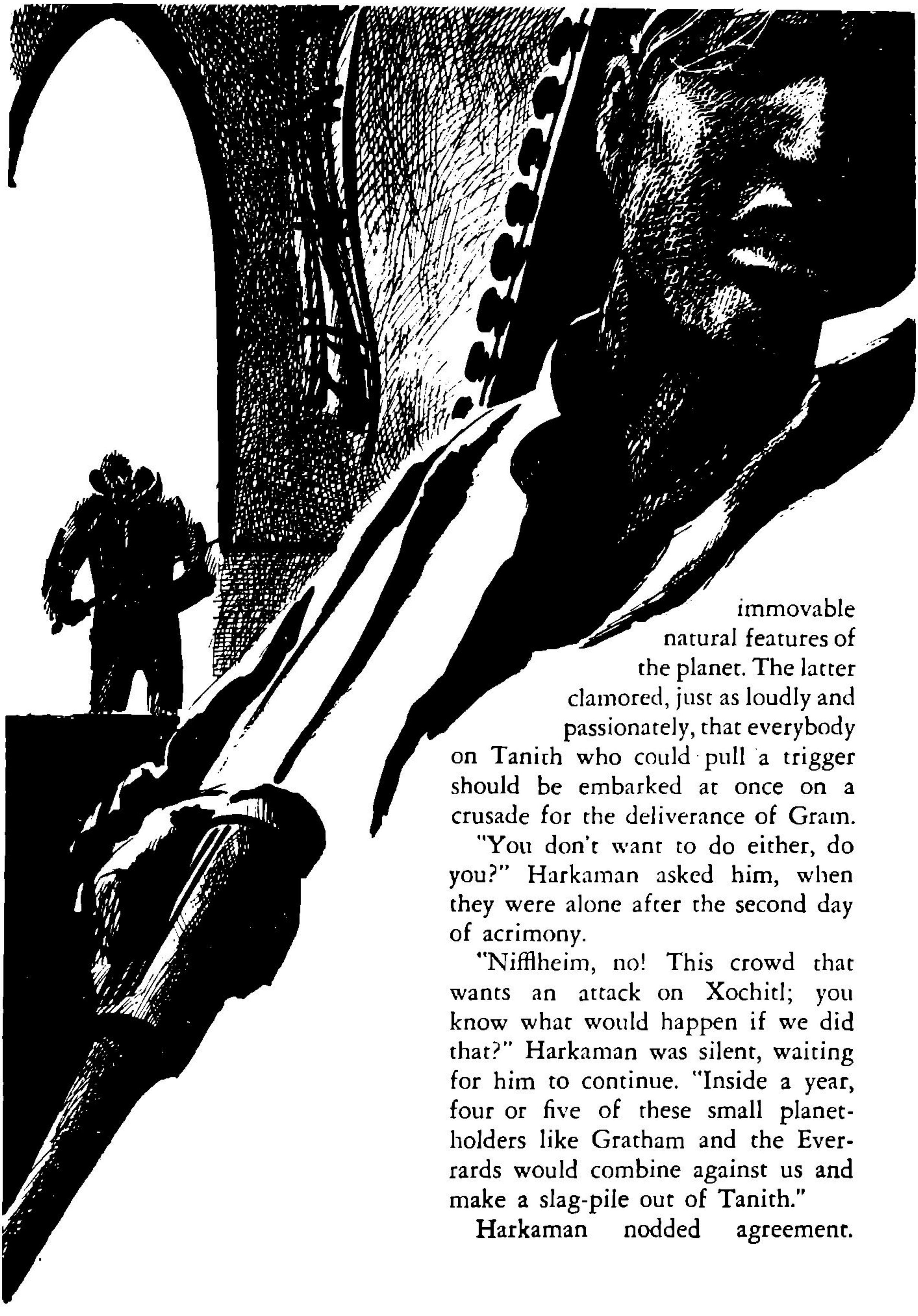
Then a look of shocked surprise came into the face of the man in the screen, and Trask wondered why, until he realized that he had leaned back in his chair and was laughing uproariously. Before he could apologize, the man in the screen had found his voice.

"I know, Prince Trask; you have no reason to think kindly of King Angus—the former King Angus, or maybe even the late King Angus, I suppose he is now—but a murderer like Omfray of Glaspyth "

It took a little time to explain to the confidential secretary of the Duke of Bigglersport the humor of the situation.

There were others at Rivington to whom it was not immediately evident. The professional Space Vikings, men like Valkanhayn and Ravallo and Alvyn Karffard, were disgusted. Here they'd been sitting, on combat alert, all these months, and, if they'd only known, they could have gone to Xochitl and looted it clean long ago. The Gram party were outraged. Angus of Wardshaven had been bad enough, with the hereditary taint of the Mad Baron of Blackcliffe, and Queen Evita and her rapacious family, but even he was preferable to a murderous villain—some even called him a fiend in human shape—like Omfray of Glaspyth.

Both parties, of course, were positive as to where their Prince's duty lay. The former insisted that everything on Tanith that could be put into hyperspace should be dispatched at once to Xochitl, to haul back from it everything except a few absolutely



immovable natural features of the planet. The latter clamored, just as loudly and passionately, that everybody on Tanith who could pull a trigger should be embarked at once on a crusade for the deliverance of Grain.

"You don't want to do either, do you?" Harkaman asked him, when they were alone after the second day of acrimony.

"Nifflheim, no! This crowd that wants an attack on Xochitl; you know what would happen if we did that?" Harkaman was silent, waiting for him to continue. "Inside a year, four or five of these small planet-holders like Gratham and the Everrards would combine against us and make a slag-pile out of Tanith."

Harkaman nodded agreement.

"Since we warned him the first time, Viktor's kept his ships away from our planets. If we attacked Xochitl now, without provocation, nobody'd know what to expect from us. People like Nikky Gratham and Tobbin of Nergal and the Everrards of Hoth get nervous around unpredictable dangers, and when they get nervous they get trigger-happy." He puffed slowly on his pipe and then said: "Then you'll be going back to Gram."

"That doesn't follow; just because Valkanhayn and Ravallo and that crowd are wrong doesn't make Valpry and Rathmore and Ffayle right. You heard what I was telling those very people at Karvall House, the day I met you. And you've seen what's been happening on Gram since we came out here. Otto, the Sword-Worlds are finished; they're half decivilized now. Civilization is alive and growing here on Tanith. I want to stay here and help it grow."

"Look, Lucas," Harkaman said. "You're Prince of Tanith, and I'm only the Admiral. But I'm telling you; you'll have to do something, or this whole setup of yours will fall apart. As it stands, you can attack Xochitl and the Back-To-Gram party would go along, or you can decide on this crusade against Omfray of Glaspyth and the Raid-Xochitl-Now party would go along. But if you let this go on much longer, you won't have any influence over either party."

"And then I will be finished. And in a few years, Tanith will be finished." He rose and paced across the room and back. "Well, I won't raid Xochitl; I told you why, and you agreed. And I won't spend the men and ships and wealth of Tanish in any Sword-World dynastic squabble. Great Satan, Otto; you were in the Durendal War. This is the same thing, and it'll go on for another half a century."

"Then what will you do?"

"I came out here after Andray Dunnan, didn't I?" he asked.

"I'm afraid Ravallo and Valpry, or even Valkanhayn and Morland, won't be as interested in Dunnan as you are."

"Then I will interest them in him. Remember, I was reading up on Hitler, coming in from Marduk? I will tell them all a big lie. Such a big lie that nobody will dare to disbelieve it."

XXV

"Do you think I was afraid of Viktor of Xochitl?" he demanded. "Half a dozen ships; we could make a new Van Allen belt around Tanith of them, with what we have here. Our real enemy is on Marduk, not Xochitl; his name's Zaspar Makann. Zaspar Makann, and Andray Dunnan, the man I came out from Gram to hunt; they're in alliance, and I believe Dunnan is on Marduk, himself, now."

The delegation who had come out from Gram in the yacht of the Duke of Bigglersport were unimpressed. Marduk was only a name to them, one of the fabulous civilized Old Federation planets no Sword-World-

er had ever seen. Zaspar Makann wasn't even that. And so much had happened on Gram since the murder of Elaine Karvall and the piracy of the *Enterprise* that they had completely forgotten Andray Dunnan. That put them at a disadvantage. All the people whom they were trying to convince, the half-hundred members of the new nobility of Tanith, spoke a language they didn't understand. They didn't even understand the proposition, and couldn't argue against it.

Paytrik Morland, who was Gram-born and had been speaking for a return in force to fight against Omfray of Glaspyth and his supporters, defected from them at once. He had been on Marduk and knew who Zaspar Makann was; he had made friends with the Royal Navy officers, and had been shocked to hear that they were now enemies. Manfred Ravallo and Boake Valkanhayn, among the more articulate of the Raid-Xochitl-Now party, snatched up the idea and seemed convinced that they'd thought of it themselves all along. Valkanhayn had been on Gimli and talked to Mardukan naval officers; Ravallo had brought Princess Bentrik to Tanith and heard her stories on the voyage. They began adducing arguments in support of Trask's thesis. Of course Dunnan and Makann were in collusion. Who tipped Dunnan off that the *Victrix* would be on Audhumla? Makann; his spies in the Navy tipped him. What about the *Honest Horris;* wasn't Makann blocking any investigation about her? Why was Admiral Shefter retired as soon as Makann got into power?

"Well, here; we don't know anything about this Zaspar Makann," the confidential secretary and spokesman of the Duke of Bigglersport began.

"No, you don't," Otto Harkaman told him. "I suggest you keep quiet and listen, till you find out a little about him."

"Why, I wouldn't be surprised if Dunnan was on Marduk all the time we were hunting for him," Valkanhayn said.

Trask began to wonder. What would Hitler have done if he'd told one of his big lies, and then found it turning into the truth? Maybe Makann had been on Marduk . . . No; he couldn't have hidden half a dozen ships on a civilized, planet. Not even at the bottom of an ocean.

"I wouldn't be surprised," Alvyn Karffard was shouting, "if Andray Dunnan *was* Zaspar Makann. I know he doesn't look like Dunnan, we all saw him on screen, but there's such a thing as plastic surgery."

That was making the big lie just a trifle too big. Zaspar Makann was six inches shorter than Dunnan; there are some things no plastic surgery could do. Paytrik Morland, who had known Dunnan and had seen Makann on screen, ought to have known that too, but he either didn't think of it or didn't want to weaken a case he had completely accepted.

"As far as I can find out, nobody even heard of Makann till about five

years ago. That would be about the time Dunnan would have arrived on Marduk," he said.

By this time, the big room in which they were meeting had become a babel of voices, everybody trying to convince everybody else that they'd known it all along. Then the Back-To-Gram party received its *coup-de-grace;* Lothar Ffayle, to whom the emissaries of Duke Joris had looked for their strongest support, went over.

"You people want us to abandon a planet we've built up from nothing, and all the time and money we've invested in it, to go back to Gram and pull your chestnuts out of the fire? Gehenna with you! We're staying here and defending our own planet. If you're smart, you'll stay here with us."

The Bigglersport delegation was still on Tanith, trying to recruit mercenaries from the King of Tradetown and dickering with a Gilgamesher to transport them to Gram, when the big lie turned into something like the truth.

The observation post on the Moon of Tanith picked up an emergence at twenty light-minutes due north of the planet. Half an hour later, there was another one at five light-minutes; a very small one, and then a third at two light-seconds, and this was detectable by radar and microray as a ship's pinnace. He wondered if something had happened on Amaterasu or Beowulf; somebody like Gratham or the Everrards might have decided to take advantage of the defensive mobilization on Tanith. Then they switched the call from the pinnace over to his screen, and Prince Simon Bentrik was looking. out of it.

"I'm glad to see you! Your wife and son are here, worried about you, but safe and well." He turned to shout to somebody to find young Count Steven of Ravary and tell him to tell his mother. "How are you?"

"I had a broken leg when I left Moonbase, but that's mended on the way," Bentrik said. "I have little Princess Myrna aboard with me. For all I know, she's Queen of Marduk. now." He gulped slightly. "Prince Trask, we've come as beggars. We're begging help for our planet."

"You've come as honored guests, and you'll get all the help we can give you." He blessed the Xochitl invasion scare, and the big lie which was rapidly ceasing to be a lie; Tanith had the ships and men and the will to act. "What happened? Makann deposed the King and took over?"

It came to that, Bentrik told him. It had started even before the election. The People's Watchmen had possessed weapons that had been made openly and legally on Marduk for trade to the Neobarbarian planets and then clandestinely diverted to secret People's Welfare arsenals. Some of the police had gone over to Makann; the rest had been terrorized into inaction. There had been riots fomented in working-class districts of all the cities as pretexts for further terrorization. The election had been

a farce of bribery and intimidation. Even so, Makann's party had failed of a complete majority in the Chamber of Representatives, and had been compelled to patch up a shady coalition in order to elect a favorable Chamber of Delegates.

