

CHAPTER I

Behind the Scenes

DURING the past year, behind the scenes at the Pentagon, I have watched the Air Force struggle with an explosive problem:

What shall the public be told about the flying saucers?

Since 1951 a selected group of high government officials has been secretly briefed on the saucers by Air Force Intelligence. More than one former skeptic, after these closed-door sessions, has emerged badly jolted by the Intelligence officers' disclosures.

In the last nine months I have seen most of the evidence used in these secret briefings. Confidential sighting reports, by Air Force, Navy, and Marine Corps pilots, have been cleared to me with the conclusions of Air Technical Intelligence. Other important clues, unknown to most Americans, have been released by Project Bluebook, the "saucer" investigating agency at Wright-Patterson Field. Little by little the curtain has been raised to reveal a sobering picture.

So far, there is no proof of hostility. But several times these weird machines have come dangerously close to planes—foreign as well as American. One such approach, the evidence shows, led to a tragic disaster.

The date was May 2, 1953. It was raining that night at

Chop had learned most of the flying saucer story from Project Intelligence officers. When he transferred to the Pentagon, he had become the Air Force press specialist on the flying saucers.

It was the latter part of January when I saw the Laredo report. About noon that day Chop phoned me from the Pentagon.

"Don, can you get in here by 2 o'clock?"

"Why, what's up?" I said.

"Intelligence is ready to screen that saucer film—"

"You mean the *secret* one?"

"No, that's still under wraps," he said quickly. "I meant the South Carolina pictures—the ones you got McLean to send in for analysis. It'll be a private screening—you'll be the only one outside of Defense people."

"OK, Al," I said. "I'll be there by 2."

"You might drop in earlier," he suggested. "I've got some of those sightings you asked me to clear."

As I drove in to the Pentagon, I thought over the McLean report. The pictures had been taken near Landrum, South Carolina, on November 16, 1952. About 5 o'clock hundreds of people near Florence had seen a huge, gleaming disc traveling across the sky. An air-traffic controller at Florence Airport, who watched it through binoculars, reported the disc tilted up sharply before it climbed out of sight.

About six minutes later a group of round, glowing objects were sighted north of Landrum. Among those who saw them were J. D. McLean, David S. Bunch, and their wives. Using an 8-mm. camera with a telephoto lens, Bunch took 40 feet of film before the strange objects disappeared in the west.

After the film was developed, Bunch had turned it over to McLean's son, the editor of the *Ingalls Shipbuilding Corporation News*. Later, young McLean had asked me about submitting it to the Air Force. At first he was afraid the film would be confiscated. But after I got him a promise

Keyhole

of extra copies, he sent in the original for ATIC analysis.

When I reached the Pentagon, Chop was away from his desk. It was 20 minutes before the screening, so I skimmed through the Intelligence reports which had just been cleared. With the sightings was an ATIC statement bluntly refuting the theories of Dr. Donald Menzel, a Harvard astronomer who had tried to debunk the saucers as mirages and other illusions.

Weeks before, I'd been told what most Air Force officers thought of Menzel's theories. But to make it official, I'd put some pointed questions to Project Bluebook. This was the ATIC answer.

"These explanations were known to the Project, and carefully considered, long before Menzel published his theories. They explain only a small per cent of the sightings . . . At the request of ATIC, prominent scientists analyzed Menzel's claims. None of them accepted his answers . . . Dr. Menzel was invited by Project Bluebook to apply his theories to any or all of the unexplained sightings, using Project records cleared for this purpose. He has not availed himself of this offer . . ."

There was a lot more, but that could wait. The new sightings looked important.

The first ATIC report was dated January 9, 1953. (As in all these official cases, witnesses' names have been changed in accordance with Air Force requirements.)

Early on the evening of the 9th, a B-29 bomber, with Captain George Madden at the controls, was flying over California on a routine mission. Lieutenant Frank Briggs, the copilot, had the right-hand seat.

It was a clear night. Looking down, they could see Santa Ana, some 16,000 feet below. Except for the B-29, the sky seemed to be empty.

Captain Madden was checking his instruments when a flash of blue light suddenly caught Briggs' eye. He stared out to the right. Coming toward them, at fantastic speed, was a V-formation of blue-lighted objects.

saucers in that short time, even if they'd stumbled on some new method of propulsion. And even if they could have, they wouldn't be shooting them all over the world, taking a chance one would crash and give away the secret."

"You don't have to sell me," I said. "I dropped that answer years ago, and I don't know anyone in the Pentagon who gives it a serious thought."

"Besides," said Riordan, "the Reds would own the world now if they'd jumped that far ahead in '47. At least they'd be holding a gun at our heads."

We swung off the bridge on the Virginia side. Over to the right the Pentagon's sprawling shape loomed in the darkness. Riordan glanced at it, looked back at me.

"I still think it's queer, your getting those Intelligence reports."

"I told you it was a new policy."

Riordan eyed me sharply.

"Sure you're not back on active duty, for some kind of undercover deal?"

"I may go on active duty, but I'm not now." I told him about Ed Ruppelt's suggestion.

"What's back of all this?" said Riordan. "Why are you getting this inside stuff?"

"General Samford—Director of Intelligence—just decided to release the sightings."

Riordan frowned. "You can publish them?"

"All the ones they've cleared."

"You got any hotter cases than the ones you showed me?"

"Quite a few. And when you add them all up—"

"I'd like to see all of them," Riordan cut in.

"OK, come out to my place next week and I'll show you the works."

Riordan was silent until we turned into the airport road.

"These foreign sightings—how many have there been?"

"Hundreds, anyway. Probably as many as we have here, only we don't get all the reports."

"How many countries that you know of?"

"Every country in Europe and South America, and most of the Far East. They've been seen in Canada, Mexico, Australia, Africa, Hawaii, the Bahamas, Greenland—practically everywhere, even the Antarctic."

"Somebody's certainly damn curious about this earth. Any foreign air force pilots report the things?"

"Plenty," I said. "And foreign airline crews, too."

"Any other countries investigating the saucers?"

"Five, at least—Canada, France, Norway, Sweden, and England. Probably more. **Canada has two projects, one of them top-secret.**"

"Secret—secret!" growled Riordan. "They're all so blasted hush-hush. Even our own Intelligence people won't talk. In five years they must have found out something. But you ask them and they clam up. Don't worry, Captain, you're not crazy. We've got reports even stranger than this."

We pulled up in front of the MATS terminal. Riordan opened the door, then stopped and gave me a searching look.

"What have they told *you*? Do you know the answers?"

"I know part of the picture, Jim. I think maybe they'll show me the rest, but—"

A taxi honked impatiently behind us.

"Keep your shirt on!" Riordan snapped. He turned back.

"I'll tell you when you come out," I said. "Maybe by then I'll know what the Air Force is going to do about making all their evidence public."

Riordan climbed out.

"I hope they don't wait too long. But how they're going to break it without scaring people is beyond me."

When I got home, I typed out the details of what Riordan had told me. Then I put the latest ATIC reports in my sighting file. Beside the Air Force, Navy, and Marine Corps sightings, this file included reports by gen-

streaked over Tucson, Arizona. Thousands of citizens saw it hover for a moment above the city, then race on westward, leaving a trail of black smoke. Three weeks later two glowing saucers sighted over Key West were tracked by Navy radar men and found to be 50 miles above the earth.

Just after this, a Chilean naval officer, Commander Augusto Orrego, reported that several mysterious devices had circled his antarctic base.

"During the bright antarctic night," he said, "we saw flying saucers, one above the other, turning at tremendous speeds. We have photographs to prove what we saw." (Later, when I requested copies from the Chilean Embassy in Washington, I was told the pictures were classified.)

By this time reports were coming in from Turkey, Mexico, Cuba, Peru—almost every part of the world. Most of them described silent, disc-shaped machines. On March 9 one of these gleaming discs was sighted over Dayton, and four fighter pilots were ordered to intercept it. But the saucer swiftly climbed out of range. Twelve days later a Chicago and Southern airliner crew had a night encounter with a saucer near Stuttgart, Arkansas. As the machine zoomed, at terrific speed, the pilots saw lighted ports on the under side.

About this same time the Pentagon cleared an article by Commander R. B. McLaughlin, U.S.N., a Navy rocket expert. In this article Commander McLaughlin described three sightings near the White Sands guided missile base.

One large disc, tracked at 18,000 miles per hour, was found to be flying 56 miles above the earth. Two smaller discs, tracked from five observation posts, were seen to pace an Army high-altitude rocket. After circling the rocket for a moment, the discs speeded up and rapidly outclimbed the Army projectile.

Just after midnight, on June 22, 1950, a mysterious device rocketed in over Hamilton Field, California. Trailing

a blue-green exhaust, it made three passes, flashing by the control tower. Before Intelligence officers clamped down the lid, the control-tower men estimated the machine's speed from 1,000 to 1,500 miles an hour.

That same month a new story broke, to some Air Force officers the most outrageous of all. This one, started by a small weekly bulletin, *Talk of the Times*, was "proved" by two photographs supposed to have been taken in Arizona. The first showed a huge disc flying at an angle. The caption read:

"Hit by flak rockets, the object exploded in a shower of fireworks. About 20 silvery capsules fell to the ground."

The second picture showed two men in trench coats, each holding an arm of a queer, shiny figure about three feet high. Two girls standing nearby seemed to be awestruck by the little man. The second caption ran:

"As one silver capsule broke, the first Mars man was captured. Eyewitness G-Man McKennerich, from Phoenix, reports: 'I was astounded by the importance of this great moment. For the first time I was seeing a being from another world. At the same time I was equally amazed by the desperation of this Aluminum Man. His body was covered with a shiny metal foil. The observatory in Phoenix presumes this is for protection from cosmic rays . . .'"

How the Aluminum Man had survived his fall was not explained.

The "little men" story was not new; Frank Scully had started it in *Variety*, and later he built it up in his book, *Behind the Flying Saucers*. In this book Scully reported that two flying discs from Venus had crashed in the Southwest. In the wreckage, according to Scully's informants, investigators found the bodies of several little men. The Air Force, said Scully, had spirited the bodies and the discs away for secret analysis.

Apparently Scully was duped—he still insists he believes his sources. Regardless of that, his book gave the Air Force a new headache. Out in Dayton, Colonel Harold E.

Watson, chief of Intelligence for AMC, decided to end all the saucer talk.

"It's a lot of damned nonsense," he told Bob Considine in the interviews for INS. "There are no such things as flying saucers."

Then with a blast that included even high-ranking Air Force pilots, he branded most saucer witnesses as jokers, crackpots, or publicity hounds. A few, he admitted, might be honest—like airline pilots who, suffering from fatigue, mistook windshield reflections for space ships.

Watson's acid remarks drew some bitter comments from pilots I knew.

"To hell with him and the Air Force, too," one airline captain told me. "I wouldn't report a UFO now if they paid me."

"If we're that fatigued," said another captain, "we've got no business flying passengers. Maybe they'd better ground every pilot who sees a flying saucer."

That very night I received a special-delivery letter from a Navy pilot. On the evening of November 7, he and his radar man had sighted a UFO north of the Navy's base at Lakehurst.

"It played a cat-and-mouse game with us for 15 minutes," the pilot wrote me. "It was also seen by the pilot of an F9F-2 Panther jet. But of course you know all people who see saucers are liars or crackpots. So just throw this into your wastebasket."

In spite of this general reaction, a few pilots braved public ridicule. One was Captain Lawrence W. Vinther of Mid-Continent Airlines. On January 20, 1951, the control tower at Sioux City Airport asked Vinther to check on a strange, brilliant light above the field. As Vinther maneuvered toward the light, it suddenly dived toward his airliner. Flashing above the DC-3, the UFO abruptly reversed its direction, pacing the ship for several seconds. Vinther and his copilot described it as larger than a B-29, with no visible means of propulsion.

