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## ***what was*** **THE POWER**

. . . that, wielded by a superhuman killer, could make a sane man attempt to walk off a pier . . .

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. . . could allow the one possessing it to look different to everybody who saw him . . .

. . . could turn a prim, proper girl into a beautiful, brazen nymph flaunting her body to tease a man . . .

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# Bluebook

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Bluebook's Cover by Fred Freeman

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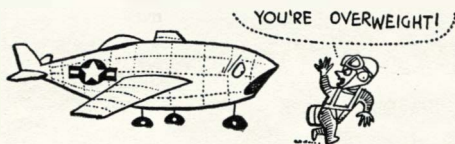
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# Pro and Con

## Are Red Planes Better?

It was with profound relief that I read your December article, "Why Russian Planes Are Better Than Ours." Finally, a magazine has had the courage to call a spade a spade.

I can too vividly remember how the Jap Zero was called "flimsy" in World War II. I have yet to talk with a pilot who fought against this ship express anything but



a desire to swap even for his P-47 or 51 or Hellcat or Corsair or any other plane we used except, maybe, the pre-WW II Wildcat.

The Zero was far superior to our ships for the same reason the MIG is now. Doesn't the Air Force ever learn? Civil aviation has proven for years that the equipment used by the Air Force in their planes is completely unnecessary.

With less equipment civil aviation has established a safety record that the military couldn't touch with a 90-foot pole. I have been flying light planes for more than 15 years and for over 100,000 miles, and have yet to get in trouble of any kind due to a lack of equipment. In fact I am now flying a 1938 Aeronca KCA that doesn't even have a radio, and yet I have no trouble at all with getting lost.

Is the excessive equipment necessary? In a very few cases, such as in intercontinental bombers, yes; but in fighters, no.

It is time the leaders of the Air Force came out of their shells long enough to find out which direction is up.

Robert R. Longo, *Wichita, Kan.*

I am not a military pilot, nor am I in the USAF, neither have I ever held a control stick larger than that of a Piper J-3. As a matter of fact, my primary mission is to shoot jets down! However, I have been a plane "nut" by choice and a student of enemy aircraft by necessity. And I feel that Michael Gladych's article contains glaring lapses of logic.

Is the F-86 too heavy? If you're looking for a short-range interceptor, yes. But are we? We don't want a specialized interceptor in the F-86. We want a fighter-bomber. I think I'd laugh myself silly watching a Gnat trying to get off the ground with a full load of tactical ordnance.

I should imagine there are many GI's who have breathed more easily while watching a Sabre give the napalm-barbecue treatment to a T-34 tank.

There is nothing wrong with heavy planes, providing they are doing the job they were designed for. Using Mr.

Gladych's analogy, a Jag will run rings around a Ford, but will it pull a house trailer?

Lt. Myron D. Weisberg, *Fort Bliss, Tex.*

*According to the Jaguar people in New York City, yes.—Ed.*

Being an airplane mechanic of sorts I can see the joys of an uncluttered lightweight fighter. But the real clincher comes when Gladych tells of the 17 ANG squadrons on alert in the country. Very true, we are one of the country's first lines of defense.

But instead of listening to the wails of the 101st Fighter Wing bemoaning the fact that they have to fly such clunks as F-94B's, I think he should have visited the 148th Fighter Interceptor Squadron, ANG, at Spaatz Field, Pa.

Down here we would gladly take those F-94B's in place of our even more tired F-51D Mustangs.

S/Sgt. David W. Thomen, *Spaatz Field, Pa.*

## Do Constrictors Squeeze?

The statement was made in Dunlavy's November article on snakes that pythons do not crush their victims. Alexander Lake, for years a top professional hunter in Africa, said: "Like all constrictors, [the python] kills by squeezing."

Again your writer says of snakes: "Their speed is largely illusion." Brother! Mr. Lake held a stop watch



on a lizard doing over 20 miles an hour (Transvaal) and although the lizard had a 50-foot start he was caught in 70 yards by a "black mamba."

I do enjoy your magazine, but I am also partial to accuracy.

Paul J. Cuttle, *Toronto, Ont.*

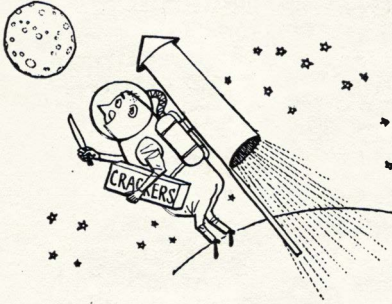
So is John Dunlavy, who refers you to "Snakes of the World," by the late Raymond L. Ditmars, the world's leading authority on snakes. There you'll find a full explanation of how constrictors kill by suffocating victims instead of crushing them. You'll also find reference to the speed of snakes. To quote another source, National Geographic, Sept. 1954: "Although some snakes can escape from a man running over rough terrain covered with underbrush, they can keep up such speed for only a brief time. Our fastest species, the western whip snake, crawls at the rate of scarcely more than three miles per hour."  
—Ed.

## Next Stop: the Moon!

Your article in the November issue, "We CAN Build a Space Ship—SHOULD We?" will not go unchallenged by me.

The first part of your title is true, and I agree wholeheartedly with the idea. Only I don't intend to wait. Come hell, high water or the government, I'm going just the same.

By now you think I'm nuts, and I don't blame you. Any ignorant savage who calls himself civilized would say I'm nuts.



I'm starting to build a small, man-carrying space ship this coming summer. I'll bring you a piece of green cheese!

Abraham J. Ausman, *President  
Inter-Galactic Worlds' Federation  
Anchorage, Alaska*

*We'll be waiting.*—Ed.

There seems to be little doubt that man will succeed in shooting satellites out into space which will take up an orbit around our little mud-ball.

Yes, the moon will be conquered, and perhaps Mars. But in two places in the article, mention is made of voyages out to the stars. Hold on there, Betsy! Let's go into some fairly simple arithmetic:

I'm going to take a cruising speed of 50,000 MPH, and determine how long it would take to reach the nearest star, Alpha Centauri—a mere 4.3 light years from our sun. A light year is . . . nearly 6 trillion miles. Thus, the trip would take 57,800 years. We would arrive at Alpha Centauri around the year 59756.

Did someone say, "within the lifetime of many?" It sure'n hell lets this backyard scientist out!

You'd better take along plenty of oxygen—and yes—plenty of canned beans.

Lloyd McWilliams, *member  
Royal Astronomical Society  
Quebec, Canada*

*We're taking along a book called "How to Grow Old Gracefully."*—Ed.

## Topsy-Turvy

At first I didn't understand the small illustration accompanying the story, "The Price of a Tin Star" (November). Then I turned the magazine upside down.

Success! A gun and gun belt.

The illustration was perfect—but why was it printed upside down?

Mrs. John E. Wilson, *Holidaysburg, Pa.*

*It was done by a dude printer. Another printer, from Texas, caught the error, but only after several thousand copies were printed. Since we never make mistakes, you've got yourself a collector's item.*—Ed.

## Your Move, Bub

In your December issue I find one article that should have been in *Reader's Digest*. It was, for at least a part, a reprint of an article from one of the heating contractor's publications. No credit was given.

The article I am referring to is "You Either Get Swindled or Frozen," supposedly by Wallace Croatman. Regardless of the worth of the article, plagiarism should not be condoned by a magazine of BLUEBOOK's caliber.  
Lincoln M. Horton, *Detroit, Mich.*

*We suggest next time, before you make loose accusations, you at least read the article. Midway through this one, there's a detailed anecdote about a guy who bought a \$30,000 home and got a two-bit heating plant. As was clearly stated in the article, the source of this anecdote was Heating, Air Conditioning and Sheet Metal Contractor. The fact that the anecdote appeared originally in a trade magazine for heating contractors gave the whole thing an added validity.*

## Miracle Diet

In reference to "In the Lion's Jaws" (December), by Paul Johnstone, page 37 says of Wolhuter: "Fat, dumb and happy," he rode into the jaws of death."

However, page 38 says of his belt: ". . . lucky that he was slim enough to have plenty of extra holes!"

Please explain his loss of weight.

Harry C. Staffell, *London, Ont.*

*Aha! Thought you caught us, eh? "Fat, dumb and happy" is an expression that means unreasonably complacent; the author put quotes around it to indicate that he wasn't describing Wolhuter's physical appearance, but his attitude.*—Ed.

*Address all letters to: The Editor, Bluebook Magazine, 230 Park Avenue, New York 17, N.Y.*

## ...AND YOU CAN'T LIVE WITHOUT 'EM



**"You only married me for my money?  
Ye gods, why didn't you speak up  
before? I'd have given you money."**

Bluebook 8111

# The HEAD MAN

by Oren Arnold



Who else can remember how insufferably humid and hot it was last August? Who else is trying to put aside a little money to get at least one room refrigerated come July? Had nearly \$100 toward it, but went to town Thursday night with Adele, and that pretty turquoise-and-silver dress in the show window just fitted her, and—well, a man needs pride before comfort, I reckon.

Even with springtime exuberance, you should drive carefully and not insist on having your rites.

“My stomach,” reports neighbor K. T. Palmer, “is just like the government. When it’s functioning properly I scarcely know I have one.”

As I look among my male acquaintances I realize that while many are known for their deeds, almost as many are known for their mortgages.

Cards of sympathy should be mailed to my brother-in-law Mr. Burns Roensch, the architect at 300 Elizabeth Road, San Antonio, Texas. His three grade-school sons have suddenly taken up the piano, the saxophone and the clarinet. His wife was already a soprano.

Maybe you gents have noticed how some wild animals cooperate with one another. The stork and the wolf, for instance, often arrive at your door about the same time.

It occurs to me that men rarely get a square deal. When one is

born, his mother gets the flowers. When he is married, his bride gets the flowers. When he dies, his widow gets the insurance money to spend her winters in sunny Arizona (advt.).

**Did you gentlemen hear about the poor fellow who lost control of his car? No, no—he wasn’t in an accident. He just made the mistake of teaching his wife and son to drive.**

“If Moses had been a committee instead of an individual,” grouched our new Kiwanis Club president, “the Israelites would still be enslaved in Egypt.”

**While sneering at South Sea natives who beat tom-toms to ward off evil spirits, we North American natives blow horns to break up traffic jams.**

As head man of a family I have observed that most grown people who get a severe scolding deserve it, and that most children who get one, don’t.

Overheard my wife coaching our high-school daughter; and gentlemen, the way women team up, it’s no wonder we men lose in the battle of life. Mom was saying, “Any girl can refuse a kiss, dear, without actually being deprived of it.”

**“A successful politician,” says Pat O’Reilly, who is one, “is a fellow that finds a lot of people mad about something and gets mad with them.”**

Almost any man can tell you that chasing women is pleasant recreation. The trouble starts only after you catch them.

I take umbrage when my wife tells people how conscientiously I observe the Sabbath. “All summer,” says she, “he plays golf religiously, and on winter Sundays he’s a devout sleeper.”

Disturbing statistic: we Americans spend more on whiskey than on public education, including colleges.

Any clever conversational gambit that I may venture at the supper table is sure to be topped by an even snappier one from the teenage section. But I don’t let on. I just grin, then over the dishwasher Mom patiently helps me figure out what it was they said.

**Sneaked that old dress form out of our attic and paid the garbage man a dollar to haul it away. Had to, before my wife paid some gyp \$50 to make a modernistic lamp of it.**

Influence, it seems, is immoral if I try to use it in business or politics where I could get it. At home where it isn’t, I can’t get it.

What our ebullient high-school daughter knows doesn’t bother Mom and me so much, it’s how she found it out.

In-the-home axiom: you can demand obedience and get it; you can demand love, and lose it.

# Editor's Note:

**We'll be** happy to tell you what the odd-looking gadgets in the picture are. As a matter of fact, we don't see how you can stop us.

Aluminum foil, that's what. Same kind of stuff that's going to be used to make some of the earth satellites that will soon be buzzing around in space making your life and mine better. And the identical stuff which artist Fred Freeman used as models for his cover painting.

Fred, being an honest craftsman, wasn't content merely to imagine what a solar-mirror satellite would look like. Instead he asked author Lloyd Mallan to demonstrate exactly how the foil would be folded while it was the business end of a three-stage rocket and being shot into space. Mallan did, and the little gadget at the right in the photo is the result.

Then Fred unfolded a similar piece of foil (shown below) and used that as his model for the painting. Now you're probably wondering how Lloyd

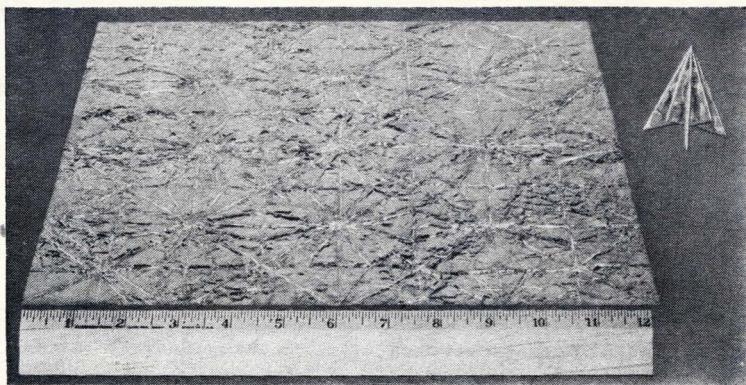
outstanding engineering organization in the field of jet propulsion and rocketry. He's also a member of the Aviation Writers Ass'n. and the British Interplanetary Society, and author of the new book "Men, Rockets and Space Rats."

He has specialized in science and aviation writing ever since his days as a reporter and editor on the Pittsburgh *Post-Gazette*. He grew up in Pittsburgh and early demonstrated his air-mindedness by building in his basement a one-seater, plane, with a second-hand motorcycle engine for power. He was 15 at the time and it was probably fortunate that he was not allowed to tear down the house—which would have been necessary—to get the plane out of the cellar.

**To come** from outer space down to a very earthy plane like murder, we'd like to say a few words in favor of "The Cinderella Smile," on page 20. and its author, Arthur Gordon. Gordon won't like this because he insists he's a writer, not an Author. We always have a certain amount of trouble telling the difference, but have finally settled on this rule of thumb: If you've written a book, you're an Author. On this basis Gordon is an Author and a damn good one. His novel, "Reprisal," was a Literary Guild selection in 1950, and he says he's going to perpetrate another novel this year.

Beyond that he's a native of Georgia, a Yaleman, a Rhodes Scholar, former managing editor of *Cosmopolitan*, former major in the U. S. Air Force, present

Scale model of an aluminum-foil solar mirror and how it will be folded for insertion in rocket.

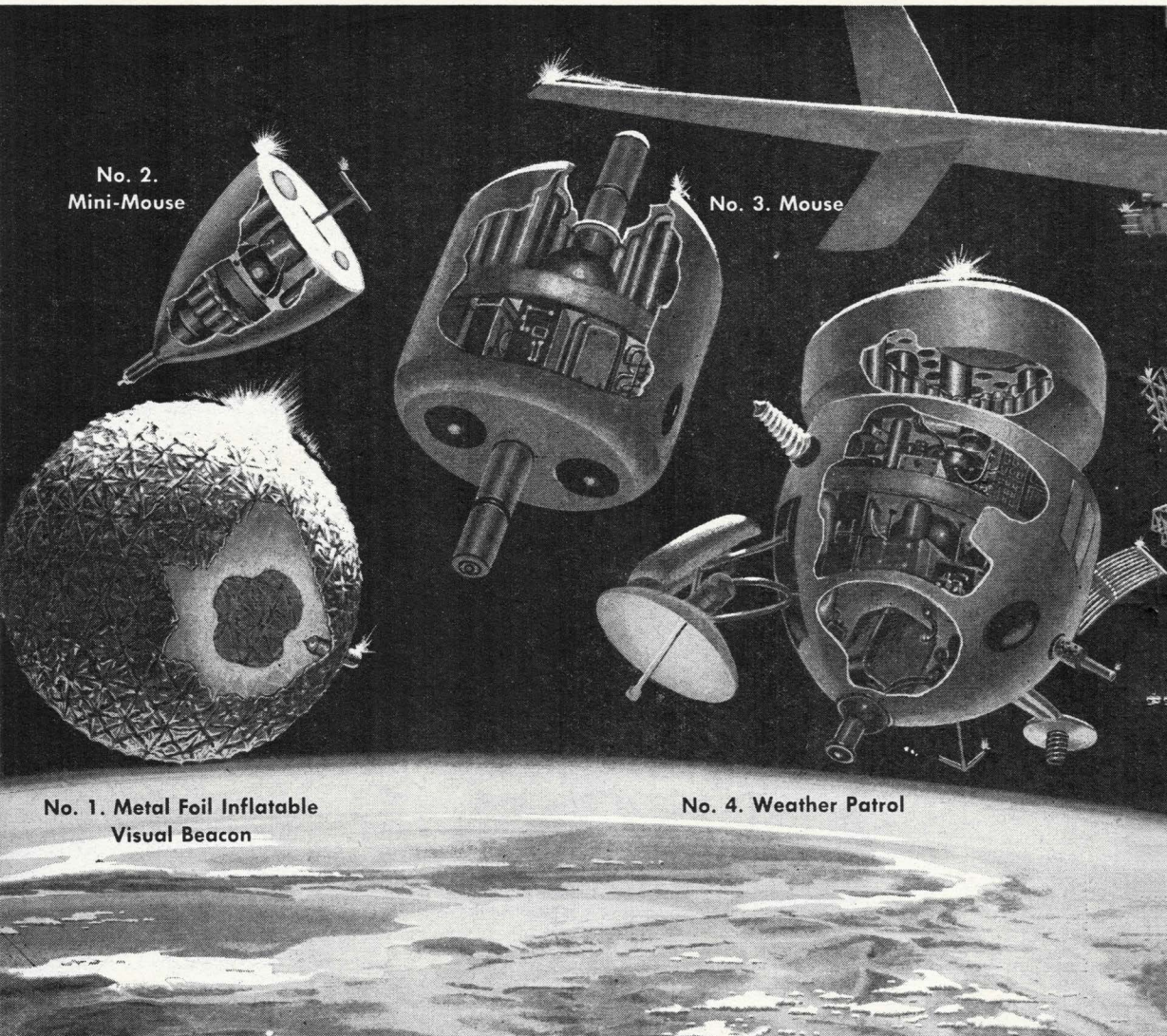


Mallan knew the right way to fold the foil in the first place. Well, he didn't imagine it, either: he's a responsible reporter and he learned it from Dr. I. N. Levitt, the noted scientist who designed this type of satellite, known as the Beacon and described on page 18.

Mallan has the distinction of being one of only two laymen who have ever been elected to active membership in the American Rocket Society, the

resident of Princeton, N. J. (what's a Yale man doing in Princeton?), and father of four small ladies, aged 10 and under. He works about three hours a day, from nine to noon, then "puts on such a show of exhaustion that everyone is convinced, including myself." This, he insists, is a nerve-racking life but an independent one—and fine, if you can stand it.

Oddly enough, and as a guy who put in six years as a free-lance writer, we agree.—A.F.



No. 2.  
Mini-Mouse

No. 3. Mouse

No. 1. Metal Foil Inflatable  
Visual Beacon

No. 4. Weather Patrol

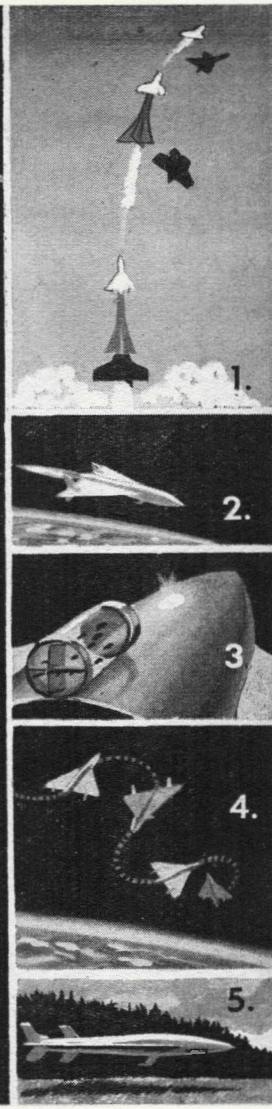
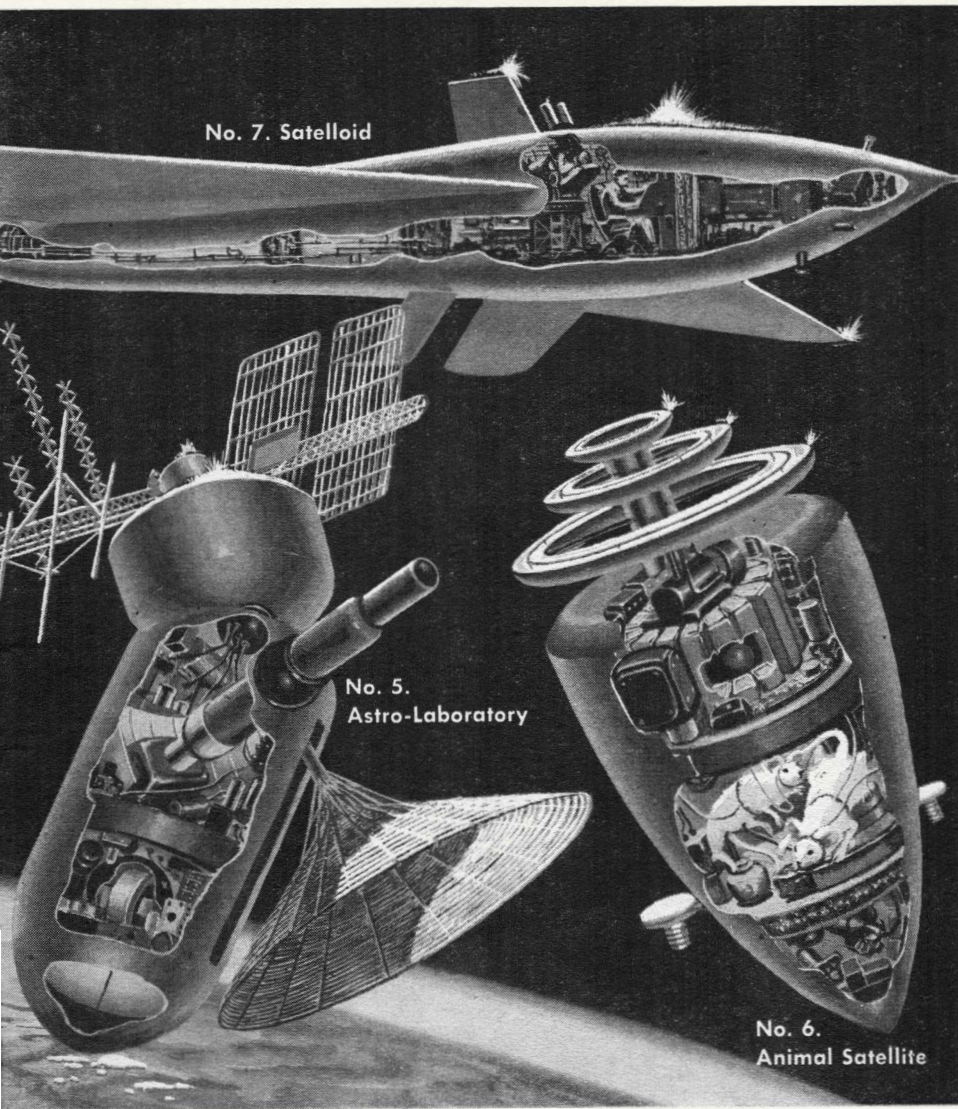
Types of artificial satellites that soon will circle the earth 200 to 4,000 miles out. In these scientifically accurate drawings, sections have been removed to show interiors. One of the first to be launched will be the Beacon (lower left). Eventually the manned satelloid (upper right) will probe the secrets of space. Strip of pictures on right shows: (1) Launching a satelloid—

# \* **ESV** WILL MAKE

\* Earth Satellite Vehicle

Artificial satellites, the first to be launched into space in 1957-58, will bring us more benefits than the entire 2,000 years of Christian civili-





first-stage rocket is fired, falls off when burned out; second-stage rocket delivers its thrust, falls off; third stage of flight ensues, with vehicle (2) orbiting around earth. (3) Automatic device makes delicate speed adjustments. (4) Thin upper atmosphere gradually slows satelloid, it makes a falling-leaf descent. (5) Pilot takes over the controls and brings her down in a glider landing.

# YOUR LIFE BETTER

zation. This incredible story-behind-the-news may sound like science fiction, but it's solidly rooted in fact. For details, please turn the page.

**BY LLOYD MALLAN**

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THE OTHER DAY a respectable man in a large Midwestern city shot and killed his grocer with a high-powered rifle. The motive? There wasn't any—at least not a sensible one. Fantastic as it seems, the man pulled the trigger merely because the grocer charged him 15 cents extra per head of lettuce, explaining that a sudden hailstorm in the area had demolished most of the crop. To the man this was apparently the straw that broke the camel's back, for he had just returned from a long-planned Canadian hunting trip in which rain and hail had driven into hiding all the elk and deer. All he brought back with him was a bad case of neuralgia—and a hair-triggered temper.

Less tragic than this senseless slaying, but more costly to the pocketbook of the average guy, is the fortune that American car owners had to pay in hidden federal and state taxes last year: about 60 percent on almost 44 billion gallons of gasoline, according to the American Petroleum Institute.

Both of these costly situations—one in terms of human life, the other in dollars—might well be prevented in the days ahead by the development of ESV—the Earth Satellite Vehicle program announced by President Eisenhower last year. ESV, in fact, is going to change our lives so completely they'll hardly be recognizable 30 years hence. Here are just a few of the many changes that it promises:

- Within two decades the quarter-million deaths from cancer each year may be cut to zero.
- The nearly 10,000 deaths annually among persons over 65 from such causes as heart disease, brain hemorrhages and hypertension may be eliminated.
- The terrible travel toll—in 1954, 22,500 people were killed for every 100-million passenger-miles, mostly in cars—should be eased considerably.
- Damages from floods and hurricanes, which in 1955 took many lives and cost hundreds of millions of dollars, may be largely prevented.
- Crop losses from storms, frost, insects and blights, which run well over \$13 billion annually, may be avoided, or at least greatly lessened.
- The elimination or reduction of weather calamities, disease, accidents and the like will eventually reduce food costs, taxes, industrial and home power costs, telephone toll charges, the price of insurance and other living costs.

If these seem an incredible combination of unrelated benefits from ESV, they are only a small portion of the whole. ESV will improve almost every facet of daily living, from sports and vacationing through public health and city management. It should even help to eliminate emotional violence—which caused the death of the Midwestern grocer mentioned earlier—hot tempers, unreasonableness and wars.

## TIMETABLE OF SPACE TRAVEL

Predictions by two outstanding scientists, made without knowledge of the other's, show significant agreement—and lend weight to the idea that the conquest of space is just around the corner.

### DR. I. M. LEVITT,

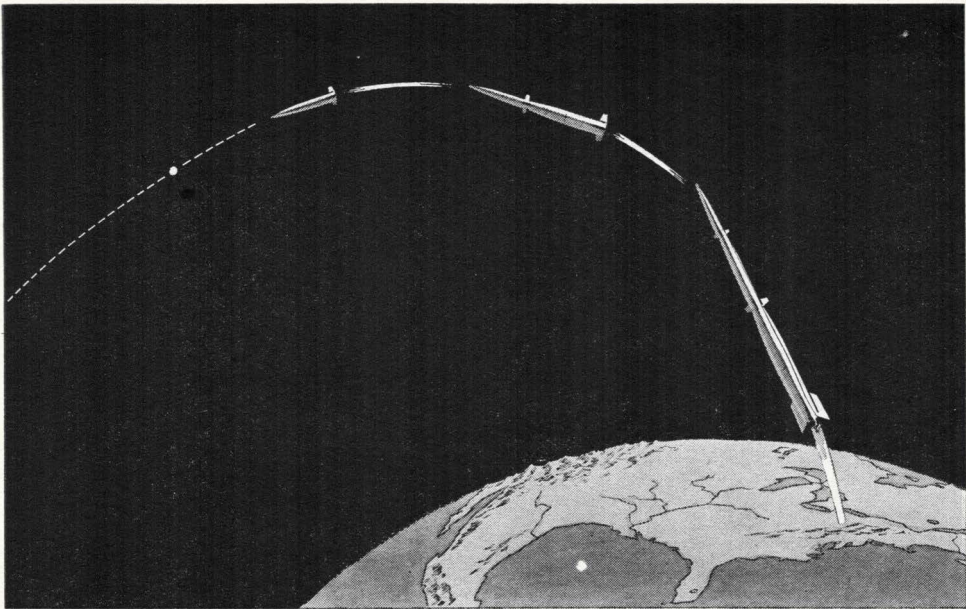
*Director, Fels Planetarium, Philadelphia*

- 1957-58**—Minimum satellites with or without instruments
- 1960** —Satellites with television transmitters
- 1963-64**—Satellites carrying animals for long periods
- 1968** —Satellites carrying men for days or weeks
- 1978-80**—Complete space station
- 2000** —Travel to moon and planets

### H. H. KOELLE,

*German rocket expert*

- 1956-60**—Unmanned satellites
- 1961-65**—Satellites carrying cargo and passengers
- 1966-70**—Experimental space station
- 1971-77**—Full-fledged space station
- 1978-85**—Expedition to Mars



Satellite would be launched by three-stage rocket (far right). First stage would supply enough power to push unit into thinner atmosphere, then drop away. Second-stage rocket would take over at top speed of first stage, and third stage would start with momentum gained from first two. When third-stage rocket, carrying satellite in its nose, reached top speed and altitude, an explosive charge probably would be activated to release satellite and propel it horizontally into its orbit, perhaps 200 to 300 miles out from earth.

Dr. Homer E. Newell, Jr., a noted physicist of the Naval Research Laboratory, has called ESV "one of the greatest, if not the greatest, philosophical and scientific achievements of mankind."

And so it is. No scientist in the world, however eminent, would dare dispute that ESV is a revolutionary turning point in human affairs—the beginning of a new era that, within a comparatively few years, will make our present civilization seem as primitive as the age of the cave-dwellers does to us.

Yet, the full and amazing significance of ESV has not been brought home to the American people. The history-making announcement on July 29, 1955 of the ESV program, called Project Vanguard by the Department of Defense, caught the press short. Reporters turned to the rocket scientists for elaboration on the significance of ESV—but rocket men are understandably more interested in the technical aspects of placing artificial satellites in whirling orbits about the earth than they are with the ultimate effects on daily life.

Even Secretary of Defense Charles E. Wilson merely said, in commenting on the ESV announcement, that the nation's scientists were now "breaking the space barrier." According to *The New York Times*, Engine Charlie saw the Earth Satellite Vehicle "as the first in a chain of experimental space flights in which each new missile would incorporate knowledge

gained from previous trips." This is phrased to indicate that ESV is only a thing of space—it does not suggest the tremendous practical benefits to the human race.

What exactly is ESV, anyway? How will it work? And how will it do all the wonderful things we've attributed to it?

To answer these questions as clearly and authoritatively as possible, the writer traveled for almost three months, seeking out the men who know ESV better than anyone else. Because all of them—physicists, engineers, meteorologists and medical research scientists—are extremely busy men with great responsibilities, interviews with them are hard to get, and few if any have been granted to other reporters. That situation makes this a unique behind-the-news report, here published for the first time.

The first artificial satellite is scheduled to be launched between July 1957 and December 1958. This time was picked by the government-sponsored National Science Foundation and the National Academy of Sciences because it corresponds with the International Geophysical Year. During this period, solar activity will be at its peak—sunspot cycles will be at their average maximum, which they reach every 11 years, and violent magnetic storms on the sun will cause all kinds of mysterious disturbances on earth. The IGY, as the Geophysical Year is designated, will

## HOW ESV STARTED

Five years ago most scientists held that anybody who proposed an artificial satellite was a crackpot. Except for a few bold spirits, all seemed overwhelmed at the vastness of the idea and its problems. Anyhow, they asked, what practical worth could a satellite have?

One bold spirit who felt there were excellent common-sense reasons for a satellite program was physicist S. Fred Singer, of the University of Maryland. He set about in his own way to convince the skeptics.

Many sorts of artificial satellites had already been proposed. "Most of them," said Dr. Singer recently, "were to be used as some sort of refueling station en route to the moon. There were space platforms bristling with TV cameras and people pointing them downward at the earth—and what have you. But a practical proposal had never been made, none with any justification." So Dr. Singer designed a satellite that was economical, sensible, and had a clear-cut purpose. He called it a Minimum Orbital Unmanned Satellite of Earth—or MOUSE.

The name had a deep purpose, and Singer and two eminent British rocket authorities thought long and hard before coming up with it. For Arthur Clarke and A. V. Cleaver felt as did Singer that winning over the conservative scientists who controlled the purse strings involved a psychological approach. There seemed less chance that big executive scientists would be frightened away from the idea if it were presented as a tiny rodent.

When Singer designed his satellite in 1952, he was Scientific Liaison Officer for the Office of Naval Research in the U. S. Embassy at London. At this time in Washington the American Rocket Society was trying to make the government see the feasibility of a minimum artificial satellite. They were having no luck. Then they heard about the Mouse.

Andrew G. Haley, a founder of Aerojet-

General, rocket makers, was chairman of the Society's Space Flight Committee during that period. He describes what happened: "Early in 1953 we decided to place the Mouse squarely before the government's National Science Foundation. Its director, Dr. Alan T. Waterman, agreed to meet with our committee at my Washington office. I also arranged for many important people from the airframe and propulsion industry to be there—North American Aviation, Glenn Martin, Aerojet-General, Douglas Aircraft, almost all the other big outfits. Everybody seemed sure we had the technical know-how to place a small satellite in an orbit. Dr. Waterman left the meeting with the promise that he'd see what he could do.

"Well, a year went by—and we heard nothing. In December, 1954, the Rocket Society again submitted a proposal to the National Science Foundation, a formal request to study the practicability of an unmanned earth-satellite vehicle.

"We still heard nothing. And then on July 29, 1955, Project Vanguard was announced by the White House."

Haley and his associates were overjoyed. They hadn't expected this for many years, if at all. Says Haley: "If it hadn't been for the support of strong, well-entrenched scientists like Dr. Theodore von Kármán, Dr. Fritz Zwicky and Dr. Fred Singer, the idea might have just evaporated. None of the officials of the National Science Foundation, or of the National Academy of Sciences, or of any other organizations in America with such great prestige, wanted to be associated with even the idea of a satellite."

And says Dr. Singer wryly: "The minds of the people who didn't think even a minimum satellite was feasible were not changed by any physical discoveries made in rocketry after I devised my own minimum satellite. They changed their minds finally, and very simply, because of President Eisenhower's announcement."

## THE AGE OF SPACE

be the first all-out effort in history to understand the whole nature of the world in which man lives. Forty countries will participate.

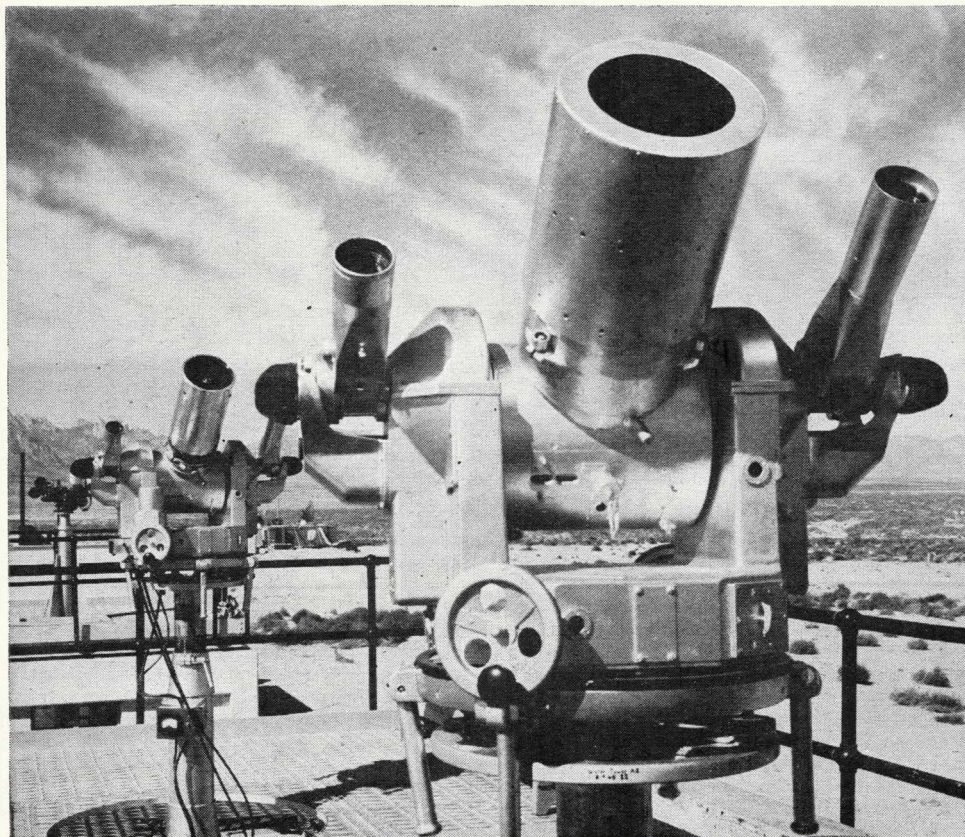
The Glenn L. Martin Co. of Baltimore, maker of the Navy's Viking rocket, has been awarded the major contract of the ESV program—that of the three-stage rocket which will carry the first of perhaps 10 satellites 200 to 300 miles aloft where it will be blasted into its orbit. General Electric will make the first-stage rocket motor, Aerojet General the second. As this was written the contract for the third had not been awarded.

The scientists working on ESV are certain ESV will be ready as scheduled. They have a particular interest in the artificial satellite because, in addition to all its other benefits, it will confirm—or dispute—the laws of gravity. As George Trimble, Jr., vice-president in charge of engineering at Martin, says, "Not even Einstein's general theory of relativity has been

proved. The satellite will be the first celestial body that we can know with accuracy, since we'll be building it. Because of this we'll be able to keep a constant check on the gravity laws of Newton and Einstein."

The satellite also will contribute to other basic scientific knowledge. Comparatively speaking, almost nothing is known about the nature of the earth, its atmosphere, its surrounding space, and how the three interact. The reason is that the thick blanket of air surrounding this planet effectively disguises the tremendous cosmic forces that act on it. Even in the high thin regions of the atmosphere, these forces are transformed by clashing with air. Only from space, where the satellite will orbit, can the forces be observed in their unmasked intensity.

As a result, ESV will provide the means for an extended study of the earth's magnetic field, how this is affected by radiations from the sun, and how the Aurora Borealis is then affected so that it causes radio blackouts in the far North. It will help scientists figure out how the ionized gases of the ionosphere re-



Theodolites, like this one at White Sands Proving Ground, N. M., will be used to track satellites.



**Huge solar mirrors, orbiting in space, someday will focus sun's rays in a shaft so powerful that it will break through storm clouds to warm a city or orchard, may even dissipate the storm itself.**

act, and their changing effect upon the lower atmosphere and thus upon the weather. It will provide a method for accurately determining distances between separate points on earth, the amount of meteoric dust in the upper reaches of the atmosphere, the rate of re-radiation of heat and light from the earth's surface, the intensity of solar ultra-violet radiation, and so on.

Don't get the idea, however, that the satellite will just provide theoretical fodder for scientists. Its value can be quickly translated into dollars-and-cents meaning to the average man in the street. For example:

According to *The New York Times* financial

writer J. H. Carmical, the nation's oil producers will spend some \$3 billion searching for new oil deposits in the U.S. during 1956. For every successful well they sink, there will be eight dry wells. "If we knew exactly where to look," says Richard L. Wilcox, a public-relations officer for Standard Oil of New Jersey, "we'd save eight-ninths of the cost of exploration." Thus, the savings that could be made in one year in the U.S. alone is rather impressive: \$2.7 billion.

How could a satellite tell the oil people where to look? The technique would be simple, even for a non-instrument-carrying satellite like Dr. I. M. Levitt's Beacon, described elsewhere on these pages.

First, says Dr. Levitt, the satellite's exact orbit would be established by tracking it with telescope-cameras along its path around the world. This could



be done in about a month. After that, an astronomer would know exactly where the satellite was supposed to be in the sky on a certain date at a certain time. If it were not there, this would indicate that its orbit was being gradually changed by natural forces. Any such deviation in its orbit or speed would be caused by changes in the pull of gravity.

Large oil deposits would create a concentration of gravity, and thus additional gravity pull, wherever they were located. So would deposits of uranium, gold, silver, platinum and other rocks and minerals. All of these have great mass—and the mass in relation to the volume of celestial bodies determines gravity action.

An electronic brain could quickly analyze information on the density (mass per unit volume) of oil and other minerals, combine it with the degree of disturbance to the satellite's orbit at a particular point

## WHAT MAKES IT STAY UP?

Once a satellite has been hurled upward and outward by rockets into its planned course around the earth, why should it keep on traveling in this orbit, instead of arcing back down to earth or shooting off into space?

Answer: There'll be no atmosphere to slow it down, and the centrifugal force impelling it outward will be exactly as strong as the pull of gravity.

The strength of centrifugal force in any moving object depends on its speed: more speed, more centrifugal force. The right speed for a satellite to go—called the critical speed—depends on how high you want its orbit to be, since the farther away from earth an object gets, the weaker upon it is the force of gravity. Hence the higher the satellite, the less centrifugal force—or speed—is needed to keep the thing in balance with gravity.

The critical speed will be figured out by electronic computers. Their job is to calculate precisely how much rocket power is needed, and exactly when it is to be applied to thrust an ESV beyond the grasp of the atmosphere and into its circular orbit.

If the final push delivered by the rockets is not given in a perfectly horizontal position, the satellite will follow an ellipse instead of a circle. Then, since the pull of gravity will vary greatly from position to position, the satellite will slow down, and wobble quickly back into the atmosphere.

MOUSE, circulating at a relatively low altitude of about 300 miles, will go around the world every 90 minutes or so. The low height and high speed of this first ESV were chosen for these reasons:

- The high speed will reveal quickly the traits of artificial orbits.

- The closeness will allow measurements of atmosphere density. The final edges of the atmosphere are present 300 miles up. This will eventually slow down the satellite. Recording the time it takes the ESV to fall out of its orbit, which should take two or three weeks, scientists can calculate almost exactly the spacing between air molecules up there. Then, by following the ESV's downward journey with telescopes and cameras until it burns up in the lower atmosphere, they can compute air density at various levels of the fall.

- The effect of gravity will naturally be more pronounced. The way the satellite's orbit varies over certain parts of the world will show how gravity is concentrated in those parts, indicating the presence of oil and mineral deposits.

- Light and heat reflected on the satellite from the earth's surface and from clouds can be more easily measured. Such information is needed to determine the movements of temperature, the shielding effects of clouds, and thus the origin of storms.

- Then, of course, there's the matter of money. A closer orbit costs less. Rockets and launching gear won't have to be so gigantic, less fuel will be called for. There's no point in starting out with billion-dollar equipment. It's much more sensible to experiment with small stuff first.



**Two-way TV communication will be possible anywhere on earth via relay satellites (sketch on next page). Thus a home office can supervise construction of a plant thousands of miles away.**

over the earth, and select a specific mineral as the cause. The computer could then evaluate the richness of the deposit and its depth below the surface. Simple high-school geometry would do the rest. By triangulating from the satellite's orbital deviation and the position of the telescope-cameras that recorded it, the deposit could be pinpointed.

Think of the savings in mineral exploration that could be passed on to the consumer—you! And this

is only one of ESV's immediate possible benefits. As the satellite program develops from one stage to another, the benefits from each stage should be as great as those from the 2,000 years of Christian civilization.

The following are 10 areas of your life and mine that will be made better by ESV. They are only the more obvious areas. For after the "birds" begin to fly in their artificial orbit about the earth, many undreamed-of benefits are bound to be revealed.



# 1. WHAT ESV MEANS TO THE HOMEOWNER

Cheaper electric power and lower cost heating almost right away. Eventually, solar-generated electric power transmitted to individual homes, thus making them independent of weather and eliminating poles, wires and pipes.

Wider choice of secluded homesites because of no dependence on telephone

lines, other present-day utilities. Community decentralization, far from industrial centers where air is contaminated.

The eventual elimination of fume-generating industrial processes.

Fewer and less-costly losses from floods and other unpredictable natural disasters.

SOME YEARS AGO, I worked for the Columbia Gas System in Pittsburgh. I still can recall vividly the tenseness that mounted among the company's executives and engineers each winter as the daily temperature dropped lower and lower.

You see, the company got its gas supply from many sources, but largely by tapping into the "Big Inch," which pumped tons of natural gas northeast from Texas. In particularly frigid weather, when people between Texas and Pittsburgh were using an extraordinary amount of gas, pressure in the Big Inch would fall off dangerously at a point far below Pittsburgh. When it did, parts of Ohio, West Virginia, Maryland, Pennsylvania and Southwestern New York—all served by our company—suffered from a shortage of gas for heating and cooking.

Once, during a severe cold spell, the entire city of Wheeling, W. Va., was without gas. To make matters worse, a warm front moved in over West Virginia while freezing cold-air masses still hovered between the Texas Panhandle and Ohio. Ice broke up in the Ohio River alongside Wheeling and the waters spilled over into the city. Sewers backed up into homes, but there was no gas for sterilization, heat or cooking. Illness and disease began to spread. Hospitals were crowded but had no heat. The city's industry, mostly steel and pottery, was paralyzed, since mill furnaces and ceramic ovens used natural gas. Emergency committees were set up and the Red Cross came in on a disaster basis.

The mayor and a local newspaper called for the dissolution of the Columbia Gas System. But it was like blaming the Air Force Weather Patrol for the existence of a hurricane. There's just no predicting the weather.

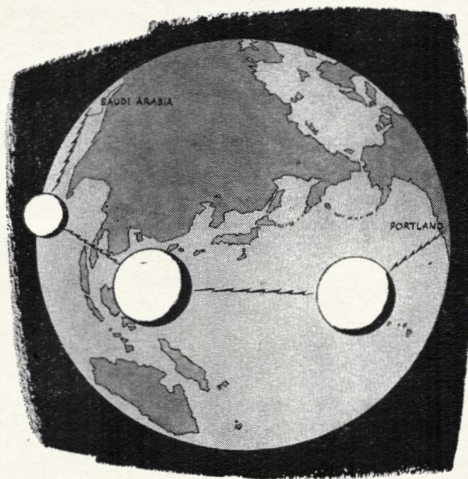
After the emergency, the steel and pottery companies considered converting their furnaces and kilns to electricity. But critical shortages of electrical power, also because of weather, discouraged widespread conversion. No power source seemed entirely reliable.

Every winter, in greater or lesser degree, people and industry in northern and temperate zones face

the same perilous situation. They also face other dangers, budget-breaking damages, and inconveniences—all because of the weather. A frightening number of people die or are injured each winter because of fire caused by exploding or faulty gas lines, short-circuited electric lines, overheated furnaces, and the like. Blizzards, high winds, frosts, and torrential rains sink foundations, erode lawns, crack driveways, peel paint, destroy gardens. And when there's a real emergency due to storms and floods, communications often break down and people remain unwarmed.

Weather is probably the one act of nature that most seriously and widely affects the homeowner. Yet, as the old saying goes, everybody talks about the weather, but nobody does anything about it.

Well, an artificial satellite *could* do something about the weather. It could make weather prediction extremely reliable, thus warning homeowners and industry of coming emergencies. Not only that, but



THE AGE OF SPACE



**With ESV, plants can be built wherever mineral wealth is found, no matter how inaccessible the spot. Power will come via power-broadcasting satellites, as shown in sketch, lower right.**

it could provide services to homes and industries that would be largely weatherproof.

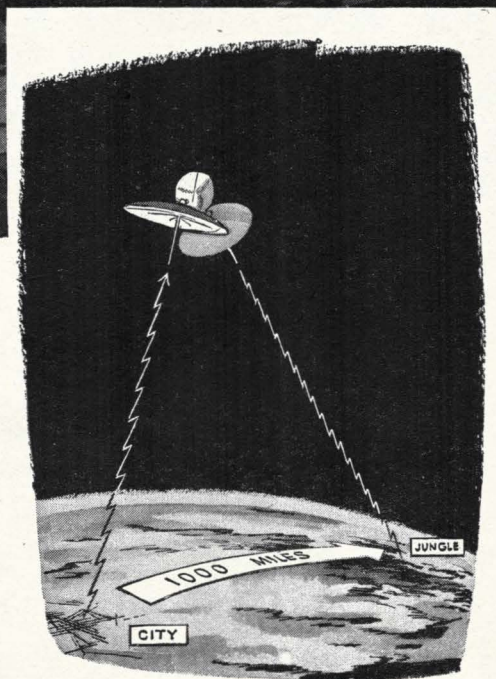
At present, nobody knows what causes weather to act as it does, and its actions are essentially unpredictable. Storms, for example, sometimes double back on their own paths—and catch everybody with his defenses down.

According to Dr. Fred Singer, only about five percent of the earth's surface is now observed for weather. Filling in the gaps left by the other 95 percent is an unfair burden to place upon any forecaster. Some weather condition might develop in the Amazon jungles that would ultimately influence the weather of Hartford, Conn., or any other part of

the country. But with an artificial satellite like Dr. Singer's Mouse, the jungles, wastelands and oceans of the world, as well as the civilized portions, could be scanned for weather.

The one man in the U.S. who can be called an expert on this technique is Dr. Harry Wexler, Chief of the Scientific Services Division, U.S. Weather Bureau. He has made a study of the ESV as an instrument for weather observation and has lectured on the subject. Regarding the present method of forecasting, he remarks dryly, "It's more of a knack now than an exact science."

Dr. Wexler's proposal is to use the satellite at first as a storm patrol. He has calculated that the best orbit would be located at 4,000 miles out, circling the poles. The ESV, carrying a television camera



and transmitter, would complete its orbital run once every four hours exactly. His reasons for choosing such an orbit are as follows:

1. It is far enough away from the earth to permit an instantaneous view of an area comparable in size to North America, including the adjacent ocean areas.

2. It is close enough so that cloud areas and geographical features can easily be identified.

3. It will permit movement of the satellite at such a speed that the same cloud system would be viewed at least twice during the same 12-hour period—since each cloud system is directly associated with a certain type of storm, the movement and velocity of all kinds of storms could be carefully tracked.

4. It will permit complete coverage of the earth's surface at least once daily in daylight.

5. It will have a westward drift of motion rela-

## What Will the First Satellite Be Like?

**T**HERE HAS been much talk of a satellite able to carry 50 to 100 pounds of equipment. Physicist E. Fred Singer's well-publicized MOUSE, for example, would be a tiny, self-contained physics laboratory carrying 100 pounds of instruments. It would look a bit like a short, chunky rolling-pin (see page 6).

But at the altitude and speed a satellite must travel, the Mouse's weight might be prohibitive in terms of costly rocket propellants. So a simplified Mouse bearing a few instruments might have to be used at the start. Or the first Earth Satellite Vehicle might carry no instruments at all.

A perfect example of the non-instrument satellite is the "Beacon," proposed by Dr. I. M. Levitt, director of the Fels Planetarium at the Franklin Institute in Philadelphia. The Beacon would be a hollow sphere, 15-20 feet in diameter. It could be made of ordinary aluminum foil—the kind used by housewives. This would make it cheap to build, and light—about 15 pounds. Because of its lightness, only a small amount of rocket fuel would be needed to shoot it into an orbit 200 to 300 miles out. What the Beacon would look like is shown on page 6.

Despite its lack of instruments, the Beacon would be of extreme value. From a practical point of view, it could supply exact measurements of the earth for mapmakers. From a scientific point of view, it would help determine the forces at work on an artificially orbiting body. For example, the corrosive effects of meteoric dust upon the thin aluminum skin could be observed through telescopes. By sending up Beacons made of various types of metal foil and coated plastic, a foolproof skin could be developed for use on later satellites.

The Beacon would be a spectacular sight in the sky. Its globular surface would reflect sunlight long after night had fallen over half the world. When in the earth's shadow, it could be illuminated by batteries of 60-inch searchlights. The Beacon would appear against the sky's almost motionless starry background as a steadily moving star about as bright as the North Star.

Unlike other small ESV's the Beacon would be "constructed" in space. The aluminum skin of the sphere would be flattened, folded and packed into the nose-cone of the rocket. Inside the deflated sphere would be a deflated plastic balloon with a small carbon-dioxide cartridge—not much larger than the type that is used to convert water into soda.

Once the satellite was moving in its orbit, 200 to 300 miles out from earth, at nearly 18,000 miles an hour, an automatic timing device would activate the cartridge to inflate the balloon, which in turn would inflate the aluminum-foil sphere. Since atmospheric pressure at that distance would be practically nil, there would be little external pressure to hamper the quick wide expansion of the carbon dioxide. Thus, a little gas would go a long way. Eventually the gas would leak off into space, but the sphere would keep its shape, being perfectly balanced against gravity by the centrifugal force of its motion.

If small spheres could be "constructed" in outer space, so could larger spheres. Not only that, but telescope mirrors, machinery parts, and other equipment all could be shot into a particular orbit piecemeal, where they would revolve around the earth indefinitely until a crew could be sent to assemble them into a single huge unit.

## THE AGE OF SPACE

tive to the earth's surface that will permit the satellite quickly to detect new storms—which normally move from west to east.

Besides the television camera, the satellite would carry instruments to measure the light and temperature reflected from clouds, ground and oceans. By analyzing the amount of light and heat reflected away from the earth because of cloud coverage, and comparing this to the amount absorbed by land and sea in cloudless areas, a continuous record of temperature movements could be recorded. This would take the guesswork out of predicting the paths of storms.

There is even the possibility of having information sent from the satellite directly into an electronic computer, which would automatically correlate all data and continuously make its own forecasts. Feeding into the brain additional historical data on weather for specific areas should make it possible eventually to chart the weather exactly, day by day, for six months to a year ahead.

Although the U.S. Weather Bureau now makes forecasts up to 30 days in advance, these are nothing more than suggestions of weather trends. Jerome Namias, who is in charge of such forecasting, admits that the long-range forecast "does *not* take in things like individual storms. . . . If you make a forecast for a region based solely on past weather records you may be, say, 50 percent correct."

Accurate, long-range forecasting by ESV will enable the homeowner to anticipate and prepare for weather emergencies. It also will save him considerable cash and trouble, for he'll know when to plant his garden, mix concrete for a new driveway, paint the roof, remove storm windows, buy more coal or fuel oil, and go on vacation.

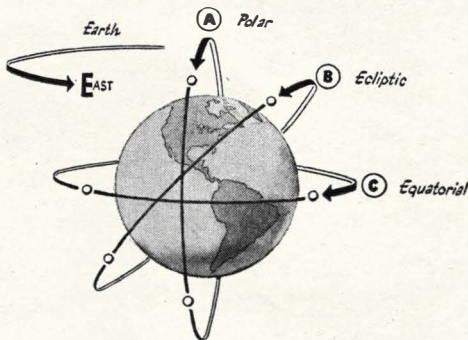
Some meteorologists think that radiations from the sun, either ultraviolet or corpuscular, may trigger puzzling weather changes on earth. This is another reason why scientists are eager to put an artificial satellite out in space where the whole situation could be observed, so to speak, at a glance.

If a connection can be established between the sun's radiations and the earth's weather, said Dr. Fred Singer, "it may then become possible to predict weather conditions on a really long-range basis." In other words, you might know what weather to expect years—perhaps decades—in the future.

Pinning the weather down to a precise time and place will be a tremendous victory for the homeowner—and everyone else. But it will still not prevent telephone wires and power lines from breaking under the weight of sleet and ice. It will not stop gas pipelines from springing leaks. Nor will it put an end to freak conditions that spread deadly industrial fumes through a quiet family neighborhood. Certainly it won't guarantee that radio and TV receivers operate without interruption.

But as we get more and more Earth Satellite Vehicles of different types, telephone lines and TV coaxial cables will become obsolete; electric power and gas pipelines will become unnecessary; and the weather may even be modified as desired.

Dr. John R. Pierce, director of electronics research at the Bell Telephone Laboratories, has already estimated the preliminary steps that will be required to use artificial satellites as relay stations for telephonic and television communications. Dr. Pierce, incidentally, was one of the six signers of the American Rocket Society's second proposal to the National Science Foundation, recommending that an unmanned ESV be seriously considered. A slim, scholarly-looking man of 45, he's not one to make an unreasoned statement. His laboratory is responsible for the almost-impossible electronics guidance system of the Nike anti-aircraft rocket. This contains 1.5 million electronic components wired inside an air-



**Three basic orbits. Polar (A), owing to earth's rotation, covers most territory, but is hardest to track. Ecliptic (B), which can be angled at any direction from equator, is fine for mapping. Equatorial (C), if in direction of earth's rotation, allows easiest launching.**

frame that is about a foot in diameter and 20 feet long. Another of his lab's accomplishments is the transistor, a tiny crystal that makes all radio tubes of any size seem ludicrous.

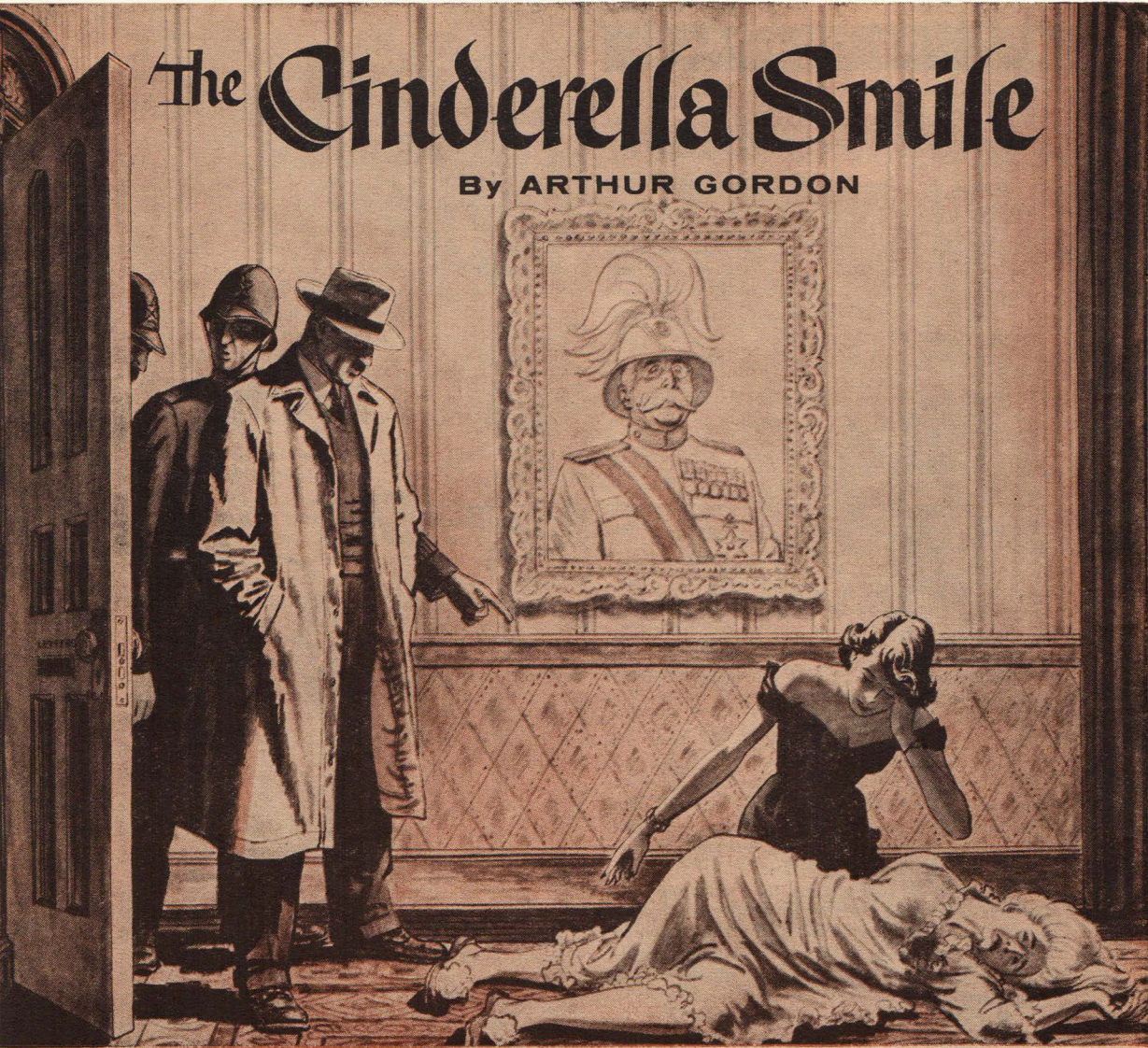
Using transistors for electronic control, a complex electronic brain can be fitted into a small artificial satellite. In fact, Dr. Fred Singer's Mouse will contain radio transmitters that use transistors instead of vacuum tubes. Singer has been experimenting with transmitters the size of a woman's hand.

Another development that came out of the Bell Telephone Laboratories is the solar battery—a unit which transforms solar energy into electrical power and stores it for use in periods when the battery is not absorbing energy from the sun.

*Continued on page 108*

# The Cinderella Smile

By ARTHUR GORDON

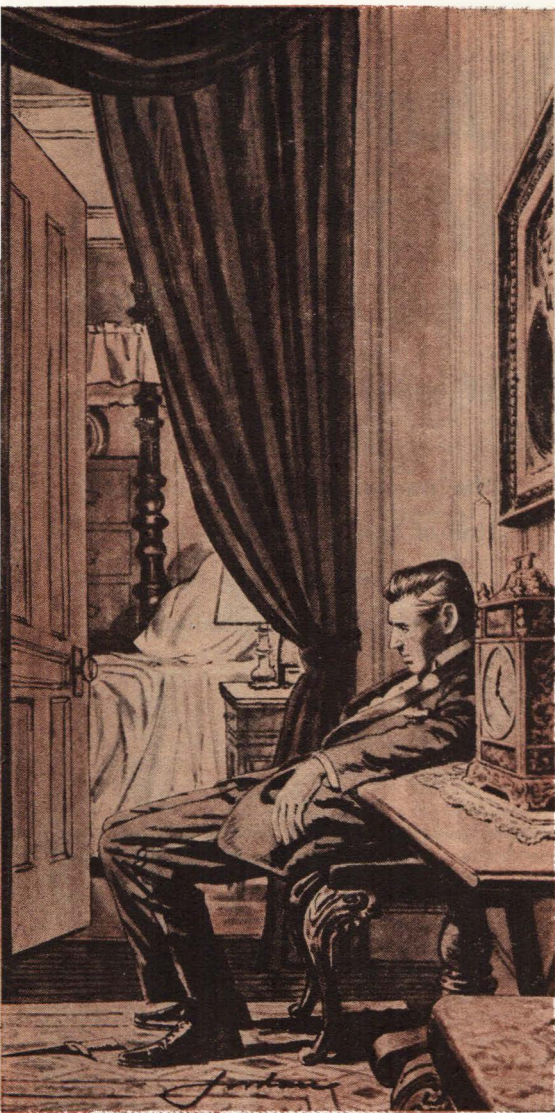


*Here was I, a bachelor, and here was this enchanting girl. If only her rich old aunt hadn't been such a dragon! You know what happens to dragons—they get killed.*

WHENEVER I THINK OF SYLVIA, the thing I remember best is her smile. The way it started slowly, deep in her wide blue eyes. The way it would touch the corners of her lovely mouth, hesitantly, and then vanish almost before you knew it was there. A shy smile, a secret smile. I don't know how it affected other men, but I fell halfway in love with Sylvia's smile the first time I saw it.

It was my first night in London. I had come over from New York at the request of the British Broadcasting Company to give (and get) some technical information on color television. I was delighted to have the assignment; I had never been in England before. When I met Sylvia, six hours after stepping off the plane, I was even more delighted.

It was at a cocktail party given in my honor



by Alan McKenzie, the lean, friendly Scotsman who was to be my sponsor and opposite number at B.B.C. Since we were both bachelors, several of the guests—not very surprisingly—were pretty girls. And one of the girls was Sylvia.

You know how it is at cocktail parties: you never can remember names, or much of what's been said. But that smile of Sylvia's stayed with me, and her clear British voice, and the touch of her hand when she told me good-by. And so I asked Alan about her.

"Sylvia?" he said. "Yes, she's pretty, isn't she? Quiet sort of girl; I like 'em a bit livelier, myself.

She works down at the Air Ministry as a photo-interpreter—you know, one of those wizards who can look through a stereoscope at an aerial photograph and tell you just where the enemy has its camouflaged factory. Said to be good at it, too."

"Why isn't she married?"

"Seems remarkable she isn't, doesn't it? Well, she lives out in Kensington with her aunt, an old dragon who keeps a pretty tight rein on her, I'm told. But Sylvia stands to inherit a packet some day, so she just has to put up with it."

"I thought she was wonderful," I said, and I meant it.

"Did you, now? Then why not ask her to do something with us tomorrow night? A theater, perhaps. I'll get hold of another girl. We could come back here for a cold supper afterwards."

"Think Sylvia will be home by now?"

"Very likely. Why not give her a ring?"

When I identified myself and asked Sylvia to join us the following evening, she hesitated for several seconds. Then she said, "That's very kind of you indeed. I'd love to come, but . . ."

"But what?"

"But my aunt doesn't like me to stay out late. She's all alone here, you see, except for me. I always have to be home before midnight. So perhaps you'd rather. . ."

"That would be all right," I said quickly. "I'll bring you home whenever you say."

"Will you?" It was strange how clearly I could visualize her there at the other end of the wire, could imagine that slow, enchanting little smile.

"It's a promise, Cinderella," I said. And I meant that, too.

**T**HE next day was a blur of introductions and preliminary conferences at B.B.C. Through it all I kept thinking about Sylvia and wishing the evening would come. It was absurd, I knew, but I had a curious feeling that she was also thinking about me.

She met us at the theater as arranged. Alan's girl was a vivid redhead, animated and gay. She talked a great deal and laughed a lot. Sylvia, on the other hand, said very little—she just smiled her quiet smile as if she had some secret knowledge that brought her great contentment. And I was content just to sit beside her and watch that smile.

Between the acts I did learn a few things about her, of course. That she liked her job. That her hobbies were photography, sewing, and going for walks—all rather solitary pursuits, I noted. That her aunt was something of a tyrant, but really a lovable old soul. That she had no other relatives . . .

When the play was over, we took a taxi back to Alan's flat. It was down in Chelsea, at the foot of Tite Street, right on the Embankment. From the windows, even in the darkness, you could see the glitter of the Thames. The others took it for granted. I suppose, but to me it was much more than just a

*Continued on page 96*



**Junie and his wife Helen. When he's off his game, she can always spot what the trouble is.**

# Junie McMahon

## KING OF THE PINS

**BY ROWLAND BARBER**

**The newest member of bowling's Hall of Fame is no trick-shot artist. He got there through application and a simple, easy technique.**

**T**HE SPRING OF 1956, it will be noted in future annals, was the time of an extraordinary invasion of Rochester, New York. From early March until May this upstate town, usually peaceful amongst its kodaks and roses, was the target for some 35,000 invaders.

They came for the express purpose of hurling 245 tons of hard rubber down 20,000 square feet of polished maple. Four hundred shmoo-shaped hunks of hardwood were clobbered again and again. The manner in which these were clobbered determined which of the 35,000 aliens took home part of a total of \$450,000.

The fact that they took this money away from Rochester didn't bother Rochester at all, since the invaders and their wives left behind nearly four million dollars, in tills all over town. In fact, more than one innkeeper was heard to say he had never had it so good.

Most important, it will be recorded, everybody had a lot of fun and excitement, and for many it was the high point of a lifetime. For they had taken part in the world's biggest participation sports event—the annual tournament of the American Bowling Congress.

This year the ABC brings together 6,000 teams from all over—the “all over” including such unlikely

bowling hotbeds as Saudi Arabia. Rolling for prize money in team events, singles, doubles and a “masters'” tournament, will be the best of the game—the hottest pin-busters active today. Indeed, competition is so hot that a man with a paltry league average of 170 may find himself relegated to compete in the low-score or “booster” division of the tournament.