"And, of course, the elected Makann Chancellor; that did it," Bentrik said. "All the opposition leaders in the Chamber of Representatives have been arrested, on all kinds of ridiculous charges—sex-crimes, receiving bribes, being in the pay of foreign powers, nothing too absurd. Then they rammed through a law empowering the Chancellor to fill vacancies in the Chamber of Representatives by appointment."

"Why did the Crown Prince lend himself to a thing like that?"

"He hoped that he could exercise some control. The Royal Family is an almost holy symbol to the people. Even Makann was forced to pretend loyalty to the King and the Crown Prince . . ."

"It didn't work; he played right into Makann's hands. What happened?"

The Crown Prince had been assassinated. The assassin, an unknown man believed to be a Gilgamesher, had been shot to death by People's Watchmen guarding Prince Edvard at once. Immediately Makann had seized the Royal Palace to protect the King, and immediately there had been massacres by People's Watchmen everywhere. The Mardukan Planetary Army had ceased to exist; Makann's story was that there had been a military plot against the King and the government. Scattered over the planet in small detachments, the army had been wiped out in two nights and a day. Now Makann was recruiting it up again, exclusively from the People's Welfare Party.

"You weren't just sitting on your hands, were you?"

"Oh, no," Bentrik replied. "I was doing something I wouldn't have thought myself capable of, a few years ago. Organizing a mutineering conspiracy in the Royal Mardukan Navy. After Admiral Shefter was forcibly retired and shut up in an insane asylum, I disappeared and turned into a civilian contragravity-lifter operator at the Malverton Navy Yard. Finally, when I was suspected, one of the officers—he was arrested and tortured to death later—managed to smuggle me onto a lighter for the Moonbase. I was an orderly in the hospital there. The day the Crown Prince was murdered, we had a mutiny of our own. We killed everybody we even suspected of being a Makannist. The Moonbase has been under attack from the planet ever since."

There was a stir behind him; turning, he saw Princess Bentrik and the boy enter the room. He rose.

"We'll talk about this later. There are some people here . . ."

He motioned them forward and turned away, shoo-ing everybody else out of the room.

The news was all over Rivington, and then all over Tanith, while the

pinnace was still coming down. There was a crowd at the spaceport, staring as the little craft, with its blazon of the crowned and planet-throned dragon, settled onto its landing legs, and reporters of the Tanith News Service with their screen pick-ups. He met Prince Bentrik, a little in advance of the others, and managed to whisper to him hastily:

"While you're talking to anybody here, always remember that Andray Dunnan is working with Zaspar Makann, and as soon as Makann consolidates his position he's sending an expedition against Tanith."

"How in blazes did you find that out, here?" Bentrik demanded. "From the Gilgameshers?"

Then Harkaman and Rathmore and Valkanhayn and Lothar Ffayle and the others were crowding up behind, and more people were coming off the pinnace, and Prince Bentrik was trying to embrace both his wife and his son at the same time.

"Prince Trask." He started at the voice, and was looking into deep blue eyes under coal-black hair. His pulse gave a sudden jump, and he said, "Valerie!" and then, "Lady Alvarath; I'm most happy to see you here." Then he saw who was beside her, and squatted on his heels to bring himself down to a convenient size. "And Princess Myrna. Welcome to Tanith, Your Highness!"

The child flung her arms around his neck. "Oh, Prince Lucas! I'm so glad to see you. There's been such awful things happened!"

"There won't be anything awful happen here, Princess Myrna. You are among friends; friends with whom you have a treaty. Remember?"

The child began to cry, bitterly. "That was when I was just a play-Queen. And now I know what they meant when they talked about when Grandpa and Pappa would be through being King. Pappa didn't even get to be King!"

Something big and warm and soft was trying to push between them; a dog with long blond hair and floppy ears. In a year and a half, puppies can grow surprisingly. Mopsy was trying to lick his face. He took the dog by the collar and straightened.

"Lady Valerie, will you come with us?" he asked. "I'm going to find quarters for Princess Myrna."

"Is it Princess Myrna, or is it Queen Myrna?" he asked.

Prince Bentrik shook his head. "We don't know. The King was alive when we left Moonbase, but that was five hundred hours ago. We don't know anything about her mother, either. She was at the Palace when Prince Edvard was murdered; we've heard absolutely nothing about her. The King made a few screen appearances, parroting things Makann wanted him to say. Under hypnosis. That was probably the very least of what they did to him. They've turned him into a zombi."

"Well, how did Myrna get to Moonbase?"

"That was Lady Valerie, as much as anybody else. She and Sir Thomas

Kobbly, and Captain Rainer. They armed the servants at Cragdale with hunting rifles and everything else they could scrape up, captured Prince Edvard's space-yacht, and took off in her. Took a couple of hits from ground batteries getting off, and from ships around Moonbase getting in. Ships of the Royal Mardukan Navy!" he added furiously.

The pinnace in which they had made the trip to Tanith had taken a few hits, too, running the blockade. Not many; her captain had thrown her into hyperspace almost at once.

"They sent the yacht off to Gimli," Bentrik said. "From there, they'll try to rally as many of the Royal Navy units as haven't gone over to Makann. They're to assemble on Gimli and await my return. If I don't return in fifteen hundred hours from the time I left Moonbase, they're to use their own judgment. I'd expect that they'd move in on Marduk and attack."

"That's sixty-odd days," Otto Harkaman said. "That's an awfully long time to expect that lunar base to hold out, against a whole planet."

"It's a strong base. It was built four hundred years ago, when Marduk was fighting a combination of six other planets. It held out against continuous attack, once, for almost a year. It's been constantly strengthened ever since."

"And what have they to throw at it?" Harkaman persisted.

"When I left, six ships of the former Royal Navy, that had gone over to Makann. Four fifteen-hundred-footers, same class as the *Victrix,* and two thousand-footers. Then, there were four of Andray Dunnan's ships—"

"You mean, he really is on Marduk?"

"I thought you knew that, and I was wondering how you'd found out. Yes: *Fortuna, Bolide,* and two armed merchantmen, a Baldurbuilt ship called the *Reliable,* and your friend *Honest Horris."*

"You didn't really believe Dunnan was on Marduk?" Boake Valkanhayn asked.

"Actually, I didn't. I had to have some kind of a story, to talk those people out of that crusade against Omfray of Glaspyth. He left unmentioned Valkanhayn's own insistence on a plundering expedition against Xochitl. "Now that it turns out to be true, I'm not surprised. We decided, long ago, that Dunnan was planning to raid Marduk. It appears that we underestimated him. Maybe he was reading about Hitler, too. He wasn't planning any raid; he was planning conquest, in the only way a great civilization can be conquered—by subversion."

"Yes," Harkaman put in. "Five years ago, when Dunnan started this programme, who was this Makann, anyhow?"

"Nobody," Bentrik said. "A crackpot agitator in Drepplin; he had a coven of fellow-crackpots, who met in the back room of a saloon and had their office in a cigar box. The next year, he had a suite of offices and was buying time on a couple of tele-

casts. The year after that, he had three telecast stations of his own, and was holding rallies and meetings of thousands of people. And so on, upward."

"Yes. Dunnan financed him, and moved in behind him, the same way Makann moved in behind the King. And Dunnan will have him shot the way he had Prince Edvard shot, and use the murder as a pretext to liquidate his personal followers."

"And then he'll own Marduk. And we'll have the Mardukan navy coming out of hyperspace on Tanith," Valkanhayn added. "So we go to Marduk and smash him now, while he's still little enough to smash."

There had been a few who had wanted to do that about Hitler, and a great many, later, who had regretted that it hadn't been done.

"The *Nemesis*, the *Corisande*, and the *Space Scourge* for sure?" he asked.

Harkaman and Valkanhayn agreed; Valkanhayn thought the *Viking's Gift* of Beowulf would go along, and Harkaman was almost sure of the *Black Star* and *Queen Flavia.* He turned to Bentrik.

"Start that pinnace off for Gimli at once; within the hour if possible. We don't know how many ships will be gathered there, but we don't want them wasted in detail-attacks. Tell whoever's in command there that ships from Tanith are on the way, and to wait for them."

Fifteen hundred hours, less the five hundred Bentrik was in space from Marduk. He hadn't time to estimate voyage-time to Gimli from the other Mardukan trade-planets, and nobody could estimate how many ships would respond.

"It may take us a little time to get an effective fleet together. Even after we get through arguing about it. Argument," he told Bentrik, "is not exclusively a feature of democracies."

Actually, there was very little argument, and most of that among the Mardukans. Prince Bentrik insisted that Crown Princess Myrna would have to be taken along; King Mikhyl would be either dead or brainwashed into imbecility by now, and they would have to have somebody to take the throne. Lady Valerie Alvarath, Sir Thomas Kobbly, the tutor, and the nurse Margot refused to be separated from her. Prince Bentrik was equally firm, with less success, on leaving his wife and son on Tanith. In the end, it was agreed that the entire Mardukan party would space out on the *Nemesis.*

The leader of the Bigglersport delegation attempted an impassioned tirade about going to the aid of strangers while their own planet was being enslaved. He was booed down by everybody else and informed that Tanith was being defended where a planet ought to be, on somebody else's real estate. When the Bigglersporters emerged from the meeting, they found that their own spaceyacht had been commandeered and sent off to Amaterasu and Beowulf for assistance, that the regiment of local infantry they had enlisted from

the King of Tradetown had been taken over by the Rivington authorities, and that the Gilgamesh freighter they had chartered to transport them to Gram would now take them to Marduk.

The problem broke into two halves: the purely naval action that would be fought to relieve the Moon of Marduk, if it still held out, and to destroy the Dunnan and Makann ships, and the ground-fighting problem of wiping out Makann's supporters and restoring the Mardukan monarchy. A great many of the people of Marduk would be glad of a chance to turn on Makann, once they had arms and were properly supported. Combat weapons were almost unknown among the people, however, and even sporting arms uncommon. All the small arms and light artillery and auto-weapons available were gathered up.

The *Grendelsbane* came in from Beowulf, and the *Sun-Goddess* from Amaterasu. Three independent Space Viking ships were still in orbit on Tanith; they joined the expedition. There would be trouble with them on Marduk; they'd want to loot. Let the Mardukans worry about that. They could charge it off as part of the price for letting Zaspar Makann get into power in the first place.

There were twelve spacecraft in line outside the Moon of Tanith, counting the three independents and the forcibly chartered Gilgamesher troop-transport; that was the biggest fleet Space Vikings had ever assembled in their history. Alvyn Karffard said as much while they were checking the formation by screen.

"It isn't a Space Viking fleet," Prince Bentrik differed. "There are only three Space Vikings in it. The rest are the ships of three civilized planets. Tanith, Beowulf and Amaterasu."

Karffard was surprised. "You mean *we're* civilized planets? Like Marduk, or Baldur or Odin, or . . . ?"

"Well, aren't you?"

Trask smiled. He'd begun to suspect something of the sort a couple of years ago. He hadn't really been sure until now. His most junior staff officer, Count Steven of Ravary, didn't seem to appreciate the compliment.

"We *are* Space Vikings!" he insisted. "And we are going to battle with the Neobarbarians of Zaspar Makann."

"Well, I won't argue the last half of it, Steven," his father told him.

"Are you people done yakking about who's civilized and who isn't?" Guatt Kirbey asked. "Then give the signal. All the other ships are ready to jump."

Trask pressed the button on the desk in front of him. A light went on over Kirbey's control panel as one would on each of the other ships. He said, "Jumping," around the stem of his pipe, and twisted the red handle and shoved it in.

Four hundred and fifty hours, in the private universe that was the *Nemesis;* outside, nothing else ex-

isted, and inside there was nothing to do but wait, as each hour carried them six trillion miles nearer to Gimli. At first, the ruthless and terrible Space Viking, Steven, Count of Ravary, was wildly excited, but before long he found that. there was nothing exciting going on; it was just a spaceship, and he'd been on ships before. Her Highness the Crown Princess, or maybe her Majesty the Queen of Marduk, stopped being excited about the same time, and she and Steven and Mopsy played together. Of course, Myrna was only a girl, and two years younger than Steven, but she was, or at least might be, his sovereign, and beside, she had been in a space action, if you call what lies between a planet and its satellite space and if you call being shot at without being able to shoot back an action, and Relentless Ravary, the Interstellar Terror, had not. This rather made up for being a girl and a mere baby of going-on-ten.

One thing, there were no lessons. Sir Thomas Kobbly fancied himself as a landscape-painter and spent most of his time arguing techniques with Vann Larch, and Steven's tutor, Captain Rainer was a normal-space astrogator and found a kindred spirit in Sharll Renner. This left Lady Valerie Alvareth at a loose end. There were plenty of volunteers to help her fill in the time, but Rank Hath Its Privileges; Trask undertook to see to it that she did not suffer excessively from shipboard ennui.

Sharll Renner and Captain Rainer approached him, during the cocktail hour before dinner, some hundred hours short of emergence.

"We think we've figured out where Dunnan's base is," Renner said.

"Oh, good!" Everybody else had, on a different planet. "Where's yours?"

