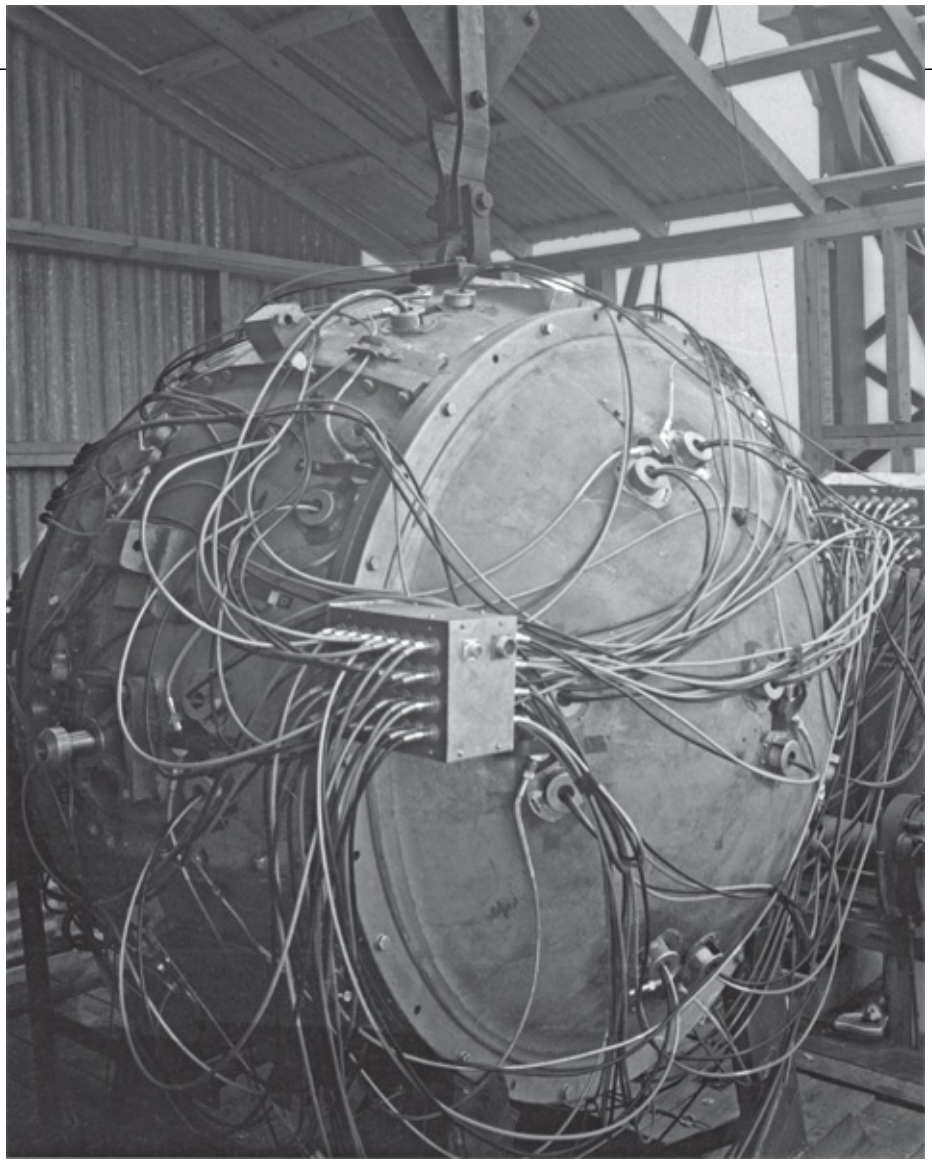
Steve Sheinkin

BOMB

The Race to Build —and Steal— the World's Most Dangerous Weapon



STEVE SHEINKIN

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THE RACE TO BUILD—AND STEAL—THE WORLD'S MOST DANGEROUS WEAPON

Roaring Brook Press
New York

For Mom, my first and most patient writing teacher

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PROLOGUE: MAY 22, 1950

HE HAD A FEW MORE MINUTES to destroy seventeen years of evidence.

Still in pajamas, Harry Gold raced around his cluttered bedroom, pulling out desk drawers, tossi boxes out of the closet, and yanking books from the shelves. He was horrified. Everywhere he look were incriminating papers—a plane ticket stub, a secret report, a letter from a fellow spy.

Gold ripped the papers to shreds, carried two fistfuls to the bathroom, shoved them into the toil and flushed. Then he ran back to his bedroom, grabbed the rest of the pile, and stumbled on slippe down the stairs to the cellar, where he pushed the stuff to the bottom of an overflowing garbage can.

The doorbell rang.

Gold walked to the door. He took a few deep breaths, trying to slow his heartbeat, then opened th door and saw the men he expected: Federal Bureau of Investigation agents Scott Miller and Richa Brennan. They'd been questioning Gold for days, showing him pictures of known spies, demandi information about his connection to these people. Gold had admitted nothing, insisting he was what h appeared to be: a simple, hardworking chemist who lived with his father and brother, and had nev been far from his Philadelphia home. Unconvinced, the FBI agents had come to search his house.