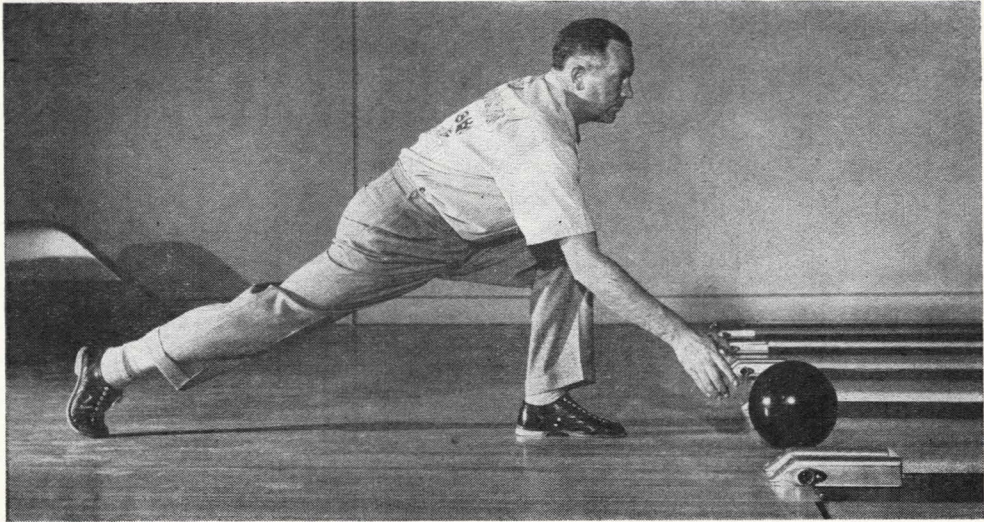
Among the bowlers who need no boosting are the select group of the “real pros” of the game. Just as an elite contingent of 20 or 30 golf masters invariably supplies the winner of each major meet, so it is with bowling. The winner of any big tournament is likely to be one of 30-odd regulars who seem to take turns hitting the prize money. All of them bowl consistently over 200; all of them wear the coveted 300-game ring.

But even the sharpest bowlers have their off nights, their disappointing tourneys, and there's no single consistent winner. But the nearest thing to a consistent winner is a rugged, sandy-haired Irishman from Fair Lawn, New Jersey.

He is no trick-shot artist. His trademark is the constant, deadly wide hook he throws for his strikes.

He has never rolled a perfect game in an ABC tourney. Thirteen others hold that distinction. Rather, his stock in trade is a cool determination when the chips are down, and he holds what is to





**Junie demonstrates one of the faults he sees most often in bowlers: too long a stride.**

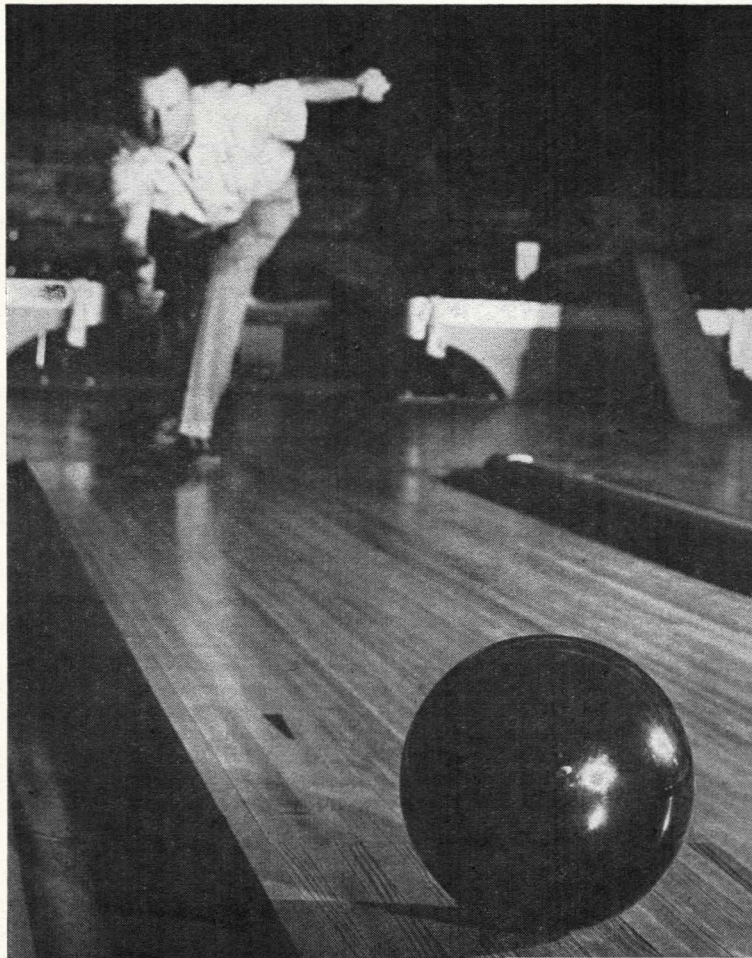
many top bowlers the biggest title of them all: the highest average for 10 consecutive years of tourney play. For 90 high-pressure games in 10 meets, the big Jersey hooker averaged 207 pins. His lifetime overall average is a whopping 210.

His name is Junie McMahon. Last year, at 43, he became the youngest man ever installed in the Bowling Hall of Fame.

This would seem to make McMahon the cream of a considerable crop, since there are 2,100,000 men who bowl about 200 million games per year in ABC leagues. Add to these organized legions the 18 million or so who bowl unsanctioned games, and it's not difficult to see why bowling is regarded as the greatest participation sport of all time, ranking far ahead of softball, snooker, billiards or

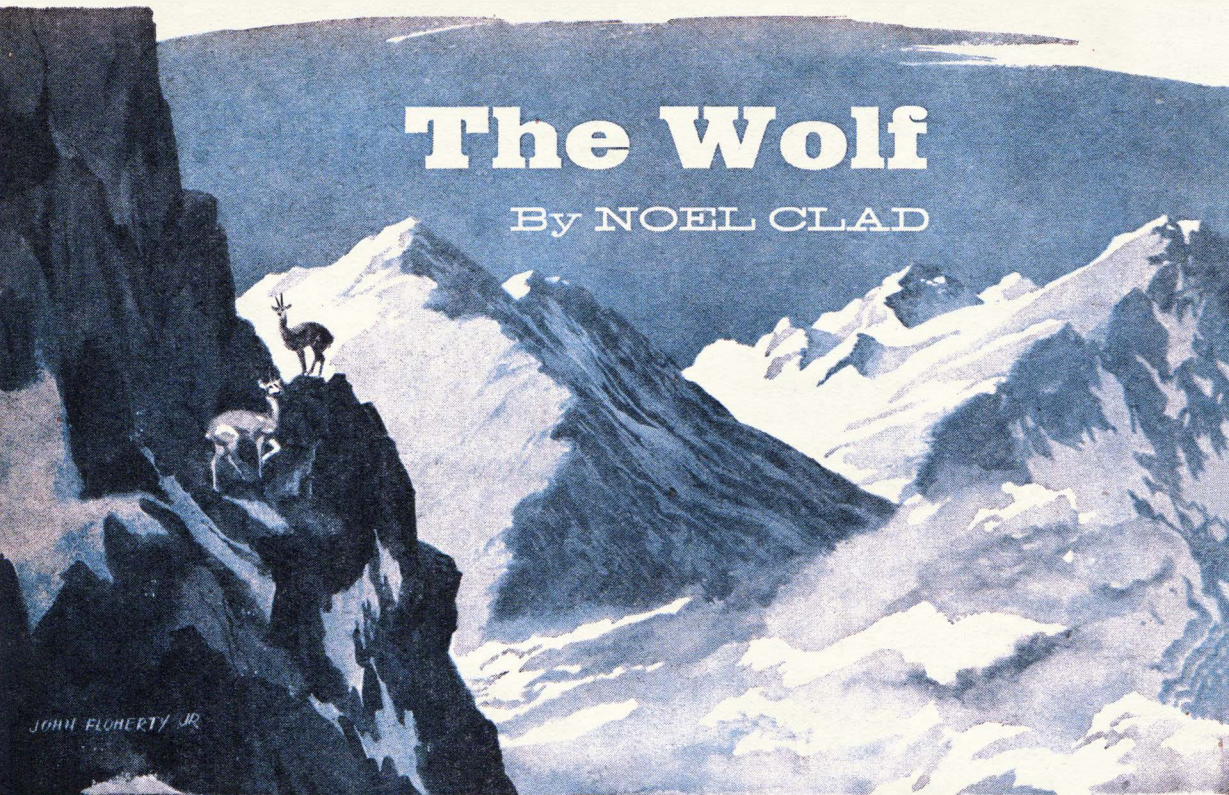
*Continued on page 99*

**A spot bowler, Junie always aims his hook at a point on eighth board from the right.**



# The Wolf

By NOEL CLAD



*To the old guide, hunting had rules which a true sportsman never broke. Could this eager young American understand that?*

FERENC HAD BEEN HUNTING the wolf for seven years. The shepherd called him Guai, which in the dialect of the Italian Ortlers means Woe. It was not quite a personal feud. Guai dropped down now and then to the lower meadows and carried off lambs belonging to other shepherds. It made Ferenc even angrier. It was an insult, as though Guai had decided to give Ferenc a breathing spell. Ferenc did not want charity. He wanted to kill Guai.

Ferenc's province was the upper meadows. He went up early, sometimes while patches of snow still lay on the ground. Every morning he would search the soft ground until, one morning, he would see the huge tracks. There was always a warning. Sometimes he saw Guai, silhouetted against a distant ridge, lean as a knife blade after the winter, blacking out the moon against the Dentelles which rose 700 sheer feet behind him. Sometimes he heard Guai: a long mournful howl close to the summer hut. Inside it,

Ferenc would take the matchlock from the corner and spend a long time cleaning it. He would nod his head, acknowledging the fact that another spring had come.

"All right," he said. "Now we begin once more."

Ferenc was unmarried. He had only himself to feed. It was well because each year Guai robbed him of half the annual increase in his flock.

"Ferenc," said the villagers, "why do you risk the upper meadows? Stay with us down here; your riches will increase."

But they were townspeople, frightened of solitude. Sometimes, looking down, he could see four or even five flocks in the same meadow. The shepherds visited at night by their fires. Sometimes they ate supper together, or sang, or played chess with one another. It was too crowded. Besides, Ferenc alone among them held the certificate of *Guido Alpino dell'Alto Montagna per la Cacciatori*. He was a

**"Don't fire!"** cried the guide, and he grabbed for the gun barrel just as Holliday sighted on the chamois.

mountaineer by taste and by Government certification. In addition to which there was Guai. He would never think of letting the wolf defeat him.

It was morning. The thin sun burned the mist, reflecting against the ice cirques of the Dentelles. The fog line receded until it passed Ferenc and opened up to him the clear slope above and a cloudless alpine sky. He watched the last wisps dissolve, clinging to the evergreens, until at last they were pulled loose and sent coiling down the mountainside.

He looked around at the flock. The gray sheep grazed widely on the spring grass. There had been no kill in the night. He crossed to the hut and went inside, wiped the matchlock clean of moisture and stood it in a corner. He broke twigs and held the wooden match steady until the smallest caught fire. He piled on a handful of faggots and put some sheep fat in a pan. Suddenly he stood up to listen.

It was the booming squeal of a mountain trumpet. It sounded once, and then again, distorted through the fog, from the lower end of Ferenc's meadow. He went to the door, taking his own horn from his belt, put it to his lips with the mouth held down slope so the sound would fall. Then he listened again. The reply was closer.

At length a figure stepped through the line of retreating mist, now halfway down the upper meadow. It was Balabeck, the son of the clerk of the Commissariat of Guides. He walked with a twisting motion. His leg had been broken in last winter's skiing. He would go to Milan to have it rebroken and set properly. If it healed well, he could have his guide's certificate again.

"God bless," he said, puffing slightly. "Guai deserted you last night."

"God bless. He did not come here. Come in. Mutton's on."

"He visited below. He got a lamb. He howled in advance and they were ready. They tied a lamb to a tree, dosed with arsenic, barely living. Guai took it. To keep the lamb alive the dose was small. It may not kill."

Ferenc felt a tightness across his chest. He turned away. "It is a coward's way."

"Village people," Balabeck shrugged. "It would be too bad." He looked away from Ferenc's face and out the window. "But I didn't come to say only that. You have a client. The Commissariat sent me up. It is a day's hunt, a sergeant on furlough from the American Forces in Leghorn. He wants chamois."

"The wine is behind you," Ferenc said heavily. "Hunter?"

"I believe he is." Balabeck unstopped the stone flask and took two tin mugs from the cupboard. "He is quiet: good eyes. He speaks Italian. He will join you at the pathway crucifix. He carries a Mannlicher, light but flat trajectory. The piece is well cared for."



"When?"

"Ten o'clock. His wife waits in the village. She does not like hiking. She is Italian." He grinned. "Naturally."

Ferenc tried to smile but his heart was not in it. Dynamiting fish, shooting setting birds, poisoning game. There was a kind of man who did these things. He removed the pieces of brown mutton from the pan with his knife and put them into the bowls Balabeck held. "What time do you have now?" He ate standing up, looking out the door toward the distant ridge. The wolf might never howl again.

"Half after."

"I better go." He took his rucksack from its wooden peg. It was already packed with rope, ice creepers, emergency *pitons* and a standard first-aid kit. He loosened the drawstring and put a jacket, some bread and cheese, wine, and a leather bottle of brandy inside. He slung it on and hunched his shoulders so that the straps fell into their familiar grooves. He took the matchlock from the corner. "You will stay with the sheep?"

"It's what I came for." Balabeck looked over Ferenc's equipment, double checking from long habit.

WELL then, I'll be back at dark." Ferenc put the matchlock over his shoulder, barrel down where he could watch it over the rough ground. "My wolf won't . . . Nothing happens in the daytime." Ferenc looked away, down the trail.

Balabeck rubbed his hands and frowned. "I hope he isn't," he said at last.

Ferenc did not turn around. "I hope so too," he said.

The sun had burned the mist all the way down to the lower ridges by now. Ferenc walked quickly, with a mountaineer's fluid action. A cold wind crawled down from above but the sun was burning in the thin air. He mopped his neck with his handkerchief.

The sergeant was sitting on the stone base of the crucifix, his back to the trail on which Ferenc appeared. The collar of his field jacket was turned up. His shoulders hunched forward, shoving his hands deep in his pockets. He blew a cloud of cigarette smoke which the wind whipped downhill.

Although Ferenc walked with care, he was still 50 yards away when the sergeant turned. He stood up, the cigarette smoke blowing back into his face. His gray eyes were assured as he extended a hand.

"*Sergente* Holliday," he said, the words edged with the hair-lip dialect of the Friulian Plain. "I am called Bill."

"Ferenc," the mountaineer said. "The Alpine Guides Association informed me you want chamois." The soldier took a pack of cigarettes from his pocket. Ferenc lighted one from the sergeant's windproof lighter.

"Yes. I have only today. My wife is a town girl, and I told her I would bring a trophy. There should be a good chance with chamois. Later I

would like to return, for bear or wolf." Holliday's left hand pulled a candy bar out of the jacket pocket. Ferenc shook his head.

"You are a wolf hunter?"

"In Montana we have big ones. The fur is not so fine as the Ortler, though. Rienna, my wife, is eager to have a lap robe. I promised I would get her one. There are many here?"

"A few." Ferenc's mouth tightened. But so few sportsmen any more, he thought, that perhaps it does not matter. But you could not explain that to people. He leaned past the sergeant to look at the beautiful rifle resting against the carved Savior. "It is a fine piece."

"Yes, it is." Holliday eyed the guide's ancient matchlock but decided against making the only comment he could have made, on its quaint antiquity. He turned to his own rifle and put it into the guide's hands. "It's a Mannlicher, you know," he said. "I bought it in Germany dirt-cheap right after the war. The Germans were selling everything to keep going."

"It's a light caliber," Ferenc said, opening the breech. "You have to be a good shot. A wounded animal may live for days in agony." He grimaced.

"I know. The rifle's aim is perfect. There is almost no need for deflection allowance. And I am a good shot. Shall we go?"

Ferenc straightened. "Above us are the high meadows. At the far end are the Dentelles. It is a wall of stone and ice we cannot climb. We will drop down and come around beyond the Dentelles. It is a ridge climb, and cold. The wind there blows directly from the glacier."

"I don't care anything about the wind. There are chamois there?"

"It is the best place for them," Ferenc said, looking at the American. "It is difficult to get a shot at this season. But if you are to have a chance at all it will be from the other side."

"That's all I'm asking. Let's move."

THEY picked up the rifles and dropped down the path up which Holliday had come. The snow was completely gone here. The lichen was beginning to change from dead brown to green. The grass was dotted with daisy and mountain asphodel. Beside them, a stream ran milky with stone dust, splashing boulders and backwashes. The firs were crinkled on the edges with the new green of this spring's growth. The pine needles were mushy. A crested cardinal made a raucous scarlet slash against the green.

"It's pretty here, Ferenc."

"It's good country."

They swung to a fainter trail and began abruptly to climb in wide traverses up a steep alpine meadow. The going was hard, on earth spongy from the melting snow above. They took a break on a damp log and pushed off again. The grass changed to rock. The evergreens were sparer, giving way to laurel and beech. It was hot work, for the trees blocked the

*Continued on page 106*

**CARS:**

# what's the best

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## oil?

**BY ROBERT GORMAN**

**All the talk about additives and super-high grades doesn't mean a thing—unless you pick an oil that suits your car and your type of driving. An oil that makes one engine purr like a kitten may send another to the repair shop.**

**T**HE RIGHT OIL in the crankcase can add thousands of trouble-free miles to the life of your car, lower gas consumption, cut down repair bills, and provide more power and snappier performance.

The problem is to find the right oil. It's not easy.

An oil that protects one engine may burn out another. Cars are as different as the people who drive them, and to give good results an oil has to be suited not only to the car itself but to the way the car is used.

The matter is further complicated by the fact that the quality of oil can't be measured as such. An oil's effectiveness is the sum of many separate qualities. Some of these may help your car. Others may hurt it. A few of the expensive properties that are added to modern oils—at an extra quarter a quart—will neither help nor hurt.

In older and simpler days, an oil's main job was to reduce friction between moving parts. Straight mineral oil—refined petroleum—could do this fairly well. But over the years, lubrication has become one

*Continued on page 93*



Photo by Black



"I have to let him go to the washroom," the deputy thought, "but that's when he'll try to escape."

# Ten Miles to Death

*A Short Short Story by Stephen P. Lewis  
and Herman Frey*

**D**ADE WAS HANDCUFFED to the seat—but no one could manacle his mind. He shot a glance across the aisle of the railroad car. Sure enough, his eyes met the steady gaze of Joe Loftus, the cautious old deputy sheriff, who calmly puffed on his pipe as he slouched in his coach seat. But while the train chugged away the miles from Black Gulch to Branchville, Dade worked out his plan to escape.

It wasn't going to be easy. Joe Loftus was a 200-pounder, strong, tough, experienced and cautious—mainly cautious. He was close to 60 and had been a law enforcement officer for almost 40 years. During that time he had built up a reputation throughout the West as a deputy who never grew careless, who never took anything for granted, who was always alert.

But dangerous though it would be to try to escape, it would be a lot safer than waiting in the county jail at Branchville—until they hung him. Oh sure, they'd give him a fair trial. But what good is a fair trial when you're guilty? Especially when they really have the goods on you—horse stealing, cattle rustling, maybe even a murder or two.

He looked around at Loftus again. The deputy's cold blue eyes were still glued on him and this time his huge right hand was caressing his gun butt.

Dade sneaked a glance out the window. He knew this country as he knew his own saddle. They were only about 10 miles from Branchville. Sheriff Scott would meet the train there, to hustle him off to jail. Once the sheriff met him, he was sunk.

He had to make his move and he had to make it soon. Dade wanted to be just outside Branchville when he made the break. Then he could sneak into town and hide at Cy Martin's place. And just in case Cy wasn't too anxious to put him up, he planned to be equipped with a very effective persuader—Joe Loftus' revolver.

Dade eyed the weapon as he turned his head over his left shoulder and pleaded. "Joe, how about lettin' me go to the washroom—please. I'm dyin'!"

"Don't call me Joe, ya bum. An' ya can wait till we get to Branchville."

"Man, be human. I been hooked to this damn seat for hours. I just gotta get into that washroom."

Joe Loftus studied the situation—cautiously. He

knew Dade was smart, slippery, mean and desperate. He knew he'd try to escape. And he figured the toilet was the place he'd try it. But still, the prisoner was entitled to go to the washroom.

The deputy reluctantly pulled his huge bulk out of his seat and crossed the aisle. He signaled for the conductor, who hurried up to him.

"Anything I can do, Joe?" the conductor asked.

"Just this, Sam. I gotta take my bad boy to the men's room. If we're not out in exactly five minutes, guard the door with all the six-shooters you can muster an' wire ahead to Sheriff Scott at Branchville."

Then Joe Loftus drew the pistol from his holster and removed the handcuff key from his special triple-buttoned pants pocket. He jabbed the prisoner with the revolver and warned, "No funny business now. One false move an' you're done for. Don't forget I'd just as soon save the state the cost of a trial."

The deputy removed the cuffs and shoved the lean, swarthy horse-thief down the aisle toward the washroom.

Dade looked out the windows and studied the countryside. He realized that they would hit Dead Man's Curve in a few minutes. That would be his one big chance!

**A**T the toilet door Loftus hesitated, then searched the prisoner thoroughly but in vain.

"No harm in makin' sure," Joe said. He locked one of the handcuffs to Dade's right wrist and the other to his own left wrist. Then they entered the washroom.

Dade hunched over the washbowl with his legs firmly braced as he studied Joe Loftus in the mirror. The train should be reaching Dead Man's Curve any second now. And when it did . . .

With a lurch, they suddenly hit the curve. Loftus was thrown off balance. He staggered for just a split second, but it was enough. Dade whirled around and threw a terrific uppercut with his free left hand. It landed flush on the jaw. The deputy crumbled to the floor—out cold.

Dade was on him in a flash. He grabbed the revolver and felt in Joe's special pocket for the key to the handcuffs. It wasn't there. He searched the

unconscious man's pants pockets, then his shirt pockets. Still no key.

A brief moment of panic shuddered through him. With his left hand, he scooped up some water and poured it on the immobile Loftus. It was then that Dade noticed the blood all over the base of the washstand—and the strange empty look in Loftus' eyes.

HE grabbed the deputy's thick wrist and groped desperately for a pulse. There was none. Dade felt his own heart pounding. Panic gripped him in earnest. He was handcuffed to a 200-pound corpse. He had to free himself at once, break the tiny toilet window of the moving train and squirm through, and he had to do it right now. But without the key he was helpless.

His fingers shook as he resumed his desperate search. He checked the deputy's holster, his cartridge belt, shoes, socks, billfold, pipe, tobacco pouch, all his clothes, everything. But no key.

Dade was sweating like a pig. He dashed cold water on his face, tried to get a grip on himself, and started to search again.

He was too upset to notice that the train had stopped. He was nervously running his free hand

through the dead man's pockets when the window behind him exploded inward. He grabbed his revolver and whirled around, to find himself staring down the barrel of a shotgun.

"Drop it, Dade! Drop it and unlock the door," Sheriff Scott ordered.

Dade hesitated, then gave a helpless shrug, threw down the revolver and opened the washroom door. Deputy Hodges and the conductor eased in with drawn pistols. They covered Dade and helped the sheriff climb through the broken window.

Sheriff Scott took one quick look at his dead deputy. "Well, Dade—this makes it murder for sure. Couldn't find his key, eh?"

The sheriff started to search the prisoner. He fished out a handkerchief, some loose tobacco. Then he unbuttoned Dade's back pocket—and from it drew a small key.

"Well, what do you know, Dade! You had the key all the time. You, yourself!" Dade's jaw dropped.

The sheriff waved the key under his nose. "Did you really think a smart deputy like Joe would walk into a small room with you an' leave the key to the handcuffs right where you could find it if you ever got the jump on him?" —BY STEPHEN P. LEWIS

## TWIST OF FATE

### Birth of a Bank Note

IN THE MIDDLE 1600's Louis XIV had some 400 troops in Canada. And one payday, there wasn't enough coined money to meet his payroll. But the Administrator of New France, M. de Meules, was an inventive soul and he was equal to the occasion.

Playing cards of the day were much larger than those we use. His Excellency took a deck, cut each pasteboard into four pieces, penned an assigned value on each, affixed his signature, had the governor countersign—and paid his troops.

This currency, put into compulsory circulation to meet an emergency, was intended merely as a temporary measure. But Louis XIV guaranteed payment on the card money. It was the first issue of bank notes ever made—nothing similar was then in existence nor had ever been in circulation. Europe, Asia, America—all used letters of credit, coined money, and bills of exchange. But M. de Meules' squares of cardboard, each marked with a stated value, each guaranteed as exchangeable for coined money in the specified amount, and this guarantee backed by the signatures of two of His Majesty's officials, were actual bank notes with precisely the characteristics of our currency of today.

It was used thereafter as a temporary expedient whenever it was necessary. Holders of the card money were asked, once each year, to convert it into bills of exchange on Paris—a sort of treasury bond.



But many Canadians hoarded the notes like gold; some even traded bills of exchange for those first bank notes.

Watching this new system work were some Boston merchants who did business in Quebec. Massachusetts, at the time, was burdened with a public debt. In 1690 a group of these businessmen proposed to their provincial legislature that it liquidate the debt with an issue of similar cardboard money.

There was one hitch: Puritans would have no part of those instruments of the devil, playing cards. The first bank notes circulated in the Colonies were therefore written by hand and bore official signatures, but were unadorned with hearts or clubs or jacks or better.

—MARY ALKUS



## FAMOUS FIRSTS IN SPORTS:

Illustrated by  
William Hoyer



# National Invitation Tournament

**I**NSPIRED BY a casual suggestion in a New York University School of Commerce *Bulletin*, Everett Morris of the *Herald Tribune*, President of the N. Y. Basketball Writers Association, asked the group one day in 1938: "Why can't basketball have a World Series the way all the other major sports do?"

The Association reacted enthusiastically, and Morris approached Madison Square Garden on the proposal. The management grabbed the idea like a panhandler scrambling for a dime, and the National Invitation was born.

The writers then invited three leading Eastern teams (L.I.U., N.Y.U., Temple) to tangle with three top Midwest clubs (Colorado U., Okla. A & M, Bradley) in an elimination tournament at Madison Square Garden, starting March 9th, 1938. The Colorado Buffaloes, co-winners of the Rocky Mountain Big Seven title, were the favorites. The Buffaloes' line-up included Byron "Whizzer" White, the football All-American who had passed up a reported 15-grand offer from the Pittsburgh Pirates in favor of a Rhodes Scholarship; and Jim "Swisher" Schwartz, high-scoring forward.

Temple, coached by Jimmy Usilton, that season had taken 21 out of 23 against such intersectional powerhouses as Stanford, S.M.U., Pittsburgh and Illinois. Jimmy knew he was in for trouble with Stanford's fabulous Hank Luisetti, so he switched from his 2-1-2 to a four-man zone defense, and assigned Howie Black with special instructions to cover Luisetti. He told Black: "You stay with the big guy no matter what. Wherever he goes you go." So Black, sticking to Luisetti like glue, held the Coast star to 11 points. Black was further useful in scoring the decisive basket as Temple upset the 1937 top national team 35-31.

Just before the tournament opened, Jerry Tarlow, NYU speedster, announced he wouldn't play unless he got paid. Jerry argued: "The Garden stands to make a nice piece of change on us, and the colleges will get their cut too, so why should we play for nothing?" Coach

Howard Cann, and several of the scribes, managed to talk him out of such dangerous notions, so Jerry went out to do-or-die for dear old N.Y.U. sans pay.

Temple dumped Bradley (53-40) and Okla. A & M (56-44) with such ease that the bookies quickly reversed themselves and made the Owls odds-on-favorites to take the title. The Buffaloes, piloted by Frosty Cox, had qualified for the finals by edging N.Y.U. (which had ousted L.I.U.) 48-47 in the last six seconds on a Frank Merriwell goal by Don Hendricks.

So on the night of March 16th, before 14,497 clamorous cash customers, Temple whopped the Buffs 60-36, to win the first (and their only one thus far) N.I.T. Their starting line-up, averaging better than 6-feet-4, was as follows:

POSITION	PLAYER	HEIGHT	CLASS
LF	Don Shields	6' 5"	Senior
RF	Howard Black	6' 1"	Junior
C	Meyer Bloom	6' 6"	Senior
LG	Don Henderson	6' 5"	Sophomore
RG	Ed Boyle	6' 4"	Sophomore

They were one of the first college fives to come up with a "goon squad," so with that height advantage, plus their superior passing, shooting and intercepting, they made the Buffaloes look like high-schoolers. In the first period the Owls romped to a 10-1 lead, using the "sleeper play" a couple of times, and by half-time made it 33-18. With the altitudinous trio of Bloom, Boyle and Shields as goal tenders, they trished them in almost at will. Co-captains Shields and Bloom, both seniors, paced the attack with 16 points each. For his sensational shooting and generalship, Don Shields won by unanimous vote the writers' trophy, given to the most outstanding player in the tournament.

After the game a tired Whizzer White, who managed to snag 10 points, paid this tribute to the Owls: "Boy, I never did so much chasing in all my life."

—BY BILL GOTTLIEB

# enough to cure the blues

By JOHN D. MacDONALD

*Only three times in my life have I heard as much  
horn as Buck blew those nights. We didn't know why until it was all over.*

THE WAY we got booked into Sarasota, you could laugh about it or cry. The outfit is called Three Beats and a Belle, a name I think we could do without. But Cuddis, who books us, likes it extremely, mostly because he made it up. I'm Harry, on piano. There's Lew on bass, a nervous, dark, wispy little guy. And there's Buck on the horn, very fine horn indeed. He's a big type who looks Princeton, about the fifth reunion bracket, but isn't. We're the Three Beats. The Belle is Vicky, 5-foot-5, hair like black ink, dimensions like those you read about after they've elected a Miss Potato Crop, or a Miss Extruded Plastic.

What Vicky does, she sings in a raspy little voice which I find pleasing because it's a true voice, and the timing is there. Too many times I hear big rich voices with as many flats as old trolley wheels, and about as much timing as a cracked distributor.

About this Sarasota thing, we'd been booked in Miami, at the Carralonne on the Beach until February last, and then it was roar across state in the wagon to hit the opening of a new club on Lido Key called—honestly—The Inside Track.

We got across to Sarasota on schedule and found the men in black rubber raincoats still wetting down the ashes of The Inside Track. I'm good old Harry, house mother. I drive the wagon. I deal with management. I deal with Cuddis. I spread salve on all bruised personalities. Also I get the horse share of work on account of in many places they want piano alone for the cocktail kick, and the whole group at night.

We moved into the motel the owners of The Inside Track had lined up. Vicki, of course, gets her own room. I bunk in with Buck. Lew sleeps alone because, though a very small guy, he has a snore like bowling with square balls.

Cuddis, highly distressed, said on the phone he would check around and call back. It took him a

whole day to get us lined up in a Tamiami Trail trap called The Flying Gull, on a one-week-at-a-time contract for half the money. He said it was purely a stop-gap.

Somebody had shot that gull in mid-air. It was the sort of place which, even though it hasn't got one, you always remember as having had a dirt floor. A little stand with tired crêpe paper and weary tinsel. A beer-nursing clientele. Brass-throated waitresses and half a ball bat behind the bar. Also, I might add, the piano wasn't exactly the kind Liberace lights candles on.

I looked it over alone and went back, slightly on the moody side, to report to the others. It was like stepping into the past. Like three years ago in Chicago, we worked that class of joint. Not Vicky, just Buck, Lew and me. Vicky is within the last year.

I painted it black, and that night we opened. Vicky looked around at the place as though she was holding it out at arm's length, by one corner. I knew I would have no trouble with Lew. Away from his bass he is a pretty bleached-out personality. Three words in a row is a long chatter. Give him gin, board, room and Molly—which is what he calls the blond bass fiddle—and nothing can roil him.

WITH Vicky, I didn't expect much trouble. She's a very nice girl. (There are many very nice girls in the business; it's only the clowns who give the canary trade a bad name.) Vicky's nice in the morning-glass-of-milk, money-home-to-Mother meaning of the word. I picked her up after she won a TV deal, and by then we had it made, so this earthy-type bistro was a serious shock to her.

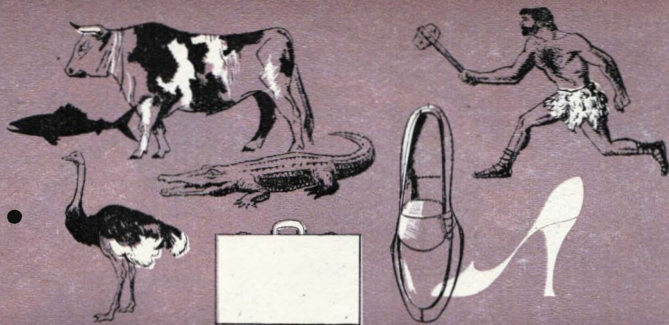
But she's a workman. In our production numbers, like the ersatz Spanish deals, she wags around clacking sticks and shaking gourds among other things. Even with the wolf yelps and leers, I did not

*Continued on page 91*



# Read All About It...

BY JOHN T. DUNLAVY



## LEATHER

**T**HE OLDEST craft known to man is the preparation of leather, outdating even the weaving of textiles. The Bible (Genesis III, 21) alludes to the use by Adam and Eve of skins for clothing, and there are many indications of the use of leather in China and Egypt long before the Christian era. Prehistoric people most likely used grease and smoke to preserve pelts, while the art of tanning is pictured in Egyptian drawings dating back to 3000 B.C. A pair of wonderfully preserved Egyptian leather sandals in the Metropolitan Museum of Art in New York is over 3300 years old.

**I**N THE ancient world leather was as highly prized as gold and silver. The methods of making leather were kept secret within immediate families and made them wealthy. Leather was used by the early Greeks for armor, the building of ships, for sails, houses and clothing. Leather tanning, established here in 1620, was one of the first industries in America. By 1750 there were more than a thousand tanneries in Colonial America. Today America is both the largest producer and the largest consumer of leather products. Its tanneries process more than 125 million hides and skins each year.

**A**S THE TERMS are used in the leather trade, "hides" generally refer to the pelts of heavier animals used for solid leather goods, while "skins" refer to those of smaller animals used for fancy goods. A hide or skin consists of three layers: the outerskin, which cannot be tanned and which is removed with the hair; the middle layer, which is processed for leather; and the underskin which is removed in the defleshing process. The middle layer, or corium, is a chemically complex substance composed of much protein; it is subject

to deterioration by the action of bacteria and enzymes, can be dissolved in water, and if dried out becomes hard and brittle. The action of tannin or tannic acid on the corium protein, however, produces a completely different product—a pliable material resistant to the action of water and bacteria which we call leather.

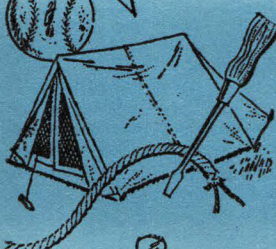
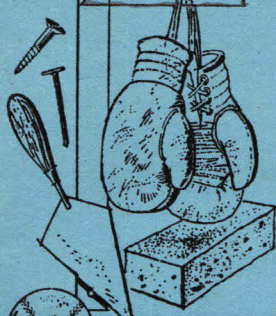
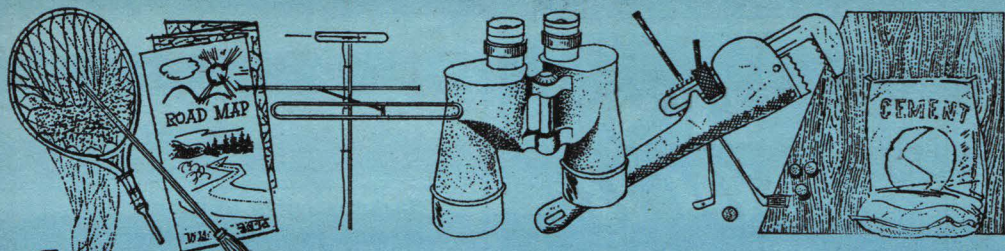
**I**T IS THOUGHT that the ancient Hebrews discovered the value of oak bark as a tanning agent, and this became the principal method of tanning for more than 20 centuries. Today, four distinct methods of tanning are used. Vegetable tanning, which employs acid derived from tannin-bearing plants and trees, takes up to four months time and is used mostly for heavy leathers. Mineral tanning, including alum tanning and chrome tanning, requires only a few hours and is used for most shoe uppers and fancy leather goods. Chrome tanning (with chrome salts) is used to produce 90 percent of all upper leather manufactured in the U.S. today. Chamoising or oil tanning, in which skins are treated with fats and often smoked, was developed by American Indians. Syntanning, the latest, uses synthetic tannins.

**A**LL KINDS of skin, whether human, animal, fish, bird or reptile, can be made into leather, some being more suitable than others. Cattlehide leather is the major product in the industry, being the prime source of sole leather and shoe upper leather (22 million hides per year in the U.S.). Solid cattlehide is tough and long-wearing, and is used for machine belting and harnesses, while split hides are used for luggage, gloves, clothing and many other items.

**B**UCKSKIN used for gloves and good quality shoes comes from deerskins imported mostly from Latin America and Canada. Reptile skins (alligator, crocodile, water snake, lizard, python, and cobra) make beautifully textured and extremely durable leathers for shoes, handbags and accessories. Kangaroo makes a strong, flexible leather for shoe uppers. Ostrich, the only bird from whom we get leather, makes pinkish-colored leather for fine handbags and wallets. Dogskins are frequently used for glove leathers. Walrus leather is used for jewelers' polishing wheels. Sealskins are prized for even composition and, weight for weight, make the strongest of all leathers.

**A**PPROXIMATELY 85 percent of all leather consumed in the U.S. goes into the making of shoes. There are many terms for leathers used as shoe uppers. Elk is a trade name for a soft, chrome-tanned leather. Buck is finished with a slight nap to look like buckskin. Patent leather is coated with a lacquering mixture to give it a glossy finish. Suede is a general term applied to many qualities of leather which have been finished with a fluffed surface.

**A**S A PRODUCT, leather has not greatly changed from old days. It's the processing which has changed. Leather has survived despite frequent and fierce competitors such as rubber and composition soles, rubber and canvas belting, pyroxilin-covered fabrics for luggage and upholstery, and, in recent years, plastics. The ancient saying "there is nothing like leather" is still true for it has thus far been impossible for science to duplicate the fibrous structure of natural leather, a flexible, durable, porous material that breathes and yet has tremendous tensile strength.



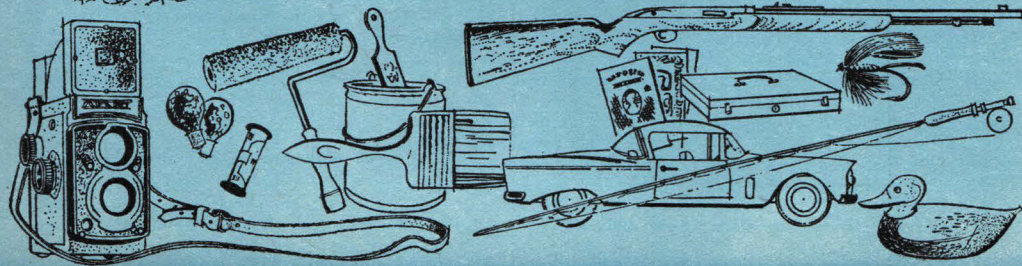
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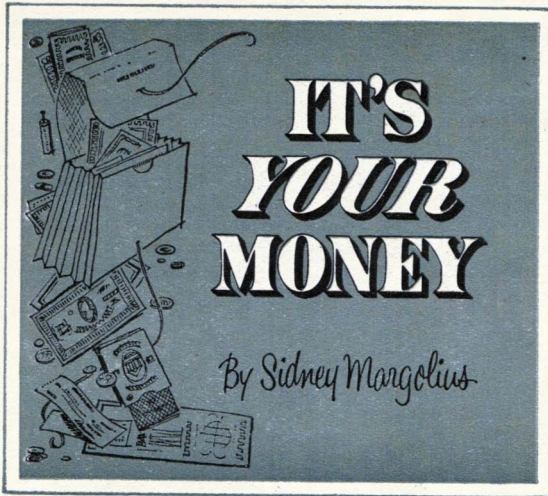
# Lend-a-Hand

Dept.

March 1956

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- **Annuities give you an income you can't outlive; should you buy one?**
- **Picking a mutual fund**

**E**VEN WITH Social Security and the trend toward employer-paid pensions, you're probably going to need savings of your own or depend on help from others on that day you punch the time clock for the last time.

Whether it's because of low earnings, lack of planning, or inflation, most men don't save enough during their working years to provide independence and a smattering of comfort in retirement. Before the latest improvement in Social Security and other pension benefits in 1955, a little over half the retired folks in this country who were 65 or older were depending on state old-age assistance or relatives for their chief support. Even among those receiving Social Security, several hundred thousand have had to get supplementary state welfare payments—the kind you have to pass a means test to qualify for.

In recent years, the money problems of retired people have sharpened because we now have a longer life expectancy but a shorter work expectancy. Most everybody works for large employers and *has to* retire at age 65. In fact, only one person in 20 retires voluntarily, the U.S. Department of Health, Education and Welfare reports. Not only that but most people now live in small houses and flats instead of the big rural homes that always had a room and some chores for the oldsters when they had to quit work.

So the average fellow who works

for wages is becoming increasingly aware of the need to put aside money for retirement. That's the real reason behind the drive of unions to get employers to provide pensions. And it's the reason behind the boom in annuities, which provide income for retirement. The number of annuities in force has doubled in the past year, the Institute of Life Insurance reports. BLUEBOOK itself has received letters in recent months from men as young as 35 asking for advice on building retirement income.

It makes sense. For even if you can't now collect the maximum Social Security payment of \$108.50 a month for a retired worker, or \$162.80 for a man and wife, you probably are going to need at least \$40 more income a month.

#### **Retirement needs.**

On the basis of surveys made by the United Auto Workers union in Detroit, and by the U.S. Bureau of Labor Statistics in other cities, we figure that a retired couple living in a big town now needs close to \$200 a month to pay for a modest but self-respecting standard of living. In fact, this estimate of retirement needs is so modest it allows for only a two- or three-room rented apartment and no car. A single person can estimate he or she needs 72 percent of the amount required by a couple, or \$144 a month for this auto-less budget.

If you could tell how much longer

you were going to live after you retire, you could plan almost to the last dollar how big a supplementary fund you would need. The average life expectancy at age 65 is 14 years (13 for men and 15.3 for women). To give you \$40 a month for 14 years, you'd need \$5,600. That's figuring you'd use up both the capital and a safe three percent interest it could earn while being consumed.

But you might very well live more than 14 years after retiring, so you wouldn't want to use up your capital. On the other hand, if you tried to live off the interest only, you'd need a savings fund of \$16,000 earning three percent to give you \$40 a month.

That's why an annuity has a big advantage. An annuity is a contract with an insurance company, but it is *not* an insurance policy. You pay in a certain amount and the company agrees to pay you, when you reach a certain age, a specified income every month for the rest of your life. You can either pay for your annuity in installments while you are still working or, after you retire, pay for it all at once in a flat sum.

But annuities are expensive and have other disadvantages too. We'll give you both sides of the annuity story straight.

#### **Advantages of annuities.**

1. You can't outlive your income.
2. You have no investment problems; the insurance company from

whom you buy the annuity, invests your payments so they earn interest for your retirement fund.

3. There are tax advantages. You don't have to pay tax on the interest your annuity is earning, until you start collecting payments. At that time you will be retired and probably will escape paying any taxes on the investment earnings since you will have little other taxable income. This advantage is more important for higher-bracket taxpayers.

4. There is no "fluctuation" of value as in stocks. The amount of money you'll receive is guaranteed.

#### **Disadvantages of annuities.**

1. You can probably save a larger fund by selecting your own investments than by paying into an annuity in advance of retirement. Even if you save only through government savings bonds earning 3 percent, you'll build a larger savings fund because you eliminate the insurance company's selling and administrative expenses which must come out of your investment in an annuity. This disadvantage is also true of endowment policies, which provide insurance now and retirement income later. Specifically, if you save \$100 a year in U.S. Savings bonds, at the end of 20 years you'll have about \$2,740. If you invest the same money in an annuity, you'll have about \$2,400, or 13 percent less.

2. Annuities, like government bonds, savings accounts and other fixed-value investments, protect you against deflation but not against inflation. You get back only the same number of dollars you invested, plus interest, even though those dollars may now have much less buying power. For this reason, some people nowadays like to invest part of their savings in stocks or mutual funds, since the value of these shares generally rise (and fall) when prices of necessities rise (and fall). An important point to remember here is that the *long-term* trend has been inflationary and probably will continue to be so.

3. If you're buying an annuity in installments, you can't always get all your money back if some emergency arises. Part of your early payments goes for initial sales expense. In a

typical plan you would get back only \$51 for every \$100 you invested if you withdrew at the end of the first year, and not until the end of the 10th year could you get back all you put in. In any other fixed-value investment like "E" bonds and savings accounts, you get back all your dough plus interest any time you need it.

#### **Overcoming disadvantages.**

There is a way to get the advantage of an annuity while minimizing its disadvantages: You can accumulate your own savings fund prior to retirement, then when you retire buy an annuity outright with a single payment. For example, if you want to provide a lifetime income of \$40 a month starting at age 65, you can buy a single-payment annuity for about \$6,100. Or a husband and wife can buy a joint-and-survivor annuity paying \$40 a month while both live, and \$30 a month to the survivor, at a typical cost of about \$7,600.

This plan is also more flexible. You aren't committed at retirement. At that time you might find you prefer another investment that will yield you the supplementary income you need. For example, the money can be invested in a two-family dwelling, which is an often-used way of getting supplementary retirement income. Or it can be invested partly in a home and partly in an annuity.

But there are two outstanding exceptions to the advantages of doing your own saving and buying an annuity outright. If you have the kind of life-insurance policy that permits conversion of the cash value to an annuity, especially if it was bought some time ago, it may pay to take advantage of this feature. Frequently it gives you a larger annuity than if you cashed in the policy and bought an immediate annuity outright with the money. Another exception is group purchase of annuities on an installment basis. If your employer has this plan, take advantage of it because the cost generally is lower than for the same contract bought individually.

#### **What kind of annuity?**

There are two types of annuities. A "life" annuity pays a specified

amount as long as you live. A "refund" annuity pays a smaller income for the same investment, but if you die before you get back all you invested, the balance will be paid to your heirs in cash or installments. Either type may be arranged as a "joint and survivorship" annuity, so that if the original beneficiary dies, a named survivor will continue to get a specified amount of income. This may be advisable in the case of couples even though a survivor annuity costs more. Women are a hardy breed who generally outlive their men, and the plight of elderly widows is especially severe since a widow gets only three-fourths as much Social Security as her husband and generally doesn't have as much chance to get occasional part-time work.

Some people buy the refund type of annuity because they are concerned that they may die before they get their money back. But the average fellow without much to invest gets the most income for his money from the straight "life" type, Arch W. Troelstrup, Stephens College's expert on family finances, points out. In a typical case you get \$78 a year income for each \$1,000 you invest at age 65 in an immediate "life" annuity, but only \$58 in a "refund" annuity. Thus the "life" type is better for people who want the biggest income for their investment and aren't concerned about leaving an estate.

#### **Shopping for an annuity.**

If your employer doesn't have an economical group-purchase plan, and you must buy an annuity by yourself, compare values among different insurance companies. There are some variations. First compare the net cost (after dividends) charged by each company for a specified amount of income to start at a particular age. In other words, how much does each company charge for, say, an income of \$40 a month to start at age 65? If you plan to buy an annuity that you'll be paying for in installments, also compare the cash-surrender values. For example, if you invest \$100 a year, how much could you get back at the end of the fifth year from Company A and Company B?

*Continued on next page*

*If you need information on money problems—insurance, investment, budgeting, government pensions, unemployment insurance, borrowing, etc.—write this department. Unfortunately, we can't give individual replies in all cases, but will try to do so in many; others we'll answer here. For an individual reply a self-addressed stamped envelope must be enclosed with your letter. Write to Sidney Margolius, Bluebook, 230 Park Ave., New York 17, N. Y.*

## Selecting Mutual Funds

*"I have been approached by several people who suggested I invest in a mutual fund. The Wellington Fund was mentioned most often. Could you tell me whether this is a safe and paying investment?"*

—S.L., Bronx, N. Y.

*"Can you tell me anything about United Income Fund plan? Is there some place their past record on investments might be investigated?"*

—N.J.K., Huron, S. D.

Two of the chief factors in selecting a mutual fund are whether it suits your investment objectives, and its record of past performance.

Generally, mutual funds are classified according to investment objectives in this way: *Balanced funds*, which hold bonds and preferred as well as common stocks, yield lower earnings than some other types but also fluctuate less in value; *income funds*, which buy common stock, provide more current income but fluctuate more sharply as the stock market goes up or down; and *growth funds* which emphasize investment in stocks of corporations believed to have more than average growth possibilities, are apt to pay small current dividends. Frequently business and professional men who don't need current income from dividends prefer growth funds.

Experts often suggest that older people wanting retirement income select an "income" fund, while younger families building future savings might pick a growth fund. But for moderate-income families, safety should be a factor along with the income or growth objectives. And in respect to "growth" stocks, there is a good question whether the larger investors seeking capital gains rather than immediate income, because of the tax savings, have not caused growth-company shares to be overpriced for small investors.

As an example of how some prominent funds are classified, here is a grouping suggested by Arnold Green, mutual funds manager of Bache & Co., and other investment advisors.

Among conservative "balanced" funds are Wellington, Boston Fund, Eaton & Howard Balanced Fund, Investors Mutual and Whitehall Fund.

Among representative "income" funds are Massachusetts Investors Trust, Dividend Shares, Axe-Houghton A and B Funds, National Stock Series, United Income Fund and Value Line Income Fund.

Among representative "growth"

funds are Eaton & Howard Stock Fund, Incorporated Investors, Fundamental Investors, Affiliated Fund, State Street Investment Corp. and Massachusetts Investors Growth Stock Fund.

This is by no means a complete classification of all the mutual funds on the market, nor should it be considered a recommendation to buy any of these in preference to others, or to buy any fund at all. These are some of the larger and better-known funds, but there are also others with good records.

Past performance of a fund is considered one of the guides to its future prospects. One way to compare the past records of all funds is to study *Investment Companies*, compiled each year by Arthur Wiesenberger & Co., a large investments dealer, 61 Broadway, New York City. This book costs \$25, but you may be able to scan it at the office of a local investments dealer, or your local bank or library. It will show you how much gain each fund has produced in past years. You can also get up-to-date reports on the comparative performances of the different funds in such investment magazines as *Forbes*, *Financial World* and others you will find in your library.

Also compare the prospectuses of the various funds, which you can get from any funds salesman or dealer. The prospectus generally tells the fund's earnings record in the past 10 years, and how much selling commission or "load" is included in the price of its shares.

## Dependent Parent

*"My mother is 81 and my brother has passed away. He and I had been supporting her but now I have full responsibility. Is my mother entitled to Social Security?"*

—J.G., Johnstown, Pa.

She may be entitled to it (1) as your brother's dependent parent, if he had sufficient Social Security coverage at time of death, and if he left no widow or child entitled to benefits now or in the future; or (2) if your father worked in employment covered by Social Security before his death. If you are uncertain, the nearest Social Security office can verify her eligibility either from your brother's or father's account. If she isn't eligible, another possibility of help is state old-age payments. Before granting these to her, the state authorities will want to know whether you or other close relatives are not willing or able to support her.

## Banks that Pay the Most

*"In your November column you mentioned that many people bank by mail to get higher interest rates and that New England savings banks are the highest payers. What are the names of these banks? Do they pay 3 percent?"*

—J.B.E., Alexandria, La.

Massachusetts and New Hampshire banks seem to be the highest payers in New England. You can get their names from Kenneth McDougall, Executive Manager, Savings Banks Association of Massachusetts, 111 Devonshire St., Boston 9, Mass.; or from Elden J. Murray, Executive Secretary, Savings Bank Association of New Hampshire, 4 Park St., Concord, N. H. Mr. Murray reports that eight New Hampshire savings banks are paying an average of 3/4 percent, and 29 are paying 3 percent. Several large New York banks also are paying 3 percent, including Dime Savings Bank, 9 DeKalb Ave., Brooklyn, and Williamsburgh Savings Bank, 209 Havemeyer St., Brooklyn.

## Tip for Railroaders

*"I am covered by railroad unemployment and sickness benefits. What happens if I am laid off and then become sick during that period. Can I apply for sickness payments in addition to collecting unemployment benefits?"*

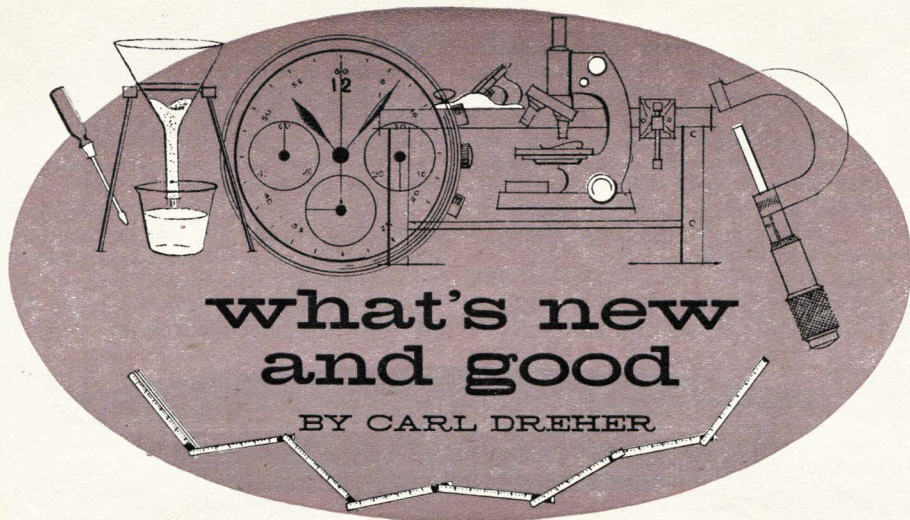
—R.V., Port Jervis, N. Y.

The Railroad Retirement Board says that unemployment and sickness benefits cannot be paid for the same days. However, you should stop registering for unemployment benefits at the time you become sick, and claim sickness benefits instead. Then if you are still unemployed after you recover, you could register for unemployment benefits again. This way you protect the amount of unemployment payments you will get if you are laid off for a long time. Unemployment benefits, as well as sick benefits, are limited to 130 days in any one "benefit year," and your benefits cannot be more than your "base year" wages. (A "benefit year" begins each July 1 and ends the following June 30. The "base year," on which the amount of benefits is figured, is the calendar year preceding the current benefit year.)

Railroad sickness benefits, of course, are paid in addition to medical and hospital insurance benefits from union-railroad welfare agreements, so don't forget to apply for those too.

—By SIDNEY MARGOLIS





**Eliminating bad radio and TV commercials • A power tool that does a lot for a little • Dirt-cheap midget pump for swimming-pool cellars**

**Kommercial-Killer:** We know a writer who finds it helpful to have an FM set giving out with music while he composes his masterpieces. There's only one hitch: Some commercials drive him nuts. He solved the problem by installing a small toggle switch next to the one which turns the set on and off. When an objectionable commercial comes on, he flips the switch and enjoys silence until he figures the music has come back, then flips back to the on-position.

This is a kommercial-killer, or, as some call it, a blab-off. It isn't electronics; it's just plain electricity on the bell-wiring level. The switch is connected in series with the voice coil of the loud-speaker and the set remains hot, but the speaker can't speak. This is the primitive kommercial-killer, on a par with the caveman's stone hatchet. It costs only about 30 cents and can be installed in half an hour by an electrical moron. Its disadvantage is that you can only guess when the commercial has ended, and as the commercials get longer the guesses get wronger. Also, you're apt to forget and leave the set on. Our friend has come back after a few hours to find the set still perking silently—rather a waste of wattage and tube life.

The same device is widely used on television, but there the picture reminds you the set is on. To kill commercials on television you use the same hook-up, but the switch is at the end of a length of lamp cord and you operate it from where you sit. You know the commercial is off when the spieler, bowing, scraping and smirking, finally fades from the screen. The cord is a nuisance, though.

Zenith Radio Corporation has brought the kommercial-killer up to date by substituting a beam of light for the cord. This system, called "Flash-Matic," can be had on several models of the Zenith 1956 line. It does a lot more than kill commercials: It turns the set off and on and changes channels, all by flashing a light at the proper points around the screen.

If you think "Flash-Matic" is the ultimate in this line, that only shows you don't know American technology. The Vocatrol, manufactured by the Vocatrol Corporation of Cambridge, Mass., listens to music but is deaf to speech, including commercials. The basis of discrimination is that drops in sound level are more frequent, faster and deeper in speech than in music. To take advantage of this difference, eight tubes and some complex circuitry are called for.

What about singing commercials, which are neither speech nor music but a kind of bastard union of the two? The Vocatrol has a knob which, when properly set, usually enables the instrument to recognize the singing commercial for what it is. There would seem to be some danger, however, that the creators of these insufferable jingles will be able to get around that by adding an instrumental accompaniment, or some other skulduggery. (Don't underestimate those babies.) In that case the engineers will have to come up with a device which will react to what is said rather than the way in which it is said.

Anyway the writer we mentioned earlier is pricing the Vocatrol and if necessary he'll buy it on time.

*Continued on next page*

**Stand-by electricity:** The catastrophic floods and storms of the past year really impressed on home owners how much the daily business of living depends on electricity. Until central station electric supply is made considerably more dependable than it now is in the country and the suburbs, there are going to be plenty of power failures, sometimes for long periods. So it's wise for those who can afford it to have a stand-by power plant ready to go. It doesn't cost much, actually.

A plant that will meet most requirements of the non-farm suburban household may be of 3,500-watt capacity. It should be 115/230 volts if you cook with

electricity. You don't need automatic starting, although it's nice to have. Manual starting will do, since the main object is to keep your household from being paralyzed in the event that the electricity is off for a long time. With only 3,500 watts available you won't be able to use all your appliances at once—but then, you usually don't have to.

The cost of such a plant, including installation and wiring changes that may be required, will be around \$700, and it ought to last 20 years. Counting maintenance of the plant and interest on your investment, the cost should be under \$70 a year. Electricity will cost an average of 8 cents per kwh for gasoline.

## These We've Tested

**Seven tools in one:** *Cummins Model 440 "Do-It Shop" (multi-purpose power tool), 45½ x 7¾ inches, weight 20 pounds; John Oster Mfg. Co., 5055 N. Lydell Ave., Milwaukee 17, Wis.; \$79.95.*

We hesitate to use the word "amazing," since every advertising hack has applied it to every product on the market regardless of merit, but the versatility of the Do-It Shop is just that. The Do-It works efficiently as a ¼-inch drill, vertical drill press, horizontal drill press, shaper, sander, lathe, and, *within limits*, as a circular saw. (For \$34.95 extra you can also get a jig-saw attachment for it, but we didn't test that.)

The power plant of the Do-It is a ¼-inch drill, which mounts in a sliding bracket on a pair of way bars (see photos). The way bars are hinged at one

end so that they can be set in either a vertical or horizontal position. Changes from one tool to another are quickly made with the aid of adjuncts which, together with the basic parts, show thoughtful design. The result is a useful tool that merits a place in any moderate-cost home workshop.

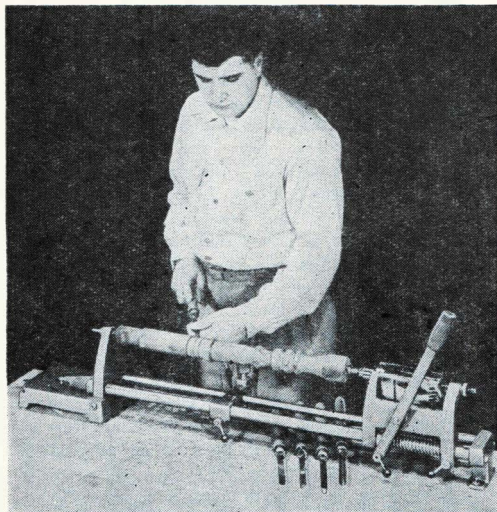
You can screw the tool directly to your workbench or, if you want to be able to move it around, fasten it to a plank. In our test we used a 2 x 10-inch plank 48 inches long, attaching this to our workbench with two 4-inch c-clamps. The tool and the plank on which it was mounted together weighed 35 pounds and could easily be lifted and stored under the bench or elsewhere.

Powerwise and in general performance, the Do-It can hold its own with any ¼-inch drill in its class and price bracket. Though its power is limited to 1/7 or at the most 1/6 hp., that's enough for a good many jobs. As a vertical drill press, it naturally won't match a machine-shop drill press with a ½ hp. motor and nine speeds, but it compares favorably with drill stands made for ¼-inch drills (except those listing for about \$20 without the drill) and is accurate enough for practically any job the amateur or semi-professional normally tackles. As a horizontal drill stand, which few home mechanics have, the Do-It will do edge and end drilling, such as axial holes for dowel joints.

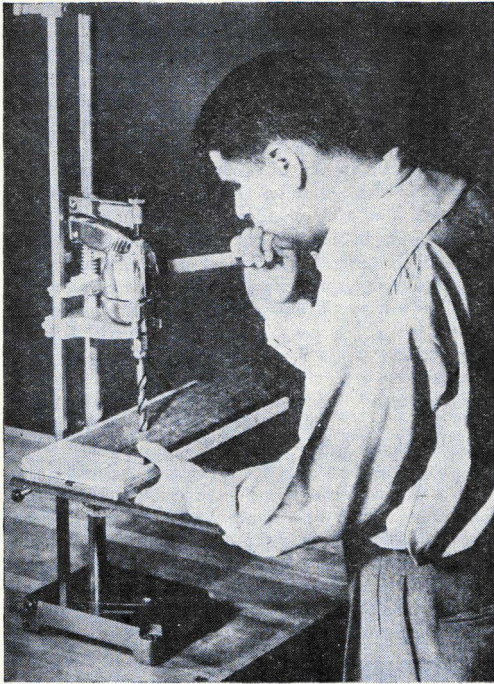
The 4-inch circular saw of the Do-It just isn't big enough to mean much in a practical way, though it will cut up to 1-inch lumber with fair speed and accuracy. A man whose main interest is maintaining or expanding a house would need to be able to cut 2-inch lumber. For this, if he couldn't afford an 8- to 10-inch bench saw, his best bet would be a 6-inch portable saw, which can be mounted under a steel table as a bench saw.

For us, the chief interest of the Do-It was as a woodworking lathe.

The instructional pamphlet which comes with



**Do-It Shop as lathe. It has seven other uses.**



Here the Do-It Shop is a vertical drill press.

the Do-It tells you how to turn lamp bases, furniture legs, candlesticks, bowls, ashtrays, and the like. To a certain extent the craftsman has to adapt his technique to the Do-It lathe, for while standard wood-turning lathes have three or four speeds varying from under 1,000 to over 3,000 rpm, the Do-It runs at only the single drill speed of about 1,800 rpm. But this is about in the middle of the range and any lack of flexibility is more than balanced by the advantage of getting the Do-It lathe as part of a package while a separate lathe with its own motor would cost you \$40-60.

Don't try to use the Do-It with only the switch on the drill; it's inconvenient and not altogether safe. Use a foot switch such as the Lee Engineering model described here in October 1955, or Versa Tool's "Footrol," mentioned elsewhere in this column under "Two saws in one."

**For flooded cellars:** "Drainmaster"; M. P. White Co., Boston 16, Mass.; \$1.95 plus 30 cents postage.

In the great floods here in the East last fall, several of our neighbors watched helplessly while the water rose in their cellars, inundating furnace, electrical equipment and other things. For some of these people, a pump would have made the difference between negligible damage and a sizable repair bill uncovered by insurance.

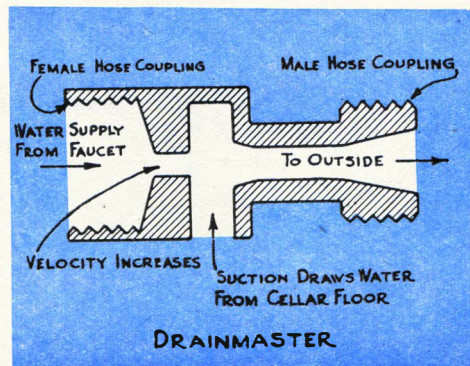
The usual type of pump is an electric sump pump. It's so called because it's set in a sump, a pit about 18 inches deep at a low spot in the cellar floor. Since the sump catches the first water that enters the cellar, the pump starts operating at the earliest possible moment. The typical sump pump will dispose of 3,000 gallons an hour—50 gallons a minute—against a 10-foot lift. If the water came in faster than that, you'd need a centrifugal pump driven by a 4 hp. gasoline engine. This could handle up to 200 gallons per minute. Above that you might as well resign yourself to the inevitable.

The gasoline-driven job would cost you at least \$200, and you might have it on hand for years without needing it. When you do need one, so many other people are equally desperate that there's no chance of buying or borrowing one. The electric pump costs about \$100 installed. The protection is well worth that, but there's one drawback: When there's a flood, the electricity is as likely as not to be off.

There's one other recourse. It will work only with relatively small volumes of water but it's simple and inexpensive. With the Drainmaster, you can use your own water supply to pump out the cellar. If you're on a municipal system the chances are that you'll still have water even if the electric power fails.

The Drainmaster is a tiny brass gadget only 3 inches long and 1¼ inches high, with a weight of less than half a pound. You connect one end of it to your water supply with an ordinary ½-inch garden hose. A similar hose connected to the other end goes out a cellar window. It works like the jet pump commonly used to raise water from wells. Water from the supply hose (see drawing) enters the Drainmaster where it is squeezed through a small tube. This increases its velocity and, if you remember your high-school physics, when velocity goes up, pressure drops. The water then enters a larger chamber where the drop in pressure creates a partial vacuum. This sucks up water from the cellar floor through an opening in the chamber and discharges the water with the hose stream to the outside.

The manufacturer claims the Drainmaster will



handle 300 gallons per hour. That's probably a maximum under favorable conditions—short lengths of hose, high pressure, and low lift. BLUEBOOK's tests indicated it would pump about 75 gallons per hour under unfavorable conditions. That could be a welcome help if the water weren't coming into the cellar too fast.

The test conditions were: intake hose, 9½ feet long (about average); discharge hose, 35 feet long (probably well above average); a lift of slightly over 6 feet; initial depth of water to be pumped out, 12 inches; supply pressure, 30 pounds (about average for a municipal or private system).

**Two saws in one:** "Circle Jig" (attachment for converting table saw into jig saw) with three 5-inch blades; Versa Tool Mfg. Co., Lake Ave. at Fourth St., Racine, Wis.; \$11.95.

Thousands of home handymen have circular or table saws but haven't got jig saws. The jig saw, after all, isn't as useful as the circular saw. But it's indispensable for such operations as scroll work, pattern cutting, and making odd-shaped parts for furniture and toys.

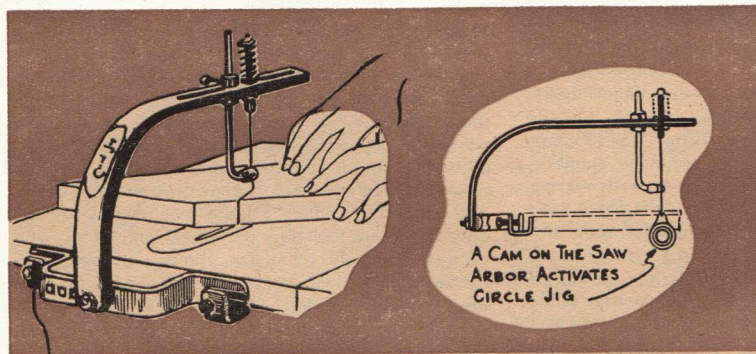
We described two makes of portable jig saws last October. These were saber saws, which have a stiff, short blade supported at one end only. A stationary jig saw ordinarily uses a longer, thinner blade-gripped

it will cut plastics, light metals, and wood (true); that it can be mounted on the side of the saw for long cuts (true, but this can be done more easily on some self-contained jig saws); that it will cut miters and angles (true, but the adjustment for angle-cutting may be inconvenient on some circular saws).

There is only one claim that we would differ with: that the device will convert a circular saw to a jig saw in three minutes. We took 40 minutes the first time, and after practice reduced that to 10 minutes. We doubt that few mechanics, except those who do it all the time, could line up the blade and make the adjustments properly in three minutes.

The Circle Jig has one real advantage over the self-contained jig saw. The less expensive jig saws usually have tables 9 inches square. The table of a circular saw is much larger—ours is 14 x 18 inches, and by means of extensions we have increased it to 18 x 36 inches. A larger surface like this is far more comfortable to work on.