"Abaddon," the Count of Ravary's tutor said. When he saw that the name meant nothing to Trask, he added, "The ninth, outer, planet of the Marduk system." He said it disgustedly.

"Yes; remember how you had Boake and Manfred out with their ships, checking our outside planets to see if Prince Viktor might be hiding on one of them? Well, what with the time element, and the way the *Honest Horris* was shuttling back and forth from Marduk to some place that wasn't *Gimli,* and the way Dunnan was able to bring his ships in as soon as the shooting started on Marduk, we thought he must be on an uninhabited outer planet of the Marduk system."

"I don't know why we never thought of that, ourselves," Rainer put in. "I suppose because nobody ever thinks of Abaddon for any reason. It's only a small planet, about four thousand miles in diameter, and it's three and a half billion miles from primary. It's frozen solid. It would take almost a year to get to it on Abbot drive, and if your ship has Dillinghams, why not take a little longer and go to a good planet? So nobody bothered with Abaddon?"

But for Dunnan's purpose, it would be perfect. He called Prince Bentrik and Alvyn Karffard to him;

they found the idea instantly convincing. They talked about it through dinner, and held a general discussion afterward. Even Guatt Kirbey, the ship's pessimist, could find no objection to it. Trask and Bentrik began at once making battle plans. Karffard wondered if they hadn't better wait till they got to Gimli and discuss it with the others.

"No," Trask told him. "This is the flagship; here's where the strategy is decided."

"Well, how about the Mardukan Navy?" Captain Rainer asked. "I think Fleet Admiral Bargham's in command at Gimli."

Prince Simon Bentrik was silent for a moment, as though he realized, with reluctance, that the big decision was no longer avoidable.

"He may be, at present, but he won't be when I get there. I will be."

"But . . . Your Highness, he's a fleet admiral; you're just a commodore."

"I am not just a commodore. The King is a prisoner, and for all we know dead. The Crown Prince is dead. The Princess Myrna is a child. I am assuming the position of Regent and Prince-Protector of the Realm."

XXVI

There was a little difficulty on Gimli with Fleet Admiral Bargham. Commodores didn't give orders to fleet admirals. Well, maybe regents did, but who gave Prince Bentrik authority to call himself regent? Regents were elected by the Chamber of Delegates, on nomination of the Chancellor.

"That's Zaspar Makann and his stooges you're talking about?" Bentrik laughed.

"Well, the Constitution . . ." He thought better of that, before somebody asked him what Constitution. "Well, a Regent has to be chosen by election. Even members of the Royal Family can't just make themselves Regent by saying they are."

"I can. I just have. And I don't think there are going to be many more elections, at least for the present. Not till we make sure the people of Marduk can be trusted with the control of the government."

"Well, the pinnace from Moonbase reported that there were six Royal navy battleships and four other craft attacking them," Bargham objected. "I only have four ships here; I sent for the ones on the other trade-planets, but I haven't heard from any of them. We can't go there with only four ships."

"Sixteen ships," Bentrik corrected. "No, fifteen and one Gilgamesher we're using for a troopship. I think that's enough. You'll remain here on Gimli, in any case, admiral; as soon as the other ships come in, you'll follow to Marduk with them. I am now holding a meeting aboard the Tanith flagship *Nemesis*. I want your four ship-commanders aboard immediately. I am not including you because you're remaining here to bring up the late comers and as soon as this meeting is over we are spacing out."

Actually, they spaced out sooner; the meeting lasted the whole three hundred and fifty hours to Abaddon. A ship's captain, if he has a good exec, as all of them had, needs only sit at his command-desk and look important while the ship is going into and emerging from a long jump; the rest of the time he can study ancient history or whatever his shipboard hobby is. Rather than waste three hundred and fifty hours of precious time, each captain turned his ship over to his exec and remained aboard the *Nemesis;* even on so spacious a craft the officers' country north of the engine rooms was crowded like a tourist hotel in midseason. One of the four Mardukans was the Captain Garravay who had smuggled Bentrik's wife and son off Marduk, and the other three were just as pro-Bentrik, pro-Tanith, and anti-Makann. They were, on general principles, also anti-Bargham. There must be something wrong with any fleet admiral who remained in his command after Zaspar Makann came to power.

So, as soon as they spaced out, there was a party. After that, they settled down to planning the Battle of Abaddon.

There was no Battle of Abaddon.

It was a dead planet, one side in night and the other in dim twilight from the little speck of a sun three and a half billion miles away, jagged mountains rising out of the snow that covered it from pole to pole. The snow on top would be frozen CO_2; according to the thermocouples, the surface temperature was well below minus-100 Centigrade. No ships on orbit circled it; there was a little faint radiation, which could have been from naturally radioactive minerals; there was no electrical discharge detectable.

There was considerable bad language in the command room of the *Nemesis.* The captains of the other ships were screening in, wanting to know what to do.

"Go on in," Trask told them. "Englobe the planet, and go down to within a mile if necessary. They could be hiding somewhere on it."

"Well, they're not hiding at the bottom of any ocean, that's for sure," somebody said. It was one of those feeble jokes at which everybody laughs because nothing else is laughable about the situation.

Finally, they found it, at the north pole, which was no colder than anywhere else on the planet. First radiation leakage, the sort that would come from a closed-down nuclear power plant. Then a modium of electrical discharge. Finally the telescopic screens picked up the spaceport, a huge oval amphitheater excavated out of a valley between two jagged mountain ranges.

The language in the command room was just as bad, but the tone had changed. It was surprising what a wide range of emotions could be expressed by a few simple blasphemies and obscenities. Everybody who had been deriding Sharll Renner were now acclaiming him.

But it was lifeless. The ships came crowding in; air-locked landing-craft full of space-armored ground-fighters went down. Screens in the command room lit as they transmitted in views. Depressions in the carbon-dioxide snow where the hundred-foot pad-feet of ships' landing-legs had pressed down. Ranks of cargo-lighters that had plied to and from other ships or orbit. And, all around the cliff-walled perimeter, air-locked doors to caverns and tunnels. A great many men, with a great deal of equipment, had been working here in the estimated five or six years since Andray Dunnan—or somebody—had constructed this base.

Andray Dunnan. They found his badge, the crescent, blue on black, on things. They found equipment that Harkaman recognized as having been part of the original cargo stolen with the *Enterprise.* They even found, in his living quarters, a blown-up photoprint picture of Nevil Ormm, draped in black. But what they did not find was a single vehicle small enough to be taken aboard a ship, or a single scrap of combat equipment, not even a pistol or a hand grenade.

Dunnan had gone, but they knew whither, and where to find him. The conquest of Marduk had moved into its final phase.

Marduk was on the other side of the sun from Abaddon with ninety-five million miles—close, but not inconveniently so, Trask thought—to spare. Guatt Kirbey and the Mardukan astrogator who was helping him made it within a light-minute. The Mardukan thought that was fine; Kirbey didn't. The last microjump was aimed at the Moon of Marduk, which was plainly visible in the telescopic screen. They came out within a light-second and a half, which Kirbey admitted was reasonably close. As soon as the screens cleared, they saw that they weren't too late. The Moon of Marduk was under fire and firing back.

They'd have detection, and he knew what they were detecting—a clump of sixteen rending distortions of the fabric of space-time, as sixteen ships came into sudden existence in the normal continuum. Beside him, Bentrik had a screen on; it was still milky-white, and he was speaking into a radio handphone.

"Simon Bentrik, Prince-Protector of Marduk, calling Moonbase." Then, slowly, he repeated his screen-combination twice. "Come in, Moonbase; this is Simon Bentrik, Prince-Protector, speaking."

He waited ten seconds, and was about to start again, when the screen flickered. The man who appeared in it wore the insignia of a Mardukan navy commodore. He needed a shave, but he was grinning happily. Bentrik greeted him by name.

"Hello, Simon; glad to see you. Your Highness, I mean; what is this Prince-Protector thing?"

"Somebody had to do it. Is the King still alive?"

The grin slid off the commodore's face, starting with his eyes.

"We don't know. At first, Makann had him speaking by screen—you know what it was like—urging everybody to obey and co-operate with 'our trusted Chancellor.' Makann always appeared on the screen with him."

Bentrik nodded. "I remember."

"Before you left, Makann kept quiet, and let the King make the speech. After a while, the King wasn't able to speak coherently; he'd stammer, and repeat. So then Makann did all the talking; they couldn't even depend on him to parrot what they were giving him with an earplug phone. Then he stopped appearing entirely. I suppose there were physical symptoms they couldn't allow to be seen." Bentrik was cursing horribly under his breath; the officer at Moonbase nodded. "I hope for his sake that he is dead."

Poor Goodman Mikhyl. Bentrik was saying, "So do I." Trask agreed, mentally. The commodore at Moonbase was still talking:

"We got two more renegade RMN ships, within a hundred hours after you left." He named them. "And we got one of the Dunnan ships, the *Fortuna.* We blew out the Malverton Navy Yard. They're still using the Antarctic Naval Base, but we've knocked out a good deal of that. We got the *Honest Horris.* They made two attempts to land on us and lost a couple of ships. Eight hundred hours ago, they were joined by the rest of Dunnan's fleet, five ships. They made a landing on Malverton while it was turned away from us. Makann announced that they were RMN units from the trade-planets that had joined him. I suppose the planetside public swallowed that. He also announced that their commander, Admiral Dunnan, was in command of the People's Armed Forces."

Dunnan's ground-fighters would be in control of Malverton. By now, the odds were that Makann was as much his prisoner as King Mikhyl VIII had been Makann's.

"So Dunnan has conquered Marduk. All he has to do, now, is make it stick," he said. "I see four ships off Moonbase; how many more have they?"

"These are *Bolide* and *Eclipse,* Dunnan's ships, and former Rotal Mardukan Navy ships *Champion* and *Guardian.* There are five orbiting off the planet: Ex-RMNS *Paladin,* and Dunnan ships *Starhopper, Banshee, Reliable* and *Exporter.* The last two are listed as merchantmen, but they're performing like regulation battlecraft."

The four that had been circling Moonbase broke orbit and started toward the relieving fleet; one took a hit from a Moonbase missile, which staggered her but did no evident damage. Two ships which had been orbiting the planet also changed course and started out. The command room was silent except for a subdued chuckling from a computer which was estimating enemy intentions by observed data and Games Theory. Three more came hurrying out from the planet, and the two in

the lead slowed to let them catch up. He wanted to be able to engage the four from off the satellite before the five from the planet joined them, but Karffard's computers said it couldn't be done.

"All right, we have to take all our bad eggs in one basket," he said. "Try to hit them as soon after they join as possible."

The computers began chuckling again. The serving-robots were doing a rush business in hot coffee. Prince Bentrik's son, sitting beside his father, had stopped being Ruthless Ravary the Demon of the Spaceways and was a very young officer going into his first space battle, more scared and at the same time happier than he had ever been in his short life. Captain Garravay of the *Vindex* was making signal to the other ships from Gimli: *"Royal Navy; smash the traitors first!"* He could understand and sympathize, even if he couldn't approve of putting personal ahead of tactical considerations, and made a quick sealed-beam call to Harkaman to be prepared to plug any holes they left in formation if they broke away in search of vengeance. He also ordered the *Black Star* and the *Sun Goddess* to shepherd the lightly armed and troop-crammed Gilgamesh freighter out of danger. The two clumps of Dunnan-Makann ships were converging rapidly, and Alvyn Karffard was screaming into a phone to somebody to get more speed.

At a thousand miles, the missiles started going out, and the two groups of ships, four and five, were equidistant from each other and from the allied fleet, at the points of a triangle that was growing smaller by the second. The first fire-globes of intercepted missiles spread from their seeds of brief white light. A red light flashed on the damage-board. An enemy ship took a hit. The captain of the *Queen Flavia* was on a screen, saying that his ship was heavily damaged. Three ships bearing the Mardukan dragon-and-planet circled madly around each other at what looked, in the screen, like just over pistol-range, two of them firing into the third, which was replying desperately. The third one blew up, and somebody was yelling out of a screenspeaker, "Scratch one traitor!"

Another ship blew up somewhere, and then another. He heard somebody say, "There went one of ours," and wondered which one it was. Not the *Corisande,* he hoped; no, it wasn't, he could see her rushing after two other ships which were, in turn, speeding toward the *Black Star,* the *Sun Goddess* and the Gilgamesh freighter. Then the *Nemesis* and the *Starhopper* were within gun-range, pounding each other savagely.

The battle had tied itself into a ball of gyrating, fire-spitting ships that went rolling toward the planet, which was swinging in and out of the main viewscreen and growing rapidly larger. By the time they were down to the inner edge of the exosphere, the ball had started to unwind, ship after ship dropping out of it

and going into orbit, some badly damaged and some going to attack damaged enemies. Some of them were completely around the planet, hidden by it. He saw three ships approaching *Corisande, Sun Goddess,* and the Gilgamesher. He got Harkaman on the screen.

"Where's the *Black Star?*" he asked.

