

Jean-Jacques Greif

Albert & Marilyn

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Introduction

Marilyn's summer dress is billowing above a subway grate at the corner of Lexington avenue and Fifty-second street. A huge crowd, held by barriers, hoots and shouts. "Hey, Marilyn! You're the best! Looking good, Marilyn! Great legs!" She is shooting *The Seven Year Itch* in New York City. The year is 1954.

She's not really shooting. She's playing the scene for the crowd. The cameramen, the director, the gaffers, are only pretending. Some wizards in the production team set up the scam for publicity. As the story is supposed to take place in a house on East Sixty-First street, the crew does film Marilyn there, a few days later, for half a minute or so. Otherwise, the whole movie will be made in a Hollywood sound stage.

While she is in New York City, Marilyn meets some friends and attends a few parties. She'd go out more if she wasn't married to Joe DiMaggio, who doesn't like her milieu.

When she attends a party, everybody tries hard not to stare at her. A man stares and nods. He looks like a doctor—receding hair, high forehead, round glasses with tortoise-shell frames.

"Do you remember me, miss Monroe?"

"Yes. You're a photographer... Hatman or something."

"Halsman. I made the picture that was on Life magazine's cover two years ago."

"Sure. I remember. You also had me jumping up and down for hours. Gee, my legs were so sore afterwards. Just thinking about it still hurts."

"When people jump, they tend to drop whatever mask they're wearing. Thus, I can photograph their real self. I have photographed more than eighty jumpers. Groucho Marx, Bob Hope, the Duke and Duchess of Windsor, even Vice-President Nixon. As soon as I reach one hundred, I'll publish a book. I already know the title: *Jumpology*."

"I had a small part in *Love Happy*, the last movie the Marx Brothers made. Groucho asked whether I could walk so that smoke would come out his ears. I did my sexy walk and he gave me the part."

"Talking about sexy—I read something in a magazine. As the sexiest woman alive, you were asked whom you considered the sexiest man alive. You answered Einstein."

"You shouldn't believe everything you read in magazines. I'll tell you the true story. I shared an apartment with Shelley Winters in Hollywood a couple years ago. Just for fun,

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we drew lists of men we thought sexy. I remember I had Charles Boyer and Jean Gabin on my list. French guys, you know. Also John Huston. I had just made *Asphalt Jungle*, which he directed. And well, I had been reading a book of letters by professor Einstein and anyway I have always admired him, so that's all there is to it. I guess Shelley talked to one of those press people."

"He is a good friend, you know."

"Who, professor Einstein?"

"I'm going to visit him in Princeton on Friday. He usually spends the summer sailing on Long Island somewhere, but he is not so well, so he has to stay at home. He enjoys visits. You can come with me, miss Monroe. I'm sure he'd be delighted."

"Oh, I'd love to. I mean it. How come you're friends? Did you photograph him?"

"I did, but we were friends already before I became a photographer. In a way, he saved my life."

"Professor Einstein saved your life?"

"Twice, actually."

"Is this some kind of a riddle? I can't imagine professor Einstein saving your life. Twice? Wow!"

"If you want a riddle, you can ask me where I come from."

"I was going to. I just can't place your accent."

"I grew up in a city named Riga, by the Baltic sea. When I was a child, it belonged to Russia. In the past, it was German at times, or Polish, or Swedish. Then, when I was twelve years old, at the end of World War I, it became the capital of a new country, Latvia. This country didn't survive World War II: my birthplace is now part of the Soviet Union. I spoke Latvian and Russian and also Yiddish, because my family was Jewish. I studied in Germany and spoke German, then worked in France and spoke French. So my accent when I speak English is a strange brew, with many exotic flavors."

"You didn't tell me about professor Einstein saving your life."

"Oh yes. My father was a dentist. He hoped I would become a doctor, which is considered better than dentist for some reason, but I wanted to be an engineer. Schools in Latvia were a joke, especially when compared to German ones. I passed an exam and was accepted in a very good engineering school in Dresden, Germany. During the 1928 summer vacation, my father came from Riga and we went hiking together in the Austrian Alps. I

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remember early pictures you made in the Rockies. Another European photographer. Hungarian, yes?"

"André de Dienes. My first real pictures."

"So you hiked in the mountains. My father stumbled and fell down several hundred feet."

"Oh Gosh. Was he hurt?"

"He died."

"This is awful."