About a month later, after the public had been officially told the saucers did not exist, another expert took the floor. This one was Dr. Uner Liddel, of the Office of Naval Research. Yes, said Dr. Liddel, the saucers were real. But they were only the Navy's "sky-hook" cosmic-ray research balloons, huge plastic bags which often rise as high as 100,000 feet. Mantell, said Dr. Liddel, had been chasing a sky-hook balloon. He added:

"There is not a single reliable report which is not attributable to the cosmic balloons."

Liddel's claim brought a hot answer from a former Air Force scientist, Dr. Anthony O. Mirachi.

"The Navy report is erroneous," said Mirachi. "It lulls people into a false sense of security."

Describing the "maneuvered motion" of the saucers, he said they might be missile experiments by a potential enemy, and he urged a new investigation. Otherwise, we might be risking another and far more dreadful Pearl Harbor.

Though I knew both answers were wrong, I didn't get official statements until two years later. Then the ATIC told me:

"We have not the slightest evidence to indicate that the objects reported are foreign secret weapons.

"Relatively few sightings have been caused by balloons. The ATIC is aware of all sky-hook balloon launchings. In checking UFO reports, it gets maps showing sky-hook balloon tracks for comparison, also, the launching times and the tracks of small weather balloons, when sightings in the general area are involved. All these have very definitely been cleared in such cases, and all balloons, including sky hooks, have explained not more than 20 per cent of the sightings."

But long before this, Liddel's balloon answer had flopped; there were too many sightings it could not explain.

But Mirachi's solemn warning had not been forgotten. Though the Air Force knew he was wrong, the ominous

ing down an image into small sections, it reveals whether a saucer's glow is caused by radiant heat, an exhaust trail, or some other source.

Early in '52, the cameras were under contract, and plans were worked out to send them to strategic points—air bases, A-bomb plants, and other spots where UFO's have frequently been seen.

Other steps in the plan included the use of cine-theodolites, which photograph guided missiles as they are tracked, and modified sonar sound-detection devices to catch any faint propulsion sounds from the seemingly silent machines.

As if to date this new, stepped-up investigation, the project's name was changed to "Bluebook," and Captain Edward J. Ruppelt, aeronautical engineer and World War II bombardier, was assigned to coordinate the reports and, in special cases, make on-the-spot investigations.

For the first quarter of '52, another lull seemed in the making. Then several things happened in quick succession.

During a flight to Hawaii a plane carrying Navy Secretary Dan Kimball was buzzed by a flying saucer. Kimball's pilot hurriedly radioed a second Navy plane, some distance behind. In a few moments word came back. The saucer had just buzzed the second plane, so swiftly that no one aboard could make out its shape.

Shortly after this, Air Force instructors in New Mexico sighted a huge, shining, oval-shaped craft, about six times the size of a B-29. Since it was at an extremely high altitude, some witnesses estimated its size as even larger.

About this same time new foreign reports came in. Over in Norway a bluish-colored light appeared above an electric power plant. As it descended, witnesses could distinctly see the disc shape of the glowing device. A few days later, at Singapore, hundreds of people sighted a rocket-shaped UFO moving at tremendous speed.

In the midst of this, *Life* magazine hit the newsstands with its article, "Have We Visitors from Space?" In a seri-

ous review of the evidence, *Life* stated its case for interplanetary saucers. Except for a few sightings which writers Darrach and Ginna had dug up to add to the official record, there were no points which I had not known back in '49. But that was unimportant. What counted was that *Life*, after seeing the evidence, had swung from amused skepticism to a serious belief in the saucers.

Another reversal, which went unnoticed in the United States, was headlined in Canadian papers on April 16. On that date the Canadian government announced an all-out investigation of the saucers, by Royal Canadian Air Force Intelligence and also by a secret project in the Defense Research Board. Until this time, as I knew from personal contacts, a small group of Canadian engineers had been trying—without much success—to convince their government that the saucer problem was serious. It was obvious that something unusual had happened to bring about this change.

In Washington, too, Defense officials suddenly took a new, serious interest in the saucers. On May 8, Air Force Secretary Thomas K. Finletter and his highest staff officers were secretly briefed by Air Technical Intelligence officers. After this long briefing, which covered the entire five-year investigation, it was left to Finletter to decide on a public statement.

Some Air Force officers, believing the facts should be told, were hoping for a break. But in the end, after weighing the possible dangers, Finletter—like others before him—carefully walked the tightrope. On June 4 he gave out this report on the briefing:

"No concrete evidence has yet reached us either to prove or disprove the existence of the so-called flying saucers. There remain, however, a number of sightings that the Air Force investigators have been unable to explain. As long as this is true, the Air Force will continue to study 'flying saucer' reports."

In making this public, the Air Force asked for detailed

it up; wisecracks might keep down hysteria. But now many papers had stopped joking and were demanding the answers.

On the morning of the 18th the United Press at Dayton asked for an interview with Captain Ed Ruppelt. Though General Samford's directive prohibited such interviews, Ruppelt was told to answer the questions—refusal to talk, at this time, would only increase suspicion.

"Does the Air Force think these sightings are just hallucinations?" the UP man asked Ruppelt.

"No," said Ruppelt, "we're convinced that people making these reports actually see something in the sky. But what the objects are is another question."

Answering another query, he admitted that jet fighters guided by radar had chased UFO's but had failed to catch them.

"Some of the objects," he said, "have been tracked at speeds up to 2,000 miles an hour."

These were honest answers. But Ruppelt's failure to identify the saucers led to new trouble. Several editors, worried by stories of Russian-built saucers, warned their readers that this might be the answer. One foreign dispatch, which helped to bolster this fear, was based on an account in the *Zaarbrucker Zeitung*. Published on June 28, 1952, it appeared to be a semiofficial report on a large disc found near Spitzbergen.

According to the *Zeitung*, six Norwegian jet fighters had been flying near Hinlopen Straits when their radio was jammed by a strange interference. As the jet pilots circled, looking for the cause, Flight Captain Olaf Larsen spotted an enormous blue-metal disc, wrecked on the snowy ground.

Accompanied by a rocket expert named Norsel, several Norwegian Air Force officers landed near the disc in ski-planes. No one was found aboard. The disc, said the *Zeitung*, was 125 feet in diameter and made of some unknown metallic substance. A plexiglass domed compart-

ment in the center contained a mass of remote-control equipment—it was one of the remote-control radio units which had caused the signal interference.

The disc, as described in the news story, was powered by 46 jets on the outer rim. When the jets were in operation, this caused the outer ring to rotate around the stationary control unit.

When the disc was dismantled and taken to Narvik, experts were supposed to have discovered these facts: The flight range was over 18,000 miles. The altitude range, 100 miles. The disc was equipped to carry high explosives.

Then came the line that, in the present tense situation, could easily be dynamite:

"The chronometers and instruments bear Russian symbols . . . It is assumed the disc came from the Soviet Union and was grounded by receiver failure."

No one in the Air Force had believed the story, but a routine check had been made. As was expected, the Norwegian government denied any knowledge of the disc. But the damage had been done. Many Americans, unaware of Norway's denial, tied the report to Dr. Mirachi's warning of another, more terrible Pearl Harbor. And so the fear of the saucers grew.

The sighting curve was still rising. But even the confidential reports gave no hint of the reason for the nationwide reconnaissance. Only once, on the night of July 18, did a saucer maneuver as if preparing to land. Just before this, airmen at Patrick Air Force Base, in Florida, saw four of the strange devices circling near the field. Shortly after they turned away a fifth saucer came out of the west. Angling in over the base, it made a 180-degree turn, like a plane in a traffic pattern. Then, accelerating at terrific speed, it raced back to the west and vanished.

Until this time, no other case had matched the Indianapolis sighting in its effect on the public. With all the reports from defense bases, this was thin comfort to the

The details gave it an authentic sound. Two figures, witnesses said, had climbed into the conning-tower. The outer rim began to glow, then became bright red as the ring rotated. With the tower retracted, the saucer rose straight up, spinning like a top.

To make it worse, from the Air Force viewpoint, the chief designer of Vickers Aircraft had partly backed the report.

"If the description is accurate," said the Vickers expert, "it may be a military hovering craft. From the glow, it could house a jet plant to provide vertical take-off. The metallic suits (worn by the two figures) could be protection at high altitudes . . . But I'd have to be shown a saucer to believe in it."

Several American commentators, in repeating this story, left an alarming question in many minds. Were the saucers a Soviet spotting device, now marking key American targets for later attack? Intelligence officers knew it wasn't true, but that didn't help the frightened people who were writing the Pentagon.

By the morning of July 23, even high Air Force officers were urging Intelligence to hold a press conference and relieve public tension. The Director, Major General John A. Samford, found himself in a hot crossfire. But he knew the dangers of a public discussion and he stubbornly held out.

When the next two days passed with no highly dramatic reports, Samford and his staff began to breathe easier.

Then, on the 26th, the dam broke.

The trouble began at Key West. Early that evening a red-lighted saucer flashed over the Naval Air Station. It was seen by hundreds of people. A destroyer escort hastily put to sea, following the course the machine had taken. Then official silence fell.

Shortly after this, at 9:08 P.M., a formation of saucers descended on Washington for the second time. Luckily, they were too high to be seen by most people in the city.

But as before, jittery controllers at the Center tracked the strange machines. Again, Andrews Field and Washington Airport tower men confirmed the saucers' maneuvers, pinpointing them simultaneously at spots where lights were seen by airline pilots.

Oddly enough, the Air Force jets were again delayed in getting to the scene. But this time, when the first fighters arrived, some saucers were still in sight. Flying at top speed, over 600 m.p.h., Lieutenant William L. Patterson tried to chase the nearest machine. But it quickly left him behind.

Meantime, Air Force Intelligence had gone into action. Major Dewey Fournet, Jr., the Pentagon's top investigator, had been rushed to the Center. With him were Albert M. Chop and an officer specialist on radar. For two hours they watched the saucer blips, Fournet and Chop quizzing Barnes and his men while the radar specialist checked the set.

Several newsmen, tipped off to the sightings, were waiting when Fournet and the others came out. The three men refused even to speculate on what the saucers might be, but they confirmed Patterson's report on the unsuccessful chase.

The new Washington story broke with a bang in papers all over the country. Within 48 hours newspaper editors from coast to coast were hammering at the Air Force. One demand for the truth, a typical editorial, came from the *Rocky Mountain News* in Denver.

"It is incredible—as well as a terrifying thought—that our Air Force, with all of its facilities, hasn't been able to identify these objects . . . If these so-called saucers involve experiments cloaked by military secrecy, it is time to take off that cloak in the interests of national sanity. There are enough real dangers in the world without the unnecessary addition of imaginary ones.

"On the other hand, if they do not actually know what these objects are, then let there be no more boasting of our

scientific and military advances until they do come up with the right answer."

Even under the furious barrage from within and outside the Pentagon, General Samford still battled against any public discussion. But in the end he had no choice.

From somewhere higher up, General Samford was given an order. I have reliable evidence that it came from Lieutenant General Nathan Twining, now the Air Force chief of staff. Regardless of the source, Samford was told, in effect: "You will hold a press conference."

At no time in the five-year saucer scare was any man put in a tougher spot than the Director of Intelligence.

What could he say? What was safest, the best for the country?

Without actually saying so, he could let Americans believe the saucers were a secret U. S. device. It was not true, and probably few papers would accept it, after all the denials.

Even if the public believed it, this could cause a dangerous complacency, and Congress was sure to cut badly needed appropriations. With a superior weapon like the saucers, there would be less need for new long-range bombers and conventional guided missiles.

So that answer was out.

There was only one safe step, in the nation's present mood.

The saucers would have to be debunked.

It was a hard step for General Samford to take. It meant reversing the new, sober approach which Intelligence was making. It was risky, too—this time the public might not believe the Air Force statements.

But it was the only way to stop the rising tide of fear.

CHAPTER V

The Powder Keg

SINCE 1947, as General Samford knew, the Air Force had frequently tried to debunk the flying saucers. Each time it had been more difficult. How could it be done now, with any hope of success?