"Gone to Em-See-Square," Harkaman replied. "We got the two Dunnan-Makanns. *Bolide* and *Reliable.*"

Then young Steven of Ravary, who had been monitoring one of the intership screens, had a call from Captain Gompertz of the *Grendelsbane,* and at the same moment somebody else was yelling, "Here comes the *Starhopper* again!"

"Tell him to wait a moment; we have troubles," he said.

Nemesis and *Starhopper* sledgehammered each other and parried with counter-missiles, and then, quite unexpectedly, the *Starhopper* went to Em-See-Square.

There was an awful lot of Em being converted to Ee off Marduk, today. Including Manfred Ravallo; that grieved him. Manfred was a good man, and a good friend. He had a girl in Rivington . . . Nifflheim, there were eight hundred good men aboard the *Black Star,* and most of them had girls who'd wait in vain for them on Tanith. Well, what had Otto Harkaman said, so long ago, on Gram? Something about old age not being a usual cause of death among Space Vikings, wasn't it?

Then he remembered that Gompertz of the *Grendelsbane* was trying to get him. He told young Count Steven to switch him over.

"We just lost one of our Mardukans," Gompertz told him, in his staccato Beowulf accent. "I think she was the *Challenger.* The ship that got her looks like the *Banshee;* I'm turning to engage her."

"Which way; west around the planet? Be right with you, captain."

XXVII

It was like finishing a word puzzle. You sit staring at it, looking for more spaces to print letters into, and suddenly you realize that there are no more, that the puzzle is done. That was how the space-battle of Marduk, the Battle *off* Marduk, ended. Suddenly there were no more colored fire-globes opening and fading, no more missiles coming, no more enemy ships to throw missiles at. Now it was time to take a count of his own ships, and then begin thinking about the Battle *on* Marduk.

The *Black Star* was gone. So was RMNS *Challenger,* and RMNS *Conquistador. Space Scourge* was badly hammered; worse than after the Beowulf raid, Boake Valkanhayn said. The *Viking's Gift* was heavily damaged, too, and so was the *Corisande,* and so, from the looks of the damage board, was the *Nemesis.* And three ships were missing—the three independent Space Vikings, *Harpy, Curse of Cagn,* and Roger-fan-Morvill Esthersan's *Damnthing.*

Prince Bentrik frowned over that.

"I can't think that all three of those ships would have been destroyed, without anybody seeing it happen."

"Neither can I. But I can think that all those ships broke out of the battle together and headed in for the planet. They didn't come here to help liberate Marduk, they came here to fill their cargo holds. I only hope the people they're robbing all voted the Makann ticket in the last election." A crumb of comfort occurred to him, and he passed it on. "The only people who are armed to resist them will be Makann's storm-troops and Dunnan's pirates; they'll be the ones to get killed."

"We don't want any more killing than . . ." Prince Simon broke off suddenly. "I'm beginning to talk like his late Highness Crown Prince Edvard," he said. "He didn't want bloodshed, either, and look whose blood was shed. If they're doing what you think they are, I'm afraid we'll have to kill a few of your Space Vikings, too."

"They aren't my Space Vikings." He was a little surprised to find that, after almost eight years of bearing the name himself, he was using it as an other-people label. Well, why not? He was the ruler of the civilized planet of Tanith, wasn't he? "But let's not start fighting them till the main war's over. Those three shiploads are no worse than a bad cold; Makann and Dunnan are the plague."

It would still take four hours to get down, in a spiral of deceleration. They started the telecasts which had been filmed and taped on the voyage from Gimli. The Prince-Protector Simon Bentrik spoke: The illegal rule of the traitor Makann was ended. His deluded followers were advised to return to their allegiance to the Crown. The People's Watchmen were ordered to surrender their arms and disband; in localities where they refused, the loyal people were called upon to co-operate with the legitimate armed forces of the Crown in exterminating them, and would be furnished arms as soon as possible.

Little Princess Myrna spoke: "If my grandfather is still alive, he is your King; if he is not, I am your Queen, and until I am old enough to rule in my own right, I accept Prince Simon as Regent and Protector of the Realm, and I call on all of you to obey him as I will."

"You didn't say anything about representative government, or democracy, or the constitution," Trask mentioned. "And I noticed the use of the word 'rule,' instead of 'reign.'"

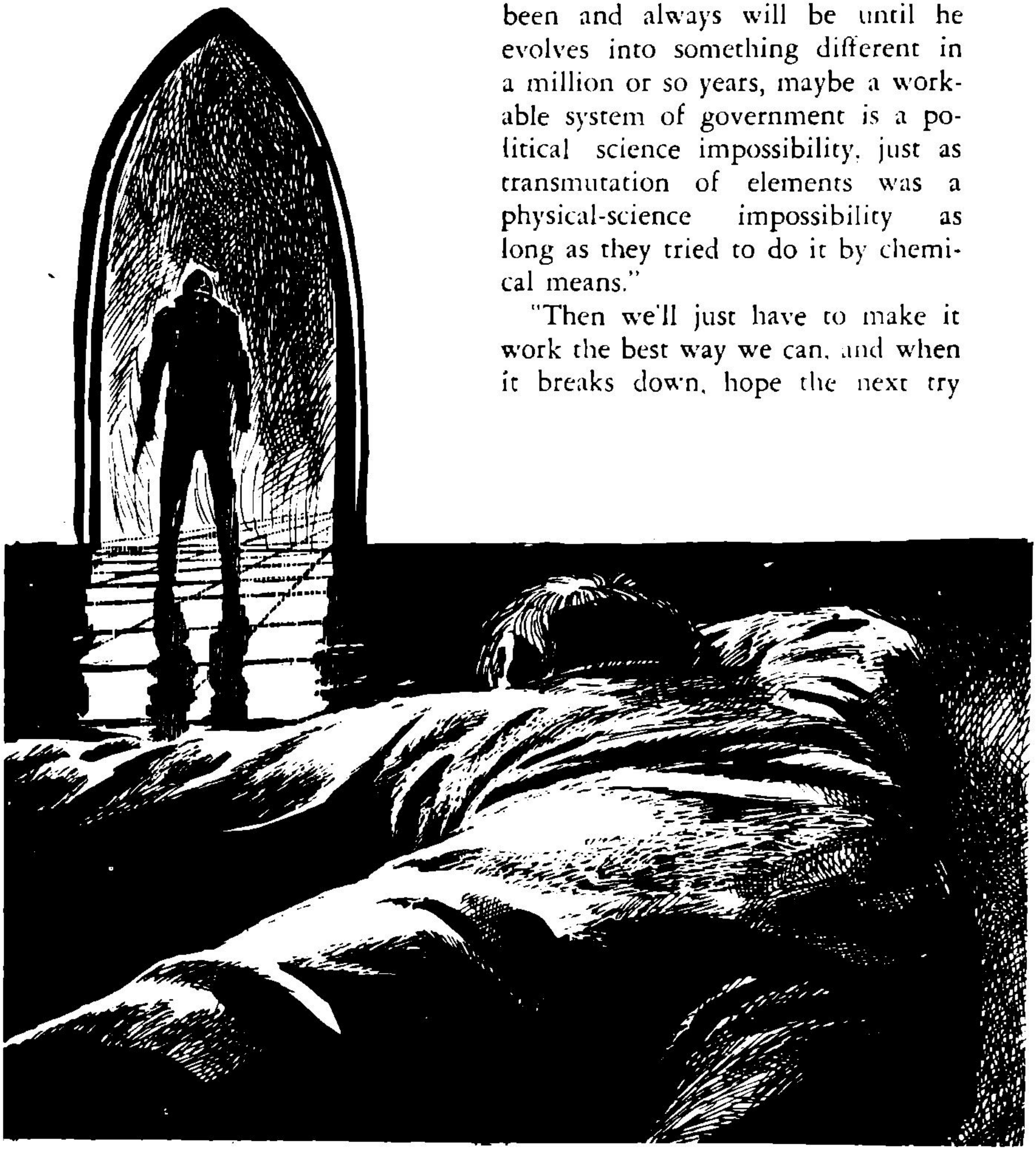
"That's right," the self-proclaimed Prince-Protector said. "There's something wrong with democracy. If there weren't, it couldn't be overthrown by people like Makann, attacking it from within by democratic procedures. I don't think it's fundamentally unworkable. I think it just has a few of what engineers call bugs. It's not safe to run a defective machine till you learn the defects and remedy them."

"Well, I hope you don't think our Sword-World feudalism doesn't have bugs." He gave examples, and then quoted Otto Harkaman about bar-

barism spreading downward from the top instead of upward from the bottom.

"It may just be," he added, "that there is something fundamentally unworkable about government itself. As long as *Homo sapiens terra* is a wild animal, which he has always been and always will be until he evolves into something different in a million or so years, maybe a workable system of government is a political science impossibility, just as transmutation of elements was a physical-science impossibility as long as they tried to do it by chemical means."

"Then we'll just have to make it work the best way we can, and when it breaks down, hope the next try



will work a little better, for a little longer," Bentrik said.

Malverton grew in the telescopic screens as they came down. The Navy Spaceport, where Trask had landed almost two years before, was in wreckage, sprinkled with damaged ships that had been blasted on the ground, and slagged by thermonuclear fires. There was fighting in the air all over the city proper, on building-tops, on the ground, and in the air. That would be the *Damnthing-Harpy-Curse of Cagn* Space Vikings. The Royal Palace was the center of one of half a dozen swirls of battle that had condensed out of the general skirmishing.

Paytrik Morland started for it with the first wave of ground-fighters from the *Nemesis*. The Gilgamesh freighter, like most of her ilk, had huge cargo ports all around; these began opening and disgorging a swarm of everything from landing-craft and hundred-foot airboats to one man air-cavalry single-mounts. The top landing-stages and terraces of the palace were almost obscured by the flashes of auto-cannon shells and the smoke and dust of projectiles. Then the first vehicles landed, the firing from the air stopped, and men fanned out as skirmishers, occasionally firing with small arms.

Trask and Bentrik were in the armory off the vehicle-bay, putting on combat equipment, when the twelve-year-old Count of Ravary joined them and began rummaging for weapons and a helmet.

"You're not going," his father told him. "I'll have enough to worry about taking care of myself . . ."

That was the wrong approach. Trask interrupted:

"You're to stay aboard, Count," he said. "As soon as things stabilize, Princess Myrna will have to come down. You'll act as her personal escort. And don't think you're being shoved into the background. She's Crown Princess, and if she isn't Queen now, she will be in a few years. Escorting her now will be the foundation of your naval career. There isn't a young officer in the Royal Navy who wouldn't trade places with you."

"That was the right way to handle him, Lucas," Bentrik approved, after the boy had gone away, proud of his opportunity and his responsibility.

"It'll do just what I said for him." He stopped for a moment, to play with an idea that had just struck him. "You know, the girl will be Queen in a few years, if she isn't now. Queens need Prince Consorts. Your son's a good boy; I liked him the first moment I saw him, and I've liked him better ever since. He'd be a good man on the throne beside Queen Myrna."

"Oh, that's out of the question. Not the matter of consanguinity, they're about a sixteenth cousin. But people would say I was abusing the Protectorship to marry my son onto the Throne."

"Simon, speaking as one sovereign prince to another, you have a lot to learn. You've learned one impor-

tant lesson already, that a ruler must be willing to use force and shed blood to enforcè his rule. You have to learn, too, that a ruler cannot afford to be guided by his fears of what people will say about him. Not even what history will say about him. A ruler's only judge is himself."

Bentrik slid the transpex visor of his helmet up and down experimentally, checked the chambers of his pistol and carbine.

"All that matters to me is the peace and well-being of Marduk. I'll have to talk it over with . . . with my only judge. Well, let's go.

The top terraces were secure when their car landed. More vehicles were coming down and discharging men; a swarm of landing craft were sinking past the building toward the ground two thousand feet below. Auto-weapons and small arms and light cannon banged, and bombs and recoilless-rifle shells crashed, on the lower terraces. They put the car down one of the shaftways until they ran into heavy fire from below, at the limit of the advance, and then turned into a broad hallway, floating high enough to clear the heads of the men on foot. It looked like the part of the Palace where he had lodged when he had been a guest there but it probably wasn't.

They came to hastily constructed barricades of furniture and statuary and furnishings, behind which Makann's People's Watchmen and Andray Dunnan's Space Vikings were making resistance. They entered rooms dusty with powdered plaster and acrid with powder fumes, littered with corpses. They passed lifter-skids being towed out with wounded. They went through rooms crowded with their own men—"*Keep your fingers off things; this isn't a looting expedition!*" "*You stupid cretin, how did you know there wasn't a man hiding behind that?*" In one huge room, ballroom or concert room or something, there were prisoners herded, and men from the *Nemesis* were setting up polyencaphalographic veridicators, sturdy chairs with wires and adjustable helmets and translucent globes mounted over them. A couple of Morland's men were hustling a People's Watchman to one and strapping him into a chair.

"You know what this is, don't you?" one of them was saying. "This is a veridicator. That globe'll light blue; the moment you try to lie to us, it'll turn red. And the moment it turns red, I'm going to hammer your teeth down your throat with the butt of this pistol."