Gold led the way to his room. Agent Miller sat down at Gold's desk and started opening drawer sifting through paper piles. Brennan went to work on the sagging bookshelves, packed tight with ma and science volumes, and stacks of paperback novels.

Brennan flipped through a paperback, stopping to inspect something stamped on the inside cove the name of a department store in Rochester, New York.

"What's this?" he asked Gold, holding up the open book.

"Oh, I don't know," Gold said, "must have picked it up on a used book counter somewhere. Lo knows where."

Then, from a desk drawer, Miller pulled a train schedule for the Washington-Philadelphia-Ne York-Boston passenger line. Another clue that Gold wasn't the homebody he'd described.

"What's this, Harry?" Miller asked.

"Goodness knows," Gold said, shrugging. "I probably picked it up when I went to New York." *Th is bad*, he said to himself. *Bad, but not terrible*.

Then came the body blow.

Gold watched Brennan slide a thick, tattered copy of *Principles of Chemical Engineering* from t shelf. Nausea swelled Gold's throat as he saw a light brown, folded street map drop to the floor. T Gold, the map seemed to scream its title in the silent room: "New Mexico, Land of Enchantment."

Oh God, he thought.

"So you were never west of the Mississippi," said Brennan, bending down to lift the map. He open it and saw, at the spot in Santa Fe where the Castillo Street Bridge crosses the Santa Fe River, an

marked in ink.

"How about this, Harry?" demanded Brennan.

Miller spun from the desk, stood, and watched Gold.

Gold needed to speak quickly, needed to offer an explanation. But he froze.

"Give me a minute," he managed, falling heavily into his desk chair.

Brennan offered him a cigarette, which he took. Brennan lit it, and Gold drew deeply.

"A torrent of thoughts poured through my mind," Gold later said of this moment. The map cou easily be explained—he'd just say he loved Western stories, which was true, and that, out of curiosit he'd sent to a Santa Fe museum for the map. Surely they didn't keep records of such requests; no o could prove he was lying.

But then he thought about what would happen if he continued claiming innocence: "My famil people with whom I worked, and my friends whom I knew, my lifetime friends—they would all ral around me. And how horrible would be their disappointment, and the letdown, when finally it w shown who I really was."

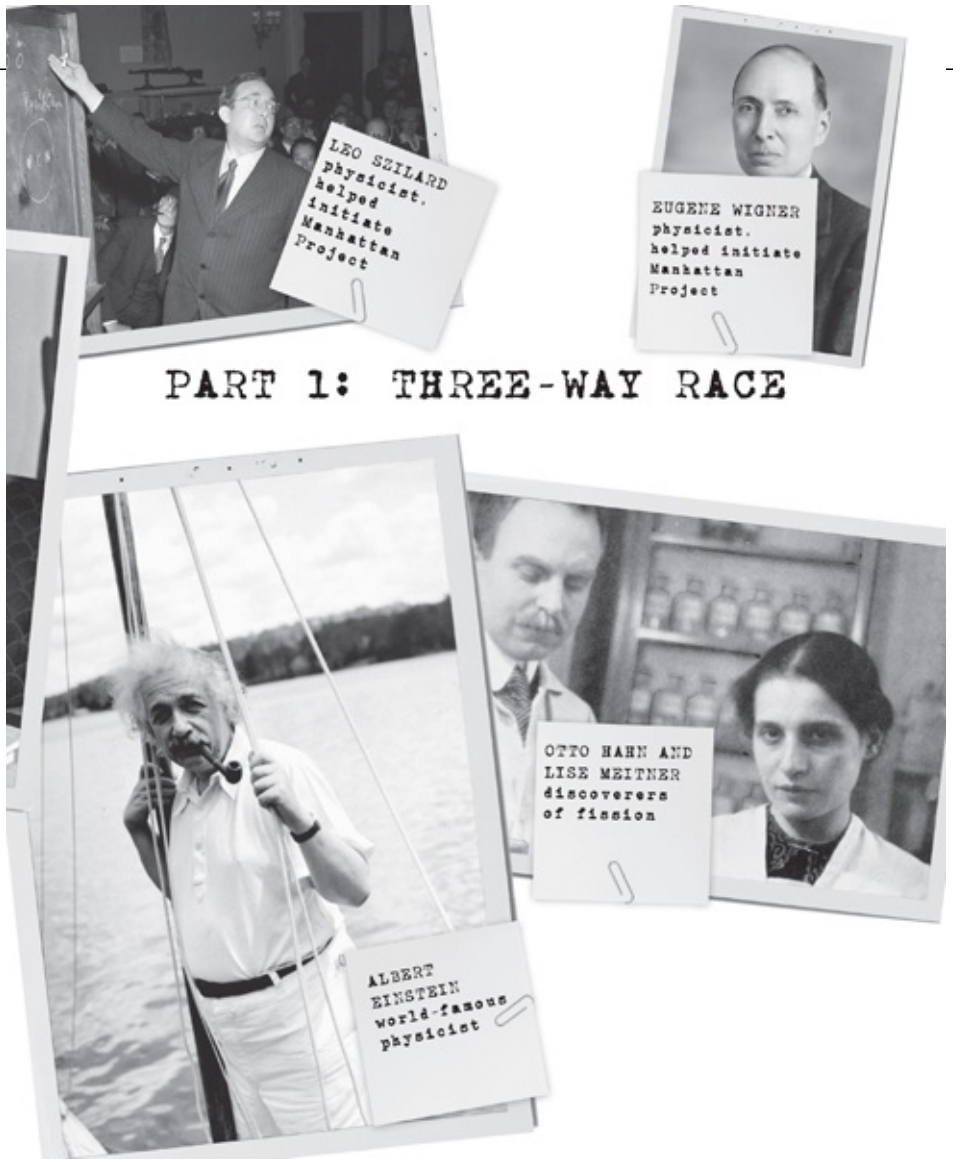
Harry Gold had been living a double life for seventeen years. Overwhelmed by exhaustion, he turn to the FBI agents. They were still waiting for an answer.