It was impossible to go back to the 1949 statement, which explained away *all* sightings. For the Air Force was now on record that many were still unsolved. The latest figure, given out by Captain Ruppelt, was 25 per cent; some Intelligence officers privately made it much higher.

Even admitting that 25 per cent were unsolved was misleading, for it evaded the basic facts. Actually, the Air Force reports showed nearly 500 genuine saucer sightings. The excitement created by these authentic accounts had caused many erroneous reports. But this did not change the basic situation.

Instead of admitting this, a reverse approach had been used. The implication was plain: If the Air Force could solve 75 per cent of the cases, probably the rest could be explained, with a more scientific analysis.

Misleading or not, this reverse approach would have to be the foundation for debunking the saucers now. Samford's problem, then, was to explain the remaining 25 per cent. He could say that the saucers were probably some

strange phenomena, completely outside our present understanding. Even some Air Force officers, who didn't know the facts, believed this was true. But it ignored the sighting patterns and the proof of definitely controlled maneuvers.

How many shrewd newsmen would swallow this vague answer after the Washington sightings?

The high speeds and maneuvers, General Samford knew, had to have a specific answer. What made it harder was the simultaneous visual sightings and radar trackings, especially the accurate pinpointing by the Center and Andrews Field. There had to be some explanation, or the newsmen would be on him like hawks.

There was one loophole—the temperature-inversion theory publicized by Doctor Menzel.

Samford and his Intelligence staff already knew the theory. It was based on an effect well known to scientists. Ordinarily, air gets colder as altitude increases, but under certain conditions there may be layers of warm air with cool air underneath.

Since light rays move slower in a denser medium, they are refracted, or bent, as they pass from cold to warm air. It is this which causes mirages on deserts, or on heated roads where motorists seem to see pools of water ahead. Like light, radar waves also move more slowly in a denser medium and are bent in the same way. When a temperature inversion is strong enough, it will cause a refraction effect.

According to Menzel, observers reporting saucer lights had been misled by reflections, either of ground lights or of the stars, the moon, or the sun. In the same way he explained radar saucers as ground objects picked up by deflected radar beams, then re-reflected by the inversion layer to show on scopes as strange blips. The apparent high speeds and violent maneuvers, he added, were caused by reflections of moving objects such as cars or trains, or by turbulence in the inversion. In the latter case the agi-

tated air reflected the light or radar waves unevenly, creating false effects of motion even from fixed objects.

During July several prominent scientists had refused to accept Menzel's claims. But few of the public knew this. Even General Samford, at that time, did not have all the evidence against the astronomer's theory.

Regardless of its merits, it offered the only out. It did explain a small number of sightings, perhaps two to three per cent. Some Intelligence officers were afraid it might backfire; there was one key fact in the Washington cases which would blow it sky-high. But so far this fact had escaped the press. If no one brought it up, the answer might stick.

No one in Intelligence, from General Samford on down, wanted to take this step. But after the press conference order, they had no choice.

It was obvious that General Samford should not face the press alone. He would have to have help, not only in covering technical angles but in handling dangerous questions. With a large group, questions could be passed back and forth to give the Director a breathing spell.

When the details were worked out, the conference was set for July 29. The group would include several UFO experts from ATIC—Colonel Donald L. Bower, of the Technical Analysis Division, Captain Ed Ruppelt from Project Bluebook, Captain Roy L. James, Mr. B. L. Griffing, and other civilian specialists from the Electronics Branch. To cover the interception angles, Major General Roger M. Ramey, Chief of the Air Defense Command, would be on hand with some of his staff.

Up to the very last, the Intelligence officers hoped that the conference would be canceled. But the sightings, instead of letting up, were still increasing.

That very morning Army officers and Indiana state police had watched a weird "dogfight" between several discs over Indianapolis. Three hours later a saucer had scouted the atomic energy plant at Los Alamos, racing off

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at high speed when Air Force jets went after it. Other Intelligence reports, coming in by teletype, hinted that the 29th would be a peak day in this July saucer cycle.

By noon the Air Force had still another headache. The night before a story by INS had reported a new Air Force order—if saucers ignored orders to land, pilots were to open fire. At Washington, Frank Edwards had picked up the flash and repeated it on the Mutual network. Telegrams protesting the order were now coming in from all over the country. One, typical of the rest, came from Robert L. Farnsworth, president of the U. S. Rocket Society. Also wiring the White House, Farnsworth gave United Press a copy of his message to help arouse the nation. It read:

"I respectfully suggest that no offensive action be taken against the objects . . . Should they be extra-terrestrial, such action might result in the gravest consequences, as well as alienating us from beings of far superior powers. Friendly contact should be sought as long as possible."

Under this new barrage General Samford gave up his last-ditch attempt to postpone the conference. By this time no one could have stopped it without a disastrous flare-back. Many people would have suspected some frightening answer too terrible to make public.

It was nearly 12 o'clock when an Air Force officer phoned me that the conference would be at 4. Thinking it would be sooner, I'd planned to fly to New York at 5, to be ready for radio and television dates on the following day. On the way in, I stopped at the airport, switched my reservation to 7 o'clock, and then drove on to the Pentagon.

At 3:50 the conference room was half-filled. I recognized C. B. Allen, aviation man for the New York *Herald Tribune*; Gunnar Back, television commentator; Clay Blair of *Life*; Doug Larsen of NEA; and a dozen others from big-city papers and national magazines. By 4 o'clock the room was packed with top correspondents, wire-service

men, and commentators. I hadn't seen a bigger turn-out since the A-bomb story broke.

Promptly on the minute, General Samford came in, a stockily built man with whimsical blue eyes. His shrewd, pleasant face showed no hint of concern—it was not for nothing that he was Director of Air Force Intelligence.

Behind Samford came Major General Ramey, a florid-faced, serious-looking officer. Their advisers spread out around the platform—an impressive group of colonels, majors, captains, and civilian specialists. Only Ruppelt came near to matching Samford's unconcerned look. Most of the others were sober-faced, and with good reason.

For the next hour or so they would be sitting on a powder keg. Two simple questions would light the fuse. All they could do was pray that nobody thought to ask them.

In his opening remarks, General Samford set a pattern which he used later in answering difficult questions. Normally, Samford is not a verbose man: on occasion he can be as terse as a drill sergeant. But clipped words, short sentences, often give a dramatic effect, and the Director wanted no drama here. A dry, academic approach was the best answer, and Samford did his utmost to set the pattern.

"I think the plan is to have very brief opening remarks," he said in a slow, unruffled voice, "and then ask for such questions as you may want to put to us for discussion and answer. Insofar as opening remarks are concerned, I just want to state our reason for concern about this.

"The Air Force feels a very definite obligation to identify and analyze things that happen in the air that may have in them menace to the United States and, because of that feeling of obligation and our pursuit of that interest, since 1947, we have an activity that was known one time as Project Saucer (press name for Project Sign) and now, as part of another more stable and integrated organization, have undertaken to analyze between a thousand and two thousand reports dealing with this area. And out of that

saucer assignment. He told me he'd seen most of the important cases when he was acting press chief at Dayton. Here at the Pentagon he'd seen the Intelligence reports as they came in, sat in on Intelligence conferences, and talked with top investigators like Major Fournet.

"You must have a pretty good idea of the answers," I said. "What do you think is behind this saucer survey?"

"I can't answer that," said Chop. "On this job I'm not allowed to express any personal belief."

He lit a cigarette, waited a moment, then went on, carefully measuring his words.

"The Air Force doesn't deny they may be interplanetary. But we have no concrete evidence to support it."

"What do you mean 'concrete?'"

"No wreckage—no bodies—no material objects."

"What about the pictures you've analyzed?"

Chop told me later my question had jolted him. For a moment, he thought I had somehow learned of the secret film. But his dead-pan expression didn't give me a hint.

"You've had some photographs," I said. "There have been ten or twelve in the papers. Maybe some were faked, but two or three looked genuine."

"So far, none of them has shown any details," said Chop. "No ATIC analysis has proved anything definite."

Just before I left, Chop took a copy of my book from a desk drawer. He ran through it, picked out a few paragraphs.

"You seem sure the saucers are friendly. If they *are* interplanetary—and I said if—why all this long observation without any contact?"

"I don't know, there could be several answers." I watched his face. "Of course, if the Air Force thinks they're hostile, I can see why they've kept quiet."

Chop gave me a dry smile.

"You said that—I didn't." He stood up. "OK, I'll see what I can do on those cases. It may take a little time."

A week later he phoned me.

"Come on in," he said. "I've got three or four sightings cleared for you."

Still skeptical, I drove in. The Air Force, I was positive, wouldn't be giving me cases of any importance—certainly none that would upset General Samford's statements. Probably they'd be watered-down reports that didn't prove anything. But they'd be enough to block any claim that the Air Force was holding out.

"These may surprise you," Chop said dryly, when he gave me the sightings. I looked at the first, an Intelligence report which had recently come in from Oneida Air Force Base in Japan.

Just before midnight, on August 5, 1952, a saucer carrying a bright white light had slowly approached the base. Up in the control tower, Air Force operators quickly focused binoculars on the mysterious light. As it came closer, they could see a dark, circular shape behind the glow, four times the light's diameter. A smaller, less brilliant light shone from the round, dark undersurface of the strange machine.

By this time towermen had flashed word to a Ground Control Intercept station. For several minutes the saucer hovered near the tower, its dark shape clearly visible behind the light. Then it suddenly turned away, accelerating at high speed.

As GCI picked up its track, a strange thing happened. The mysterious craft divided into three units, as if two other saucers had been launched from the first. While the amazed Air Force men watched, the three machines raced off, keeping accurate intervals, at a clocked speed of 300 knots.

Calling a nearby C-54 transport, the towermen tried to vector it in toward the three saucers. But with its slower speed, the transport had no chance. In seconds the strange machines disappeared from the area.

Incredulous, I looked at Chop.

"I can publish this?"

He nodded.

"But this report proves the saucers are *solid objects*."

He gave me his dead-pan look.

"Read the next one," he said.

The second Intelligence report was barely a day old. It was dated August 20, and it came from Congaree Air Base, near Columbia, South Carolina.

On that morning radar men at a nearby Air Defense Command post were watching normal traffic when the blip of some unknown object suddenly appeared on the scope.

When it was first sighted, the saucer was 60 miles from the ADC post. Almost instantly the men could see that it was moving at fantastic speed. In a matter of seconds, as the sweep went around, a row of widely spaced dots appeared on the glass. While the operators were still staring at the track, it ran off the scope. Hurriedly, before the blips could fade, they figured the object's speed. Then they looked at each other, astonished.

The unknown machine was making over 4,000 miles an hour.

One operator hastily cut in his mike. Then he realized it was useless to flash an alarm. The strange craft was moving at 70 miles a minute—nearly ten times the top speed of any interceptor. Even if he flashed word hundreds of miles ahead, jet pilots would see little more than a blur if they got anywhere near the saucer.

In this report Air Technical Intelligence had made no attempt to gloss over the facts. The operators were experts, trained to recognize blips of solid objects. The radar was working correctly.

Something had streaked through the South Carolina skies that morning, but the ATIC frankly admitted it had no explanation.

"This is cleared, too?" I said. "Even this ATIC statement?"

"That's right," said Chop. "There's only one condition."

Here it comes, I thought.

"We want you to emphasize the fact that our pilots aren't shooting at these things. We've been catching hell from all over the country." Chop showed me some telegrams and letters. "They even wire the President, 'In the name of God, don't shoot at the saucers.' So anything you can do—"

"Sure, I'll include that," I said.

"I'll get you a statement from General Ramey. Go ahead, read the others. They're not quite so hot as those two, but they're important."

The third Intelligence report, dated July 23, covered an F-94 chase over Braintree, Massachusetts. Earlier, GCI had picked up a saucer circling at high speed, about the time that a bluish-green light was sighted from the ground. When the F-94 pilot was vectored in, he saw the machine's light, then locked onto the saucer with his radar. For a few seconds he tried to close in at full power. But the saucer swiftly pulled away and disappeared from his scope.

In this case, too, ATIC had found no explanation.