"Have you found anything out about the King, yet?" Bentrik asked him.

He turned. "No. Nobody we've questioned so far knows anything later than a month ago about him. He just disappeared." He was going to say something else, saw Bentrik's face, and changed his mind.

"He's dead," Bentrik said dully. "They tortured him and brainwashed him and used him as a ventriloquist's dummy on the screen as long as they

could; when they couldn't let the people see him any more, they stuffed him into a converter."

They did find Zaspar Makann, hours later. Maybe he could have told them something, if he had been alive, but he and a few of his fanatical followers had barricaded themselves in the Throne room and died trying to defend it. They found Makann on the Throne, the top of his head blown away, a pistol death-gripped in his hand, and the Great Crown lying on the floor, the velvet inner cap bullet-pierced and splattered with blood and brain tissue. Prince Bentrik picked it up and looked at it disgustedly.

"We'll have to have something done about that," he said. "I really didn't think he'd do just this. I thought he wanted to abolish the Throne, not sit on it."

Except for one chandelier smashed and several corpses that had to be dragged out, the Ministerial Council room was intact. They set up headquarters there. Boake Valkanhayn and several other ship-captains joined them. There was fighting going on in several places inside the Palace, and the city was still in a turmoil. Somebody managed to get in touch with the captains of the *Damnthing*, the *Harpy* and the *Curse of Cagn* and bring them to the Palace. Trask attempted to reason with them, to no avail.

"Prince Trask, you're my friend, and you've always dealt fairly with me," Roger-fan-Morvill Esthersan said. "But you know just how far any Space Viking captain can control his crew. These men didn't come here to correct the political mistakes of Marduk. They came here for what they could haul away. I could get myself killed trying to stop them now . . ."

"I wouldn't even try," the captain of the *Curse of Cagn* put in. "I came here for what I could make out of this planet, myself."

"You can try to stop them," said the captain of the *Harpy*. "You'll find it even harder than what you're doing now."

Trask looked at some of the reports that had come in from elsewhere on the planet. Harkaman had landed on one of the big cities to the east, and the people had risen against Makann's local bosses and were helping wipe out the People's Watchmen with arms they had been furnished. Valkanhayn's exec had landed on a large concentration camp where close to ten thousand of Makann's political enemies had been penned; he had distributed all his available weapons and was calling for more. Gompertz of the *Grendelsbane* was at Drepplin; he reported just the reverse. The people there had risen in support of the Makann regime, and he wanted authorization to use nuclear weapons against them.

"Could you talk your people into going to some other city?" Trask asked. "We have a city for you; big industrial center. It ought to be fine looting. Drepplin."

"The people there are Mardukan subjects, too," Bentrik began. Then he shrugged. "It's not what we'd like

to do, it's what we have to. By all means, gentlemen. Take your men to Drepplin, and nobody will object to anything you do."

"And when you have that place looted out, try Abaddon. You were aground there, Captain Esthersan. You know what all Dunnan left there."

A couple of Space Vikings—no, Royal Army of Tanith men—brought in the old woman, dirty, in rags, almost exhausted.

"She wants to talk to Prince Bentrik; won't talk to anybody else. Says she knows where the King is."

Bentrik rose quickly, brought her to a chair, poured a glass of wine for her.

"He's still alive, Your Highness. The Crown Princess Melanie and I . . . I'm sorry, Your Highness; Dowager Crown Princess . . . have been taking care of him, the best way we could. If you'll only come quickly . . ."

Mikhyl VIII, Planetary King of Marduk, lay on a pallet of filthy bedding on the floor of a narrow room behind a mass-energy converter which disposed of the rubbish and sewage and generated power for some of the fixed equipment on one of the middle floors of the east wing of the palace. There was a bucket of water, and on a rough wooden bench lay a cloth-wrapped bundle of food. A woman, haggard and disheveled, wearing a suit of greasy mechanic's coveralls and nothing else, squatted beside him. The Crown Princess Melanie, whom Trask remembered as the charming and gracious hostess of Cragdale. She tried to rise, and staggered.

"Prince Bentrik! And it's Prince Trask of Tanith!" she cried. "Just hurry; get him out of here and to where he can be taken care of. Please." Then she sat down again on the floor and fell over, unconscious.

They couldn't get the story. The Princess Melanie had collapsed completely. Her companion, another noblewoman of the court, could only ramble disconnectedly. And the King merely lay, bathed and fed in a clean bed, and looked up at them wonderingly, as though nothing he saw or heard conveyed any meaning to him. The doctors could do nothing.

"He has no mind, no more mind than a new-born baby. We can keep him alive, I don't know how long. That's our professional duty. But it's no kindness to His Majesty."

The little pockets of resistance in the Palace were wiped out, through the next morning and afternoon. All but one, far underground, below the main power plant. They tried sleep-gas; the defenders had blowers and sent it back at them. They tried blasting; there was a limit to what the fabric of the building would stand. And nobody knew how long it would take to starve them out.

On the third day, a man crawled out, pushing a white shirt tied to the barrel of a carbine ahead of him.

"Is Prince Lucas Trask of Tanith here?" he asked. "I won't speak to anybody else."

They brought Trask quickly. All that was visible of the other man was the carbine-barrel and the white shirt. When Trask called to him, he raised his head above the rubble behind which he was hiding.

"Prince Trask, we have Andray Dunnan here; he was leading us, but now we've disarmed him and are holding him. If we turn him over to you, will you let us go?"

"If you all come out unarmed, and bring Dunnan with you, I promise you, the rest of you will be let outside this building and allowed to go away unharmed."

"All right. We'll be coming out in a minute." The man raised his voice. "It's agreed!" he called. "Bring him out."

There were fewer than two score of them. Some wore the uniforms of high officers of the People's Watchmen or of People's Welfare Party functionaries; a few wore the heavily braided short jackets of Space Viking officers. Among them, they propelled a thin-faced man with a pointed beard, and Trask had to look twice at him before he recognized the face of Andray Dunnan. It looked more like the face of Duke Angus of Wardshaven as he last remembered it. Dunnan looked at him in incurious contempt.

"Your dotard king couldn't rule without Zaspar Makann, and Makann couldn't rule without me, and neither can you," he said. "Shoot this gang of turncoats, and I'll rule Marduk for you." He looked at Trask again. "Who are you?" he demanded. "I don't know you."

Trask slipped the pistol from his holster, thumbing off the safety.

"I am Lucas Trask. You've heard that name before," he said. "Stand away from behind him, you people."

"Oh, yes; the poor fool who thought he was going to marry Elaine Karvall. Well, you won't, Lord Trask of Traskon. She loves me, not you. She's waiting for me now, on Gram . . ."

Trask shot him through the head. Dunnan's eyes widened in momentary incredulity; then his knees gave way, and he fell forward on his face. Trask thumbed on the safety and holstered the pistol, and looked at the body on the concrete.

It hadn't made the least difference. It had been like shooting a snake, or one of the nasty scorpion-things that infested the old buildings in Rivington. Just no more Andray Dunnan.

"Take that carrion and stuff it in a mass-energy converter," he said. "And I don't want anybody to mention the name of Andray Dunnan to me again."

He didn't look at them haul Dunnan's body away on a lifter-skid; he watched the fifty-odd leaders of the overthrown misgovernment of Marduk shamble away to freedom, guarded by Paytrik Morland's riflemen. Now there was something to reproach himself for; he'd committed a separate and distinct crime

against Marduk by letting each one of them live. Unless recognized and killed by somebody outside, every one of them would be at some villainy before next sunrise. Well, King Simon I could cope with that.

He started when he realized how he had thought of his friend. Well, why not? Mikhyl's mind was dead; his body would not survive it more than a year. Then a child Queen, and a long regency, and long regencies were dangerous. Better a strong King, in name as well as power. And the succession could be safeguarded by marrying Steven and Myrna. Myrna had accepted, at eight, that she must some day marry for reasons of state; why not her playmate Steven?

And Simon Bentrik would see the necessity. He was neither a fool nor a moral coward; he only needed to take some time to adjust to ideas. The rabble who had bought their lives with their leader's had gone, now. Slowly, he followed them, thinking.

Don't press the idea on Simon too hard; just expose him to it and let him adopt it. And there would be the treaty—Tanith, Marduk, Beowulf, Amaterasu; eventually, treaties with the other civilized planets. Nebulously, the idea of a League of Civilized Worlds began to take shape in his mind.

Be a good idea if he adopted the title of King of Tanith for himself. And cut loose from the Sword-Worlds; especially cut loose from Gram. Let Viktor of Xochitl have it. Or Garvan Spasso. Viktor wouldn't be the last Space Viking to take his ships back against the Sword-Worlds. Sooner or later, civilization in the Old Federation would drive them all home to loot the planets that had sent them out.

Well, if he was going to be a king, shouldn't he have a queen? Kings usually did. He climbed into the little hall-car and started up a long shaft. There was Valerie Alvarath. They'd enjoyed each other's society on the *Nemesis*. He wondered if she would want to make it permanent, even on a throne . . .

Elaine was with him. He felt her beside him, almost tangibly. Her voice was whispering to him: *She loves you, Lucas. She'll say yes. Be good to her, and she'll make you happy.* Then she was gone, and he knew that she would never return.

Good-by, Elaine.

CRUCIAL EXPERIMENT NO. 5

by Joseph F. Goodavage

"Here are the data. Make what you will, yourself, of them."—CHARLES FORT.

Donald A. Bradley, Max Woodbury and Glenn W. Brier, using IBM computers in the Research Division of NYU's College of Engineering, reported in the September 7, 1962 issue of *Science* that he noticed some "odd coincidences" between the positions of the planets and the weather. In his abstract: "Lunar Synodical Period and Widespread Precipitation," Bradley reports that it tends to rain after a New and Full Moon, and that flash floods in Texas are most likely to occur after a Full Moon.

It was carried by at least one wire service and covered in *Newsweek*, November 5, 1962.

And Dr. Irving P. Krick, Denver's long-range weather specialist, is at odds with Dr. Francis W. Reichelderfer, Chief of the United States Weather Bureau since 1939.

Dr. Krick (*National Observer*, September 24, 1962): "Our first evidence—as a consequence of H-bomb explosions—was that cold waves were more intense and penetrated farther south—snow in New Orleans last winter, for example."

Dr. Reichelderfer (*U. S. News and World Report*, October 29, 1962): "There were no changes in basic weather patterns after the radiation belts were affected by H-bomb explosions."

Dr. Krick, who has never completely revealed the basis for his amazingly accurate and successful weather forecasts is suspected by many of being an undeclared astrologer. If this be true, it is conceivable that some of the more superficial weather phenomena stated in his forecasts are detrimentally affected by H-bomb explosions which add to radiation belts in the high reaches of the atmosphere. This area is regarded by astrometeorologists as the "lens" through which planetary and Solar radiations must pass before having any precipitate effect on the lower atmosphere.

* * *

In the following October check-out, the actual weather was gleaned from reports in local newspapers and national periodicals, but mainly from the United States Weather Bureau's "Weekly Weather and Crop Bulletin," which gives a national run-down of each week's weather. Space limitation prevents a more detailed outline.

OCTOBER, 1962, WEATHER COMPARISONS

ASTRO FORECAST	ACTUAL WEATHER	RANDOM FORECAST
Southeastern states: high humidity; above normal temperatures. Semitropical lows from Alabama, Georgia, Florida areas. Isolated flash rains along Atlantic coast to amplify over Chesapeake Bay on October 1st and 2nd.	Temperatures four degrees above seasonal along South Atlantic coast. Rainfall totals over 1-in. Two in. from N. Florida to Ohio Valley; also 2-in. over Chesapeake Bay. Locally heavier totals scattered over much of area. Swainsboro, Ga., 7 in. in 24-hrs. W'msport, Pa., 6 in. for week ending Oct. 8th.	Early winter snow and hailstorms in Texas, New Mexico and Arizona on the 1st and 2nd. North and South Carolina: cold, clear and dry from the 3rd to 6th; —frost at night.
A pattern will be set by a northing low entering Pacific coast—Seattle, Washington and Portland, Ore. area on Oct. 4th. A *preview* of Nov.'s worst weather. This storm in e'ward transit to reach Buffalo-Albany area Oct. 7th and 8th.	"From the 4th to 7th, a severe coastal rainstorm, *in part due to Hurricane Daisy* offshore in the Atlantic, broke its old single rainstorm record. Flooding caused widespread damage in Massachusetts and Rhode Island."	Flash floods in Dakota and Montana on the 9th and 10th. High humidity and dense fogs in Colorado on the 8th and 9th.
From Oct. 7th to 9th, descending, gusty winds of varying velocities will develop around intense highs, one of which will dominate the Pacific coast from October 10th to 12th.	". . . Torrential rains and high winds battered the W. coast north of Monterrey . . . hurricane winds exceeded 100 mph along Ore. coast; rains over 7 in. In San Francisco, World Series delayed four days. Oregon declared disaster area."	For Florida, Alabama and Georgia; drizzling rain on October 9th to 13th. Heavy rain over the Mississippi River Valley and the Gulf States will flood levees on the 12th.