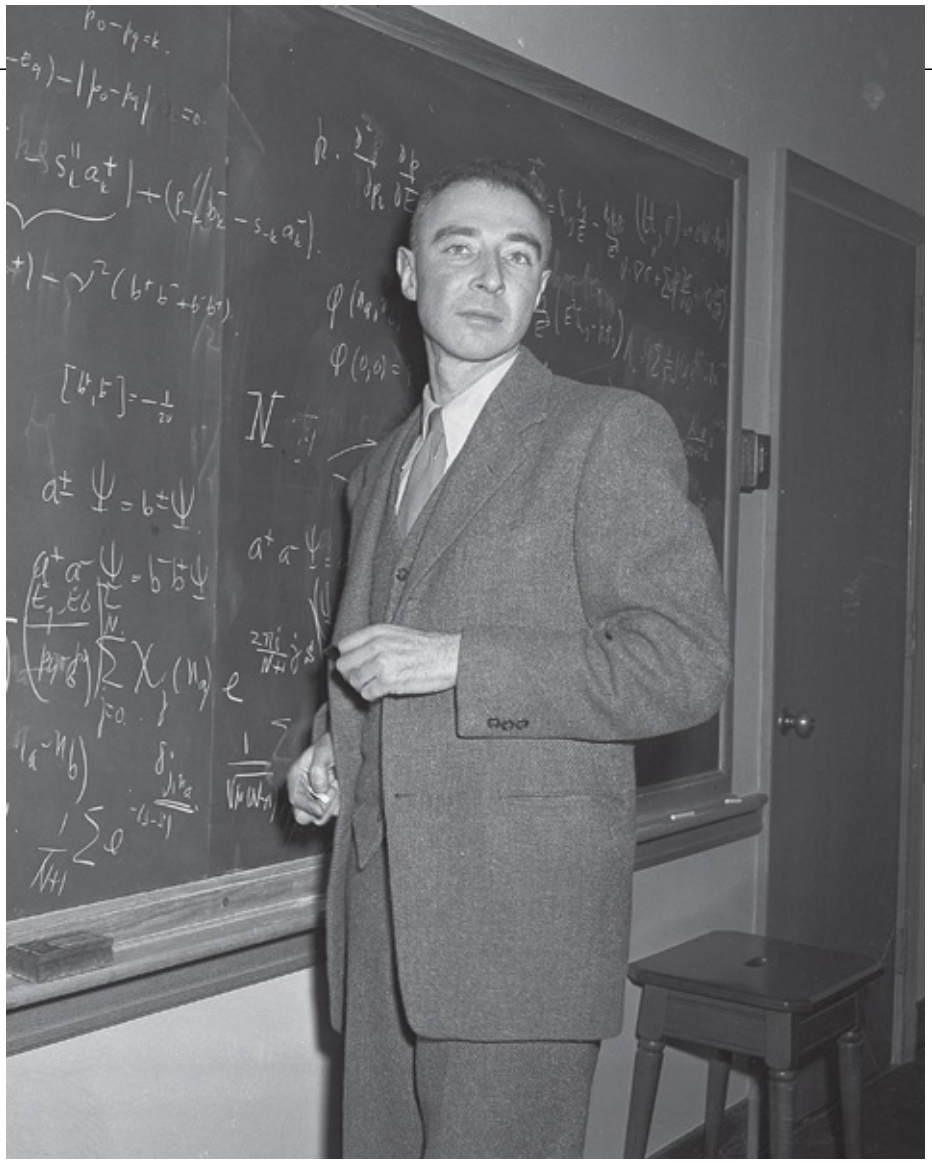
"Yes, I am the man," Gold said.

He slumped a little lower in his chair.

"There is a great deal more to this story. It goes way back," he said. "I would like to tell it all."


KNUT HAUKELID
Norwegian
resistance
fighter
FRANKLIN
DELANO
ROOSEVELT
U.S.
President.
1933-1945
HARRY GOLD
courier and
spy for the
Soviets


LEO SZILARD
physicist.
helped
initiate
Manhattan
Project
EUGENE WIGNER
physicist.
helped initiate
Manhattan
Project
PART 1: THREE-WAY RACE
OTTO HAHN AND
LISE MEITNER
discoverers
of fission
ALBERT
EINSTEIN
world-famous
physicist



Robert Oppenheimer poses at the front of his classroom at Princeton University, December 17, 1947.