The next case, also unexplained, had occurred on the night of July 29. It had been only a few hours after the Air Force press conference.

At 9:30 P.M., Mountain Standard Time, a yellow-lighted saucer had abruptly appeared over Los Alamos. It was the second one to be sighted that day over the atomic energy base. When it was first seen, by an Air Force Reserve colonel, the machine seemed to be hovering almost over the base. As nearly as he could tell from the glowing light, its shape was round or oval.

After a minute the saucer streaked away, its color changing from yellow to white. From the way the light swiftly shrank in size, the machine's speed had been terrific. It disappeared within 15 seconds.

"Another color-change report," I said. "I guess you've had a lot of them—showing how these things change color when they speed up or slow down."

"Yes, it's nothing new." Chop eyed me a moment. "Any idea why they change?"

"I've heard one explanation. It was worked out by a Canadian government engineer; he happens to be in charge of one of their saucer projects. His answer explains all the color changes and the method of propulsion. Ever heard of it?"

"Maybe," said Chop. "Some of the Canadians came down to check things with Project Bluebook. We've exchanged information."

Just then his phone rang. While he was talking, I looked over the last Intelligence report. This IR had come from an Air Defense Command unit near Osceola, Wisconsin. It was dated July 28, 1952.

About 2:30 A.M., GCI radar had picked up several UFO's. As in the Washington Airport sightings, the first tracked speeds contrasted strangely with the later maneuvers. Most of the saucers were idling along at 60 m.p.h. until jet interceptors took off. Shortly after this, one machine's speed jumped to more than 600 miles an hour.

When the nearest pilot reached 25,000 feet, he spied several rapidly moving lights east of St. Paul, Minnesota. The saucers coincided with the track which GCI had given him. At the same time they were also sighted by a plane spotter of the Ground Observer Corps.

At Osceola some one had tentatively suggested a meteor shower, obviously without knowing of the tracked speeds. But an astronomer at the Washington Naval Observatory later reported this was impossible. Even the 600 mile-an-hour speed recorded would be entirely too slow for a meteor, and the original reports of 60 made it ridiculous. The sighting remained unsolved.

"There'll be some more IR's later," said Chop. "We'll probably have that Dayton report before you finish the article."

Trying not to show what I felt, I thanked him and left. Getting these reports had baffled me. It was less than a

month since General Samford had branded the saucers as phenomena with no mass. The Oneida report, describing a solid machine of some kind behind the light, was official proof to the contrary. And the other cases were a start toward wrecking the inversion answer.

Why had Intelligence released them—to me, of all people? Chop must have had the Director's permission; no one would dare release the reports against General Samford's wishes. Yet anyone could see they would give an entirely new slant on the press conference.

Next day I was still puzzling over it when I had a call from *True*, in New York. A short time back an Army physicist at Fort Belvoir had come out with a "bell-jar" experiment which produced miniature "saucer" lights. Though it had now been almost forgotten in Washington, John DuBarry, the aviation editor of *True*, wanted me to check on it with a scientist.

The leading authority on the ionosphere was Dr. George Ray Wait, of Carnegie Institute. When I talked with him, he quickly disposed of the Army physicist's theory.

"I don't know of any atmospheric conditions that would duplicate the 'bell-jar' saucers," he told me. "You can do many things in a laboratory which you can't duplicate in nature."

While we were talking, he gave me a valuable guide in analyzing saucer reports.

"The question is, are they navigated?" he said. "If the reports of reversals, sharp turns, and descents are fully confirmed, then no natural phenomena, to my knowledge, would explain such sightings."

When I checked at the Pentagon, Chop told me that the Air Force also had investigated the bell-jar theory.

"They agreed with Dr. Wait—there's nothing to it," he said.

On July 29, I was sure, they would have welcomed this bell-jar story, to help them reduce hysteria. It was plain

the saucer light, also was left out because of a last-minute double-check on clearance. When the final word came, *True's* presses were already rolling.

As a result these important revelations have remained, until now, unknown to the general public.

Just before the article went to press, Chop asked me to come in to the Pentagon.

"I've got an insert the Air Defense Command wants you to use," he said when I saw him. For a moment I thought it might be some last-second joker, but it proved to be only the statement from Major General Ramey:

"No orders have been issued to the Air Defense Command, or by the Air Defense Command, to its fighter units to fire on unidentified aerial phenomena. The Air Force, in compliance with its mission of air defense of the United States, must assume the responsibility for investigation of any object or phenomena in the air over the United States. Fighter units have been instructed to investigate any object observed or established as existing by radar tracks, and to intercept any airborne object identified as hostile or showing hostile interest. This should not be interpreted to mean that Air Defense pilots have been instructed to fire haphazardly on anything that flies."

"Anything else you want in the story?" I asked Chop.

"No," he said. "All we ask is for you to try to see the Air Force problem and give a fair picture." He paused, then went on in a casual tone, "If you think of any other angles, when you finish this piece, come on back in. We'll give you whatever we can."

I went out, still wondering. What had caused this about-face, the sudden cooperation since July? It wasn't because of my talk with Colonel Boyd—I'd said the same thing for two years before that.

There must be some deep, underlying reason. But what it was remained a mystery.

CHAPTER VII

Jigsaw Puzzle

STRANGE as it was, the Air Force rebuttal of the inversion theory was not the only enigma I'd found. In the past two months there had been several contradictory incidents.

The first was the Air Force reaction to a new "little men" report, started by Joseph Rohrer, a Pueblo radio executive. Ordinarily the story might have been laughed off. But Rohrer was a respected citizen, president of the Pike's Peak Broadcasting Company, and he insisted he was telling the truth. His sober account, given in a chamber of commerce talk, was headlined by the Pueblo *Chieftan*, reprinted in other papers, and broadcast by several Western radio stations.

According to Rohrer, seven flying discs had fallen into the government's hands. Three of them, he said, had been forced down in Montana. Most remarkable of all, one saucer crewman—a man about three feet tall—had survived when his disc crashed. For two years he had been kept alive in incubator-type quarters at an isolated spot in California. At first, attempts to communicate with him had failed. But gradually he had been educated by means of pictures, and linguists had now taught him to read and write English.

From Rohrer's description, the saucers consisted of giant rotating discs with stationary cabins.

"I have been in one saucer," he told the chamber of commerce men. "It was 100 feet in diameter and 18 feet thick. The saucer was put together in five sections, and sleeping quarters for the crew are tubes with caps on the ends."

The cabins, he added, were pressured with 30 per cent oxygen and 70 per cent helium. (The oxygen-helium combination, in a different ratio, is now being considered by our own space-travel planners.) For propulsion the discs used electrostatic turbines, and the magnetic fields created by the rotating rings gave them tremendous speeds. Variations in the fields, at different speeds, explained the various color changes so frequently reported.

Because of their high voltages, said Rohrer, the discs usually avoided close approaches to cities and planes. But on one occasion, in a section of Seattle, fuses were blown and electric appliances were burned out when a disc momentarily flew too low.

The government, Rohrer concluded, was keeping it secret because of possible panic.

When this report became public, some people tied it to the Aluminum Man story of 1950: the capped sleeping tubes sounded like the "silvery capsules" with little men, supposed to have fallen from a disc hit by anti-aircraft fire.

As Chop had expected, Rohrer's story brought a new crop of letters demanding the truth. He told me that ATIC knew nothing of the discs Rohrer reported.

"Why doesn't the Air Force publicly deny it?" I asked him.

"We'd rather not," said Chop.

"Why? Colonel Watson denied the Scully story, and this man's gone a lot farther. He claims he's been inside a saucer. I don't see how you can let it stand."

Chop shook his head dubiously.

"It'll cause more publicity if we make a statement."

"Well, then make him retract the story without mentioning the Air Force."

"How?" said Chop. "We can't order Rohrer to retract it."

"Have General Samford get him on the phone and throw a scare into him. Put it to him point-blank—where did he see the saucer, what date, who were the officers that showed it to him? The general could tell him he'd have to retract it or the Air Force would blast him. Even if Rohrer meant it just as a joke, a lot of people will believe it, if you let it ride."

Chop rubbed his chin thoughtfully.

"It's an idea—about General Samford, I mean. I'll put it up to Intelligence."

Next day he told me it had been turned down.

"We'd have to go through channels—this way, it might offend the Area commander."

"That sounds pretty flimsy to me," I said. "I don't know of any regulation that keeps the Director of Intelligence from making a phone call."

"Anyway, local Intelligence men would have to check on Rohrer's story."

"If you know it's bunk, why bother to check?"

"That's the routine."

"What about the people who wrote in? You going to tell them it was a hoax?"

"No. We'll just say we haven't any knowledge of what Rohrer claims."

Shortly after this the story of a sensational encounter by a West Palm Beach scoutmaster, hit papers all over the country. After the Rohrer case, I expected the Air Force to ignore it. But Intelligence surprised me.

The saucer encounter took place in a woods near West Palm Beach, on the night of August 19, 1952. About 9 o'clock that evening, Scoutmaster D. S. Desvergers and three scouts were riding home from a meeting when they saw strange lights in the woods. Leaving the boys in his

CHAPTER VIII

The Canadian Project

ABOUT twice a year since the fall of 1950, Smith had flown to Washington on official business. Each time, before he left, we had discussed the saucers and exchanged sighting reports. In the hope that he might be planning another visit, I wrote him at Ottawa. Then, while waiting for his answer, I went over the information I had on the Canadian investigation.

Two years before this, when I first learned of the Canadian interest in saucers, most Dominion officials and scientists had been openly skeptical. But early in '52, after a series of unusual sightings, their attitude had changed.

Though most of these recent sightings had been classified, a few were released to the public. Two of the published reports came from veteran airmen of the Royal Canadian Air Force.

On the night of January 1, 1952, an orange-red disc appeared over North Bay, where the RCAF has a new jet base. For eight minutes, flying at a high altitude, the machine circled, dived, and zigzagged over the field. From its estimated height in the stratosphere, the saucer was one of the largest ever sighted. Its maneuvers were made at supersonic speeds.

When the report was published, RCAF Intelligence

refused to comment. Then a second saucer was reported, again over North Bay. Approaching from the southwest, it stopped directly above the base. After hovering for a moment, it swiftly reversed direction. Climbing at an angle of 30 degrees, it disappeared at tremendous speed.

Meantime, other disturbing reports had reached the RCAF. Until then, many top officers, taking their cue from the Pentagon debunking, had laughed off the sightings. But after the second North Bay case, a high-level conference was held at Ottawa.

Four days later RCAF Intelligence publicly admitted it was starting a serious investigation. At the same time the Defense Research Board announced a new project, now secret.

"We are carefully studying the information," said Dr. O. M. Solandt, chairman of the Board. "At the moment we are as mystified as anyone else."

Another official statement was given out by Dr. J. C. Mackenzie, chairman of the Atomic Energy Control Board and formerly president of the National Research Council.

"It seemed fantastic that there could be any such thing," said Dr. Mackenzie. "At first the temptation was to say it was all nonsense, a series of optical illusions. But there have been so many reports from responsible observers that they cannot be ignored. It seems hardly possible that all these reports could be due to optical illusions."

Dr. Peter Millman, a famous Dominion astrophysicist, also admitted he was baffled after studying the sighting reports.

"It is no good just laughing at these reports. We can't discover any conventional explanation which would cover the reported maneuvers of these objects."

Just four days after the new project was begun, a formation of orange-red discs was sighted over Toronto, flying high above the city. Then on May 1 a lone saucer, moving at terrific speed, flashed over the Canadian capital. In this sighting at Ottawa, the disc's speed was calculated

as 3,600 m.p.h. by government investigators from "Project Magnet."

Unknown to most of the public, this special project had been started three years before, by geomagnetic engineers and scientists in the Telecommunications Division, Department of Transport. Its originator, the engineer in charge, was Wilbur B. Smith.