In using the Circle Jig to convert a circular saw into a jig saw, you remove the circular blade and substitute a cam and connecting assembly link on the blade shaft. A cam is a wheel with a hole which is offset from the center; this provides the reciprocating motion of the jig saw. The connecting link assembly includes the lower chuck or holding device for the jig-saw blade. The upper chuck is mounted



Circular saw can be converted into jig saw by using Circle Jig, which costs about one-third the price of regular jig saw.

John Munro

under tension at both top and bottom. With a ¼-hp. motor it would cost you at least \$35.

But if you have a circular saw, there's a cheaper alternative. The Circle Jig will convert it into a stationary jig saw. How does the Circle Jig at \$11.95 compare with a regular jig saw at three times the price?

The claims for the Circle Jig are that it's complete, with nothing else to buy (true); that it requires no special tools to install (true—all you need is an adjustable wrench); that it uses standard blades which can be changed in seconds (true); that the blade tension is easily adjustable (true—you adjust it with the hand wheel which raises or lowers the circular blade); that there is "unlimited" power at the blade (substantially true; the power is ample); that

on an overarm or bracket which clamps onto the back of the saw table.

The Circle Jig was tested on a 1/16-inch-thick material of Fiberglas and nylon widely used for awnings, partitions, etc.; on ¼-inch Masonite, ½-inch plywood, and 1-inch (actually 25/32-inch) lumber. In all cases it cut fast and with good control along both straight lines and fairly sharp curves. The vibration was probably greater than in regular jig saws firmly bolted to a heavy bench, but not enough to interfere with accurate work or annoy the operator.

The saw was controlled with a foot switch, "Footrol," also manufactured by Versa Tool and retailing at \$7.95. This struck us as a little steep; the Circle Jig, on the other hand, seems moderately priced.

—BY CARL DREHER

# man around the house...

BY  
JOHN SHARNIK

- **Build a closet you can take with you**
- **What paint for what job**
- **A brick wall you can nail up**

THERE'S A NEW approach to the overcrowded-closets problem—a scheme to take the wrinkles out of your wardrobe without putting a permanent crimp in your budget.

Here's the way things *used* to work:

When your business suits start coming off the hanger looking like something out of the bottom of a GI barracks bag, you'd call in the carpenter and run up a bill of \$150 to \$300 per decent-sized new closet. Put your house on the block a year or two later, and you'd find you'd hardly added a buck to its market value. Those costly new closets? Well, you can't take 'em with you.

Or *couldn't* anyway. Now there's a way around this impasse—closets that are not only cheaper to install but that you can pack up when you move.

The principle is pretty simple: Instead of designing and building a closet as part of the structure of the house, you tackle it like a piece of furniture, standing free of the walls and ceilings, so you can hoist it into a moving van, like a desk or a bookcase, when the time comes.

Look up "closets" in any home-improvement manual and it'll start you building a stud wall, anchored to the existing walls of the room. In the new scheme, you just build yourself a large plywood box—2 feet deep, 6 feet 8 inches high and as wide as the available wall space. Mount it on legs or a flush base, and front it with a pair of lightweight doors rolling on standard sliding-door track (available at hardware or lumber outlets).

One further trick: Use bolts instead of screws and nails to assemble it, and you can dismantle it flat for real easy handling in transit.

If the job sounds beyond your skills, there's a guy who'll make it easy for you. He's Carl Koch, the young Massachusetts architect whose drawing board churns out ideas the way Yankee farm teams produce infielders.

He's in the process right now of putting on the market a knockdown closet built on this principle. You'll buy it in the form of a kit containing all the necessary parts—pre-cut and pre-finished. The only tool you'll need to assemble it, says Koch, is a screw-driver.

It'll be available, furthermore, in combination with other units, such as cabinets, shelves and shelf supports. All these modular units will fit together in various interchangeable combinations, enabling you to put together a complete free-standing knockdown storage wall. (For information, write: Teclbuilt, Inc., 55 Brattle St., Cambridge 38, Mass.)

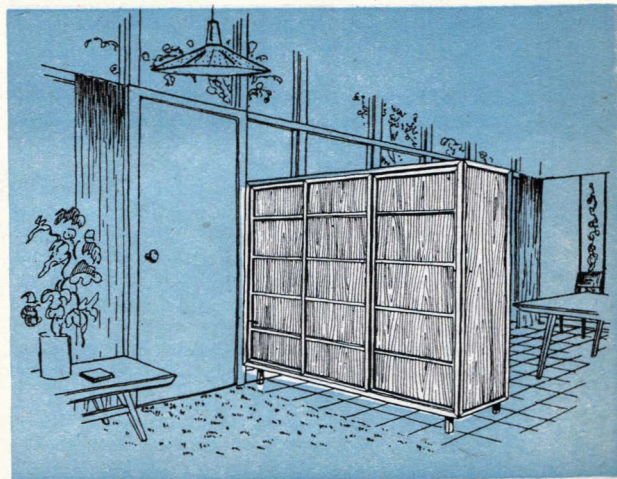
**MORE ON STORAGE.** When it comes to finding a convenient place to install storage units—built-in or knockdown—there's one spot you may have overlooked. That's the area alongside the fireplace.

Most old fireplaces project a foot or more into the room, creating awkward space along the walls on either side. Put this space to use by turning the fireplace wall into a storage wall, covering the spaces above and alongside the fireplace with shelves and/or cupboards.

And if you're hard put for closet space, you might cheat an extra foot and build your storage wall two-feet deep—enough to hang clothes. The fireplace then becomes recessed into the storage wall, giving it a look of special interest.

*Continued on next page*

**Movable closet near door can be used for coats.**



**HIDING PLYWOOD EDGES.** The question of how to conceal the exposed edges of plywood is answered easily now by a thin, flexible wood veneer that comes in rolls like tape. You glue it on, preferably with rubber-based contact cement, which requires no clamps or other pressure. Called Weldwood Flexible Wood Trim, it's available in various wood veneers to match the face of the plywood. Costs 79 cents per 8-foot roll at hardware stores and lumberyards.

**UPDATING A BATHTUB.** Got one of those old-fashioned claw-footed bathtubs in your house—the kind that traps dust, washcloths and pieces of soap underneath?

If you're not in a position to replace it, you can modernize it for a total expense of about five bucks and a couple of hours' labor. Just box it in with a plastic surfaced hardboard (trade-name: Marlite), which comes in various colors and patterns. One recommended pattern is a marbelized surface that'll give the old tub a look of the very latest in luxury and style.

**TOUGH TILE.** Anybody going whole-hog on a bathroom remodeling project—or adding a new bathroom—ought to look into the newest development in wall tile. It's porcelain-aluminum tile, which has a hard ceramic surface heat-fused to an aluminum backing. The combination is tough and chip-proof—like regular ceramic clay tile, but it's only a fraction as heavy. That means you can use it in places like a finished-off attic, where clay tile might require reinforcing walls and floors.

It can be applied to the wall with mastic instead of setting in cement. For information, including price, consult a tile contractor in your neighborhood or write Vikon Tile Corp., Washington, N. J.

**PAINT LINGO.** What with one chemical discovery after another, the paint field is getting to be as crowded with confusing new jargon as those ads for summer suits. The following advice from paint experts will help you choose from among the various new "miracles" on the paint shelves:

- To paint a kitchen or bathroom, an *alkyd*-based paint will usually be your best bet. Available mostly in glossy finish, it's highly resistant to moisture, dries so quickly that it's washable next day.

- For living room, bedroom and other parts of the house, a *latex* (rubber-based) paint is the likely choice because of its flat soft finish. It's also washable—but in most cases not until you've let it "cure" for three or four weeks. Better stay away from it in places where moisture is prevalent; that'll keep it from setting.

- *Silicone* paints—as previously reported here—are for masonry walls, to check moisture seepage and sweating.

- *Vinyl* paints, which you've probably been hearing about lately, provide an extra-tough, washable

surface, but so far they're available only in a few dark shades, and only for industrial uses.

**HOUSE AT TWO-THIRDS OFF.** If you want to know what proportion of cost you're saving when you do it yourself, I've heard of an experience that may give you a rough idea.

Nels Christiansen, a retired Navy man with a skilled pair of hands, has built himself a handsome adobe-brick ranch house in California—with no professional help except in clearing the site. Cost of materials: under \$10,000. Market value, according to offers he's received—and turned down—\$30,000 or more. Savings on labor, in other words: a good two-thirds.

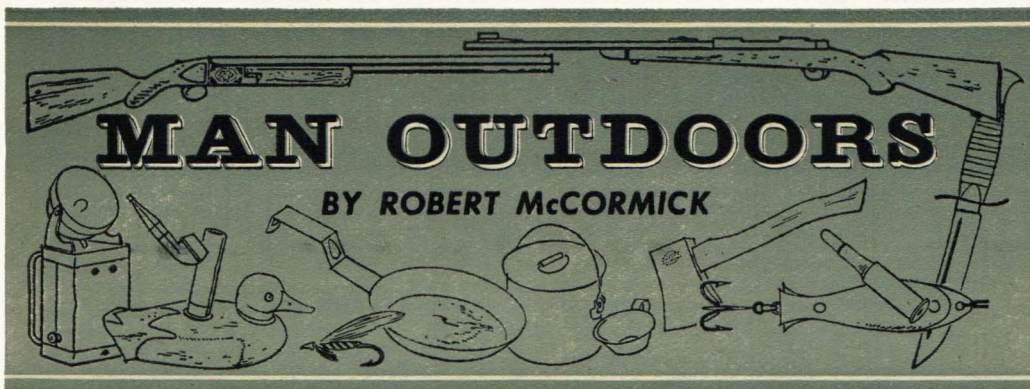
**WRITES ON ANYTHING.** Useful around the workshop is Magic Marker, a gadget that looks like a pregnant fountain pen, writes indelibly on any kind of surface, porous or smooth. A sucker for gadgets, I've actually found good use for this one—to lay out patterns for a recent sheet-metal project and to register my name on my tools, enabling me to salvage them from other surrounding households after neighbors have come borrowing or the neighborhood kids have staged one of their periodic raids.

**NAIL-ON BRICKS.** A slew of wall and siding materials—some reported in this department—have been devised to look like brick. Most realistic of all is a new substance that you can nail to any wall surface, exterior or interior. It not only looks like brick but feels like brick—because that's what it is.

Nail-On Brick, as it's quite logically called, is nailed in overlapping tiers, like clapboards. After you've nailed the whole wall in place, you can fill the joints with mortar, to provide a final touch of realism—and to hide the nails. (Inquire at local lumberyards or write Ludowici-Celadon Co., 75 E. Wacker Dr., Chicago 1, Ill.)

**NON-STICKING WINDOWS.** Plastic—a material that seems to provide many of the answers to housing problems nowadays—has come up with still another answer. The problem: moisture that causes wood window frames to 1) expand and stick, 2) contract and admit drafts, 3) rot; and causes metal frames to oxidize. A new plastic window frame won't absorb moisture and needs no painting. (Plyco Corp., Elkhart Lake, Wis.)

**BOTTLE LAMPS.** If you put away a couple of those Christmas-gift whiskey decanters with the idea of turning them into something useful, one of the big liquor distilleries is willing to offer you an assist. The Old Forester distillers have come out with a do-it-yourself kit for converting the holiday dead soldiers into lamps. Costing \$2.25, the kit consists of a switch socket that fits tightly into the mouth of the jug, plus cord and shade. (Write Pennington Crafters, Inc., 3412 "J" St., Philadelphia, Pa.)



**More power, quieter operation, easier handling, smoother styling—  
these you'll find in the 1956 crop of outboard motors.**

**T**HIS MAY COME as something of a shock to outboard-motor enthusiasts, but major makers of motors have drawn heavily on automotive-minded Detroit for ideas to improve their 1956 crop. Basic changes: added emphasis on two-tone color stylings and increased horsepower.

Traditionally, the outboard motor always has been a drab sort of thing, entirely in keeping in looks with the old Model T Ford. Some years ago, however, the trend to colorful, streamlined stylings set in, and it has grown to such proportions that this season even the old Johnson "Sea Horse Green" has given way to an iridescent "holiday bronze," generously trimmed with white.

Mechanically, increased horsepower in many motors produced by the industry's Big Four—Johnson, Mercury, Evinrude and Scott-Atwater—is indica-

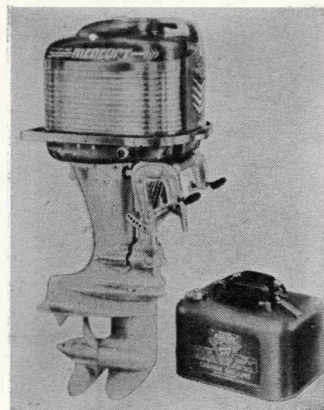
tive of today's trend toward larger, roomier and more heavily-loaded outboard craft—all-purpose family runabouts capable of hauling whole groups and their picnic gear to distant shores. Added power also is needed because of the increased use of the outboard for water skiing, for cabin cruisers, and for offshore and open-water ocean-fishing jaunts.

With all this in mind, we've gotten together a brief roundup of the 1956 crop of outboards, with special emphasis on what's new:

**MERCURY'S MARKS**—Ten models: the Mark 6 (5.9 hp.); Mark 25 and 25F (20 hp.); Mark 30 and 30E (30 hp.); Mark 55 and 55E (40 hp.); and three new competition models for stock outboard classes B, C and D—the Mark 20H, 30H and 55H (horsepower varies with RPM's). The "E" models have electric starters. Priced from \$225 to \$730.

**Features for '56:** Biggest news from Mercury is the fact that, at 40 horsepower, the Mark 55 still remains the world's most powerful production outboard—a healthy unit which will do the work of two 25's on even the biggest family-type cabin cruisers, big fast runabouts and/or commercial workboats and offshore fishing craft. Provided with either manual or electric starting systems, the 55 also features the "silent" Dyna-Float Suspension rubber mounts which now have become standard equipment on all save the smaller Mark 6.

Aside from the strictly competitive models built especially for racing, Mercury's newest model for '56 is the Mark 30 MercElectric, a motor its makers claim is "the most versatile engine of the season." At 30 hp., this one is capable both of 30 mph and a "turtle-slow" trolling pace for anglers; its four cylinder-in-line engine features Dyna-Float suspension, a fully waterproofed dirigibly mounted integral aircraft



**Most powerful outboard on market is Mercury's 40-hp. Mark 55. It does work of two 25's, features new suspension system for less noise and vibration.**

type magneto, plus a 12-volt electric starter and generator designed to permit use of lights, horns, etc., without fear of battery drain.

Other items: All 1956 models incorporate the safety and endurance features pioneered in the Mercury line, i.e., waterproofed spark plugs and magnetos, uni-cast one-piece gear cases that seal the lubricant in and the water out, the safety propeller clutch, a clog-proof water pump and a single-line fuel system. In addition to the four basic two-tone color combinations now available, others are planned for later in the year.

**EVINRUDE'S '56 MODELS**—Nine models: 3, 5.5 (new), 7.5, 10 (new), 15 (two models), 30 (three new models). Because of what the Evinrude people say is today's greater variety of uses for the outboard, the '56 line consists of "a motor for every need"—three holdovers and six new models including three in the 30-hp. class. Priced from \$145 to \$580.

**Features for '56:** Supplanting the company's 25-hp. units, three new 30's are the major offerings for the new season: the deluxe electric-starting and highly-stylized Lark, in two-tone blue-grays with red and chrome trim; the electric-starting Big Twin; and the same motor with a standard manual starting system. Other newcomers: the electric-starting 15-hp. Fastwin, a 10-hp. Sportwin and a 5.5-hp. Fisherman.

Evinrude, like Johnson, also claims to have effected a marked fuel saving in the big 30-hp. motor,

even over the old 25's. In addition, the company claims to have eased the physical effort necessary to start all motors manually. A new, low-speed adjustment to provide trolling at slow speeds has been incorporated into the 30-hp. units.

Other items: The "aquasonic" principle of motor silencing, introduced in the 1955 models, has been extended to all '56 motors except the 3-hp. Lightwin. Remote controls, permitting operation of the motor from any position in the boat, also are available this year on all save the Lightwin. A lighter, more compact electric starter is introduced in the 15- and 30-hp. models.

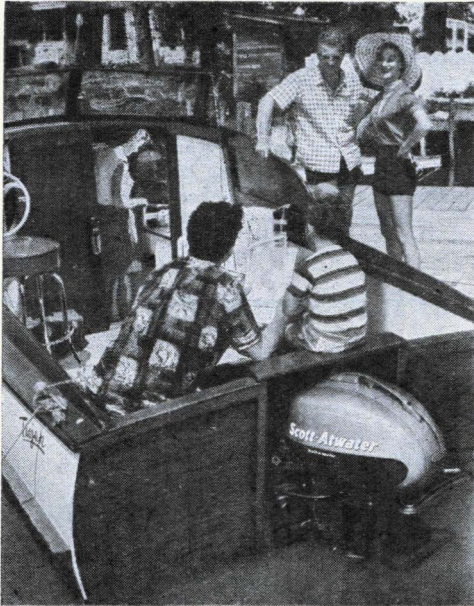
**SCOTT-ATWATER BAIL-A-MATICS**—Six models: 3.6, 5, 7½, 10, 16 (new) and 33 (new) horsepower. Still the only outboard motor maker in the business to supply an automatic bailing device as standard equipment, Scott-Atwater is now offering this feature on all units except the tiny 3.6-hp. job. Priced from \$114.50 to \$559.50, the motors are the lowest priced on the market.

**Features for '56:** Two brand-new, high-horsepower models feature the Scott-Atwater line this year: the 33-hp. alternate-firing, twin-cylinder, and the husky 16-hp. with the frankly "auto-style streamlining." Claimed to attain speeds up to 42 mph, the 33 is available either with conventional or electric push-button starting. Added attraction: an exclusive built-in tow ring, located in the lower unit of the



Streamlined shapes (eyes left, you guys!) are the big thing in outboards this year. New 30-hp. Evinrude is fine for water-sheing, has low-speed adjustment for trolling.





Pipe the lines of the model above. She's said to be fast and versatile, to have plenty of cruising power, to give a real smooth ride.

motor, for use either by water skiers or as a kind of "trailer-hitch" to other boats.

Biggest splash, though, probably will be made by the new 16, a marked departure from the traditional in outboard motor styling. As part of its streamlined features, even the controls are concealed behind a flip-open panel. Added features: an underwater exhaust, air-intake silencer, Hush-Spring Mount, rubber-mounted hood. Free-Flow V-Valves for smoother operation and a Safety-Zone Shiftlock to prevent shifting gears at high speeds. Comes with manual or electric starting.

Other items: Bail-a-matic, still an exclusive with Scott-Atwater even after three seasons since it first was introduced; a complete gearshift on all save the lightest model; snap-off hoods for ease in inspection and repair; a twist-grip speed control. All Scott-Atwaters are especially constructed to resist salt-water erosion and require no flushing, even after ocean use.

**JOHNSON SEA HORSES**—Nine models: 3, 5½, 7½ (new), 10, 15 (two new models) and 30 (three new models) horsepower. Both the new 15- and 30-horsepower units come with or without electric starters. The Johnson Javelin is a 30-hp. deluxe beauty developed for the man who wants added sparkle, stainless steel trim, concealed controls and the ultimate in advanced styling. Prices range from \$146 to \$582.

**Features for '56:** While nothing as sensational as the suspension-drive "quiet" motors introduced in 1954 and 1955 is on the market from Johnson this year, major mechanical improvements all are designed to (1) increase these silent-operating features and (2) decrease the amount of physical work necessary to both carry or operate the new motors.

Exclusive of the 3-hp. motor, which engineers feel is quiet enough for most purposes anyway, new rubber suspension mounts have been installed on all other units in the '56 series to bring the ultimate in "silent" operation to fishermen. Suspension drive first appeared in the Johnson 5½, traditional anglers' favorite, two years ago, then was installed on the 10-

MARCH						
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## Florida Bass Snook

**Good**—Though faint stirrings of spring brings an end to ice-fishing in northland, smart anglers intent on the best in the sport postpone their Florida vacations till March when fishing really begins to get good. Famed Florida bass will be hitting hard now, and the trick is to pick out the best of more than 30,000 lakes, thousands of miles of streams, for fish running 10-16 pounds.

**Better**—In Florida, try entire St. John's River system from its mouth near Jacksonville down through sprawling Lake George to the headwaters. Other good bets: any open lake near such Central Florida towns as Leesburg, Eustice, Orlando, Lakeland, Winter Haven, Lake Wales and Kissimmee.

**Best**—Now's the time, too, for great sport on snook, baby tarpon, and other Florida species in canals along the Tamiami Trail, and the brackish waters around Everglades City and Marco. Salt-water angling terrific around the Palm Beaches, Stuart, on down to Marathon and Key West. Florida West Coast, other Gulf ports to Brownsville, Tex., also excellent now.

and the old 25-hp. jobs last year. Now it comes as standard equipment on the entire line.

Other items: smoother pull-cord starter action on all models below the 30-hp. class, which the Johnson people claim decreases the physical effort in starting the motors as much as 40 percent; a fuel-saving device on the 30-hp. motor designed to make it more economical in operation than even the old 25 it replaces; and a return to the old lifting and/or carrying handles, which were eliminated from last year's 25 but reinstalled on this season's 30.

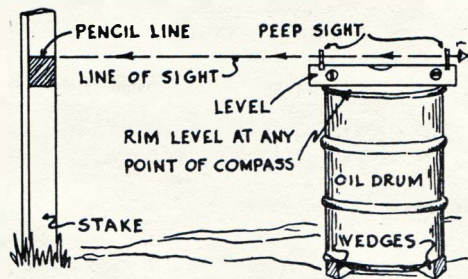
**FOR ALL OUTBOARDS:** The Glen H. Clemens Co., RR No. 14, Fort Wayne, Ind., is marketing a heavy-duty, 10-ounce khaki motor cover designed to keep your motor like new under all sorts of conditions.

Ideal for both winter storage and hauling the motor in your car, the cover guards against dirt, dust, scratches and paint chipping. Sold to fit all popular makes, the price is \$4.85 and up, depending on the size and make of motor. For additional info, write the Clemens people direct.

## make it easy . . .

**You don't** need expensive surveying instruments to get a building started level or to find out how much the ground slopes. All you need is a 50-gallon oil drum with a good rim around the edge (or another suitable platform); an ordinary level; a peep sight that attaches to the level (mine cost about a dollar a few years ago); and some long stakes.

Here's what you do: Set the drum on end. Lay the level across its rim and prop the drum with dirt or wedges until it's level all around. Now,



drive in stakes, one for each corner and a couple for each wall of the proposed building. Keep them outside the building's perimeter so you can let them stand during construction. Next, attach the peep sights to the level. Sighting through them, turn the level on top of the drum rim until you have a stake in your sights. Have a helper hold a bright-colored card on the stake, moving the card up or down until the front wire of the sight rests exactly on the top edge of the card. Have the other person mark with a heavy pencil along this line. Repeat for each stake. The pencil marks will all be at the same level and, by measuring up or down from any given mark, you can keep the building level.

—Louis Martin Reütz, Bourbon, Mo.

BLUEBOOK will pay \$5 for each "Make It Easy" published, but none can be acknowledged or returned.

**I find** it very handy to wear an old sock on my hand while I am painting. It absorbs dripping paint, and I have a bit of rag at my fingertips to rub off spilled drops of paint.

—Richard C. Dahl, Lincoln, Neb.

**A quick** and efficient way to start a charcoal, coal or wood fire is to use a regular fusee flare of the type used as warning signals by the railroad and trucking firms. These flares are inexpensive and can be purchased at sporting goods or hardware stores. Ignite the flare, then lay it in the bottom of the fireplace, piling charcoal or wood around its hot flame, which burns for about ten minutes.

—Thomas P. Ramirez, Fond du Lac, Wis.

**Sometimes** the hardest job in redecorating is removing old wallpaper. I found that the use of double-edged razor blades in a dime-store scraper will peel dry wallpaper easily without gouging the plaster. If the paper is stubborn, soak it with a household sponge.

—Mrs. Matthew P. Dwyer, Middletown, N.Y.

**Whenever** your whetstone becomes dirty, greasy or glazed moisten a small cloth with cigarette-lighter fluid and rub over the stone. A few brisk strokes will restore its sharpening qualities.

—Jack D. Hungate, Tampa, Fla.

**To put a new tire** on a child's tricycle: Get a piece of used acetylene gas hose from any garage or shop. Cut to circumference of wheel minus  $\frac{1}{4}$  inch. Push a piece of steel wire through hose. Put hose on wheel and twist wire until hose is tight to rim. Snip the ends of wire and bend stubs out of sight in the break in hose.

—Norm Grigg, Rogers City, Mich.

# THE POWER

BY FRANK M. ROBINSON



# THE POWER

BY FRANK M. ROBINSON

**Working with Bill Tanner on that top secret survival project for the Navy were some of the best research scientists in the field. And among them was a killer who, with supernatural power, now stalked him through the city streets.**

OLSON was cracking up.

It had been clearly coming for a whole month now, Tanner thought. Every day Olson had grown more nervous until now the psychologist reminded Tanner of a fine crystal goblet—ping him just right and he would fly into a thousand pieces.

The others had noticed it, too, which meant that Tanner would have to do something about it sooner than he had thought. And no matter how he handled it, getting rid of Olson was going to be an unhappy job. Still, it might be possible to do something for Olson, though he didn't know what.

He paused for a moment in the doorway of the Science building and dug the bowl of his pipe into his tobacco pouch, forcing the grains of tobacco in with a heavy thumb.

What the hell was eating Olson?

Tanner zippered the pouch shut, then took a last breath of spring air and pushed through the glass doors. The project laboratories at the Chicago university were already filling up with the usual influx of Saturday-morning students, eager to pick up a spare dollar. They flocked in and signed waivers and then the graduate assistants assigned them to the different experiments.

He stopped by the cold room for a moment to watch a volunteer floating in icy water, thin, thread-like wires leading to thermocouples strapped to various parts of his body. They would of course fish the man out before any damage had been done. Anyhow, he reflected, human beings were pretty durable—they could always stand more than they thought they could.

He stared for a while in silence, then walked down the white-washed corridor to the Limits Experimentation lab

where Commander Nordlund, the Naval observer, was supposed to meet him.

Olson.

A pudgy, very blond young man, his own age, who hid behind a pair of thick, horn-rimmed glasses. Brilliant, narrow-minded, and anti-social. The kind for whom a university was always a refuge, but not the kind you expected to flip his wig, either. Something had happened to Olson—but just exactly what?

He would have to do something about it and the other members of the committee would watch him closely to see how he handled it. If he fumbled it . . . Well, Van Zandt had the hatchet out for him and would administer the *coup de grace* with as much dispatch as possible; you probably wouldn't even see the blood. Chairman today, flunky tomorrow.

In the limits lab, Commander Arthur Nordlund, USN, was half-sitting on a table, cigarette dangling from pale fingers. Nordlund was waiting to talk to him about Olson, Tanner thought, and he couldn't blame the man for it—much as he might dislike Nordlund. There were eight people in the United States who knew the limits of human endurance better than anybody else on earth. The government couldn't afford to let any one of them slip his moorings and start to talk.

"How's the world going, Commander?"

Nordlund smiled faintly and managed to look annoyed at the same time. He was slender, the type that looked well in a uniform, with sharp, delicate features and a pencil-thin mustache. He was in his early thirties, not much older than Tanner.

But I can't talk to him, Tanner thought. He's the silk

type of personality and I'm the tweed, and never the twain shall meet.

Nordlund flicked open a German cigarette lighter that lit on contact with the air. "I think we ought to discuss what you're going to do with Olson."

"I was thinking of having a talk with him."

Nordlund shook his head. "Uh-uh. That won't wash, Professor, it's not enough. The man's in bad shape and I want to know what you're going to do about it and when."

He was going to hate to do it, Tanner thought slowly. Whatever was bothering Olson, firing him from the committee might be the straw that broke the camel's back.

Nordlund read his expression and a slight tinge of authority crept into his voice. "I appreciate your feelings for the individual in this case, Professor. But even though this isn't the hydrogen-bomb project, it's still security work. The government can't afford to have a man go to pieces on work like this. It's like a line on board ship—when you see it's frayed and might snap, you replace it."

Tanner said, "Well, I'll tell him after the meeting. Maybe I can convince him he needs a rest, something like that."

Nordlund stood up. "Handle it any way you please. And while we're at it, what about his sister? She's never struck me as being a stable type, either."

Tanner turned on his heel. "It's a little late to shake up the whole committee, Commander."

"Suit yourself, Professor, I function only in an advisory capacity." His voice changed slightly and Tanner could almost feel the piano wires in it. "But if anything goes wrong, we'll know where the responsibility lies, won't we?"

They got to the seminar room just before the rest of the committee members arrived and Tanner settled back to study them as they filed in.

Patricia Olson—Petey, for short—was first. She might have been pretty but she wore no rouge or lipstick to dress up what she had. She wore her very blonde hair pulled back in a bun and plastic framed glasses with perfectly round, enormous lenses. A slightly flat face, a nose that could be called pert, a perpetual frown, and very light, flaxen eyebrows. Efficient. Calm. And very cold.

The next was Professor Owen Scott, whom campus mythology had built up as another Mr. Chips. A shell of a once-vigorous man, Tanner thought, with a wispy gray hair hanging over a lined face. The chairman of his own department but a little too old for chairmanship of the committee.

Marge Hanson of Biology came in giggling at some comment of the man behind her. Auburn-haired, a larger and far prettier girl than Petey but, like Petey, one who insisted on low-heeled shoes and sensible skirts. The type who played tennis and swam and danced all night and woke up early the next morning still thinking the world was a wonderful place to live in.

She caught his eye, said "Hi!" and winked. He caught himself smiling and then winked solemnly back.

The wit who had made Marge laugh was Karl Grossman, a fat, untidy little man who never tucked in his shirt securely enough. Then there was Eddy DeFalco, the third member of the anthropology department, tanned, well-muscled, cocky, and confident.

The girls adore him, Tanner thought. The boyish type they go to bed with when they're off on a vacation and nobody knows them. But why blame Eddy just because he's lucky?

Professor Van Zandt was a thin, nervous man in his middle forties with ice-blue eyes that were unnaturally sharp. There was a little too much padding in his suit-coat shoulders and Tanner had a hunch that beneath the double-breasted coat there was the beginning of a slight paunch.

Beware the Ides of March, for Van will get me if I don't watch out. . . .

Bringing up the rear was John Olson, Petey's older brother, his yellow hair ruffled, nervously moistening his thick lips and hanging on every word that Van Zandt was saying. He looked jumpy and scared.

Why?

They were all different, Tanner thought. And they all

had their faults. But it was a good committee. It was probably one of the brainiest that could be assembled at any university in the United States.

"If we're all here," Grossman grunted heavily, "why should we delay?"

Tanner nodded to Petey, who started to read the minutes of the last meeting: "*Saturday, May twenty-second. The meeting of the Navy committee for Human Research was called to order . . .*"

Tanner waited until she had finished reading the minutes, then made a show of fumbling with his pipe, wondering briefly how many of them knew it was Young Man with Prop.

"During the last year in our research program for the Navy," he started easily, "we've been doing primarily survival research—why some men live and some men die under different stresses and environments. Under battle conditions, certain men are smarter, more efficient, and more capable than others. Having determined the qualities necessary for survival, we've been trying to figure out how the successful ones, the ones who *do* survive, get that way, what factors play a part."

He champed a little harder on his pipe and squinted through the smoke. "Hunting for people with these characteristics has been a little like hunting for a needle in a haystack. So John Olson suggested a questionnaire—in which you can cover a lot of people quickly at a small cost. Those who showed promise on the questionnaire could be given more exhaustive physical tests later. As you recall, the questionnaire we drew up covered an individual's past medical history, psychological outlook, family background, and heredity—all the items we had agreed were important, and many of which can hardly be tested in a physical sense." He smiled cautiously. "We all agreed to take the test ourselves last week—sort of as a dry run. None of us signed our names, for which I'm sorry. John's compiled the results and I must admit there were some pretty fantastic answers on one of them."

DeFalco looked curious. "Like what?"

Tanner held up one of the questionnaires. "The person who filled it out, if we take it at face value, has never been sick, never had any serious personal problems, never worried, and has an IQ close to the top limits of measurability. His parents came from two distinct racial stocks and for what it might be worth, his father was a water-dowser and his mother a faith-healer."

There was a ripple of laughter around the table and even Professor Scott was grinning. Tanner put the questionnaire aside. It had been good for a chuckle at least.

"If there are no more suggestions, I'll have Petey send the form to the printers, and then—"

"Professor Tanner!"

He glanced down at the end of the table. Olson's pudgy face was covered with a light sheen of sweat that glistened in the sunlight coming through the windows.

"Do you think that questionnaire—the one from the superperson—was on the level?" said Olson.

"You mean, did I fill it out as a gag? No, I didn't—but obviously somebody did."

Olson wet his lips again. "Are you so sure of that?"

There was an uneasy silence, then Professor Scott snorted: "Rubbish!"

Olson didn't give ground. "Maybe there's something to it. I think we ought to . . . look into it."

Nordlund edged into the conversation. "If it's on the level . . ."

"It isn't," Tanner said curtly. "I hardly think we should take it seriously. And there are a lot of important things to cover today."

Olson's voice rose to a nervous squeak. "Maybe you don't want to admit what it means, Tanner!"

They were all staring at Olson now. His face was damp

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Illustrated by Richard Cardiff

and his eyes a little too wide. The eyes of a man scared half to death, Tanner thought clinically. Then he could feel the sweat start on his own brow. He had a hunch that Olson was going to blow his stack right in the committee room.

He tried to head him off, to get the frightened man to talk it out. "All right, John, just what do you think it means?"

"I think it means the human race is all washed up!"

Tanner glanced over at the Navy man and could see that Olson's outburst was going over like a lead balloon with Nordlund; there was a look of shocked surprise on the other faces. A moment of embarrassed silence followed, then Petey, looking as if she were about to cry, said, "John, I think we better—"

Olson didn't look at her. "Shut up, Pat."

Nobody said anything. They were going to let him handle it, Tanner thought uneasily. It was his baby. He held up the questionnaire. "Who filled this one out?"

Another strained silence, one in which a slight, uneasy movement in a chair or an embarrassed fumbling with papers sounded very loud.

"Don't you think we ought to skip this?" Van Zandt said impatiently. "I don't see how it's getting us any place."

Tanner flushed. He was trying to humor Olson and Van Zandt knew it but then, this was the academic jungle. Van had won his spurs a long time ago, but he still liked to keep in practice.

He dropped the questionnaire. "All right, we'll forget it for now." He nodded to Olson. "See me after the meeting, John, and we'll talk about it then."

"You're scared!" Olson screamed in a hysterical voice. "You don't want to believe it!" He was trembling. "Well? What are you going to do about it?"

It was like watching an automobile accident. It repelled you but you couldn't tear your eyes away. There was a sort of horrible fascination to this, too—the sight of a man going to pieces. He waited for Van Zandt to say something, to squelch his younger colleague with a few broadsides of logic. But Van said nothing and only stared at Olson with a curious, speculative look in his eyes. Nobody knew Olson better than Van Zandt, Tanner thought, but for reasons of his own, Van was letting John dig his own grave and wasn't going to argue him out of it.

There was nothing left to do but go along with Olson. He turned to Marge. "Do you have a pin?"

She found one in her purse and handed it over. He stood a book on end on the table, imbedding the head of the pin between the pages so the point projected out about an inch. Then he tore off a tiny fragment of newspaper, folded it into a small umbrella shape, and placed it on the pin point.

"Maybe we can prove something this way, John. I'm assuming that our—superman—has mental powers such that he could make this paper revolve on the pin merely by concentrating on it. The paper is light, it's delicately balanced, and it wouldn't take much to move it. Okay?"

There was a round of snickers but Olson nodded and Tanner felt relieved. It was the only thing he could think of on the spur of the moment. A kid's game.

"Anybody care to try?"

Marge said, "I'm willing if everybody else is."

The others nodded and she stared intently at the pin. The paper hung there quietly, not stirring. After a minute she leaned back, holding her hands to her head. "All I'm doing is getting a headache."

"Van?"

Van Zandt nodded and glared at the paper umbrella. If sheer will power could do it, Tanner thought, Van Zandt was his man. But the paper didn't move. Van Zandt leered. "My superior talents apparently aren't in evidence this morning."

Olson himself and then DeFalco tried and failed. Nordlund stared intently at the pin and then looked bored when the paper didn't even tremble. It was Professor Scott's turn next.

The paper hat tilted slightly.

There was a thick, frightened silence. The condescending attitude had vanished like a snap of the fingers and Tanner could feel the tenseness gather in the room. All eyes were

riveted on the suddenly trembling old man. "My God, I didn't . . ."

"Very simply explained," Grossman said quickly. "A door slammed down the hall, though I doubt that any of you heard it in your concentration. I am sure that a slight draft would be enough to affect our little piece of paper."

The old man looked enormously relieved and some of the tenseness drained away. Grossman tried it next, with no result.

Tanner shrugged. "Well, John?"

Olson was suddenly on his feet, leaning his knuckles on the table and glaring down the length of it. "He wouldn't show himself in a test like this!" His pudgy face was red. "He hasn't got the nerve, Tanner, he's hiding!"

What the hell do you do in a case like this? Tanner thought. They were babying a neurotic but they had gone this far and it wouldn't hurt to go a little further. He'd play along just once more. I feel embarrassed for the poor guy. And it's partly my fault; I should have done something about it a week ago.

"We'll try it again, only this time all together." Olson's superman could still hide and yet reveal his powers—if he wanted to take on Olson's dare. When nothing happened, maybe then John would be convinced. Except that you could never dissuade a neurotic when he wanted to believe in something . . .

He nodded to the others.

On the street outside there were the faint sounds of automobile traffic and the muted vibrations of conversation. Some place far away tires screeched. Equally remote were the indignant complaints of a housewife, short-changed at a sidewalk fruit stand. In the room itself, there were no sounds, not even the muffled sighs of breathing. And there was no motion, other than that of the small motes of dust floating in the bars of sunlight that streamed through the window.

And the tiny paper umbrella which trembled, tilted, and then spun madly.

## 2

TANNER STIRRED RESTLESSLY under the sheets, then reached for the window shade and pulled it aside slightly so he could see out. Dark clouds were scudding across the face of the moon and in a few minutes they'd probably start to seep rain. The street lamps lined the walk like king-size candles and a mile away he could see the red glow that marked the winking neon of Chicago's Howard street. There was a bar down there that didn't catch any of the student trade and didn't go in for any of the shrieking jazz combos. It was where he usually took Marge when he was in a talkative mood. And where he wished he were now.

The rising wind rattled the pane and whistled through the narrow space between window and frame. The cold air on his naked stomach made him shiver. Or had it been just the chill air? Maybe it was the idea that the moon and the dark clouds were looking down on someone else right then—somebody who was as superior to him as he was to a moronic bushman.

He thought back to what had happened that morning. The paper umbrella had spun like a dervish and they had sat there, frozen with fear and amazement. His own self-confidence had left him with all the speed of a small boy sliding down a banister and his stomach had felt as if he had been eating chopped ice for breakfast. For a brief moment his world had wobbled and teetered and almost collapsed.

Then Grossman had sworn in guttural German and had hit the book with his open palm, crushing the paper hat and pin down among the pages. Then they had left, babbling to each other and with no immediate plans on what to do next.

Well, to hell with it.

He fumbled on the bed table and found his pipe and lit it. The bowl glowed dimly in the dark and the smoke took some

of the chill off his chest. He lay back on the pillow and stared out the thin space between the shade and the glass, looking at the speeding clouds and the winking stars without actually seeing them.

Olson had been sure the superman would hide. Olson had been insistent on some kind of a test. And Olson had been scared to death, scared enough to stand up against group disapproval, which had probably never happened before.

He suddenly regretted that he had never got to know Olson very well, that he had never gone out of his way to be friends with the man. Olson was the type who desperately needed friends and companionship, who needed to lean on other people. All in all, the faculty at the University had been cold to Olson—himself along with the others.

He looked at his watch. It wasn't too late in the evening. In fact, eleven o'clock Saturday night was ridiculously early.

He swung his legs over the side of the bed and walked to the phone, the cold air in the room sending chills over him.

The familiar buzzing and then Susan Van Zandt's voice. "Hello?"

"Hello, Sue. John there?"

"No, Bill, he isn't in. Do you want me to have him call you?"

He hesitated. Olson—who roomed at the Van Zandt's—must have gone out, though he had gotten the impression that John was just as tired as he was and had made no plans for the evening. Maybe a movie or something . . .

"Forget it, Sue. I'll call him tomorrow."

Olson not being home meant nothing at all, he decided, except that Saturday night, despite the weather, was too good a night to waste by sleeping.

He sat down on the phone table and dialed Marge's number.

"Waiting long?" Tanner asked.

"Long enough to order for the both of us, and have two men try to pick me up. And I'm sure that the waitress thinks that anybody who orders Scotch-on-the-rocks and a glass of beer at the same time is a little odd."

He slid into the booth beside her. "You should have ordered two Scotch's. Then the waitress would have considered you a common drunk and perfectly normal."

He drained half his beer and looked at Marge over the top of the glass. She wore her auburn hair in an Italian cut that went very well with her light coat of tan. She didn't fuss over clothes but she knew how to wear them. A plaid skirt and a light green sweater and a thin, choker necklace. A wisp of perfume and the faint odor of sweetly scented soap.

She was the pretty high-school teacher, the type every freshman falls in love with.

"Stop it! You're looking at me as if I were a butterfly on a specimen slide!"

"Not a really beautiful butterfly, Marge—but definitely a pretty one."

She wrinkled her nose. "You can think up a better line than that, Bill. Besides, you could have said *that* over the phone."

He didn't feel much like banter. "I've been thinking about this morning."

Her smile fled and she was suddenly the university intellectual again. "Is there anything left to say? I'm about talked out."

"Well," he said, "I know one thing: I'd like to find out who it is."

"I'd almost rather not know."

"It could be you, of course."

"Me?"

He half-smiled. "Why not? Superman doesn't have to be a *man*, you know."

"And it wouldn't do much good for me to deny it, would it?"

"That's just what you would be expected to do, under the circumstances."

"All right," she said coolly. "Then I don't deny it."

For a moment he felt as if somebody had dropped an

ice cube down his back. "How do I know you're kidding?"

"You don't," she said maliciously.

He drained the rest of his beer. "Let's talk about something else."

An hour later the bartender flicked the lights twice in rapid succession and Tanner glanced at his watch. Closing time—and early Sunday morning. He helped Marge on with her jacket and they stepped out into the night. Outside, a light fog had rolled in from the lake and it had started to mist. The dark clouds had settled so low that Tanner felt a slight touch of claustrophobia.

They started walking down the street and he brushed her hand with his. Their fingers met and clung.

"Do you ever get lonely, Marge?" He let it hang there. "Sometimes."

"You don't have to be."

He could sense her smiling faintly in the dark. "You're nice, Bill."

"But not that nice?"

She seemed distant. "It's a cold night, isn't it?"

He walked her to her apartment, kissed her lightly on the cheek, and left her fumbling for the door key. He was at the bottom of the steps when she said: "Bill? John Olson called me earlier this evening and said you should be sure to look him up tomorrow. He said he had been trying to get hold of you all afternoon, he had something to tell you."

He wished to hell she had told him sooner. "I'll give him a ring in the morning."

He turned and started down the street. It was only a mile back to his own apartment and there was no sense in waiting for a bus that might never come.

Street lamps on the shadowed streets, a haloed nimbus surrounding the globes. The store fronts dark and haunted, the pavement deserted. Life had retreated from the streets into smug little homes and apartments and rose wall-papered bedrooms. It gave him the willies. It was as if the city were totally empty, mile after mile of desolate streets, a no-man's land with himself as the only living person. . . .

The click of his heels echoed back and forth from store to store—the solid, steady sound of leather hitting concrete. The solitary *click-click-click* was like the ticking of some huge watch.

He had covered three blocks before he caught the tiny separation in the sounds, the minute distinctions between the sound of his own heels on the sidewalk and the sound of someone else's a block down. So he wasn't the only one out late at night, he thought. In a way, it spoiled the illusion.

He turned a corner and crossed over a block. The footsteps that paralleled his own also turned a corner and crossed over a block.

He changed step, just to vary the rhythm.

A block away, somebody else changed step.

Sweat oozed out on his forehead and the pounding of his heart filled his ears. He stopped under an awning to light a cigarette and the flame jiggled uncertainly in his hands. His palms felt damp and greasy.

If somebody was after him, he'd wait for them to come; he could take care of himself. And if it was just somebody out walking, he'd wait for the sound to die away.

Thirty seconds.

One minute.

Five minutes.

There was no sound except the rising wind and the rustle of leaves. He forced a smile. It had been his imagination. He'd been acting like a kid sidling past a graveyard.

He started walking.

And there were the sounds of footsteps a block away. A little faster. He quickened his own step.

It hit him just when he was walking past a street lamp and he had to hold on to the pole for support. It felt like being slugged and for a moment he almost blacked out. Something tore and buffeted at his mind, forcing the essential bit of personality that was *him* to scuttle into the dim recesses.

For a brief moment he felt the helpless inferiority of a very small man in a very large room, or as if he were drunk and there were a small kernel of sobriety in the back of his mind wondering why he was saying and doing the things that he was.

It passed quickly and he straightened up, no longer afraid of the evening and the footsteps.

Footsteps. Odd he should have thought of them. There were no footsteps other than his own. He had been walking down the street in the middle of a deserted city. Alone.

Alone. His mind plucked curiously at the word and it struck him how appropriate it was. He had been alone all his life. Alone in this damned vale of tears that people called life. Alone in the rabbit warrens of the cities.

The unfriendly city. The houses, the apartment buildings, the stores—all frowning at him, dark and unfriendly. Like the world. The whole, entire world.

He turned another corner and walked slowly toward the park. It loomed ahead, a darkened stretch of trees and winding paths and small, crouching hills. The string of street lamps wound through the hills like a gigantic pearl necklace. To the right there was . . . the lake.

He was sweating. His hands were shaking and the salt perspiration crept down his forehead and beaded into the corners of his eyes. He had a headache, a whopping big headache, and somewhere lost inside him a voice was crying: *not the lake, not the lake, not the lake!*

People didn't care, he thought. People never gave a damn about each other. About him. Marge would smile and kid him to his face but she didn't really mean it. And it was that way with everybody he knew. Not a single friend among them, not a single person who cared. . . .

What was it the man had said? The epitaph? *He lived, he suffered, he died.*

But there was always the lake. The beautiful lake. The cool, black rolling lake with the long concrete piers that fingered out into the friendly water, into depths where the level was well above a man's head. Just a few steps down the sloping sands and onto the concrete . . .

*Not the lake!*

William Tanner was going to die, he thought, and felt a tear crawl down his cheek. Little Willie Tanner, whose mother had died when he was eight, despite everything the science practitioner could do. And whose father had been killed in an airplane accident, one of those fateful accidents that you have a premonition about. *"I shouldn't go, Willie. I don't feel right about it . . ."*

And now Mom and Dad and Grandma Santucci would be waiting for him and he'd show the people who didn't care.

Just a few more steps to the pier. The black water, quietly lapping against the concrete in small waves that were getting bigger as the wind rose. The black-green, friendly water. Waiting for him.

He turned for one last look, his cheeks streaked with tears. A man was standing at the head of the pier. A tall man, with a slouch hat that was pulled down over his face, wearing a belted raincoat. The man was waiting for him to take that long, last dive and Willie didn't want to disappoint him, did he?

No, Tanner thought. He didn't want to disappoint his friend. The friend who would call the police so they could fish out his body when they found it lodged against the pier supports below.

He turned back to the water. So restful, so peaceful . . .

*"Hey, Mac, don't do it! For God's sake, don't go off!"*

There was a moment of confusion and silent regret and then something sank out of his mind like water draining from a basin. He felt weak and collapsed to his knees on the pier, almost falling over the side. Two men were racing towards him, down the strip of concrete. Soldiers, from a couple of cars parked on the slight cliff overlooking the lake. Their dates were standing on the shore, the wet wind plastering their dresses against them.

The man in the belted raincoat was gone.

"What the hell's wrong, fella? You weren't going to go off, were you?"

His teeth were chattering and they had to help him to his feet.

"Tell us where you live, buddy, and we'll take you home. Life can't be that bad. A good night's sleep . . ."

"Not home," he mumbled. "Some all-night restaurant where they've got a big crowd . . . don't want to be alone."

They helped him back towards the shore. He was so damned weak, he thought. So damned out of it. And so miserably frightened.

Something had toyed with him, like a very superior cat toying with a very stupid mouse. He had been handled like a two-year old. Somebody had pulled the strings and he had jerked like a marionette, doing what they wanted him to, thinking what they wanted him to think.

He was a strong man, physically and mentally, but he had been handled like putty. A moment more and he'd have committed suicide. A dive into the lake and that would have been it.

Exit Professor Tanner. Exit the curious Professor Tanner who was in charge of a research project for the Navy and who had uncovered something that he shouldn't have. Exit Professor Tanner who was in a position to learn too much.

It started to rain harder, the water coming down in huge drops that splashed on the pier and made small explosions in the lake and wet his hair until it was plastered over his forehead like tape.

The soldiers had thrown his enemy off, he thought. They could probably have been handled but they were unexpected and apparently it took time to gain control of a man's mind. So he had been saved. The superman was a menace and apparently his talents were limited. He had only one. One simple, terrible gift.

He could make people do what he wanted them to.

Tanner shivered and felt horribly sick. The night still reeked with murder and somewhere in the city a monster was loose.

### 3

THE SOLDIERS TOOK HIM to an all-night restaurant, had a cup of coffee with him, and left. After they had gone, he retrieved the Sunday papers that somebody had left behind and read everything including the want-ads. Then he ordered more coffee and battled grimly with his nerves, looking up apprehensively every time somebody came in. When the morning finally came, he went to a Catholic church and sat through every mass, hearing nothing of what was said but absorbing the comforting presence of the people in the pews. After lunch he went to a movie and saw a complete show. Twice.

People gave him a feeling of security, he was afraid to be without them. And he dreaded the evening when the streets would be empty and he would have to go home alone. He could go to the movies again, he thought—maybe take in an all-night feature. But the crowd would thin out at midnight and the interior of a deserted movie house would be just as bad as the lonely streets.

He finally went back up north to a druggist he knew and talked the man out of a small tin of sleeping pills. Perhaps the danger was not in going to sleep but in staying awake. . . .

He roamed the crowded streets until six and then, without giving it any conscious thought, walked over to a little spaghetti house that was open Sunday night and which the bachelor faculty members had made their own particular hangout. He still hadn't called Olson. He hadn't gotten his courage up to that point.

He didn't frighten easy, he thought, but this time he was scared to the point where he was close to being physically sick. To be no longer his own master, to feel that he was being used, that somebody had—in effect—put him on as casually as a glove. . . .



He spotted Eddy DeFalco alone in one of the booths and immediately tried to shrink back out of sight. DeFalco was too good a bet, too logical a choice for whatever had stalked him the night before.

"Hey, Bill, let's be sociable—come on over!"

The restaurant was fairly crowded and he had a feeling that safety lay in numbers. He walked over woodenly and sat down.

DeFalco started to butter a thick slice of Italian bread. "You changing your diet? You've never had spaghetti on Sunday night before."

I'm not good at acting, Tanner thought. I wonder if my suspicion shows. Have to be casual.

"I'm not having it now, either. Just coffee."

DeFalco's eyes narrowed. "You look white as a sheet, Bill. Feeling O.K.?"

No, I don't, Eddy. And maybe you know why. "I guess I'm a little jumpy."

DeFalco looked sympathetic. "Everybody's upset. Nobody knows for sure yet whether it's coincidence or exactly what it is."

He had a curious feeling of disorientation, as if he and DeFalco were talking about two different things. "I wish to God that I had never gone to that meeting yesterday," he said carefully. "Ed, how do you feel about . . . our superman?"

DeFalco carefully wound up a forkful of spaghetti. "I wish he'd go away," he said dryly.

Tanner studied him carefully. "Would you be willing to kill him if I told you who it was?"

DeFalco stared at him and Tanner felt his teeth want to chatter; he gripped the table to keep his hands from shaking. The intense dark eyes and the sullen, brooding face.

And behind it . . . ?

"You know, I suppose," DeFalco said.

"I think John Olson knows. I think that's why Olson was scared to death yesterday morning."

DeFalco's face showed nothing. "So all we have to do is ask John—is that what you're driving at?"

"That's right. That's all we have to do."

"You haven't run into Marge or Petey or Karl or any of the others today, have you?"

"I haven't been around."

"Well, you won't be able to ask John Olson about it. Not tonight or tomorrow or any time."

He suspected what was coming. "Why not?"

DeFalco's voice was flat.

"Because John died at three o'clock this morning."

## 4

HE CHECKED IN at the neighborhood YMCA early Sunday night, when there were still people on the streets. He locked the door of his room and jammed a chair in front of it. Then he switched off the light and stood to one side of the window, staring down at the street below. A few couples drifting by on the sidewalk, two or three customers in the delicatessen on the corner. But nobody in the shadows across the street, watching. Nobody in a parked automobile looking up at his window.

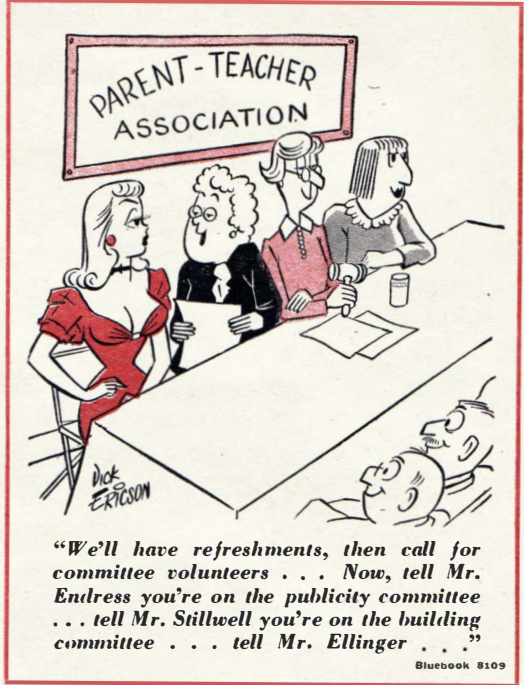
He opened the bottle of sleeping tablets and juggled one in his hand, debating whether or not he should take it. He was dead tired, but he had so much on his mind that he wouldn't be able to sleep without it.

He took the pill.

When he awoke in the morning it was with a splitting headache and a confused recollection of a nightmare about the lake.

But the important thing was he was still alive.

He was jittery, he didn't want to go back to the campus. But there were classes to be taught and a salary to earn, and



**"We'll have refreshments, then call for committee volunteers . . . Now, tell Mr. Endress you're on the publicity committee . . . tell Mr. Stillwell you're on the building committee . . . tell Mr. Ellinger . . ."**

Bluebook 8109

in broad daylight his courage was several notches higher. And he didn't want to give in to the fear that he felt.

Olson's sister Petey was sitting at her desk in Tanner's shoebox office on the third floor, staring stonily out the window. Her hands were folded in her lap and her face looked as if it had been hewn from granite. Her flaxen hair had been pulled back into an even tighter bun than usual and she was wearing a black dress with a high, starched collar and long sleeves. The only touch of color was in the two pink, plastic combs in her hair, and that just made the rest of her seem more forbidding.

Petey in mourning, Tanner thought, looking 10 years older than she actually was.

"You didn't have to come down, Petey."

"What else could I have done?" Her voice was mechanical and precise, without inflection. "There was nothing I could do at home or over at the Van Zandt's. The police told me that. So I came up here."

"How did it happen? Do the police have any leads?"

She wet her lips. "I don't know too much about it. Susan Van Zandt found him—the body—at seven in the morning. He had set the alarm so he could go to mass and it went off and rang and kept on ringing. When nobody turned it off, Susan went up and knocked on the door. There wasn't any answer so she used her key and went on in. John had been sitting at his desk, writing a letter. He never finished it. He was slumped in his chair, half-lying on the desk. Later on, the police said he had been dead for four hours, that he had died at three in the morning."

"Stop it, Petey. I'm sorry I asked you."

"The detective said there had been no struggle," she continued with a horrible, dry-eyed composure. "John hadn't been shot or knifed or blackjacked or strangled, he'd just . . ."

"Petey, do you have friends who might be home today?"

The starched face nodded silently.

"Then take the day off and go and see them. Come back whenever you feel up to it. Next week, maybe two weeks . . ."

After she had left, he went to the window and stared out, trying to regain his sense of proportion. There was the green grass three stories below, the ivy that trailed up the broken brick to frame his one window, and the small, industrious spider that had cast its web in the upper left-hand corner. Two flies buzzed futilely just outside the pane: the first signs of summer. In a nearby tree, a squirrel chattered angrily at him and on the lawn below, a student stretched out to doze and forget the world of Chaucer and Shakespeare.

There was nobody watching the building, nobody at all. He brewed himself a cup of scorching hot, black coffee, then went to class and lectured to a suddenly wide-awake audience that was far more interested in the death of John Olson than in anthropology. He bluntly parried questions about it, dismissed the class, and went to lunch.

Early in the afternoon he dropped in on Susan Van Zandt.

The house that John Olson had died in was an old-fashioned white clapboard home that had been built around the turn of the century. It was a landmark the university had acquired in a will and promptly turned into a faculty home.

Susan Van Zandt let him in, smiled a dutiful smile, and relaxed gratefully back on the couch. She still had her bathrobe on and Tanner knew there would be dust on the mantle, dishes in the sink, and an ice-box of slowly souring left-overs. Her thick brown hair wasn't brushed, and her eyes had the faintest suggestion of circles beneath them. She had been slim and attractive at one time, he thought, but after marriage she had slipped easily into an early middle age and had let motherhood coarsen her. She hadn't regretted either one.

"I don't think John ever roomed any place else," she said nervously. "Central Housing sent him over here as soon as he showed up on campus. I think he always liked it here." She waved her hand around the room. "It's comfortable, and he had his own key and could come and go as he pleased."

"Sue." He hesitated a moment, wondering how he would phrase it. "Do you know if anybody on campus hated him enough to kill him?"

The heavy-lidded eyes flew open. "Oh, no. He wasn't killed. The police said there were no signs of a struggle or a fight. He had been writing a letter when it . . . happened."

"About what time did he get in?"

"About an hour after you called. Midnight, I guess. Van and I were watching TV."

John Olson had come in at midnight and died at three, Tanner reasoned. For three hours he had sat in his room—doing what? And then he had put on his bathrobe and sat down to write a letter. To whom? And what about?

"Is the letter he was writing still here, Sue?"

"No, the police lieutenant has it. I . . . didn't see it."

"Do you know much about him, Sue? Much about his background?"

"Give me a cigarette, Bill." He gave her one and lighted it. "He came from a small town in South Dakota. Brockton, I think. His people were farmers. He lived there until he was eighteen, when he went away to college."

"That doesn't tell me much about him."

She spread her hands. "That's all I know. He never talked much about himself."

"He had a pretty cold personality. Any reason why?"

She closed her eyes and frowned, as if trying to remember was hard work and she wasn't quite up to it. "Who knows? I think maybe somebody hurt him when he was young. I always got the impression that the only real emotion he felt for anybody was hatred for somebody back in his home town. Other people's problems didn't interest him at all, probably because he was so wrapped up in his own. He was . . . cold . . . and he had no sense of humor. And I think he was frightened of some person. Maybe the same person in his home town that he hated. And I could be wrong on that score, too."

"Was he pretty much the intellectual?"

"Yes and no. He was interested in psychology, but that was his field. I would say he was more interested in the off-beat side, though. Hypnotism, things like that."

The doorbell rang and Susan turned away. "The detective—he was supposed to come back today."

Lieutenant Crawford was middle-aged, with pale-blue eyes and a friendly face and hair that was beginning to silver around the temples and above the ears. He wore a slouch hat and a blue suit with a suggestion of a shine and a lived-in air and signs of strain where it was tight around the waist. He looked a lot like a harried, unsuccessful businessman.

Susan introduced them and then withdrew. Crawford lowered himself into a straight-backed chair like a man lowering himself into a tub of steaming hot water. He teetered the chair back on its two rear legs and stared at the room, then looked back at Tanner. "You knew John Olson pretty well, didn't you?"

"Not too well. His sister is my secretary. And John was on my committee. Outside of that, I didn't know him very well at all."

Crawford chewed it over for a moment, then looked at him shrewdly. "You want to know how he died, don't you?"

Tanner tried to keep the tenseness out of his voice. "That's right. Have you got any theories?"

"Theories? That's the nice thing about my work, the woods are always full of them. Myself, I think he took the short way out. We won't know until we get the results of the autopsy but it looks like poison." He took the cigar out of his mouth and stared at the chewed end thoughtfully. "Did you ever see the expression on the face of a man who took poison? You wouldn't forget it, once you did. They die relatively slowly and they feel every second of it. It all shows in the face." He shrugged. "The only thing wrong with that theory is that we can't find the bottle or the tin or whatever he carried it in."

"I don't think he would have taken poison," Tanner said.

"Why not? He wasn't well liked, he didn't have any friends or love life, and so far as I can tell, he didn't particularly enjoy living."

"I think he was murdered," Tanner said slowly.

Crawford looked interested. "The only person who could be sure that Olson was murdered at this stage of the game would be the murderer himself."

"Anybody could think it was murder, Lieutenant. That's the popular thing to think nowadays."

"Yeah, I guess it is at that." Crawford took out his wallet and thumbed methodically through the bills and the cards. He moistened a thumb and pulled out a small white card. "I found this taped down to the desk top and pulled it off and took it along. I didn't know what to make of it."

He handed the card over. It was in Olson's handwriting and read:

*Man is a rope stretched between the animal and the Superman—a rope over an abyss. What is great in man is that he is a bridge and not a goal . . .*

It was signed: *Adam Hart.*

Tanner read it and handed it back. "I don't understand. It's a quotation from Nietzsche."

Crawford smiled slightly. "That's what the girl at the library said. This Adam Hart—did you ever hear of him, Professor?"

"No, I never heard of him before in my life."

"That so." Crawford gazed thoughtfully out the window and Tanner realized with a shock that the man didn't believe him. "That kind of surprises me, Professor, it really does." He leafed through his wallet again. "You know, I was rather glad I met you here. I was going to have to look you up later in the day, anyway. On business. You see, Olson was writing a letter when he died—he died right in the middle of it." He paused. "It was addressed to you, Professor."

He handed over a sheet of folded blue writing-paper and Tanner opened it. The bottom right-hand corner was crumpled, as if a hand had suddenly clutched at it. On the paper itself there was just the date and his name and one line of writing that broke off abruptly.

*Professor Tanner:*

*I want to tell you about Adam Hart . . .*

## 5

HE WENT HOME late that afternoon and discovered his apartment had been thoroughly ransacked. The janitor remembered nothing, though nobody could have gotten in without his help. And he hadn't been bribed or forget, Tanner thought. The man honestly couldn't remember.

And the next three nights were bad. He stored most of his possessions and lived out of a suitcase, shifting hotels every night and telling nobody where he was staying. There was nobody he could trust.

He locked the doors and stuffed clay into the keyholes and jammed the spring locks so they couldn't be forced open. Then he pulled the shades and sat in the dark and watched the streets or the courtyards through the crack between shade and window, waiting for the Enemy to show up. He cradled his service pistol in his lap, hoping for the opportunity to use it.

David and Goliath, he thought grimly, but I don't have a chance. He would watch for an hour, then take a sleeping pill and collapse on the bed, not even bothering to turn down the sheet. Before he drifted off to sleep he usually spent an agonizing few minutes wondering what the Enemy's next move would be.

He didn't have long to wait.  
His world started to go smash Thursday morning.

He had been sitting at his desk going over his lectures for the day when Crawford walked in and settled in Petey's swivel chair. The police lieutenant looked worn; his shirt stuck to him in huge patches where the sweat had soaked through and little tears of perspiration oozed over the ridges in his neck.

"You could have knocked."  
"Sorry, Professor—the door was open." Crawford turned in the chair to look out the window at the students crossing the quadrangle below. "Semester's just about over, isn't it?"

"Next week is finals. After that they're on their own."  
"What are you going to do this summer, Professor?"  
"Well—I was thinking of taking a short leave from the project and going out to Colorado on a research grant. Excavation of an old Indian village." With everything that had happened in the last few days, he knew he wasn't going to go. But Crawford would find that out in due time.

"You know, I rather figured that you would be doing something like that. I really did. But I guess we were both wrong."

Tanner studied Crawford for a moment. The man was a little too casual, he was waiting for some kind of reaction. "I don't get you."

"Being curious is my job so I checked up on it. No particular reason and if you want to get sore about my snooping, I guess you've got a right to be. Anyway, I checked and they told me in the front office that they had taken your name off the list. Just the other day, too. They're bringing in a professor from another university to handle it. They'd been considering him and at the last minute I guess he got it." He located a toothpick in his pocket and absently dug at a rear tooth. "I'm surprised you didn't know about it."

"I've got a contract," Tanner said tightly.  
Crawford looked sympathetic. "I know people who have had contracts before, Professor. And guess what? They were no good—no good at all. I suppose you could sue but I wouldn't want to give you odds on winning."

"You're sure of this?"  
"I don't kid people about things like this, Professor."  
He had been going to withdraw anyway, Tanner thought. But he couldn't understand why his name would have been taken off the list arbitrarily.

"About John Olson," Crawford said, changing the subject. "The other day when I was talking to you, you said you thought he'd been murdered. Anything to go on besides your own opinion? This is official—and I wouldn't advise withholding information."

Tanner chose his words carefully. "Let's just say it was

a harebrained idea of mine. There was nothing solid to it."

"Then you weren't convinced to the point where you'd try playing detective?"

Tanner felt tired. "Let's not beat around the bush, Lieutenant. What're you driving at?"

Crawford patted his face with his handkerchief again. "There's nothing more that needs to be done with the Olson case. We're closing it."

"I thought you had the idea that he was poisoned."  
"So I was wrong. The results of the autopsy came in yesterday. There wasn't any poison, Professor. Not a trace of it." He smoothed out the dampened handkerchief and tucked it carefully away in a pocket. "I'll admit that the look on his face was almost a sure tip-off for poison, though it doesn't explain why he should've sat down to write you a letter rather than one to his sister, for example."

"And it doesn't explain who Adam Hart is."  
Crawford snipped the end off a fresh cigar. "Adam Hart. I'll admit I'm curious about him, Professor. But then I'm curious about a lot of things and life's too short to investigate them all." He stood up, toying with his hat. "Well, I guess that's the way it goes then. I've seen it happen before to a healthy young fellow so I shouldn't be too surprised."

Tanner could feel his skin start to crawl. "Surprised at what?"

"Olson wasn't killed and he didn't commit suicide, Professor. I hate to disappoint you but he came home at midnight Saturday night, read a while, and at three o'clock Sunday morning he sat down at his desk and died." He snapped his fingers. "Just like that. No pain or strain. He just died."

Just like that, he thought, after Crawford had gone. A young, relatively healthy man had sat down at his desk and died. With no cause.

He shivered. It would be so damned easy to get the shakes and end up in a blue funk, just knowing what was after him. Not *who*. Not a person, not somebody he could fight, not somebody he could flush out into the open.

Not *who*, but *what*.  
And just what was wanted of him? To drop off the committee? Or had he already gone past the point of no return, did he already know too much? And if so, why hadn't there been another attempt to kill him? It wouldn't be difficult. Sunday morning he had almost walked off the end of the pier. Perhaps someday he would step out in front of an automobile or lean too far out of an open window. And everybody would say that Professor Tanner had been careless. Or that the world had been too much for him.

*And why me? Why me rather than anybody else on the committee? What do I know that's so special? Or is it that he just hasn't gotten around to the others yet?*

He started sifting through the pile of mail on his desk. It was the same stack of mail that had been there Wednesday morning. The same stack that had been there Tuesday and Monday. Nobody had sent him anything since Monday. No firm in the city had dropped him a circular, nobody had sent any bills.

He flicked through the sheaf of letters waiting to be filed and stopped at one. A colored circular from Colorado advertising the natural wonders of that state.

Only he wasn't going there. And one of the minor reasons why was that—Crawford had said—the school had dropped him. Why, he didn't know. Professor Scott wouldn't have had anything to do with it. He had had run-ins with Scott, but the old man had always backed him up outside of the department. His trouble must have started with the Dean of the school, Harry Connell.

He looked at his watch. Harry would be in now. And maybe Harry would have an explanation.