"Wait. It gets awfuller and awfuller. They pretended I had killed him. You know what Dr. Freud says: a son always wants to kill his father. Austrian judges read Freud, of course."

"You can't accuse someone because of what a doctor says. You need material proofs."

"I was just kidding. They hate Freud, anyway. They don't care about material proof either. I was a foreigner and a Jew, that was proof enough. The jury condemned me to ten years in jail."

"This is really shocking. Did you spend ten years in jail?"

"My family and my friends went around and got people to sign petitions and so on. The nazis were gaining strength in Germany and Austria in those years. They denounced the petitions as a Jewish plot to get a murderer out of jail. An Austrian bishop said I was worse than Judas, who had the decency to hang himself. After a kind of appeal, I was granted a second trial. An expert showed I couldn't have pushed my father. He convinced the new jury sort of halfway: I was condemned to four years only this time."

"This couldn't happen in America."

"Unless you're black, of course. Well, this is when my sister went to Einstein in Berlin. He had taught physics in Austria and knew many people there. He wrote a personal letter to the president of the Austrian Republic. This gentleman signed a pardon decree that set me free. I had spent two years in jail. Some people are still trying to get the sentence overturned altogether¹. Jail was a rough place. I don't know whether I would have survived another two years there, being a Jew. That's why I say Einstein saved my life."

"That was the first time."

"German engineering schools don't like Jewish jailbirds. Instead of returning to Dresden, I moved to France and became a photographer. I was quite successful. I liked it

¹ This was done in 1960.

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there. I spent ten years in Paris. As you know, the nazis caught up with me. They invaded France in 1940. They convinced the French puppet government to round up most Jewish immigrants and refugees. Cattle cars carried them to the Death Camps, where they were gassed. America could have saved many of them, but it closed its doors. A few of us did escape our likely fate because we received affidavits from the United States, which means we could emigrate. Do you know who signed and sent my affidavit?"

"Professor Einstein."

"He saved many people. As many as he could. He is a great man in more ways than one."

"He is becoming sexier and sexier!"

"So—day after tomorrow. There's a very convenient train from Penn Station."

"Oh no!"

"You said you'd love to come."

"I mean, I can't take a train. I don't feel like the sexiest gal on earth, honest, but if some journalists say so, then lots of people think so. This colleague of yours, Tom Kelley, asked me to pose in the nude and he made a calendar and called me miss Golden Dreams, and maybe some soldiers in Korea were happy looking at the pictures. Is there anything wrong about it? But now if I travel on a train and anybody recognizes me, there's a mob and it gets unpleasant. Somebody might be hurt, even."

"How foolish of me! I have no imagination. I'll rent a car, don't worry."

Marilyn spends half a day in Princeton with Halsman while she is in New York for the mock-shooting of *The Seven Year Itch*, and there she meets Einstein. This visit is well documented. There's a slight mystery: why don't we have pictures? An obvious explanation comes to mind.

"Hey, Mr. Halsman, what are you doing?"

"What do you think I'm doing? I'm putting a roll of film into my Leica. I'm going to take some photographs."

"You can't do that. Please."

"I understand we couldn't ride on a train. But why can't I take pictures?"

"Look at my hair! People who believe Marilyn Monroe is sexy would discover she is ugly. I don't even have any makeup on."

"Same here," Einstein says, smiling.

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“Okay. I’m going to take a few pictures, but I’ll sign a paper saying I’ll never show them to anybody. I’ll keep them in my safe as a memento of this visit.”

Einstein died in April, 1955. Although Marilyn was forty-seven years younger than him, she survived him only seven years. Philippe Halsman died in 1979. Maybe someone will find his safe someday in an attic and we’ll know what Marilyn looked like without makeup.

Marilyn’s mother, Gladys, married a certain John Baker when she was only fourteen years old. When she was sixteen or seventeen, she already had two children, Jack and Berniece (some biographers write the name Berneice). Then she divorced and John Baker took the children away to his home state, Kentucky. The son died. Berniece Baker married a Mr. Miracle and settled in Florida. Marilyn met her a few times.

Marilyn Monroe’s own name wasn’t Marilyn Monroe, of course, but Norma Jeane Baker. Or Norma Jean—she dropped Jeane’s last e because she admired Jean Harlow. Ah, but wait! Gladys had divorced Baker and married a Mr. Mortensen, so it should have been Norma Jean Mortensen. She sometimes used that name. He had also gone away before Norma Jean’s birth, and Gladys didn’t seem to know who was Norma Jean’s true father. When Norma Jean Baker or Mortensen married Jim Dougherty, she became Norma Jean Dougherty. The casting director at Fox said nobody would remember her name. He wanted to call her Marilyn Miller. She suggested Monroe, which was—maybe—the name of Gladys’s father.