SKINNY SUPERHERO

HARRY GOLD WAS RIGHT: This is a big story. It's the story of the creation—and theft—of th deadliest weapon ever invented. The scenes speed around the world, from secret labs to comman raids to street-corner spy meetings. But like most big stories, this one starts small. Let's pick up th action sixteen years before FBI agents cornered Harry Gold in Philadelphia. Let's start 3,000 miles the west, in Berkeley, California, on a chilly night in February 1934.

On a hill high above town, a man and woman sat in a parked car. In the driver's seat was a very th young physics professor named Robert Oppenheimer. Beside him sat his date, a graduate stude named Melba Phillips. The two looked out at the view of San Francisco Bay.

It was a fine view, but Oppenheimer couldn't seem to stay focused on the date. He turned to Philli and asked, "Are you comfortable?"

She said she was.

"Mind if I get out and walk for a few minutes?"

She didn't mind.

Oppenheimer got out and strolled into the darkness. Phillips wrapped a coat around her legs a waited. She waited a long time. At some point, she fell asleep.

She woke up in the middle of the night—the seat beside her was still empty. Worried, she steppe onto the road and waved down a passing police car.

"My escort went for a walk hours ago and he hasn't returned," she told the cop.

The police searched the park, but found nothing. They notified headquarters, and a wider search w begun. An officer drove to Oppenheimer's apartment to look for useful clues.

He found the professor in bed, sound asleep.

The cop shook Oppenheimer awake and demanded an explanation. Oppenheimer said he'd gotten o of the car to think about physics. "I just walked and walked," he said, "and I was home and I went bed. I'm so sorry."

A reporter for the *San Francisco Chronicle* got hold of the story and wrote an article with t headline: "Forgetful Prof Parks Girl, Takes Self Home."

No one who knew Robert Oppenheimer was the least bit surprised.

* * *

HE'D ALWAYS BEEN DIFFERENT. A girl who knew Robert as a child in New York City described him a "very frail, very pink-cheeked, very shy, and very brilliant."

Oppenheimer was a tougher critic. “A repulsively good little boy,” he said of himself. “My life as a child did not prepare me for the fact that the world is full of cruel and bitter things.”

He was constantly getting sick, so his nervous parents tried to protect him by keeping him inside. While other boys played in the street, Robert sat alone in his room studying languages, devouring books of literature and science, and filling notebooks with poetry. Around kids his age he was awkward and quiet, never knowing what to say unless he could bring the conversation around to books. Then he would let loose annoying bursts of learning.

“Ask me a question in Latin,” he’d say, “and I’ll answer you in Greek.”

Hoping to toughen up their stick-skinny fourteen-year-old, Robert’s parents sent him to a sports summer camp. But he was an awful athlete and simply refused to participate. Then the other campers found out he wrote home every day, and that he liked poetry and looking for minerals. That’s when they started calling him “Cutie.”

Robert never fought back. He never even responded. That made his tormentors even angrier.

One night, after dinner, Robert went for a walk. A group of boys waited for him in the woods. They grabbed him, dragged him to the icehouse, and tossed him on the rough wood floor. They ripped off his shirt and pants, dipped a brush in green paint, and slapped the dripping bristles against his bare body.

Robert never said a word about the attack to camp counselors. “I don’t know how Robert stuck out those remaining weeks,” his only friend at camp later said. “Not many boys would have—or could have—but Robert did. It must have been hell for him.”

Science saved him. Robert dove deep into chemistry and physics in high school, graduated from Harvard University in 1925, then earned advanced degrees at top universities in Britain and Germany. Even in classes with some of the brightest students in the world, “Oppie,” as friends called him, never lost his know-it-all style. He interrupted physics lectures with his own theories, sometimes charging to the chalkboard, grabbing the chalk and declaring. “This can be done much better in the following manner.” Classmates got so annoyed they actually signed a petition asking him to allow others to speak in class. After that, Oppenheimer calmed down. A little bit. “The trouble,” a friend said, “is that Oppie is so quick on the trigger intellectually, that he puts the other guy at a disadvantage.”

He’d lucked into a thrilling time in theoretical physics. Physicists were just beginning to figure out what atoms look like, and how the tiny particles inside them move and affect each other. Theoretical physicists were the explorers of their day, using imagination and mind-bending math to dig deeper and deeper into the surprising inner workings of atoms. Oppenheimer knew he’d found his calling.

When he returned to the States, schools all over the country tried to hire him. He picked the University of California, in Berkeley, where he quickly built the country’s best theoretical physics program. Students who came to study with Oppenheimer quickly realized they were in for a wild ride. “When you took a question to him,” one student remembered, “he would spend hours—until midnight, perhaps—exploring every angle with you.”

“He generally would answer patiently,” another student agreed, “unless the question was manifestly

stupid, in which event his response was likely to be quite caustic."

While sitting in on other professors' lectures, Oppenheimer was known to squirm impatiently. "O come now!" he'd call out. "We all know that. Let's get on with it!"