Connell's secretary didn't want to let him by.  
"I'm sorry, Bill. Mr. Connell's very busy right now. Why don't you stop back later?"

"Do you think he would be in later?"  
She bit her lip. "Honest, Bill, I don't know what to say.

He said you might be in to see him and to tell you that he was busy."

"And that he was going to be busy the rest of the week, that it?"

She shrugged. "Of course, if you didn't pay any attention to me and walked right in . . . I can always say I tried."

He brushed past her. "Thanks."

The man in the office was on the phone, talking. He hung up when Tanner barged in, an angry look on his fleshy face. "I thought I told my secretary to tell you I was busy?"

"She did but I guess I'm getting a pretty thick skin."

He lowered his voice. "What's going on, Harry? Why didn't you let me know if something was up?"

CConnell's face reddened. "I ought to call the police. I ought to have you thrown out of here."

"What on God's green earth are you talking about?"

"Where did you get your degree?"

"Wisconsin."

"Can you prove it?"

Tanner sank down in a chair, enormously tired. "What's the story, Harry?"

CConnell's mouth was so tight with anger it was almost invisible. "The name is *Mr. Connell*, Tanner. And the reason why I don't call you 'Professor' is because you're not one." He ran a shaking hand through his thinning hair. "It was a routine check—I don't know what made me do it. You had applied for the Colorado position and we wrote to Wisconsin asking for any experience you might have had on field trips before." He paused. "They never even heard of you. They don't have a single record of you. I've read about impersonations before but I never thought . . ."

Tanner felt stunned. "You couldn't have checked everything!"

"We did."

"You—you could've checked with Professor Palmer in the anthro department. He could have told you."

CConnell picked up a letter from his desk and waved it at him. "He told us he never heard of you. Read it yourself."

"My thesis is on file here," Tanner said slowly. "You must have checked that."

"We checked it—that is, we tried to. There wasn't a thing. Not a thing."

"I filed it when I applied here, it should have been there!"

"Then why don't you go and look? And when you find it, bring it back here and I'll apologize." He picked up a narrow slip of paper from his desk and handed it to Tanner. "Here's a check—you're paid up to date. We're breaking your contract right now. You're through, both here and on the project. You're lucky the board doesn't prosecute but it would make the university look foolish for having hired you in the first place."

Tanner took the check and stared blankly as the little man turkey-walked back to his desk. All his records had been checked at one time, he thought, confused. They never would have hired him without doing that. Connell must realize that. Or maybe it was just that . . . that . . .

That Connell didn't remember.

His thesis wasn't listed in the card catalogue and when he checked in the stacks, he couldn't find it there, either. There was the row of neatly typed and bound theses, thick with dust, but there was no gap where one had been taken out. So far as he could determine, it had never been on file.

He sat in the stacks for half an hour before he got to his feet and walked slowly outside. There was nothing to do but make plans to leave, to close down his bank account and get out of town. What he would do after that he didn't know and didn't care. But maybe now the waiting and the suspense were over. The Enemy had won and he was off the committee and in disgrace. No job, no source of income, no money coming in.

Down, but not quite out. At least, he wouldn't starve.

The teller at the bank took his book and came back a moment later, looking puzzled.

"I'm sorry, Mr. Tanner, but there seems to be some



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sort of a mix-up. We have no records here of any account for you."

The sun was shining and there wasn't a cloud in the sky, Tanner thought, but it was still a terrible day. "Where do you think I got the book? Who do you think made out the entries?"

The teller fluttered his hands helplessly. "There's no record sheet for you and no identification card that we ask all depositors to sign. I don't know how this all happened. Really, I . . ."

Tanner's voice was thick. "Why don't you get the manager?"

The manager was a thin, balding man with steel frame glasses and darting, suspicious eyes. He glanced at the bank book, frowned, and went to a rack of cards at the rear of the teller's cage. When he came back he had another book like the one Tanner had been issued.

"This book you have—it's yours?"

"It's got my name on it."

The manager gave him a nasty look and showed him the book he held in his hand. The number was the same. "Names can be forged. And it so happens we already have a book by the same number. The man to whom it was issued has held it for the last ten years. I don't know how you got hold of this book and numbered it and I don't know how you got it filled out but forgery is a criminal offense."

He suddenly stopped and looked as if he wished he had called the police immediately.

Tanner left him standing there and walked out.

He had had close to a thousand dollars in the bank and now it was down the drain. Somebody had gotten there ahead of him. Somebody who had pulled his card and substituted another. Or, to be more exact, somebody who had persuaded the teller to pull the card.

*You couldn't run very far without money.*

Then he remembered and felt in his coat pocket. The check. He had never gotten around to cashing it at the bank. And there were half a dozen currency exchanges he knew of offhand.

The first one he tried cashed it without question and he felt momentarily pleased at the small victory. Then he realized, at best, he had just postponed the situation.

He stopped in at a small restaurant and ordered coffee. He felt worn out, as if he had run a mile or had been sick for a long time. The noose was drawing tighter. Any day, any hour, somebody would yank on the rope and he'd be

left dangling. The Enemy obviously wanted something more than just to get him off the committee.

He looked at the restaurant clock. Twelve o'clock, and he had an appointment with the dentist for one.

He fumbled through his pockets for a dime. It had been only a cleaning job and that could be put off to another day. And probably another city, since he wasn't going to be in this one too much longer.

He dialed the number, gave his name to the receptionist, and asked for a cancellation. There was a moment of silence.

"*Would you repeat your name, sir?*"

He did.

"*I'm sorry, sir, but we have no appointment for anybody named Tanner.*"

"I made it a week ago," he said slowly. "For one o'clock."

Another pause.

"*Dr. Landgraf doesn't recall you, Mr. Tanner. However, if you wish to make an appointment . . .*"

He hung up.

No mail since Monday. Because his name had somehow disappeared from all lists? Because all the files that mentioned him had been yanked? And there was the case of the records in Wisconsin and the disappearance of his thesis from the library. And then the bank book and his appointment with the dentist . . .

He was being isolated, he thought. Anything in print that mentioned his name was disappearing. People were being conditioned to forget that he had ever existed. One by one his connections with people were being severed. It was like a dental surgeon blocking off the nerves with shots of novocaine.

Just before the tooth was pulled.

## 6

THEY BURIED John Olson Friday morning.

It was in a little cemetery just outside the city limits, on a morning that was overcast and cloudy with a cold wind that blew off the choppy lake. None of Olson's relatives, outside of Peety, were present.

The minister stood at the head of the grave and said a few words, words that were tumbled and lost in the wind that flapped his vestments. Then the two gravediggers worked the small rollers that held the canvas straps supporting the coffin and it lurched and slowly disappeared into the raw gash of the earth.

The minister walked over and said something to Peety and they started for the line of cars on the road a few hundred feet away. The others followed, Tanner with them. Behind him he could hear the soft sound of shovels biting into the dirt.

The others hadn't had much to say to him but he detected an uneasiness about them, a suspicion of each other. They had seemed unnaturally quiet and withdrawn.

He caught up with DeFalco.

"Ed, I want to talk to you a minute."

DeFalco stopped and took a cigarette out of an ornate case and tapped it against the back of his hand. He didn't meet Tanner's eyes.

"Something wrong?"

"Has Connell been saying anything?"

DeFalco lit up and fanned out a stream of smoke from his nostrils, smoke that was shredded by the cold wind. "Sure he has. You knew he would."

"Do you believe it?"

"No."

Tanner's voice shook. "I can't disprove it. For the same reason that I can't prove I have a bank account here or that I had a dental appointment yesterday afternoon or that every firm I've dealt with in the city no longer carries me on their books. Ed, I'm being isolated!"

DeFalco's face went perfectly blank. "What do you want me to do about it?"

Tanner stared at him. DeFalco's face was cold and emotionless, the heavy black hair glistening in the dampness, strands of it moving slightly in the wind. A tense, powerful, handsome face—with the eyes of a man who was almost scared to death. "Sure, I'll believe you, Bill. Somebody's pulled your records. But how can I help?" He thumbed towards the hill behind them from which came the steady sounds of falling dirt. His voice was jerky. "Olson was curious, he knew too much. And look what the payoff was for him. I don't believe that a man just sits down and dies. Something got him. And something's after you. I don't want to be included in."

"You've changed a lot since Sunday night, haven't you?"

Something flared briefly in the dark eyes. "So I was sounding off. I was talking to hear myself talk. People do it all the time." He paused and took a deep breath, like a diver does before hitting the water. "I don't want to know too much about Olson. I don't want to know too much about you. I don't want to talk to you, I don't even want to be seen with you. You're a dead man, Tanner—and there's nothing that you or I or anybody else can do about it!"

Tanner watched him get into his car and start off with a roar, the wheels throwing gravel. DeFalco wasn't a coward. Sunday night he had been full of hatred and willing to eat fire.

But something had gotten to him.

Tanner was driving the rented car back from the cemetery when he became gradually aware of somebody standing beneath an awning along the side of the street. He almost recognized the figure, yet couldn't place him. Somewhere, some place . . .

He just barely saw the little girl. He had a brief glimpse that for a moment froze the entire scene. The man beneath the awning of the florist shop, the few people standing in front of the stores, the flag in front of the postoffice hanging limply in the dampness, the police car double-parked halfway up the block.

And the five-year-old in the bright yellow dress dashing out in front of his car.

He slammed on the brakes and twisted frantically at the wheel. Then there was a sudden silence and the smell of scorched rubber and the cold feeling of sweat trickling down the nape of his neck. A second later he was out in the street, kneeling by a little girl who was miraculously unhurt, the tears of fright just beginning to well in her eyes. A crowd quickly gathered and then parted to let two policemen through.

"I wasn't going very fast. I was . . ."

They looked at him coldly.

"We hear that all the time, Mac. You guys drive through here like a bat out of hell and when somebody gets hurt—no, you weren't going fast! Me, I'm getting damn sick and tired of it."

The other policeman turned to the little girl and bent down. "Were you hurt, Mary-Anne? Did the car knock you down?"

She shook her head and started to cry. "*I want my ball! I was p-playing and it b-bounced away and . . .*"

The policeman made a face and put away his traffic book. "You're real lucky, Mac. If anything had happened to her we would have gotten your hide and tacked it to the stop-light. Now take off and take it easy."

Tanner got back in his car and drove around the block and parked. He leaned his head on the wheel. He was still shaky, still confused as to what had happened. He had been driving down the street and the little girl had run out in front of his car. If he hadn't been lucky, and if he hadn't had quick reflexes . . .

But there was something more to it than that.

The man who had been standing beneath the florist shop awning. A belted raincoat and a hat pulled low over his eyes so his face was in shadow. The same man who had been standing at the end of the pier when he had almost gone off?

Probably.

And the florist's little girl who had been playing out in front. Playing out-of-doors on a cold, raw day. And then she had had a sudden desire to run out into the middle of the street because she thought her ball had gone out there.

And if he had been a shade of a second slower, she would have been dead.

And it was near certainty that he would have ended up in jail, to rot there the rest of his life because release papers would be lost and people would have forgotten all about one William Tanner. They would have forgotten that he had ever existed.

He was being hunted and so far he had acted like a sitting duck. He hadn't fought back, he hadn't really tried. He had accepted the idea, as DeFalco had, that fighting was impossible and that he didn't have a chance.

Which wasn't quite true. The Enemy wasn't perfect, he had his limitations.

And he wasn't entirely helpless himself. He knew that the man who was after him was the same man who had, somehow, killed John Olson. That it was one of those who had been at the meeting that fateful Saturday morning.

Which one?

He didn't know. But Olson had known. Somewhere in the past he had met the Enemy and had known him when he had seen him again. He hadn't been able to speak outright, but he had done his best to point the finger.

The answer to who the Enemy was, he was suddenly convinced, lay in Olson's own background.

And the place to begin was with Olson's home town.

## 7

THE TRAIN CHUGGED into Brockton at six, Saturday morning, when the town was still up to its neck in nightgowns and bed-sheets. It stopped briefly to pick up a dozen noisy milkcans and to drop off the newspapers and William Tanner.

He stood on the platform for a moment watching the train rattle away down the long length of track, then turned to the station. It was a one-story wooden structure with a sign in front saying BROCKTON in peeling, Gothic letters. A note was tacked on the waiting-room door to the effect that the station didn't open until seven.

Apparently, he thought, when anybody left town it had to be on the evening train. He started walking into the village.

Brockton. It was a small town—probably not more than 2,000 population. A grid of criss-crossing streets that ran for a few blocks, then faded into the prairie. Several blocks of business section and a local tavern with a broken neon sign swinging in the early-morning air and a whitewashed church with a steeple. A combination drug-and-hardware store with bamboo fishing poles leaning against the display window and a town hall that featured movies every Saturday and Sunday night.

Small town.

Farm town.

Backbone-of-America town where every politician wished he had been born. The town where John Olson had been born.

He checked in at a small, rambling hotel. The hotel cafeteria was, wonder of wonders, open for business. He ordered pancakes and coffee and watched the waitress as she walked back to the kitchen to fix them. She was young and eager to please—even at six in the morning—and bore a faint resemblance to the old man at the hotel desk. Probably a daughter or maybe even a granddaughter pressed into service.

The pancakes were thin and didn't soak up the syrup and the coffee was hot and strong and remarkably good.

The girl stood behind the counter three stools down, idly polishing the marble top and watching him out of the corner of her eye. She was probably wondering just who he was and exactly what he was doing there, he thought. By noon everybody in town would know that a stranger had blown in.

"That's pretty good coffee."

She walked back, a little too quickly, and he couldn't help smiling. The walk went with the pink piece of ribbon in her hair. What did they call it? Simple and unaffected?

"You a salesman?"

He raised his eyebrows and she colored. "I didn't mean to be nosy," she said. "It's just that we're not exactly overrun with visitors out here."

"No, I'm not a salesman. I came here to see the Olson family."

She frowned and he knew she was trying to think of some way of asking him about it without trying to appear too curious.

"I knew their son at the university. He died last week and I've brought back his belongings." In a sense, it was exactly what he was doing. And it wouldn't hurt for the information to get around—people might be that much more informative.

"John Olson?"

"That's right."

She went back to the ketchup bottle. "I didn't know him very well. I guess I was only ten when he left town." She folded the rag to have a clean surface. "I'll bet Adam Hart will feel bad when he hears about it."

For a moment he felt as if the coffee and the pancakes were going to come right back up. It took every bit of will power that he had to control the tremble of his hands.

"Who's Adam Hart?"

"Adam was a real good friend of Johnny's—they used to be together all the time. You know kids when they hero-worship somebody older than they are." She put the bar rag down and slid the ketchup bottle into place between the sugar bowl and the salt and pepper. "I didn't know Adam very well," she said slowly, looking down at the counter, "but he's the type you never forget. You could roll all the movie stars into one and they couldn't even begin to compare. I guess all the girls were crazy about him."

"Is he around town now?"

She shook her head. "Oh, no. Sooner or later almost everybody leaves Brockton. Adam left about eight years ago."

His breakfast was going to stay down after all, he thought. But for a moment she had really frightened him.

"This Hart fellow—what did he look like?"

Her face got pink. "Young, but not too young. Maybe twenty-five or so. Blond hair and tall and kind of thin so he looked like he was a little hungry all the time. Blue eyes and a smile that made the whole world bust right open . . ."

She was serious, he thought, amazed. She hadn't known Hart very well but she had fallen in love with him when she was 10 years old. What was more, she still hadn't shaken it.

She looked wistful. "You'd never forget him, Mister. Once you saw him."

He finished his coffee and just sat there, staring at the nickel-plated faucets and the shining glasses and the little boxes of breakfast food stacked behind the counter.

You could forget Pety and Marge, he thought; Adam Hart was a man. Olson was dead and he, Tanner, sure as hell wasn't chasing himself. Which meant that Adam Hart *had* to be one of the five remaining men who had been at the meeting that Saturday morning. Even granting that it was eight years later, still . . .

But the man the waitress described didn't resemble any of them.

The Olson home was two doors down from where the paved street ended and three up from the encroaching prairie grasses. It was a small white bungalow—too small and too new for a farm home—and Tanner guessed the Olsons had moved in recently.

He walked up the sidewalk, then hesitated a moment before knocking. It was still rather early in the morning. Maybe too early.

"You want something, Mister?"

The man had come around the side of the house, carrying a half-empty bag of grass seed under one arm. He was a tall, leathery-faced man, very Scandinavian-looking, with silvered hair half-hidden beneath a dungaree cap. He reminded Tanner of the farmers who used to come to the stockyards with manure still clinging to their boots.

"I'm looking for the Olsons, but maybe it's too early."

The man spat. "Not too early, not by two hours. Used to get up at five when I had the farm. Still got a garden and don't see any reason why I should sleep late now." He looked sharply at Tanner. "I'm Mark Olson. You got something on your mind?"

Tanner nodded to the small suitcase he had brought along. "I'm from the university. I brought back some of John's things."

The old man opened the screen door. "Come on in, Son. Mother's right in the living room."

It was dim on the inside, with the cool, musty smell that goes with a closed-up house. In the living room, Mrs. Olson was seated in a rocker by the picture window, a colored afghan tucked up around her fleshless limbs. Her face was furrowed and stitched with fine lines and her eyes were sunken and dried.

"I'm from the university," he said softly. "I've brought back some of John's things."

She glanced at him and then turned back to the window, as if looking any place else but through the glass took too much effort.

"Patricia wired us that he died," she mumbled. "She said it was too late for us to go to the funeral. She said they buried him the same day."

Which hadn't been true at all, he thought. Then he looked again at the old lady and realized she would never have survived the trip.

"Johnny was a good boy," the old lady said weakly. "He should have lived longer than he did. . . ." Her voice trailed off and her husband tugged at Tanner's sleeve. Tanner followed him to the small kitchen and took a seat by the table.

The old man was gruff. "You don't want to talk to Mother too long. She's been ailing these last few days. Johnny's dying hit her pretty hard."

"John was born here in Brockton, wasn't he, Mr. Olson? Born and brought up here?"

"Lived here all of his life until he went away to college. Maybe he shouldn't have gone. He came back once or twice in the summer and he wasn't the same. Kind of unhappy, kind of moody."

He set a battered tin coffee pot on the stove and lit the burner with a match. His hand was shaking. "I always told Mother he was a farm boy, that he wasn't cut out for school in the city." His voice was low and close to cracking. "I'm going to miss that boy, Mister. I never approved of his going to school but I set a lot of store by him just the same."

He was going to make it painful for the old man, Tanner thought. But it had to be done.

"His whole life was here, wasn't it? You know, his friends and relatives?"

"He had a lot of good friends." The old man went to the pantry to get some thick china mugs. "Never forget one. Fellow named Hart. Adam Hart. Older than Johnny but I always thought the friendship was good for the boy. A youngster makes friends with an older man and he gets a better view of life."

The coffee was boiling but he made no move to take it off the stove.

"This Adam Hart—Johnny used to talk a lot about him," Tanner lied. "What sort of a fellow was he?"

"All man, Son. Came from a gypsy family that had settled over on the west side of town. One of those families that had two dozen kids in the house and a trained bear in the backyard. The kids just couldn't keep away. No grass or flowers on the lot but some cherry trees the youngsters could climb. Johnny used to hang around over there. Adam was one of the gypsy boys, a lot older than Johnny. They took to each other and Adam used to help Johnny with his school work and teach him how to play sports."

He got up and poured out thick black coffee that smelled burnt and raw. "Adam will be real sorry to hear that Johnny's dead." It took an effort for him to say the word and the coffee pot shook a little, spilling the hot liquid on the oil-cloth.

But Adam Hart isn't sorry, Tanner thought. Probably

only a little regretful that he had to go to all that trouble to kill Olson.

"Anybody know where Adam is now?"

"Nope. Nobody's heard from him since he left town."

"What did he look like?" The girl in the hotel restaurant had been pretty young when she had seen Hart. Her memory wouldn't be as good as the old man's.

"Early twenties—maybe just twenty. Light brown hair. About as tall as me, medium. Well-knit—he'd have been good behind a team of horses."

Tanner sipped his coffee.

The Adam Hart that the girl had described and the Adam Hart that the old man had known didn't sound at all like the same person.

Brockton high school looked a little larger than the town deserved. Tanner guessed it served half the county: the town of Brockton and the miles of farmland around it. The classrooms were deserted and for a moment he thought he was out of luck.

But the baseball coach, who was also the football coach and the basketball coach and who taught swimming and track and algebra in his spare time, was still there. Coach Freudenthal was a chubby man in his middle forties with an easy, friendly air. He was working out in the gym, showing two 12-year-olds how to shoot baskets. The backboards were old and the floor was warped but Tanner was willing to bet they still turned out championship teams.

He told the coach why he was there and the welcome smile slipped away.

"Sure. I remember Johnny. He was the star of the team when he played here. You would never have figured him for it, though." He turned to the boys and slapped the nearest on the rump. "Okay, kids, shower up and go on home." He started for his office. "How'd it happen, Professor?"

"His heart gave out. Overwork, I guess."

"That's funny, I never would have guessed he was a heart case." Freudenthal pulled off his sweat shirt and started rubbing down his paunch with a towel. "You know, you'd never have thought he was an athlete. He just didn't look the type, though let me tell you a lot of them don't. He just didn't have the build for it, but when it came to reflexes and a quick eye, I've never seen his equal. He won a letter in basketball." He slipped on a shirt and started buttoning it. "Maybe this sounds odd but I don't think he ever really enjoyed sports. He kind of drove himself to play them."

"Was he a good student?"

"One of the best. Just as reliable in his studies as he was on the basketball court." A smile flickered across his face. "Maybe he was more reliable. Johnny made a monkey out of me one night—he was really off. I couldn't figure it out, he couldn't even make a simple lay-up shot."

"When was that?"

"Don't remember exactly, sometime during the winter of his junior year—it was the same night the gypsies threw one of their big parties."

An alarm rang in Tanner's mind. "Did a fellow named Adam Hart ever go to school here?"

Freudenthal looked surprised. "Hart? Hell, none of the gypsy boys ever went to school. And just between you and me, I don't think they needed to. The closest Adam Hart ever came to going to school was when he used to come to watch Johnny play ball." He went over to the wash basin in the corner and doused his hair. "He was a pretty good friend of Johnny's, always on the sidelines cheering him on."

Except for one night when he couldn't make it, Tanner thought. The night when Olson had played such a miserable game.

"Did John ever strike you as being the moody sort?"

"Not to start with. He was sort of a happy-go-lucky kid. You know how the pudgy type are—nothing ever worries them. He started to sober up toward the end of his junior year, got pretty gloomy. I remember I used to talk to him, try to snap him out of it. It didn't do much good. Something was eating him but I never had any idea of what it was."

"His folks say he didn't turn sour until he went off to college."

"You know how parents are, Professor. They're the last to know when something goes wrong with their kids."

Tanner got up to leave. "You wouldn't know if there are any pictures of Adam Hart around, would you? Any shots of the bleachers where he might have been in the background?"

"Try the *Eagle*. They'd have photographs if anybody would."

He hesitated. "Coach—what kind of a guy would you say Hart was?"

Freudenthal edged forward in his chair, his face glowing. "Do you know I had another Thorpe or Mathias right at my fingertips, Professor. Honest, I mean it. Right at my fingertips. You should have met this Hart. He was a young sprout but he was one of those few people you meet and know that someday they're really going to be great. He could have been a great athlete. Hell, he could have been great in anything!"

"What'd he look like?"

"Late teens, give or take a year—right at the peak. Kind of a short fellow, dark hair, fairly bulky build. The perfect athletic type. Quiet. He usually didn't have much to say but when he did, it was worth listening to. Never put on airs, never dressed too sharp. One of the few young fellows you could relax with and talk to. Good head. Mighty good head."

The coach had described a third man, Tanner thought. Different from those described by the girl in the cafeteria and Olson's father. The girl had seen the type of man that young girls always wanted to see in their dreams. Smiling, polite, a sharp dresser, a little on the thin and hungry side. Mark Olson had seen an unblemished Son of the Soil. Coach Freudenthal had seen the perfect athlete.

And everybody else in town had probably seen Hart in a slightly different light. Hart had been like a mirror, reflecting back what they had *wanted* to see.

Which meant that one member of his committee had left seven different impressions on the others. One member looked vastly different to each of the other seven. All he had to do . . .

*Who am I kidding? Hart wouldn't leave such an obvious opening. He's masquerading and he'll do a good job of it, he's no amateur. I can bet my bottom dollar he looks the same to all of us.*

But it would be interesting to see what Hart *actually* looked like. And the only way to find out would be to get hold of a photograph.

There weren't any.

The *Brockton Eagle* had no cut of Adam Hart, though the editor remembered him well enough and went on to describe a man who might have made the perfect country editor. Tanner went through the yellowing files of the newspaper and ran across a photograph or two where the caption listed Adam Hart in the background. But the photos were indistinct and blurry, as if the photographer's hand had jiggled at the precise moment he had taken the picture.

Adam Hart, apparently the best-known and the best-liked person in town, had been a nonentity as far as pictures went.

Tanner ate lunch and later in the afternoon walked out to the west side of town to take a look at the Hart family home.

It wasn't there.

There was nothing there but an empty lot, grown wild with prairie grass and ragweed and straggling bushes. There were a few cherry trees on the back of the lot and some stunted crab-apple trees along one side. But there was no house.

He walked across the street and collared a neighbor who was repairing his front porch.

"The Hart home? Burned down eight years ago. Just a few weeks after Adam left. Lucky he did, too, or he would have been burned to death with the rest of his family. Worst tragedy we ever had in this town. Old man Hart and his wife

and all their kids and relations. Must've been close to fifteen—used every coffin we had."

The man drove another nail into a porch step. "Damned shame. Finest family I ever knew. Some say the bear got loose and knocked the connections off the gas tanks outside the kitchen. They shot the bear the same night; it was pretty badly burned, too."

"What time did it happen?"

"Late at night, a little after the evening train went through. People in the house panicked and couldn't unlock the front door, which didn't make sense because they weren't the type to lock up anything to begin with. But we found a lot of the bodies piled up behind it. They didn't have a chance. You know, one of those big wooden houses. Went up like a deck of celluloid cards—regular torch."

He straightened up and felt in his pockets for more nails. "It was a mighty big funeral. Everybody in town was there and Adam even got wind of it somehow and came back. Never saw a man so cut up, it really hit him." He tugged at his ear. "Guess it would have hit me, too, if I had lost my family like that. Never felt so sorry for a man in all my life. Believe me, Adam didn't deserve it. Never a straighter or more generous soul walked the face of the earth, let me tell you."

Tanner cut him off with a curt "thanks" and headed back towards the hotel. It was near dusk, the sun sinking slowly behind the flat horizon of the endless prairies.

Brockton, he thought. A quiet little town with not too many houses and not too many people.

A little town that didn't realize it had spawned a monster.

He had supper and read for a while, then turned in. There wasn't too much more he could find out, he thought. He knew almost all there was to know about Adam Hart, even if he didn't know who Adam Hart was.

He stretched out and tucked his hands behind his head. He had come to Brockton to find out about John Olson but he had ended up finding out a lot more about Adam. And what really mattered, of course, was not the education of John Olson but the education of Adam Hart.

He could guess how it had all started. Adam Hart, a personable gypsy boy. Living in a house with a dozen other children, part of a family that kept a trained bear in the backyard and had cherry trees on the lot. Trees that could be climbed and had cherries to be eaten and there was nobody who would chase you away.



"I'm selling secrets. You interested?"

BLUEBOOK 7614



A mecca for every kid in town. And John Olson had been no exception. A pudgy little boy, happy-go-lucky and spirited, who hung around with the Hart children and ended up hero-worshipping Adam Hart. Hart's reaction? He had probably been flattered and somewhat amused. And maybe one day when Adam and John had wandered off fishing together, Adam made his big discovery.

Maybe there had been vines overlooking the stream. Hart, athletic and with superhuman reflexes, might have swung across or climbed them and dared his younger companion to do the same. John, by himself, couldn't have done it. He didn't have the ability, he didn't have the sheer muscular strength. There had probably been a period of kidding and then John had tried with Adam Hart, perhaps unconsciously, concentrating on the boy, unintentionally willing him to swing across.

John had done it. Maybe the next time, overconfident and with Hart not concentrating, he hadn't succeeded and had fallen into the stream. It must have set Hart to thinking.

And maybe Hart had suddenly realized that John *hadn't* made it across the river the first time. That it had been *him*, Adam Hart, who had made it. It had been John's body, but it had been Adam Hart's mind and nervous system. He had taken over John's mind and had pulled the strings that jerked the muscles and reflexes of his youthful puppet.

It must have been a wonderful feeling of power, Tanner thought. Adam Hart must have realized what he was then. That he was a superman.

It had probably been a lot of fun at first. Even John had probably gotten a kick out of it. He could play on the high-school teams and astound everybody with his ability. And Adam Hart must have enjoyed sitting on the sidelines, guiding John's mind so he could make intricate plays on the floor and shots that would make the spectators gasp.

But then there must have been a day when there was a split. When John Olson realized that he wasn't the master of his own soul, that he wasn't living his own life. He must have grown tired of it, must have wanted out.

But Adam Hart hadn't grown tired. John Olson was his creation, his puppet—the pet dog who had learned a hatful of tricks. And when his master wanted him to perform, John would perform, like it or not.

It must have been that which had crushed Olson. The knowledge that his life was not his own. That he had nothing to say about what he did. That Hart was master and he was something lower than a slave.

He felt a sudden surge of sympathy for Olson. It must have been killing knowledge.

But Olson had finally gotten away. Hart had tired of playing with him and Olson had fled away to college. And then, years later, Hart had shown up on the scene again. Olson had been terrified, knowing what might happen. That any moment Hart would pull the strings and once more he would be living the life of a marionette.

Tanner sat up in bed and took his pipe off the dresser. Olson had been added to the Project three months before his death. Had his nervousness actually dated from then? Probably. And if he had recognized Hart, why couldn't he simply have left? But maybe Hart had decided that Olson knew too much and he couldn't afford to have him leave.

Olson had tried to finger Hart, to point out that the Enemy existed and that something should be done. He hadn't been able to talk outright so he had . . .

Filled out the questionnaire himself. Deliberately phoned it to arouse the suspicions of the committee. And when that had failed he had seen his one chance start sliding down the drain and had desperately tried to argue it out. He had dared Hart. And Hart had taken him up on it by making the paper umbrella spin.

But it doesn't fit, Tanner thought. It was a stupid thing to do. And Hart is not a stupid man.

Hart had known then that Olson would require constant watching and constant control. He had probably been standing outside the Van Zandt home, waiting in the dark, watching Olson move about his room, knowing that since he had failed

to kill him, Tanner, that Olson had to go. John had come home at midnight and fought for three hours and finally broken the compulsion that had prevented him from talking or writing about Hart directly. He had sat down to write a letter and Hart had guessed what he was doing and killed him.

It couldn't have been difficult. Hart had known Olson's nervous system as well as his own. It would have been an easy thing to clamp down on it, to strangle the autonomic nervous system so that Olson's heart had simply ceased to beat.

And Olson hadn't been the only victim. Years before Hart had killed the people who had known him best, who had probably guessed what he was.

His own family.

So one night he had come back. On the evening train. It had been a simple thing to let loose the trained bear and then stand behind a tree across the street and direct the animal towards the tanks of bottled gas outside the kitchen window.

Adam Hart, Tanner thought coldly.

The Enemy.

Adam Hart.

Monster!

It was a subtle awareness of other life in the room besides himself. An awareness of warmth, of movement . . .

He jerked and rolled off one side of the bed. A moment later a figure was bending over the bed, pulling at something that it had jabbed through sheets and mattress to tangle in the springs. There was a brief moment of tense struggle and then the figure had the knife in his hands and was crouched, waiting for him.

Tanner grabbed the pillow and used it as a shield when the figure lunged. The knife slashed through the pillow in a flurry of feathers and he felt a stinging in his cheek. Then he had the figure by the wrist and was bending it back to force the dropping of the knife.

The figure heeled him in the instep and he went down, still clutching grimly to the wrist that held the knife. They rolled against the bureau and he forced the wrist farther back. A little more pressure and then a sudden crack and a thin, strangled scream of pain. They rolled once more, the figure trying to get its knees under his chest.

Then he had the knife and sent it skittering across the floor. When the figure started to scramble after it, he kicked it savagely in the groin. It doubled, moaning, and he yanked on the light chain.

A kid, he thought, a young kid. Maybe 19, maybe 20. A farm youngster with clean-cut features and a hard, muscular frame and ingrained dirt under his nails and in the palms of his hands. Just a farm boy.

And a fanatic. Tanner felt clammy with sweat and sick with pain and excitement. "What were you after, boy? I haven't any money!"

The boy was in too much pain to even be sullen.

"Didn't want your money?"

"Then what were you after?"

The boy looked up at him, dazed. "You were asking too many questions," he said in a choked voice. "You shouldn't have been asking questions about Adam Hart!"

"Did Hart send you?"

The boy nodded.

Tanner looked at him contemptuously. "What do you take me for? Adam Hart hasn't been in town for the last eight years!"

"He didn't send me after you!" the boy whispered. "And he didn't have to be in town—he told me eight years ago!"

Tanner stared at him, disbelieving, then got the picture. Adam Hart had been a cautious man. He had foreseen the possibility that sometime in the future somebody might come back to his home town, looking for information.

So he had planted his booby traps, doing the delicate mental surgery that turned farm boys into deadly killers.

When they were triggered by somebody asking questions about Adam Hart.

## 8

THE DOCTOR'S NAME was Schwartz. He had rushed down to the clapboard town hall which also served as a police station, took one startled look at Tanner and the boy who had tried to kill him, then hustled Tanner into a side room. He made him sit on the table, busied with his kit and found a small hypodermic and a bottle. "I better freeze it for you. You make a face and it will be hard to sew."

A few moments later one side of Tanner's face felt pleasantly dull and numb. "Thanks for being considerate."

"Why not? You look like a cash customer."

"I take it you don't have many."

"I could use more. Too many people out here pay off in ham hocks and home canning." He was bending close to Tanner now, his fingers making expert passes with needle and surgical thread. "It was a knife, wasn't it? I don't think razors would be too popular in this town."

Tanner jerked a thumb towards the door. "The kid out there did it, in case you were wondering."

"So I gathered. He's Jim Hendricks—most people in town think he's a pretty good boy."

"He's very good. Particularly with a knife."

The doctor took two more stitches and coated the cut with salve and lightly taped a strip of gauze across it. "Are you going to push charges?"

"Wouldn't you?"

"Kids sometimes do funny things. I don't think most people out here would want to see a boy punished for the rest of his life for something he had done on the spur of the moment."

Tanner looked at him coldly. "Is that the way you look at it, Doctor?"

"No. But I'm afraid that's the way a jury out here would look at it. The Hendricks boy is well-liked in town, his father's a respected member of the community—runs the feed store two blocks over. . . . Why was Hendricks trying to kill you? I can't help being curious. Things like this don't happen here very often."

It might be an act, Tanner thought. Doctor Schwartz could be another booby trap that Adam Hart had left behind.

"When did you start practice in this town, Doctor?"

Schwartz looked at him intently. "Five years ago. But it would make a difference if I had been here—oh, say for more than eight years, wouldn't it?"

Tanner said: "What do you know about him?"

Schwartz drummed his fingers on the table top. "I'm the only doctor in this town. I'm the only one they've had for the last five years. I know almost everything there is to know about everybody. I know all their virtues, I know all their sins. And believe me, both would fill a book."

He brushed the sweat from a faint mustache. "I never met Adam Hart but I'm surprised how much I know about him. He must have been quite a guy. He borrowed money from everybody but so far as I can discover, he never paid it back and nobody ever pressed him to repay. They wrote it off the books and considered it an honor. For kicks, he used to start fights among the young toughs in town just to see what would happen. Nobody ever complained. If anybody else had done it, they would have been run in. When Adam Hart did it, it was just high spirits.

"That isn't all. There were half a dozen bastard children in town at one time who could have claimed Adam Hart for a father."

Tanner felt a little sick, thinking of a future 20 years away when there would be six Adam Harts running around. "You said 'were'—what happened to them?"

"They were all sickly kids—all of them. Nothing you could put your finger on, and nothing I could do for them. Maybe it was something in the genes, I don't know, but they caught every childhood disease there was and they didn't have any resistance. They died, all of them."

Mutations that hadn't made the grade, Tanner thought.

"The girls who had them didn't care that it was out of wedlock," Schwartz continued. "Neither did their parents. When Hart was younger he was precocious sexually and he experimented all over town—with everything and everybody. From the stories that went around, I can't think of anything he left out. In a medical book he would have taken up a full page in Latin. Nobody ever thought it might be wrong. For him."

Adam Hart had flagrantly and openly violated the taboos of human society, Tanner thought. And the members of that society had cheerfully forgiven him.

"As far as this town is concerned," Schwartz said in a low voice, "the only citizen it ever produced worth talking about is Adam Hart. Ever since he left, Brockton's been in an in-between state. It isn't living and it isn't dead. It's just waiting. There's a couple of other towns around here that are the same way, incidentally. Hart got around."

"What are they waiting for?"

"For Hart to come back, of course. And some day he will," Schwartz paused. "I sometimes wonder if Hart's been traveling around the country."

So a lot of other towns could get to know him, Tanner thought. It was something he hadn't thought of before. The whole country, waiting for Adam Hart to come back . . .

Tanner slipped on his coat and started for the door. Schwartz said: "What are you going to do when you find Hart, Professor?"

Tanner smiled faintly and the pain ticked back in his cheek. "Kill him."

At the door, Schwartz said: "Dr. Pierce—I bought his practice just before he retired—was always going to tell me about the Hart family."

"He never did, did he?"

"No. Six months before he retired, he had an accident. He fell down the cellar steps one night and broke his neck."

"You so sure it was an accident?"

Schwartz hesitated. "I guess not. But if I found out for sure that it wasn't, my life wouldn't be worth much, would it?"

Tanner nodded. "You're right, Doctor. It wouldn't."

## 9

HE CAUGHT THE TRAIN out of Brockton early Sunday morning. The endless prairies and the low blur on the horizon that had been Brockton gradually disappeared and he felt some of the tenseness drain out of him. In many ways it had been a smart idea going to Brockton. He had learned a lot about Hart.

And it also had been the sheerest luck that he had gotten away alive.

It was an uncomfortable thought. So far he had made no move that Hart hadn't anticipated. It was still cat-and-mouse, with himself cast in the role of the mouse. Sooner or later Hart would tire of the play, the claws would flash out, and that would be that.

The train felt warm and uncomfortable and he made a half unconscious gesture towards his collar. In the end it would be either the pier or life as a living-dead man like Olson. A marionette.

Was Hart after anybody else on the committee? If not, why not? What was so special about himself?

Two men passed by in the aisle, deep in political argument. "What we need is a leader, a strong, honest-to-goodness leader," one said.

A leader, Tanner thought.

Someone like Adam Hart?

It had been practically axiomatic that the human race would hate anybody or anything that was superior to it. That it would do its best to destroy it.

But would it really?

There was the very possible chance that people would welcome Adam Hart with open arms. And why not? For

the last 30 years people had done nothing but play follow the leader. They were broken in, they were ripe. People were worshipers by nature. They worshiped movie stars, they worshiped athletes, they worshiped dictators.

People wouldn't fight Adam Hart. They'd parade him down Broadway, they'd shower him with paper, they'd print his biography and buy millions of copies of it, every home would have his portrait.

What was it Marge had said?

*I'm ready to build a little shrine in my living room as soon as I know what to put in it.*

He sighed, bought himself a paper from the candy butcher and tried to bury himself in it. The same old news, he thought, blinking to keep awake. The same minor wars, the same tensions, the same murders and rapes and thefts—only the names had been changed, but not to protect the innocent.

Why did Adam Hart want anything to do with it?

And then he thought of the one person who might know, the innocent bystander who probably knew as much about Adam Hart as Olson himself. The one person who would know because, Sharlie, she was dere . . .

Olson's sister, Petey.

He dozed during the afternoon, then had supper in the crowded dining car, read a few optimistic articles in a professionally optimistic magazine, and was wide awake when the train came into Chicago. It was early evening and a light fog had rolled in from the lake so the city looked like a dark gray mass of cotton, shot through with black shadows and with a million lights glowing from the depths—lights that were yellowed and diffused by the mist.

The train slowed and abruptly the gray night was replaced by the brilliance of the train shed. The aisles filled with people struggling into their coats and stretching to get down their luggage from the racks. He pulled down his own bag and sat back waiting for the aisle to clear.

The line started moving down the aisle and Tanner watched the people on the platform greet those getting off. The car was half empty before he noticed the two men standing on the platform, a little to the rear of the pressing group of greeters. Two men in brown business suits and conservative ties and well-shined shoes who intently inspected everybody as they got off but greeted no one. They were waiting, he thought.

For whom?

Now the aisle was almost empty. The two men outside had moved closer to the stream of people getting off. At the far end of the coach, a colored woman started to sweep down.

The palms of his hands felt wet against the upholstered arms of his seat. He didn't know who they were or what they wanted but he was convinced it concerned him.

He made up his mind and ran to the opposite end of the car from the exit door.

"Hey, Mistah, you goin' the wrong way!"

He brushed past her and ran into the next empty car. At the far end, he worked frantically at the door away from the platform. It swung open and he dropped the few feet to the concrete rail bed, bending his legs slightly to take up the jar.

The shed was so damned bright.

He stood there for a brief moment in an agony of indecision. His suitcase . . . his clothes and his service pistol . . . everything he owned . . . left behind . . .

He started running down the tracks.

*"Stop that man!"*

A whistle split the air of the shed. The police, he thought chaotically. For some reason they were in on it. He frantically tried to run a broken field down the rail bed.

*S'pang!*

Cement chipped from a nearby pillar and he doubled his speed, the cool night air burning his lungs. The concrete of the rail bed showered chips once more and then he was running in cinders and he was out of the train shed. For a brief moment he was silhouetted between the fog outside and the

bright lights of the shed. Something tore into the fleshy part of his thigh, almost dropping him to his knees. He staggered, then the thin tendrils of fog floated between himself and the shed and he was plunging down a cindered embankment.

The gritty cinders shredded the skin in the palms of his hands and ground into the side of his pants where he slid. He ended in a tangle of weeds and saw grass and oily water at the bottom of the slope. He lay there a moment, shaking, the greasy water seeping through his coat and shirt and crawling down his chest.

I can run for it, he thought. But beyond the embankment there was only a well-lighted, broad avenue where he would make the perfect target.

He flattened himself out in the ditch. There were noises overhead and the slight rattle of rolling cinders as men walked along the rail bed 10 feet above him. A flashlight cut through the fog and outlined a clump of ragged bushes two feet from his head. The light hovered for a second, then continued on down the track.

*"I thought I saw him run on down . . ."*

*"Look for blood—I think I winged him."*

*"None here. This damned fog—he must've gone off the side some place."*

The night was closing down and the fog was moving in thicker. The voices were a hundred yards down the track now but he knew in a moment they'd start back, watching the sides of the embankment. If he was going to leave, it would have to be now.

He got to his knees, wincing at the pain in his leg, and silently crawled the few yards to the sidewalk, taking advantage of the cover the few bushes offered. The avenue beyond was a one-way street and cars were parked on the other side.

Forty feet of boulevard to cross, with no cover but the drifting fog.

He took off his shoes and felt around on the ground for a fair-sized stone. He threw it diagonally across the embankment so it clattered down the other side a good 50 feet from where he was.

*"You hear it? Over here!"*

*"Where?"*

*"Down here—this side!"*

The light bobbed towards him, then cut down the other side of the embankment. He stood up, crooking his arms so he held his shoes in front of him, and ran frantically across the street.

There was no sound but the soft slap of his stocking feet on the asphalt.

The cars, and then the blessed shadows . . . He turned south, to an alley, stopping for a moment in the darkness to wipe his hands on his trousers and tenderly feel the wound in his leg. A flesh wound, but it hurt like hell and was bleeding only slightly less. He'd had a tetanus shot in preparation for the diggings in Colorado, but the wound would still have to be washed and bound.

He put on his shoes and cut through the alley for two blocks, then walked down to Madison street. Skid Row, where nobody asked questions and where a man covered with blood and cinders wasn't worth phoning the police about. He sidled through a run-down bar to the washroom, scraped most of the dirt off himself, and combed his hair. The wound would have to wait until later. Washing it would start the bleeding again and he couldn't travel through the city dripping blood.

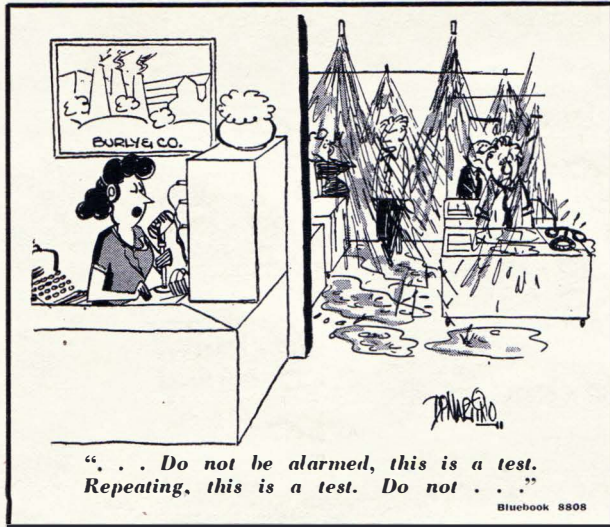
He searched through his pockets. Half a dozen coins and a couple of bills and after that he'd have to pass the hat.

He walked back out to the bar and over to the phone booth. There was one person it was probably safe to call, Eddy DeFalco, though he couldn't expect much help. He dropped in a coin and dialed.

*"Hello?"*

He leaned close to the mouthpiece. "Eddy? This is Bill Tanner."

*"Bill!"* Dead, silence for a moment. Too dead, as if somebody had put his hand over the mouthpiece. Then a jit-



tery, almost hysterical: "Long time no hear, Pal. Where the hell are you?"

"Why are the police after me, Eddy?"

"Police? You're kidding." Dead silence again, not quite muffling the sound of a door slamming. A screen door as somebody ran out to the neighbor's to make a phone call? "What do you mean the police are after you?" Pause. "Where are you?"

DeFalco had let him down at the funeral, he thought. Now he was turning him in.

"Bill? Something wrong? Why don't you answer? Bill? Where are you?"

He had maybe five minutes before they traced his call and the police arrived. Maybe a little more than that.

He quietly clicked down the receiver and dialed again.

"Marge?"

She knew his voice but she didn't hang up and she didn't scream bloody murder. She said quietly: "I want you to know that I'm going to call the police just as soon as you're through talking."

"Why are they after me, Marge?"

Her voice was dull. "For murder."

"Whose?"

"John Olson's."

"Do you believe I killed him?"

"I'm trying not to; I'm trying very hard."

There was a sharp click at the other end of the line.

Hart had sicked the police on him, he thought, shaken.

It wouldn't have been difficult for Hart to forge evidence, to implant convictions that he had killed Olson. The rest of the committee members knew better, but like DeFalco they had seen the handwriting on the wall and were scared to death. They were willing to go along, to throw him to the wolves.

He left the tavern 10 seconds before the sirens started to sound.

Chicago after midnight.

A million lights and a thousand voices along Randolph and State. Theaters and night clubs and drug stores and the open-all-night jewelry shops that specialized in zircons you couldn't tell from real diamonds. Couples heading home from the show, and 16-year-old hoods on the corners, hair thick with vaseline and combed straight back, their sport coats too long in the sleeves and too big in the shoulders. The life and lights and sounds of a city after dark . . .

Three blocks over, the concrete-and-marble cliff-dwellings of LaSalle street, silent and dark, with only the faint street lights filtering through the fog. The glass cages that looked with empty eyes at the deserted sound stages of the metropolis.

The lights marched out from the Loop along the empty streets, marking them with thin threads of luminescence that quilted the night into gigantic squares; the squares of a chess board with himself pitted against the master player.

Someplace in the darkness was Adam Harr, Tanner thought. Sleeping? Prowling the city?

He stepped out into the street and hailed a cab.

Petey wasn't home.

He pressed the buzzer again, then walked over and tried the door leading to the apartments. It wasn't locked. The moisture and the heat of summer had swelled the wood so the door had caught without closing all the way. He went up the stairs to her apartment; but he wasn't as lucky the second time.

He could wait until morning to see her, he thought—then realized he might not have until morning. And the empty apartment might tell him things that Petey wouldn't.

He tried the knife blade routine between the door and the frame and discovered that the door had two locks, only the first of which was a spring arrangement. He glanced down the hall. It wasn't a new building. The wall paper was discolored and the rose-figured rug was faded in spots and there was the indefinable odor of age. With luck, the building had probably been erected before the every-room-with-bath era.

He tried the apartment next door and managed to spring its lock. He waited a tense moment for noises from within—for the half-muffled voice, thick with sleep, to mumble: "Who's there?"

But there was no sound at all and he slipped quietly into the darkened room.

It was a bachelor-girl's apartment, dimly lit by light from the kitchenette. The sofa had been folded out into the bed and the covers were turned back, a pair of rumpled silk pajamas laid out on top. There was a faint noise coming from the kitchen that he hadn't heard before and he froze for a moment, listening. A radio, turned low, and a midnight disc-jockey show.

Nothing else. No sounds of anybody moving around out in the kitchen, no sounds of dishes clattering in the sink.

He walked quietly over and looked in. The icebox door was ajar, the makings of a sandwich on the table. There was bread, butter, lettuce, and a few slices of liver sausage. A half a glass of milk had been poured and he picked it up and sipped it.

Sour. The girl must have gone down to the delicatessen for another carton—and she'd be back any minute.

He went back to the living room, saw the door leading off to it, and tried it. The connecting bath shared with Petey's apartment.

He flicked on the light, then turned and locked the door he had just come through. He ran water into the bowl, let down his trousers, and sponged gingerly at the flesh wound. The caked blood washed away and the wound started to bleed again. He found gauze and tape in the cabinet and bound his leg tightly.

It wasn't until he put the tape back that he noticed what was wrong with the bathroom.

Face powder and talcum and bath salts and cologne and a fringe of nylons hanging from the towel racks. There was nothing unusual about it, not even the fact that the colognes and powders were of two different brands and the nylons of two different sizes. So two girls shared the same bathroom and had different tastes.

Except that Petey wasn't the cologne-and-powder type and she preferred lisle stockings to nylons.

He turned off the light and slipped into the other apartment. It took a moment for his eyes to get used to the dark and then he found a floor lamp and flicked on the night light

set in the base—enough light to see the room with but not enough light to be seen from the street.

It looked pretty much like the apartment next door. Which was all wrong because there were too many details that didn't match up with Petey's character. The pink, tufted chenille bedspread—a little too frilly, a little too feminine for the grimly efficient machine he knew was his secretary. The same thing went for the curtains and the draperies.

For a brief second he thought he was in the wrong apartment, then saw a photograph of Petey on top of the dresser. A smiling, laughing Petey with her hair down and her teeth showing, keeping company with a table-top army of perfumes and lotions and lipsticks.

It didn't make sense. Petey wasn't the type.

He pulled open the dresser drawer and ran his hands through the garments in it. They matched the bottles on top. Feminine as all get out. What the hell, he thought, Petey doesn't make a practice of showing off her underwear anyway. An efficient secretary with a grim exterior who probably liked to be feminine underneath.

The closet told him he was kidding himself. The suits and the cotton dresses and the drab wool ensembles were there, all right. But so were flowered prints and taffeta evening dresses and a black lace creation with lots of skirt, no back, and a minimum of front.

Petey had been leading a double life, and nobody had suspected it. And then he wondered: *Why?*

There were muffled footsteps down the hall and the metallic jiggling of a key in the lock.

He turned off the night lamp and stepped back into the shadows of the closet.

She flicked on the ceiling light and closed the door behind her, then threw her wrap on the bed and stretched, shaking out her thick, golden hair and arching the white of her neck. It was amazing what drab clothes and dresses had done, Tanner thought clinically. She had a figure and she knew how to dress it. And the way she moved! Not the sharp, awkward movements she used to make that made her seem like a cubist painting come to life, all squares and angles. She was smooth, lithe, animalistic. Her face, with make-up, was definitely pretty.

She had started to unloosen the straps on her high-heeled pumps when he said softly: "Hello, Petey."

She froze for a second, balanced on one foot. Then she said, "What are you doing here?"

"Just visiting." He took out his tobacco pouch and pipe. "You look beautiful when you're all dressed up. Go dancing much?"

She kicked off the shoe and straightened up, one hand brushing back her long blonde hair that had usually been worn in a bun at the back of her neck. "That's none of your business."

"So soon after your brother's death, too."

"You don't mourn a person forever."

"Not even for seven days?"

Her voice was ice. "I was your secretary at the university but you don't work there anymore. And you've no right to pry into my private life."

He sat down on the bed and ran his hands over the sheets. Silk. You didn't buy silk sheets on a secretary's salary.

"Who replaced me, Petey?"

"Van Zandt, who did you think?" She deliberately turned away from him and walked over to the closet. She put her hands behind her back and unloosened the eyelets and stepped out of her dress. "Getting an eyeful, Professor? You don't seem like quite the rube you used to be."

Secretaries, he thought slowly, didn't buy slips of black nylon and lace on their salaries, either.

"Why didn't you tell your folks about John's death so they could have been there?"

"I told them later on. They couldn't have made it to the funeral anyway."

"Your father could have made it."

She glared at him. "You went up there?"

"I went through the whole town. I talked to everybody, from the little girl who waits behind the counter at the hotel to the math teacher who shows chubby little farm boys how to shoot baskets. They knew John very well. They knew Adam Hart, too."

"I don't know what you're talking about."

He smiled faintly. "Come off it, Petey. You gave yourself away the minute you stepped into this room."

She raised her flaxen eyebrows and looked bored. Then sat down on a chair and started to roll down her stockings. "How?"

"I called up DeFalco and Marge when I came back. They knew the police were after me, they knew the police were convinced that I had murdered John. I don't think they believed it themselves but . . . something . . . had scared them to the point where they were willing to throw me to the wolves. You're not scared, Petey. You're not scared at all. Because you're on pretty good terms with that 'something'? You not only know I didn't kill your brother, Petey, I think you know who did."

Coldly: "So what?"

That's right, he thought to himself, so what? So her brother is dead and I stand a chance of being killed any day. And it wouldn't matter to her. It doesn't matter a damn whether I live or die. And it hasn't made any difference to her that her brother's been killed.

The scene at the office and the scene at the cemetery had been part of an act.

"You were a great little kiddie, weren't you, Petey? Good-looking girl and you managed to keep it hidden from all the boys, didn't you? But there was somebody you didn't hide it from, wasn't there? There was somebody you fixed yourself up for!"

She sprang up. "Get out of my room!"

"Who's keeping you, Petey?"

Her voice was brittle. "Nobody's . . . keeping me!"

"You're a damned liar, Petey. You're being kept and you're being kept by your brother's murderer—you're sleeping with Adam Hart!"

Her face was dull marble. "What do you want?"

"Who's Adam Hart?"

The strength had drained from her voice and it was shaking. "I won't tell you! I couldn't if I wanted to!"

"I could make you. I wouldn't hesitate."

"Big man!" she said bitterly. "If you think you can, go ahead and try it!"

Tanner sighed. Petey was probably telling him the truth—she couldn't tell even if she wanted to. As her lover, Hart would have put on whatever appearance and personality he wished.

"Why do you live with him, Petey?"

"Because I want to—what other answer did you expect?" Her voice became shrill and ugly. "You wouldn't understand me if I called you a small man, a little man, a weak man! You wouldn't understand me if I said you were *human*—and that explained it all!"

He looked up at her and felt as if he were still lying at the bottom of the embankment and the oily water was spreading across his skin again.

"You must know that he doesn't give a damn for you. It's his own version of bestiality, only he hasn't any sense of morality to be outraged by it. You weren't the only woman—he's gone with others. Six girls back in Brockton had children by him. So you're pretty and charming. But your greatest asset is simply that you're handy."

"It doesn't make any difference to me."

He stared at her, trying to determine whether she really meant it. He finally decided that she did.

"What does he want, Petey?"

"How the hell do I know what he wants—he doesn't confide in me. Maybe he wants to run things, maybe he wants to run the world. Would that be bad? *We're* not doing such a red-hot job of it!"

"Adam's run things before. Your brother's life for one. And why? For kicks. And why are the police on my back?"

"You tried to call John the same night he was killed. They traced the call. And they found a note and some letters in your apartment. The police think that John had found out you were an imposter."

The records that had disappeared, he thought. The perfect set-up. And it would have been easy to plant the note and the letters.

"Your Adam Hart's pretty bright, isn't he? And he's got you nicely trained, hasn't he?"

She stared at him for a moment with a slight smile, her eyes full of hate. Then, deliberately, she skinned off her slip. Reaching her hands behind her to her brassiere fastenings, she spat: "I suppose you'll be staying to see the rest of it, Professor?"

The brassiere came away from her beautifully modeled breasts.

She stood there in nothing but her panties. "Think maybe you'd better be running along now, Professor?" Her hands went to her waistband—and began to pull down.

"Ah—for God's sake!" he said, and got up and strode to the door. As he reached it, she said softly, "Professor."

He looked around. She stood there, ivory and pink and brazenly, blondely naked. Her smile and the expression in her green eyes made his breath catch. Her smile broadened viciously. "Better take a real good look," she said. "You know you're not going to live out the night, don't you?"

## 10

HE WENT OUT the door to the sound of her laughter and slammed it behind him. He leaned against it a moment, his eyes closed. He felt no hatred for her. This wildly out-of-character behavior of hers . . . obviously Petey wasn't herself. She was just another puppet who danced to the piper's tune.

He lit his pipe, his hand trembling, and flicked the match onto the worn carpeting. He started for the hallway. Halfway down the hall, he stopped. The outside door to the apartments had opened and there were footsteps on the stairs.

Somebody coming home, he thought, little twinges of anxiety plucking at his mind. He listened. The footsteps passed the first-floor landing and went on to the second. And then to the third. A woman would have taken the elevator, so it was probably a man. A man in a hurry . . .

Then he knew who it was. He could feel him coming up the stairs, the way a swimmer feels the waves in a lake.

Adam Hart had probably been tired and bored after he had dropped Petey off. A cup of coffee in a restaurant and then a sudden decision to pay Petey a surprise visit. A little sport before morning came.

Tanner stood in the hallway in almost fatal indecision, listening to the quiet footsteps and feeling the moisture starting out on his hands and face. With all his intense desire to find out who Hart was, he had never meant to meet him face to face in a hallway. That kind of meeting could only end one way.

Now the footsteps were at the landing between the third and fourth floors. Calm, sure, and just a little hurried.

Adam Hart didn't know that he was there.

He hesitated one more second, then turned and fled down the hallway. Behind him, the footsteps on the stairs halted briefly, then bounded up.

*Who are you . . .*

*Who are you . . .*

*Who are you . . .*

The end of the hall, a door, and a small red light burning above it. The fire escape and, outside a clearing, cool evening with 10 thousand stars spotted in the distant sky. A breeze that tugged at his collar and sifted through his hair, chilling the sweat on his face.

He could go over the side and four stories down to the blessed softness and the safety of the concrete, he thought. No worries, no fears . . .

He clutched at the iron railing, suddenly panicky, then was running on the iron grid, spinning down the steel steps. Four flights of stairs taken two and three at a time. He stumbled and fell at the very bottom and for a second he was looking up at the building, staring at a shadow in a felt hat and a trench coat, silhouetted against the sky.

He got to his feet and started for the end of the alley, his legs shaking so badly he could hardly stand.

*Don't run . . .*

*Don't run . . .*

*Don't run . . .*

His head suddenly ached and there were subtle probings, sudden pressures and jabs that brought sharp pain to his eyeballs and caused an uncontrollable itching of his skin. He opened his mouth to scream and laughter bubbled out instead, then his lungs suddenly refused to work and his left leg developed an involuntary limp.

A vague thought trickled through his mind. This was it. The master was learning how to pull the strings, like a violinist tuning his violin.

Then there was a sudden pressure on his heart, the feeling of a hand that was slowly squeezing it, choking the arteries and the veins and throttling the valves. The same thing that John Olson must have felt, although not as blessedly quick.

The alley exit was a dozen yards away . . .

He fought back, trying to blank his mind, mentally grasping the fingers and trying to make them release, desperately trying to cause some pain in return. There was a brief hesitation, he took a quick, strangled breath, and then the pressure was back.

The stars and the night and the cooling air . . . idiot laughter and curses and his own hands tearing at his chest, his eyes smarting and swelling.

Then he was out of the alley and on a residential street, for the moment out of sight. There was a sudden release, bafflement, and a frenzied groping in the air around him. His heels were a staccato echo on the sidewalk and he hurriedly switched to the dew covered lawns. Far behind him, in the alley, there was the chatter of feet racing down the fire-escape steps.

He'd have to hide, and hide quickly. He couldn't outrun Hart and as soon as Hart had him in sight again . . .

He cut in towards one of the houses whose windows were dark and reflected the dull glow from the street light. A frame house which meant a back porch and . . .

The space beneath the porch was musty and thick with cobwebs. Planks and ladders and a lawnmower and garden tools had been stowed there. He lowered himself between two stacks of boards and shivered. He had been afraid and fear had pulled the strings as much as anything else. So damned, uncontrollably afraid. He forced himself to relax and to think of something else.

The musty smell of the rotting wood beneath the porch and outside a lukewarm night with the stars like crystal, inanimate ice in a pitch-black sky.

He waited.

The little things of the night. The soft noises from the trees and shrubs as small things settled for slumber or foraged for food. The creeping things in the wood pile and the faraway echoes of automobiles two blocks over.

There was a scratching at the back fence and the gate creaked open. A boxer dog was framed in the opening for a minute, then trotted casually in. A swift inspection of the grounds, and back towards the garbage can just inside the fence. A nudge and a sudden clatter that filled the night.

If the dog came any closer . . . But the hound was pawing through the remains of the evening dinner and didn't wander over to the porch.

Then he felt a shadow in the yard and knew that Adam Hart had heard the noise and darted in to investigate. He could feel the cold gaze sweep around the moon-lit yard, hesitating at the shadows of the rose bushes and the hollyhocks, lingering on the dim recesses beneath the porch . . .

*Be nothing, be nobody . . .*

He tried to develop a blank mind, a mind that didn't

think of Adam Hart, that didn't think of being caught, that didn't think of hiding under the porch, under the porch, under the porch . . .

Blankness.

Nothing.

A probing under the porch.

Nothing.

A gentle probing at the bushes and the shadows of the shrubs.

Nothing.

There was nothing in the yard but a dog that had been worrying a paper sack of garbage and now looked up, wagging its tail. It forgot the garbage for a minute and started to trot across the yard, towards the shadowed figure that stood by the front gate.

And then there was *fury*.

The small noises in the bushes and under the porch suddenly died. There was an abrupt chittering in the oak tree and then silence. Something crashed down through the branches and thudded on the ground. The boxer growled and the hackles on its neck rose. It trotted stiffly forward, then suddenly froze in a patch of moonlight. It began to whimper.

Tanner watched, fascinated.

A muscle on the dog's left hind leg bunched and jerked and there was a brittle, snapping sound. He could see the muscles of the throat work as the boxer tried to howl, but not a sound came out.

*Fury!*

The end was quick. The dog's skin rippled and the hound went into convulsions, circling around its useless leg and frothing at the jaws. Suddenly there was a louder snap and it sagged, broken, to the ground. It jerked once, as if somebody had kicked it, and a growing depression showed faintly in its side. Blood gushed abruptly from the mouth and then the yard was still and empty.

Footsteps sounded faintly down the sidewalk. Then silence.

Tanner crawled out from under the porch. He glanced at the boxer, lying crushed in the middle of the yard, and imagined himself lying there. He stared, then went out the back gate and down the alley.

Clouds started to roll in from the west and the night air began to chill.

Downtown, the clock in front of Marshall Field's said one o'clock. The theater crowd filled the streets, heading for the IC station or waiting on the corners for the bus or thronging the restaurants that stayed open until the small hours of the morning.

People, the blessed people. He felt safe with them, with lots of them.

"Cuppa cawfee, Mister?"

Dirty blue shirt and baggy khakis, a stained bristle of white whiskers and eyes that were all pupil and bloodshot lens. A shaking, outstretched hand with ingrained dirt in the palms and grubby fingernails.

Tanner started digging.

"I only need five dollars and thirty-six cents," the voice said hopelessly.

He pulled his hand out of his pocket as if he had been burned. There was nothing behind the bloodshot eyes, there was no indication that he was anything but a wino on the bum.

But \$5.36 was all the money he had.

He stared at the bum for a moment, then whirled on his heel and walked away.

*I can't go up to a policeman and say, "Officer, I'm being followed by somebody who isn't human." I can't vanish. I can't hide. It's out in the open. I'm the mouse and Hart is the cat. And may God have mercy on my soul for as Petey said, I shall not live through the night . . .*

There were couples walking slowly down the street, laughing and pressing close to each other. Two sailors stood beneath a dying movie marquee, looking professionally lonesome and eyeing the crowd as it swirled past. A matron, heels

clicking loudly on the sidewalk, hurried toward the Grant Park underground garage. A group of soldiers talked in earnest voices to a girl in a doorway, the streetlight lost in the fuzzy sheen of too-blond hair.

The street was clearing for the short night.

He kept glancing in the store windows, trying to catch a glimpse of anybody who might be following him. Nobody for certain . . . and possibly everybody. He stopped for a moment longer, looking at the reflections in a Walgreen's drug-store window.

A glimpse of a man in a felt hat and trench coat? He couldn't be sure . . .

"I think that bird is real cute," a nasal voice said. "Look at him, that one there."

Pick-up.

He glanced at the display. A little wooden bird teetered back and forth on a perch, then swung down to dip its bill in a glass of water. Up—back and forth, back and forth—and down again. No strings, no motor. Just the bird, its perch, and the glass of water.

"It's real cute. I'd like to . . ."

The bird lowered its beak into the water and didn't come up.

Five.

Ten.

Fifteen seconds.

Suddenly he knew what was coming but he couldn't turn away.

The bird swung up, winked a painted eye, and spewed a stream of water that splashed on the glass a foot away.

"Say, now wasn't that cute? How do you suppose . . ."

Suddenly she decided it wasn't cute at all and started screaming. "Somebody botherin' you, Ma'am?"

The soldiers who had been talking to the girl down the street. They clustered around the window and Tanner edged away.

"He did it! He's the one!"

She pointed at him and one of the soldiers caught his arms and another hit him in the stomach. He doubled and tried to wrench an arm free. Then one of them slugged him in the face and he could feel the cartilage in his nose give. He went down.

Another soldier tipped his hat and took the girl by the elbow. "Just a cake-walkin' civilian, Ma'am. No trouble at all."

Tanner shook his head and stumbled to his feet, feeling for a handkerchief to soak up the blood spurting from his nose. He was shaking with fury and started after the soldiers. Then he turned away.

He couldn't blame them. Adam Hart was actually throwing the punches. Adam Hart was working him over, trying to get even for his getting away the first time. Hart's human reactions, the curious mixture of man and superman. It was encouraging, if he could only live through it.

He walked aimlessly up Randolph Street, trying to keep with the crowds. A glance at the toy soldiers on display in the Vaughn seed-store window. Just a glance—long enough to see one of them present arms and to hear the tinny thudding of a miniature drum.

The night spots were winking out one by one. The actors were disappearing from the stage and he realized that soon there would be only he and Hart, alone on the boards and with no audience to see the final tragic act.

He wasn't aware, at first, of the old woman walking beside him. Her voice was a whispered croak.

"You don't want to stop tomorrow, do you, Sonny?"

There was nothing behind her eyes. Just as there had been nothing behind the beggar's and nothing behind those of the soldier who had slugged him. A certain vagueness, a certain blankness perhaps.

Just an old lady in black.

"Tomorrow belongs to those who own today, Mother."

"Who owns today?" she asked sharply. "Not you."

"Who are you?"

"Do you think you'll ever find out?"

"Yes."

Shrill laughter boiled out of her withered throat. "Only if you live that long!"

She turned and walked away. When she disappeared around a corner he realized that he was absolutely alone.

Randolph, the other side of LaSalle Street. The shadowed fronts of buildings, dead neon signs, and the indifferer glare of the street lamps. The still life of a sleeping city, broken only by the fluttering of a newspaper that lodged for a moment against a trash basket and then scuttled to a hiding place beneath a car.

He started walking again, then stopped.

Adam Hart was waiting for him at the end of the block.

A solitary figure in a slouch hat and a trench coat, the face, as always, in shadow.

Waiting for him to come closer.