A southing low pressure area from Calif. coast to reach Ga. on 19th, will generate a complex merging pattern. N. of Bermuda this depression will develop acute intensity and powerful wind velocities—a classic pattern for unusual turbulence, which will ensue over 20th-21st.

Hurricane Ella described as "weird" due to 80-mile 'eye' (usually 20-miles in diameter) and no rains, swung north along the Atlantic coast, barely skirting land, and blew itself out in eastward transit over the Atlantic on the 22nd.

Southeastern states to receive hurricane warnings on the 20th as a new hurricane swings eastward from the Bahamas over the Atlantic coastline.

Unseasonable fall coolness from northern New England. On Oct. 28 a mass of frigid air over the Dakotas and Eastern Monatana will drop the Mercury and chill northern areas in eastward transit. Sharply falling temperatures over Duluth, Chicago, Detroit and Pittsburgh as October closes.

"CLEVELAND, Oct. 26 (UPI): The coldest weather ever recorded in October chilled some areas of the eastern third of the nation today. Cleveland, 23°; Huntington, W. Va., 16°; Charleston, W. Va., 7°; Cincinnati, 23°; Bismarck, N. Dakota, 11°. "CLEVELAND, Oct. 29 (AP): A cold blast of polar air hurled up to a foot of snow on sections of the Midwest and Norheast today . ."

Virginia to New York: variable weather from October 23rd to 30th, with generally below average temperatures and windy. Last week in the month—severe snowstorms for Massachusetts and Rhode Island. High winds and snows in Maine as October ends.

FEBRUARY HIGHLIGHTS

There is a critically-tested and long-established rule in astrometeorology: "When Saturn or Uranus is joined by Mercury or Venus between 300 and 330 degrees of geocentric longitude, it causes the quality of the season to be colder. If a conjunction or configuration falls at either a New or Full Moon, it becomes that much more effective. When the conjunction falls near the meridian or within angular distance thereof in key charts, it intensifies the planetary conjunction or aspect."

While checking other record cold winters against preceding seasonal key charts, we find that either Saturn

or Uranus was on the meridian in three-prong grouping at the region of maximum intensity. This same pattern centered over the Eastern states during a cold wave in February, 1905, and was confirmed again in 1934 when New York City recorded an all-time low of —15° on February 9th and the temperature dropped to —14° in Washington, D. C.

The key charts this winter show a marked similarity—with one exception. Venus is late for this party. But instead of a one-punch deep freeze, she is withholding her frost-bitten sojourn until March for the sixth installment of this experiment.

The bone-chilling sixty-five-year-old record low temperatures which swept southward into Texas, Mississippi and Louisiana in January, 1959 are correlated by both Saturn and Uranus in quadrature to the meridian over the Plains states.

ASTRO WEATHER
FEBRUARY

The increased intensity of arctic blasts stemming from the interior Midwest in eastward transit during the last week of January has probably *initiated* the approaching Deep Freeze. Low pressure patterns with counterclockwise air flows in the northwest quadrant for February denotes superabundant snowfalls, even in the normally dry northwestern states. Closely scattered, brief extremes will occur in higher elevations of the Far West. Cold weather will harden over the central states and intensify over the eastern third of the United States and Canada.

Abnormally high barometric readings—above thirty-one inches—will be reported in communities along the northern border from the upper lakes region anywhere eastward and into northern New England. Over higher elevations and inland the snow and ice will accumulate—and stick.

A greater pattern will be set by high pressure and low temperatures spawning from the Pacific Northwest on February 4th and 5th while a major low souths over California late on the 4th and spreads into the Southwest over the 5th and 6th to center over the South Atlantic states around midnight of the 7th.

The first of a series of bleak, raw winter periods is indicated from the 4th to the 8th over the Eastern third of the nation. Beginning on or immediately after February 3rd, another blast of polar air will descend through the Midwest, dropping record sub-zero temperatures eastward over the northern borders and extending far southward to grasp Middle and lower Atlantic states in a glacial grip.

Extremely complex patterns initially activated over the 4th and 5th will be developing over these Middle Atlantic states. No less than *three* solar-planetary and *four* mutual-planetary configurations will be converging in exact "magnetic" angles to the sensitive area bordered by Pittsburgh, Pa.; Buffalo, N.Y.; Raleigh, N.C.; and Washington, D.C. This area is now particularly sensitive to high relative humidity, low barometer, heavier cloudiness and high condensation—and will cause a tremendous

accretion of snowfall in eastward shift. The triggering of all these elements at once on February 8th poses a classic pattern of northing cold air masses drifting eastward while a low-pressure area pushes up the Atlantic coast. This augurs one phenomenal blizzard.

Expect storm emergencies on February 8th and 9th east of the Appalachians over coastal inlands and into northern New England. Planetary details are given above to correlate these celestial movements to the meteorological phenomena. They may be checked in any Ephemeris and possible cause and effect may be deduced.

A mass of arctic air stabbing southward into Texas and all Gulf coast areas on February 6th and 7th will invade Florida with the threat of destructively freezing temperatures in citrus-growing sections of the state on the morning of the 8th.

Except for a possible snowstorm in the northeast on Lincoln's birthday, the intensity of severe cold should abate slightly during the second week in southern portions of the Midwest and in the Southeast. But respites from this abnormal cold in the higher inlands will be transitory, especially in elevated areas of the northeast.

Inland rivers will freeze solidly and ice on the Great Lakes will cake to record thickness.

After the 15th, cold waves sweeping down from Canada on arctic gales will whip heavy snows over the eastern and southern shores of the Great Lakes region. Cold fronts centering over the Midwest will develop very high northwest wind velocities—also north of the Great Lakes—then drift eastward. This pattern will be previewed on the 14th by heavy snowfall on the eastern shores of Lake Michigan into Indiana and the Ohio Valley—and will penetrate into New York on the 15th.

A primary low coming from the Pacific northwest on the 19th will be preceded by rising temperatures as it moves eastward. Mountains of snow will pile up in northwest elevations and in the upper Midwest late on the 20th, continuing through the 21st.

This blizzard will strike into Michigan where it will mature; wind velocities will then increase to bury Pittsburgh and the storm will sweep eastward to pile snow deep in the canyons of New York on the late evening of the 22nd. Temperatures will drop sharply in the wake of this storm.

It could well be a disaster.

Immediately following the 24th there will be temporary moderation of temperatures in the Midwest.

Don't be fooled by it. A low pressure area originating on the pacific coast on the 25th will pile even more snow in the Mississippi Valley late on the 27th and reach New York on howling winds as a high pressure area centers north on February 28th or March 1st. In northern sections east of the Appalachians, powerful gales, extremely complex, unpredictable storms, snow and ice on the 28th will permeate New England on March 1st.

(*Continued from page 7*) spoke, for instance, of men being endowed by the Creator with "certain inalienable rights, among which are the right to Life, Liberty and the pursuit of Happiness." Obviously, they had a Finagle factor in there somewhere—because if these were God-given and inalienable rights, then, clearly it would be absolutely impossible to abrogate those rights, and there would have been no need to take up arms in their defense. Who has to take up arms in defense of the law of gravity? Either they didn't know what they were talking about, had a major Finagle factor in their equations, or didn't mean what they said.

When people try to solve their real-world problems with such fantasy equations as those with that meaningless Finagle Variable Constant in them . . . the results can be expected to be at minimum disappointing.

The world got along pretty much all right, so long as they used Finagle Factor thinking in politics and in technology—when Magic and Politics alike befuddled themselves with Variable Constants. The political equations didn't make sense—but that was all right; the technological equations were as bumbling and inept as the political. So, in the multiple names of the One God, Christian, Jew and Saracen had at each other with bumbling and inept weapons that couldn't kill more than one or two individuals at a time.

The trouble is, the Magi have learned to comb the curlicues out of their thinking, to make their equations read $E=mc^2$ instead of $E[?]=*m(c^*\pm?)$ and forced their thinking into hard, disciplined, effective terms that agree with reality—not with their own wishes.

And the Political Scientists are still working with Finagled concepts.

We're still using the same *kind* of thinking, in politics, that the Crusaders and the Saracens did—where each side was fighting in the name of the same One God.

That same kind of thinking had Nazis and Russians alike fighting for "democracy and national socialism." (While the British, who fought "for King and country" were hard at it with Japanese who were fighting for "King and country.")

And, that time, we took the hard, disciplined, no-Finagle-factors-allowed thinking of the ex-Magi, and made $E=mc^2$ put an abrupt and appalling end to that war.

In popular democracy, theory holds that the elected ruler chosen by the people should act in a manner to express the beliefs and wants of the people—whether they express his own, personal beliefs is to have no bearing on his actions. It is *not* necessary that he personally believe as the people do, but it *is* necessary that he act to express the will of the people with courage and honesty.

For instance, a devoutly Catholic judge believes, personally, that divorce should not exist—but as an

elected official of the people of his state, he should try divorce cases honestly and without bias of his personal, sincere beliefs.

This is almost universally agreed on by those who claim Democracy is what they want. But their "That's what I believe," should be written as "That's* what I believe," with a Finagle operator in place . . . because they won't accept that.

Governor Ross Barnett, of Mississippi recently acted in a manner precisely aligned with that concept of the proper behavior of a true democratic elected executive; he expressed the beliefs of the electorate of his state honestly and courageously . . . and was attacked *personally* by the United States courts, since he—not the People of the State of Mississippi whom he was in fact correctly representing—was threatened with Contempt of Court penalties which would have jailed *him,* and fined *him.*

If a senator from the State of Mississippi has the right of immunity to arrest—why shouldn't a Chief Executive of the State, when that Chief Executive is properly doing the democratic duty which he swore to fulfill —to express honestly and courageously the beliefs of his electorate?

Now before you blow your stack completely—notice where the gimmick in that actually lies. The question of ethics, of morality, justice, and right, *does not enter at all.*

One of the Finagled Truths* of the democracy concept is that *the will of the people is never wrong.* That the people may be misled, or misrepresented, or in one way or another have the blame for sheer, plain, simple stupidity and/or bull-headedness transferred from the sacred People—"Vox Populi Vox Dei!" and don't argue with the Sacred Gods of our beliefs!—to some individual.

The fact of the matter is that the people of Mississippi wanted precisely what Barnett was trying hard to give them.

All the people? Hell, no! But the *majority* did—as powerfully attested at the previous election, in which Barnett had run on a wholehearted, all-out segregationist platform. The electorate of Mississippi voted for that; it was what they wanted, and Barnett is a hero in his own state now, because he fulfilled his proper democratic duty. He defended the beliefs of his electorate.

The fact that forty-five per cent or so of the people of Mississippi can't vote has nothing whatever to do with the situation—under the standard concepts of democracy! The Negroes can't vote, but that situation is the result of the votes of the electorate—and the fifty-five per cent who do vote are a majority, and under the rules of democracy the minority should peaceably accept the decision of the majority, shouldn't they? Or should the Republicans have started an insurrection when Nixon lost by so narrow a margin?

And under the usual slop-happy, highly-Finagled terms of "Democracy," what happened to the Jews in Germany under the Nazis was per-

fectly democratic; the Hitler crew were elected by a majority of the voters, and their program was accepted by a majority of the voters—which, says "democracy*" makes it the Voice of The People and therefore The Voice of God. The People couldn't *possibly* be considered stupid, immoral, unethical, bull-headed, or anything but the vehicle of Divine Truth.

If Barnett had gone against the direct and expressed will of the people who elected him, and forced them to accept a change in their beliefs, wants, and desires against their will —would he have been acting as a proper elected democratic official? No, he would have been doing what an autocrat, a tyrant, does—forcing his ideas of morality, justice and righteousness on an unwilling people.

Currently, we believe Castro is doing that sort of thing to the Cuban people—forcing the Cuban people to accept a type of politico-economic system they did not choose. Notice that to do it, Castro has had to call in high-power military assistance from outside. If Barnett had chosen to impose on his electorate an unwanted, and specifically rejected program—integration—he would have had to call in external military force.