Oppenheimer's own lectures, according to a student named Edward Gerjuoy, were lightning burs of ideas, theories, and math on the blackboard. "He spoke quite rapidly, and puffed equally rapidly Gerjuoy said. "When one cigarette burned down to a fragment he no longer could hold, he lit another Oppenheimer paced as he lectured, his wiry black hair sticking straight up, his large blue ey flashing, as he furiously wrote, erased, wrote more, talked, puffed, and bobbed in and out of a cloud white smoke.

During one lecture, he told students to think about a formula he'd written. There were doze scrawled all over the board, and a student cut in to ask which formula he was talking about.

"Not that one," Oppenheimer said, pointing to the blackboard, "the one underneath."

There was no formula below that one, the student pointed out.

"Not below, *underneath*," snapped Oppenheimer. "I have written over it."

As one of Oppenheimer's students put it: "Everyone sort of regarded him, very affectionately, being sort of nuts."

* * *

"I NEED PHYSICS MORE THAN FRIENDS," Oppenheimer once told his younger brother. Lost in his studie Oppenheimer paid little attention to the outside world. He didn't hear about the stock market cra that triggered the Great Depression until six months after it happened. He first voted in a presidenti election in 1936, at the age of thirty-two.

"Beginning in late 1936, my interests began to change," he later said. There were a few reasons.

For one thing, the country's ongoing economic troubles began to hit home. "I saw what th Depression was doing to my students. Often they could get no jobs," he said. "And through them, began to understand how deeply political and economic events could affect men's lives. I began feel the need to participate more fully in the life of the community." Oppenheimer started going political meetings and discussion groups. He began giving money to support causes like labor unio and striking farm workers.

But it wasn't only events in the United States that caught Oppenheimer's attention—he was al alarmed by the violent rise of Adolf Hitler and his Nazi Party in Germany. Hitler took over chancellor of Germany in 1933 and started arresting political opponents and tossing them in concentration camps. With complete control of the country in his hands, Hitler began persecutin German Jews, stripping them of their legal rights, kicking them out of universities and governme jobs. Oppenheimer, who was Jewish, still had family in Germany, as well as Jewish friends from h student days. When he heard that Hitler was harassing Jewish physicists, Oppenheimer dedicated portion of his salary to help them escape Nazi Germany.

At the same time, the German dictator built up a huge military and started hacking out what

called a “Greater Germany,” a massive European empire that Hitler insisted rightfully belonged t
Germans. He annexed neighboring Austria in 1938, then demanded a huge region of Czechoslovaki
Britain and France were strong enough to stand in Hitler’s way—but they caved in to his threat
hoping to preserve peace in Europe.

“This is my last territorial demand in Europe,” Hitler promised.

A few months later, he sent German troops into the rest of Czechoslovakia. Just twenty years aft
the end of World War I, it looked like a second world war was about to explode.

Oppenheimer followed these terrifying events from his home in California, burning with what h
described as “a continuing, smoldering fury” toward Adolf Hitler.

But how was a theoretical physicist supposed to save the world?

THE U BUSINESS

ACTUALLY, THEORETICAL PHYSICISTS were about to become more powerful tha Oppenheimer had ever imagined.

In late December 1938, in the German capital of Berlin, a chemist named Otto Hahn set up a ne experiment in his lab. By the late 1930s, scientists like Hahn understood that everything in th universe is made up of incredibly tiny particles called atoms. They knew that atoms themselves a composed of even smaller particles. Atoms have a central core, or nucleus, made up of protons an neutrons packed tightly together. Surrounding the nucleus are electrons.

Scientists also knew that some atoms are radioactive. That is, their nucleus is naturally unstable- particles break away from the nucleus and shoot out at high speeds. This was useful to experimente like Hahn, because they could use radioactive elements as tiny cannons.

Hahn began his experiment with a piece of silver-colored metal called uranium. He placed th uranium beside a radioactive element. He knew that neutrons would speed out of the radioactiv material. He knew that some of these tiny particles would hit uranium atoms. The big question wa What happens when a speeding neutron crashes into a uranium atom?

The answer was shocking. Hahn was sure he'd made a mistake.

As expected, some of the speeding neutrons hit uranium atoms. What staggered Hahn was that th force of the collision seemed to be causing the uranium atoms to split in two. According to everythin scientists knew in 1938, this was impossible.

* * *

AT ONCE EXCITED AND DISTURBED, Hahn needed help. He turned to his former partner, Lise Meitner, Jewish physicist who'd been forced out of Germany by Hitler. Hahn wrote to Meitner at her ne office in Sweden, describing the strange results of his experiment.

"Perhaps you can suggest some fantastic explanation," Hahn said of the splitting uranium. "W understand that it really *can't* break up."

Meitner responded immediately, agreeing that the news was amazing, but adding: "We hav experienced so many surprises in nuclear physics that one cannot say without hesitation abo anything: 'it's impossible.'"

A few days later Meitner's nephew Otto Frisch, also a physicist, came to Sweden for a visit. Ov breakfast, she showed him Hahn's letter.