By the way, I haven’t introduced myself. My name is Jean-Jacques Greif. Jean is a very common French name. I don’t know whether my mother knew Jean Harlow, but I’m sure she read Jean-Jacques Rousseau and had friends named Jean-Paul and Jean-Pierre..

When I was born, she was married to a Mr. Roth, but then she divorced and married Mr. Greif, who was my real father. So I was Jean-Jacques Roth for about six months, then Jean-Jacques Greif. I am French and I live in Paris. If you want to know more about me, just go and visit my web site, *jjgreif.com*. You’ll see that I wrote a book about Marilyn Monroe a few years ago. Recently, I received the following letter—which I translate from the French:

“My dear Jean-Jacques (if you allow me to call you by your first name),

“I have read many books about Marilyn Monroe, maybe all of them, being a second cousin twice removed¹ of her half-sister Berniece Baker Miracle. Well, let me tell you I

¹ I have never understood this “twice removed” business. She’s some kind of cousin, anyway.

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consider your book the truest, movingest, best-written [I skip a whole paragraph of flattery] of them all.

“As you certainly know, being the number one specialist of Marilyn in France and probably the world¹, Berniece died in a freak accident in Florida, where she lived. While she was feeding her pet manatee, she fell in the bayou or whatever it’s called and her long red hair got caught into the propeller of the outboard engine². Being Berniece’s heir, I inherited what Marilyn had left her, which wasn’t much. You know about it, since you mention it in your book: she left most of her property and stuff to Lee Strasberg, her drama teacher. Anyway, Federal Express delivered a single suitcase to me three years ago or so.

“I just couldn’t open the damn suitcase because they hadn’t delivered any key. I was very busy at the time, having just bought a taxi license, so I put the suitcase away in a small storeroom here.

“When I read your wonderful book, however, I remembered the suitcase. I called a friend who knows how to open a lock without a key. I felt pretty stupid when he told me the old iron clasp wasn’t locked, but only rusty and stuck. He opened it in ten seconds with a screwdriver.

“I discovered a strange assortment of tidbits: sunglasses, old-fashioned kid gloves, a couple of fountain pens, a small Japanese doll, a porcelain parakeet, and so on. My screwdriver-savvy friend thought the tchotchkes could bring in some money. He knew a gentleman who sold stuff in big auction houses. The gentleman seemed shocked that I considered selling these valuable heirlooms. Marilyn had intended her half-sister to wear the glasses and write with the pens, obviously, so it would be a sacrilege, sort of, to sell them. Well, I didn’t.

“The suitcase also contained a notebook. This is where I need your help. I wonder whether the text on its pages is a movie script copied in her own hand or something. You quote some of Marilyn’s letters in your biography, so I thought that 1) you know English 2) you can recognize Marilyn’s handwriting.

“If we could meet, I’d show you the notebook. I found your address on the Internet, but of course I am ready to go any place you choose.

“Yours truly,

¹ This is a wild exaggeration. I am number ninety-four, I’d say.

² A bit too freakish for me. I wonder if it is one hundred per cent true.

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“Marie-Thérèse Lefebvre.”

I called her on the phone.

“Oh, I’m so thrilled, Jean-Jacques, to talk to a real writer. I appreciate your taking the time... You must be very busy.”

“Not so busy that I couldn’t look at that notebook.”

“I’ll bring it right away. Do you want me to come to your apartment?”

“That would be convenient. I don’t know where you’d park your taxi, though.”

“I have a day off next Friday. If it’s okay with you... I’ll take the subway, so I don’t have to worry about parking.”

She was very tall and very thin, with black hair and pearly white skin. I wondered how she managed to fit in her taxi. If she wanted her clients to have a comfortable ride, she couldn’t push her seat too far back. It would be worse if she were really fat, I thought. As a foreigner, I use words I have learned in school, like “fat,” instead of modern expressions like “weight-impaired.”

“Bonjour Marie-Thérèse.”

“Call me Marithé. Nice apartment you have here. You must earn lots of money with your books.”

“I wish I did. The apartment is nice because I bought it long ago, when prices were still quite low. I’m not rich, just old.”