Probably no one in Ottawa was better equipped for a saucer investigation than Wilbur Smith. As the official in charge of broadcast monitoring, he could direct his men to listen for any strange messages; as a geomagnetic engineer, with a government laboratory at his disposal, he could carry out research on certain propulsion theories; through the official ionosphere observatories he could keep a radar check on saucers flying at extremely high altitudes.

In addition to this, Smith was an electronics expert, with several inventions to his credit. One was a high-speed radio direction finder used in World War II. Another was a new type of voltameter, and a third was a regenerative noise filter. He was also an expert on electronic analysis of graphic charts.

When I met Smith, in 1950, he was in Washington to represent Canada at an international conference on wavelength allocation. For two weeks, between his committee meetings and at nights, we covered every angle of the saucer problem. A tall, quiet-voiced man with close-cropped black hair, Smith had the cool detachment of a typical scientist. In our first talk he told me of the analyses he and his men had made. Then he gave me his opinion.

"I'm convinced they're real—that they're machines of some kind. We've weighed three possibilities. One, they're interplanetary. Second, they're a United States secret device. Third, they're Russian. The last two don't stand up. From the weight of evidence I believe the saucers come from outer space. And I think their appearance is what suddenly increased your government's interest in space travel and an artificial satellite. Judging from our

own operations, I'm sure your government also is vitally concerned with learning the secret of propulsion."

"What do you think it is?" I asked him.

Smith laid a pad on the table—we were lunching at a downtown hotel. Then he sketched a rocket-shaped craft.

"First, let's consider the parent ship. From the high altitude sightings, I think it must be a type like this. For power it could use nuclear fission, mass conversion of energy, or some other revolutionary source, such as cosmic rays. But our experiments indicate that the true discs, which are probably launched from large parent ships, utilize magnetic fields of force. And it's possible that the parent ships also use this same source of power."

It wasn't the first time the electromagnetic field theory had been suggested. Before Scully used the idea, in his story of the little men, I'd checked it with two or three engineers. But when several well-known scientists ridiculed the theory, I'd lost interest in it.

The first hint of electromagnetic propulsion had come in '47, on the day of Ken Arnold's now famous sighting. About that same hour, an Oregon prospector later reported, several discs appeared over the Cascade Mountains. As they circled overhead, his compass needle went wild.

His claim drew a tart comment from Project Sign analysts.

"It is difficult to take this seriously. It would imply fantastically large magnetic fields."

There had been other hints of discs rotating to utilize magnetic fields. One report came from the Reverend Ross Vermilion, a former B-29 pilot. The minister and other witnesses had described a rotating saucer which hovered a few hundred feet over a Kansas highway. Also, I had found some scientific support in the experiments of Dr. Fernand Roussel, a Canadian physicist now living at Lasqueti Isle, British Columbia. In a privately published treatise called "The Unifying Principle of Physical Phe-

nomena," Dr. Roussel explained his theory of universal electromagnetic fields, which he believed space ships could tap in traveling between planets. (This treatise, which is now out of print, has several points in common with Einstein's unified field theory.)

Quoting Doctor Roussel, I mentioned this propulsion theory in my 1950 book on the saucers. But after the storm raised by Scully's electromagnetic explanation, I'd stopped giving it serious thought.

Since then, several scientists have backed the theory. One who publicly advanced the idea was Dr. Franz Zwicky of the California Institute of Technology. In 1951, writing in the *Journal of the American Rocket Society*, Dr. Zwicky said that it may be possible to use the electricity of the ionosphere. In this upper atmosphere ions are stripped of some outer electrons by the ultraviolet rays of the sun. This ionization frees molecules which carry large electric charges.

"If we can tap this electric force," said Dr. Zwicky, "it may prove better than atomic energy for propulsion."

Recently the Carnegie Institute of Terrestrial Magnetism admitted new discoveries about the ionosphere. Until two years ago this layer, which begins about 50 miles up, was believed to be utterly still. Now, radio-echo (radar) tracking shows there are high-speed "waves" which reach speeds up to 540 miles an hour. Unsuspected downward velocities, as high as 275 m.p.h., also have been discovered. Future ionosphere research may give us the key to tremendously powerful magnetic forces now unknown.

Other reputable groups, including scientists of the British Interplanetary Society, have suggested space-ship propulsion by means of external fields of force. It is only the beginning, but it shows the changing attitude toward this once-derided theory which a more advanced race may long ago have put to practical use.

In 1950, however, Wilbur B. Smith and his little group

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were the only government scientists I knew who took the idea seriously.

"Certainly the theory's been ridiculed," Smith said when I mentioned some scientists' reaction. "So were plans for the aeroplane, the helicopter, jets, the A bomb—practically all our modern developments. I'd have doubted it myself before our experiments."

At the start the Canadian project was unofficial, though the research was done in a government laboratory with official approval.

"If you publish any of this," said Smith, "I want you to make that clear. We're government engineers and scientists, but we are working on our own time. We've gone back to the fundamentals of electromagnetism and examined all the old laws. We know now it is possible to create current by a collapse of the earth's magnetic field. Eventually, I think, we can achieve enough current to power a flying disc. And we plan to build such a disc."

"How much of this can I use?" I said.

Smith hesitated. "I'll give you the information, but it will have to be cleared with my government."

After his return to Ottawa, Smith rewrote my original draft and sent it to the Canadian Embassy in Washington. The revised report was cleared for me by Mr. Arnold Wright, Defense Research member of the Canadian Joint Staff, after a check at the Pentagon. The following is a verbatim copy of the most important statements.

"A group of Canadian scientists has been working for some time on certain problems connected with the earth's magnetic field. These investigations appear to point the way to a new technology in magnetics, and if the initial conclusions are correct they offer a ready-made explanation for many of the striking features which have been reported in connection with the sightings of flying saucers.

"The basic premise is that it is possible to produce a magnetic 'sink' [the name arbitrarily chosen by Smith and his engineers] within the earth's field; that is, a region into

which the magnetic flux will flow at a controlled rate, giving up some of its potential energy in the process. Such a 'sink' would have many interesting properties, such as the following:

"1. Electrical power could be obtained from the collapse of the earth's magnetic field into the 'sink.'

"2. Powerful reaction forces could be developed in a conducting ring surrounding the sink and offset from it, sufficient to support a suitably designed ship and to propel it.

"3. If the rate of flow of magnetic flux is modulated, the resulting magnetic disturbances could be used for communication purposes.

"It is curious to note that most of the descriptions of flying saucers are in accordance with the design which would be necessary to exploit the properties of a magnetic sink. For example, the saucers are described as consisting of a large circular disc, with a small central cabin. In this case, the sink could be located in the upper central part of the cabin. The collapsing field in cutting through the surrounding metallic ring would induce in it an electric current which would react with the magnetic field which induced it, producing a force that would have a substantial vertical component. Support and propulsion of the ship would then be a combination of this resultant force, the airfoil action of the disc, and the interaction between eddy currents induced in the disc by its rotation and the main fields.

"Rotation of the disc may be either deliberate, for the induction of eddy currents, or may be incidentally caused by the electron drag of the very large current circulating around the disc. In any case, there is good observational evidence that the disc appears to rotate.

"Since the lift on the saucer will be proportionate to the product of the earth's magnetic field and the field produced by the current induced in the disc, it follows that when the saucer is accelerating upwards a greater force is required, and hence a greater circulating current.

"If the circulating current is sufficiently large and the cooling of the disc is inadequate, it may become red or even white hot, which is in line with several reported observations. Also, under certain conditions of operation, a very high voltage may be built up between the center and the rim of the disc, which could result in a corona discharge through the surrounding air, if the saucer were at a sufficiently high altitude. Such a discharge would resemble the Northern Lights but would be very much more intense. This also seems to be confirmed by observations.

"Navigation of such a flying saucer," the report went on, "would be a very complex process indeed. In the first place, the earth's magnetic field makes all sorts of angles with the horizontal, depending upon geographical latitude and peculiar local conditions. Thus the direction of the force which results from the interaction of the earth's field and the field of the disc may be in almost any direction.

"Furthermore, the tilt of the saucer to get the reaction force in the wanted direction most probably will result in aerodynamic forces in some other direction. Navigation therefore will resolve into a determination of the field direction, comparison with the direction in which it is desired to move, and analysis of the aerodynamic forces which would result from such a motion—and, finally, a suitable correction in the initial tilt of the saucer and flow of magnetic flux.

"It is doubtful if a human pilot could manage to do all this at the speed which would be necessary to maneuver a saucer at the speeds and through the intricate motions which have been observed. It is therefore highly probable that the saucer control systems are semi- if not fully automatic. There are many reports of saucers hovering in one spot for some time. For a saucer designed to operate as described, this would probably be its easiest maneuver. It would be necessary merely to adjust the flux flow and the tilt until the resultant force exactly balanced the

weight of the saucer. There would be little or no aerodynamic problem in this case.

"There is no indication that the accelerations to which a saucer crew would be subjected would be any different from the accelerations experienced in any other type of aircraft going through the same maneuvers. Those authorities who have been consulted say that even Einstein's Unified Field Theory does not indicate that gravity can be neutralized or the inertia of matter overcome. Where saucers have been observed to execute close turns and other maneuvers which would result in large accelerations, it is most probable that such saucers are remotely controlled and do not contain living matter as we know it."

During our talks Smith had enlarged on several of the major points. One night, while we were dining at the Roger Smith Hotel, I told him I was puzzled by the conflicting reports of the saucers' lights.

"If the reports are right," I said, "they're every color of the rainbow. And pilots say they sometimes appear suddenly, or blink out like a light bulb when it's switched off. It just doesn't make sense to me."

"I think I can clear it up," said Smith. "Most of the effects are caused by the disc's rotation, though sometimes a corona discharge is the cause. In the first place, probably many discs aren't seen at all, especially at night. If they're not heating up from rotation, and there's no corona discharge, you wouldn't see one unless it was caught in a searchlight beam or you saw its metal surface shining in the moonlight."

He stopped as I held out my cigarette case.

"No, thanks, I don't smoke." He waited until I had lit up, then went on. "Now let's assume a rotating ring begins to speed up, so that it overheats from its movement through the magnetic field. At first, out of the darkness, you'd see a pale pink—if the speed-up was not too rapid. Then the color would brighten to red, orange-red, through yellow to the glow of white-hot metal. If you slowly heat any metal you'll see the same changes."

"That's right, I've noticed it," I said.

"Now if the ring's rotation was very swiftly accelerated," Smith continued, "the human eye couldn't catch the rapid changes. It would go from red to white too quickly. The same holds true when the rotation is reduced. If the slowing is gradual, you'll see the various stages as the saucer turns yellow, orange, red, pink, and finally becomes dark. But if the rotation were abruptly slowed or stopped, the cooling effect of the air, especially at high speed, would be very swift. You could get the impression that the light had actually been turned off."

"It sounds logical enough," I agreed. "It explains all but the blue and green combinations."

Smith paused while the waiter put down our dessert orders.

"Those colors come from the corona effect. Under certain atmospheric conditions you'll get the Northern Light colors. At different heights a certain shade would predominate. For instance, at relatively low altitudes, any corona discharge would be very short in length and you'd see more of a blue-white color. Somewhat higher, it would be green, or bluish green. Higher still, you might see all the normal corona colors—red, yellow, blue, and green."

"If the ring were overheating, could you still see a corona discharge?"

Smith nodded, then qualified the answer.

"Ordinarily a bright red or white glow would nullify it. But if the rotation speed was only moderate, you might get a reddish color tinged with blue. Higher up, you'd be more likely to see a red shade, from heating, tinged with green or bluish green. It would most likely be a rather hazy effect instead of precise colors. In the majority of cases, however, you could expect just the red-orange-white range, and the reports bear that out."

"This certainly backs up the rotating disc answer," I told him. "It's the first convincing explanation of all the night sightings."

"It explains the daytime variations, too," said Smith.

"It's fairly clear, from the reports, that the discs are made of some silvery-colored metal. In sunshine they gleam like conventional aircraft. But there *are* color changes in daytime, when the saucers maneuver or suddenly speed up. Many of them have been described as turning red or getting white-hot—also the reverse. However, in bright sunlight it's harder to detect the changes—and to recognize the disc shape, too."