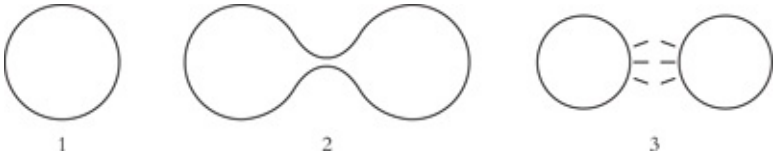
"I don't believe it," he said. "There's some mistake."

The two went outside to discuss the mystery. "We walked up and down in the snow, I on skis and sh on foot," Frisch recalled.

They talked over an idea proposed by the great Danish physicist Niels Bohr. Bohr had recentl

suggested that the nucleus of an atom might act like a "wobbly droplet" of liquid. If that were tru they asked each other, what would happen if a speeding neutron hit the nucleus of a uranium atom Could the force of the collision cause the uranium nucleus to stretch and stretch—just like a liqu drop—until it split?

They brushed the snow off a fallen log and sat. Meitner pulled out a scrap of paper and pencil, an Frisch sketched a diagram of a circle stretching into a long oval shape, and finally breaking in two.



"Yes," said Meitner. "That is what I mean."

They agreed: this must be what happened to the uranium atoms in Hahn's lab. Meitner took th pencil and paper and began working out the math.

"If you really do form two such fragments," she said, "they would be pushed apart with gre energy."

An atom splitting was incredible enough. But what made this a world-changing discovery was that atoms really *could* be split, they would release energy as they broke in two. How much energy? Ju enough, Meitner and Frisch calculated, to make a grain of sand jump. That doesn't sound like much- but keep in mind how tiny atoms are. With 238 protons and neutrons, uranium is the largest atom nature. Still, each atom is incredibly small. A single ounce of uranium has abou 100,000,000,000,000,000,000 atoms.

What if you had a twenty-pound lump of uranium? A fifty-pound lump? What if you were able to g all those atoms to split and release energy at the same moment? You'd have *by far* the most powerf bomb ever built.

"I feel as if I had caught an elephant by its tail, without meaning to," Frisch wrote to his mothe "And now I don't know what to do with it."

* * *

NEWS OF THE DISCOVERY SPREAD QUICKLY within the small world of theoretical physicists. Otto Frisc rushed to Copenhagen, Denmark, catching up with Niels Bohr just as Bohr was boarding a ship f America. Frisch began telling Bohr that uranium atoms could split in two and was halfway through h explanation when Bohr slapped himself on the forehead.

"Oh, what idiots we have all been!" shouted Bohr. "Oh, but it is wonderful. This is just as it mu be!"

Bohr was so excited, he ran home to get a blackboard. He set it up in his cabin on the ship and spe most of the two-week Atlantic crossing exploring this new discovery. By the time he reached Ne York City in January 1939, he was convinced—uranium atoms really could split in two. He took th news to a physics conference in Washington, D.C., where it leaped from one physicist to another.

"Bohr has just come in," one scientist announced. "He has gone crazy. He says a neutron can spl
uranium!"

A newspaper reporter attending the conference described the news in a short article, which wa
picked up by papers across the country. The next morning a young physicist named Luis Alvarez wa
sitting in a barber shop in Berkeley, California. While the barber snipped his hair, Alvarez grabbed th
San Francisco Chronicle from a pile of papers beside the chair. "In the second section," h
remembered, "buried away some place, was an announcement that some German chemists had foun
that the uranium atom split into two pieces."

Alvarez put down the paper.

"I got right out of that barber chair and ran as fast as I could." He sprinted to the campus of th
University of California, where he taught, and ran from lab to lab with the news, soon bumping in
one his fellow professors, Robert Oppenheimer. Alvarez told Oppenheimer that uranium atoms split i
two—scientists were calling it fission.

"That's impossible," Oppenheimer said.

Alvarez explained what little he'd read about fission. Oppenheimer quickly agreed it must be tru
"It was amazing to see how rapidly his mind worked," said Alvarez.

"The U business is unbelievable," Oppenheimer told a friend a few days later—U is the chemic
symbol for uranium. Like all the scientists involved in the discovery, Oppenheimer was fired up b
new ideas in physics, deeper glimpses into the weird inner world of atoms. The thought of makin
weapons of mass destruction had never occurred to him.

But now, suddenly, he couldn't shake it from his mind: fission might make it possible to build
whole new type of explosive.

"Within perhaps a week," recalled a student, "there was on the blackboard in Robert Oppenheimer
office a drawing—a very bad, an execrable drawing—of a bomb."

* * *

ROBERT OPPENHEIMER realized something else right away. If it was obvious to *him* that an atomic bom
might be possible, it was also obvious to everyone else in the global community of top physicists. Th
would not usually be a problem. In normal times, scientists from around the world freely shared ne
ideas and theories. But in 1939, normal times were rapidly coming to an end.

Adolf Hitler was demanding a big piece of Poland, claiming it rightfully belonged to German
Britain and France finally faced the fact that Germany would continue gobbling up territory unt
stopped by force. At Poland they drew the line. A German attack on Poland, they warned, would mea
war with Britain and France.

Hitler waved his fists and raged, "I'll cook them in a stew they'll choke on!"

Calling his military chiefs to Berlin, Hitler announced: "Further successes can no longer be obtaine
without the shedding of blood." He ordered the German military to prepare an all-out invasion
Poland. Hitler knew this might ignite a much wider war, but he was not worried about taking th

blame.