Tanner stared and the seconds ticked slowly by. He felt like a dog who had puddled on the carpet and was now going to be whipped by his master. He had a feeling something terrible was about to happen.

He tried to turn, to run.

He couldn't move a muscle. The man at the corner held him in the palm of his hand.

Then the fingers of the hand that held him slowly curled inwards and he stopped breathing, as abruptly as if somebody had closed a valve. His heart slowed and he suddenly lost any feeling in his legs. His hands went numb and the numbness sped up his arms, towards his chest.

Adam Hart was flicking off the switches one by one.

Tanner was suddenly looking at a blackness far deeper than just the night and he could sense himself crumpling slowly to the sidewalk. He touched the concrete at the same time a police prowler car rounded the corner, the searchlight flashing in the doorways.

There was the squeal of brakes and simultaneously full release and a complete easing of tension.

"Hey, Mac, you can't sleep on the sidewalk here—sleep it off in the tank!" They helped him into the car.

The figure at the end of the block was gone.

## 11

HE WAS SCARED but he didn't go to pieces. He managed to lose his wallet between the car and the sergeant's desk so when they searched him down, they found no identification. There was nothing to associate him with the William Tanner who was wanted for murder. When they asked him his name and address, he gave them a phony name and an address on West Madison. They didn't even bother to check.

They threw him into the lock-up for overnight and he thanked God for the crowded cell and the ravings of the drunks and the muttered, jumbled conversation of the others. He reveled in it for half an hour, then let himself lapse into a sound sleep. The mattress was hard and his only pillow was his arm, but in the cell he was safe. The jam-packed jail and the confused mumble of thoughts was the best possible protection.

Heavy, steady slumber, and then waking dreams that weren't dreams so much as a drowsy, mental review of what had happened. A kaleidoscope of shifting pictures, the main one of a man in a slouch hat and a trench coat.

He woke up shaking and biting his arm to keep from screaming . . .

"Okay, let's get up! You bums can't sleep all day—let's shake a leg! Let's roll out!"

They gave him a breakfast of bread and cereal and let him bathe in a slimy shower room and shave with a razor whose blade was crusted with dried soap and whiskers. At nine o'clock they took him before the judge who yawned, looked bored, and since he was a first offender, let him off with a reprimand. By Monday noon they had let him loose in the world again and he was on his own.

He stayed with the crowds on the sidewalk and didn't make the mistake of wandering into deserted sections of the public parks or venturing down streets that were empty of people. He headed back towards the Loop and the baking canyons between the steaming buildings.

Up Michigan Boulevard, thick with perspiring businessmen in wilted summer suits and women in thin, cotton dresses and a few sailors in baggy whites. The lions in front of the Art Institute and the young saplings growing on the roof of the Grant Park garage . . .

He turned in at the public library, headed for the crowded newspaper room and read until noon. He had lunch, then found himself a bench in Grant Park, a stone's throw from Buckingham Fountain. Kids playing in the water, lovers on the other benches, a family having a picnic on the grass nearby. The safety of numbers.

Van Zandt.

Nordlund.

DeFalco.

Scott.

Grossman.

Which one?

*Consider the superman: He toils not, neither does he spin. Or perhaps he spins too much. Given a superhuman needle in a five-straw haystack of humanity, how would you find him? He's a step up the evolutionary ladder, far superior to me and thee.*

*Of course—there's always one test which nature uses to judge new species.*

*Survival.*

*It might be as simple as that.*

He counted the change in his pockets. Thirty-six cents. The five dollars he had had was still in his wallet and the wallet had been dropped in the gutter the day before and miles away. Thirty-six cents. Less than half a dollar to eat on and sleep on—or die on.

He wandered up North Clark street and into a pawn shop, first glancing in the window to be sure there would be no other customers but himself.

"Something for you, sir?" The man was fat and oily and eager.

"I'm interested in a pistol," Tanner said quietly. "Say something of medium caliber, not too big."

The man looked surprised, then reached into a show-case and laid a small automatic on the counter. "This is an Italian Beretta, really a beautiful gun." He hesitated. "You have a permit, of course."

"How much?"

Before the owner could object, Tanner scooped up the gun and inspected it carefully. He flipped out the magazine then just as quickly put it back. "You make a habit of keeping these things loaded?"

The man behind the counter laughed nervously. "Of course not. We . . ."

Tanner leaned over the counter and pointed the Beretta at the fat man's stomach. "You did this one," he said dryly.

The man licked his lips. "You're kidding," he said flatly. "We never leave bullets in a gun."

"Don't you?"

The fat man's hand started to slide to a drawer just underneath the counter.

"I wouldn't," Tanner said in a quiet voice.

The pudgy hand retreated. "What do you want?"

"This gun, a box of shells, and say ten dollars expense money. It's a bargain."

The fat man shrugged and handed over the shells and the money. Tanner backed away towards the door. He was in the doorway when the fat man cleared his throat painfully and asked, "Was it really loaded, Mac?"

"As you said, you never leave bullets in a gun."

He ducked out, closing the door behind him so the fat man's string of curses was partly muffled. Down the alley to the next street over and he was in the clear.

The Van Buren street subway station and the cool, cellar-like air, a welcome relief from the stifling heat outside. He



pushed 20 cents through the wicket and walked down the stairs to the platform.

There was one thing he could do, he thought, and that was to start at the beginning. To go back to the university and the room where they had all met that Saturday morning. To refresh his memory and maybe find a clue that would help. But if he went back, he would be making himself bait. Summer school hadn't started yet, the campus would be deserted, and he would be alone.

He stood there and debated. Far down the track he could see the lights of a Howard street train going north. He watched the lights grow bigger and finally made up his mind.

When the train left the station, he was on it.

The campus was deserted, the buildings gray and gloomy in the growing evening dusk. He worked his key in the door of the science building and quietly slipped inside. The night watchman usually spent all night in a cubbyhole in the basement, reading thrillers and sitting with his ear glued to a blaring radio. He would be no trouble at all . . .

He walked through the silent corridors and into the committee meeting room. The shadows were growing but there was enough light to make out the furniture and the worn marks in the tile floor. There was the long, heavily varnished table and the cheap, straight-backed chairs and the tinted photograph of an old professor, apple-cheeked and with mutton-chop whiskers, staring somberly down from the walls. Dust lay thick on the table and the window sills, marred by clean streaks where somebody had run his fingers or laid something down. And there were faint fingerprints in the dust on the molding and scratches around the door.

Somebody had gone over the room pretty thoroughly.

He stood there for a moment, wondering who it might have been and trying to concentrate on the mystery, rather than worrying about his own exposed position.

Somebody coughed behind him and he whirled. He hadn't heard the door open, he hadn't heard the footsteps down the hall. But now Karl Grossman stood in the doorway, nervous and hesitant. Or was that a cover?

Grossman started to waddle towards him, his hand outstretched.

The Beretta was in his hand and a shot splashed into the woodwork behind Grossman. He had a frozen picture of a shocked look on Grossman's fat face and then the big man was diving toward him and had wrapped his cord-like arms around his knees.

It was like watching a slow-motion film in which time had crawled to a halt and he could see each individual frame as it flicked past. There was no thought, no emotion, no feeling.

He felt himself go down, knocking over a chair behind him. Then the physicist had his throat with one hand and was desperately straining for his gun hand with the other.

They rolled once and during the movement he worked the gun free and took hasty aim. Their bodies crashed into the wall and the thin molding near the ceiling gave way and the heavy photograph of the mutton-chopped professor plummeted down. At the same instant the sharp crack of the Beretta filled the room.

Silence.

Smoke and blood and shards of glass. A frightened man on the floor beneath him, eyes glassy in a pasty face beaded with the sweat of fear. But a man who was still very much alive. A man who wore crepe-soled shoes, so naturally he wouldn't have made any noise coming down the corridor. An average man who would have died if it hadn't been for the photograph that had shaken Tanner's arm. And it couldn't possibly have been planned that way. It had been sheer good fortune for both of them.

Luck. The only reason why Grossman had survived. Which meant that the physicist was . . . safe.

He took another look at Grossman and the blood trickling from a scratched ear and got shakily to his feet.

"I'm sorry, Karl. Lord, I'm sorry! I—I was panicky. I—"

Grossman got up and fumbled for a cigarette. His hands



were shaking badly. "I cannot blame you, William. I think I know what you have been going through."

Surprise. The world was full of them.

The chubby physicist gestured at the room. "I re-ran the experiment, without our people. I checked the room for little air currents. The tiny gap between the molding and the ceiling, any tiny hole in the wall, the little space between the door and the frame—everything. I assure you there was no way the paper umbrella could have moved. Normally." He paused. "And I know about you."

The pupils in Grossman's eyes were more their normal size now. He dabbed at his ear with a handkerchief, glanced at the blood stains, and shrugged. "I did some checking on you—for which, my apologies." His eyes narrowed. "It was very unusual. People who should know you claim you do not even exist."

"People like who?"

Grossman walked to the window and stared at the darkening campus outside. "Your banker, your lawyer, your doctor, your dentist. They have never heard of you. And you would be amazed at the number of students who remember the courses you taught—but not the professor who taught them."

Hart had been editing his past, Tanner thought. Rewriting his personal history so that at some time in the future he could be safely eliminated. Nobody would worry about him, nobody would be concerned. Because nobody would remember him.

"Did you find anybody at all who recalled me?"

"A few. The committee members, your secretary, and a Grandfather Santucci in Connecticut. And that was all."

There were the sounds of footsteps running down the corridor. "Say, what's going on here?" The indignant face of the night watchman poked into the room. "I heard shots, and it wasn't the radio . . ." His eyes widened and he started to back out. "Mebbe I ought to call the cops . . ."

Grossman took a bill from his wallet. "It was nothing, Joseph. Just a short talk."

The watchman hesitated, his eyes on Tanner, and Tanner could almost hear him wondering where he had seen Tanner before and why it was important to remember him.

Tanner sidled past. "Let's beat it, Karl."

It wasn't the night watchman that bothered him. It was the growing dusk and the stillness and the knowledge that they were alone and no match at all for other . . . visitors.

They took Grossman's car and Tanner slid behind the

wheel. He drove slowly through the warm evening, going south again toward the Loop.

Grossman stirred uneasily beside him. "You know that the police are after you, William?"

"So I've heard." *Run, mouse, run!*

"I have done some investigating," Grossman continued. "I have not discovered much. You, I assume, have found out much more."

"You're taking your life in your hands if you listen to me, Karl."

"I have already taken my life in my hands. Tell me."

Tanner talked quietly, filling Grossman in on everything he had done since that Saturday morning—his own suspicions and minor triumphs and near death and above all, Adam Hart.

When he had finished, Grossman said: "We should tell the government. Right away."

"You'd have a tough time convincing them."

"I do not think so. The government is willing to believe anything nowadays, William. It has to."

"You forget that I'm a discredited man, Karl. I'm wanted for murder. The government would spend all its time looking for me, not Adam Hart." Outside the lights of wealthy Gold Coast apartment buildings winked quietly by. "Besides, call in an army of agents and sooner or later the news of what was going on would leak out. Then you could expect people to react one of two ways. They'd cheerfully welcome Hart as a dictator or else they'd start a pogrom where everybody of above-average IQ would have to run for their lives."

"What does he want, William?"

"I haven't got the answer to that one, Karl. As Petey Olson once said, he doesn't confide in me." He circled a block and turned north on the Outer Drive. "Maybe he wants the world. Petey implied as much. And for all we know, maybe he's well on the way to getting it. You read the newspapers and you can't help but think that the world is going to hell in a handcart. But maybe it's not going there under its own power, maybe somebody's pushing it."

"But why would he do it?"

"Maybe it's because he's the first one, Karl. Maybe he thinks a little chaos will paralyze humanity so his own race can grow and thrive."

The hum of the motor and the whirr of the wheels against the concrete. The dark shadow of Grossman, slouched in his seat, his cigarette a tiny red flare in the blackness.

"It's getting late," Grossman said. "Maybe we should go home."

"Yours?"

"You have no place else to stay, have you?"

"You don't think Anna will object?"

"Anna will do as I say, William."

"You know this is a dangerous thing for you to do, don't you, Karl?"

"So? I do not care to stand by and watch this thing happen."

"Is your house being watched?"

"I do not think so—and I have tried to make very sure."

Tanner felt like laughing. How sure was sure? He turned off on a side street and concentrated on watching the street-signs so he wouldn't miss Grossman's house. But in the back of his mind there was a slight, nagging doubt. He had talked a lot to Karl because he considered Karl safe. But no matter what test he ever devised for Karl and the others, he could never really be certain that Karl was really . . .

Karl.

## 12

HE PARKED in front of Grossman's home. The physicist opened the door and led the way to the small, fragrant kitchen.

"Anna and the boys must be in bed so we will be quiet. But maybe a glass of beer and a sandwich would go good, eh?"

He nodded and Grossman opened the refrigerator door and set dishes out on the table. "We have salami and wurst and some good American cheese—try it on the pumpernickel. Cold pork and mustard and. . . William, have you ever tried this cream cheese cake?"

"With beer?"

"It is not so bad as you think." Still looking in the box, Grossman tried to set the plate on the table. He didn't quite make it and the sound of the china shattering on the linoleum was loud and ugly. He held up his hands. "Anna will wake up now but she does not mind a snack at night." He winked. "I do not think she will be too angry."

Tanner started to butter a slice of bread. "I'll make up a sandwich for her—pour a little oil on the troubled waters."

A light clicked on in a room down the hall and there was the sound of slippers padding heavily on the worn carpeting. Anna Grossman waddled into the patch of light in the kitchen doorway, her heavy features still thick with sleep.

Grossman closed the icebox door and turned towards her. "I have brought home Professor Tanner, Anna. He will be staying with us for the night." He smiled and nudged a chair with his foot. "We were thinking we would have a little something before turning in and . . ."

His smile faded. The heavy, stolid expression on Anna's face hadn't changed. There was no welcoming smile, no angry frown, no look of recognition written there at all.

"What are you doing in my house?"

Grossman looked a little grim. "I did not mean to waken you, Anna, but in any case we do not argue in front of guests."

"What are you doing in my house?"

"Anna! As your husband, I command . . ."

"My husband died six years ago!"

Tanner stepped forward. "Don't you remember me, Mrs. Grossman?"

Her eyes flicked at him coldly. "I have never seen either one of you before in my life. Now get out of here before I call the police!"

Grossman was breathing heavily. "*Rudolph! Frederick!*" There was an immediate scurrying down the hall and two sturdy boys about 10 and 12 years old popped into the kitchen. "Your mother is sick—you will take her to her room."

They edged back towards their mother, hostility etched deep in their faces. They didn't recognize Grossman either, Tanner thought. Hart must have found out that the physicist was doing some investigating. And now Karl was going to pay the price.

Grossman started to crumble. "Anna, I—I do not understand. I am your *husband!* I . . ." The stern expression on her face didn't change and he turned to the boys. "You know your own father, boys . . ."

"Pop died a long time ago," one of the boys said coldly. "He got killed in Korea."

Anna Grossman threw open the kitchen door. "Frederick, go next door and get help! Rudolph, call the police!"

The neighbors wouldn't remember either, Tanner thought. It wasn't going to do any good to stay and try to bluff it out. The neighbors would hold them until the police arrived and then the fat would really be in the fire. He'd be racked on a murder charge and they'd get Karl on a charge of breaking and entering.

"Come on, Karl," he said gently. "Let's go."

The big man slumped in a chair. "My family—I have lost my family!"

Tanner grabbed him by the shoulders and shook him. "They're not going to remember you, Karl, no matter what! Hart's made you pay and if you stay here you'll be playing right into his hands!" He turned and started running toward the front door. Whether Grossman followed him or not was up to the physicist. But he could hear loud voices next door and he knew that this was his last chance to leave.

There were footsteps behind him and when he got into the car, Grossman slid in beside him. The lights were on in the houses on either side of Grossman's home and two men

had started running towards the car. He gunned the motor and they roared away.

He drove for a few minutes and then glanced casually at the quiet shadow sitting next to him.

Before, Grossman had always impressed him as being a big man, fat but with a thick layer of muscle beneath it. Now Grossman suddenly struck him as being small and pudgy and weak and curiously empty. Like a paper milk carton, firm and solid when it was full, and light and flimsy and easily crushed when the milk had been poured out.

Adam Hart had won another round.

Midnight, Monday, and the rain had started to pelt down, huge drops that mixed with the dust on the windshield and made oily smears that the wiper couldn't get rid of. It had been an hour since Grossman had had anything to say and Tanner hadn't prompted him. They had driven around the city and he had let the scientist talk when he wanted to and had kept his own mouth shut when he hadn't wanted to.

They drove in silence for a few more miles, then Grossman said: "You have a plan?"

"That's right, Karl. I've got a plan. Our problem is one of survival. We've got to smoke Hart out, to threaten his survival. To place him in a situation where his own reactions will be the tip-off, where he'll *have* to show himself to get out. As I did with you this afternoon. Only that time the results were unintentional." He took a deep breath. "I'm going to try to kill each member of the committee, Karl. When I do not succeed—that will be the tip-off."

"But—that is murder!"

"Not exactly. The situation is in two parts. My part is to try to kill the suspected party. I make my plans, there is no backing out, and I will not be able to stop halfway. If Hart read my mind, he would read only murder. I'll set up the situation and then tell you what it is. It's up to you to solve it, to stop it at the last minute. But you'll never tell me the solution, I'll never know it."

"And what is to stop Adam from reading your mind and knowing it is a false situation?"

"Perhaps he could, but he couldn't read the solution. It would still be up to him to get out of it, unless he had absolute faith in your ability to prevent it. And I doubt that an organism keyed to survival would have that faith."

"And what of my own mind?"

"I'm gambling on the element of surprise. The chances are he would be far too busy concentrating on the threat at that precise moment to pay too much attention to you."

A little of Grossman's strength had flowed back into him, a little of the milk had been poured back into the carton. He turned the idea over in his mind and Tanner could sense Grossman's intensely logical brain examining it from every angle. "It is rather risky."

"I can't deny that."

"And if you or I should slip in the case of an innocent person?"

"Then we're murderers."

He drove back into Chicago and the near north side, and checked into a cheap hotel. They went up to the room and Tanner flicked off the lights and placed a chair to one side of the window. "You want the first shift, Karl? Four hours on, four hours off. I think you'll have a warning if . . . anything . . . tries to reach you. Wake me up immediately."

Grossman took the Beretta and sat in the chair. "Whom do we try first tomorrow?"

The first guinea pig, the first one they would eliminate . . . He picked one out of thin air. "Professor Scott. He could help us a lot on the rest, once he's eliminated as a suspect."

He got into bed and tried to push a thought into the back of his mind, the nagging thought that kept reminding him he could never quite be sure of Karl, or of anybody else. Just before he dozed off, Grossman stirred in his chair by the window and said:

"You know, William, I do not think we will succeed. We are too much like dogs—plotting to capture the dog-catcher."

**P**ROFESSOR SCOTT. A vigorous man growing old, sitting in the sun and watching the days flick by, thinking each morning is just a little chillier than the one before, that each walk to the park takes just a little more out of him.

Or was it all an elaborate front designed to fool the peasants?

Tanner stretched uneasily behind the wheel of the car.

Did Scott actually bound out of bed with the reflexes of a 30-year-old, run an electric razor around his jaw, take a needle-spray shower, and then settle down to a breakfast of sausage and fried eggs and steaming strong coffee?

When Professor Scott creaked down the front steps was it just Adam Hart mimicking the actions of an old man?

It was possible. But then, anything was possible.

It was a scorching day, the sun a blazing plate in the clear blue sky. The kind of day when the firemen open the hydrants and the asphalt feels sticky and a lawn can turn from green to brown between sunrise and sunset. It was mid-afternoon and most people were down by the beach, or trying to sleep off the heat in sweat-soaked hammocks and porch swings.

The curving walks in the park were almost empty. A little boy, his short pants soaking wet, was playing with the drinking fountain, holding his thumb over the spout and seeing how far the squirting water would go. A couple were on the tennis court, the *thunk* of the ball against the racquet breaking the pudding stillness of the afternoon.

And there was an old man walking slowly past the empty benches, searching for one in the shade.

Professor Scott.

An act?

Tanner turned the key in the ignition and started the car. Professor Scott wouldn't find a shady bench on that side of the street; his favorite spot was in the full glare of the sun, the wooden seats and the metal arm-rests too hot to be comfortable. Sooner or later the old man would have to cross over.

And when he did, the moment of decision would be upon him.

The old man suddenly stopped and glanced towards a shady spot under the trees, a dozen yards away, on the same side of the street. Tanner held his breath. Scott *had* to cross the street; if he didn't, it would be all off. The plan wouldn't work later in the day, the park would be too crowded.

Professor Scott obligingly continued straight ahead.

Tanner eased the car away from the curb and let it glide slowly down the tarry street that paralleled the sidewalk. The essential element of surprise. Professor Scott didn't know what was going to happen—and neither did Adam Hart.

But Tanner shouldn't think about it. That would be dangerous.

Action.

Blankness.

A few feet more and the sidewalk ended at an intersection. Beyond the junction there was only one walk and that was on the opposite side of the street.

He pushed heavily on the accelerator and glanced quickly round. The empty park and the deserted benches, the little boy at the fountain and the tennis players hidden from view by a curve in the road.

No witnesses.

Professor Scott was stepping off the curb, preparing to cross the intersection at a diagonal.

Sweat was making the palms of his hands slippery against the plastic steering wheel. The car was leaping down the street now, its engine roaring in the quiet afternoon.

The old man had stopped and was looking up, startled.

The perfect target.

One slip and I'm a murderer, Tanner thought. But it's too late now to stop. I couldn't stop if I wanted. Grossman . . . But I mustn't think . . .

Professor Scott was turning to run, his face a mask of fear. He had dropped his paper and his straw hat had fallen off and was rolling into the gutter.

*Let's see you change now, Professor! If you're Hart then you're off balance, there's nothing you can do to stop this car. Let's see you suddenly leap for the curb, let's see you sprint down the street with a 30-year-old's muscles. And if you do then it's going to be all over. You'll have lost the game! But if you can't run faster than a hobble—then please God, let Grossman do his share . . .*

Sudden panic clutched him by the throat. He was in the intersection now. Professor Scott was past it but still in the middle of the street, his legs working frantically.

Oh, God . . .

He was a split second from murder. Then a car shot out of the intersection and smashed into his trunk. There was the squeal of tires and the scream of tearing metal and then the impact threw the two cars together like the arms of a collapsing V. His car jumped the curb and rocked to a rest.

The sun and the heat and a moment of startled quiet. He frantically worked the door handle, then put his shoulder against the panel and forced it open. A huddled form lay in the street 50 yards away. They were off to a great start, he thought. They had wrecked two stolen cars and nearly killed a man.

But the problem of who was Adam Hart had been decreased by a factor of one.

Grossman got out of his car and hurried over. "William, is he . . ."

"No, probably just fainted. Give me a hand here."

"All right, but I think we . . . Look out!"

The truck was speeding and he got out of the way just in time. Then he realized in a flash that it wasn't after either him or Grossman, that somebody else had been the target for the day. It could have missed the fallen form of Professor Scott: it actually had to swerve out of its way to hit him.

There was a *thunk* and a tearing sound and then the car had disappeared around the curve.

A block away, there was a sudden babble of voices.

Grossman's face was starchy white. "It *could* have missed him—the driver could have swerved and missed him completely!"

Tanner raced up to the bleeding figure. He took one look and knew there was nothing anybody could do for the old man. He knelt down and hurriedly searched through the torn pockets, found what he wanted, and scrambled for the shrubbery lining the road.

Grossman was close behind him. "What are you doing?" "Getting out of here. How much luck do you think we would have convincing a crowd that we hadn't run over the old man? With Hart around to whip them up, we'd be lucky if we didn't end up dangling from a tree. Where'd you leave your car?"

"A business street a few blocks from here. Where are we going?"

"To Professor Scott's home—before the police get there. The old man was killed for more reasons than just to make us look bad. I want to find out why!"

A crowd had begun to gather around Scott's body but by then they were out of sight. In the business district Tanner made a phone call to Scott's home. He passed himself off as a police officer and told the housekeeper what had happened and that she should get there as soon as possible.

Then he drove around to the house and parked until she had left. He took out of his pocket the things he had taken from the dead man's clothing and started to sort through them.

Grossman looked at him accusingly. "Why did you take his wallet?"

"Because money isn't going to do Professor Scott any more good. But it might come in very handy for us for such little things like eating and hotel rooms, or hadn't you thought of that?" He brushed his hand across his forehead. "I'm sorry, Karl, I'm a little jumpy. Let's go in."

He opened the door with the keys he had taken from Scott's body. The house was lavender and old lace with antique furniture made of thick cherry wood, hand-turned.

"You are looking for something?" said Grossman.

"Yes, but I'm not sure what. Some note, some message. Something that would have made it dangerous for Scott to live any longer."

"Perhaps he had a den?"

There was none on the main floor but it was logical that Scott would have had some kind of a work room. Tanner snapped his fingers. "Let's try the basement."

At first glance the basement was like any other basement. A coal furnace with a stoker, the coal bin and the washing machine and the screens stacked up in one corner. There was a room just off the bin and he stepped in and flipped the light switch.

The lights were fluorescent and it took a moment for them to come on. It was different from what he'd expected and a good deal different from the upstairs of the house. The study was a modernistic room with pine paneling and a mobile hanging from the ceiling at one end. Shelves of books were built right into the wall and one whole wall was devoted to a battery of filing cabinets.

He surveyed the den carefully, then two things caught his eye.

The first was a file card on the desk with a heading neatly typed on it reading: "Heterosis, bibliography." On the card, Scott had written: *The most important. See dossiers.*

And then he knew. Professor Scott had moved fast, possibly even faster than Hart had. The old man hadn't lost any time. He had started assembling a dossier on each member of the committee before people had started to . . . forget.

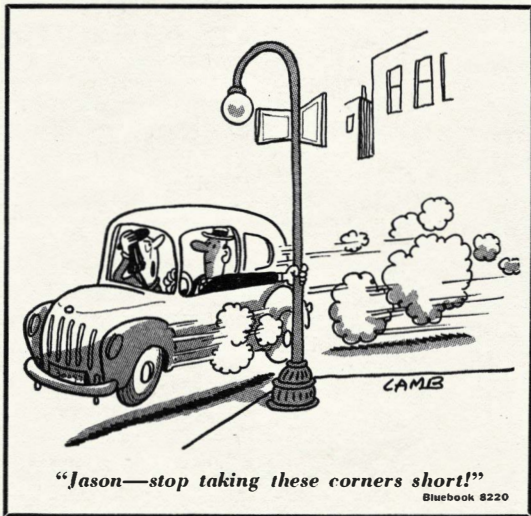
But where would the dossiers be?

He looked through the desk and the bookcases, then came back to the shelf above the desk itself. An open space, about two inches, in the middle of the small group of books. Just right for half a dozen 8-by-12 file holders.

Somebody had taken them, somebody who had entered the house about the same time Professor Scott had left for his walk in the park. Somebody who had known about the dossiers or had suspected their existence.

Who?

The other item depressed him. Scott had had access to the same information about John Olson that he had had and the old man had looked up a medical directory and then



written a letter to Brockton. It was addressed to *Dr. Herman Schwartz, Brockton, South Dakota.*

It had come back, stamped: DECEASED.

The return postmark was Sunday night.

The evening of the same day he had talked to Schwartz, he thought. Either he had unintentionally given Schwartz away or else . . . He looked at the back of the envelope. Somebody had read it and revealed it and hadn't done a good job. The chances were that Schwartz had never received the letter, a letter that undoubtedly asked questions about Adam Hart. Somebody who worked in the post office automatically read the incoming mail so any information relating to Adam Hart could be side-tracked and destroyed, and the people to whom it was sent could be investigated.

Schwartz had guessed that his life might not be worth a plugged nickel. And how right he had been.

"What's that, William?"

He waved the letter. "Nothing unusual, at least not now. Just a letter to a man who knew too much and died because of it." He stuffed the letter in his pocket.

They stood for a moment on the doorstep outside and Grossman said: "Why did the truck hit Professor Scott and not us, William?"

"Because whoever was driving it didn't have orders to, Karl. It wasn't Hart, he didn't even know we were there. While we were in the park, Hart was here, rifling the house." He started down the steps.

"Where are we going to stay tonight?"

Tanner frowned. "I don't know but I think it's a mistake to stay together all the time. If we do, it's putting all our eggs in one basket." He hesitated. "Tell you what—I'll meet you in the lobby of the Chicago public library tomorrow at ten. All right?"

Grossman nodded. "Be very careful, William."

"I've had a lot of experience along that line the last few days, Karl. You just watch out for yourself." He walked down the street, turned the corner, and once more he was cut off and alone.

Nordlund.

Van Zandt.

DeFalco.

It was narrowing down fast, faster than Adam Hart could have figured on. Grossman had been eliminated, Scott had been killed, Peety had been identified as Hart's mistress. Marge could safely be counted out for obvious reasons.

Now there were only three.

It was getting towards dinner time and the streets were emptying again. He caught the "El" back uptown and walked into one of the larger hotels in the Loop. He had cleaned up and had Scotty's money; he was presentable, if not a fashion plate.

An events board in the lobby listed four different conventions going on in the hotel. He memorized the brief listing, then wandered into the bar. People, lots of people, for far into the night. Before the crowd started to thin, he would make contact and then he'd be good until morning again.

He juggled a small vial in his pocket. Dextroamphetamine. Enough to keep him awake for a week. And after that?

But by then, of course, the game would be over—win, lose, or draw.

He picked a table in the corner where he could watch the people in the room and ordered beer. It was near eight o'clock and he was tracing wet rings on the marbelite top when he suddenly picked it up.

It was just an awareness, a feeling that somebody had come into the room and quickly glanced over it. Somebody who had stopped for a moment a few tables away, looked at him, and then passed on.

He tensed, waiting for the prying and the probing. But it didn't come. There was only a subtle aliveness to the air, a feeling of being watched. Whoever it was, was still in the room, waiting for him to go to the john or do any one of a number of things that would momentarily separate him from people.

He settled back in his chair and quietly inspected the room. It did no good. It was too smoky, there were too many pillars that people could hide behind, and it was doubtful if he would recognize anybody in the hazy atmosphere anyway. He turned back to the beer rings and pushed a finger around one of the circles, smearing the oval of dampness.

Somebody walked up to the table.

"Bill."

It was Marge.

She sat down. He said, "You've got a chance to leave now, Marge. Stick around and you'll be tagged. Adam Hart's here."

"I don't know who you're talking about."

He kept his voice low and tried to hide his annoyance. "The mystery man, Marge. The man who moves little tents of paper on Saturday mornings just by looking at them. The man who murdered Olson. So be a nice girl and beat it."

"I'm not going to run out."

"It's not a question of personal bravery, it's just good common sense."

"I've been here too long already, then. It wouldn't make any difference now, would it?"

"How did you know I was here?"

"I didn't. I just came in here with my date—I think he's in the john right now. Very big fraternity man. I'll hold his hand on the way home and he'll tell all the boys how he seduced me—you know the type."

He couldn't help smiling. "You better get back to that bar, then, before he comes out."

"Bill." She worried her lip between her teeth for a moment, then took the plunge. "I think you're going after this . . . Adam Hart. I think he might be a very dangerous man. And I can't help wondering if you shouldn't give it up."

"Who are you fronting for?"

She didn't slap his face, she didn't cry, she didn't get sore. "I'll make it very simple, Bill. I love you. I want to see you alive and not dead and if that sounds corny, I can't help it." She leaned towards him and he was suddenly very conscious of the smooth sweep of her breasts and the tan of her shoulders and the fine tone of her skin. The faint smell of her perfume and sweetly scented soap . . . "I'm lonely and I want you, which is something no girl is ever supposed to admit. But I'm tired of playing games and it doesn't look as if either one of us is going to have much time for them."

"I—I—never got a proposal from a girl before."

"I'll bet this will be the only one, too."

He smiled. "It probably will be."

She stood up to go back to the bar. "Breakfast with me—pick me up say at nine o'clock?"

"It's a date. In some nice, crowded restaurant." He watched her walk across the room, trying to catch a look at the guy she had gone out with. But people got in the way and her date kept his back turned and shortly afterwards, they left.

He went back to smearing his beer rings.

The feeling of tension was still in the room.

It was getting late and he was going to have to make contact soon. He stood up and sauntered over to the bar where a small group of men had been talking in loud whispers, then suddenly guffawing and slapping each other on the back. Name badges identified the group. He leaned casually on the bar and turned to face them. He glanced idly at one of the badges and his face lit up.

"Say, all you fellows in the kitchen-supply business?" They stopped talking and he knew he had sparked interest. "Got a brother in the business, runs the Amco supply house on the south side."

"Y'don't say!"

A friendly clap on the shoulder.

"Hey, Barkeep, bring a drink for m'friend here!"

A furious pumping of his hand.

"Little party going on upstairs . . ."

He was in.

There was no Amco and he had no brother but it wouldn't be difficult to string them for the evening. He could take his

lead from what they had to say, maybe even accept verbal orders for his "brother." The party upstairs would go till daylight hours, traveling from room to room. He couldn't have wanted anything better.

He drank with them in the bar and when they left and took the elevator up, he was still with them.

But so was the tension. It rode the elevator with him, a shadow he couldn't shake. The ghost that would sit in the corner and wait for him to make one small mistake. He turned, to try to locate it.

"Face the front of the elevator, please."

The shadow went with him from party to party, always shifting or vanishing when he tried to pin it down. The rooms were filled with laughing, giggling, empty faces, trying to convince themselves and each other that they were having a great time. The loneliest faces in the world. And behind one of them . . . ?

But which one?

Early in the morning he suddenly discovered that he was slipping. He was drinking just a little too much, he was laughing just a little too hard, he was getting drunk a little too easy. Something was trying to push him along, like a butcher laying his thumb on the scale. Something was trying to add the straw to the camel's back.

Drinking and laughing and thinking it was too damned funny that they thought he had a brother who owned a warehouse. What a clever fellow he was, he ought to tell them the joke, just to see the look on their faces. They'd get a big bang out of it . . .

A big bang . . .

He shook his head and tried to swim out of the alcoholic fog. Tell them what he had done, he thought thickly, and they'd throw him out. He'd be alone in the corridor and Hart would pounce on him before he could even get to the elevators. He held a glass from then on but he didn't drink.

Five-thirty in the morning came very slowly and he could sense the tension being replaced by a feeling of disappointment. Sunrise and a faint, pink color behind the silhouetted skyline. Two more hours and there would be people on the streets and the city would be alive again.

He was suddenly sick to death of the smell of stale beer and the mumble of drunken conversation. There were about a dozen people in the party and they were nearly out on their feet. Glasses and empty bottles and small mountains of cigarette butts littered the room.

He sneered inwardly. The human race at its worst.

*You agree . . .*

It was just a drifting thought that plucked at his mind; he couldn't be sure but what he had thought of it himself.

*Your pocket . . .*

*In your pocket . . .*

*Look in your pocket . . .*

He glanced quickly around. Nobody was looking at him, nobody was paying any attention to him. He walked over to the window and he could feel the skin crawl between his shoulder blades and knew that somebody in the room was watching him.

He put his hand in his pocket and felt a small piece of paper. Sometime during the evening he had been jostled and somebody had put it there. He took it out and unfolded it.

It read:

*How do you like the zoo?*

A neatly written signature that looked like copperplate:

*Adam Hart.*

Zoo? he thought.

The room and its impressions suddenly whirled around him, as hard and clear as cut glass.

A rock-and-roll tune blaring over the radio. A sudden suppressed giggle. The sound of liquid sloshing in a glass, a roar of animal laughter, the flushing of the water closet and water puddling in the sink, a woman's voice "Now, Charlie . . ." somebody dropping a glass in the short hallway.

And inside his head, defeat and sudden twisting laughter before Adam Hart withdrew.

*Don't feed the animals . . .*

IT WAS 7:30 in the morning and a little too early for the Loop to fill with people on their way to work. Trucks were busy making deliveries before the Loop got crowded and the newspaper wagons were dropping off stacks of the *Tribune* and the *Times*. A few baggy-eyed businessmen were trotting out of the subway entrances but the Loop was still the private reservation of the newsstand vendors and the deliverymen. It would be another hour before the counter at Walgreen's became packed with secretaries drinking their breakfasts.

The sun was up and there wasn't a cloud in the sky. It was hot already and Tanner knew the day was going to be another scorcher.

He bought a paper and found an empty booth in a drug store. He ordered coffee and rolls for breakfast and took another dextroamphetamine capsule to keep himself going through the day. He killed half an hour over the coffee and rolls and another 10 minutes glancing at the paper. A senator had died, a prominent actress had become involved in a New York vice trial, a government official had resigned over charges of corruption. And the police were still looking for a university professor who was wanted in a murder case. Oddly enough, the paper didn't run a mug shot of him. Thank Heaven for small favors, he thought. It meant the police hadn't located a picture of him so neither the run-of-the-mill cop or the general public could be expected to recognize him on sight.

He paid his bill and walked out to the now-crowded street.

Eight o'clock in the morning and he had nothing to do until he saw Marge for breakfast at nine. An hour to waste—and why not get to Marge's early? Spend some time talking about nothing at all, get his mind off his worries for once.

At least for 30 minutes.

He caught an "E1" going north and was at her apartment by 8:20.

And there wasn't any Marge. He pressed the buzzer and could hear the faint ringing in the apartment but nobody came to answer the door. She might have gone out early, he thought, disappointed. And she might have forgotten about the breakfast date, which wasn't a pleasant thought but a possible one anyway.

He tried the knob from force of habit and the door swung quietly open. She must have forgotten to shut it all the way when she had left. Or else the lock had jammed and hadn't locked automatically when she closed the door; it happened sometimes. Or maybe . . . ?

*Oh, God, no!*

"Marge!" He raced in, glancing at the living room and throwing open the closet door. Then into the bedroom and the kitchen and a quick look into the bathroom. She wasn't there and he felt sick with relief, and then abruptly wondered just where she was. Stepped out just for a moment, probably . . .

It was quiet and warm in the apartment, the sunlight strong and bright through the chintz-curtained windows. The room smelled sweet. The faint odor of Tweed, he thought, Marge's trade-mark; what she called a "sensible" perfume. The apartment was a better set-up than Petey's. A little larger, the carpeting not so worn, the wallpaper clean and modern.

That was what set it off. A modern room. A lot of light from the windows at the end, modernistic limed-oak furniture, wrought iron lamps and chair frames, and a fish mobile over the desk, the fins moving slightly in a breeze from a half-open window. A large bed in the bedroom with a bookrack headstead and thick, round pillows. He ran his hand lightly over the coverlet, then turned it back and looked at the sheets. Good honest cotton.

He went back to the closet he had opened when he had first searched through for Marge. He hesitated, shrugged, and opened it up. Nothing but Marge's suits and dresses, and he

could identify almost every one. There were no hidden gowns, no fancy wraps.

The top of her dressing table was almost bare compared to Petey's. The large bottle of Tweed perfume, powder, rouge, and lipstick. A small box for hairpins and curlers. A large picture frame standing on top of the dresser, with no photograph in it. Probably a new frame she hadn't had time to fit a photo for.

He started for the door, thinking of waiting outside in the hallway, then paused halfway across the room, feeling vaguely unhappy about something. A nice, modern room, he thought. Neat, airy, attractive. But almost like a room in a hospital. It was designed not to be lived in but to suit somebody's esthetic taste. And not Marge's. Marge had always struck him as the type who would have her laundry in the bathroom sink, stockings drying on a towel on the radiator, and bobby pins scattered loose over the dressing-table top.

But there was something more specific, something that had struck him as a clue.

The dresser.

The large frame on top of it that had no picture in it.

People bought frames because they had pictures to go in them, he thought slowly. They didn't buy the frames first and wait for the pictures to come later. At least, most people didn't. And Marge had had a photograph to put in that frame, one he had given her the previous Christmas. One of himself.

He took the frame down and looked at it closely. It wasn't a new frame, there was a little tarnish around the edges. And there was a sheet of photo paper in it. A sheet of plain, white photo paper but with no picture on it.

But Marge saw something when she looked at it, he thought. She saw a picture there.

Adam Hart's.

Marge had been the Judas Goat. Sure, have breakfast with her at nine—but she had never meant to be there. Somebody else would have been waiting for him. He would have had breakfast with Adam Hart instead, and that would have been the last breakfast he would ever have had.

The night before, when he had been in the bar, he thought suddenly. How odd that of all the hotels in the Loop, he and Marge should have hit the same one. And her date, the escort he had never quite seen. The tension had dropped off for a little while after Marge had left, and then it had come back—strong.

Adam Hart had taken her home and then returned.

And Tanner had believed everything that Marge had told him.

The clock on the dresser chimed once. Eight-thirty. Time to get the hell out of there.

He looked down at the frame he held, then broke it over the back of a chair. Then he walked out and slammed the door behind him.

Grossman was waiting for him at the library, nervously pacing back and forth in front of the information booth. He was making himself too obvious, Tanner thought. He should have been in the reading room, supposedly absorbed in a newspaper or book.

The physicist saw him and hurried over. "What are we going to do today, William?"

"Go right ahead with what we intended to do. Eliminate another committee member."

Grossman wet his lips. "Which one? Professor Van Zandt? DeFalco?"

"Neither. I was thinking of Arthur Nordlund."

"Why him?"

"Why not? He's a young man, a strong man. And one who has contacts that might do us some good—if he's the McCoy and if we can convince him."

Grossman nodded. "All right. Then we shall lay a trap for Commander Nordlund."

Tanner looked around and spotted a pay phone in the hall just a short distance from the reading room. He took down the phone number. "I'll be gone for a while, Karl. I'll call you back here."

He left the library and turned south on State Street. There was a little print shop just south of the Loop that he had discovered when he had once audited an undergraduate criminology course. A shop that could fix him up with a faked Naval Intelligence identity card before he started looking into the background of Arthur Nordlund.

He ticked off what he knew about the man. Early thirties, though like most predominately thin men, he didn't look that old. Hardly an athlete but not exactly soft, either—a "stringy" build. An unfriendly personality that annoyed most people; he wasn't pleasant to talk to, he wasn't pleasant to be with. People would steer away from him.

Tanner knew that Commander Nordlund lived in an apartment hotel just off Diversey Parkway and usually had his breakfast in a little coffee shop just around the corner from it.

Tanner took the "El" north, strolled past the coffee shop, and casually glanced in. The commander was sitting at a table in the rear. Tanner bought a paper on the corner, then went to the soda fountain in the drug store catty-cornered to the coffee shop and ordered a chocolate malted. He finished it in a hurry when Nordlund suddenly got up, paid his bill, and strolled outside.

The commander flagged a cab. Tanner caught another, and told the driver to follow Nordlund's.

Nordlund's cab stopped at the athletic club. Tanner drove up a block and got out, swearing to himself. The club was for members only; he couldn't get in. And there was no telling how long Nordlund would be there.

He walked across the Drive to a park bench on the lake front and sat down and unfolded his paper. No matter how long the commander stayed, he was going to wait him out.

He had been waiting a bare half-hour before the Navy man came out, dressed in white ducks and T-shirt and with a rolled-up towel under his arm. Probably going swimming at a nearby beach.

On the sidewalk, Nordlund lit a cigarette and leaned against the building watching the passers-by. Tanner hid behind the paper. Nordlund was waiting for somebody.

Two cigarettes later, a girl in tennis shorts ran up to Nordlund and kissed him lightly on the cheek. They stood on the walk and talked for a while. The date, Tanner thought. While he was watching, the girl suddenly frowned and pointed to Nordlund's towel. The commander snapped his fingers and made a face, then gestured down the street towards the beach. The girl started walking, turned, waved once, and went on.

Nordlund walked to the street and hailed a cab. Tanner caught one right behind him and trailed him back to his apartment on Diversey Parkway. He parked while Nordlund ran into the building.

The girl had gone on ahead, he thought, while Nordlund had driven back to the apartment. Why? Because he had forgotten something? Maybe a blanket, maybe a portable radio?

The cab driver drummed his fingers against the steering wheel. "Why so interested in him, Mac? You got somethin' on him?"

"Let's just say he owes me money."

The driver nodded wisely. "One of those guys, huh? Y'know, they're all alike—live in fancy apartments and owe everybody in town."

The minutes limped by. What the hell could be keeping him? Tanner thought. A dash in, a minute to get whatever he had forgotten, and a quick dash out.

Five minutes.

Ten minutes.

A half hour.

The mailman made his rounds down the street and walked into the apartments and talked to the girl at the switchboard; Tanner could get a glimpse of her through the big glass doors. An old man in a Western Union uniform tottered in and three girls, probably secretaries, came out. The laundry truck drove up and a bin full of white linen disappeared through the doors. A couple of kids wandered by, tossing a ball back and forth among themselves.

The cab that Nordlund had come in suddenly clashed gears and moved up the street.

Tanner's own driver stirred restlessly. "Doesn't look like he's coming out, Mac. I think he's given you the slip."

"Wait a few minutes longer."

The driver shook his head. "Uh-uh. This is a busy time of day and I'm losin' a lot of fares as is. I'm gonna have to beat it."

Tanner paid him off, then walked into the drug store on the corner where he could watch the entrance of the apartment building. He leafed through the magazines at the newsstand and had himself a cup of coffee.

Forty minutes.

He walked over to the phone booth, left the door halfway open so he could still see the apartments, and called Grossman. He could go up alone but there was no sense in taking chances that he didn't have to.

One hour. Grossman drove up in a cab and barged into the drug store, his fat face-sweaty. "He has not come out yet?"

"Not yet—and it shouldn't have taken him longer than a few minutes. Let's go up."

At the desk, the woman said, "Commander Nordlund has apartment 607. I'll give him a ring." Before he could stop her she was buzzing the room. There was no answer. She frowned. "Now that's odd. He *should* be in. He had a visitor just a little while ago."

The noises from the street were suddenly very sharp. "What visitor?"

She looked flustered. "Why, a gentleman who came in a little over half an hour ago—I think that was about the time. Is something wrong? What on earth's the matter?"

"What did he look like?"

"Well, I should say he was a very distinguished-looking gentleman." Her face softened a little. "Really, a very fine appearance and very dignified. Tall and somewhat thin, steel-gray hair, a small salt-and-pepper mustache..."

There was the same subtle change in her voice and the same distant look in her eyes, Tanner thought. He had seen the same look and heard the same sort of tremolo when he had been in Brockton. From the little girl who had served him breakfast at the hotel.

"I think," he said gently, "that all of us should go up. I don't think the commander has been feeling very well."

"Oh!" She told the girl at the switchboard to take over and scurried out from behind the counter. About 50, Tanner thought, and a little on the dumpy side. Like the girl in Brockton, she had seen the man she had wanted to see. She caught the burly laundryman just as he was leaving. "Jeff, help us a minute, will you? A man on the sixth floor may be ill!"

Now there were four of them, Tanner thought. Maybe enough to handle Adam Hart if he had stayed behind.

The floors slipped by in silence and he could feel the jitters begin. What if Hart were still there? So there were four of them, but that was no guarantee. It would take sudden surprise and shock and no thought at all about what he was going to do. He took the Beretta from his pocket and checked it. The woman's eyes widened and the laundryman looked surprised and said, "What's the idea, Mister?"

He didn't answer and when the elevator doors slid back, he hit the corridor, running. 601—603—605 . . .

He crashed into the door with his shoulder. It hadn't been locked, it hadn't even been closed tightly, and he stumbled halfway through the living room before he could stop himself.

It took him a full 10 seconds to realize that there was nobody there, that there was no tension and there wasn't going to be any plucking at his mind. But there was a subtle electricity to the air, as faint as a woman's perfume, and he got the impression that somebody *had* been there and just a moment before.

And then Grossman was shouting from the bedroom, "In here! Come quickly!"

NORDLUND'S EYES were half-closed, the muscles in his face rigid and his loose linen shirt soaked with sweat. He had sagged to his knees by the bed, one hand clutching at the spread. He was suffering from primary shock, Tanner thought. The skin was cold, the pulse so feeble as to be almost undetectable, the breathing shallow.

"Nordlund!"

He got his hands under the man's arms and lifted him onto the bed. The laundryman and the woman who had been at the desk downstairs were staring. She started to edge towards the door. "Maybe I better call a doctor."

He was panicky for a moment, then flipped open his wallet and showed her the faked identity card for Naval Intelligence. "Td appreciate it if you wouldn't. But you might go downstairs and get some hot coffee." He jerked a thumb at the laundryman who was looking helpless. "You, help me get him undressed and under the covers—he'll come around in a few minutes." He loosened the laces in Nordlund's shoes and a moment later they had him under the blankets. With warmth and a hot drink, Nordlund would recover all right. But it was a wonder the man was still alive.

"What d'ya think did him in? Somebody get in or something?"

Tanner was blunt. "Don't you have laundry to deliver, Jocko?"

"Yeah, sure, I guess I do." The laundryman turned in the doorway. "Next time you want help," he said bitterly, "ask somebody else."

I'm still a flub at human relations, Tanner thought. But dammit, I couldn't have let him stay.

"Watch the commander, will you, Karl?"

He walked back to the living room and looked around. The table by the window, a chair moved slightly away from it as if somebody had been sitting there. Nordlund had walked in and was probably in the bedroom when Hart had come up and sat down. Towards the bedroom itself, a chair had been overturned and a lamp shattered on the floor.

So Nordlund had come out and tried to fight and they had gone to it for a few minutes, he thought. And Nordlund had been partially successful; at least he had lived long enough so that help could arrive. The sheerest sort of luck, the one chance in a million that depended on somebody watching him and finally getting curious as to why he hadn't come back down from his apartment.

Tanner walked back to the bedroom and looked at Nordlund with a good deal more respect. Nordlund was about his own height and thin, maybe about 150 pounds, with thin wrists and slight shoulders and a narrow chest. But in other respects a bear of a man.

The coffee came up and Tanner tried to pour some into the slack mouth. It didn't work very well; a little dribbled in but a lot more slopped over on the sheets. He pressed the jaws open, held down the tongue with a finger, and tried again. It worked a little better, but it was still a messy proposition.

Grossman had shown the woman out and come back. "Should we call a doctor, William? He does not look good."

"No, he'll be all right." He took his pipe from his pocket and noticed for the first time that his own hands were shaking. "It was a close call."

"I would not want to come closer."

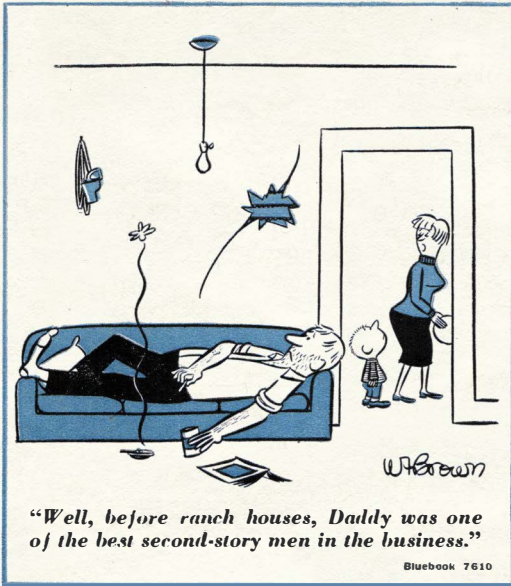
"Do you think he was working on a separate line of investigation? After all, you were, Scott was, and I was."

"Perhaps, although he did not seem inclined to believe what happened that Saturday morning."

Tanner stood up. "Let's take a look around."

They turned the apartment upside down. There was nothing, outside of personnel work that Nordlund had been doing for the Navy. A sheaf of carbons of transcripts of the meetings at the university, some personnel records, and a large file of restricted Naval publications.





**"Well, before ranch houses, Daddy was one of the best second-story men in the business."**

Bluebook 7610

There was a small noise from the bedroom and Tanner raced back. Nordlund was sitting up, his eyes staring.

"It's all right, Commander, he's gone. You're going to be all right."

The light in Nordlund's eyes faded and he sagged back on the pillow. "Oh, God!"

Tanner waited a moment for Nordlund to recover and then asked the question he had been wanting to ask for the last hour. "Who was he, Commander?"

Nordlund shook his head. "I never managed to see his face, Tanner. He walked in and then we were at it. I never saw his face, he never let me see it! Do you know what it's like, Tanner, for a man to slip into your mind and start driving you as he would drive a car?"

His voice started to shake and Tanner said, "Take it easy. Hart isn't here and he's not coming back, at least for a while. And I know what it feels like, I've been through it before."

The horror of it seemed suddenly to wash back on Nordlund. He shook underneath the covers, and bit his own wrist. Tanner watched him curiously and waited for the spasm of fear to go away. Nordlund's eyes were red-rimmed and sunken, his face a fine grid of jumping muscles. His nerves were shot, Tanner thought. It was as if somebody had snipped the wires that had strung him together.

Tanner said, "What have you done since that Saturday morning, Commander?"

"What do you mean?"

"Did you try investigating Olson or any others on the committee, anything like that?"

"No, I didn't think it was necessary." Nordlund's mouth tightened. "I saw everything that you people saw but it didn't make sense to me. I thought that perhaps a draft had moved the paper—you thought that yourself at the time."

Poor, pragmatic Navy man, Tanner thought. He believed in what he could touch and nothing else, and after Saturday he had been in over his depth and floundering around. He hadn't known what to believe.

"And after Olson was killed?"

Nordlund looked away. "They said you did that. I believed them. And you had disappeared, it seemed logical."

"And Professor Scott?"

"Old men are killed crossing the street every day." His voice turned bitter. "I was pretty stupid, wasn't I?"

"You were, but that's water over the dam. Maybe I ought to bring you up to date."

After he had finished, Nordlund said: "It's easier to believe in the Abominable Snowman."

"Do you think I'm lying, Commander?"

Nordlund shivered. "Lord, no. If I was any firmer a believer, I'd be dead."

Tanner walked to the window. It was getting late. A few more hours and night would have rolled over the city. And the problem of what to do when the sun went down would be with him. "There's three of us now and we've got two men to go after. Who will be first, Van Zandt or DeFalco?"

Nordlund closed his eyes. "You make the decision, Professor. I don't know enough about either one of them."

"There is not a great deal to know," Grossman said precisely. "Van Zandt was born in Belgium—1916, I believe. His father was a baker, his mother was a seamstress. He came to this country at the age of ten. A precocious child, from what other faculty members have told me. He did his undergraduate work at Beloit and his graduate work at Harvard. A brilliant student. Professionally, he has written a number of papers on the psychology of factory workers—invaluable, I understand, if you are interested in that sort of thing."

"What about DeFalco?"

"I do not know much about him. He was born in 1925, here in Chicago. An above-average student, though not exceptionally so, and very much the athlete. He was expelled from school during his senior year and readmitted after a month. He has done both his undergraduate and graduate work here."

"All that's from the records," Tanner said. "Which means that only one of those backgrounds is true."

Which left them both about where they had started, he thought.

*Power, power, who had the power?*

Professor Harold Van Zandt—cold, distant, bitter? Or Edward DeFalco, the DeFalco who had been so scared that morning in the cemetery. Or had that been an act, too?

"Any suggestions?"

Nordlund's thin hands plucked at the blankets. His voice was so low Tanner almost didn't hear him. "We could go away—we could run. Hide where he could never find any of us."

"And spend the rest of our lives wondering if we were safe? You don't think Adam Hart's going to forget you, do you, Commander?"

Nordlund sighed. "All right, I was just making noises."

"Karl?"

"I think, perhaps, we ought to eliminate DeFalco first. There is probably less chance of him actually being it and then that would make four of us on our side."

Nordlund struggled up in bed. There was a little color in his cheeks and his eyes didn't look quite as whipped as they had.

"Do you think you can get out of bed?" asked Tanner.

Nordlund tried it. "I'm a little weak but outside of that, I guess I'm all right. What do we do now?"

"The first thing to do is to get out of here. Just because Hart failed the first time doesn't mean he's going to leave you alone. The police will probably be coming around a few minutes from now—they'll have some charge worked out." He felt a brief surge of sympathy for Nordlund. "You realize you're all washed up in the Navy, don't you, Commander? Your records will disappear and somebody will dream up some reason to nail you."

"I've thought about that." Nordlund went to the clothes closet and started packing a small overnight case. "What do we do the rest of the evening?"

"That's up to you. We'll split up for the night and meet tomorrow morning, say the same place I met Karl this morning. Ten o'clock in the lobby of the public library downtown."

They took the elevator down and separated on the sidewalk outside. Nordlund started north. Grossman bought a

paper at the newsstand and turned west. Tanner watched them go and started back to the Loop.

It was suppertime and the walks were crowded with people hurrying home. A few more hours and the sun would be down and another long night would have begun.

How many nights had he hidden? Tanner wondered.

How many nights had he spent hiding behind closed doors and drawn shades, waiting for Adam Hart to show up in person? And how many nights had he walked the streets trying to keep with the crowds or spent the night with a drunken party, anything to keep from being alone?

He was walking through the Loop again. Maybe he could hit another hotel and invite himself into another convention party.

But it wouldn't be easy to stay awake all night again. He already felt half-dead with fatigue. The dextroamphetamine was losing its effect and he felt jumpy, skittery. Nerves. His were only going to take so much. And once he was off the dextro binge and had fallen asleep?

He laughed to himself. It wouldn't take much to kill him then. A child with a blunt instrument could do it.

He yawned and shook his head and forced himself to take an interest in the city and the people around him. Funny, he thought, I've forgotten how ugly the city can look. At night it's all neon and chrome and plastic but you can look above the level of the lights and see the old buildings through the glitter.

The buildings, all angles and ugly corners and covered with soot and grime. The bright, flashy store-fronts, glass and chrome and stainless steel and above them the sordid, cluttered architecture of the early 1900's. The dirty, littered lanes of tar that passed for streets and the flashing, raucous signs. The ugly street lamps and the squat metal boxes that said *KEEP OUR CITY CLEAN*. The imitation Roman of the Art Institute and the hideous building that was the public library and the modernistic messes that were the cheap jewelry stores and the cut-rate clothing shops.

And the people.

The jostling, greedy, overdressed, stupid people. The fat man in the restaurant window, drowning himself in a bowl of spaghetti; the overdressed woman window-shopper, her face cast in a mold of powder and rouge, dreaming of buying more clothes than she could ever possibly wear; the teen-ager, thick black hair waved out over his temples and his sport coat drooping over narrow shoulders, staring at a nude dummy in another window . . .

But hold it! All this was every little imperfection magnified a hundred-fold. Every little fault exaggerated out of all proportion.

Hart! he thought.

Somewhere in the crowds behind him, giving him the special guided tour of the city. Somehow he would have to shake him.

He stopped and looked at the display in an out-of-season fruit store and tried to blot Hart out of his mind. The apples in the window weighed a pound apiece and the grapefruit were as big as a boy's head and the plums looked as large as oranges. A clerk was lettering a sign on the inside of the glass with white wash. The sign read:

HAD ENOUGH?

He blinked and turned away. An empty alley where the delivery trucks could come up to the service entrances. A quick dodge down it and maybe into the store's rear entrance . . .

He was two steps into the alley when he suddenly caught the absence of any pressure on him, the watchful waiting. The *expectant* waiting. Up the alley and he would be all alone. Death would be waiting for him at the end of it. Sudden and quick this time and just as final as John Olson's had been.

He turned away from the alley and it was like walking in glue. Hart had insinuated himself into partial control. He staggered and people on the sidewalk stared at him, their faces carefully blank or curious or filled with disgust. Then he was back on the walk and the contact was broken.

Somewhere, a mental shrug.

*I'll have to watch it. People will stare and then some old biddy will say Mr. Policeman, look at that man! Isn't that terrible? And then a cop will run me in and five will get you ten that this time I won't be lucky.*

He walked past a novelty shop where a man was printing up headlines on phone front pages. A pause to watch the man take the paper off the bed of type and paste it in the window.

It was a two-line banner:

IT'S A LOUSY WORLD  
ISN'T IT, TANNER?

A lousy world. Adam Hart's world would be so much neater, so much better organized, people would be so much happier. . . .

He had to get away!

He ran across State Street on the tag end of a green light, cutting off most of the crowd behind him. Into the corner Walgreen's and past the lunch counter. Something tugged at his mind and he glanced at the menu a high-school girl was holding. There were the usual late evening specials listed and a small piece of white paper clipped to the top. It read:

*Feed the animals?*

He circled through the drug store, then out again and into a subway entrance. He didn't go down to the train platforms but crossed through the passage over to the branch that ran beneath Dearborn Street. The sound of his heels echoed through the tile-lined passage and there was a tentative groping in the air behind him.

Then he ran up the exit stairs and was seeing the city as he had always seen it. The solidity and majesty of the Board of Trade building, the simple, marble beauty of St. Peter's, the sharp lines of the Prudential building. And the people on the walks, some handsome, some homely, some marked with the signs of easy or hard living. Not all good, not all bad. Just people—for whom he suddenly felt a vast affection.

It hit him then and he almost went under. A sudden clutching at his mind, the familiar, heavy squeezing; but this time an attack designed to overwhelm him quickly.

He stumbled and leaned against a building for support, momentarily closing his eyes. The pressure dropped a little but it was still there, still grinding down on him, and he knew he couldn't resist it for more than a few minutes. He had never thought that Hart would attempt control in public, that he would run the risk of giving himself away. But neither had he considered what Hart would do if he were desperate.

He glanced wildly up the street. People on the walks, but no police car. Cars parked by the curb. And one that had just shouldered its way into a parking spot, the owner getting out and still holding the keys in his hand. Tanner ran up to him and tore the keys away and slid into the car. He slammed the door in the man's face and locked it, then savagely thumbed the starter.

"Police! Where's the cops? He's stealing my car!"

People started to run up the walk and boil out of the all-night restaurants, some of them still clutching sandwiches. The owner started to beat at the door.

He hit the starter again and the motor came alive with a roar. He pulled away from the curb, scraping the fender of the car in front of him. The man who had been pounding at the door fell away from the side.

Speed, he thought blindly. Speed to get out of there while he was still breathing, while his heart still pumped. And distance to separate him from Adam Hart . . .

Already Hart's control was slipping. He could feel himself start to breathe more normally, his heart to slow down to an average beat. He roared down Randolph, running the stop-lights, and then he was out of the Loop. Far behind him he could hear the shriek of sirens.

He was still running risks, he thought. But if he had to take a chance, he would rather take it this way.

Then he caught a glimpse in the rear-view mirror. There was another car on the silvered pavement, running without lights, turning whenever he turned. He floored the gas pedal but the car behind him still clung.

Randolph and Ogden and then he was skidding through the light night traffic onto Washington Boulevard. On Washington he could feel the feeble pluckings at his mind again. Minute stirrings and shivers and then another sudden attempt at full control.

His hands froze on the wheel and he nearly drove over the curb and into the street-lamps.  
Somewhere, silent laughter.

*Faster! Oh, my God, faster!*

The night reeled by outside the car windows. The apartment buildings and the shuttered houses and the haloed street-lamps.

Winking out, one by one.

He shook his head and opened his eyes wide. The lights were growing dimmer. Hart was narrowing his attempts at control, limiting it to just the eyes. The world was fading, the moon and the stars were blinking out and the lighted houses were shadows that flickered by like gray ghosts. A few minutes more and he would be driving blind, trying to thread his way out of the city in pitch blackness.

Then he had a sudden urge to turn the car and drive north. An imperative, demanding urge.

*Why?*

He froze to the wheel and kept straight on, the street and the city a darkening pitch-black mist. And then, very faintly, he caught it. The far-away plaintive bellowing of a train whistle. Somewhere ahead was a train crossing, the red light winking and the wooden arms down and the alarm clanging away.

He caught himself swerving at the intersections as something tried to force him into the side streets, away from the crossing far ahead.

Then he was driving in pure blackness, the bellowing of the train whistle hammering his ears. A jar and a splintering noise and the sound of his tires thrumming across the rails. Then the bellowing was behind him and drawing away. He kept the gas pedal to the floor and prayed.

The yellowed street lamps flared briefly like candles that had just been lit, guttered for a second, then swiftly grew to brilliant luminescence. The stars flickered into view and the houses along the boulevard settled back into sight like objects at the bottom of a muddy but clearing stream.

The freight was a long one, it was going to hold up traffic for minutes. He was blocks away from Hart now and he knew that he was free for the rest of the evening. There were still problems, of course. There were the police, who would be looking for a stolen car. Which meant that he would have to ditch it, and soon.

And there was the minor question of where he was going to spend the night.

## 16

HE ABANDONED THE CAR near the city limits and then walked long blocks back to a park that was comfortably crowded with people sleeping out in the open. There would be bugs and he'd get grass stains and the air was still enough so he would hear every little whisper. But it was safer than a hotel room and not as stuffy and the air didn't smell of cheap disinfectant.

He walked through the lanes of the park and paused at the other side. Beyond was a strip of clay, strewn with tin cans and crumpled cardboard boxes, bordering a drainage canal. There was a sharp slope and then a narrow, grassy ledge just above the surface of the water. Shadowed and safer, perhaps, than the park itself.

He slid quietly down the slope and laid down on the dried grass. He stared at the moon and the stars overhead and then dozed off and slept fitfully until dawn.

He woke up with the birds, in the early morning when the sky is a candy pink. He yawned and got to his feet and walked through the park until he came out on a business street.

He was still miles away from the Loop and the 10 o'clock rendezvous with Grossman.

Early on a Thursday morning.

*How much longer can I last?*

It was 10 o'clock when he made the Loop and walked into the library. Grossman and Nordlund weren't there.

They weren't there at 11.

They weren't there at noon.

At one o'clock Nordlund walked in. It took Tanner a minute to recognize him. The white ducks and the linen shirt had disappeared. The mocassins had been replaced by black shoes and he was wearing a lightweight blue-serge suit that made him look five years older. He had dyed his hair brown and maybe it was only the lighting but the lines in his face looked deeper.

"I stole the suit," Nordlund said dryly. "It's the first thing I ever stole."

"It won't be the last. Where did you stay last night?"

"In a car—the kind where the front seat folds down to make a bed."

Nordlund was resourceful, Tanner thought. He was going to be handy to have around.

Nordlund said suddenly, "Where's Karl?"

"I was hoping he'd be with you."

The Navy man looked concerned. "I haven't seen him since we separated last night."

Scratch another one, Tanner thought grimly. Karl wouldn't have been late, something must have happened to him. To the best of his knowledge, the police hadn't been looking for him.

"What do we do now, Professor?" Nordlund asked expectantly.

Tanner felt tired. He hadn't slept well, his muscles ached from lying on the ground. He wanted a shave and a shower and he wanted to sleep between clean sheets for once—sleep soundly without worrying about the night's sleep being his last. And he was tired of playing George and having everybody else let *him* do it. Quite a few other people had a stake in what was happening, too.

"How good are you at playing Hawkshaw, Commander?"

"Detective? I could give it a try."

To Nordlund, Tanner thought, life had probably been one old-college-try after another and it had always paid off for him. He wondered if the man actually knew what he was up against. Then he was annoyed with himself for getting annoyed. At least Nordlund was resilient, he hadn't been beaten down.

But then, he hadn't been running for two weeks, either.

"There are only two committee members left, Commander—one of them is it. We don't know much about either one, particularly what they've been doing these last two weeks. I think we ought to find out. You take DeFalco, I'll take Van Zandt. Find out as much as you can about what's he's been doing and we'll meet out in front tonight—say about eleven." He hesitated. "Be careful—you'll be doing well if you can just stay alive that long."

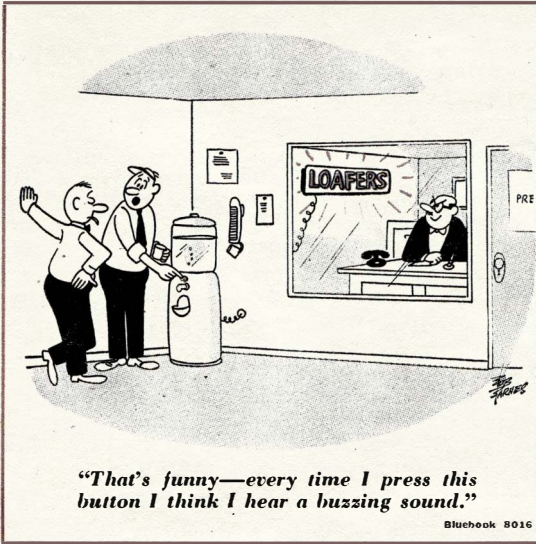
After Nordlund had left, Tanner went to the newsstand outside and bought all the early editions of the afternoon papers. He took them back to the library reading room and spread them out on one of the tables. If something had happened to Grossman, there was an off chance the papers would have a story on it.