"Come to think of it," I said, "Project Sign mentioned that in its 1949 analysis. I'll bring the report next time we get together."

Our next talk was at the Pan American Union, where the wave-length conferences were being held. Smith had an hour to spare, and we found an empty room. I had brought my copy of the final Project Sign report, which contained one section entitled, "Confidential Analysis of Intelligence Reports." Though it had been declassified, not many people knew the analysis details.

Together, Smith and I went over the main points.

"Group 1. The most numerous reports indicate daytime observation of metallic disclike objects, roughly in diameter ten times their thickness. Some suggest the cross-section is asymmetrical and rather like a turtle shell. Reports agree that the objects are capable of high acceleration and velocity. They are often sighted in groups, sometimes in formation. Sometimes they flutter.

"Group 2. Lights observed at night. These are also capable of high speed and acceleration. They are less common in groups. They usually appear to be sharply defined luminous objects.

"Group 3. Various kinds of rockets, in general like the V-2.

"Group 4. Various devices, probably cosmic-ray balloons.

"Group 5. Reports given little credence.

"In general, there are few if any indications of noise or radio interference. Nor are there many indications of any material effects or physical damage attributed to the observed objects."

Smith carefully reread the last sentence.

"Not *many* indications," he said. "That could be taken to mean they do have a few. I didn't think any disc had come that close."

"What do you mean?" I said.

"There is an area of possible danger." Smith reached for a pencil, sketched a rotating disc, then roughly outlined a city beneath it. "With a disc 100 feet in diameter, for instance, there will be two fairly large fields of magnetic force around it while it's in operation. If it were to fly low over this city—let's say at 500 feet—eddy currents would be induced in power lines and metal surfaces. It could blow fuses, perhaps even burn out wires. The danger zone might even be larger; possibly it would extend for a thousand feet. I believe it's the main reason discs have avoided flying low over inhabited areas."

"How close could a plane come without danger?"

"Well—" Smith stopped, gave me a shrewd glance. "You're thinking about Mantell. Judging from the report, he never got near enough for any such effect. However, if a pilot did fly into a region where a magnetic field was collapsing, it would produce eddy currents in his plane.

"At a moderate distance it would merely throw off his direction finder and compass. If he were fairly close, it could affect his ignition and set up strong vibrations in his plane. It might even cause a fire. But the plane would have to be well inside the danger zone."

"Could the vibrations cause a plane to disintegrate?" I asked.

"Possibly," replied Smith. "But it would have to be extremely close with a 100-foot disc. A larger one, rotating at high speed, would have a greater danger zone, of course."

He looked back at the Project report.

"I see they recommended that the discs' flutter be analyzed. What ever came of that?"

"Nothing that I know of." I glanced at another section,

where Project analysts had discussed the saucers' shape and color, and checked several paragraphs for Smith:

"Color. Observers universally report light-colored objects . . . Seventy per cent said the objects were glittering, shiny, luminescent.

"Shape. Over half were reported as round, disc-shaped, spherical or circular. Very few [observers] saw any distinctive shape . . .

"Individuals who see objects in daylight either look at the reflection of the sun on a shiny surface, or else directly at a light source of high intensity. In the war, camouflage experts placed bright lights on the leading edges of anti-submarine aircraft to conceal them from sub lookouts. So if observers in daytime actually see lights, or the reflection of the sun on objects, it would account in large measure for their not identifying them."

"That also holds for the daytime difference in colors," said Smith. "On a sunny day a disc could be bright red from rotation, but seen close to the sun it would appear as just a brilliant object. Also, any corona effect would be much dimmer in daylight. The farther from the sun, the more of the true color you'd see.

"On a cloudy day people have seen the actual color changes. At first a disc which isn't heating up will look silvery—or gray, on a very dark day. Then increased rotation will give it a reddish tint, and on through orange to white. And of course the reverse, as rotation decreases."

"It all adds up," I agreed. "But what about the rocket-shaped types?"

It was getting close to Smith's next conference. He looked at his watch, hesitated.

"Let's cover that later. Call me tonight and we'll set a date."

Before our next meeting I listed a few points that still puzzled me. When we got together for dinner, Smith picked up the discussion exactly where we'd left off.

"You were asking about the rocket-shaped types. I think the large parent ships have that general shape. There may

be a smaller cigar-shaped type operating nearer the earth, but I'm not convinced. A disc seen at various angles will give all the effects reported."

He took out a half-dollar, poised it between his fingertips.

"Assume this is a disc-shaped saucer. Narrow your eyes, so your vision blurs a little and you don't see the sharp outlines. Now I'm holding it flat, edgewise to you—you see it looks like a long, extremely narrow cylinder." He tilted it slowly. "Now it's a narrow ellipse, the typical 'cigar shape.' As I tilt it a bit more, it looks more like a football, then egg-shaped. And finally it becomes perfectly round."

He laid down the coin.

"I believe many, if not all, of the saucers described as egg-shaped, oval, or cigar-shaped have simply been tilted discs, traveling at varying angles because of the local magnetic fields. And that brings up another point—the reportedly sudden disappearances. Take the daytime sightings first. Suppose a disc seen as round or oval abruptly tilts so it's edgewise to the observer. At best, all he could see would be a very narrow cylinder-shape, little more than a line. Except at close range, the human eye couldn't resolve it—the disc would seem to vanish.

"Abrupt maneuvers may also explain some of the night disappearances. Some witnesses describe discs as glowing on top, but dark on the lower side. It may be that there is a stationary section under the rotating disc, and only the moving ring heats up. There may be some other explanation. But if the lower side remains dark, then any maneuver that turned the bottom toward an observer would give the effect of a sudden blackout."

During one of our talks Smith had sketched his idea of a flying saucer, showing a rounded, turretlike central cabin. It was possible, he said, that the turret might retract in flight, to reduce resistance. I got out the sketch and looked it over as Smith finished his blackout explanation.

"With all that heat," I said, "it's hardly possible the things could be piloted—unless, of course, they're creatures

who can withstand extreme heat as well as the high gs."

"I agree," said Smith. "If they were humanlike beings, they'd have to avoid operations that would cause such heat and high g-forces. The cabin would need to be heavily insulated. They might also have special cooling systems, perhaps a nonconducting gas in hollow compartment-walls. But I think most if not all of the disc-type saucers are under remote-control."

We had already covered some of the reconnaissance angles. Smith agreed with me that some of the discs undoubtedly carried television scanners and cameras. Others, he thought, would be equipped with devices like our tape recorders, to pick up broadcasts and code messages for later analysis aboard the mother ship.

Though he admitted it was pure speculation, Smith also had sketched his ideas of how discs could be berthed on the larger craft. Each mother ship could have small cup-shaped niches in its sides, into which the disc turrets would fit, with the rest of the saucers lying flat against the parent ship's side.

If the turrets retracted, it would be even simpler for the discs to attach themselves to the larger craft. They might be held in place magnetically, or by some mechanical lock.

Another angle which Smith had covered was the operating steps. To take off, he said, the revolving section would be rotated until the resultant cutting of magnetic fields caused sufficient upward thrust. Since less resistance would be encountered in edgewise flight, this was obviously the reason for the discs' tilting up at steep angles, during swift climbs.

The actual control was one point which puzzled me, and I asked Smith about it now.

"Even if they're remote-controlled from the mother ship," I said, "it must take some kind of robot to calculate all the forces."

"No doubt of it," Smith answered. "They probably use an automatic device which constantly analyzes the mag-

netic fields through which a disc is traveling. This robot would be in the disc itself—even if it were manned. I think it must be linked with the controls, so that it instantly changes the disc position, and the speed of rotation if necessary, to compensate for magnetic field variations. And the same would apply for maneuvers. For turns, climbs, hovering, and other maneuvers, the operator would have a series of push buttons—whether he was aboard the disc or on the parent ship. When he pushed a button for a turn, or to speed up, the robot would do the rest."

Another thing I had wondered about was the oscillation or flitting motion so frequently reported.

"They seem to waver before making a turn or climbing," I said to Smith. "Some pilots say they've seen the discs oscillate even in straight flight."

"That's to be expected," he told me. "Let's say a master-control button was pushed for a turn. There'd probably be a split-second delay while the robot-analyzer checked the resultant forces needed, then it would move the controls. This accounts for oscillation before any sudden change such as a steep climb or a sharp turn.

"In straight flight, oscillation would be caused by the disc's adjustment to changing magnetic fields. In a formation, you'll sometimes see individual saucers wobble in succession as they pass through different fields."

He looked at me quizzically as I glanced at my notes.

"I see you still have some doubts about electromagnetic propulsion."

"No, I think you're right. Some of the points are hard to grasp, that's all."

"When we do get all the answers," Smith said soberly, "it will be a tremendous thing—and we'd better get them before Russia does. Magnetically powered discs would be terrible weapons. Their range would be unlimited, and their speeds would be far beyond anything we've even dared hope for. They'd make perfect guided missiles, and they could easily carry A-bomb warheads—perhaps even the H bomb, when we get it."

"And their being silent would make it even worse," I added. "You'd never hear them until they hit."

"Well, of course, that applies to even slower missiles," said Smith. "The people in London never heard the V-2s before they struck."

"Incidentally," I said, "that was the last question on my list. I don't understand why the saucers have never been heard, even at fairly low altitudes."

"A few people have reported hearing them," answered Smith. "But most sightings, I think, have been at altitudes higher than witnesses thought—so high that you wouldn't hear anything. In two or three cases, when discs passed overhead at a moderately low altitude, people have said they heard a swish. And of course if you were very near a saucer on the ground, or if it was hovering close to the earth, you'd undoubtedly hear a humming sound from the rotation. That is, unless other sounds—like a train passing by—drowned it out."

This was our last meeting before Smith left for Ottawa. It was two months after this when he sent back the revised version of the article I'd written. It had been intended for early publication, but was held up to include details of the Canadian disc experiments. Later in '51, Smith told me they had made laboratory tests with a rotating disc, but by that time Project Magnet had been classified. I decided to wait a while longer, hoping that the details, and pictures of the disc, would be released. But Smith had been unable to clear them, and the article had remained unpublished.

Now, as I read over the material, in December of '52, Smith's earlier explanations seemed almost uncanny in light of the recent sighting reports.

For a careful check I went through my entire file of sightings.

There were several which described the red-green-yellow-blue combination indicating a saucer's corona discharge at high altitudes. The most outstanding case was at

Phoenix, where hundreds of people had seen the so-called "jewel box" saucer.

In sightings at lower altitudes, case after case bore out Smith's explanations. During daytime periods, scores of metallic-looking discs had been seen to change color during maneuvers. One typical report, in 1950, described an encounter near Lewisburg, West Virginia. Two round, silvery devices had approached the city, then had swung into tight, fast circles. As the maneuvers began, both discs turned orange-red. When they straightened out, reducing speed, the orange hue quickly faded and the discs resumed their normal silvery color.

In detailed night reports, too, observers' descriptions backed up Smith's analysis. One carefully reported encounter, which I had personally investigated, was the dramatic incident near South Bend, on the night of April 27, 1950. Because of this check-up, I was able to get the passengers' stories as well as the crew's account.

At 8:25 P.M., a Trans World Airlines DC-3 was droning westward over Goshen, Indiana. In the left-hand seat, handling the controls, was Captain Robert Adickes, a stocky ex-Navy pilot with ten years' service in TWA. Over on his right was Robert F. Manning, also a four-stripe captain, who was acting as first officer on this flight to Chicago.

The DC-3, Flight 117, was cruising at 2,000 feet when a strange red light below and behind the airliner suddenly caught Manning's eye. Moving swiftly, it climbed up on the right, overtaking the plane.

Puzzled, Manning watched it close in. This was no wingtip light—the red light was too bright. The DC-3 was cruising at 175 m.p.h., but the mysterious object overtook it rapidly, the light steadily growing in size. It was now an orange-red color, like a round blob of hot metal sweeping through the night sky. Craning his neck, Manning looked down on a spherical shape which glowed brightly on top, its lower half in shadow.