"In starting and waging a war," he told his generals, "it is not right that matters, but victory. Clos your hearts to pity! Act brutally! The stronger man is right!"

FINDING EINSTEIN

ON THE HOT SUNNY MORNING of July 16, 1939, a Dodge coupe pulled to the sandy side of th road in the oceanfront town of Patchogue, New York. Out of the car climbed two sweat-soaked men.

The men looked around, then began walking down the town's main street. Speaking with Europea accents that locals couldn't quite identify, the visitors asked for directions to "the cottage of D Moore." No one in town knew of such a place. The men went into stores and gas stations. No luc They hiked back to their car and collapsed into their seats.

"Perhaps I misunderstood the name 'Patchogue' on the telephone," the driver said. "Let's see if w can find some similar name on the map."

Visibly irritated, the man in the passenger seat unfolded a map of Long Island. He ran his fing along town names in tiny print.

"Could it be Peconic?"

"Yes, that was it," the driver exclaimed. "Now I remember!"

He started the engine. They got back on the road.

* * *

DRIVING THE CAR WAS EUGENE WIGNER; in the passenger seat sat Leo Szilard. Both were Hungaria born physicists, both about forty, both Jews who had fled from Europe as Adolf Hitler rose to powe Both were tormented by the same question: What had German scientists told Hitler about th possibility of building atomic bombs?

They had no way of knowing. But this much was clear: fission had been discovered in Berli Probably, German physicists were already working on an atomic bomb. This was a terrifying though Especially since six months had already passed since Hahn's discovery, and the American presiden Franklin Roosevelt, still had no idea that such a thing as fission even existed.

Szilard and Wigner were determined to tell him. Step one of their plan was to find Albert Einstei the world's most famous scientist. If Einstein sounded the alarm about the danger of a German atom bomb, President Roosevelt might just listen.

Wigner had called Einstein's office that morning. He was told the great man was on vacatio staying at a beach house he rented from someone named Dr. Moore, in Patchogue. Or was it Peconic Something with a *P*.

About an hour after leaving Patchogue, Wigner and Szilard pulled into Peconic. Once again the asked around for the home of Dr. Moore. Again, no one knew.

"Let's give it up and go home," Szilard sighed. "Perhaps fate never intended it."

Wigner shook his head. "But it's our *duty* to take this step," he insisted. "It must be our contributio to the prevention of a terrible calamity."

So they drove slowly on, passing dunes and cottages.

Szilard had an idea. “How would it be if we simply asked where around here Einstein lives?”

Wigner spotted a young boy, about seven, walking along the side of the road holding a fishing ro
He pulled over. Szilard leaned his sweaty head out the car window.

“Say,” he began, “do you by any chance know where Einstein lives?”

The boy looked up, and said, “Of course.”

* * *

ALBERT EINSTEIN stood on the porch of his rented cottage, looking cool, tan, and relaxed in loose pant
a T-shirt, and slippers. His famous mane of white hair was windswept from a morning of sailing o
Long Island Sound. He welcomed the weary Hungarians, inviting them to sit down and have some ic
tea.

After a few minutes of small talk, Szilard and Wigner brought up the subject they’d come to discus
They told Einstein about the newest discoveries in fission and explained how uranium might be us
to build devastating bombs.

Einstein hadn’t been following the fission research. He took a minute to process the science. Then h
said, “I hadn’t thought of that at all.”

Einstein quickly realized that with atomic bombs, Adolf Hitler would be absolutely unstoppabl
“And Einstein was just as horrified as I was by that prospect,” Wigner recalled. “He volunteered to d
whatever he could to prevent it.”

Wigner got out a pen and a piece of paper. He took notes as Szilard and Einstein worked out the te
of a letter to President Roosevelt.

* * *

SIX WEEKS LATER, on September 1, 1939, Germany launched a massive invasion of Poland. Using a ne
style of attack known as blitzkrieg, German for “lightning war,” Hitler’s planes, tanks, and soldie
slashed deep into Polish territory. Britain and France had promised to protect Poland—they had n
choice but to declare war on Germany. They did, but it had no effect on the German charge. Hitler
troops poured into Warsaw, Poland’s capital, in late September.

On October 11, in Washington, D.C., an economist named Alexander Sachs showed his ID t
security guards outside the White House. He walked into the building with Albert Einstein’s letter i
his briefcase.

Sachs was a former aide to President Roosevelt, and a personal friend. He also knew Leo Szilar
and he’d told Szilard he could get Einstein’s letter directly into Roosevelt’s hands. The start of Worl
War II had made it tough to get an appointment with the president, but he’d finally made it.

Sachs was ushered into the Oval Office, where the president was seated behind his desk.

“Alex,” Roosevelt said, flashing his famously big smile, “what are you up to?”

Sachs sat down. He asked Roosevelt to listen very carefully to what he had to say. Roosevelt poure

two glasses of brandy, got comfortable in his chair, and motioned for Sachs to begin.