They didn't, but two other stories caught his eye. One was a page-one story on himself—the usual killer-at-large stuff—with detailed descriptions of the murder and a two-column cut of John Olson. It was old news but it was being played up big. There was no photograph of himself.

The other story was a science feature about the Man of Tomorrow. It was well done and scientifically accurate. But then, he thought, it should have been.

It was written by Professor Harold Van Zandt.

He had a long time to kill before nightfall, he thought. He could spend some time trying to find out what had hap-



**"That's funny—every time I press this button I think I hear a buzzing sound."**

Bluebook 8016

pened to Grossman but he had a hunch he wouldn't have much success. It would be more profitable to check up on one Harold Van Zandt, jealous colleague, unhappy husband, and bitter ex-Army officer. And each and every one of them could be a pose.

He made the long walk to Van Zandt's house and strolled casually by on the other side of the street. The house on the corner was quiet and placid in the hot afternoon sun, apparently nothing or nobody moving behind the chintz-curtained window. Susan's two boys were playing stick ball in the middle of the street but they were far too busy to notice him.

He spent the rest of the day interviewing people in the neighborhood, on the authority of his Naval Intelligence identification, without too much success. The Van Zandts had kept pretty much to themselves. But one big fact stood out: the shopkeepers reported that the Van Zandts had been spending a great deal more money lately. But most of them weren't too talkative about it.

By nightfall he was back in the Loop. He had the evening to kill until Nordlund showed up and then they had to map out a campaign against Van Zandt. He had a hunch that with Van they were on the wrong trail, but there had to be some reason for Van's sudden wealth. Would Adam Hart make such a suspicious move? Probably not, but then . . .

He ate in a little restaurant on Washington and took in a movie. By the time he got out it was after 10 and the streets were filled with the Thursday night shift of joy-seekers. He walked down Randolph past the public library and ducked into the IC station to buy a paper. He'd scan it and see what the news was and if there was anything on Karl and then it would be time to meet Nordlund.

The story about Grossman was buried on the inside, an inch and a half of type on page nine. It didn't mention him by name; the body hadn't been identified. A fat man, about 40, found dead in an alleyway just off Rush Street. He had been wearing an unpressed brown suit, black shoes, white shirt and regimental striped tie. Cause of death was unknown but the police had found no marks of violence.

It didn't *have* to be Grossman, Tanner thought, then realized he was kidding himself. A fat man who had wandered into an alley and died there. As Olson had sat down in his room and died.

No marks of violence.  
Of course not.

*There would be nobody to mourn him. Nobody to claim the body. Nobody who would miss him. Karl's own family didn't even remember him.*

He walked slowly out the entrance and recognized Nordlund standing in front of one of the library pillars. He handed him the paper. "Grossman's dead."

Nordlund read the squib in silence. For a moment Tanner was nettled, then knew there was really nothing that could be said. He dug his pipe out of his pocket and lit up, standing back in the shadows of the pillar and watching the people hurry by on the sidewalk a few feet away.

"I've checked up on Van Zandt. He's spending too much money lately."

"Where'd he get it?"

"I wish I knew."

"It doesn't sound like . . . Hart."

"No, it doesn't. But then it'd be a little difficult for us to second-guess Hart, wouldn't it?" He paused. "What about DeFalco?"

Nordlund frowned. "I don't know. His neighbors haven't seen him around for the last week. I don't know what the score is but he seems to have done a fairly complete fade-out."

DeFalco. Hart. A fade-out didn't make sense. It was suspicious and Adam wasn't the type who would do anything obviously suspicious.

"If we last long enough," Nordlund said, "I think we might be safe."

"How do you figure that?"

"Somebody's bound to start investigating."

That was true, Tanner thought, but how soon? One member of the committee had been murdered—that was a local matter. One had been run over by a truck. Several had disappeared, if you counted Karl's death as a disappearance in the eyes of the local police. The local police would be in an uproar. But the national government? No reports were being filed to Washington, but it was summer and the committee was comatose then anyway. Some department head might put two and two together in a few days and get worried. But not right now. Not today.

"You're probably right, Commander. Somebody will probably start investigating. I figure in about a week. And we don't have that long."

"So what do we do? Just stand here?"

"We'll go after Van Zandt tomorrow. There's nothing more we can do tonight anyway."

"Professor?"

"What?"

Nordlund sounded a little reluctant. "Do you think it's such a wise idea to separate for the night again? If we stayed together before, maybe Grossman would still be alive."

"That's right," Tanner said dryly. "He might. And on the other hand, all three of us might be dead."

Hesitantly. "I suppose that makes sense. Do we meet here again tomorrow?"

"Ten o'clock, same as today."

Tanner watched Nordlund walk down the steps and disappear into the entranceway of the station. He couldn't blame Nordlund for being scared, for wanting to stick together for the night. Everybody hates to die, he thought. But most of all they hate to die without friends and relatives around.

Everybody hates to die alone.

17

TANNER WALKED DOWN the library steps and lost himself in the crowd on the sidewalk. He hadn't been quite truthful in saying there was nothing that could be done that night. But then, it wouldn't have been very smart to reveal *all* his plans. What Nordlund didn't know, Nordlund would never be able to tell . . . someone else.

It was risky, he thought. It was dangerous and foolhardy,

but maybe tonight was the perfect time to pay the Van Zandts a visit.

He stole a car that was parked along a side street and drove out towards the Van Zandts', parking a good four blocks from their home. He checked his pistol, then left the car and cut through a back yard into an alley. He made a slow, cautious approach to the Van Zandt home, not wanting to stumble over tin cans or bottles or anything else that would make noise. When he was opposite the Van Zandt back yard, he moved quietly into the shadows of the garage and watched.

There was a light on in the kitchen, somebody was home. Midnight and perhaps the Van Zandts were taking a coffee break from their TV set. He glanced at the street. There were no cars parked along the side, the Van Zandts weren't entertaining any company.

He silently lifted the latch on the fence gate and padded quietly up the walk. For a minute he was worried that the porch steps would creak or that the screen door would be locked. The door opened easily and he stepped quietly into the shadows of the porch. The noise he did make wasn't very loud; he brushed against a skate and it rolled a little across the floor. There were footsteps inside and Susan Van Zandt opened the kitchen door wide, the yellow light flooding past her.

"I thought sure . . ."

He stepped out of the darkness and into the kitchen. Susan's hand flew to her mouth and he could hear the scream gathering in her lungs.

He shoved the Beretta against her bathrobe—a new one, black and shocking pink—and said: "Please be quiet, Susan. No screaming, no hysterics. Now call your husband. In your normal voice."

She stood there a moment longer, her chest heaving as she muffled the screams that wanted to bubble out, then turned on her heel and walked back into the kitchen. New pink-silk mules, too, Tanner observed.

He had been in the kitchen once before, when he had first come around to ask about Olson's death. He didn't recognize it now. There was a new deep-freeze and a new refrigerator. There were also new cabinets and a new range that had as many dials as the instrument panel of a jet plane. He could see part way into the hallway. The worn carpeting had been replaced by a deep, carved pile rug that stretched from wall to wall.

Susan didn't have time to call her husband. Van Zandt came walking into the kitchen carrying the evening paper and holding a glass of milk. He was wearing a new wine-red smoking jacket that Tanner knew he couldn't have touched for anything less than a hundred dollars.

He didn't see Tanner at first. "I thought I heard somebody out here, Sue. I—"

The glass slipped from his hand and shattered on the floor and warm milk ran all over the new linoleum.

Tanner motioned with his pistol. "Over there, Van. Sit at the table and put your hands on top."

"I . . . don't carry firearms."

"Just do what I say, Van. You, too, Sue. Over there."

"You're making a mistake, Bill." Her voice was low and throaty; she had recovered from the first shock of seeing him on the porch.

"I don't think so."

She sat down, her eyes watching him warily, and he knew she was the most dangerous of the two.

"All I want you to do, Van, is to answer some questions. For example: how did John Olson die?"

Van Zandt cleared his throat. "You ought to know. The police say you killed him."

"You know better than that. I think you were there when it happened, maybe you even saw him the very moment life flickered out. Maybe that's what keeps you quiet, maybe you were scared. I'd rather think that than anything else."

They didn't say anything but just stared at him.

He waved the gun at them. "Oh, come on, now. Don't clam up—let's hear the details. Or maybe I should tell them to you? I won't fill you in on the background. You know all

about Adam Hart, the gypsy boy from Brockton. Maybe you know too much about him. If I were you, I'd worry about that. You know how he kills and you know that he held John Olson in the palm of his hand and then just squeezed the life out of him. You had a head start on the rest of us, Van. Olson lived with you. You knew he was running downhill and you must have been curious as to why. You started your investigation early, long before that Saturday morning." He paused. "You saw Olson die. You saw him sweat and squirm and you saw him clutch at his chest when his breathing stopped and you saw his life slip away when his heartbeat ceased."

Susan flinched and Tanner leaned towards her. "What's the matter, am I getting too graphic? Offending your finer sensibilities? Come off it, Susan. You care a lot about your own family but you don't give a damn for anybody else. When I talked to you about John ten days ago you showed as much emotion about his death as you would about a blade of grass that had been stepped on."

Van Zandt had gained back some of his courage. "You're rambling," he said sarcastically.

Tanner turned the pistol slightly. "I don't want any nonsense, Van. I mean it. What I'm driving at is that John Olson didn't just curl up and die, as everybody thinks he did. As you told the police he did—though that doesn't matter now. But John Olson had been used by Adam Hart a hundred times before, and there's nothing like fighting the devil you know. It wasn't easy for Hart to control him this last time. Olson didn't win his fight but I think he managed to get out one scream, didn't he? Maybe two. Enough to waken you and Susan and maybe enough to bother the neighbors. But when they came over you told them it was nothing and a few days later they had forgotten all about it. Naturally. Isn't that, just about the size of it?"

Van Zandt's smile was thick. "You're guessing. It's all guesses."

Tanner nodded. "That's right. It's all guesses. And I make some bum ones. I even thought for a while that you might be Adam Hart. Silly, wasn't it? Adam Hart is a monster but you two are something worse." He ran his hand across his forehead; it was wet and it wasn't all from heat and exhaustion. His breathing was ragged and he knew he was running a fever. "You saw Olson die, and you guessed how. It shouldn't have been hard for you, Van. He lived here with you, you had already started investigating, and you were studying him at the meeting as if he were a bug under glass. After the demonstration you put two and two together and you must have been a lot sharper at it than I was. Maybe you even helped Scott with his dossiers. You guessed who Adam Hart was and then you did something that turns my stomach."

Susan wasn't looking at him but was staring down at the table. Oddly enough, Van seemed more relaxed, not at all worried; the slight shadow of a smile was flickering over his face.

"You sold out," Tanner said thinly. "For money. For the filthy green. And Adam Hart accepted because he realized that even he could use allies, that you might be valuable. He could have controlled you directly but that would have taken time and effort and unwilling servants are never as useful as those who are enthusiastic about their position. Maybe you fingered Professor Scott, maybe it was you who told Hart that Grossman's weakest spot was his family. Maybe you even sicked him onto Marge, knowing what it would do to me. You'd be good at that, you're a psychologist. You'd complement Hart." He stopped, feeling light-headed and exhausted. "You sold out everybody you knew, you sold out humanity. And for what?"

Van Zandt's smile was broader now. "You're a fool, Tanner. Always were and always will be. We didn't invent Adam Hart, we didn't make him as Frankenstein made his monster. But he's here and anybody who knows it and doesn't realize that the world will dance to his tune if he wants it to, is stupid. You know it, I know it. That's one of the things they teach you when you're a military man. To know when your position is indefensible. And what's the old saying? 'If you can't lick 'em, jine 'em.' I jumped on the bandwagon. Maybe I'm a little ahead of the rest of the crowd but that's my good

fortune. Within a couple of months that bandwagon's going to be pretty crowded."

He shook his head and looked at Tanner sadly. "You value your fellow man too highly, William. They're intelligent cattle, that's all. I think that Adam wants to run the world and when he does, people will be a lot healthier, happier, and better cared for."

"When Adam's running the stockyard, the cattle will be watered and fed and sprayed every week to get rid of the bugs—that it, Van?"

Susan was still staring steadily at the table, a Mona Lisa expression on her face, and it bothered him. A table set for three. Some people set their table late at night so they wouldn't have to worry about it early in the morning.

Then it hit him.

A table for three.

Why wasn't it set for just the two of them, or if their children were going to be eating with them at the same time, four?

Three.

It had been set for that night, he thought suddenly. A table for three. For Susan and Harold and Adam. A snack before turning in, a little light-hearted conversation with a monster to prove to him over and over and over that they were really on his side. Maybe talk far into the night so they wouldn't have to spend so much time lying in bed, alone with their consciences.

A table for three and they had been waiting for the other party when he had walked in.

He abruptly backed into the hallway leading to the front part of the home.

"Where's he staying, Van?"

Van Zandt looked at him with grinning triumph playing peek-a-boo in his small, deep-set eyes. "Where's who, William?"

"Eddy DeFalco, Van. You know—Adam Hart."

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"I WOULDN'T KNOW," Van Zandt said quietly. "I wouldn't tell you if I did."

"I watched Scott get his and I read all about Karl dying in an alleyway. I don't have the qualms I used to, Van." Tanner's hand tensed. "You're a free agent. You don't have the compulsion not to talk. Where is he?"

Van Zandt's smile faded. His hands on the table-top trembled slightly. Then there was something else in his eyes besides fear, the barest shadow of relief.

Tanner felt it at the same instant, as he had felt it once before in Petey's apartment building. The presence at the side gate lifting the latch, the presence walking up the sidewalk.

The third guest was arriving.

"You're lucky, Van," Tanner whispered. "At least for a few minutes. I don't think Adam's going to be very happy with you."

He turned and ran through the house to the front door, then hesitated in the darkness and looked out the front window. There were no cars out front, nobody was waiting.

He eased the door open, holding the lock so it wouldn't make a noise snapping shut, and closed it gently behind him. He ran two doors down, cutting through a back yard and standing in the shadows to watch. He could see through the yards to the Van Zandt corner lot and the street that ran along the side of their house. The front door banged open and he could see a figure standing on the steps. Adam Hart, seeing if he were still around. Then the figure went back in and the door slammed shut behind it.

Tanner glanced at the kitchen window. Only the little lamp on the kitchen table was lit now and it cast fantastic shadows on the windows. He could make out three distorted figures, one of which was gesticulating angrily. Then all mo-

tion stopped and the three shadows were carved in black and gray.

The light on the table suddenly went out and the scream, when it came, was more of a whimper than a scream. Tanner felt a slight tingling in the air, as if he had been touched very briefly by a bubble of something intangible that had pulsed outward from the house.

Hart must have been angry because the Van Zandts had failed to keep him there. And he must have realized that the Van Zandts were living not wisely, but too well—and too recently. If and when the government looked into the case, there would be questions. And Van Zandt could supply the answers.

So there had to be . . . fury.

There was a flickering, lurid light in the kitchen now. It caught a shadow that danced around the walls, plucking at the cabinets and tearing at the refrigerator and pulling things out, something that hammered at the range and smashed the wooden chairs. There was the faint, muffled sound of smashing china and all the while the light grew brighter and stronger.

Tanner watched, unable to turn away. Minutes passed and now the flames were eating at the chintz curtains and there was the sound of popping windows. A moment later the screen door slammed and a figure in a trench coat and a slouch hat ran down the stairs and over to an automobile on the side street. He got in and the car roared away.

The neighbors would turn in an alarm, Tanner thought, but it would be too late. The house was frame and it burned far too fast . . . as a house had back in Brockton years before. Van Zandt's home would burn to the ground. For some reason the coroner would forget to make an investigation and there would be no mention of it in the papers. The wreckers would move in tomorrow and by the end of the week the lot would be leveled and rolled and planted in grass. The neighbors wouldn't be able to tell you who had lived there, the butcher would only look puzzled if you mentioned the name, the woman in the beauty parlor would say "Well, really, I've never heard of them," and the delivery boy would give you a stony stare and tell you to go to hell.

Van Zandt and Susan and their two children. At best, they would cause a faint baffled frown if anybody who had known them ran across the name again.

Permanent erasure, not even a memory left.

He walked quickly through the alley, keeping to the shadows of the garages and the back fences.

There was a full moon and the stars were very bright in the sky.

He dodged from shadow to shadow and waited a moment before sprinting across the open streets to make sure that nobody was watching. The avenues were empty and silent—the whole city was indoors, watching the late TV shows or making midnight snacks or tossing restlessly in hot, stuffy little bedrooms. He clung to the alleys and when he had to use the streets he tried to keep in the puddling shadows between the street lamps or run silently past the houses, ducking in the shadows of trees whenever a car passed.

Four blocks back to his car seemed like four miles.

He drove downtown and parked in the belt of slums that girdled the Loop. It was risky to stay with the stolen car but he was too sick to leave it and spend another night running. It was two in the morning and he was shaking with exhaustion and burning up with fever. He crawled into the back seat and stared out at the lamp-lit darkness, cradling his Beretta in his lap and waiting. He couldn't keep his eyes from closing. He'd doze for a few minutes and each time wake up shaking with the chills.

Friday morning came very slowly.

He had breakfast in a cheap cafeteria, sitting in a corner so people wouldn't notice his whiskered face and his rumpled clothing. An hour to go before the library opened. Another hour or so before Nordlund was due.

And then what?

He dawdled over his coffee until after nine, paid his tab,

and left. The reading room of the library was already comfortably crowded with students and bums who had come in for a little shut-eye, safe in the knowledge that the librarians were softer-hearted than cops and wouldn't throw them out. He spent an hour pretending that he was absorbed in a magazine, then went out to the lobby.

Nordlund was waiting for him, his eyes red-rimmed and his suit rumpled and worn. The Navy man hadn't done so well that night either, Tanner thought, and somehow he got a small tinge of perverse pleasure out of it.

"I see we were both lucky," Nordlund said.

"It could have been worse." The girl in the information booth was staring at them and Tanner started for the door. "Let's go over to the park and sit down."

They found a bench on the other side of the boulevard and Nordlund collapsed into it, hooking his elbows over the back and letting his head sag back. His eyes closed. "What are we going to do about Van Zandt?"

"Nothing. He's dead."

Nordlund froze, his head still back and his eyes still closed. His lips formed the silent syllable: "How?"

"Last night. Hart got him. Like Olson. Like Grossman. Van Zandt and his whole family." He took a ragged breath. "Don't feel sorry for him. Van was working with him, working with him all the time."

People walking up the boulevard stared at them and quickly looked away. A cop strolling by didn't even glance at them. Like the library, the park was in limits for bums.

Nordlund's voice was nervous. "That doesn't leave many left, does it?"

"DeFalco's it."

Nordlund leaned forward and held his head with his hands. He looked as if he were going to cry. "And now that we know it, what are we going to do about it? What are we going to do, Tanner? This guy is a superman—what the hell are we doing chasing him?"

"Don't overestimate him. He makes mistakes, he gets panicky, too."

"He makes mistakes?" Nordlund asked bitterly. "Here you sit, dirty and sick, and there he goes, free as a bird. And you think he makes mistakes?"

"I'm still alive," Tanner said quietly.

Nordlund took a deep breath and let it out in a sob of resignation. His hands were shaking. "Okay, Professor, I'm still with you. But what do we do now?"

He had to consider it logically, Tanner thought, to ignore the fact that he was sick and burning with fever. He had solved a major problem, he knew who Hart was. But now that he knew, what was he going to do about it?

And then he thought he had part of the answer. Hart had planted evidence to hang John Olson's murder on him and he, Tanner, had obliged by running as soon as he had heard about it. But maybe that was a game that two could play at.

"Maybe we could frame Hart—for Olson's murder."

A tired laugh. "You're crazy, Professor. They want you for the killing."

"But I didn't kill Olson, DeFalco did—Hart did."

"The police won't believe it—all the evidence is against you."

"Nobody's admitted the crime, Commander. The murderer wasn't caught red-handed, nobody saw him do it. Without an admission of guilt, and with the supposed murderer a formerly respected member of the community, all the evidence in the world would still leave a lingering doubt."

Nordlund shook his head. "It'd be your word against his. You haven't got the time to manufacture any evidence against DeFalco, and if you turned yourself in and insisted you were innocent you know damn well what would happen. You need an assist."

Eddy DeFalco, Tanner thought. Clean-cut, young, personable. And he should be, for he was actually Adam Hart—and nobody could help but love Adam. But now maybe Hart had made a mistake. Hart was probably spending just as much time and effort in looking for him as he, was trying

to avoid being found. Maybe Hart was superhuman but he couldn't be in two places at once. While Hart was out looking, DeFalco couldn't possibly be home.

He had been on the run for the last two weeks, Tanner thought, which also meant that Hart had been on the run—and DeFalco must have had to disappear for long lengths of time.

"I think I might have my assist, Commander. When the police finally agreed that it was murder, didn't Lieutenant Crawford ask that none of you leave town? Since you all knew me, you were all valuable witnesses."

"One of his men dropped around every night to bring me up to date, too, but what about it?"

"He came around to see that you were still on the string, Commander. Now do you see it? DeFalco's disappeared—Crawford will at least be suspicious. And maybe that gives us an in. If Crawford is suspicious of DeFalco now, it will take only a thread to tie him up to Olson, only a suggestion to make Crawford want to pick DeFalco up for questioning."

"And what if he does?" Nordlund said stiffly. "Everybody loves Adam, everybody will no matter what he has to say."

Tanner didn't want to argue, he was getting to believe something now and he didn't want it spoiled, he didn't want it knocked down. "Hart won't run the risk of having three or four people question him at once, he won't run the risk of being put on the lie box. A machine isn't flesh and blood, Commander—a machine won't love him!"

"So what are you going to do about it?"

"If you've got money enough, I think I'll get a shave," Tanner said slowly. "Maybe you ought to, too. And then we're going to deliver the body. We're going to call the police and tell them where they can find DeFalco."

"You know, I suppose."

Tanner shook his head. "No, I don't. But I know somebody who does. Hart's a logical man. He knows that DeFalco's absences will be suspicious. The days don't have to be explained, and for the evenings he'll have an alibi. He spent the night with a girl friend. And five will get you ten that the girl friend is a gal named Rosemary O'Connor."

She had been a clerk in a woman's clothing store not far from the campus, or so the rumor went. Which meant she had left a trail and wouldn't be hard to find.

After he and Nordlund cleaned up, they started covering the shops in the campus area. By late afternoon they found the manager of the stocking shop where Rosemary O'Connor had worked two years before. The manager was a prim little man.

"Oh, yes, Miss O'Connor. I remember her quite well. She was in something of a scandal as I recall. Naturally we discharged her immediately." He eyed the two "Naval Intelligence" men speculatively.

"Do you still have her address?"

He had. It was on the west side of the city. If they hurried, Tanner thought, they could be waiting for her when she came home from work.

Her apartment was in a run-down section of town where the fire escapes made a rusty tracery against the deep blue sky. They waited in the tiny entranceway of the building, a cracked-tile cubbyhole where all the names over the mailboxes were scribbled in pencil.

When she walked in, Tanner didn't have to be introduced. She stopped and stared at them and he knew it was she. She wasn't an exceptionally pretty girl, which surprised him. Average height and maybe just a little too plump. Good skin and features, dark complexion, and thick black hair. A strictly average girl, passably pretty and attractive, fairly intelligent, who had once made a mistake she couldn't possibly have avoided. A patsy for Adam Hart.

He showed his Naval Intelligence card and jerked a thumb at Nordlund standing behind him. "We'd like to talk to you."

Her voice was cold. "Come on up." She led the way up the stairs to a dingy apartment with a colorless rug and a sofa whose springs you could see just under the worn

upholstery. She took off her hat and turned to face them.

"Well?"

"Do you know Eddy DeFalco?"

"You wouldn't be asking me if you didn't think so."

"Do you know where he's staying?"

"No."

"You been going with Eddy a couple years now, haven't you, Rose?"

"If you know the figures, why ask me?"

"You knew he was running around with other women, didn't you?"

"Yes, I knew it."

"And you still stuck with him?"

"Yes."

"Why?"

"That's a silly question, isn't it?"

"He got you into trouble, Rose. You lost your job over it."

"It was no great loss—it wasn't worth keeping."

"Where's he staying, Rose?"

"I told you I didn't know!"

"What would you do if I told you Eddy was a murderer?"

She stared at him. "I wouldn't believe it," she whispered.

"I'm sorry, Rose but he is. The other night he killed an entire family."

She shook her head wildly, her eyes closed as if in pain. "No, no, no. You've got it all wrong! He's afraid of something, he's been running from somebody! He didn't kill anybody—he's been worried about somebody killing him!"

"It's been a front," Tanner said gently. "And you've been part of it."

"I don't believe it!"

"Where does he spend the nights, Rose?"

"Right here, with me, what'd you think?"

"Got any idea where he is right now?"

She started to cry, tight little tears that trickled reluctantly out of the corners of her eyes. "I won't tell you a thing, not a damned thing! Go ahead and do anything you want to!"

"Nordlund, get her purse."

Nordlund disappeared and came back a moment later. Rosemary suddenly stopped crying, her eyes wary. "What do you want with my purse?"

Tanner opened it up without answering and dumped the contents on the sofa. Rosemary made a lunge for it but Nordlund held her back.

Rouge and lipstick and a cheap little compact. A carefully folded handkerchief and a little perfumed sachet of rose leaves. Keys and a small tin of aspirin and a broken pencil. An address book. And tickets. Tickets in four different colors to the city's amusement park.

Chicago's fun park, the largest in the world, over 70 acres of roller coasters and ferris wheels and lemonade stands. A different-colored ticket for every day. Tickets that had been bought for different rides and then not used and stuffed away in her purse. Tickets that still had a crisp, new feel so they must have been purchased fairly recently.

"How often do you meet him there, Rose? Every night? And you don't actually come back here at all, do you? He sees you for an hour or so and then he disappears, doesn't he?"

She crumpled then. She sagged into the chair next to the couch, her eyes closed and the sobs shaking her apart. "We do! Honest to God, we come back here . . . every . . . night!"

He had him, Tanner thought. A call to Crawford and the police would be in the amusement park looking for DeFalco/Hart—who would have no idea that the police were after him.

"Don't try to leave, Rose. There's a policeman at the front and one stationed in the alley. And don't try to telephone him—it's tapped. You can't help Eddy now anyway." Lies—but they'd be enough to keep her from warning DeFalco.

Even after he had closed the door, he could still hear her sobbing. She loved DeFalco, he thought, and wondered if Hart had forced her to. Probably not—it wouldn't have made a bit of difference to her how much of a monster he was.

THE ODORS hit him first. The sweet smell of cotton candy and caramel corn and sugar waffles, mixed with the faint exhaust odors from the diesel engines that drove the rides. The sticky smell of Coke and root beer and orange pop. The sharp odor of hot dogs and raw onions and the fragrance of buttered popcorn.

And the noises. The cries of the barkers and the drifting shreds of conversation from the crowds.

Nordlund had bought himself a hamburger and was eating it, leaning over slightly so the drippings wouldn't hit his shirt.

"Got any idea how they're going to work it, Professor?"

Tanner shrugged. "I suspect Crawford will leave only one exit open and the police will watch as the people leave."

"They'll have a tough time with this crowd."

"Maybe."

Nordlund took a sip from his bottle of pop. "What's to keep the police from running you in?"

"In the first place I'm not going to walk up and introduce myself, and in the second they're not looking for me right now."

"Professor." Nordlund paused. "Why couldn't Hart go right over the fence, if he wanted?"

"Why should he? He doesn't even know the police are looking for him yet. He's still carrying on the masquerade, he's still Edward DeFalco, waiting for Rosemary O'Connor to show up. And if worse came to worse, the park isn't so big it couldn't be surrounded."

Nordlund finished off the hamburger and wiped his thin fingers on a paper napkin. "How does it feel to be winning for a change?"

"It isn't over yet, Commander."

He walked slowly down the midway, listening to the crowds and catching the expectant hush as the roller coasters crept to the top of their hills, the ratchets clicking sharply beneath the cars, and then the thundering roar as the cars caromed down the incline with the shrieks of their riders cutting through the night.

Something wet splashed on his face and he glanced up. Dark clouds had rolled in over the moon and a sharp wind was rattling the leaves of the trees. It looked as if the weather were going to break and there would be a heavy summer thundershower, one in which it would rain torrents and the sheet lightning would look like fireworks.

Some of the people on the midway felt the raindrops and started to drift toward the exits. Tanner glanced at his watch—the men at the gate would be checking now. And it was just about time that DeFalco/Hart was leaving. He would have gotten tired of waiting for Rosemary to show up. She wouldn't have been meeting him much before eight—she got out of work at 5:30, give her time to eat and dress—and he wouldn't have waited for her much beyond 8:30 or 9. About an hour together, usually, and then they would have split up.

DeFalco would have had more serious duties for the rest of the evening. An hour to keep up the pretenses with Rosemary and then back to stalking the streets of the city as Adam Hart.

He stopped at a shooting gallery and bought a quarter's worth of ammunition from the woman who ran it. She absently handed him the gun, frowning at the people hurrying past the booth towards the exit.

"Looks like we'll close early tonight."

Tanner aimed the gun, spattered the targets at the back, and handed it back to her. "Bad night, huh?"

She leaned over the counter and lowered her voice confidentially. "Y'know, there's a rumor going around that they got a murderer trapped in here."

Tanner felt cold. However it had started, it might tip off Hart that something was up.

"You believe it?"

She racked the rifle and laughed. "Why not? Gives a body a little excitement to look forward to."



Tanner laughed back and walked away.

He hadn't taken more than half a dozen steps when he heard it. It was dim and faint and sounded like nothing more than a car backfiring or somebody at another shooting gallery a few hundred feet away. He turned to Nordlund. "You hear that?"

Nordlund nodded. "It sounded like a shot."

Tanner glanced around. The midway was almost deserted and the lights had started to go out in the different booths. The rain was spattering down now, hitting the crumpled candy wrappers and the remains of ice-cream cones and the little bits of bun that littered the ground. A few concessionaires in raincoats were rolling down the canvas in front of their booths.

And then people started to come back up the midway, coming back from the exit like water backing up in a drain. A few were running and looking over their shoulders, others were scrambling off the midway itself into the shadows of the booths and the different rides.

Another shot from the direction of the exit.

Tanner smiled crookedly. What was it that Karl had once said? They were like dogs trying to catch the dog-catcher? But it had worked. Hart had panicked and had used a pistol. The police wouldn't have shot him, they wanted him merely for questioning. So it must have been the other way around. A brief moment of panic and Hart had lost.

A policeman was running down the midway. "Get off the midway, everybody off the midway!"

Tanner and Nordlund moved back into the shadows of a concession booth and sat on a bench. Nordlund turned up his collar and pulled down his hat against the blowing rain. His eyes closed and his chest started to move with an easy, deep rhythm.

"Don't you want to watch, Commander?"

Nordlund reluctantly opened one eye. "There's nothing we can do one way or the other. And I'm so beat I can't stand up."

A mile away, Tanner could hear the first, faint cries of the sirens. The reinforcements were coming up and the manhunt was about to begin.

The man stepped out of the shadows 200 feet away and started sprinting down the midway. There was a shot and the man staggered and for a fraction of a second Tanner was looking at the wild, tortured face of Edward DeFalco. Then DeFalco was past him, twisting and dodging and running faster than Tanner had ever seen a man run before.

Then there were other men on the midway, running and ducking into the shadows and firing after the fleeing figure. DeFalco turned in mid-stride and flame sputtered from a pistol he held. A policeman far down the midway cried out and dropped to the ground. There was a fusillade of shots and DeFalco stumbled again, then was up and running. He wasn't going to die easily, Tanner thought.

DeFalco suddenly dodged between two concession stands and was lost from sight. Tanner could see the spot where he had disappeared; the space between the stands was nothing but shadows and darkness.

Other people were filling the midway now. The police, lugging rifles and riot guns, and the surging, curious crowd. Then other policemen were blocking off the area and holding the crowds back.

Tanner felt cold and wet. He sneezed and tried to wrap his collar tighter around his throat. Nordlund was at his side, offering him a cigarette. "This has turned into a pretty big manhunt, hasn't it, Professor?"

"They're hunting a pretty big man." He didn't feel a great deal like talking. The tension had built up within him and it was fighting with the fatigue that was making him sick. He knew when it was all over that he would lie down and collapse some place for 48 hours.

A whisper started to float through the crowd. "The fun house—they've trapped him in the fun house!"

The crowd surged down a street just off the midway and Tanner followed it. The crowd packed itself around the

fun house in a huge arc. It was a real professional set-up, Tanner thought. The fun house was surrounded on all sides, there were spotlights on the entrances, and Crawford was talking over a small, portable loud-speaker. His words sounded high and querulous in the mounting wind.

And then silence. The sound of the rain pelting down and the breathing of the crowd and little snatches of mumbled conversation. The cold, wet smell of the rain and the faint, acrid smell of cigarette smoke. The lights and the trees and the big wire trash baskets etched sharply against the night. The gaudy front of the fun house, the face of a gigantic clown with a bulbous nose and a grinning mouth for an entranceway, the red paint and the gilt gleaming wetly in the lights.

The police threw in tear gas and half a dozen men with masks disappeared into the grinning mouth.

They almost missed DeFalco when he made a break for it. Even with the lights, a little window in a corner, about six feet above the ground, was in shadow. It opened noiselessly and a man wriggled silently out.

"There he goes!"

DeFalco ran straight down the midway, running the gamut of the guns and the lights. The guns chattered and he stumbled, then somehow made it to his feet and was running like the wind. A hundred yards, two hundred yards, and he was running through the thin stretch of grass that separated him from the wooden framework of one of the roller coasters.

The lights and the cars and the hunters moved after him, flowing down the midway. In the shadows of the wooden framework, a figure made its way rapidly towards the top, leaping from beam to beam with an incredible agility.

"... lights, get the lights..."

"... there, at the top..."

"... can't miss, all over..."

"... all over!"

A scattering of shots from the figure high in the framework. Then the lights were on him, first one picking him out and clinging tenaciously and then the others until the whole roller-coaster framework was bathed in light. DeFalco was caught in the center, like a fly in a web.



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Tanner thought he heard the man scream, "Oh my God!" Then the riot guns caught him and he fell and the guns still clung, their invisible fingers plucking at him while he was still in the air. He hit the ground and bounced and it was all over.

All over.

The crowd surged towards it. Tanner got near enough to catch a glimpse of the thing on the grass and felt sick. An ambulance drove up and two men with a blanket and a stretcher took away what was left of Edward DeFalco. The telltale stains lingered for a while in the rain and then were diluted and dissolved and washed away and the green of the grass showed through, the mud at its roots looking a little richer.

Tanner stood in the rain and stared for long minutes, then turned and walked slowly back to the overhang of a concession booth. The spotlights were winking out one by one and the brilliant white of the roller-coaster framework faded to oyster gray and then a dirty gray and then almost disappeared entirely against the black sky, just a shadow in the darkness.

Men stripped apart the riot guns, put them back into cases, and slung them into waiting automobiles. There was the gentle purr of motors and one after another the cars drove to the entrance. The crowd was breaking into little groups and heading for the exit, flowing away from the park, out into the city, to split up and go back to its various homes and stations and garages.

She had loved him, Tanner thought. She didn't care what kind of a monster he was. And she had cried and said he couldn't have done it.

Somebody said something to him and he turned blindly around. It was Crawford. "Commander Nordlund said you were over here, Professor. We'll need a statement from you in the morning, of course."

"Certainly." Tanner started walking through the beating rain towards the exit.

He didn't see Marge at first, didn't even know she was there until she had thrown herself on him and was sobbing in his ear. "Bill, Bill, I'm so glad you're safe!"

Marge. The police must have asked her down to help identify DeFalco.

"Bill, it's been a nightmare!" She stood there in the rain, expectantly, waiting for him to take her into his arms or kiss her.

A new Chevy pulled up and Commander Nordlund stuck his head out the window. "Hey, kids, Crawford lent me a car—can I give you a lift?"

Tanner walked over as if he were in a dream.

"It's all over, isn't he?" Tanner said stupidly.

Nordlund looked at him sharply. "You feel all right?"

"Yes, I feel all right." Tanner shivered. "It's all over, isn't it? No more running, no more hiding, no more chasing. Adam Hart is just a nightmare. Two weeks lost for me but nobody else will give a damn—because nobody else will ever know." His voice was thick. "Scott dead, Karl dead, Van dead, John dead, Eddy dead. Nobody left alive but us."

The rain beat against his face and the water seeped down inside his collar and trickled down his neck. He felt cold and wet and sick and lonely.

Nordlund got out of the car. "Help me get him in the car, Marge, he's sick." He put his hand on Tanner's shoulder. Tanner knocked it away and backed off a step. The amusement park was empty now, the lights all out except for the headlights of the automobile. There was no sound except the thin mutter of music coming from the car radio and the steady rumble of thunder. They were alone in the amusement park.

Alone.

Nordlund was solicitous. "What's the matter, Bill?"

"I don't want to go with you."

"What the devil's eating you? Why not?"

Tanner backed away another step. It was too late to run, it was too late to hide, it was too late to pretend he didn't know.

"I'm not going any place with you, Hart."

NORDLUND STARED AT HIM, his mouth open. "You're out of your mind, Professor."

Tanner's bowels had turned to water and he was afraid he was going to lose everything while he stood there. "Not yet," he chattered, "but I soon will be, won't I?"

Marge was very close to him, trying to put her arms around him. "Bill, you're sick. Come with us and we'll . . ."

He got the pistol out of his pocket and held it in a trembling hand. "Stay away, Marge. I know you're a puppet but I don't want to kill you. Stay away from me. Please!"

She hesitated and unwillingly let him go. Nordlund said, "I don't blame you for being frightened, Professor. You've been through a lot. It's only natural that you should be close to cracking. But you've got to get a grip on yourself, man—you've got to pull yourself together!"

It sounded so plausible, so logical. He was worn out and tired and Nordlund only wanted to help. It would be so easy to lie to himself. . . .

Nordlund opened the car door. "Come on, get in and I'll drive you to a hotel."

"Some drive." Tanner's voice was still shaking. "You and Marge and me, all alone. How many pieces would I get to the hotel in? By the time you got through with me, I could be stuck in a letter and mailed there."

"I'm losing my temper," Nordlund said, his lips tight. "I almost lost my life, too, remember? And if it hadn't been for you, I would have died."

Tanner bobbed his head quickly. "Yeah, good act. One of the best I've ever seen. I believed it. But it was just an act. It would have been much more convincing if I had gone up earlier, though, wouldn't've it? But you had to string it out too long, you had to pretend that you had fought off Hart for half an hour. It can't be done. I know. *Nobody* can fight you off for that long—not the first time! And what would have happened if I had gone up alone?"

Nordlund shook his head pityingly. "You've really stripped your gears, Professor. You've really gone overboard."

"I really have, haven't I? But I think I stripped them long ago—I must have to have been so stupid. You were the most logical candidate all the time. The Navy man, slipping into survival research so you would know just how close anybody might be to tagging you, to guessing that there might be somebody like you. How many reports never got to Washington, how much information was misfiled? And what a spot for you! What an opportunity to meet important people and have easy access to information files!"

The rain was cold and the wind was raw and he felt on fire with fever. He was going to come down with pneumonia, he thought—but that didn't matter a bit.

Nordlund tried to reason with him as he would with a small child. "Look, Professor, Adam Hart was just killed. You saw him back there, dead, just half an hour ago."

The thought of DeFalco sobered Tanner. "Poor Eddy. You were chasing him from the very start, weren't you? And when it came time to stage your production number, you used him as bait. You pulled the strings and served him up on a silver platter. You made him pull the gun when he was about to leave at the exit, to make sure the police would kill him!" He paused, trying to control his voice. "I should have guessed—it was all so easy for me when Commander Nordlund started to help!"

"Do you think that everything DeFalco did was human?" Nordlund asked dryly. "Do you think a human being could have made it through the gunfire and leaped from beam to beam on the framework the way he did?"

Tanner was half-screaming now, the rain streaming down his face and running into his mouth and fuzzing his words. "Sure he could—with you pulling the strings! You! Sitting on the bench and pretending to be asleep! It took a lot of concentration to run him around, didn't it? You sat there and

worked the wires and watched your puppet dance! And I'll bet it was damned difficult keeping him together, to make him look superhuman, for as long as you did, wasn't it?"

Nordlund shook his head sadly. Marge was crying.

Tanner felt hoarse. "DeFalco couldn't have been you, Adam! He still died too easy and he died in a stupid way. You would have died hard and you would have been cleverer, you wouldn't have made any grandstand plays!"

He took a breath. There was no stopping now, he was committed. "I should have guessed you were Nordlund when you pulled the act in your way. Hart was after the rest of us because we were investigating him, because it wouldn't be long before we knew too much. Olson was killed because he could finger you, Van because he failed you, and Earl and Scott because they were too curious. And Eddy was your ace in the hole from the start, wasn't he? But there was absolutely no reason to kill 'Commander Nordlund.' He wasn't investigating, he wasn't even interested!

"And the main reason why Eddy couldn't have been you — is a reason you overlooked because you didn't know about it. DeFalco had an opportunity to kill me once, in the cemetery after Olson's burial. There was nobody around, we were absolutely alone. It could have been done quickly and quietly and there were gravediggers behind the hill who could have hidden the evidence! If DeFalco had been you, he wouldn't have overlooked that chance!"

He was crying with exhaustion now and his voice came out in huge sobs. "I wanted out a dozen times. I wanted to forget all about it! Why did you keep hounding me, Hart? Why?"

He didn't wait for an answer but did what he had to do. He squeezed the trigger twice, before he could even think about it, then let his arm fall to his side and started backing away.

Both shots had missed. The man in front of him hadn't moved, except to turn up his raincoat collar against the driving wetness.

And then the picture was complete.

The night and the rain and the scudding clouds and the two of them. The belted Navy raincoat with the turned-up collar and the soft hat, dripping rain, that kept the face in shadow. Commander Arthur Nordlund.

The Enemy.

Adam Hart.

Tanner turned and ran and was almost to the fun house entrance when something caught him and spun him around so hard he slipped to his knees on the walk. The man a hundred feet away still hadn't moved.

Olson.

Scott.

Grossman.

Van Zandt.

DeFalco.

*You don't think you're going to get away, do you, animal?*

The muscles in the soles of his feet suddenly knotted and cramped so hard it brought a shriek of pain to his lips. He didn't want to get up, he knew what torture it would be to stand on them. He wanted to lie in the mud at the side of the walk and die there, to lie on his stomach and breathe the ditch water and hope he drowned before Hart tore up his insides as he had the dog's.

He got to his feet.

He screamed with agony when he stood on them but he made it inside the grinning lips of the fun-house door. Out of sight and the pressure was less and he started running down the tracks the little fun-house cars rode on. The cars themselves were outside, covered with canvas.

He glanced back once and saw a figure in the doorway and shot wildly at it, a fraction of a second before his arm developed cramps and his biceps felt as if somebody had gripped them and was grinding in until the fingers touched the bone. He couldn't see in the darkness and he banged into the curving walls and felt the blood spurt from his nose.

*Don't run . . .*

The whisper formed in his mind like a bubble of smoke. The gravel of the tracks seemed to grow to the size of rocks and he stumbled and fell and cut his knees. It was getting hard to breathe. The very air was viscous, like molasses. Funny. The laughter ripped from his throat. Like molasses.

*Don't run . . .*

He didn't catch the faint flicking of the switch, the silent purr of the electrically operated machinery. He wasn't ready for it when he stumbled around a corner and the Laughing Lady swayed out from the wall, luminous and red-faced, big, puffy balloon arms holding her stomach as she rocked back and forth roaring with recorded laughter.

*"Don't run! Ho-ho-ho-hah-hah-hah! Don't run! Hah-hah-hah! DON'T RUN! HO-HO-HO! DON'T RUN!"*

The sound roared down at him and the balloon arms brushed him, thick rubbery fingers trailing across his face and shoulders. He screamed and fired at it and little cogs and wheels came spurring out and the big balloon arms sagged limply and the voice died in a gurgle. He was rushing down the tracks now, screaming frantically as the artificial spider webs brushed him or the dancing skeletons leaped out, their bony fingers stabbing at him and their voices shrieking.

It was only a low rumble that warned him in time. The low, rumbling sound and the slight quivering of the track. He flattened himself against the wall and the sound roared down at him, then the cars were rattling past, a bare two inches clearance between himself and them.

Silent laughter bellowed through his mind as it must have bellowed through Van Zandt's before he had died. The laughter of a crazed thing that liked to see the animals die, whose final act for his puppets was always suicide.

There was a ledge paralleling the track and he climbed up on it. A passageway opened off of it and he ran through. He abruptly tripped and fell flat, with angular boards cutting into his chest and stomach. A passageway with the tilt boards, like miniature teeter-totters, that kept turning one way or the other. He got up and picked his way down the passageway, rounded another corner, and came out in a small closed room with a red glow coming from a wall niche.

Satan in red, flames leaping at his feet, wearing the face of Arthur Nordlund. Only slightly twisted, slightly inhuman. and vastly . . . beautiful.

There was a noise behind him and Tanner whirled. The passageway he had come through was closed tight and he was locked in the room. He battered frantically at the walls and then another whirring sound started. The floor fell away from him and a side wall opened up and he found himself sliding down a strip of canvas with rollers beneath it.

The canvas was the tongue of the grinning exit-entrance and a moment later he was out in the open and the rain was washing over him. Full circle and he had come back to face the Enemy a hundred feet away.

There were little pricklings in his arms and legs and the nerves went to sleep. His fingers lost their grip and the pistol slipped from his hand to fall on the asphalt. The pressure on his mind was rubbing away his sense impressions of the world as he had seen old ladies rub out the wrinkles in their foreheads. There was a relaxation of his muscular system and a loss of feeling and connection with his own body. He tried to fight it, to will himself to feel and hear and respond. He didn't succeed.

His legs gone and his arms numb and his pulse slowing and vague surprise that his breathing had stopped entirely. Then he was alone in the shadows of his mind, his consciousness dimming out like a spark that grows dimmer and dimmer until it's a tiny light and then a twinkle and then nothing at all.

The fading impressions of the night.

The rain.

The damp cold.

Then no night, no rain, no feeling, no impressions at all. Just the tiny coal in the huge wilderness of his own brain.

He didn't do it consciously and he did it without apparent effort. He reached out to Marge standing nearby and casually put her on, as he would a garment. The night and his impressions of it returned, but they were a different set of im-

pressions this time. He had a different sense of being, and a vague cloud of emotions hampered his thinking. There was a different feeling to the air and the night and the rain. He realized he was seeing the world through different eyes—it was distorted and yet familiar.

He looked around and saw himself sinking to the shining black of the asphalt. A hundred feet away was the intense, glittering face of Adam Hart, the muscles in his face standing out rigid with the effort of his concentration.

It was like working a marionette. He pulled the strings and Marge responded.

She walked over and picked up the gun where he had dropped it. She turned and pointed it at Adam Hart. There was a flicker of awareness on Hart's part, then, and a sudden change of pressure. For a moment Tanner was receiving two sets of sense impressions, seeing the world as if it were on stereoscopic slides and his eyes hadn't quite meshed. Then Marge's sense impressions began to fade and he knew that in a minute Hart would be safe. But it was too late.

It took two shots to cut Adam Hart down.

Tanner stared at the body and watched the water run down the dead man's face and soak the clothes and collect in a puddle by the feet where the asphalt was a little lower. It still looked a little like Arthur Nordlund but the body was squatter and broader and the face was homely. The features were a little too thick and uneven, the mouth full and pouting. Not anybody you would look at twice, or anybody you would remember. Heterosis, Scott had written. Where two people of diverse racial stocks have children and the offspring retain all the superior qualities of the parents and are superior to either. A little English and a little oriental showed in the dead man's face.

Adam Hart.

The homely gypsy boy from Brockton.

The man with the Power.

Dead. As dead as if he had been run over by a truck or knifed by thieves. Dead and all his dreams dead with him. But you couldn't judge him as you would anybody else, Tanner thought. It wouldn't be fair. He hadn't been human.

Then he wondered how long it had been since he and Adam had stood there and faced each other. Five minutes? Ten? The police would be arriving at any minute. Then they would ask him why he had shot Nordlund. He would tell them he had shot a monster and they would stare at him coldly and somebody would say: "*He's Commander Arthur Nordlund, Professor. I liked him a lot. I thought he was a very decent sort of human being.*"

That's what they all would say, that's what. But nobody would recognize the body on the ground as being Arthur Nordlund. Nobody would. . . .

No more running through the streets. No more hiding. No more anything. The man with the Power was dead.

Dead.

Somebody was crying and he looked up. Marge stood a short distance away, sobbing softly. Then she looked up at him and the expression on her face was a curious mixture of loathing and repulsion and desire and awe.

Then he remembered *all* that had happened.

The committee meeting, so long ago. Somebody had moved the little paper umbrella. But Hart had been the cautious type; would he have betrayed himself, even though Olson had thought he would? No. So somebody else must have moved it. He had gone all around the room. If somebody had had the power and hadn't known it, that person would have moved it then.

He had asked everybody to try but he hadn't tried himself. Not until, to satisfy Olson, he had asked them all to try together. And then he had unconsciously joined in and the little paper umbrella had obligingly moved.

He glanced back at the fun house. There was a small light bulb over the entrance and a loose, plastic shade on top. He stared at it and it moved slowly, then picked up speed.

*Power, power, who had the power?*

*He had.*

*And hadn't known it.*

Hart must have known immediately who and what he was then. And Hart had tried to kill him. That should have been the tip-off. He had survived. For two whole weeks, despite everything that Hart could do. Three times Hart had tried to kill him. And had failed each time.

And the last time Hart's pressure had finally primed the pump, had finally brought his own talents out into the open. Hart had probably been desperately afraid of that, but he had had to take the chance.

And there had been the clue of heterosis. The gypsy boy from Brockton, the far superior offspring of mixed parentage. The one case where two and two had made five. And his own parents. The Santuccis on his mother's side and the Tanners on his father's. English and Italian. And his mother had been a sometime fortune-teller and his father had foreseen the future when he had predicted his own death. They had had wild talents, talents they had passed on to him.

There had been other clues. The photographs, for one. Hart had never taken a good photograph. And neither had he. The papers had never run one when he had been wanted for murder. They had never been able to find one that would have reproduced. And the photograph in the frame in Marge's room. Hart had used her but Hart had never given her a picture.

*But he had.*

The blank sheet of photographic paper in the frame had been a picture of himself.

*Why had Hart tried so desperately to kill him?*

He thought about it for a minute, and then he knew. Hart hadn't given a damn whether his own race procreated and grew and eventually replaced *homo sapiens*. He hadn't cared whether his own children had lived or died. He had gotten on the committee for the sole purpose of eliminating others like himself.

So he, Tanner, had had to die. And the others on the committee had been slated for death because they had discovered that a man like Adam Hart existed—and they could have spread the information. And who was to say that if there were others like Adam Hart, they might not have tried to kill Adam for the same reason Adam would have tried to kill them?

In Hart's mind, there had been room enough in the world for only one man with the Power.

It was funny, Tanner thought. Human beings, when they thought of the Superman, even though they cast him as the villain, invariably gifted him with a Superhuman morality—the lust for personal power was not supposed to be one of their vices. But it hadn't applied to Adam Hart.

And it didn't apply to him.

He stood there in the darkness and shed his human identity as a snake sheds its skin. He glanced at the animal that was crying a few feet away from him, then turned on his heel and strode towards the entrance, ignoring the wind and the rain and the exhaustion that had, after all, been only a *human* exhaustion.

Outside was the sleeping city, the lights glowing dimly in the shiny blackness. The lights that marched out from Chicago, down the highways and across the continents until they spanned the whole vast globe itself.

The thought occurred to him then, as it had to Adam Hart years before.

It was going to be fun to play God.

—BY FRANK M. ROBINSON

**NEXT MONTH: "The Golden Years," by Thomas Collins—a helpful, frank and entertaining book on a situation faced by every American male. PLUS "One of Us," a short novel of jungle warfare.**

## Enough to Cure the Blues

Continued from page 32

anticipate trouble with her. And I was right, because even if she was working at the bottom of a tar pit and it was working near Buck, it would not be too sticky for her—on account of the torch.

It's not a torch she carries where you can see her wave it around. It's a torch she keeps in her cellar. And not a feeble light, either. It's maybe 10 thousand candle power. Once in a while she leaves the cellar door ajar and then, for a fraction of a second, like when she looks at Buck and he's not looking, it could blind you. As is most always the case, Buck wouldn't see it if she flung it in his face.

I knew I'd have trouble with Buck. The surroundings would make old memories sharper.

It was like this. There was a girl. Also a canary but this one was not as nice, and her name was Reena, and she and Buck had an understanding. There was another horn, and his name was Jack Bryce. On old disks you can still hear him. Gaudy, rough, mellow—a horn that makes the backs of your hands prickle, and shoots golden bullets through your head. A better horn than Buck's. Not much, but enough.

It happened four years ago. Jack and Reena took off together. They had to take off, because if they'd tried to stay, Buck would have killed him. He had a bad case of Reena. Jack fell off the edge of the world. Buck couldn't trace him. Buck played drunk horn for a year. And despite rumors to the contrary, drunk horn is bad horn mostly.

**I** FORMED the trio, then, three years back. Buck never failed to ask any musician about Jack Bryce, and Reena. But as I said, they had fallen off some place. Buck was cured of the bottle, and he was cured of his yen for Reena, but not of his one-track determination to find them and bust Jack's head in.

Buck began to play more horn than ever before. He had chances to leave the group. But most of them would have meant a steady stand. And with us he could keep roaming. He had the idea that some place, sometime, he would run into the pair of them.

I expected trouble from Buck and I was right. But, believe me, it was the right kind of trouble. This is the only way I can explain it. Take a joint like The Flying Gull, outside Sarasota. Fill it with a great big group of amateur and professional girl-watchers. Then put our Vicky, who is without flaw, in something as well-fitting as a coat of varnish. And then have Buck come up with so much horn that they'd rather hear him than watch her. It's the truth.

He rode it way out there into the lost places of the human heart. All the bittersweet and the sadness. He leaned on the old ones: "Body and Soul," "Penthouse Serenade," "Talk of the Town," "Sophisticated Lady."

Listen, sometimes those notes would come out like those little balls of mercury you held in your hand the time you were sick and the thermometer broke and your mother let you have the escaped silver in a dish.

Sometimes the notes were brass claws, closing on your heart. Sometimes the sound came with banners waving, proudly, but a parade that walked the edge of nightmare.

We let him have his head. That first night and the next and the next. The place was packed. Buck began to pull in the good trade. A lot of it. You might think that I might think that he was wasting all that horn on that place, at those prices. But with musicians it doesn't work like that. It comes to you and you have to give it out. No matter where. Even a sodden hotel room with a towel stuffed in the bell of the horn and no fee at all. Music for free. Buck was singing about how the good times had gone. Vicky stood to the side, with a breathless look about her, and she watched him with all her heart and all her longing in her eyes. That cellar door was wide open, but Buck's eyes were shut. The only breaks Lew and I took were to give Buck a chance to breathe and brace before hitting it again.

**O**NCE in a great while you get it like that. I can remember only three times in my life. A weekend in St. Louis. Four nights in New York on the old 52nd Street, before the street was turned into a dirty post card. And Buck in The Flying Gull. Each time it was horn. Funny why that should be. Maybe a horn plays closer to the raw notes of the human heart in both ecstasy and agony.

It happened on the fourth night at The Flying Gull. I was chording a background for him, anticipating the key changes. Lew was right with it. I could faintly hear Vicky humming a dusky counterpoint to the fine horn. It was quarter of two in the morning. The piece was old: "One Hour Tonight." And Buck was putting things in it that had never been there before. The crowd had slimmed out. The ones that were left listened, looking into their drinks, thinking of old times and old faces.

Buck ended it in the middle of a phrase, with a shocking, brutal blatt that tore everybody's nerves. It jolted my fingers right off the keys. Lew's hands froze on the bass. We turned and stared at Buck and then looked where he was looking.

I saw the man at the bar. I hadn't seen him come in. He was looking at Buck and Buck was staring back at him. It was hard to recognize him, but I finally did. Jack Bryce, wearing rumpled khaki pants. Life had broken his face and his eyes and his heart. Four years had added 15.

They stared at each other. It was late and

everybody sensed the tension. It was so quiet I could hear the trucks droning down the trail.

A drunk said angrily, "Whassa matter witha music?"

"Shut up!" somebody else muttered at him.

**J**ACK BRYCE pushed himself away from the bar, turned with a little difficulty and came directly toward the stand. I heard his blue canvas shoes slapping on the worn floor. He walked directly toward Buck. He grunted as he stepped up onto the stand. I didn't know what was going to happen and yet I couldn't break out of the freeze.

Jack stopped in front of Buck and held his hand out. "Let me play one, Buck?" he said hoarsely.

Buck stared at him as if he couldn't believe what he saw. Then, slowly, he gave him the horn. Jack turned around, fingering the valves. He turned toward me. "Tea for Two, Harry," he said in a low husky voice.

I gave him an eight-bar intro, and he didn't come in, so I gave him eight more bars. Out of the corner of my eye I could see that he had the horn to his lips.

Maybe I've been to too many movies. Maybe those Hollywood types have set me up too often for the warm glow. You know what I mean. Ruined musician comes into Hungarian restaurant, borrows gypsy violin, plays his new concerto for violin that has him back at the top before you can say Darryl Zanuck.

He took it after the second intro. Ever live across a street from a kid who has just taken up the horn? Torture, man. The kid has no lip. And Jack's lip was gone. A dissonant and hideous squawking. But the kid bores through to the very end. Jack could hear himself. He quit after five notes. He just opened his hand and let the horn fall and bounce. He went off the stand. He nearly fell, but caught himself and got to the door and went out.

Vicky got to the horn and picked it up. She handed it to Buck. He worked the valves. He looked at a new dent in the bell. He wiped off the mouthpiece. If there was any expression on his face at all, it was a faintly puzzled look. If Iron-Pan Hogan should ever completely whiff a tee shot, he might wear that same look.

Buck played a fast test scale. Vicky stood near him, looking down into his face. For the first time Buck had a chance to really look down those cellar stairs and see that bright hot light that shone there for him. That night, life had handed him his revenge without him raising a finger, so he didn't have the other thing on his mind any more. Now he could look at Vicky.

The cash trade was beginning to mumble. I started with two handfuls of nothing, and Lew picked up the beat, and I faked and then pulled it into an intro to that old Goodman theme, "Good-by."

Buck put the horn on it. I took a glance. Vicky stood with her hand on his shoulder. He looked up at her as he played. He was playing "Good-by" and his eyes were saying hello.

It was good horn. It was good, competent, unmagical horn.

Lew and I talked about it this morning over four A.M. coffee. I mean I talked and he grunted in the right places. We agreed that maybe Buck will never play as much horn as he did those nights when he was summoning the ghost of Jack Bryce in out of the Florida night. So in that sense something is lost.

But it is still a fine fat horn, a very good horn, and something else has indeed been gained. They don't pop up with a Vicky every day. And you can't go out and find one. You just have to be lucky enough to have one come along.

And, you see, I'd never let her see even one small glimmer of the torch I'd been carrying that year.

—By JOHN D. MACDONALD

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## What's the Best Oil?

Continued from page 27

of a lube oil's less important jobs. In today's engines it's more essential for an oil to counteract metal-eating acids, prevent rust, dissolve varnish and sludge, break up abrasive particles, and keep power-stealing deposits from settling out in the wrong places.

One of the chief enemies of oil is air. You can't keep the stuff out because your engine needs nearly 10,000 gallons of air to burn a gallon of gas. But oxygen in the air reacts with oil to form acids, varnish, and a host of other compounds nobody wants.

The troubles caused by oil oxidation have skyrocketed in recent years as a result of smaller, hotter engines, tighter-fitting parts, higher pressures, and new gasolines, engine metals, and designs. To make matters worse, modern cars are misused most of the



**Sometimes the "best" oils won't give necessary protection to particular models of cars.**

time. The extra power that's built into them is kept throttled down because of more traffic jams and an increase in "light-duty" hopping from home-to-store-to-job-to-movies.

To slow down oil oxidation and counteract acids, chemical additives are mixed with the oil. But they have to be used sparingly, because of their harmful side effects. Like some wonder drugs that cure pneumonia but attack your liver, oxidation fighters protect the oil but may chew up some hot engine parts and leave power-stealing deposits.

Even if chemical treatment could completely prevent oil breakdown—which it can't—it still couldn't eliminate all the harmful rubbish taken in with the air and gas. So refineries add detergents to their higher-priced brands.

Oil detergents are similar to the ones your wife pours into the washing machine and act in much the same way. They unstick clinging dirt, break it into tiny particles, and hold the particles suspended in the liquid. They prevent or cure clogging of piston rings, valve lifters, and other close-fitting parts. They keep sludge and ash from settling in the crankcase and combustion chambers, and can clean out some deposits that are already formed. By floating the dirt, they give an oil filter a chance to screen part of it out of circulation.

But detergents, too, have drawbacks. Most types

increase oil oxidation, and—like kitchen cleansers—have a tendency to foam.

What all this boils down to is that *there is no simple, automatic way to tell which oil is best for your car*. But that doesn't mean it's impossible. You have to make a decision on three main things: (1) the brand of oil, (2) the type, (3) and the grade. There are a number of rules-of-thumb you can use to narrow your choice on each. Once you're settled on an oil, you'll want to know how to get the most out of it by having your car serviced properly.

**Which brand?** Ask the manager of your car-dealer's service department which brands are recommended for your car. Though automakers don't make any official recommendations, they sometimes allow a few hints to spread around the dealer-grapevines. This is most likely to happen when some special trouble starts popping up in a new model.

A couple of years ago, one of the top auto companies discovered that an "improved" part wore out fast even with the "best" oils. However, a few brands did give some extra protection. Factory men knew which these were and let the word leak out to local service managers.

But when you listen to such inside dope, consider the source. It's apt to be less biased if it comes from a service shop that doesn't sell oil.

Don't put too much faith in old favorites. A brand you've been using happily for 20 years may still come in the same can, yet not be the same oil. In any case, past performance doesn't mean much—it's how the oil makes your car run today that counts.

**Which type?** The type of oil is indicated on the can in two ways. The older classifications are "Regular," "Premium," and "Heavy Duty." Regular oil can be any kind of crude, refined in any way. Premium means the oil has oxidation fighters added. Heavy Duty is premium oil plus a detergent. Some refiners use the term "Extra Heavy Duty" to suggest that their oils exceed minimum requirements.

The American Petroleum Institute, a refiners' trade group that sets industry standards, recently decided that these older classifications are obsolete and has come up with three new ones: ML, MM, and MS. These refer to the kind of driving each refiner thinks his product is suited for and stand, respectively, for Light, Moderate, and Severe Service. It's a fair assumption that ML corresponds roughly to the old Regular, MM to Premium, and MS to Heavy Duty.

Naturally, as you go up the scale in type, you go up the scale in price. And, other things being equal, the higher type of oils give your engine more protection.

How much protection does your engine really need?

Most drivers haven't yet caught up with the fact that engines driven least are likely to wear most. Two-thirds of all car trips these days are under eight

miles, which, in cold weather, doesn't give the engine a chance to warm up. Under these conditions, gasoline can't burn completely and some of it slides down into the crankcase to dilute the oil. Huge quantities of water are formed, but instead of being vaporized and passing out with the exhaust, the water settles on engine parts and mingles with the oil.

The result is, oil gets dirtier faster and forms more acids and varnish. It also has to fight harder to keep moisture from rusting iron and steel. So you need the protection of high-additive oils.

You probably also need the higher types of oils if you take long trips at high speeds, if others in the family use the car, or if the bus is used only on weekends, giving the engine a fine opportunity to rust during the week.

There are two other ways to help you decide on oil type:

**1.** If your car is new, follow the manufacturer's recommendations. When the factory suggests an MS oil, chances are the car needs a detergent to keep some close-fitting parts from gumming up. This advice, if it's given, applies regardless of the way you use the car.

**2.** If you detect rust on the oil dipstick or hear a persistent clicking that can be traced to sticky valve-lifters, better switch to a higher-additive oil. If you're already using a factory-recommended type, try another brand of the same type or have the oil changed more often.

**Which grade?** In oil language, "high grade" doesn't mean good quality any more than "heavy duty" means heavy bodied. Grade refers to only one property of a lubricant—its viscosity, or resistance to flow. In other words, a Number 20 oil is thicker than a Number 10.

It's thicker, that is, if you measure them both at the same temperature. For you have to keep in mind that oil thins out as it gets warm. Grade number is based on minimum viscosity at a temperature of 210 degrees. It tells you, in effect, that the oil won't thin out beyond a certain limit.

But if heat thins oil, it follows that cold weather thickens it. That's one of the chief reasons why an engine is such a hard starter in winter.

Because thickness is so important in cold weather, "winter grade" oils are also checked for maximum viscosity at 0 degrees. If they don't stiffen beyond a set limit, they earn the letter "W." Thus, while a 10 and a 10W act the same in a hot engine, the 10W flows faster when cold.

Winter-grade oils—numbers 5W, 10W, or 20W—are generally recommended for cold-weather driving. Judged strictly as lubricants, they're better any time of the year, but as a rule they evaporate, seep out, and get burned up faster than heavier oils. So they give you fewer miles to the quart.

Most drivers also feel that a thicker oil film offers extra protection on hot drives. For these rea-

sons, medium-grade oils—especially Number 30—have become outstanding favorites except in very cold weather.

Oils of the same grade number may thin out at very different rates. One that doesn't change thickness too much over a broad temperature spread is said to have a high viscosity index, as VI. Nature gives some oils a high index; chemical treatment improves others.

In the last couple of years a batch of high VI—or multi-graded—oils like 10W-30 have hit the

**• • • like some wonder drugs  
that cure pneumonia but attack  
your liver, additives  
may protect the oil but chew  
up your engine • • • • •**

market. This combination number means the oil doesn't get thicker than a 10W at zero or thinner than a Number 30 at 210 degrees.

A multi-grade can do you the most good if you live in a changeable climate and do a lot of short-hop driving. With it, you don't have to worry about seasonal oil changes or sudden cold or hot spells. That means you never have to drain good oil too soon or postpone a needed change until the new season settles in.

If you think you can benefit from an all-weather oil but are shying away because of one bad experience, give it another whirl. Some of the early brands contained very watery base stock bodied by a load of chemical thickeners. They gave poor mileage because the base oil cooked off fast. Most present multi-grades, however, are more satisfactory.

But remember that you pay extra for a high VI, and for your car in your part of the country its advantages may be purely theoretical. If you've been getting good service from a light oil, it is doubtful that a multi-grade can offer you any real improvement.

The best way to judge viscosity grade is by performance. Since grade has little connection with anti-wear properties, you needn't hesitate to experiment with different grades to find out which will make your car run most smoothly. The wrong grade may cause hard starting, cold-engine stalling, poor gas mileage, high oil consumption, and some engine noises. Keep a record of these for each grade you try. If the car is new, however, stay within the grade range suggested by the manufacturer.

**Servicing tips. 1.** If you're not hard on a car and the weather is mild, 1,500- to 3,000-mile oil changes should be adequate. But if you do a lot of short-hopping in cold weather, you ought to change oil more frequently. Oxidation fighters and detergents do get used up. Refiners recommend a 500-



mile drain period for this type of driving. Their advice may do them more good than it does your car, but don't stretch the oil change too far—keep it under a thousand miles, anyway.

**2.** If you're using a detergent oil, pay no attention to the station attendant's pitch that the oil on your dipstick "looks dirty" and needs changing. Detergent oils break up carbon and other deposits into particles that are too tiny to be trapped by any filter. It's therefore perfectly normal for these oils to look filthy after short service. On the other hand, if a regular oil gets black and gritty, it's very likely that crankcase deposits are building up. And since particles carried in non-detergent lubes aren't as finely divided, they may be acting as abrasives inside the engine. Very dirty oil is overdue for a change.

**3.** Check the oil filter regularly if your car has one. All filters have a by-pass arrangement that lets oil flow around when the cartridge gets too sludged to let it flow through. If the filter housing feels cool in a hot engine, the element is probably clogged. Replace it the next time you change your oil. And

**• • • the wrong grade of oil may cause hard starting, stalling, poor gas mileage, high oil consumption and engine noise • • •**

when you do, add an extra quart. If you've been using a detergent oil, a clogged filter can be an important tip-off. A detergent is supposed to prevent sludge formation. When it stops doing this, its cleansing power has been used up, or the oil is so loaded it can't hold any more dirt. You might switch to a different brand or higher-type oil. If you find that the filter still clogs up long in advance of its rated service life, your best bet is to shorten your oil-drain period.