"Look over here," he said to Adickes. "What do you make of this?"

told it to him. Just the same, I notice a few scientists have swung around—at least they admit it's possible to tap electricity in the atmosphere."

"All right, maybe it is the answer. But so far as I know it hasn't been proved."

"Then the Air Force hasn't built any test discs, like the Canadians?"

Al fiddled with his cigarette lighter before he answered.

"Circular airfoils have been tested—you know that. There was the Navy XF5-U and—"

"I mean rotating discs using electromagnetic fields."

"It's possible. I couldn't say."

"What does ATIC say about that Camp Drum report, where they heard what sounded like rotating discs?"

"No conclusions," said Al.

"Can you get me the Intelligence report?"

"Not now, anyway. They're still analyzing the case."

It was the first time since July there had been any hint of a hold-up on reports.

"What about some 'mother ship' cases?" I said. It was a stab in the dark; I wasn't sure they had even one confirmed report, unless it was the Oneida sighting. And I didn't class that as a mother-ship case.

Al gave me a sidelong look.

"Another tip?" he said. "OK, I'll see what I can do. It may take time—the Project's shorthanded and behind in its work."

It could be true, but I began to suspect a stall. Later on, I found out that my radar article had caused trouble; some officers had objected to my getting the ATIC reports.

While I was waiting for word on Air Force cases, I read over several unofficial reports of mother ships.

The first came from Culver City, California. On July 23, 1952, several aircraft-plant workers had sighted a bright, silvery ship flying northwest over the city. One technician, who watched it through binoculars, described it as elliptical-shaped and flying with a rocking motion.

Apparently at a high altitude, the strange craft stopped and hovered. In a few seconds the aircraft men saw two small discs launched from the starboard side. For several minutes the discs circled over the area, in a precise pattern. Then the "mother ship" took them aboard. Climbing straight up, at tremendous speed, the cigar-shaped machine quickly vanished.

The next three incidents took place in Europe. On September 29, 1952, a large cigar-shaped ship was sighted over Denmark. Flying beneath it were several discs, all of them rotating at high speed. Both the parent ship and the discs were reported from various parts of the country.

Two weeks later, on October 10, another mother ship, also accompanied by spinning discs, was seen over Germany, Norway, and Sweden. One published report carried eyewitness accounts from 30 Swedish cities; at least 7,000 people were said to have watched the mysterious formation. Later that same day a single disc was seen over Copenhagen airport, by Danish air force officers.

On October 14 hundreds of Frenchmen at Lens and Oléron reported another cigar-shaped ship with a convoy of discs. Many of the observers were leading citizens, including several college professors at Oléron. The story had one fantastic detail which has all the earmarks of hysteria. According to a few Oléron citizens, one disc discharged hundreds of odd, fiberlike threads as it zigzagged over the city. Afterward, one man insisted he had been caught like a fly in a spider web, and several witnesses confirmed this eerie tale.

Except for this, the Oléron-Lens sightings were identical with the other mother ship reports. In addition, this case had radar confirmation. Operators at the Mont de Marsan airdrome, reporting to official investigators, said their scope had shown a large image unlike any known aircraft.

Compared with these European cases, the lone unofficial

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"Billions upon billions of stars," Dr. von Weizacker has said, "may each have their own planets revolving about them. It is possible that these planets would have animal and plant life on them similar to the earth's."

Our progress toward space travel has changed the minds of many engineers and scientists who once called this a fantastic dream. We have made long strides since the pioneering rocket tests of Dr. Robert H. Goddard which began back in the twenties. Most of this progress has been made in the last five years. Perhaps it was only coincidence, but our intensive drive for space travel did not begin until after the first flood of saucer reports.

Within a few months the Defense Department mapped serious plans for a moon rocket and an artificial satellite. In 1948 Secretary James Forrestal publicly announced the first steps.

"The Earth Satellite Vehicle Program, which is being carried out independently by each military service, has been assigned to the Committee on Guided Missiles for coordination. . . . Well-defined areas of research have been allocated to each of the three military departments."

Another hint of the government's interest was given by General Curtis Le May, when he asked Congress for Air Force research funds covering these items: "Flight and survival equipment for ultra-atmospheric operations, including space vehicles, space bases, and devices for use therein."

We are still several years from our first space flight. While a moon rocket could be built now, it would be a crude device compared with the space ships which have been planned. One reason is that we are waiting for atomic power. Also, rocket designers have almost outstripped the research scientists. This was frankly admitted last February by the chief of the rocket section at the Naval Research Laboratory.

"Present plans for space travel," he said, "and designs for space ships are based on a meager store of scientific

knowledge. Before we can attempt to transport human beings in a ship, we must produce a practical, reliable, unmanned satellite. To do this we need better, more efficient rocket power plants . . .

"We need more research on fuels, on high-temperature metals, and methods for cooling the inner walls of rocket motors and the outer skins of high-speed airframes."

However, we have learned some of the answers, using improved V-2s and other rockets. Powered by liquid fuels, a Wac-Corporal unit, fired at high altitude from the nose of a V-2, has climbed about 250 miles, reaching a speed of 5,000 m.p.h. Eventually rockets driven by atomic-powered jets, or perhaps a now-unknown propulsion system, will escape the earth's gravity and fly into free space.

In the frigid cold of the earth's shadow, space-ship cabins will have to be heated. But in sunlight, crews will have to be protected from the intense solar heat: even in our supersonic test planes, which fly at less than 100,000 feet, cockpits must be air-cooled. To safeguard crews in airless space, a balance must be found between the extreme cold on the shaded side of a ship and the tremendous solar heat on the exposed side. Methods now considered include combinations of black and white painting, and a slow, controlled rotation of the entire space ship.

Already, chemical air-purifying systems have been planned for crew compartments. Tests indicate that crews and passengers will breathe oxygen and helium, eliminating the danger from nitrogen bubbles.

After scores of rocket flights, engineers have developed complicated control and recording instruments which withstand the shock of terrific acceleration. The first crude inertial controls of the V-2 have been replaced by new devices which detect the slightest variation in speed. Gyroscopes a thousand times more accurate than those used in aircraft are ready for space-ship use, and automatic navigation equipment designed for guided missiles is being adapted for space rockets.

When they reach the moon, they can take on a full fuel load, and still take off easily, with the moon's pull only one sixth that of the earth.

Unlike the earth-moon trip, flights to other planets will involve complicated navigation. Mechanical brains, like the present Goodyear L-3 GEDA, will work out the course, figuring when and where to intercept the target planet's orbit.

Probably Mars will be first solar planet to be explored. At its nearest approach, Mars is 35 million miles from the earth. Venus, at its nearest, is closer—25 million miles. But Mars, according to many astronomers, is the most likely to have intelligent life, and several peculiar incidents in the last three years seem to increase the probability.

The most important evidence is linked with the mysterious explosion on Mars in 1949. The strange blast was seen on December 9 by the noted Japanese astronomer, Tsuneo Saheki. Since Saheki has specialized in observing Mars since 1933, his report carried weight with world scientists.

According to Saheki, the explosion caused a brilliant glow for several minutes. This was followed by a luminous yellowish-gray cloud 40 miles high and 700 miles in diameter. After ruling out all other explanations, Saheki suggested it had been an atomic explosion.

Such a blast could be from two causes, Saheki said—a volcanic eruption or an artificial atomic explosion. If the latter, then it could only have been set off by highly advanced beings. In this case it could have been a test of some atomic weapon even more powerful than the H bomb—or it could have been an accident.

If it was an artificial explosion, there are three possibilities. It might have been caused by a Martian race; a race from another planet could have settled on Mars recently; or spacemen from outside our solar system might be using Mars as an operating base during their investigation of the earth.

Since the 1949 explosion, strange blue clouds have been seen above Mars by Walter H. Haas, director of the Society of Lunar and Planetary Observers—also by other astronomers. The cause of the clouds is a mystery.

Beside this recent activity, there are other unanswered questions about Mars. The most important concerns the long-disputed *canali* on the red planet, discovered by Giovanni Schiaparelli in 1877. Though Schiaparelli did not claim these "channels" were artificial, he did not deny the possibility that they were canals built to link the melting polar icecaps with water-starved areas on Mars.

Since then, many scientists have accepted this answer, among them Percival Lowell, who established Lowell Observatory in Arizona and studied the red planet for over 30 years. During this time Lowell discovered a precise network of over 600 *canali*—which he was convinced were waterways. Lowell's theory, stated in his three books,* was that Mars is a dying planet, with the melting icecaps its only remaining source of water. The Martians, Lowell believed, had built the canal network and a series of pumping stations in a gradually losing battle to perpetuate their race.

In addition to this, several astronomers have reported seeing odd geometrical symbols on Mars. To be visible from the earth, they would have to be gigantic. The most logical explanation is that the Martians were attempting to signal the nearest inhabited planet, perhaps in the hope of being saved from their slowly approaching doom. But even the existence of the symbols is denied by many competent observers.

However, the possibility that Mars is inhabited—at least temporarily—is serious enough to make it the first one explored.

During the flight robot calculators and automatic star-trackers will keep the ship on course. And by the time a

* *Mars and Its Canals; Mars as the Abode of Life; The Evolution of Worlds.*

Mars voyage is possible, a new method of navigation should be practical—radio astronomy.

In the last few years astronomers using radio-telescopes—giant parabolic reflectors with amplifying systems—have been hearing mysterious radio “signals” from the Milky Way and beyond. Their source is unknown.

At first scientists believed the peculiar transmissions came from hot objects of great magnitude, which they named “radio stars.” But astronomers have been unable to identify them with any luminous objects.

In a recent report Dr. Grote Reber, Bureau of Standards authority on cosmic radiation, stated that such powerful radio waves could not be caused by any star, or group of stars. He admitted he was puzzled by the signals, which combine to form an odd hissing sound.

“These mysterious radio transmissions,” said Dr. Reber, “are one of the biggest questions in science today. We’re not sure of their origin or what they mean.”

In England two British scientists, Drs. R. Hanbury Brown and C. Hazard, have tracked some of the signals to the galaxy Andromeda. But like Dr. Reber, they do not attempt to explain the meaning, though they believe some unknown phenomenon may be the cause.

Inevitably, it has been suggested that the signals may be “scrambled” messages between inhabited planets, or between some planet and its space ships. It is also possible that some of the signals come from interplanetary navigation beacons fixed in space, or located on small celestial bodies which our telescopes will not pick up.

Message-scrambling is a familiar practice here on earth, but though Bureau of Standards scientists have recorded the signals on tape, no one has been able to separate the strange hissing into code or intelligible sounds.

So far, about 200 signal sources have been located in space. Whether natural or artificial, their locations are so precise that they could be used for accurate cross-bearings. Our future spacemen will undoubtedly use the signals to

check their courses, especially on long flights such as the journey to Mars.

As our first space ship to Mars swings into the red planet’s orbit, its crew will begin long-range observations with telescopes and radar. If it seems to be inhabited, they would have to make a cautious survey before getting too close.

Either the crew will launch one or more small manned craft, or they will send down remote-control devices with cameras and television “eyes,” such as we now use in radio-controlled drones. Meantime, radiomen on the ship will listen in for voice or code transmissions from Mars. If any are heard, the crew will record them and try to decipher their meaning.

To avoid alarming the Martians, the explorers would at first keep their observer units at a fairly high altitude. If they were not fired on or chased by Martian aircraft, the crew would begin a lower-altitude survey. In this preliminary check they would naturally photograph or televise any aircraft or space-ship bases, the planet’s defenses, cities, and industries.

If Martian pilots tried to intercept the observer units with ordinary aircraft, the units could be easily maneuvered out of danger by remote control. But if the Martians also had space ships, the earth crew would have to retrieve its units—or possibly abandon them—and escape into outer space. Later they might steal back for night observations by radar and infrared devices.

After this first survey, the space-ship crew might return to the earth, or they might remain in Mars’ orbit and report their discovery by radio. If the Martians seemed to be a possible menace to the earth, other space ships might be sent for a check-up *en masse*.