Sachs explained the warning in Einstein's letter. "The element uranium may be turned into a ne and important source of energy in the immediate future," Einstein had written. "One day man wi release and control its almost infinite power. We cannot prevent him from doing so and can only hop that he will not use it exclusively in blowing up his next-door neighbor."

Einstein urged the government to start working closely with physicists to explore the possibilities building atomic bombs. The letter ended with one last piece of information: "Germany has actual stopped the sale of uranium from the Czechoslovakian mines, which she has taken over."

This was a chilling clue—the Germans were grabbing all the uranium they could get. Why? Wer they already working on a bomb?

Roosevelt thought for a moment. "Alex," he began, "what you are after is to see that the Nazis don blow us up."

"Precisely."

Roosevelt nodded. He banged his desk, and said, "This requires action!"

WITHIN WEEKS of getting Einstein's letter, President Roosevelt formed the Uranium Committee, group of military leaders and scientists. Their goal was to figure out the basics of how an atomic bom might work, and what materials would be needed.

The project got off to a slow start. Sixteen different teams were spread out around the country. The began with a budget of just $6,000. An alarmed Einstein sent a second letter to President Roosevelt.

"Since the outbreak of the war, interest in uranium has intensified in Germany," Einstein warned. have now learned that research there is being carried out in great secrecy."

The race to build the atomic bomb was on.

* * *

JUST ABOUT THE LAST PERSON anyone would expect to be involved was Harry Gold.

When World War II began, Gold was a twenty-eight-year-old chemist, living with his parents an younger brother in a working-class Philadelphia neighborhood. He stood five foot six, with thick blac hair and a soft, round face. Friends described him as shy, smart, and always ready to help anyone wh asked. He was the kind of guy who seemed to blend in with the background, who could come and g from a room without being noticed. "You'd never in a million years believe this guy was a spy," on neighbor later said.

And yet Harry Gold was about to become a major player in what FBI director J. Edgar Hoover wou call "the crime of the century."

It all began one snowy night in February 1933, in the depths of the Great Depression. Like millio of Americans, Gold had been laid off from his job. His family was way behind on rent and facin eviction from their apartment. One night, after another hopeless job search, Gold was resting at hom when a friend came racing through the door. The friend explained that a guy he knew, Tom Black, wa leaving his job at a soap factory in Jersey City. Black could arrange to get Gold the job, if Gold wa willing to move to New Jersey.

Gold's mother leaped up and started stuffing her son's clothes into a cardboard suitcase. Gol borrowed a few dollars and hurried to the bus station. Arriving in Jersey City after midnight, h walked down slushy sidewalks to Tom Black's apartment.

"Black was waiting for me downstairs," Gold remembered. "I can still see that huge, friendl freckled face, the grin, and the feel of the bearlike grip of his hand."

The first thing Black said was: "I am a Communist. And I am going to make a Communist out o you."

* * *

GOLD EARNED $30 A WEEK at the soap factory, and sent $20 home to his parents. He was proud to b supporting his family and didn't mind the hard work. "I was grateful to Tom Black," he later sai "very much so."

That was exactly what Black was counting on. Black dropped by Gold's rented room often to lectu his new friend about Communism and the Soviet Union. Gold knew only the basics: Communists ha taken over Russia in a recent revolution and renamed the country the Union of Soviet Socialis Republics, or Soviet Union. Black told Gold that the Soviet government had abolished priva property and was making all the decisions about what the economy should produce, and how goo should be distributed. In this way, Black said, the Soviets would soon wipe out the greed and pover plaguing countries like the United States.

Black pressured Gold to officially join the Communist Party. "I just kept stalling," Gold explaine "I had no interest in the matter whatsoever."

Then came some good news. Gold's former employer, a chemical plant called the Pennsylvan Sugar Company, was hiring again. Gold was offered his old job back. He jumped at the chance move back to Philadelphia.

But Tom Black didn't give up that easily. In early 1934, he came to visit Gold in Philadelphia.

"Harry, you've been stalling me," Black said. "You've been trying to get out of joining th Communist Party. And possibly I don't blame you."

This last line got Gold's attention.

"But, there *is* something you can do," Black continued. "There is something that would be ve helpful to the Soviet Union, and something in which you can take pride."

The plant where Gold worked, Black explained, used cutting-edge processes to produce many usef chemicals. "The people of the Soviet Union need these processes," said Black. "If you will obtain many of them as you can in complete detail and give them to me, I will see to it that those process are turned over to the Soviet Union."

Gold took a long moment before saying, "I'll think it over."

"But actually," he later explained, "I had already formed my judgment. Yes, I would."

Some spies do it for the money; others are trying to change the world. Gold's reasons were a lot le dramatic. He was thankful to Black for getting him a job and wanted to repay the debt. Also, Gold ha what he described as "an almost puppy-like eagerness to please." Here was a chance to do somethi nice for Black *and* help the Soviet people. The chemical processes Black wanted didn't seem so secre and if the information could really help the Soviets build a better society, why not share it? Wh would it hurt?

"And that," said Gold, "is how I began."

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GOLD STARTED SNEAKING DOCUMENTS OUT OF HIS LAB, plans and formulas for making industri chemicals. Every few weeks he'd travel to New York City to meet with a Soviet contact—Gold kne