**4.** When you add oil between changes, use the same brand. The chemicals in one may counteract those in another, and a poor mixture of additives could be worse than none at all. If you're paying for any of the higher-priced oils, you may as well take advantage of the refiner's blending skill. It may not be perfect but it's certainly a darn-sight better than yours.

**5.** Avoid overfilling. Crankcase capacities are smaller on a lot of recent cars and vary in models that look much alike. It's easy for station attendants to get them mixed up, so if you're not sure how much oil your car needs, check-it for yourself in a manual or lube chart. Buying too much oil wastes your money and causes some messy spatter. More important, it can foam up the oil and interfere with circulation.

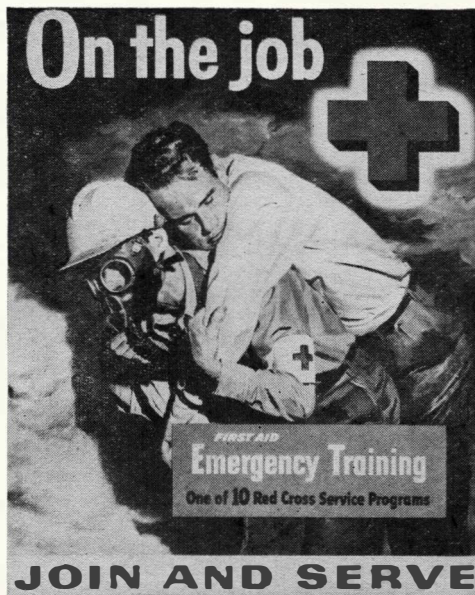
**6.** Know your dipstick. On most there's about a two-quart spread between the "full" and "low"

markings. Until oil level has dropped halfway through this "safe" range, a quart of make-up oil will overfill the engine and do you no good. If your crankcase has a four- or five-quart capacity, however, you don't want to let the level fall too far below this before you add oil. As capacity goes down, each quart becomes more important in cooling, carrying sludge, and so on. Cars with oversize capacities (like the 10-quart Plymouth Hy-Drive, in which crankcase and torque converter share the same oil) are said to be least sensitive to oil contamination.

**7.** Keep your engine clean. Regular service of other parts of the motor is good oil insurance. The air filter on the carburetor and the one on the crankcase ventilator are put there to screen dirt. They lose their effectiveness if they're allowed to become too dirty themselves. Sloppy operation of the distributor, spark-timing system, and other mechanical parts put an extra load on the oil. All in all, well-tended, properly adjusted engines generally wear out slowest.

It's obvious from the foregoing that until someone pins down the million-and-one variations in oils, engines, roads, drivers, fuels, and weather conditions, you have to play it pretty much by ear. But in the long run you'll find it hard to overrate the importance of oil. So if you can't buy foolproof protection, don't neglect the protection you can buy. When you're in doubt about the type to use or whether to change, play it safe—even if it means spending a bit more. A little extra care and cost could add thousands of good miles to the life of your engine.

—BY ROBERT GORMAN



## The Cinderella Smile

Continued from page 21

river: it was centuries of recorded history rolling majestically along.

Alan's housekeeper had left us an excellent supper. We ate it and drank a bit, and turned on the wireless—as they called it—and danced. And it seemed to me no time at all before Sylvia looked anxiously at her watch and said, "It's after eleven, Bill. I really should be getting along."

"Oh, no!" I protested. "Why, we just got here! You said you could stay out until midnight. It won't take us *that* long to get to your place, will it?"

"No," she said, "not if we can find a taxi. But . . ."

"Oh, relax, Sylvia." Alan said cheerfully. "Let the old battle-axe look after herself for once. Who cares if you're a bit late?"

"Aunt Angeja does," Sylvia told him. "She's terrified of burglars, although she locks all the windows and doors. But perhaps if I called up and made sure she's all right . . ."

"Go ahead," Alan said. "There's the phone. Wait till I turn down the wireless."

The old battle-axe answered almost instantly; she must have had the phone right beside her. But when Sylvia asked permission to stay out a bit later than usual, the request was refused with a vehemence that was audible to all of us. Sylvia put the phone down, smiling ruefully. "Well, you heard what she said. Midnight—no later."

"Somebody ought to tell her off," Alan muttered irritably. "A midnight curfew on a girl your age! Why, it's ridiculous!"

"She's old and lonely," Sylvia said. She hesitated. "If you can call a taxi for us, Alan, have it here by a quarter to twelve, I'll stay until then. But no later."

**T**HE taxi came, with depressing promptness, at a quarter to twelve. Sylvia and I said good-by, climbed into it, settled back into the intimate gloom. For perhaps five minutes we moved through the silent, deserted streets. Then I touched her little gloved hand. "Sylvia—" I said.

She did not move her hand. I saw her lips curve faintly, as if my touch was not unexpected—and not unwelcome. With my other hand I turned her face toward me so I could look into her eyes. "Sylvia—" I said again, and bent to kiss her.

My lips never touched hers. Out of a darkened side-street came one of those little British sports cars, much too fast. The driver had a girl beside him;

perhaps he was kissing her too, I don't know. In any case, he saw our taxi too late. He spun his wheel, the tires squealed, the brakes shrieked. Even so, he side-swiped us smartly just behind our left front wheel. There was a solid jolt, a rending crash of metal, and the two vehicles, locked together, skidded to a stop.

Nobody was hurt; nobody was even shaken up, but our journey in that particular taxi was clearly ended. I felt Sylvia's fingers tense on my arm. "Bill," she said, "I mustn't be late. Don't let's get mixed up in this. Let's get away, find another cab . . ."

"We can't do that." I said, astonished. "It wasn't our driver's fault. We're his only witnesses. We've got to give him our names, at least."

She gave me a despairing glance. "Hurry, then. Please hurry! I'll look for another taxi."

I did hurry, but Sylvia did not find another taxi. In the end, we had to walk, our footsteps loud and urgent in the quiet night. At times Sylvia was almost running. "Take it easy, Cinderella," I said to her once. "Your gown isn't going to turn into rags, you know." But she paid no attention; she barely seemed to hear me.

**W**E came to her house at last, a solid, narrow building with shuttered windows and a massive-looking door. Sylvia was breathing hard. It was after midnight by now, perhaps 20 minutes after, but I could not see why a few minutes should make such a difference to her. I followed her up the short flight of steps. "Got your key?"

"I don't have a key." She pressed the doorbell, hard. "My aunt's bedroom is on the ground floor. She always waits up to let me in."

We waited. Silence sang around us. Sylvia put her thumb on the doorbell again, and kept it there. "Something's wrong," she said in a low, tense voice. "I feel it. I know it. She always answers promptly."

"Maybe," I began. "She . . ."

I got no further. Sylvia had dropped to her knees, was peering through the narrow rectangular slot above a brass plate marked **LETTERS**. I heard the sudden, in-drawn hiss of her breath, saw her flinch away, put her hands over her face. She gave an inarticulate, sobbing moan. Half a second later I was looking through the slot myself.

My field of vision was necessarily limited, but what I did see I saw all too clearly. It was a small hallway, fairly well lighted. The floor was of some dark wood, highly polished, with a Persian rug centered on it. At the far end was a refectory table bearing candlesticks and a clock, and flanked by two graceful Chippendale chairs. There was nothing unusual, nothing frightening about any of this, but—

On the floor, just in front of the table, a woman was lying. Her face was turned away from me; I could see only her iron-gray hair and the back of the long white nightdress that she wore. She lay very, very still. Beside her, half on the rug and half on the floor, was a dark-stained, murderous-looking knife.

For perhaps three seconds I stared, frozen. Then I got up and threw my full weight against the door. It didn't even quiver. I tried again, and only succeeded in bruising my shoulder: I might as well have assaulted a stone wall. I heard Sylvia's voice in my ear, shrill and frantic: "That's no good, Bill! We've got to get the police! There's a telephone around the corner to the left, not very far. Oh, hurry, hurry!"

In two strides I was down the steps. Then I looked back. "What about you?"

"I'm going to try the back door. Or perhaps I can get in through a window. Oh, hurry, Bill! She may be still alive!"

I had no such illusions myself. The huddled form in the nightgown had been too motionless, too deathly still. Even so, I sprinted to the corner, turned left, and ran as fast as I could to the red-painted, glass-enclosed telephone box that stood under a street-lamp some 50 yards away. Fumbling with the unaccustomed coins, lighting matches in a frenzied attempt to read the unfamiliar directions, I was as quick as it was humanly possible to be. Not more than ten minutes had elapsed by the time I came panting back to the house.

The front door was open, now, a rectangle of yellow light against the somber facade. I went up the steps three at a time. Sylvia was kneeling on the floor beside the white-clad figure. She looked at me numbly. "It's no use," she said. "She's dead."

## Native Wit...

IT WAS A scorching day in Kansas City. I had checked in one of those back-street hotels on the north side and was assigned to a room with a connecting bath. The elderly man who occupied the adjoining room was very friendly and we soon got acquainted. Because the weather was so hot, he had left the door of his room ajar to help keep the room cool.

While I was in the bathroom shaving and carrying on a conversation with him at the same time, one of those "girls" pushed the door open and came into his room.

"Am I in the wrong room," she asked.

The old gent looked at her for a moment then replied: "No, Honey, you're not in the wrong room. You're just 20 years too late."

—ERNEST BLEVINS  
Kirkwood, Mo.

Bluebook will pay \$25 for each story of "Native Wit" that is published. Each must be previously unpublished and none can be acknowledged or returned.

I stepped gingerly over the body, looked once at the parchment-like face, the disordered gray hair, the dark-crimson stains on the front of the white night-dress. I felt suddenly dizzy and sat down on one of the Chippendale chairs. As if I had activated it, the clock on the table chimed the half-hour: one silvery note. Sylvia buried her face in her hands. "If only I'd come home on time! If only we hadn't been late!" Outside, a car pulled up with a screech of brakes; doors were opened and slammed; the London police had arrived.

THEY were marvelously efficient and polite. A police surgeon arrived, examined the body, and told us what we already knew: that the old lady had died instantly and very recently, death being caused by stab-wounds in the chest. Fingerprint experts went to work, concentrating on the hallway and on the area in the kitchen where Sylvia had found a windowpane broken and the window wide open. Photographers came, took their gruesome pictures, then the mortal remains of Miss Angela Habersham were taken away.

Sylvia and I were interrogated by a quiet man in a dark suit who looked more like a professor than a policeman. Inspector Burdock was his name. We told him everything and he listened thoughtfully, nodding from time to time.

"It looks very much," he said finally, "as if a prowler broke in through the kitchen window, was surprised by Miss Habersham before he had a chance to steal anything, and killed her before she could give the alarm." He hesitated, looking at Sylvia. "This has been a nasty shock for you, young lady. If I were you, I should go straight to bed. As for you, sir," he turned to me, "one of our men will drive you to your hotel, if you like. You've been through enough for one night, I'm sure."

I thanked him, said good-night to Sylvia, promised to call her in the morning. Her hands were cold, her face looked pale, but her self-control was remarkable. I told her so. "Take a sleeping pill, if you have one," I said. "And above all, don't blame yourself for this. It wasn't your fault that we were late."

I watched her go upstairs to her room. Then I went out to the police car that was waiting for me. As I opened the door, I felt a hand on my arm. It was Inspector Burdock. "Before you go, Mr. Carter," he said, "I wonder if you'd just review this whole affair once more in your mind. Go over it carefully and see if there's anything—anything at all—that strikes you as odd, or out-of-key, or peculiar in any way. I know you've told me everything, but sometimes it's the little things— Well, start with that phone call from Mr. McKenzie's flat, if you will, and review everything up to the moment the police arrived."

I tried to do as he asked, but I was so tired that my brain felt numb. It seemed to function slowly and with great effort. Burdock stood beside me patiently.

"Well," I said finally, "there's only one thing I do remember now that strikes me as rather odd. It

doesn't seem very important, and to tell you the truth when I looked through that letter slot I was so startled that I might easily have imagined this. But my impression at the time was that the clock on the table had only one hand. Or seemed to have only one . . ."

Burdock's gray eyes were watching me intently. "You mean, both hands were together, is that it?"

"That's right. They showed the time to be midnight. Or so I thought. And yet, when I came back from the telephone eight or ten minutes later, I remember hearing the clock chime the half hour." I shook my head. "My first impression must have been wrong. The clock must have indicated twelve-twenty, and for some reason I just didn't see the minute hand."

BURDOCK was silent for a moment. "Mr. Carter," he said finally, "I'm afraid you've had a long and very disagreeable evening as it is. But would you mind waiting here in the car for a little longer? I'll try to be as quick as I can."

"Won't it keep until tomorrow?" I asked him wearily.

"Tomorrow might be too late," he said. "Please wait."

He turned, went up the steps, into the house. I waited. Ten minutes passed. Twenty. Half an hour. Abruptly the car door opened and Burdock peered in. His face might as well have been a mask. I couldn't read anything in it. "Come with me, please, Mr. Carter," he said.

Half dazed with fatigue, I followed him up the steps. The door was closed. Burdock stopped in front of it, indicated the letter slot. "Take another look," he said.

The request seemed senseless, but I was too tired to care. I shrugged my shoulders, dropped to one knee, peered through the slot—and felt my heart give a terrifying leap. Because it was all there, just as it had been before: the stained knife, the still figure in the white nightdress, the hands of the clock fixed immovably upon midnight.

I think I gave a strangled shout. I know I recoiled from the slot as if the brass plate beneath it were red-hot. I felt Burdock's strong hands on my shoulders. "Easy does it, Mr. Carter," he said.

He pushed open the door, stepped behind it. When he reappeared, he had an oblong object about the size of a shoebox in his hands. "I don't blame you for being startled. Or for being fooled. You were actually looking through a stereoscope at a double photograph. The scale, the lighting, the three-dimensional effect—all just about perfect. Perfect enough, anyway: the human eye has a fatal tendency to see what it expects to see."

I stared at him, stupefied. "Photograph! You mean that *Sylvia*. . ."

"I was sure she did it," Burdock said. "I just couldn't see how. By making that phone call from McKenzie's, she had established the fact that her

aunt was alive at a few minutes past eleven. Then she was in your company constantly until the body—apparently—was discovered. Really rather clever, you know! Actually, of course, she waited until you went to call the police. Then she let herself in with her key, which she had all the time, called her aunt out into the hall on some pretext, and killed her the way you might slap a mosquito. Then she took care of her other little chores: re-connecting the doorbell, going back to the kitchen and breaking a window, unhooking this gadget from the back of the door and putting it in the place where it would attract the least attention."

"Where?" My brain was spinning. I couldn't believe my own senses.

"In her photographic dark-room," Burdock said. "Among a dozen other stereoscopes and all sorts of equipment. I suppose she planned to destroy it as soon as she had the time. But you never know—she may have intended to keep it to remind herself of her own cleverness. That's the way these bright criminals are, sometimes."

"But the photograph itself—where did she get it?"

"She took it, of course. Probably had a timing device on the shutter of her camera that enabled her to play the part of the corpse."

"Good Lord," I said. "In a gray wig!"

"Exactly." He wrinkled his forehead thoughtfully. "I suppose, photographically speaking, it was no great trick for an Air Ministry photo-interpreter. Still, she must have been planning it for a long time. And if you hadn't noticed the discrepancy in the clock, she might have got away with it."

"But why me?" I burst out suddenly. "Why did she pick on me?"

Murdock rubbed the back of his hand across his chin. "Well, she knew you were a recent arrival, and probably unfamiliar with our telephone boxes. Obviously, she wanted you to stay away as long as possible. She needed all the time she could get. And then, of course, knowing that you were an American . . ." He broke off suddenly.

"Yes?"

"She may have—er—felt," said Murdock with an apologetic little cough, "that you were not—ah—terribly bright!"

THE British have a sterner sense of justice than we do. They took *Sylvia*, tried her before a jury of her peers, and hanged her by her pretty neck until she was dead—just as dead as the old lady whose money she could not wait to inherit.

I was there when the judge put the black cap on his head and sentenced her to hang. I was there, and I was watching her. She didn't scream or faint or do anything like that. She just kept smiling faintly.

Oh, yes, whenever I think of *Sylvia*, the thing I best remember is that wistful, innocent smile. And the memory of it freezes me still—right down to the marrow of my bones. —BY ARTHUR GORDON

## Junie McMahon King of the Pins

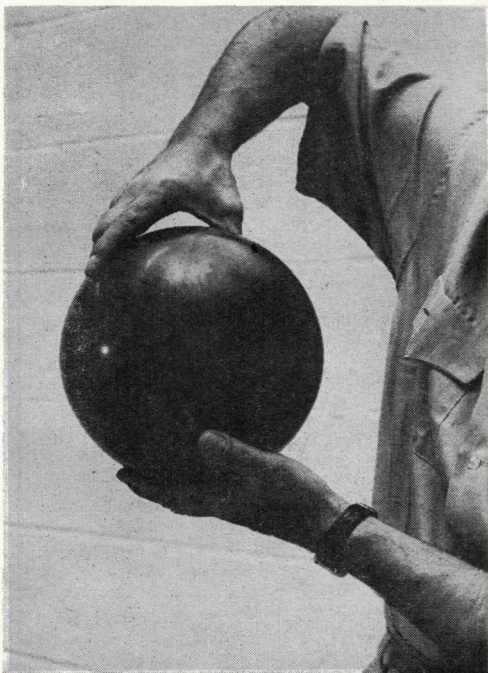
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golf. Nor is it difficult to see why Junie McMahon, already enshrined with the game's immortals, is known as a bowler's bowler.

That may well be an academic statement, since bowling, of all organized sports, probably attracts the smallest fraction of spectators per each player. Mainly, bowlers watch each other. This fact accounted, indeed, for the tensest moment in all of Junie McMahon's tournament play—a moment when for all time he established his mettle as a true champion.

It was during the 1947 ABC tournament in Los Angeles. In singles play, Junie found himself behind the current leader. In the fifth frame of his third and final game it became apparent that he was going to have to finish up with eight straight strikes to go ahead of the front-runner, by two pins.

**Two common mistakes in selecting a bowling ball are (right) choosing one with holes too large, and (below) with holes placed too far apart.**



Junie threw one strike. His next ball hooked smack into the 1-3-pin pocket to clean the boards. By the time he had rolled the third strike and the fourth, word had spread up and down the alleys: "McMahon's got a streak going!"

Competitors deserted their alleys to come watch McMahon. The runway was lined with bowler-turned-fans. Later, McMahon confessed he hadn't noticed, even then, that anybody in particular was watching him except in the grandstand.

Such was his concentration when he delivered again. Again the ball spun down the right side of the alley. Again, as if guided by radar, it arced smoothly to the left, and into the strike pocket. Five strikes. The crowd waited, respectfully still.

Nobody had noticed—and least of all Junie McMahon—that there were a number of mightily unimpressed observers of the scene. These were the pin boys setting them up for bowlers who had left their games to watch the hot finish. The pin boys didn't know who was rolling, and cared less. They only wanted their games finished so they could go home for the night.

Junie poised for his next roll, strode towards the foul line. Tension tightened, then the atmosphere exploded. Just before he reached the line, an instant before he released the ball, the pin boy in the next alley banged the kick-back with a tenpin, trying to

get the attention of his delinquent bowler, who was watching Junie.

As the ball was leaving his fingers, Junie pulled his head up, startled by the sharp sound. The ball sailed down the alley, all right, but a pin's width to the left of the line the McMahon ball unerringly takes. It landed square on the nose of the head pin.

This time luck was with the Irishman. The shot was a perfect "umbrella" ball: clearing the pins off the boards, against the laws of bowling probability. This is the hit that invariably leaves the 4-6 or 7-10 pin standing.

The extraordinary part of it was not that Junie got the providential sixth strike in spite of the distraction, but that, not thrown one whisker off his stride, he then went quickly and coolly on to roll strikes seven and eight.

This exhibition of poise under pressure accounted for enough pins to give McMahon a total of 740 for his three-game series. It clinched for him the ABC singles and all-events titles, his first national championships.

For many a kegler, this double attainment would be the peak of his bowling career. Not so for Junie McMahon. "I felt then," he said recently, "that I had just started my serious bowling. Always after that, when I won a title I really wanted, I'd think, 'This is it. This is the greatest kick I'll ever get out of bowling.' But then I'd find I still had a lot to learn, and I'd aim for some new title and forget all about the old record."

That's precisely what happened after his jackpot year of 1949. In the spring he rolled in his 10th ABC tourney—and amassed enough pins to break the record for the highest 10-year average. Never before had anyone done this the first time out. Later the same year he tackled the toughest bowlers in America in the grueling match play of the All-Star tournament, and won. For these two achievements he was voted Bowler of the Year.

He was promptly hired by the Manhattan Bowling Ball people to make nationwide exhibition tours under their aegis. "I really thought I had the bowling game licked," Junie says today. "until I began that exhibition tour for Manhattan. What I didn't learn, playing so many strange alleys!"

What he did learn helped steer him in 1951 towards the ABC all-time record 10-year average of 207, and a second All-Star victory the same year. And when, in 1955, Junie McMahon became eligible for the Bowling Hall of Fame balloting (15 years' ABC competition is required), the bowling writers of America voted him forthwith into the sport's hallowed circle.

Junie's immortality should not give anyone the idea that Junie has any thought of retiring from bowling. There's little time for laurel-resting—at least not around Paramus, New Jersey, where Junie, as a partner in the operation, manages the new Paramus Alleys and operates a bowling-supply business. Since he spends many hours teaching, and intends to roll

in a select number of tournaments (including, of course, the ABC and the All-Star), he has time to bowl in only three leagues this season.

Such a devotion to a sport is hard to envision—until one learns how the master got that way.

James E. McMahon, Junior (hence the "Junie"), was born in Passaic, New Jersey, in 1912. McMahon Senior was a customer's man for a local silk-processing concern, and an active amateur sportsman.

Junie grew up in metropolitan Jersey, going to parochial schools in Lodi and in Jersey City. An only child, he was his father's constant companion, growing up in an aura of baseball, bowling and fishing talk. He compensated for his small size by hanging around older boys and fighting to compete with them. It was thus that Junie developed the fierce power of concentration that today's tournament bowlers know only too well.

As a senior in St. Peter's prep school in Jersey City, Junie went out for baseball, then his favorite sport. But at 17 he was only 5-foot-5 and weighed 130, and the coaches cut him off the squad without letting him so much as touch a baseball.

### The bowling record of Junie McMahon

#### ABC Tournaments:

Singles title, 1947 (740 in 3 games)  
All-events title, 1947 (1965 in 9 games)  
Broke 10-year-average record (10th ABC), 1949 (206)  
Set present 10-year-average record (12th ABC), 1951 (207)  
Ten-year-average leader also in 1952, 1953, 1955  
Lifetime ABC average, 16 tournaments: 205

#### All-Star competition:

Won 1949 tourney with 214 average  
Won 1951 tourney with 208 average  
Lifetime All-Star average (828 games): 203

#### U. S. Bowling Team average (94 games): 203

Elected Bowler of the Year, 1950  
Elected to ABC Hall of Fame, 1955

#### Regional tournaments won:

New York State, all-events, 1940  
Strachota, Milwaukee, 1948  
Playdium, E. St. Louis, 1948  
Grape & Wine, Lodi, Calif., 1950  
Doerfs, St. Louis, 1951  
Highland Park, Ill., 1951  
Klars, Cleveland, 1951  
Nagys, Cleveland, 1951  
Hubbard, O. (singles), 1951  
Newsday, 1953  
Penn Classic, 1953  
Elks National, all-events, 1953

Another usual error is taking too high a backswing—as Junie demonstrates here. It causes ball's momentum to become too great for control at release.

“That really hurt,” he reflects today. “But then two things happened to change everything in my life. First, I discovered the game of bowling. Then suddenly I began to grow and put on weight.”

That summer Junie pitched for a semi-pro team, and took particular pride in mowing down a team of St. Peter's veterans. A professional career loomed, but only briefly. Towards the end of the summer he threw his pitching arm out of joint, and himself out of baseball. The only consolation for him that bleak August was that the injury didn't keep him from enjoying his new-found game of bowling, and he left the diamond for the alley, forever.

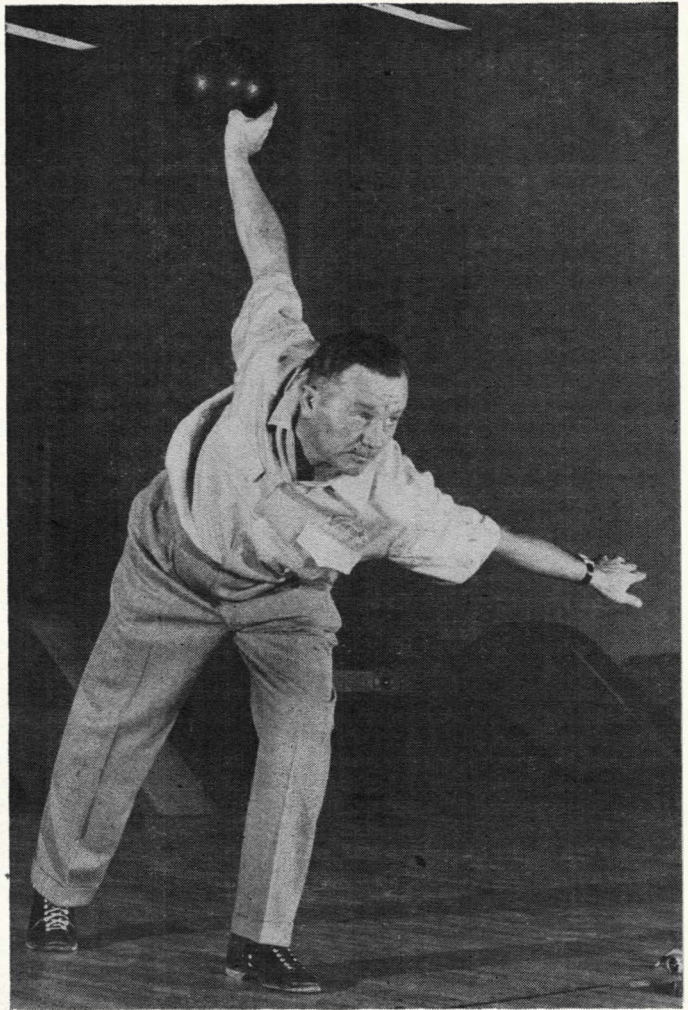
The church of St. Francis, in Lodi, had a bowling alley installed in the basement. It was there, in the winter of 1929, that Junie McMahon rolled his first bowling ball. He can't recall the score of his first game, but he does recall the thrill of discovering the game, and of discovering that size was neither an asset nor a liability to the bowler.

His zeal that winter was unbounded. Every spare moment—mornings before school, lunch hours, evenings when others were at dinner—found him in the church basement. He had watched one of the older parishioners carefully, during one Saturday session, fascinated by the way the ball rolled down the right side of the alley, then hooked in towards the strike pocket.

Too shy to ask how the hook was delivered, Junie set about to teach himself to make the shot. Over and over and over he rolled—trying first three steps, then four; raising his backswing then lowering it; trying variations of the twist as he released the ball.

The determination of the 17-year-old seems even more remarkable when he confesses today that he had to set his own pins most of the time. The hook he developed that winter was hardly the pin-flattener he hurled to dominate the ABC 20 years later, but it found the vital pocket more often than not, and it began to instill a coolness and a confidence that were to become the McMahon hallmark.

The following summer was the one that saw him



emerge from the church basement to the ball diamond. That was the critical season when he (1) ruined his pitching arm, (2) returned to bowling for good, and (3) grew up to his normal size.

Having been graduated from prep school in February, 1929, Junie had gone to work in Wall Street in New York City as a runner. Soon he was promoted to sales clerk. Shortly after his pro baseball career was blighted, his stay in the world of commerce was suddenly ended by the Wall Street crash. So in the fall of 1929 Junie came to work back in Lodi at the plant where his father was employed, in time for the start of the year's bowling-league season.

In his first year of competition, Junie bowled for the last time in only one league. For the first

## Seven ways you can improve your bowling game

**1—Check your footwork.** Make sure you are starting slowly and working up gradually to a natural speed. On a four-step delivery the first two steps should be half or three-fourths the length of the last two.

**2—Work on your timing.** Practice the proper rhythm of arm, ball and footwork until you bring the left foot and right arm to the foul line at the same time (if you're right-handed) every time you deliver.

**3—Put the proper turn on the ball.** Don't put any twist on your ball until it reaches the foul line. Almost all the turnover should be applied in front of you, past the line. Release the ball smoothly, with no snap or jerk.

**4—Maintain your form on the follow-through.** After release, your left foot should be just behind the line, pointing straight for the head pin, right foot in a natural position for balance. The right arm should follow straight through after delivery, until it reaches eye level.

**5—Learn to "play" alleys properly.** See how your natural ball behaves on a strange alley. If your ball hits the head pin too full, increase your speed or move nearer the center of the runway. If you're down from the head pin, slow down your ball, or move to the outside.

**6—Clobber the spares.** Don't be satisfied with just knocking a spare down, but always try to smack it dead center. Roll at most spares at cross angles. Roll at one-pin spares like you were shooting a gun—your right hand, after release and follow-through, pointed straight at the pin.

**7—Keep cool.** There's no place for temperament on the bowling alley. We all have bad games and bad nights; moaning and groaning over mistakes or taps will only throw you off stride for the next roll.

*Remember: there is no defense in bowling—only offense—and the offense is all you.*

—BY JUNIE McMAHON

time—and for the last time—he wound up second-best in his league—with an average of 186. But league results, total and average pins meant little to Junie then. The only important thing was to master the art and science of bowling. To this end he applied himself without rest. Despite his full-time job at the dye works, he worked at the game five hours a day, seven days a week.

During the next three years, in season and out, the bowling alley was second home. His delivery soon became automatic. Using a two-finger grip and a four-step approach, his technique on the runway was already faultless. Now he could work on accuracy, and work he did.

By 1931, the uncanny big hook of Junie McMahon was becoming legendary among the horizontal hardwood grooves of New Jersey. There was no longer a local league that could hold him below first place.

In 1934, in his fourth year of bowling, Junie hit his first tournament jackpot: he rolled and hooked his way to the New Jersey State singles and all-events titles. And that year he rolled his first sanctioned 300 game.

In 1937 the now robust Lodi Irishman competed in his first ABC tournament. He brought no titles home, but his sparkling all-events total of 1839, for nine games, popped a lot of eyeballs among the kegler clique. Few first-timers had ever approached this kind of record.

And 1937 was the year Junie had to make his first innovation in style. He broke his second finger; it could no longer bear half the burden of the grip, so he was forced to adopt a three-finger hold on the ball. The three-finger grip worked so well so quickly that Junie was encouraged to make a further change. He had been reading up on the techniques of top bowlers, and it seemed to him that the majority of the winners were spot bowlers, as opposed to pin bowlers.

A pin bowler—a category including most beginners—is one who aims his ball directly at the pin or the pocket he wants to hit. A spot bowler aims at some point on the alley, some point over which his ball must pass in order to score a strike. The spot is chosen, of course, by trial and error. But once established, it affords the bowler a sharper and closer aiming point. A good bowler never changes the spot. For McMahon it's the eighth board from the right, at the division boards. If he finds a difference in alleys, he will change his approach to match the difference, not the spot he aims at.

All of which sounds elementary, sensible—and simple to execute. But it took young McMahon more than one season to convert his sights. He started his '37-'38 season with his eye on the boards instead of the pins, but it did not work at all the way it did with the experts. His average sagged. He began having more off nights than on. Reluctantly, he went back to pin bowling.

His average climbed back to its former degree. But that was hardly enough. Came season's end, the sandy overhang of the McMahon brow tensed in the





**Junie's follow-through is a thing of beautiful balance. Check this photo with tip 4 in box on the opposite page.**

He couldn't resist particularly watching one of them—a pert, black-eyed young lady he had never seen before. Nor could he resist introducing himself to her and giving her a few pointers on improving her timing.

Now, the script should read, “. . . and, fourteen years later, he's still giving pointers to the pert young lady.” They did get married, late that year, true enough. But today it is she—the former Helen Preston—who is giving him pointers.

“Helen,” Junie admits, “can analyze anybody's faults, if she watches him bowl a game, especially mine. If my game is off and I don't know why, I ask her to come watch me. Every time, she'll come up with the right answer. I consider her one of the country's best authorities on the sport.” She is, incidentally, a consistent 165 bowler herself, today.

With his wife in his corner, Junie really went about perfecting his game; his lifetime average climbed up from 200 to 210.

old, fierce concentration, as during the long hours in the church basement. All summer long, out of season, Junie rolled and rolled and rolled for strikes without looking at the tenpins. Along about the end of July, some 50,000 pins later, the strikes began to materialize, with a new regularity.

The just reward for such dogged practice should have been a perfect game in competition the next season. Instead, it turned out to be the only sanctioned 299 game Junie ever rolled. It happened one league night. He banged out nine straight strikes, then 10, then 11. Trouble was, the team captain thought the 11th was the 12th, and exultant was a mild word for him as he whooped it up, mainly all over the person of his star. By the time the rest of the team hauled him off Junie's back, Junie was not in ideal shape to roll. His timing off a fraction, he hit just off the 1-3 pocket, leaving the 4-pin standing, for a total of 299.

One night, waiting for an alley, he couldn't resist watching a couple of girls finish up a friendly match.

It was in 1947 that Helen and Junie decided it was time to go all-out for the big-time. “Big-time” in U.S. bowling today is most easily described by two words: Detroit and Chicago. Each city is a feverish capital of the tenpin sport. Each is home to hundreds of crack league teams; each sends many hundreds to top tournaments. First-rate bowlers from outside the two-city axis move to Detroit or Chicago, find jobs for themselves, and bring out their wives and children, just to be able to compete on first-rate teams.

In 1947 Junie flipped a coin, with Helen as witness. It came up heads—and that meant they were going to Chicago.

Chicago was the McMahon home base for the next six years—the biggest years yet for the husky hook-shot artist. Sharpened by the razor-sharp, high-scoring competition, and rolling on teams led by bowling greats like Joe Wilman and Paul Krumske, Junie zoomed straight to the top: first overwhelming the ABC contenders, then taking charge of the All-Star.

*(Continued on next page)*

It was after this first double feat that Junie was hired to tour for the Manhattan Bowling Ball Company. He and Helen piled their baggage into the car, and set off. For the better part of three years they kept the show on the road, driving well over 1,000 miles some weeks, averaging over 50,000 miles each year. Junie exhibited, demonstrated and instructed on every conceivable kind of alley. Sometimes they spent a whole week covering the alleys in one city; other days they covered three or four small towns between noon and midnight. Outside of bowlers their only contact with the human race seemed to be confined to small-hotel night clerks, short-order cooks and filling-station attendants.

It was, in short, a tour grueling enough to hollow the eyes of the most hardened trouper. But Junie loved it. He looks back on it as the opportunity of his lifetime.

"For the first time," he says, "I could live bowling around the clock. And the things I learned! When I started out, I was sure I knew every fine point of the game of bowling. Maybe I did—if I bowled every game of my life on the same alley. But I'll never forget the first time I stepped out on the runway in this little town south of Chicago, to demonstrate my strike ball. Man, I missed a mile. It was a holding alley, and my ball never did hook. Junie McMahon the great hook-shot expert! Ha! It hadn't occurred to me to find out about the condition of the alley until I started showing my stuff."

After that dismal baptism, Junie began to study the alleys he rolled on. The ingrained, automatic part of his bowling technique was the motion of his approach and the way he released the ball. It would be foolish to change any of that. So he began to learn how to vary the speed of his approach, the spot where he released the ball, and the speed of the ball. Eventually he found he could easily adjust his delivery to any kind of alley, fast or holding, if he took the trouble of wasting a few balls to test the alley.

### **Figuring a New Alley**

In tournament play, Junie finds no difficulty in gauging a strange alley, so long as he can watch a bowler he knows play the alley. After a few minutes of observing a familiar bowler, noting the adjustments he's made, Junie can go into action bowling his best from scratch, without wasting a ball, knowing exactly how to compensate for the alley's condition.

The exhibition tour paid dividends even after the first year. It was in 1951 that Junie cracked his own 10-year-average record of the ABC—a mark that still stands—and that same year he repeated with his second All-Star championship.

Inevitably, after the third year of barnstorming, the strain of travel and rootless living began to show. Junie wanted nothing now so much as to be in business for himself, and to enjoy again the comfort of living among old friends. In 1953 the McMahons

bid grateful good-bys to Chicago and came home to Jersey. Settling in Fair Lawn, Junie re-established himself as kingpin on four solid teams in the metropolitan area, and shortly got himself set up in business.

Until last October, a little frame building in East Paterson was headquarters—the McMahon Bowling Supply Company. That's where he was working, helping to drill an order of bowling balls, when the news came that he had been elected to the Bowling Hall of Fame. He decided it was time to aim his sights a little higher then, and last fall he entered in partnership with two other Jerseyites to open the spectacular new Paramus Alleys—a 24-bed, all-automatic establishment, one of the first to feature a "subway" ball return.

### **He Learns from Everybody**

Partner, Manager, Bowling Shop Proprietor, Junie has an office but he's not in it much. If you want to find the boss, the best place to look is out along the alleys. If he's not bowling or instructing, he's watching. Observation, as well as practice, is an endless habit with Junie. He watches beginners, so-so-bowlers, experts, and from them all he learns something in his lifelong concentration on improving his game.

And they all learn from Junie. His devotion to detail, to self-improvement, makes him a wonderful teacher. Patient, quiet-spoken, all business on the alleys, he invokes an instant confidence in anybody he talks to. Nowhere has this quality been better demonstrated than at the veterans' hospitals he manages to visit at least 20 times each year. Bowling is the most popular sport in these hospitals. They all have alleys, and many of the more active vets take their game seriously, and really appreciate having a teacher of McMahon's caliber. But these are not the ones that Junie remembers most vividly. "It's those other guys," he said recently, "the poor guys at the mental hospitals who hardly know what they're doing. But they love to roll a bowling ball at the pins, and every time they see me come for a visit, their faces light right up."

With his more fortunate pupils, Junie has some very positive things to say. "If you really want to improve your game," he will say at a group lesson, "you've got to resign yourself to a lot of hard work.

"I don't know how many years it took me to achieve my style of bowling. Maybe I still haven't achieved it. Only last year I found myself trying to shorten my hook a little, because it helps in present-day tournament bowling.

"As you learn, you see a good point here, a good point there, watching better bowlers. You try to incorporate some point into your style, to see if it fits. If it doesn't, you discard it. In the end you may think your game is just a mass of borrowed ideas, but what it adds up to is your personal style, since everything you've kept fits with your own

physique and the way you alone move most naturally.

"Two- or three-finger grip? Three, four or five steps in your delivery? Hook or curve or straight ball? Regulation or *bocci* [right-handed bowler ending up with right foot forward at the foul line] approach? Pin or spot bowling? Fast ball or slow? All I can say is—try 'em all for size. But don't give up on a new idea too soon. Remember, it took me one year and 50,000 practice pins to convert to spot bowling. And then it paid off."

Among the faults Junie sees most often among bowlers, these six seem to be the most common:

*Using improper equipment.* Particularly, bowling ball wrong weight for easy delivery, holes improperly drilled for natural finger grip. (The average woman should use a 14½ or 15-inch ball.)

*Not concentrating.* For many bowlers, especially beginners, self-consciousness and distractions keep the average down more than any other factor. Forget about other bowlers, says Junie. Let them bowl their own games. Forget about the crowd. Concentration takes practice like any other facet of the game. Just keep your mind on your alley, the pins you're going to spill, and the way you're going to do it.

*Not "grooved."* It takes time and a lot of practice to perfect your timing to where your approach is made automatically, leaving your mind and eye free to work full-time on accuracy. If you're not able to haunt the alleys the way Junie did when he was working on his game, you can do a lot at home to improve your timing. You can practice the coordination of arm and legs in the delivery motion—backswing to crouch and follow-through. Do it over and over, slowly at first to make sure every movement is synchronized, then repeat it at normal speed until it becomes automatic. Go a step further and swing

an object like a flatiron, to simulate a bowling ball. This is like learning a new dance step at home without a partner. It can be done.

*Running to foul line too fast.* Take it easy. Remember, speed really counts little in this game. It's timing and accuracy.

*Striding too long.* Don't stretch out your approach steps. Run up on the foul line naturally. Mincing steps aren't going to help either, but over-long strides will throw you even more off balance.

*Too high a backswing.* If you swing the ball too high behind you, you're obviously increasing the momentum of the ball. The ball is going to throw you, not the other way around. Remember: you've got to have complete control when the ball is in front of you, ready for release, in order to apply the proper turn to it.

"But all the analysis in the world won't mean anything," Junie adds, "unless you're crazy about bowling and are dead set on improving your average. If you don't think it's a great game, don't bother."

### It Doesn't Take Muscles

James E. McMahon, Jr., happens to think it's a great game. And some of the reasons are very personal. Like the matter of bowling and a man's size and strength. "Doesn't mean a thing whether you're a 'natural athlete' or not, as long as you have the knack of timing and a good eye. That doesn't take muscles. I happen to be big for a bowler—five-feet-eleven, 190 pounds—but most of your all-time stars have been small men. And I know what it means to guys who are too scrawny to take part in other sports. I only have to remember what I was like at 17, and how bowling saved my life.

"Some day," he went on, "maybe we'll get smart and make bowling available to kids even younger. What do you think happens to the boy who gets cut off the Little League squad because he's slow to mature, and can't throw hard enough? There's no reason why this kid shouldn't be able to bowl back some of the pride he lost.

"Another thing about this game. You haven't got to be a champ, or even a regular 175 bowler to get your kicks out of it. Even the best of us have off nights, get swamped by some beginner who's having himself a whale of a night."

This last statement was uttered by the tenpin master with a visible shudder. He was still—20 years later—dogged by the memory of the league night when he amassed the astonishing score of 129 pins in a game that was supposed to have put his team out in front.

However, a lot of McMahon-aimed hard rubber has demolished a lot of hard wood since that unhappy night. When the broad-shouldered tourist from Fair Lawn zips up his bags and joins the spring invasion of Rochester, there will be only one place to look for him. That will be out in front.

—BY ROWLAND BARBER

## Dollar Saver

WANT a cheap roller for your lawn? Take an empty 50-pound lard can and lid, and a piece of one-inch pipe that is five inches longer than the height of the can. Cut a hole the size of the pipe in the center of the bottom and the center of the lid. Place pipe upright in the can, running it two and a half inches through the bottom hole, then fill with good rich cement and reinforce with any pieces of wire or fencing at hand. Place lid on the can with two and a half inches of the pipe protruding through the hole in the lid, let the concrete set and dry thoroughly, put on a wooden handle and start rollin'.

LYMAN C. KEUPER  
Sedalia, Mo.

BLUEBOOK will pay \$5 for each "Dollar Saver" that is published, but none can be acknowledged or returned.

# THE WOLF

Continued from page 26

breeze, and Holliday had taken off his jacket. Once or twice he stopped, bracing himself against a stump, wiping his forehead with the back of his gun hand. Ferenc, looking back, instinctively dodged the careless line of fire. But he said nothing. The sergeant clamped his lips and toiled upward again.

The wind from the glacier blew stronger as the trees thinned. Holliday shivered and buttoned his jacket on again. "Tree line," he said. "There better be some chamois here, after all this."

"I hope so too," Ferenc said.

There were only rocks and scrub. They followed the blue trail daubs of the Club Alpino Italiano across the ledges and up the cirques. From far below, the wind carried the soft sounds of sheep. Far distant, the village suffocated in a haze of its own smoke. What kind of people could live in a place like that? People who would poison animals. Ferenc sighed. One day he would have to retire and sit down there, idling and breathing smoke. Perhaps then he would understand what made people like that. Far above, the electric blue ice of the glacier appeared. He looked at it wanly. His country; but without the wolf it would never seem the same.

"Here we leave the trail," he said.

HOLLIDAY slung his rifle, following Ferenc's example. They cat-walked up the smooth stone slabs into the wind. With each step the land fell out before them, peaks rising in the distance. "There," said Ferenc. "That's the first one."

"Where?" Holliday raised himself upright on the unsteady footing. "I can't see anything."

"Across the valley. In the shadow of the outcropping."

"I can't . . . Yes. I see him. He looks awfully small." Holliday unslipped the rifle from his shoulder. "That's one rough target." He felt around his pockets. "Even the light's against you here."

"What are you doing?"

"I'm going to take a shot, of course," the sergeant grinned. "Got to keep my promise to Rienna."

"The chamois is a thousand yards away. And you'd never get the pelt. It would take two days' climbing to get from here over to there."

"Two days?" The sergeant's face was wizened in disappointment.

"Yes. You would have to go all the way around the foot of the draw. And you'd never find the kill at that."

For a long moment Holliday looked across the

thousand yards to the little *brown* animal balanced precariously on its ledge. While he watched, the sun flickered on the brown skin. The animal dropped, as lightly as a bird, a dozen feet, skipped across to an outcropping, and vanished.

"Safe as in church," Holliday muttered. "And not a thing to do about it." His jaw set grimly. "Lead on. I want to get a shot."

"We'll have lunch," Ferenc said. "And then . . ." His head came up. Incredibly faint, incredibly distant: a wolf howl. His body stiffened, his mouth open, cocking his head to keep the roaring wind out of his ears. That sound, in daytime, could only be Guai. And he was still alive. For how long? The sound was not repeated. At length he stopped listening, letting his muscles sag from the tenseness which had gripped them. He looked at Holliday. The sergeant had heard nothing.

THEY ate some bread and cheese, drank a cup of wine, and climbed again. As his eyes searched the ledges where chamois might be, Ferenc listened. But there was only the wind, a stray bird, the swish of a small earthslide, the sheep, or some very distant sound of town activity, carried miles up to them by a quirk of air.

They toiled on up the backbone of the ridge. The sun hung serene in cloudless blue. A motionless hawk was part of neither earth nor sky. Holliday wiped his bloodshot eyes, glared upward at Ferenc and forced himself on again. They raised themselves to the first shoulder, and a second. There was only emptiness.

"It's difficult to get a shot this season." Only the wind. Nothing more . . . Arsenic. How proud they must be of killing a wolf with arsenic. . . .

"Sure, it's difficult. That's what you said before. That sun is swinging over. Let's go on."

The late afternoon was turning golden. The blue white ice of the glacier threw a black shadow across the moraine of the valley far below, a finger that climbed their ridge as the sun waned, moving upward from rock to bush, from ledge to crevice. Between the ridges were pools of shadow. The blue town haze far below seemed to boil up from a black lake. The glacier struck a frozen attitude against the sky, so sharp a contrast that it almost hurt. In the setting sun, the snow fields burned orange, framed with black rocks. The wind blasted against the ridge, tugging at their jackets and their jaws. At once they saw the chamois, speckling brown across the draw.

"There they are! There!" cried Holliday, unslinging the rifle and hurrying through his pockets for a shell.

"I saw them. It is as the other. It's no shooting. You'd never get the pelt."

"No shooting, nothing. I'm not going to beat my brains out up here and never get a shot." He brought a shell out of the field jacket and shoved it into the chamber, dropping to one knee. "It's no more than five hundred yards. They're sitting ducks."

"Don't fire. You'd never find the pelt again."

"Sure. I've got to get a shot anyway. You watch."

Ferenc strode forward on the rock, grabbed Holliday's gun-barrel and lifted it toward the sky. At the infinitesimal sound of the footsteps, 500 yards away, the chamois herd exploded like a flock of birds, drifting downward with fluid ease. They balanced for seconds on invisible fingerholds of rock, and disappeared around the protecting curve of the mountain.

Holliday had not pulled the trigger. Ferenc let the rifle go. Holliday shook the shell out of the chamber without looking at it, glaring at the mountaineer. "Why the devil did you do that?"

Ferenc looked down at him. "I am a official guide," he said quietly. "I hold the certificate of the Alpine Guides for High Mountain Hunters. It is against the rules to shoot game which cannot be recovered by the hunter. Our services are for hire by sportsmen. We will go down now."

HE turned his back and edged down the ridge, not looking back. The wind was blowing violently now. The sergeant would have all he could do to hold on. Ferenc really didn't care.

He continued moving until they dropped down behind the second shoulder. The blackness was creeping up the mountainside. It had reached the entrance to the high meadow. He would not be able to keep his promise to Balabeck to return before night. It was all right. Tonight there would be no Guai to ward off. Ferenc looked down at the distant lights coming on in the huddled village. His eyes narrowed.

Holliday flopped down beside him. He did not look at Ferenc but strained his eyes down toward the village. He took the package of cigarettes from his breast pocket. His hand debated for a moment and then he offered one. Ferenc took it, held it to the sergeant's lighter and exhaled, watching the smoke streak out in the wind. They smoked in silence. At length Ferenc stubbed his cigarette out very carefully against the barren rock. There was always the chance of fires down below. It was an automatic thing. Holliday followed suit, and as carefully.

The guide stood up and moved out. The mountain top was gaining its evening crown of blowing snow. He paused for a moment to watch. A whine, low and animal. He whirled. Holliday was nowhere in sight.

"Holliday?" Ferenc's voice was frightened.

"Over here, Ferenc. A wolf. I found a wolf."

"Yes. Wait. Don't do anything. Stand there. Don't move." In desperate haste, Ferenc backtracked, running over the rocks with dangerous speed.

"He's sick."

"I know he's sick. Don't touch that wolf, I tell you." Ferenc saw the top of Holliday's head above a scarfing of rock. He vaulted over it and dropped down into a shaded half cavern.

It was Guai. Ferenc had never been so close; but he knew it by instinct, by a thousand things he had learned about the wolf in seven years. The beast

lay shuddering, the heavy coat dull and glossless. The small eyes were fiercely red and his tail beat weakly against the ground in leaden, pain-ridden, thumps. Ferenc stopped. Guai lifted his great head slowly. The flesh lines of his mouth twitched. The teeth gleamed white in the dusk in a defiant snarl. The head fell back again.

"He's practically dead," Holliday said. He looked sidewise at Ferenc and then at his rifle.

"He was poisoned."

Holliday did not reply. He looked at Ferenc and back to the sickened animal, his eyes bright with admiration of the thick wild hair, the tremendous size. Ferenc did not say it. He stared back at Ferenc, his lips moving in wonder. He pulled the rifle part way to him, and then put it away again, still staring. Abruptly, with an effort, he turned. He climbed out of the cavern.

For a long moment Ferenc faced the vicious animal eyes, constantly watching. He slipped the matchlock off his shoulder. The animal twitched convulsively, jerking itself slightly forward. It lay still again, quivering. Ferenc checked the loading, and set the piece carefully at hand against a ledge. Always keeping his eye on the wolf, he slipped the rucksack from his shoulders and reached inside. Carefully, and with all his strength, he seized the animal by the loose skin of his throat.

Guai rose to fight but there was no strength. The snapping of his jaw was only reflex. In a moment he quieted, only the hating eyes raging in his skull.

"Guai," Ferenc said, "you have robbed me for seven years. Tracks on the snow. Howl in the night. Silhouette on the ridge. You have stolen half my increase. What a poor thing you've become." The wolf showed its teeth weakly. "Here, damn you." Ferenc shoved the leather cognac flask into the red mouth, fighting down the convulsive shudders as Guai swallowed the massive dose of brandy.

"What are you doing, Ferenc?" Holliday leaned over the scarfing.

"He's drinking a whole flask, the pig," Ferenc replied. "He will throw it up and get well. He must get well. We have some business to attend to. But it must be proper."

HOLLIDAY's eyes widened in something like understanding. He pursed his lips as Ferenc stood away from the wolf, put the empty flask into his rucksack and climbed out.

"Ferenc," the sergeant said at last, "I'd like to come back. For bear or wolf and for you to guide."

Ferenc paused on the downward trail to listen. Guai was sick. He grinned; Guai was going to be hellish sick. But more than that, this sergeant understood. Perhaps others could learn to understand too. "Yes, Bill," he said. "Our services are for hire by you sportsmen."

He saw the sergeant's pleasure and turned again to the trail. "All right," he muttered to himself. "Now we begin once more." —BY NOEL CLAD

## ESV Will Make Your Life Better

Continued from page 19

Dr. Pierce has suggested the use of solar batteries to power ESV radio relay stations for long periods. The relay unit would thus be self-sustaining. Not only that, it would save telephone subscribers a fortune in the price of long-distance tolls and also make possible the opening up of telephonic communications with farflung places, where the cost of laying cables and stringing wires is now prohibitive because of distance, inaccessibility and the low number of calls.

He makes these savings graphically clear by using as an example the \$35 millions spent recently to complete a 36-channel two-way cable across the Atlantic Ocean. "Would a channel 30 times as wide," he asks, "which would accommodate 1,080 phone conversations or one television signal, be worth 30 times 35 million dollars—that is, a billion dollars? . . . The idea is of course absurd."

Dr. Pierce's plan is much cheaper and simpler. He would have metal spheres—similar to Dr. Levitt's Beacon—of 1,000 feet in diameter orbiting at 22,000 miles out from the earth. A TV or radio-telephonic impulse beamed against these spheres would be scattered in all directions over the earth, to be picked up by receiving stations at any point. The spheres would be fixed. They would hover over the equator at strategic points, since their orbital velocity would be identical with the speed of our planet's spinning. Four of them would take care of worldwide television or telephone communications.

Since there would be quite a power loss at this distance, Dr. Pierce has also suggested the use of 100-foot-diameter spheres revolving in a 2,200-mile orbit. Many more of these would be needed in a variety of orbit-paths (see page 19)—from the polar, through the equatorial and ecliptic—but they would be cheaper.

Still another suggestion of his is the use of parabolic mirrors with electronic boosters. The mirrors could be made of wire or foil but would require subsidiary equipment. When they caught the TV or radio beam from earth, they would build up the power impulse before transmitting it to selected locations on the earth's surface. Both metal spheres and mirrors may be tried out—either singly or in combination.

Dr. Pierce once told a rocket-propulsion acquaintance of his from White Sands Proving Ground that Bell Telephone Company could save \$500 million in long-lines maintenance alone during the first few

years of using orbital relay stations. And reliability would be increased immeasurably: There would no longer be a dependence on the whims of weather. World-wide coverage of the news could be visual and simultaneous. A TV news cameraman anywhere on earth could immediately have his signals relayed into all the living rooms of the world. Today, TV programs from overseas have to be made on film and airmailed to the U.S.

If radio power can be beamed, picked up in space and focused back to earth, so can electrical power. Even more interesting is the possibility of generating electrical power in space by using the sun's heat to create steam that will operate huge generators at orbiting power stations. These power-building space stations would then beam the electricity to relay stations in other orbits, which in turn would focus the power to selected points below. The whole thing would be exceedingly cheap, since solar energy is free and there would be no need for ultra-costly transmission lines. Both industry and the homeowner would profit.

People could live where they willed. Factories and mills would not have to settle beside rivers or other sources basic to the generation of power. In-



**Dr. John Pierce, electronics research head of Bell Telephone Lab, who states ESV will save a half billion on upkeep of long lines alone in first few years.**

dustry could be decentralized, with a subsequent improvement in living conditions all around.

George Trimble, Jr., vice-president in charge of engineering at the Glenn L. Martin Company, doesn't think the idea fantastic at all. "It should certainly be possible to broadcast electrical power," he says. "We don't know how to do it now—but we'll find out!"

## 2. ESV AND MEDICINE

ESV may lead to the elimination of all disease.

There are reasons to believe that cancer, premature aging, sterility, gray hair, even baldness and other mysterious ailments of the human race may be caused by radiations from outer space that reach the earth in a diluted form.

A Nobel Prize-winning chemophysicist holds that epidemics and plagues originate in outer space; that micro-organisms which can live in a suspended state in the absolute cold and vacuum of space are left behind as

planets and solar systems move through the universe, and that these organisms are then picked up by other planets sweeping through that same area of space perhaps centuries or aeons later.

ESV can verify or disprove these theories and, if they're correct, can even provide the means for shielding the earth from such extra-terrestrial attacks.

ESV may also provide medical sanatoriums and clinics of fantastic efficacy, in which the success of extremely complicated and delicate surgical operations would become routine.

WHEN THE U. S. Air Force sent mice, guinea pigs, hamsters and other small animals aloft in huge Moby Dick balloons for as long as three days, interesting results were noted. For one thing, the hair of black mice turned gray in streaks some months after they were brought back from the stratosphere.

These gray streaks followed a pattern that indicated a heavy cosmic ray plowed at many thousands of miles per second through the animal's skin, destroying the hair follicles.

Some of the tiny mammals showed severe burns, others indicated brain damage. Still others seemed to escape unharmed.

During the balloon tests, these animals had reached an altitude only half that of the 40-mile height to which rocket-borne mice and monkeys had been sent. The latter, after the four-minute ride, had shown no damage whatsoever. The conclusion was that the length of exposure to cosmic rays was a determining factor.

All this has been part of an Air Force research program called "Physiology of Rocket Flight," in progress since 1948. Long before an ESV project was announced, Air Force medical researchers had been experimenting with methods for keeping animals alive and healthy in space. They were hoping for the eventual development of an ESV, in which animals could ride outside the atmosphere for long periods. This would be the only way that they could accurately find out the effects of weightlessness and cosmic radiation on animals.

So the know-how has long been available for keeping animals alive in an ESV. When Dr. Singer's MOUSE gets under way it will have more than a

psychological basis for its name: a few of its warm-blooded namesakes will be orbiting with it.

They will be followed by larger rodents and finally by monkeys. All these animals will be pioneering heroes on behalf of the human race. Instruments in whirling satellites will record and transmit to earth the rate of their heartbeat, variations of blood pressure, reactions of nerves and brain and rates of respiration.

It should be mentioned here that although X-radiation is considerably milder than cosmic radiation, a tremendous (if unknown) quantity of it is sent from the sun to strike the earth's atmosphere.

Bursts of magnetic violence on the solar surface also encourage an increased amount of cosmic rays to slash through the earth's magnetic field. Dr. Fred Singer<sup>2</sup> has been fitting tiny Geiger counters into the nose cones of small armament rockets and sending them up through the stratosphere. The low-cost rockets, called Rockairs, have radioed back strange data: often, when there is a bright solar flare-up<sup>3</sup> of incandescent gases, there is also "a sudden increase all over the earth in the intensity of cosmic radiation," according to Dr. Singer.

Minutes-brief though their flight into thinner atmosphere may be, the Rockairs have already delivered some revolutionary knowledge. Dr. Singer has found that certain cosmic-ray impacts produce a complete change in the nucleus of an atom. This is unlike straight atomic actions, in which a flashing cosmic ray might strike an atom with a glancing blow and jolt an electron out of its orbit. When a cosmic projectile stabs through a nucleus, the very heart of an atom, it completely destroys that nucleus.

To put it bluntly: primary cosmic rays kill the

living cell, thereby threatening to upset cellular balance. Cancer is a form of cellular unbalance.

There is a strong suspicion today among many medical researchers that cancer may be triggered by cosmic radiation.

This suspicion is supported by statistical facts. Cancer is almost unknown in the tropics. Most of its victims are found in the temperate and northern zones. High blood pressure is also rare around the equator. The heart (and thus the blood-flow) is profoundly affected, by radiation. Cosmic radiation is at a minimum in the tropics; it increases in intensity with each degree of northern latitude.

Scientists now believe that the earth's magnetic field acts as a huge screen to deflect cosmic energy particles. At the poles, where the earth's magnetic pull is strongest, the effectiveness of the magnetic field is weakest. The lines of magnetic force loop out in all directions between the poles like a shield to ward off the cosmic rays. At the poles, where the "shield" is both weakest and closest to the earth, more particles are able to get through.

There is no absolute proof as yet that the violent cosmic energies are the triggering cause of cancer and other diseases. No proof exists because no atom-smasher on earth can reproduce the multibillion electron-volt energies of the heavy cosmic ray primaries. The only laboratory in which these mysterious rays

eventually reveal, through its very pureness, the manner in which cells are attacked by cosmic rays, X-rays, Beta, Gamma and all other rays. This will be one of the greatest discoveries in preventative medicine. Once the mechanism of cellular damage or death is understood, ways can be developed both to combat and treat the situation.

In this respect, Andrew Haley of the American Rocket Society sees no reason why we could not find a way to turn away from the earth all damaging radiation of outer space. "If we need a specially charged magnetic grid around the earth, we can have it. It may take the form of gigantic grids orbiting as satellites. It may even be done from the earth's surface, like a radar screen or network. Sure, it would be a bit of a job. But look at it this way. Take a guy in a canoe. His mind is conditioned to canoes—they're useful to his way of life, he's designed them, built them, practically lived in them. How could he conceive of the SS *United States*, if someone were to propose a luxury liner like that to him for the first time? How could an amoeba ever conceive of the earth as a rabbit sees it? Or how could the rabbit see it as we do?

"Anything is possible in this age of nuclear physics and rocketry. If we know the problem—we can solve it! I personally feel that one of the great justifications for the artificial Earth satellite program is its promise for medicine."

Mr. Haley is so right. One value of *ESV* that no scientist would now question is its importance in defining the nature of weather and providing an accurate means for long-range weather predictions—and this ties in directly with medicine.

An example that comes immediately to mind is the benefit to surgeons. No weatherman today can precisely predict the atmospheric pressure 24 hours hence, but before an operation, a surgeon must know the condition of atmospheric pressure. The comfort of a patient—and sometimes his or her life—depends on it.

"The immediate effect of weather on the human body, as reflected by biochemical changes, often proves entirely too much for a seriously sick person," writes Dr. Noah D. Fabricant in an official periodical of the American Medical Association.

Quite literally, then, your life depends on *ESV*. For the earth satellite vehicle not only will explain and combat various disease-inspiring radiations from the void, it will also take the guesswork out of weather forecasting. Weather fluctuations, normally unpredictable beyond a few hours, will be determined down to the minute. Surgeons will be able to schedule their operations with accuracy and even emergency operations—depending upon how critical they are—may be put off for a half-hour to several hours to a day in order to take advantage of maximum safety re surgery conditions. In addition, those who are seriously ill can be carefully watched by their physicians—who, if they consult *ESV* weather schedules, can know weeks or months in advance when adverse situations will arrive for their patients.



**George Trimble, Jr., engineering veep of Glenn Martin Co., which will make rocket for MOUSE. In previous job at Martin, Trimble instituted research into control of gravity for propulsion. Progress in this is secret, but success could make obsolete all other kinds of motive power.**

may be analyzed and tested in their pure state on living tissue is an *ESV*. Reaction of mice to the undisturbed violence of radiation in space should



**An Army tracking telescope in the mountains above White Sands, N. M. Such telescopes will be used to observe the flight actions of the first ESV's.**

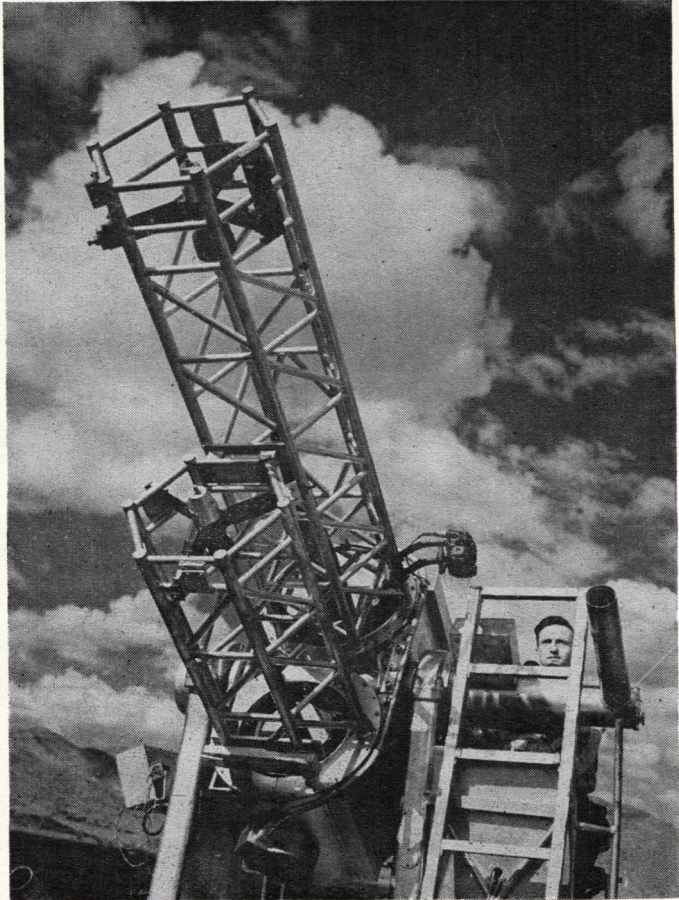
Yet in the relative sense, these things are all minor advantages of ESV. The biggest medical advantage may appear like science-fiction to the reader. (At this point it would be wise to remember Andy Haley's remark about canoes, amoebas, rabbits and men.) The Earth Satellite Vehicle can lead not only to medical research laboratories revolving in space with mice as subjects, but it can also develop into orbiting sanatoriums, clinics and manned laboratories.

Such possibilities were suggested to the author by John Shesta, a pioneer rocket man and one of the founders of Reaction Motors, Inc., the first American rocket manufacturer. "When you put a vehicle into an orbit," he said, "gravity is canceled by centrifugal force. The body is balanced in between. There are no forces pulling on it. This would be an excellent situation for the treatment of serious medical cases. The load on the heart would be inconsiderable and would have a chance to strengthen and even repair itself without complications. Obviously the heart would be doing much less work at all times, since blood would be weightless.

"Surgeons could operate on the heart with little danger. They could also observe a heart damaged by normal earth conditions and discover reasons for the damage. Shock sometimes caused by extremely complicated or delicate operations would be lessened and recovery become routine."

But how about the strain imposed on a patient by rocketing him up to board the satellite in its far-flung orbit? It would not be impossibly dangerous by any means. Engineers know how to control the acceleration of a rocket.

As for manned medical-research laboratories in space, their value is inestimable. The very nature—or, as scientists put it, the mechanism—of life may be revealed. But if nothing else, the opportunity to study various bacteria under unique conditions would be well worth-while. Germ cultures could be observed in the cold and airless void. Their rate of growth, of reproduction, their responses to the raw light and radiations of space might supply answers that not



only explain why they have an affinity for human blood or tissue but also lead to methods for the effective destruction of specific micro-organisms.

Nobody really knows how life got started or where bacteria come from. No one can explain those incomplete plants and bacilli known as parasites which suck the life from other living things in order to exist themselves. For all that anybody knows, these apparently contradictory, almost self-defeating life-forms could have germinated in distant parts of the universe.

If this, too, seems a fantastic concept, the attitude of Dr. Martynas Ycas nevertheless unwittingly lends it an authoritative support. He says that life as we know it could be "a common event" throughout the great star systems of space. Dr. Ycas, a research scientist at the Quartermaster Research and Development Center of the Army in Massachusetts, believes—as do many astronomers—that numberless planets like the Earth must be revolving about distant suns, some of them so distant that our biggest telescopes



**Dr. Fred Singer, MOUSE inventor, with a Rockair rocket and the tiny unit—consisting of a Geiger tube, a sound amplifier, a radio transmitter, and a power supply of 900 volts—which the physicist designed to fit into the  $2\frac{3}{4}$ -inch diameter of the Rockair's nose cone.**

cannot find them. He feels that our atmosphere was once poisonous, filled with methane and ammonia gases as is Jupiter's, and that by a process of chemical interaction with the sea it was reduced to its present oxidizing state that supports life. He also feels that life developed out of these big chemical changes. From Dr. Ycas' point of view, therefore, life is a local phenomenon that is achieved locally all over the universe.

The great Swedish chemo-physicist Svante August Arrhenius also believed that life existed everywhere—but he could not believe that it was local. He held that life-spores could travel through space.

His attitude cannot be taken lightly. He was one of the earliest winners of the Nobel Prize—for his revolutionary theory of ionization. He was the first director of the Nobel Institute for Physical Research in Stockholm from 1904 to 1927, when ill-health forced him to resign. From the age of 22 through his 43rd year he was ridiculed by many of the noted scientists who were his contemporaries. Among those that scorned him were Lord Kelvin, world-famous mathematician and physicist, and Dmitri Ivanovich Mendelyeev, propounder of the great Periodic Law of the elements. They thought his ionization theory was a crackpot fantasy. Today the theory forms a basic foundation of all chemistry. Tomorrow Arrhenius' theory of life-spores may transform the whole science of biology. But only an ESV will be able to verify the theory.