Provided the Martians did not have space ships, the explorers from earth could land on Mars’ two small moons and set up operating bases. The outer moon, Deimos, is about 10 miles in diameter, while Phobos, the nearer one,

"Unless that combination had some special meaning they're trying to put over."

"This IR doesn't give any hint of that." I picked up the second ATIC report. "Here's another Japan case. See what you think of it."

The report, sent in as an IR, had been written in the first person by Lieutenant David C. Brigham, a young Air Force pilot from Rockford, Illinois. It read as follows:

"At 11:20 hours, March 29, 1952, I was flying a T-6 north of Misawa. GCI was running an intercept on me with a flight of two F-84's. One of them overtook me, passing starboard at approximately 100 feet, and ten feet below me. As he pulled up abreast, a flash of reflected sunshine caught my eye. The object which had reflected the sunshine was a small, shiny disc-shaped object which was making a pass on the F-84.

"It flew a pursuit curve and closed rapidly. Just as it would have flown into his fuselage, it decelerated to his air speed, almost instantaneously. In doing so, it flipped up on its edge at an approximate 90-degree bank. It fluttered within two feet of his fuselage for perhaps two or three seconds. Then it pulled away around his starboard wing, appearing to flip once as it hit the slipstream behind his wing-tip fuel tank.

"Then it passed him, crossed in front, and pulled up abruptly, appearing to accelerate, and shot out of sight in a steep, almost vertical climb. It was about eight inches in diameter, very thin, round, and as shiny as polished chromium. It had no apparent projections and left no exhaust or vapor trails. An unusual flight characteristic was a slow, fluttering motion. It rocked back and forth in 40-degree banks, at about one-second intervals throughout its course."

Riordan put down the report.

"That beats me," he said. "How the devil could an eight-inch disc fly, let alone maneuver like that?"

"It could have been spinning and he didn't notice it. It had the typical flutter—"

"You mean the electromagnetic deal again?"

"It's the only answer I can think of. The thing must have been a small remote-control observer type."

"But that little!" protested Riordan.

"Well, you know we've built some pretty tiny remote-control units for drones and guided missiles. With these new transistors in place of vacuum tubes, they'll be even smaller. And anybody intelligent enough to build flying discs would be way ahead of us."

"Yes, I guess you're right."

"If that report gets you," I said, "take a look at these."

Riordan went through the most dramatic cases, ending with the Gulf of Mexico sighting. His eyebrows shot up when he read the mother ship's final speed.

"Wow—over 9,000 miles an hour! That's almost unbelievable."

"I just got another report showing the same thing. It's from an ionosphere observatory—" I showed him the name, which the officials had asked me not to publish. "They track the lower ionosphere layers by radar, and it records any changes on a chart. One night they were tracking the E layer, over 50 miles up, and suddenly the radar picked up a terrific disturbance. The needle jumped all over the chart. Some experts analyzed the tracing later and they said that a solid object, flying a straight course, had passed over the station at between nine and ten thousand miles an hour."

Riordan shook his head.

"What's more," I said, "it bears out Smith's theory. The chart showed the ionosphere in a violent commotion, apparently upset by some powerful electrical force. It didn't get back to normal for over 30 minutes, and any air turbulence from the thing's passage should have died down long before that."

"This business is beginning to worry me," muttered

balloon answer was ridiculous. I told you it was AWS's job to say yes or no on balloons."

"OK—it just sounded silly." Riordan picked up the report and silently read the other AWS comments, which were as follows:

"Case 226. Sighted one hour after release time at Albuquerque. Same green flare as in previous five or six cases, and moving into the wind from east to west. No balloon . . . Case 227. Read report of incident. Definitely not a weather balloon. Serves as a guide to interpretation of 223, 224, 225, and 226 . . . Case 230. Exactly as described in 223, etc. Definitely no balloon . . . Case 231. Another glowing green flare just as described above."

Riordan put his finger on the "guide to interpretation" line.

"That's the tip-off. Even then, they must have known those were guided missiles. That's what scared them into setting up Project Twinkle."

"It looks that way. But it still doesn't prove the saucer people are hostile."

"Are you crazy?" demanded Riordan. "It can't add up to anything else. You admitted the red spray things were ranging bombs under remote control."

"Yes, and I'm convinced the green fireballs are guided missiles. But those tests began four years ago. If an attack was all they had in mind, they'd have hit us long before this."

"What else could they possibly—"

The phone cut Riordan off. When I picked it up I heard a familiar voice.

"This is W. B. Smith. I've been here several days, but this is my first chance to call you about a talk. I know it's short notice, but this is my last day in Washington."

"All right, I can meet you in about an hour."

"Good. I'm at the Shoreham—Room 422-F."

When I explained to Riordan, he nodded.

"Maybe you'll get a new angle. Anyway, I've seen enough for one day. I still say it's bad news."

"We'll hash it over next time. There may be an out."

Riordan shook his head.

"I think you're kidding yourself—you just don't want to face it."

Driving out to the Shoreham, I thought over Riordan's remark. Maybe I was kidding myself. But there was one answer, which I'd just begun to see, that left a chance for a peaceful contact.

When I saw Smith, he looked the same as when I'd first met him, except for a sprinkling of gray in his black hair. But his manner was more sober as he told me the developments in Canada.

"My government is now taking the saucers seriously," he said. "The Defense Research project is secret, but I can tell you this. They're analyzing reports very carefully, and so is RCAF Intelligence. Several of our best scientists are helping on the technical aspects—they stopped scoffing after the sightings early in 1952."

A little later he told me his own project was also analyzing saucer reports, passing on their conclusions to the Defense Research unit.

"Since your project's under wraps," I said, "you can't tell me what the conclusions are. But what about your private opinion?"

"The same as before," said Smith. "After seeing all the new evidence, I'm more convinced than ever."

A few days before, I had read a news story about a flying saucer which the AVRO Aircraft Company was supposed to be building. According to the report, it was expected to have a top speed of about 1,500 miles an hour. When I asked Smith about it, he nodded.

"Since the newspapers have the story, I can tell you it's true. AVRO is building a new type of plane—revolutionary, in fact. I think it will make present types obsolete, but that's all I can say."

Then he suddenly saw what I had meant.

"It hasn't anything to do with our rotating disc experiments. It doesn't use electromagnetic propulsion."

"Those disc tests are under security, I suppose?"

Smith smiled apologetically.

"Yes, I'm sorry. We're still working on the disc problem, but that's all I can say. However, it might pay you to study Einstein's Unified Field Theory. You know it unites the forces of electricity, magnetism, and gravity in a single formula."

"It's just Greek to me. But I can see it may be the key to the discs' operation. By the way, are your radio monitors still listening for strange signals?"

"Yes, when they aren't busy with other work. However, they haven't caught any peculiar messages."

Smith opened his brief case and looked at some typed notes.

"Here's an experiment we tried. It explained something that puzzled some of our officials. You know how often a strange light will be reported by only a few people, out of thousands in a city? Naturally, some skeptics thought this proved such reports must be hoaxes. My group had a pet theory about it, so we made a test at Ottawa."

To carry it out, Smith said, they fastened a 500,000 candle-power aircraft flare inside an aluminum cone, suspending the cone under a large weather balloon so that the light would shine on the bottom of the gas bag. The flare itself would be hidden from the ground.

"We waited for a night when the wind would carry the balloon over a certain part of the city—an area where there was a night baseball game and two drive-in theaters. At 5,000 feet a delayed-action fuse set off the flare. All you could see was the glow on the under part of the balloon. The effect was striking, as if a lighted disc had suddenly appeared in the sky. We expected switchboards to be flooded with calls."

Smith paused and looked at me whimsically.

"There wasn't a single call that we know of. It's obvious why so few people see the saucers. Very few ever bother to look at the sky."

"Maybe you Canadians are just less excitable. That Indianapolis sighting last July was at 5,000 feet and it raised the devil."

"But that had rapid movement to catch the eye," said Smith. "Our balloon was moving very slowly."

"Any other tests like that?" I asked him.

"No public ones, but we're considering a 24-hour radar watch."

When I asked where he thought the saucers came from, Smith hesitated.

"I'll give you this as my personal opinion. There's some evidence that they are operating from Mars. You know about the atomic explosion which Saheki reported, and the blue clouds seen since then?"

"Yes, I've seen the reports."

"There's another factor," said Smith. "The last time Mars approached the earth, I worked out a prediction. There were several sightings at the time I'd calculated. Of course, that's far from proof. But I think Mars will bear close watch. It may be the saucers' originating planet, or it may be serving as an operating base for some race outside our solar system."

"The moon could be another base," I suggested. "Some amateur astronomers have reported seeing lights in two or three craters."

"I don't know of any official confirmation," said Smith. "It would be more logical to use the other side of the moon, which we never see. It would be an ideal operating base; they could reach the earth and return in a very short time."

For the next hour we switched to developments in the United States. I told Smith what I had learned, except for the Utah pictures.

"With all that evidence," he said, "your Air Force

Intelligence must be convinced the saucers are interplanetary."

"I think they are. How about RCAF Intelligence—and your other project officials?"

"I'm afraid I can't answer that. Of course, you can draw your own conclusions."

"They must have seen the same kind of evidence," I said. Smith smiled faintly.

"From what you've told me, I think that's a safe deduction."

"What I was hoping for," I said, "was some opinion on the motive back of all this." I told him about the analysis Riordan and I were making.

"Now that I can answer," said Smith. "We haven't any conclusion as to the motives. It's my personal opinion that the saucer race hasn't made a final decision. I think it's obvious that all the survey data is being analyzed, so that they can decide what to do about us. Possibly it's being done by robot devices—the race must be far advanced in cybernetics. They could feed all the information to a robot predictor, so that it could indicate our probable future actions—whether we'd be dangerous to contact, or a menace when we get out into space. That's pure speculation, of course. The creatures may even be having difficulty in understanding the earth races—they might be super-intelligent in some ways and lacking in others."

"If we only knew what they want," I muttered.

"There's one hopeful thought," said Smith. "They may be so intellectually advanced that they consider war barbaric. In that case, if they decide we're not a menace but are too primitive by their standards, they may simply go off and leave us alone."

"Suppose, for instance, some of our pilots discovered a lost civilization down in the Amazon country. We'd investigate from the air to see how far advanced they were before risking direct contact. If they were a century or two behind us, with sectional wars going on, we'd possibly

leave them alone—unless they had something we wanted badly. But they might be only a decade or two behind us. In that event we'd at least keep a close eye on them in the future; I personally think we'd try to communicate with them, let them know there were other civilized nations, and start trading with them. But if for any reason they were a danger to the rest of the world, we'd have to bring them under control, by reason—or threat of force."

"It's an odd coincidence," I said as I stood up to go, "I used the same 'reversing' idea—but I applied it to Mars, figuring what we'd do if we found it was inhabited."

"It would be the same general situation," agreed Smith. "We're using human logic, however, and these beings may reason in an entirely different manner. They could be highly intelligent and yet coldly materialistic. In that event they would be ruthless in achieving their ends."

"Like the Communists," I said.

"Yes—perhaps raised to the nth degree. But I lean to the other belief, that they may have outlawed war except as a last resort. At least I fervently hope so."

At the door I asked him one last question.

"Do you know of any defense, if they should attack?"

Smith quietly shook his head.

"I think we would be quite helpless."

Going down in the elevator, I looked at my watch. It was almost midnight. We had talked more than three hours. Though I hadn't learned as much as I'd hoped, one thing seemed certain. The Canadian investigators must be convinced, like Smith, that the saucers were interplanetary. Smith had a scientist's religious regard for facts. If the RCAF and the two projects had unearthed any different evidence, he wouldn't hesitate to change his mind.

As I went through the Shoreham lobby I could hear a dance band playing in the Palladium Room. I glanced in at the gay crowd on the floor. What would they feel if they suddenly learned the truth about the saucers?

Maybe they'd take it more quietly than I expected. But