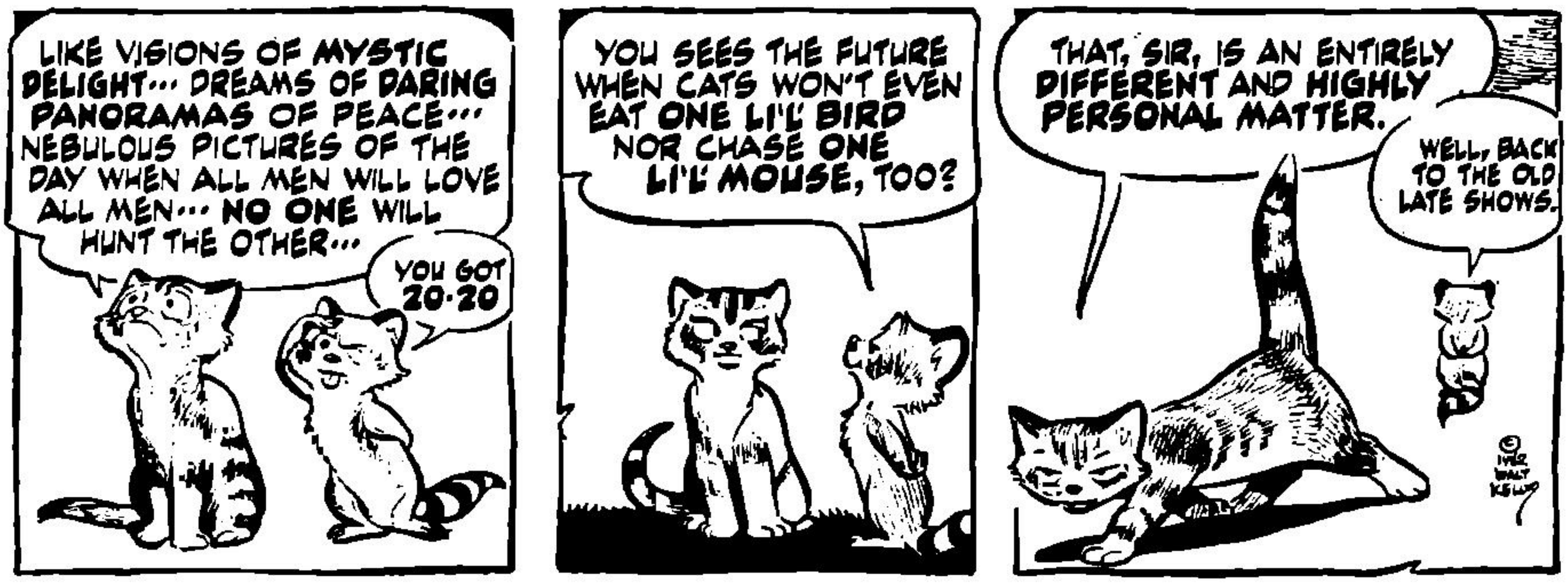
As it was, of course, the external military force was pushed in against his will.

It's interesting to consider another favorite and much-Finagled term these days—"colonialism." Colonialism is usually taken to mean that a big military power imposes its ideas and ways of life on a smaller people who are unable to defend themselves against superior force. You know—like the Russians invading Hungary to re-impose a Communist government, or Kennedy invading Mississippi to impose integration, or Indonesia moving into New Guinea to impose their way of life on the hapless and defenseless natives.

I want it very clearly understood that I am absolutely *not* arguing either pro or con, I am *not* arguing justice, morality, or anything else at that level.

I am simply saying "You don't know what you're talking about! You haven't defined your terms! You're trying to run this world by Political Magic, in which anything you want is true because you want it, not by political *Scie*nce in which you define terms, and study their real-world relationships."

So long as "democracy" means



"The way I want things to be done—that's 'democracy'," and "colonialism" turns out to be "a use of force that I don't like for purposes that make me mad," you're trying to run the world by Political Magic.

Unfortunately, physical scientists have developed the immense powers of the real Universe . . . and they are now, at the disposal of political Black Magicians. And, even more unfortunately, a "Black Magician" is, and always has been, "a Magician working *for* the things I'm working hard *against*." He—not you!—may be in the right.

Ah, but that's the soul-satisfying advantage of Finagle Factors! They *always* turn *any* wrong Answer into the Right Answer! No matter how complex, how difficult the problem, with a handy Finagle Factor, all can be made Right! If we had only the proposition "The use of force to impose unwanted beliefs on a people is wrong," we would be terribly limited —unable to spread our Light, as we know it should be. But with the simple addition of a Finagle operator, all is set aright! "The use of force* to impose* unwanted* beliefs on a people is wrong*" is perfectly acceptable! "Force" now is subject to the Variable Constant, and the term means only what we want it to mean. Thus when *we* wave immense military power over someone's head—that isn't force, it's merely peaceful persuasion. Of course, when The Enemy does that, *they're* using force.

And, of course, "impose" *really* means forcing someone to accept something that isn't good for him—it doesn't really mean making him do what *we* know he should because it will be good for him in the long run.

The rest of the Finagled terms can be manipulated in the same Variable Constant adjustment manner—and lo! the Wrong Answer quickly becomes the Right Answer!

The greatest Finagle Factory in the world is Political Magic.

The Editor.

the Reference Library

P. Schuyler Miller

SEVEN DAYS IN MAY, by Fletcher Knebel & Charles W. Bailey II. Harper & Row, New York. 1962. 341 pp. $4.95

FAIL-SAFE, by Eugene Burdick & Harvey Wheeler. McGraw-Hill Book Co., N.Y. 1962. $4.50

This has been a tough fall for the United States Presidency. In addition to the two monster novels listed above, in each of which a future President of the United States takes a clobbering, Allen Drury and Doubleday have produced a 603-page, $6.95 sequel to his novel-play-film "Advise and Consent." *McCall's*, which published excerpts, advertised this as if it were to be the story of a future war with Russia; actually, the book deals mainly with racial tensions in the United States and the United Nations.

The books before us are both, we are told, fictionalizations of possible crises which the authors believe may come upon us. Both pairs of authors are newspaper correspondents, Knebel and Bailey in Washington, Burdick and Wheeler at least formerly in Asia where they gathered material for their "The Ugly American" and discovered that publishers will take criticism in the form of fiction when they won't print it as fact.

"Seven Days in May" describes a plot by the Joint Chiefs of Staff to seize an unpopular President during a nationwide practice alert, and set up a military government headed by their Chairman, General James M. Scott. The authors have said, in a lead article for *Look*, that they believe it could well happen here, though not necessarily in 1974 —the year of their story. An inkling of the plot is obtained accidentally by a loyal Marine colonel, Martin Casey, on Sunday duty at the Pentagon. He takes his suspicions to the White House, where they mesh with other facts already known to the President and his advisers. Soon a small cadre of investigators is working to verify what Casey sus-

pects, learn when the coup will come, and devise a plan to block it. There is more physical action than you might expect as the seventh day draws near, but the story itself, well bolstered with authentic Washington local color, is secondary to the authors'—and President Eisenhower's—warning that it can happen here if we complacently decide that the Pentagon knows what's best.

"Fail-Safe" is another warning, but this time in the field of technology. Messers. Burdick and Wheeler are saying that we may have reached the point where a mechanical or electrical accident can precipitate a war. The argument is not novel to seasoned science-fiction readers, though it may be to the general public; at any rate, the mass of detail which the authors have built up to describe our SAC defense system in minute detail makes the book far more convincing than the paperbacks we've seen.

In this case the crisis is precipitated during an actual alert, set off when a BOAC air liner on the trans-polar route goes off course and appears in the radar of the DEW Line and the Omaha War Room as a possible Russian bomber. The standard defense procedure is put into action—and then, when the nature of the supposed bogey is known, one flight of six bombers continues past their "fail safe" point and heads for Moscow, loaded with hydrogen bombs and under automatically transmitted orders to dump them on the Soviet capital. A transistor has burned out in the Omaha network, and the defense machinery has done the rest. The President's attempts to order the bombers back, then to stop them with our own forces, and finally to help the Russians shoot them down, make a fascinating story which builds to an inevitable but arguable climax. The authors, for my money, waste far too much of the early portions of their book building up the life-histories of a few of their characters; the nameless President, who could be named Kennedy, gets less delineation than he deserves.

As this is written, I have seen only the galleys for "Fail Safe." Scuttlebutt has it that the Pentagon is horrified over the "secrets" spilled by the Washington-wise authors. So far as I can see, in spite of the convincing realism of their

data, just about everything they use has been published somewhere, in newspaper and magazine articles on our defense setup. Where they seem to have guessed or extrapolated, they have sometimes guessed wrong; for example, I strongly doubt that a TV camera in a passing satellite can zoom in and pick up a snapshot in the hand of a Russian soldier at a Siberian missile base. It is probably not true that the failure of one transistor could send bombers to Moscow—but the authors' message is made crystal clear: we must never turn the responsibility for deciding the fate of the nation and the world over to machines, however infallible we like to think them. And they are honest in a further degree: it is the military and the politicians, not the engineers, who insist on that hallucinatory infallibility. The people who make them know that machines can fail; the people who use them dread that knowledge.

LORD OF THUNDER, by Andre Norton. Harcourt, Brace & World, Inc., New York. 1962. 192 pp. $3.25

Here we go again with another Miller paean of praise for an Andre Norton interplanetary adventure yarn, this time a sequel to "The Beast Master." Hosteen Storm, the young Navaho whose rapport with his animal and bird companions was so well developed in the earlier book, is asked to undertake a mission into "the Blue" beyond the farthest explored ranges, where a lifeboat is thought to be down. But this is the very region to which all the Norbies—the horned natives of Arzor—have been summoned for a great powwow of civilized and savage tribes alike. It is a region of mystery and magic, where an ancient race once had a hidden stronghold and where remnants of the Xik, the alien foes who destroyed Earth before they were themselves destroyed, may still be hiding.

Of course Hosteen Storm does go into the Blue and does encounter mysteries of the Norbies and of the Ancient Ones. He solves the fate of the lifeboat and the reason for the Norbie migration. As has been pointed out in an excellent article in the fanzine, *Salamander*—which I have no business or intention of discussing here—Miss Norton's plots are simple, and intended for teen-age readers, though most of her science fiction has been very properly reprinted as adult fare.

I keep raving over these books simply because I read them for the "plus" values that are in every one of them, quite apart from the maneuverings of the plot. I am not much concerned with what is going to happen next, but with *how* and *why* it happens and what the happening will do to fill in the incomparably rich tapestry the author is weaving. In this book we get glimpses of the intricate society of the Norbies, and with Hosteen Storm begin to understand them as people whose world is being usurped

by mankind—as the America of Hosteen's Indian ancestors was usurped centuries before by European invaders. We learn more about Arzor, completely strange and completely real, unlike Earth even in its similarities. We get more brief, vivid, paradoxical glimpses of the mighty lost civilization of the Ancient Ones.

Most important, to me at least, is the fact that as fully and richly as Andre Norton paints her pictures and weaves her tapestries of other worlds, she always leaves something for the reader to fill in—a chance for an unexercised imagination, dulled on TV gunfights, to stretch itself and come to the very important understanding that there is always something more to know and unsuspected ways of finding out. The very fact that all the loose ends are never neatly and explicitly tied up in the last chapter gives these stories a value far beyond the average. Or so I will continue to believe, while I enjoy what I am shown of worlds as real as ours.

THE SCIENCE-FICTIONAL SHERLOCK HOLMES, edited by Robert C. Peterson. The Council of Four, 2845 South Gilpin St., Denver 10, Colorado. 1960. 137 pp. $3.00

By vagaries of the mails, my original comments on this fascinating little volume seem never to have reached your editor. Meanwhile it has also developed that the original $5.00 price was wrong—so here we go again.

The volume at hand represents a hybridization of two interlocking enthusiasms, the disciples of Sherlock Holmes and science fiction fandom. As Anthony Boucher points out in his introduction, Holmes was a scientific detective and some of his most potent adversaries were scientists. The pastiches and Holmes-related yarns in this collection, however, are all by authors identified with the science fiction and fantasy fields. In Poul Anderson's "The Martian Crown Jewels," for example, the mystery of the missing jewels is solved by Syaloch of the Street of Those Who Prepare Nourishment in Ovens, a Martian emulator of the great detective. In "The Adventure of the Misplaced Hound," by Anderson and Gordon Dickson, those inimitable hazards to sanity, the Hokas, *become* Holmes and Watson when there is a mystery to be unraveled. And in "The Return," by H. Beam Piper and John J. McGuire—published here in 1954—we have an excellent "straight" story in which explorers surveying the wreckage of a post-atomic-holocaust civilization come upon a vigorous center of culture here at Pittsburgh, based on a strange group of Sacred Books.

Anthony Boucher has himself contributed two stories: the very short "The Greatest Tertian," in which scholars of the far future try to unravel the puzzle of Sherk Oms and Sherk Sper, and "The Anomaly of the Empty Man," a science-fictional mystery solved by one Dr.

Verner, a relative of Holmes' on his mother's side. Mack Reynolds and August Derleth have collaborated in two of the adventures of that most Holmesian of non-Holmeses, Solar Pons: "The Adventure of the Snith in Time," in which Pons comes to grips with the theft of a set of Pogo originals via time-machine, and "The Adventure of the Ball of Nostradamus, " in which the problem is tampering with the future.

Grand fun, let me assure you—whether you are a follower of Holmes or not. But dig Holmes and you'll enjoy the book all the more.

OR ALL THE SEAS WITH OYSTERS, by Avram Davidson. Berkley Books, New York. No. F-639. 376 pp. 50¢

If there were a "Hugo' award for the best short story collection of the year, this first collection by the inimitable Avram Davidson would be the top contender. I don't know a writer today who gives us greater variety with consistently greater skill and warmth. If I've given the mid-century to Arthur Clarke, maybe Avram Davidson can finish it off.