It is called panspermy. Briefly and simply, it contends that micro-organisms can live in space and that they can be propelled by the almost infinitesimal pressure of light. Arrhenius, even at the height of fame, was criticized for this. Many scientists claimed that nothing could live in the cold vacuum of space. Svante Arrhenius promptly disproved the claim by having bacteria submerged into liquid helium, which closely approaches absolute zero, or the condition of cold found in space (about 500 degrees below zero Fahrenheit). The bacteria survived.

Arrhenius had earlier calculated mathematically the maximum size for a particle of matter that could be pushed by the energy of a wave of light. He discovered that both the size and weight limits matched those of bacteria.

He even estimated the time it would take for corpuscles of light to nudge a bacillus to Earth from Mars (three weeks) and from the nearest star, Alpha Centauri (9,000 years).

Meanwhile, if his theory is correct, space must be teeming with micro-organisms of all kinds—since the current opinion of astronomers is, that there must be millions, even countless numbers, of life-bearing planets in the Universe. Any or all of these could leave a trail of spores as they move through the void. Our own sun carries its planets with it through space at a thousand miles an hour. Some of the spores would no doubt perish, as Arrhenius himself pointed out, when they were drawn into the flaming heat of a star by its mighty gravity pull. Others would move aimlessly in a suspended state for months, years, centuries or aeons—until they settled upon or were swept up by a planet with the ideal conditions for their awakening.

Thus did Dr. Svante Arrhenius explain the apparently spontaneous generation of life on Earth originally. His theory could also explain the mysterious appearance of plagues from century to century.

If the theory is proved by an ESV laboratory, then ways might be found to shield the Earth from further invasions of harmful bacteria. When this happened it would be but a short step to the elimination of all disease.

### 3. ESV AND TRAVEL SAFETY

Radar equipment on space stations can scan the earth to report continuously on moving areas of extreme turbulence through levels of the lower atmosphere.

This information, in addition to data on the origin, movement and violence of storms, can be relayed automati-

cally to electronic brains at key aircraft control stations. Airplanes can then be scheduled for absolute safety of flight, anywhere in the world.

Trains, buses, ocean liners will benefit equally. No one will be caught unexpectedly in a blizzard, sleet storm, hurricane or flood.

**I**N THIS age of high-speed flight, even a gentle rain can be dangerous. Its droplets when met by an airplane traveling at 500 mph strike at metal with the impact of a high-powered bullet. Within a few minutes the protective coating on an aircraft's leading edge will be disintegrated, affecting the airflow over the wings. Loss of control and a crash may result.

Today, there is no protective coating that can resist the hardness of rain caused by high speeds. But already several major airlines have ordered passenger-carrying turbojet transports that will cruise at 500 miles an hour.

These jet airliners should be in full operation by 1960. Some of them may be operating on regularly scheduled flights by early 1957—practically tomorrow. The Boeing 707 and Douglas DC-8 will be good reliable aircraft. They will take people places in a bigger hurry and with more comfort than ever before. But their speed will add one more weather hazard to commercial flight.

"When planes flew as slowly as 350 miles an hour, there was no rain problem at all," says Dr. Walter Soller, Director of the University of Cincinnati's Applied Science Research Laboratory. "Hostile planes are a jet's first enemy," he continues, referring to Navy fighters, "but rain is now a close second."

Dr. Soller's Laboratory is carrying on an intensive research program for the Navy to develop a special coating that will be impervious to rain. Flying through the salty air over oceans, where Naval aircraft and overseas airlines operate, requires protective coatings on the exposed surfaces of airplanes. Normally, in the slower-flying past, these coatings resisted the corrosive effects of salt. But now, Dr. Soller says, at any speed upwards from 500 mph, "in three and a half minutes" a rainfall can destroy present coatings. Although all jet aircraft can and do cruise above the weather, they must also take off and land—at high speeds. Accurate information on rainstorms is therefore a safety "must."

Long-range forecasts by ESV will make flight-scheduling a simple procedure throughout the world.

No high-speed jet will be forced to travel hundreds of miles away from its planned destination, using up precious fuel to land safely at an alternate airport because of an unexpected thundershower.

The ordinary hazards of rapidly developing heavy storms and the sudden appearance of high turbulence—which affect all aircraft, slow or fast—will also be avoided by ESV. Today, the major airlines are installing radar storm-warning systems in their biggest airliners. Such a system can "see" turbulence for from 50 to 200 miles ahead, permitting the pilots to fly around the disturbed areas. Installation costs of these systems run to nearly \$50,000 per unit.

Orbiting ESV radar storm patrols could simplify things by transmitting continuous beacon signals to pilots, wherever their aircraft may be. A series of coded signals—similar to the air-lane radio-beacon signals now used to guide flyers—can be devised to indicate weather situations ranging from calm and clear to various degrees of storm. These signals, radioed from traveling satellites, could give pilots information on the movement and location of storms as well as on their intensity.

All forms of transportation are affected by the weather. This even includes subways. Icy streets can totally halt surface traffic and cause a tremendous increase of subway riders—to a point where the already much overcrowded subways in cities like New York and Paris are almost unable to cope with the emergency condition. Weather warnings far in advance would permit the hiring of temporary additional help and the placing of more equipment in operation on specific days. The long-range alerts would also prepare millions of employers, who could arrange a stagger-system of employee-hours for the work-day in order to prevent complete transportation chaos in one transit system.

Workers who drive their own cars to the office will profit in many ways from ESV's extended weather reports. Apart from the obvious dangers that could be avoided, such as being caught in blizzards and sleet storms, there are several others that

the average person rarely considers. One of these can best be pointed up by a little story.

Edward L. A. Wagner, a commercial weatherman who supplies forecasts to individuals as well as to companies, was hired by a New Jersey man last spring to gather evidence for a strange case. The man had been injured in an accident while driving home and his automobile was severely damaged—but his insurance company refused to reimburse him. He claimed that he had skidded into a pole because of a sudden snowstorm. His policy covered this type of accident, but the insurance company's counterclaim was simply that it had not snowed in New Jersey for weeks. Weatherman Wagner started off on what appeared to be a hopeless investigation.

Wagner got in touch with volunteer weather observers of the area—the U.S. Weather Bureau encourages people in rural districts to volunteer for such work. He studied their observation reports for the period surrounding and including the time of the accident. He also checked the official forecasts for the area. No snow was predicted at any time. But by piecing together information on winds, temperatures at various altitudes and the nature of cloud formations, he was able to prove that his client was absolutely correct.

"We determined beyond a doubt," says Wagner, "that there had been snow flurries through a small region, including the street where my client had skidded out of control. The flurries had occurred earlier in the afternoon and had left the pavement slippery enough to create skidding conditions."

Such freaks of weather can be calculated by an electronic brain—after the ESV has been in operation long enough to supply it with a wide background of weather conditions peculiar to specific locales.

In another insurance case, Wagner won his client almost a quarter-million dollars. It was a maritime suit, involving a seaman who was seriously injured on the deck of a merchant ship. The shipping company was sued on the basis of the captain's negligence. The seaman's claim was that the roughness of the ocean made topside work hazardous. Again, the company refused to pay damages. But Wagner supplied enough evidence in court to win the case.

"Our meteorologists obtained a log of the ship, calculated its location at the time of the accident, consulted with various oceanographers and were able to pin-point the barometric pressure and other weather conditions. All of this proved that the weather was dangerous to shipping."

Such detective work, however it may have helped the seaman win his case, can not prevent a person from being injured. The ship should not have been plying dangerous waters. The entire crew, cargo and vessel itself could have been damaged or even lost. Accurate information on weather conditions throughout all areas of an ocean would warn a skipper far enough ahead to allow a safe change of course. Boats move much more slowly than aircraft and thus require weather-warnings much longer in advance.

The advantage of long-range, reliable weather data to the small boat owner is quite apparent.

But there are still other ways in which an artificial earth satellite vehicle can take the uncertainty out of travel. It's common scientific knowledge that magnetic storms on the sun cause fluctuations in the earth's magnetic field. These fluctuations in turn cause deviations in the accuracy of compasses and blackouts of radio communications. The compass and the radio are lifesaving instruments to the aircraft pilot and captain of a boat. Here are a few instances of proof.

In early 1955, a DC-3 airliner leased from a non-scheduled carrier by the Army was ditched in a river just below Pittsburgh, Pennsylvania. Of the 23 persons aboard, only 10 survived. The plane had exhausted its fuel supply in the comparatively short flight from Newark, New Jersey. One of the reasons was lack of enough emergency fuel. But the main reason was that the pilot got lost. He thought that he was communicating by radio with the Pittsburgh control tower when he was actually talking with the tower in Johnstown, some 60 miles away. Apparently he also confused the Conemaugh River with the Monongahela.

In the past, during periods of solar disturbances, Air Force pilots have noticed a compass discrepancy of one degree for every hundred miles of flight. Fortunately, these flyers were carrying a sufficient supply of reserve fuel.

At sea, the situation can be equally serious. Ships could go off course sufficiently to run aground on a rocky coast, ram into another ship in a fog or miss a port entirely.

During the winter of 1957-58, disturbances on the Sun will be at their maximum. Every 11 years, the sunspots reach a peak and then subside. But strange things happen to radios and compasses for a few years while the solar magnetic storms build up, peak and fall off. Mobile radio units particularly are affected. Police radio systems, aircraft and ship owners are already being warned by the Federal Communications Commission to have emergency wave lengths available.

The fadeout and blackout of radio communications often lasts for several hours. This is anathema to pilots, who depend on their radio compasses as well as their magnetic ones. Equally disconcerting is the acrobatic transposition of signals caused by solar storms. A police squad car in New York may find the local signal blanketed out by transmissions from a radio station in London.

ESV can overcome these difficulties. First, by analyzing and explaining the connection between solar eruptions and conditions on Earth, so that something may be done about it. Secondly, by acting as a microwave orbital relay, radio communications can be controlled between specific points on earth—since a microwave is aimed like a searchlight beam and should not be seriously disturbed by conditions in the upper atmosphere.

## 4. ESV WILL REDUCE FOOD PRICES

Farmers throughout the world can be informed accurately of weather formations—the future possibilities for development of hurricanes, tornadoes and floods, the length and intensity of forthcoming dry and wet seasons—and they can plant their crops accordingly.

The transportation of food to market—by truck, freight train or shipping—can be planned on a basis where-

by spoilage due to delays would be eliminated. There will be no food shortages due to unforeseen meteorological conditions. Prices can be maintained at a standard level. Fresher and cheaper food will result.

Eventual *control* of the weather will make agriculture foolproof and favorably affect all other aspects of modern living.

**H**ERE ARE A FEW THINGS that could cause the price of meats, fruits and vegetables to rise sharply next year: a plague of grasshoppers, a widespread onslaught of cutworms, burned-out pastures, pear-blight or any one of a number of plant blights, accidental death of cattle, dried-up streams and forest fires.

Diverse as these causes may appear, they have a single thing in common: each is normally the result of weather.

High dry seasons bring together hordes of grasshoppers in a search for food, and sweeping winds determine their direction of travel to a large extent. Also helped by the wind as well as by humidity are cutworms—the naked larvae of a big family of moths. They can destroy whole farming areas sown with corn, cabbage and a variety of leafy vegetables. Once corn is destroyed, the food supply of poultry, hogs and other livestock is seriously impaired.

Burned-out pastures, dried-up streams, and forest fires also are the result of intense dry spells. Cattle suffer because of the first two situations. Destructive floods can result from forest fires in certain regions. The roots of living trees absorb a considerable amount of water, even during a long period of heavy rains. This prevents the ground from becoming waterlogged to the point where it rejects the absorption of more water—a major reason for floods.

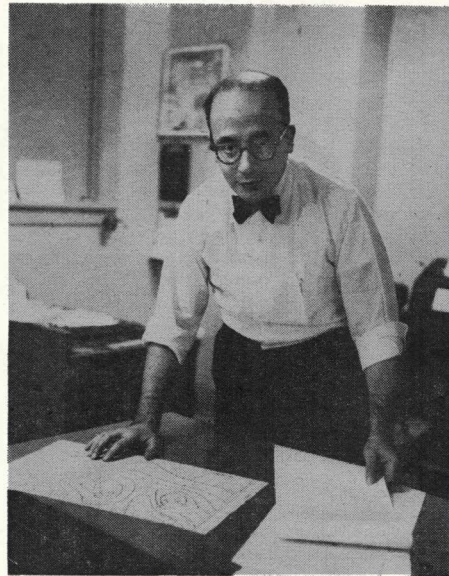
Electrical storms often kill off cattle when the animals huddle under trees struck by lightning.

Plant blights, a common nightmare of both the fruit and vegetable farmer, are the result of bacteria carried by insects or are caused directly by the insects themselves. Again, *wirls* and rains and droughts produce a multiplication of insects.

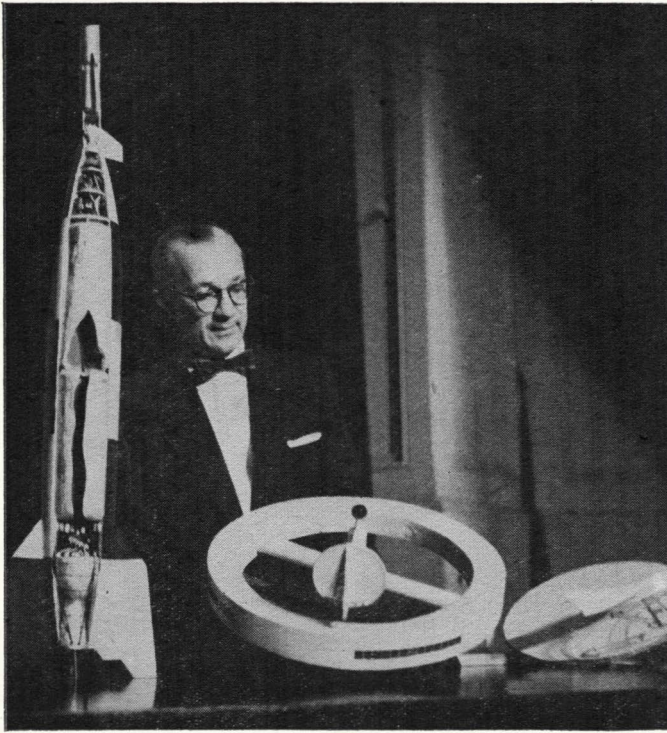
These are some of the *indirect* ways in which weather attacks the farmer and thus affects the consumer in two places that hurt most: his stomach and his pocketbook.

A complete listing of more *direct* ways of attack is almost impossible. Frost, hail, hurricanes, tornadoes, sleet, blizzards out of season, dust storms, sand storms, excessive cloudiness, long spells of dampness from rains—the list is huge.

Almost everybody has heard of the unpleasant living conditions produced by smudge pots in California and Florida. Not only do they make normal breathing and visibility difficult but they also ruin clothing. Designed to protect citrus trees from sud-



Weatherman Arthur Martinez. ESV, he has said, can disperse storm systems.



**Dr. I. M. Levitt, director of the Fels Planetarium and the inventor of the Beacon, looks over models of a space platform and a three-stage rocket.**

In this sense, ESV will be a great promoter of proper nutrition and economic solvency for everybody.

But it can also revolutionize agriculture by taking all the uncertainty out of planting and caring for crops. The fact is, ESV will eventually be able to create weather on order.

Huge flat mirrors of bright metallic foil could be established in orbits to flood a particular section of the world with extra sunlight. (BLUEBOOK's cover painting shows one such.) If the mirrors are placed over the equator at an altitude of 22,000 miles and made to rotate with the earth, they would always hang in the same position. Four of them could be placed strategically around the girth of the globe to supply heat energy wherever it was needed on earth.

The mirrors could be shaped as squares or rectangles, since there is no air resistance in outer space. They would have to be gigantic. According to physical laws, to supply twice the normal solar energy for a given area they would have to be exactly as large as that area. In other words, to keep Southern California free of frosts, a mirror's surface must be just as broad and long as the land surface upon which it is reflecting extra sunlight.

The mirrors could also be used as a kind of stationary energy source, from which sunlight could be drawn as needed by smaller mirrors rotating in orbits closer to the earth. The smaller mirrors could be bowl-shaped to focus this energy and thus concentrate it over a local land area. At least two of the big flat mirrors would always be outside the earth's shadow, making possible a continuous source of solar heat.

The system could relay light waves, including the high-heat-energy infra-red waves, from orbit to orbit.

Depending on the size and concavity of the smaller mirrors, the solar energy could be varied in intensity. Temperature as we know it on earth does not exist in space. A body warms up because radiation creates molecular action in it. Between the body and the source of energy-radiation there is a negligible

den frost, they are cans filled with burning oil, the warm heavy smoke of which carries heat up through the tree-branches. It also settles over the ground and provides warmth to protect the roots.

But if the smudge pots aren't used, the prices of limes, lemons and oranges go soaring. And the average citrus-fruit grower winds up in the red.

Mute testimony of nature's discouragement of the Southern California citrus farmer is the unbelievable number of abandoned orange and grapefruit groves that can be seen while traveling along the highways within a 100-mile radius of Los Angeles. Unkempt and overgrown, each tree is laden with fruit in various states of health—over-ripe, rotting and frozen dead against a mockery of sprouting white buds and greenly developing spheres. Spotting the countryside, the trees present a tragic sight to the tourist. It is even more tragic to the natives. The unfamiliar tourist can at least alleviate his sorrow by admiring the blue, snow-topped mountain peaks in the background—if he can see them through the smog.

Advance warning of frosts and other destructive weather conditions will go far toward saving the citrus situation as well as alleviating the anxiety of vegetable, dairy and poultry farmers everywhere. It will also save a large piece of income for you and me.

resistance, if any at all. Thus solar energy could be beamed back and forth across the skies without much loss.

All the orbiting mirrors, the giant ones included, could be maneuvered within their orbits. A set of heavy but small gyroscopic flywheels in a box attached to the mirrors at their centers of balance could tilt and turn them in relationship to each other. The gyroscopes could be switched on or off by microwave radio waves beamed from the earth. By angling the mirrors in the right way, a greater or lesser concentration of sunlight could be flooded over a chosen land area. Eventually, it should be possible to pinpoint a single acre in this way.

No human operator would ever be able to make the necessary calculations fast enough to be effective—next year's frosts or hurricanes would probably have arrived before he could aim the mirrors against this year's. So an electronic brain will be required. The entire system should be automatic. Weather-patrol satellites could locate and track the movement of warm and cold fronts. Developing conditions of storm, drought or frost could be evaluated quickly by big electronic computers on the ground, which would be receiving a steady flow of ESV-transmitted information. Almost simultaneously the computer could be selecting the proper mirror-relationships through different orbits and guide the mirrors to break up the growing adverse weather.

This, of course, is something for the future. The weather, in its more violent moods, makes man's most grandiose efforts to cope with it seem puny. More immediately, the mirrors can be used in a simpler way to warm up frost-threatened areas before the frost settles, and to nudge violent storms away from populated areas.

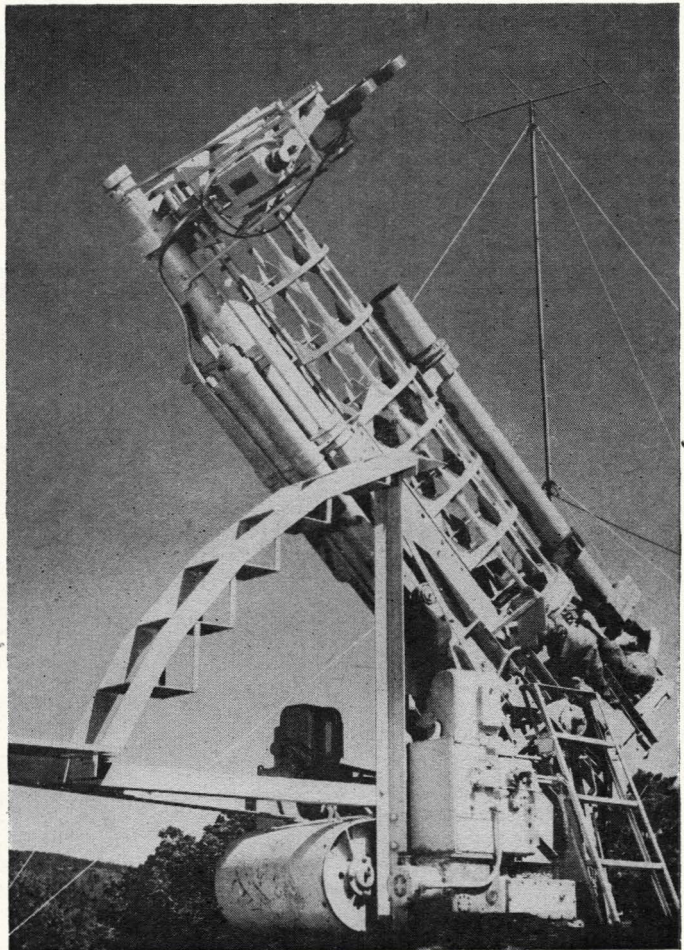
And obviously the proper manipulation of the solar mirrors which operators will eventually have down to an expert technique, can bring rain to dry regions and stop rain in wet areas.

Jerome Namias, one of the top U.S. Weather Bureau experts has made a study of jet streams as

part of his work. These are great currents of fast-moving winds that encircle the world. They speed along at anywhere from 50 to 250 miles an hour in a range of altitudes from 10,000 to 40,000 feet. Namias believes that jet streams are created when warm air coming up from the tropics clashes violently with cold, dense air rolling down from the Arctic Circle. After the jet stream is formed, it follows a hemisphere-circling pattern from west to east and may clash with other great masses of air. If a warm front should decide to be temperamental—a few have, on occasion—and travel westward, it would be cut against by the eastward-moving jet stream carrying cold Arctic air.

A snowstorm or icy rainstorm would result, since the warm front would be heavy with moisture picked up from tropical seas. The warm moisture and the cold air would not only precipitate snow; the resulting storm would travel rapidly over the United States as the jet stream kept moving swiftly

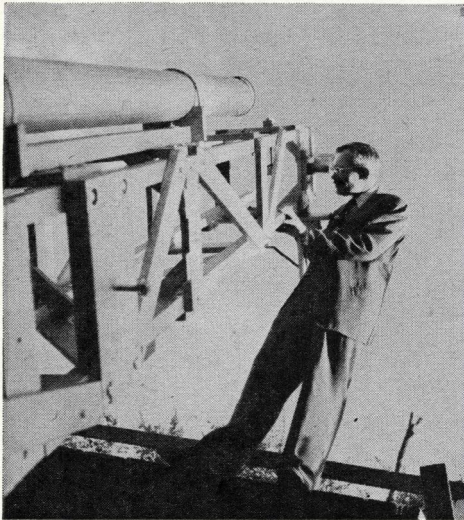
Another type of tracking telescope that will be used to follow the man-made satellites. These gadgets, joined in a microwave network, are spotted over a 4,000-mile area around White Sands proving grounds.



eastward and the warm front, more slowly, westward.

With orbiting solar mirrors, such an obstreperous warm front might be dispersed before it got very far—by turning on the heat, so to speak. A heavy concentration of temperatures higher than those of the front should cause it to spread out more widely in all directions, thus slowing it down and precipitating a good deal of its moisture content in warm showers. By the time a stream of cold winds soared over it, it would be much too weak and diffuse for resistance. Some turbulence and probably more rain would result.

Cold fronts are dense masses of freezing air that extend for hundreds of miles, but even they may be punched through by solar mirrors. The result would be local but effective. Sharp-focusing solar mirrors



With a homemade telescope in his backyard, Clyde W. Tombaugh, chief of research evaluation at the White Sands rocket proving grounds, pursues his hobby of studying Mars. The ESV program would not be possible if it weren't for Tombaugh's work in mapping all the tiny satellites that orbit in space between the earth and the moon. With his system he can locate an object the size of a tennis ball 1,000 miles out.

already in use on the earth's surface can concentrate the sun's energy into temperatures of thousands of degrees Fahrenheit. Orbiting parabolic mirrors should be able to do as well, if not better. A narrow beam of such high temperature must certainly be able to bore right through the densest cold front.

The only care needed would be to operate on the cold front at a point over desolate land, so that buildings and people would not be endangered. Once the hole were drilled in the front, nature would take care of the rest.

Arthur Martinez, a meteorologist of great experience who has specialized in cloud physics and weather modification, explains it thus: "My feeling is that successful results would be obtained. It might not break up an entire cold front, but it should break up a storm system. The atmosphere itself would carry the thermal results along a fairly extended portion of the front."

At any rate, punching a thermal hole through a cold front will help considerably the populations of nearby cities that may be frozen-in. The heat should quickly rise through the front, dispersing its density over the local surroundings.

A cold front may also be treated more gently with good effect. The warm air rises; cold air settles down. The rotation of the earth keeps both in motion. Normally, a storm system develops when the heavier cold air pushes in under massive warm air, starting counter-motions. Layers of colder air above the moving warm air add to the complications by pressing down on the warm front. The warm air, fighting to rise, then becomes wedged in between two levels of cold.

If an even distribution of hot air could be focused to ground level along the front of a cold air mass and kept there steadily—it might push back the cold front. Warm air would still be forced upward and wedged over the top—but heat from solar mirrors would be continuously replenished as it rose over the cold. The cold front could not settle in. Finally the cold front would be "cut under" by the stubborn heat.

Once this occurred, heat would rise through instead of over the icy front and moderately cold updrafts would develop, impeding the front's forward motion. The front could then be made to turn back on itself—if the satellite mirrors automatically followed its retreating mass of frozen air, undercutting it without cessation. The temperatures required for this operation would not be in the thousand-degree ranges; they might be unpleasantly stuffy, but not dangerous to life and property. Most people would welcome a brief heat-wave that cleared their streets and fields of ice, while it prevented the formation of blizzards or sleet storms.

Another valuable agricultural use of the ESV could be the spotting of forest fires.

Even the formation of hurricanes might be prevented with orbiting solar mirrors. At least, such mirrors could guide cyclonic storms away from coastal land areas by nudging them out to sea.

This, too, would help the farmer, the shipper and the dealer keep food prices down. It would prevent aftermath floods, protect a lot of expensive equipment and save important fall harvest crops. It would also save a lot of lives.



## 5. ESV WILL REDUCE TAXES

Accurate long-range anticipation or control of weather conditions alone will save an unbelievable amount of expense to our city, state and federal governments.

The high economic savings in this

and many other fields would be reflected by reduced taxes.

A lessened need for agricultural, transportation and communications subsidies by the Government would almost certainly cause a further slash in taxes.

**D**URING THE LATE SUMMER of 1955, within five weeks three hurricanes swept up the Atlantic Seaboard of the U.S., killed 256 persons, injured many more and cost about \$1¼ billion dollars. The official damage figure is a conservative \$1,680,000,000. Torrential rains and unprecedented floods, directly resulting from the storms, contributed greatly to the loss.

Connie, Diane and Ione—soft names for disturbances of power vaster than H-bombs—were as unpredictable as their nominal sex. Connie began her inland spin on August 11 at North Carolina, and for three days danced wildly through Virginia, Maryland, West Virginia, Pennsylvania and northwestern New York. The result was 49 dead and \$20 million damage. Diane, who unleashed the worst floods ever known in southern New England, also came up from North Carolina for three days, starting August 17. She killed 200 persons. Her cost: \$1½ billion. On September 19, for only two days, Ione swished through North Carolina and Virginia to strike seven dead. The price of her dance: \$160 million.

All these hurricanes might have been tamed and rendered harmless by ESV. Solar-mirror operations could have prevented the collisions of hot and cold air masses which caused the enormous winds.

Since the turn of the century, 27 destructive hurricanes have swept in from the sea across eastern and southern areas of the U.S. One of these, in September 1928, almost bankrupted the state of Florida. The two-week-long siege of floods kicked up by the stormy winds and replenished by driving rains killed 1,836 persons and injured another 1,870. After that, nobody wanted to buy property in Florida for a good long while. Otherwise, the economic damage was relatively small: only \$25 million. The least amount that any of these landward moving hurricanes has cost was \$2 million dollars. In the aggregate, they have cost the American people \$3,432,000,000—or almost \$3½ billions.

Tornadoes, although more localized, are pretty damaging too. In 1955 they destroyed upwards of \$12 million in property and caused 102 deaths through the Midwest and Southwest. From May 1917 to

May 1955, their destruction totaled well beyond \$2 billions.

But this is piggy-bank stuff compared to annual agricultural weather losses. In the past 10 years U.S. farmers have suffered crop damages totaling \$130 billion. Incidentally, the figure does not include losses from frosts and hail storms, which add up to a tidy sum for the same period: almost \$2 billion.

In the end, the taxpayer—which means everybody—has to thumb farther and farther back through his wallet.

Arthur C. Ford, Commissioner of Water, Gas and Electricity for the City of New York, emphasized the point simply. "Come on down," he said. "I'll take you out in the field and show you what a storm can do." He was referring to the early fall floods that followed Diane and the torrential rains that persisted through September as a secondary result of Ione. Silt and mud had been washed down into New York City's water-storage basins. A quarter-million dollars had to be spent on chemicals to settle the turbidity. Another \$750,000 was needed to repair damaged spillways and bridges. A pumping house was lost, its equipment destroyed by the floods. Mr. Ford, at the time of this writing, did not know exactly how much the repairs on his pumping station would cost.

A second New York City commissioner, Andrew W. Mulrain, does not like snow. "Everybody loves a white Christmas—except a sanitation man," he says broodingly. Mr. Mulrain has for 30 years been chief of the city's vast sanitation system. "Everything goes haywire then," he explains. "In several of the big snows, I couldn't leave my office for five days. That's not a total. It's for each one of those - - - - - snows."

The lives and property of New Yorkers are protected by Mulrain's dedication to his job. But again, it costs money in taxes. For example, during the winter of 1953-54 the Commissioner was forced to hire 1,178 extra drivers and 3,941 part-time laborers. Also needed for that emergency season were an additional 293 trucks. The total snowfall that year was 17.1 inches. New York City paid \$3,288,519 for snow removal.



Photo of the California-Arizona area taken at a height of 143.5 miles from a Viking 12 rocket—a version of which will launch MOUSE. Lower right corner shows Phoenix vicinity.

These are only a few instances to show how an ESV weather patrol could save time, money, life and labor—and reduce taxes in the process.

But weather obviously is not the only cause of taxation. Anything that adds to the cost of supplies that the government has to buy, also adds to our tax burden. A good example is gasoline—the oil industry has a huge basic investment in labor and equipment that increases the cost of its product tremendously.

According to the Armed Services Petroleum Purchasing Agency, last year the military bought 85,292,000 barrels of aviation and other kinds of vehicular fuels. This is the equivalent of almost 27 billion gallons, about half of which was jet fuel. Naturally if the Army, Navy, and Air Force could buy their fuel at lower cost, savings could be made in the military budget, which would show up in reduced personal taxes. ESV, by measuring variations in the force of gravity, can accurately locate oil and other mineral deposits, thus greatly diminishing the very high investments involved in prospecting. ESV can also provide long-range accurate weather forecasts, thus relieving the transportation uncertainties of oil com-

panies: shipping delays cost money and also create marketing bottlenecks.

Still another way that ESV can reduce taxes is by reduction of expensive government weather expeditions and specialized observations. For example, the Department of Commerce maintains a fleet of weather ships which costs about \$25 millions annually to keep going. The original cost of ship construction, if spread over the years, would make this figure even higher. Yet such ships are an absolute necessity for safe transatlantic aviation.

The U.S. Air Force also has its own weather patrol that is world-encircling in coverage. This too costs money. But it's an absolute necessity.

ESV can change all this. Furthermore, it can help cut down federal and state transportation subsidies. Weather losses suffered by railroads and shipping lines would be avoided.

Finally, though a continuing ESV program is itself going to require a lot of the taxpayers' money, it will in effect be a lucrative investment. With ESV, the American taxpayer has a chance to make a real dollar-profit out of taxation.

## 6. ESV—A BOON TO OUTDOOR ACTIVITIES

Exact knowledge about the weather will help you get the most out of holidays and vacations, fishing and hunting trips. Baseball and football games, horse and auto races could be scheduled so that

weather wouldn't interfere. Boating enthusiasts and sport-plane fans could enjoy themselves, secure in the knowledge that sudden changes in the weather would not endanger them.

**L**AST APRIL, a methodical Connecticut homeowner set about the building of an outdoor fireplace. First thing he did was contact Weather Fotocasts, Inc., a commercial weather-forecasting company in New York City. The company, which will take on a \$10 job for an individual as well as bigger jobs for industry, steered the man safely through the temperamental rains and high moistures of spring. The fireplace was built without the loss of a single sack of cement.

Edward L. A. Wagner, a former Air Force meteorologist who built Weather Fotocasts into a \$100,000-a-year business, gets many a call from people who want to know when to plan for outdoor wedding parties, vacations, bazaars, hayrides, picnics and boating, fishing and hunting trips.

Though a weather forecaster is far from infallible, he can help many people who want short-term predictions. But he can't do much for the guy who has to decide in April or May which two weeks of summer or fall will be best for his vacation. A baseball fan, for example, might pick his second week during the World Series—only to find his favorite sport rained out for several days. The man who always likes to come back to his desk with a sporty coat of deep tan is another obvious target for a vacation spoiled by weather. So is the hunting enthusiast, who may not mind a little rain himself, but discovers that certain animals do.

In fact, there's a whole psychology in the reaction of wildlife to weather. If a hunter would learn this subject well and then could get accurate weather predictions, he would have better luck and a better time.

Brigadier General Otis O. Benson, Jr., who has supervised climatology research with animals for the Air Force (in connection with studies of how environment affects man) and who is himself an inveterate hunter, points out specific ways an advance knowledge of the weather could help hunters:

- Deer always travel into the wind in order not to be taken off-guard. The wind, of course, carries any strange scent to them quickly. But if there's a high overcast, the sun's heat is reflected away from the ground. Rising thermal streams of air are stopped. The prevailing winds then shift suddenly and surprise

the deer. You can get downwind from a deer and approach without him smelling you. The trick is to know when an overcast is going to develop.

- Ducks always fly below the clouds. They can't fly blind. So, the lower the clouds, the easier it will be for the hunter to sight on his target.

- Caribou and mule deer are migratory because the snow kills off or covers up their source of food. In the summer, they can always be found in the high hills of Northern Canada and Alaska, when the spruce trees are green. But after the first frost they migrate downhill, where they feast on water lilies and seaweed—until the water becomes too cold. Finally, they are forced inland to forage as best they can for food through the winter.

- Wild turkeys stay in draws when it is windy—yet come out in the rain. Deer, on the other hand, are hard to find during a heavy rain. They're all huddling back in the cedars, away from the down-pour.

- Weather affects the mood of animals as it does of humans. At certain times, normally harmless game become fierce and the ugly animals become more ferocious. They will attack a hunter upon no apparent provocation.

The extreme importance of an exact knowledge of weather conditions is obvious in terms of the hunter. Not only his sport but his life may depend on it.

The same goes for boating enthusiasts. Every year a number of them get caught in sudden squalls and drown. These squalls often come up without warning and, with present means, are impossible to predict.

Yet even such an unpredictable weather phenomenon as a squall may be pinned down in the future by ESV. When the total nature of weather is exactly understood and the forces that cause it are continuously observed and reported to electronic computers for definition, it is conceivable that no squall will be considered sudden. Everything has a cause that results from an earlier cause—and so on, to infinity. The cause of squalls at a particular time and place can be predetermined, at least generally. This should be enough to forewarn the small craft owner to stay away from his boat for a day or two.

## They Said It Couldn't Be Done

SIR HUMPHREY DAVEY, the great physicist and chemist, who, in 1815 invented the safety lamp for miners, stubbornly opposed the use of illuminating gas in homes and public places. He predicted dire consequences for humanity if gas became a public convenience. When the London City Council considered the installation of gas lamps in St. Paul Cathedral, this scientist said that "no decent human being could possibly suffer the change of a house of worship into a gas container."

Soon after German chemist Friedrich Albert Winzer patented his gas lamps for street illumination in England, his contemporary, novelist Sir Walter Scott, opposed their use in the streets of London. He bitterly complained: "Only a madman can think of some kind of smoke in competition with daylight. This new invention will never have any value for human beings."

FRENCH STATESMAN Louis Adolf Thiers (1797-1877), author of the celebrated "History of the French Revolution," went on record with the following: "I agree that railways may be employed in the transport of people for a very short distance. But their usefulness must be limited to the vicinity of large cities. There cannot be any hope of overcoming the difficulties presented by long distances."

The famous German scientist, L. F. von Helmholtz (1821-1894) whose physiological and physical research opened new vistas to science, argued in his time the utter impossibility of building any mechanism, which, carrying the weight of a human being, would rise into the air. In his theoretical investigations of the feasibility of dirigible balloons, Helmholtz attempted to prove that the frictions and air resistance would be too strong for a drive forward. He called anyone who would oppose his view "a moron and a nincompoop."

WHEN IN 1801 Richard Trevithick drove his steam-engined carriage through the streets of Camborne for the first time, James Watt, the Scottish inventor who had patented a steam engine in 1769, stated that this madman should be

hanged for endangering the citizenry. Watt even insisted that the use of steam engines for any vehicles should be prohibited by Parliament.

GERMAN PHYSICIST Johann Christian Foggendorf (1796-1877), world-renowned discoverer of many important features of electricity and magnetism, made some great errors of judgment. As editor of the internationally influential *Annals of Physics and Chemistry*, he surveyed many new inventions and results of contemporary research. In an editorial about Daguerre's invention of photography, he doubted its importance and warned of an "exaggerated interest of the public."

When Philip Reis sent Foggendorf a description of his newly invented telephone for an editorial comment, the scientist returned it with a note that it had insufficient merit and interest to take up space in the *Annals*.

And when Robert Julius Mayer (1814-1878) submitted his immortal "First Law of Thermodynamics" to the *Annals*, it was pigeonholed. Professor Mayer couldn't even get an answer to his frequent inquiries. Thirty-six years after its submission, when the personal papers of the deceased editor-in-chief were examined, the manuscript was found with the notation: "Useless theory."

ANTOINE BAUME (1728-1824), developed the famed Baume scale and the Baume hydrometer and was one of the greatest industrial chemists of all times. In many lectures before scientific societies he ridiculed the "nonsensical insistence" of Antoine Lavoisier that the air is not an element but a combination of different gases.

WHEN IN the 1850's the first undersea cable was being laid between America and England, Jacques Babinet, the world-renowned physicist and member of the French Academy of Sciences, informed an international gathering of scholars: "I cannot subscribe to such unscientific plans. The theory of electricity proves without any doubt that currents cannot be submitted through such cables."

The ultimate example of ESV's usefulness to sportsmen is the fact that gravity plays no small part in all kinds of athletics. Every time an athlete lifts a leg or an arm he is combating gravity. Many spectacular records might be established if games were played in a place where the pull of gravity is less. British physicists of the National Physical Laboratory, located on the outskirts of London, have taken this matter seriously enough to investigate its

application to javelin-throwing and to pole-vaulting.

A simple ESV like Dr. Levitt's aluminum-foil Beacon could make their task easier by mapping the specific gravity densities over the whole world's area.

By supplying exact information about weather and gravity, the ESV should eventually take the chance out of almost everything that has to do with man's pleasure or prowess.

## 7. ESV CAN ASSURE BUSINESS PROFITS

All businesses, large and small, depend on the state of the weather for results. By planning their operations and manufacturing, selling or advertising their products according to exact

long-range weather forecasts of ESV, they will be able to profit rather than lose from the idiosyncrasies of weather.

ESV can open up and industrialize backward and inaccessible regions.

RECENTLY IN New York City the big department stores decided to take advantage of an election day. Many more people than average would be on the streets, the stores' executives reasoned, since a large number of firms gave employees the afternoon off to go to the polls and vote. So for several days ahead, the stores ran full-page ads in the newspapers announcing huge election day sales. Additionally, they mailed a few million circulars and brochures at a substantial cost. They hired hundreds of extra sales clerks and package wrappers.

Election day came—with torrential rains. The voting reached almost an all-time low. Needless to say, the department stores were almost empty from their opening hours until they closed that evening.

The above incident is used as a horrible example by Edward L. A. Wagner, president of Weather Forecasts, Inc., a commercial weather-predicting outfit. Wagner has a large store of such gloomy but instructive anecdotes. For the weather is always costing somebody somewhere a lot of money paid for storage space, premature advertising, advance purchase of seasonable goods that must eventually be sold at a loss, or time lost by shipping delays. No accurate figures are available on the cost of the weather to large and small businesses. But the total must be staggering.

One of Wagner's clients is the General Electric Company's air-conditioner and electric-fan division. "They hire us," he explains, "to forecast weather and temperatures on a daily basis in 40 cities to help them plan advertising, distribution and inventory sales. For instance, when we predicted a bad heat wave was approaching one summer, they were able to saturate a certain Midwestern section with electric fans from warehouses and dealers in many other areas. They had a sell-out."

The Whitman Chocolate Company of Philadelphia hired Wagner's concern because they were losing a good part of their candy shipments during the fall months. Warm weather softened the chocolate: an abrupt shift to cold weather en route hardened it. The result was a sickly gray appearance to the chocolate coating that did not harm it but ruined sales. By routing shipments for even temperatures all along

the way, Whitman managed a huge savings in the return and replacement of their product.

Another case was that of a building contractor who bought Wagner's daily weather service for a full winter. The contractor had won a bid to construct a big housing development near Schenectady, New York. To complete his contract he had to work straight through the cold weather. "He was pouring foundations when he called us in," says Wagner. "With the help of our meteorologists, particularly of one who also had engineering experience, we guided him through the right days for ordering concrete-mix, anti-freeze used in the mix, for pouring cement and even for the hiring of extra laborers."

Thus it can be seen that even fairly accurate short-range weather forecasting is a big saver of time and money. Completely accurate, long-range forecasting by means of ESV will make those savings tremendous.

But an even greater and more revolutionary business possibility of the Earth Satellite Vehicle is that of reclaiming and settling huge areas of valuable land.

The rich mineral- and timber-laden jungles of the Amazon and Orinoco regions of South America, for example, have been barely explored. The transportation costs of moving power equipment alone into such inaccessible areas would be prohibitive. Roads would have to be built, requiring heavy construction tools and machines. High tension and telephone lines would have to be strung for hundreds of miles, merely to serve a single industrial settlement.

Even today, Venezuelan oil from the Maracaibo Lake region has to be carried in its crude form by barge to the seacoast, from where it is trans-shipped more miles to the islands of Curacao and Aruba for refining.

The same sort of thing is true of minerals mined in certain provinces of Brazil: they are transported as ore over long distances because the expense of building smelting plants in out-of-the-way places is much too high.

If such plants and refineries could be operated at the location of natural mineral resources, everybody would profit—including the consumer.

Furthermore, the great wealth of resources that now lies hidden and thus unexploited could be tapped.

The frozen wastes of the Arctic and Antarctica could also be settled and exploited by ESV. Orbiting solar mirrors could supply even temperatures there for agriculture. Orbiting radio, television and power-broadcasting satellites could provide communications with the world and energy for lighting and heating factories, industrial plants and homes.

In the inaccessible jungle lands, the same variety of specialized ESV's would make road-building and wire-stringing unnecessary. An advance party of engineers could cut and bulldoze a path through the primeval growth to a mineral-rich area already mapped by a Beacon type of ESV. The men could clear ground for a heliport so that freight helicopters might airlift basic construction materials for building and mining. Eventually an airstrip could be cleared and giant flying boxcars like the Fairchild C119, the Douglas Globemaster and the new British-made Beverly could airlift huge or heavy equipment to the new settlement. Soon an industrial community would be fully operating—a civilized, self-contained outpost fenced around by jungle.

The flying boxcars from then on would transport refined minerals, gasoline and other finished petroleum products to markets of the world.

To speed things up even more, engineering and construction operations could be supervised directly from home offices thousands of miles away. The top engineers of any contractor could be consulted without delay on unforeseen problems. Two-way television communication by orbital relay satellites would make swift and easy conferring possible. Duplicate blueprints and exact scale-models of the job at hand could be projected on large TV screens at both ends.

Similarly, construction progress in the field could be followed carefully at home and advice given when necessary.

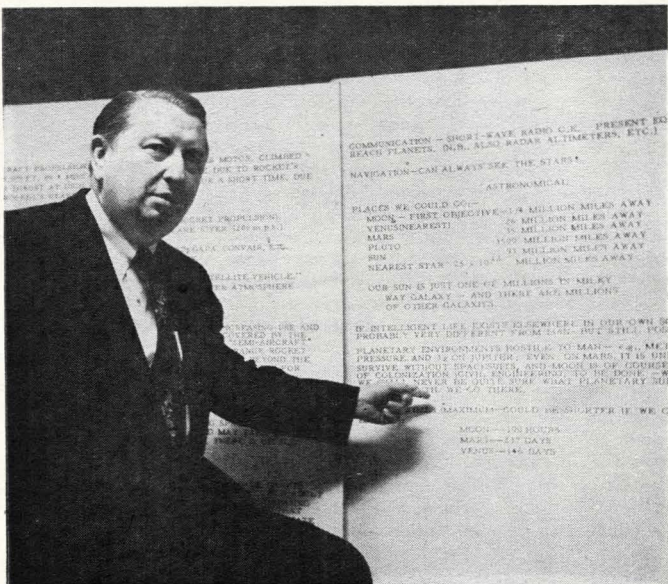
More amazing than this is what might be accomplished with solar furnaces on the ground, receiving their power source from artificially orbiting mirrors in the skies.

Gigantic flat mirrors of foil poised above the equator could endlessly shine onto the ground twice the amount of sunlight normally received. This solar heat could be picked up by large parabolic bowls and focused sharply for industrial uses.

The science editor of *The New York Times*, Waldemar Kaempffert, said recently: "On a single day the land areas of the temperate and tropical zones are flooded with more energy from the sun than the human race has utilized in the form of fuel, falling water and muscle since it came out of the trees over a million years ago. The whole amount of coal, petroleum and natural gas left in the earth is the energy-equivalent of only 100 days of sunshine."

With the advent of huge flat mirrors orbiting at 22,000 miles above the equator, solar furnaces on earth will not require the intricate and expensive mechanisms that are now necessary to keep them following the sun across the sky. In fact, the furnaces will be able to operate 24 hours a day, as one satellite bounces the sun's rays to another halfway around the earth.

Summing up briefly the business aspects of ESV, the following advantages stand out: 1. Accurate long-range weather forecasts will eliminate much of the element of chance from profit-making. 2. Actual modification of the weather to meet special needs will make business a science rather than a statistical gamble—as it now is. 3. The opening up of presently inaccessible territories to industrial exploitation will not only advance civilization, but will also assure a more stable world economy: backward nations will become secure, industry will operate with more efficiency at a lower cost, profits should be higher and consumer prices lower.



**Andrew G. Haley, head of Aerojet General, ex-president of American Rocket Society, and a major influence in getting the government to set up the ESV program. His office is filled with large signs similar to these, giving the facts on space travel.**

## 8. ESV AND THE INVESTOR

Because of ESV, in the near future certain firms will expand tremendously. These are the companies that had the foresight to engage in research at their own expense and thus gained a big backlog of know-how about artificial earth satellites.

As the scientific, economic and social value of ESV becomes more and more apparent with each new launching

of an experimental satellite, these companies will be the first to obtain government contracts for further developmental work.

Other companies engaged in pure research in the fields of rocketry and electronics will also expand greatly.

The investments made now in such companies should pay off handsomely in the future.

**G**EORGE TRIMBLE, JR., brilliant young vice-president in charge of engineering at the Glenn L. Martin Company, recently made a significant statement on the ESV program:

"It's one more step toward ever more complicated things. We'll discover use-applications and problems we never suspected. Each problem will lead to two additional problems. It will go on forever. And we expect to stay out ahead in the business."

The Martin company, like some others in the aircraft industry, has been steadily employing physicists, aerodynamicists and a great variety of specialized engineers, all of whom are given a free hand in the pursuit of answers to pure research problems. For example, Martin has an outstanding record in the development of what Trimble calls "exotic metals." These are alloys that weigh far less and yet are far tougher than their more standardized counterparts. And some day they will be mass-produced for widespread usage, after the ESV program gets underway.

Quoting George Trimble again: "We feel that man is going to build space ships sooner or later. We certainly expect to be in that business also. We'll learn with the artificial satellite."

Such a forward-looking attitude is not common to industry as a whole, but is fairly prevalent among aviation companies. Because they are prepared for each new revolutionary advance in their field, these companies are noted for rapid financial expansion within short periods of time.

Outstanding examples are Reaction Motors, Inc., of Denville, N.J., and the Aerojet-General Corporation of Azusa, Calif., a subsidiary of General Tire and Rubber.

There are other aviation firms that began in a small way and hurtled to the financial heights because of the daring and vision of their founders. Bell Aircraft Corp., near Buffalo, N.Y., is outstanding. The company is a natural contender for ESV contracts.

Perhaps 20 or 30 companies are in line for im-

mediate expansion because of the ESV program. A baker's dozen follows: the Minneapolis-Honeywell Regulator Company, which designs and makes gyroscopes, servomechanisms and electronic computers; Whittaker Gyro, Inc.; Ford Instrument Company; M.W. Kellogg; the Electronics Division of the Bell Telephone Laboratories; the Instrument and Propulsion Sections of General Electric Company, which already has the contract to develop and build engines for the Martin first-stage rocket that will launch ESV's; North American Aviation, which has been carrying on extensive developmental work in the fields of rocketry, gyroscopic automatic pilots and optical-electronic control systems; Ramo-Wooldrige, Inc., designers and manufacturers of automatic controls; Convair, which has a big know-how background in rockets and airframes; Douglas Aircraft Company; McDonnell Aircraft Corporation; and, naturally, the Glenn L. Martin Company.

For those readers seriously interested in anticipating the business and industrial trends toward ESV participation, it would be wise to follow closely certain aviation trade and technical publications. One does not have to be an engineer to understand the advertisements and news notes in such periodicals. The ads—even the employment ads—will give a graphic picture of ESV progress as it relates to specific companies. Among the trade magazines recommended are *Aviation Week*, *Aero Digest* and *Aviation Age*. One of the best technical publications is *Jet Propulsion*, official journal of the American Rocket Society. The *Journals* of the American Society of Mechanical Engineers and the Institute of Radio Engineers should also be helpful.

All these periodicals are aimed at people working in the aviation, rocket and electronic industries. They are not edited for the general public. Hence they supply valuable investment clues not to be found in the daily financial pages of newspapers or even in the investment publications.

## 9. ESV CAN BRING PEACE OF MIND AND PEACE TO THE WORLD

For a long time it has been known that violence, unreasonableness and other emotional instabilities can result from changes of environment—such as might be caused by fluctuating temperatures and the variable action of gases in the atmosphere. The earth's magnetic

field, the highly electrically charged regions of the ionosphere (influencing molecular action in the lower atmosphere), both can be expected to have a profound effect on the delicately balanced organization of electronic impulses that is the human nervous system.

THE LATE Dr. Ellsworth Huntington of Yale University, traveled throughout the world with many famous scientific expeditions. Dr. Huntington certainly had sufficient opportunity to observe at first hand the varying effects of weather and climate upon the human personality. Following are several of his most pointed observations.

1. "A storm is normally preceded by a tendency toward diminished use of books and followed by increased use. The net effect is an increase in intellectual activity in comparison with what would presumably occur in perfectly uniform weather.

2. "It is likewise clear that, except in the coldest weather, moist, tropical air, even if it has cooled off considerably since leaving the ocean, has a depressing effect. On the other hand, dry polar air has a stimulating effect which is very obvious in summer and which persists into the winter.

3. "When [the] various lines of evidence are put together, it seems hard to avoid the conclusion that human vigor, both mental and physical, varies constantly in response to atmospheric differences, which thus have a direct effect upon civilization."

Another scientist, Dr. Raymond Holder Wheeler, spent two decades investigating the possible influences of weather on world culture. When he began his studies, about 1928, he was in charge of the Department of Psychology at the University of Kansas. By 1950, he had established what he considered to be ample evidence that times of war and peace are directly related to weather conditions. Dictatorships and other tyrannical acts against people, he discovered, occurred in periods of generally warm weather. In Rome, the feeding of the Christians to the lions; Nebuchadnezzar's attack upon Jerusalem in 585 B.C.; the Napoleonic wars; the rise and terrorism of Hitler's brown-shirted Nazi Party—all happened at times when the general cycle of weather throughout the world tended toward the warm or hot.

A preponderance of cold weather in the world-

wide cycle created the opposite kinds of situations. The over-all temperature drop—through both winter and summer—may have been only several degrees, but it radically changed the human personality. Men became more aggressive and alert. Democratic revolutions flourished in America and France. Tyranny was combatted where before it had been suffered.

And apart from controlling the weather, an Earth Satellite Vehicle program could, by its own nature, establish a lasting world peace.

Andrew Haley, international lawyer and presently general counselor, as well as board member, of the American Rocket Society, has something vital to say in this respect. "It is a clearly established international law," he affirms, "that each nation has control of the air space above it. This is a relative term. Any space from which we could be observed by a potential enemy—by direct vision, by photography or by television—we would consider *our* air space. So the official who shouldered the responsibility of okaying an artificial satellite program, took the law by the tail so to speak. By declaring the satellite to be a United States contribution to the International Geophysical Year, by stating that the valuable scientific information derived from it was to be freely available to all the nations of the world—this prevented any nation from standing up on its hind legs and declaring that the ESV was an act of war.

"How could anybody make this claim? The radio frequencies on which the ESV instruments will broadcast will be published internationally, so that all nations can tune in. Fortunately, Russia followed our satellite announcement with their own. They, as well, are going to build and launch ESV's. So, since the two major powers agree that this is a wonderful and peaceful thing to do, the problem of international law is solved. Otherwise, it might have been strictly necessary to obtain the agreement of 90 nations, in order to launch an artificial Earth Satellite Vehicle without causing an overt act of war."



## 10. ESV AND THE FUTURE OF MANKIND

On earth we are familiar with engines of the reciprocating type—those powered by steam, diesel oil or gasoline—and various types of jets and rockets (reaction engines) that can take us with a variety of speeds and efficiency from one place to another. The artificial satellite in outer space, a vacuum, will discover many other kinds of propelling

power that should allow man to travel to other planets within a reasonable length of time.

Notwithstanding great technological advances, man's culture on earth is a primitive thing. ESV will provide a whole new background of knowledge and inspiration for man to colonize the Universe.

LESS THAN TWO WEEKS after the Navy was named general supervisor of Project Vanguard, Rear Admiral F. R. Furth, Chief of Naval Research, made some significant remarks on the future of ESV. On October 19, 1955, in a speech at Palo Alto, Calif., he said in part: "Over the last few years, the office of Naval Research has supported work on very high altitude aircraft, such as the Douglas Skyrocket research planes. It became apparent that aircraft research and development was leading to the point where man would eventually be able to fly an aircraft beyond the atmosphere, into space . . .

"The only solution appeared to be the development of an earth satellite that could stay above the earth for a long period of time—compared with rockets or balloons—and relay information back . . . Obviously, the satellite project holds important implications for such areas as very high altitude flight: we know from past experience that material results are apt to follow the advancement of knowledge . . .

"How can we obtain a better conversion of chemical energy into thrust? How can the power of the nucleus be used for aircraft propulsion? Is there, perhaps, an even better method than chemical or nuclear energy, as yet unsuspected, for obtaining the thrust needed to propel an aircraft? . . ."

Well the replacement of chemical fuels by more efficient methods of propulsion is already under way. In the near future after the first few unmanned ESVs are rocketed into their orbits, the public is sure to read astonishing news about new and apparently fantastic kinds of motive power.

Kurt Stehling, engineering group leader at Bell Aircraft, writes in the November 1955 issue of *Jet Propulsion*: "Although the immediate and proper goal of the space flight program is an orbital vehicle, studies of missile flights to the moon and planets have by no means been neglected. Also, research on such 'exotic' schemes as photon propulsion has not been neglected; Eugen Sänger at the Forschungsinstitut für Physik der Strahlantriebe in Stuttgart-Flughafen,

Germany, is studying methods of nuclear particle and light-beam reaction propulsion. He is receiving financial support from an American aircraft firm for this work."

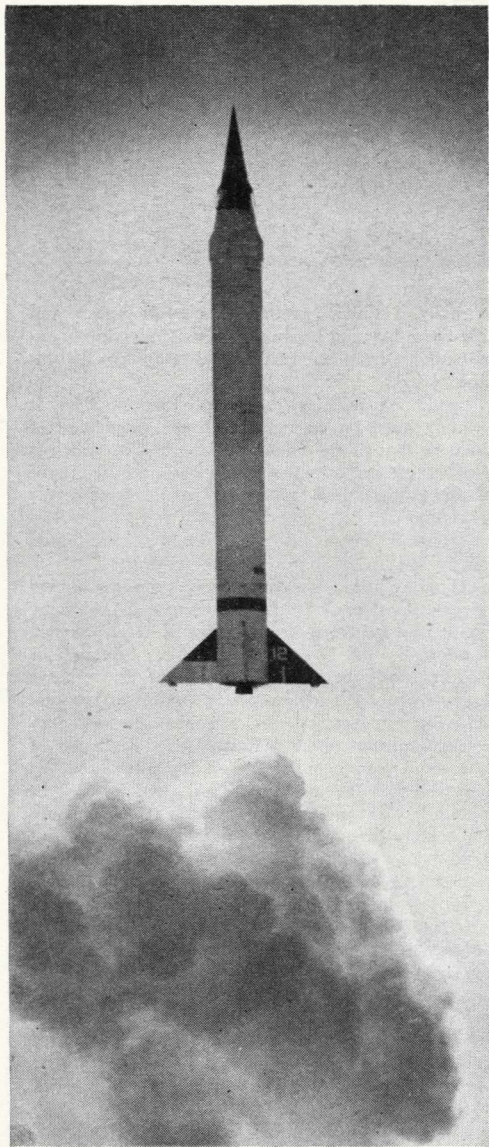
Although Stehling does not name the firm, it certainly must be an outfit with the same kind of vision as that of the Glenn L. Martin Co., which is carrying on an intensive study into the realm of adapting the force of gravity itself to aircraft propulsion.

Here is where ESV transcends science-fiction and, in fact, pales it into an insignificance.

For instance, the propulsion technique being seriously considered by Eugen Sänger in Germany can, at least for the purpose of illustration, be likened to riding on the end of a searchlight beam. This would naturally be impossible on earth. But in outer space—where there is no resistance to forward motion and where, in fact, a body once set in motion keeps moving undisturbed at its initial speed—a beam of light could supply enough push for propulsion. It is an accepted fact of physics that particles of light (photons) exert pressure upon matter. Such pressure is so minute that it goes unnoticed within the earth's atmosphere and gravity field. Yet in space, if it were focused and multiplied sufficiently, it could supply forward-thrust to a space ship. There is every reason for believing that even a strong flashlight beam could push several hundred pounds through space. A much heavier beam, like that generated by a big searchlight, should be able to move many tons of weight. Actually, weight is only relative outside of the immediate gravity field of earth—since it is the acceleration of gravity that draws objects toward the earth's center and gives them the quality which we call "weight."

As for future possibilities, there are several current plans for the reclamation of planets—to make them habitable for earth people. Mars is generally felt to be an arid world with a very thin atmosphere. One physicist has proposed the use of nuclear energy to knock one of the smaller moons of Jupiter out of

its orbit in such a way that it would soar through space to crash and shatter on Mars. Since it is supposed that Jupiter's 11 moons have frozen atmos-



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pheres of methane and ammonia, these chemicals could be reduced—by electrical means, such as artificially produced lightning flashes—to oxygen, hydrogen and nitrogen. Thus, after melting on Mars, the poisonous atmosphere of another planet's moon could provide air and water for what is now an airless and almost waterless world.

According to Andy Haley, his friend Dr. Fritz Zwicky has an even more ambitious plan for providing a future overpopulated earth with colonies in space.

Dr. Zwicky, who does research at the California Institute of Technology, is not only one of the world's top authorities on jet propulsion but is also a foremost physicist and astronomer. His plan is to move planets, not merely moons, about the solar system. Quoting Haley:

"Fritz Zwicky's proposal is to convert other planets—like Jupiter and Saturn, which are very far from the sun—into a neutron core of great density. They might be reduced in this way to the size of an apple. They could then be moved—towed by space ships maybe?—closer in to the Sun. They could be accelerated into orbits where sufficient heat and sunlight would support life as we know it. Then they could be worked up by nuclear action to a size and density comparable to the earth's. Their atmospheres could be transformed to breathable air. All this is just a matter of energy and machinery. Zwicky is a very serious scientist. He has carried on extensive studies of nebulae, the formation of stars and turbulence in space. So he may even have seen this very phenomenon of nuclear shrinkage and expansion happen somewhere in outer space."

At this point it should be helpful to remind the reader that anything is possible, so long as it can be conceived by the mind of man. Only 11 years ago, the White Sands Proving Ground was an arid wasteland. Now huge rockets soar from their launching pads into the deep New Mexico sky. Reports recorded from their electronic instruments have led to the state—in little more than a decade—where an ESV program is practical. So who can say what will occur within another decade or two?

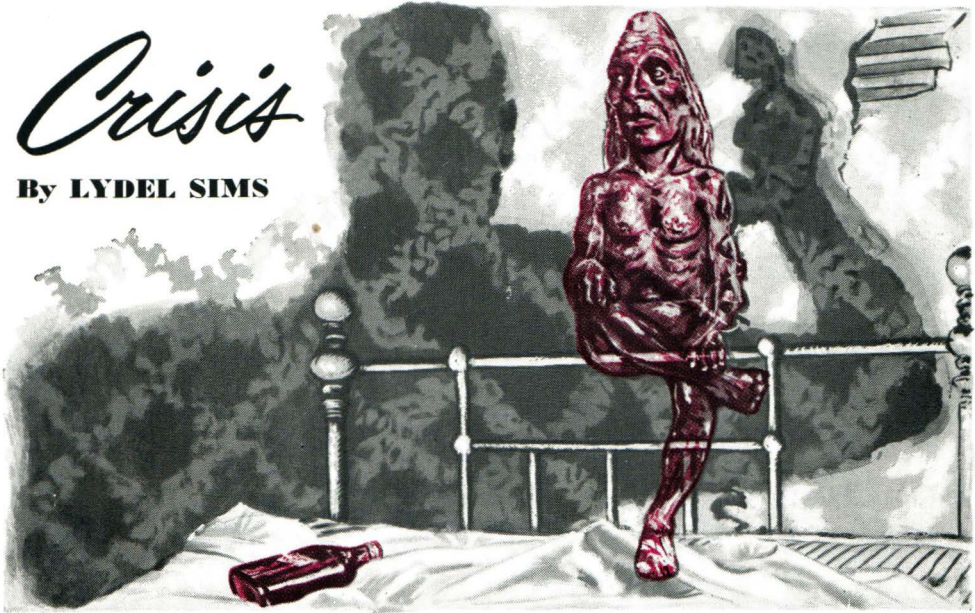
New constellations will soon appear in the heavens. Moving at different speeds and in strange patterns, some of them will be visible to the naked eye during the hour before daybreak or after sundown; others will be seen through the evening and some into the night as brilliant unblinking stars. The earth will have acquired a "lunar" network of stunning beauty and vast proportions. It will be a network for the protection of man against the terrors of space and it will also provide the means for him to conquer space.

"What may seem to be fantasy today can be realistic fact tomorrow." These are the words of a noted physicist at the General Electric Company. He doesn't want to be named, for professional reasons. But his attitude is prophetic nonetheless.

—BY LLOYD MALLAN

# Crisis

By LYDEL SIMS



## The Little Brown Man

SENSING THAT it was time to go home, Charlie Matthew dropped some money on the tavern table and put the bottle into his pocket. Then he remembered the little brown man. He'd be waiting tonight, for sure.

Charlie eased himself nervously back into the seat and opened the bottle again.

He had been just a bug-eyed kid at a freak show when he first saw the little man—about four feet high, with a thin brown head that went up to a point—looking silently out at the crowd from his seat on the platform.

That was one of the terrible things about the little brown man: he still wouldn't talk. He had visited Charlie often in the last few years, sitting at the foot of the bed or on top of the bureau, and all he would do was stare.

Maybe he would have said something if he'd been there the morning Charlie chipped his tooth on the bottle. He might have laughed when Charlie's hand shook so badly he couldn't get a drink, and finally had to pour the whiskey into the wash basin and suck it up through the rubber tube off a hot-water bottle.

The little man had missed that, but he hadn't missed much. Remember the sanitarium?

That was after Charlie's drinking had lost him a U. S. Engineers job with 15 years seniority, after his wife had left him, after he had been in and out of the city jail and the county penal farm so often he could walk through them blindfolded. When he ended up at the sanitarium with a wild case of DT's, the little man was right there in the crowd around the bed. Just staring, not saying a word.

Charlie had even tried to escape him by getting himself committed to the state hospital for the insane, but it didn't work. He had been there six months

without touching a drop, and the day he got out he was staggering drunk by mid-afternoon. That was less than two years ago, and he had seen that brown head, tapering up to a point, many a night since then.

Shaking miserably, Charlie poured himself another drink and thought about the meeting of Alcoholics Anonymous somebody had taken him to the night before. He didn't think they could help him.

Nobody could help him! Hadn't he tried everything? It was no use: he might as well give up and take his bottle on home with him while there were a few drinks left.

Yes, this was the end of the line. This was rock bottom. After tonight there would be nothing left in him to want help. . . .

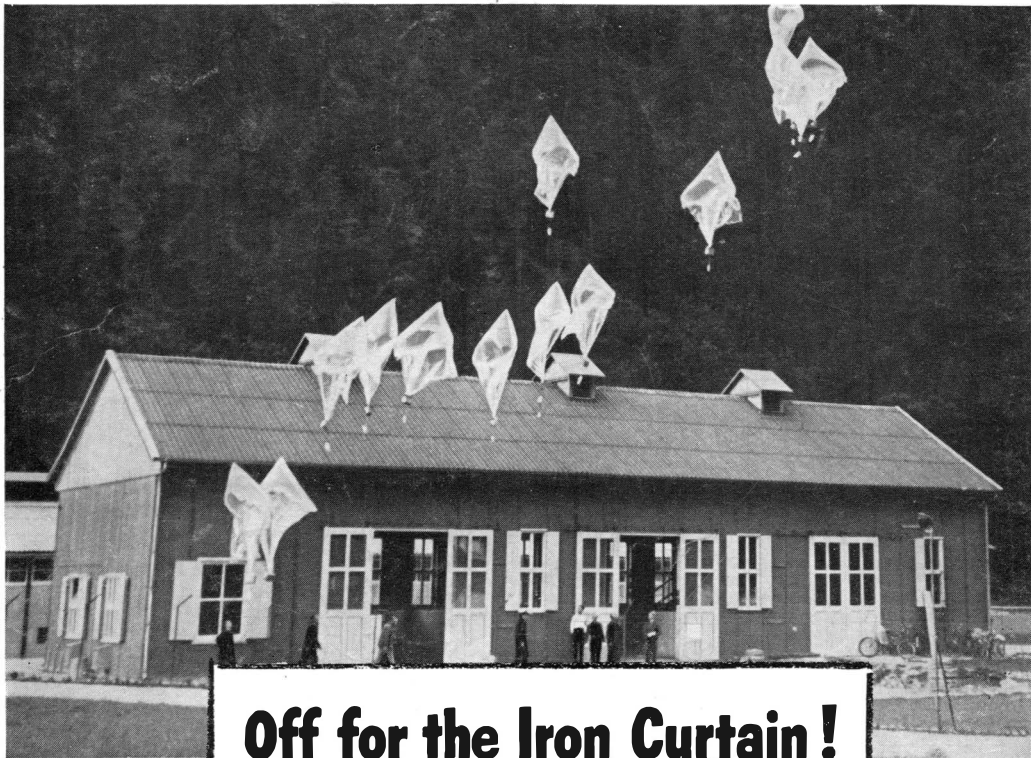
"Call me," a friend had said at the meeting. "Any time, from any place. If you need help, call me. I'll come." Was it worth one more effort?

Charlie reached for the bottle. Then, feebly, he swept it off the table, pulled himself to his feet, and lurched toward the telephone.

His friend came—that was on a Saturday night in May, 1944—and took Charlie home with him. All the next day, after the other man's family left early on a trip, they sat around drinking black coffee and talking while Charlie went through the agonies of hell. And somehow, the long week-end paid off. Charlie became an ardent member of AA and hasn't had a drink since.

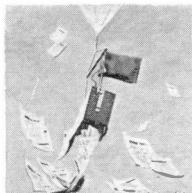
But that desperate telephone call marked more than just one turning point. There is a strange twist to the story that even Charlie didn't know until later. For the friend he called had been just waiting for his family to leave town so he could plunge off the wagon himself.

The little brown man from the freak show saved him, too.



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