The sixteen stories in the book have been published between 1954 and 1960, in *Fantasy & Science Fiction, Venture*—one, and *Galaxy*—two. This means that they have the very distinct flavor of an editorial policy that allows fantasy equal emphasis with science, places extra stress on literary quality, and has inherited a little of the character that we once looked for in *Unknown Worlds.* There is humor—a gentle humor that can produce triple-takes on occasion and improves with reflection. In fact, these are stories that repay rereading. Some of the stories, with historical backgrounds, suggest that the author could produce historical fiction of the best kind, which recreates an era while leaving the furniture out of the way of the actors. But to our tally—

"Hugo"-winning "Or All the Seas with Oysters" needs no comments by now. "Now Let Us Sleep" twists your guts as you wonder who are the Yahoos—the hapless folk herded as experimental cattle, or the brutalized scientists who use them. "The Grantha Sighting" is just about the best flying saucer story I know—and the most delightful. "Help! I Am Dr. Morris Goldpepper" is another of the author's multi-level stories: open comedy and broad satire on Big Dentistry.

"The Sixth Season" is as close to being a conventional other-world story as there is in the book. "Negra Sum" is a conventional amulet story, made unconventional by the writing. Next comes a story that I wish had earned its author a "Hugo"—"Or the Grasses Grow," in which a dwindling Indian tribe, driven off its reservation by Congress, draws on one last resource. It's my favorite.

It's magic again, of a peculiarly urban kind, in "My Boy Friend's Name Jello"—and this brings up another of the Davidson paradoxes, for nobody handles the atmosphere and flavor of metropolitan backwaters better, yet the same typewriter catches the

atmosphere of the rural slum in "Grasses." "The Golem," one of the author's best known stories, is *the* android story to end all android stories.

"Summerland" is another minor item: a familiar seance vignette that still comes to vivid life while you read it. "King's Evil" is one of those evocations of the past I mentioned: a strange episode in the life of a noted mesmerist, in London of the late Eighteenth Century. "I Do Not Hear You, Sir" links the same period to ours with an outrageously improbable invention. "Great Is Diana" might be a fable inspired by the mammary fixation of this era, and "Author, Author" is a weirdie in which a writer creates his own nemesis. "Dagon"—oriental magic this time, in Peking of 1945, and a collision of cultures there. "The Montavarde Camera"—another blend of antiquarianism and magic. And "The Woman Who Thought She Could Read"—homely, old-country white magic with dark fringes.

BRAIN TWISTER, by Mark Phillips. Pyramid Books, New York. No. F-783. 144 pp. 40¢

The new title disguises the rollicking serial published here in 1959 as "That Sweet Little Old Lady". The name "Mark Phillips," it appears, disguises a collaboration by Randall Garrett and Laurence M. Janifer.

This, you can hardly help recalling, was the first of the adventures of Kenneth J. Malone, who come 1971 is an agent in Her Majesty's FBI—Her Majesty being the sweet little old lady, locked up in a loony bin, who considers herself Elizabeth Tudor and who is a busy telepath. It's the story of the telepathic spy that has the FBI in stitches, and of Malone's fellow-agent who has to disguise himself as Henry VIII—remember him glowering on the cover, three years ago?

I hardly have to describe one of the best-liked stories the magazine has had in years. Buy the book and have fun again.

CONDITIONALLY HUMAN, by Walter M. Miller Jr., Ballantine Books, N. Y. No. F-626. 191 pp. 50¢

There are only three stories in this collection—novelettes, all long, all good, with the depth of characterization and emotional development that this author practically guarantees. You may remember them all.

The title story takes us to a time when biologists have been able to convert animals into surrogate children for a society with too many people. Even that society would take it ill if you were to bash in your child's skull, or leave it in the street to starve, but taking out your hostilities on a Cat-Q or a Dog-F, or even a neutroid—a Chimp-K—is quite in order. They're not human, after all. But there comes a time when one Chimp may be more human than her makers intended, and District Inspector Norris must find her and destroy her.

"The Darfsteller," next, was here in 1954 and won the "Hugo" for Best Novelette the following year in Cleveland. It describes the problem of a once good actor, displaced by an

android form of theater, who plots for an opportunity to appear just once more in the play that made him great. It's human, it's social commentary, and it constructs a fascinating technology to boot.

The third story, "Dark Benediction," gives us one whole man in a world where a plague from space has covered everyone with a grim, gray, infectious pseudo-skin and filled the "dermies" with an unholy lust to paw and fondle uninfected bodies. Paul Oberlin rescues a dermie girl from her tormenters, then finds that he must cast his lot with the diseased. The story shows well this author's ability to create situations in which black is never wholly black, nor white white, where decisions are matters of value and judgment rather than right or wrong. These were qualities that won him another "Hugo" for his novel, "A Canticle for Leibowitz," and they may win him more.

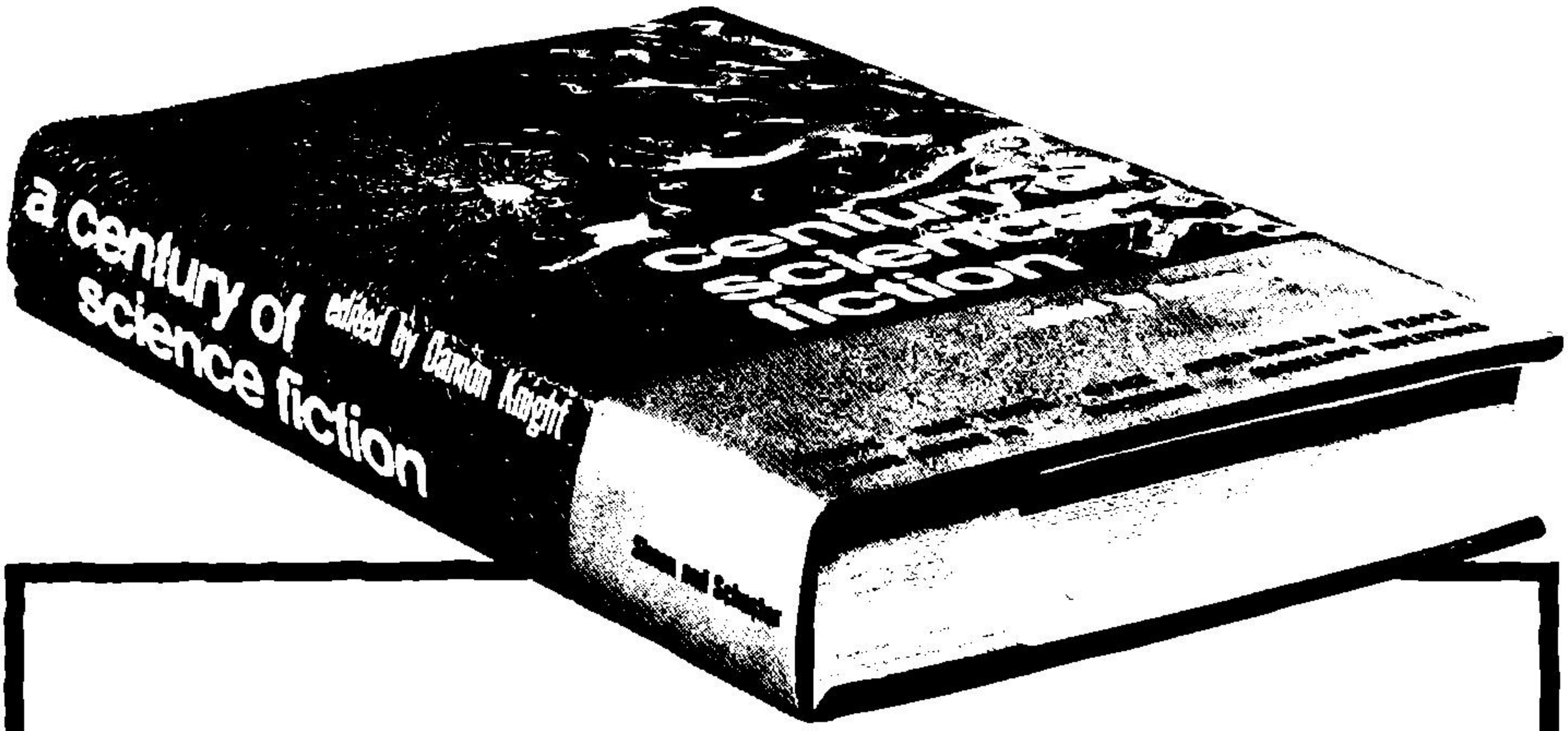
"Conditionally Human" is a book that deserves hard covers far more than some collections that get them —the new Bradbury re-assortment for example.

R IS FOR ROCKET, by Ray Bradbury. Doubleday & Co., Garden City, N.Y. 1962. 233 pp. $2.95

If you are Ray Bradbury—the one science-fiction writer whose name is known to intellectuals and librarians —I suppose that it's legitimate, when no new stories are forthcoming, to make up a new collection of stories from former collections. At any rate, that's what this book is.

According to the publisher the seventeen stories in the book include "several that have not appeared before in book form." According to my count, "several" means "two"—the title story and "Frost and Fire," both of which presumably appeared in magazines under other titles and possibly under pseudonyms, since they are not in the indexes. The first is an introspective story of the growing up of a boy near a rocket port; the second describes a struggle for life on a terribly strange world where radiations cut the life-span to eight days.

The others are re-reprinted from previous Bradbury short-story collections, with the exception of "The Martian Chronicles". From "The Illustrated Man": "The Rocket," "The Rocket Man," "The Long Rain," and "The Exiles." From "Golden Apples of the Sun": "The Fog Horn," "The Golden Apples of the Sun," and "A Sound of Thunder." From "A Medicine for Melancholy": "The End of the Beginning," "The Strawberry Window," "The Dragon," and "The Gift." From "October Country," "Uncle Einar." From "New Tales of Space and Time," "Here There Be Tygers." And from the novel, "Dandelion Wine," two episodes: "The Time Machine" and "The Sound of Summer Running." ■



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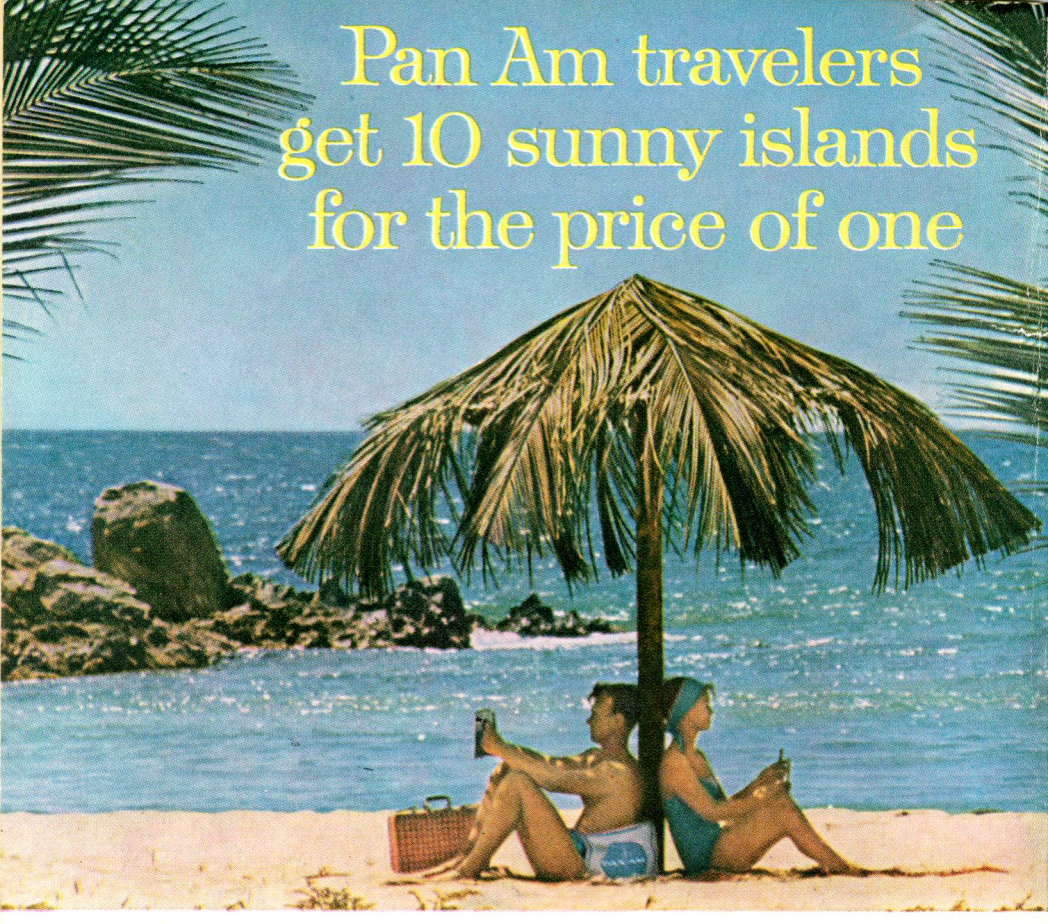

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