“Here’s the notebook.”

It had a blue cover and a red canvas spine. Inside, these two colors alternated on the pages.

“It doesn’t look like a movie script to me. More like a dialogue between two characters. She uses red pencil for one of them, blue for the other.”

“When you say *she*, do you mean Marilyn? Do you recognize her handwriting?”

“I am not sure. All American handwritings look the same to me. Let me read some of it... Hey, this is really something. Seems she’s having a conversation with Einstein.”

“Einstein? Did they know each other?”

“They met once, at the end of his life. This is a second meeting. It isn’t mentioned anywhere. He died soon afterward. Quite a discovery, you know.”

“Is it worth publishing?”

“I’ll tell you what. If you trust me and leave the notebook here, I’ll read it and type it. Then we’ll see.”

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We decided the notebook was worth publishing. Here it is. Instead of red for Marilyn Monroe and blue for Albert Einstein, I introduce each locutor with the letter **M** or **A**. Einstein drew several very messy pictures on Marilyn's notebook. I substituted my own drawings for clarity's sake.

After my work was completed, Marie-Thérèse gave the original notebook to the French National Library. They are treating the pages with adequate chemicals so they'll last a few centuries, then they'll scan them and display them on the internet. The whole process shouldn't take more than five years, they told me.

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A—I was surprised when you called me on the telephone, miss Monroe. That you'd honor an old man like me with a second visit.

M—You're too modest, professor Einstein. Talking with you is a privilege and a pleasure.

A—I'm not a professor anymore. I retired long ago. You can call me Albert, yes?

M—Okay, but then you should call me Marilyn.

A—What do you have there, Marilyn? A machine that catches sounds, is it?

M—A tape recorder. I borrowed it from a sound engineer. I have decided to record what you say, Albert. I'm not too bright, you know. I'm afraid I won't understand everything. In this way, I'll be able to write what you have said and read it at home as many times as I want.

A—You're brighter than me.

M—How can you say that, professor, I mean, Albert?

A—Last time, you came with Halsman. He was driving the car. This time, I am breathing some fresh air in my garden, I see you park your beautiful white automobile. But me, I'm not even smart enough to drive a car, so you see.

M—I have several European friends who can't drive. You don't have so many cars over there, I guess.

A—Most of the people are too poor to own a car. When they are rich, they hire a driver. And you know what, Marilyn? I had never seen a woman drive a car before I came to America.

M—It's a cinch. You would learn in a jiffy, I'm sure.

A—A cinch? A jiffy? Even English I can't learn. I have always been a slow student. If I start going to driving school now, I probably receive my diploma as a present for my hundredth birthday.

M—I have read somewhere that you didn't speak until you were five years old.

A—Who made up this legend I don't know. Would you like I tell you the truth? I didn't want to babble like other children and appear foolish, so I built full sentences in my head before letting them out. I often moved my lips while I prepared the sentence, then said it aloud with a tiny time lag. Some people thought I am retarded, but my not grandmother. She said I contributed clever remarks to the conversation of adults when I was only two years old. This means I could speak before five, no?

M—Clever remarks when you were two? Wow! You were a genius already.

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A—In my opinion, everybody is born a genius. Most children end up being boring adults because they follow the easy path. They obey parents and they obey teachers. When I was a child, Germany had just been unified and dreamt of the great conquests. We wore uniforms in school. The teachers wanted us to march in step and sing patriotic songs. My comrades enjoyed being all alike and playing soldiers. I preferred to become my own self.

M—You wanted to march to your own beat.

A—Is this an American expression? Quite clever... You're a movie star, Marilyn, so you're not an ordinary person. You're marching to your own beat, too. You've retained some of your childhood genius. Tell me, where were you born?

M—In Los Angeles. On June 1st, 1926.

A—What did your parents do for a living?

M—I had no father. I mean, I have never known my father. Two weeks after my birth, my mother left me in the care of a Mr. and Mrs. Bolender, neighbors of my grandmother. I lived with them for seven years, so they were like parents to me, except they told me to call them Aunt Ida and Uncle Albert. A red-haired woman named Gladys came now and then and brought me sweets. She was my mother, they said. You ask me what my parents did for a living. Well, Uncle Albert was a postman. Aunt Ida took care of children for money. None of the other kids stayed as long as I did, though. What they really did for a living, I'd say, was go to Church and fight sin. When I sinned, Aunt Ida whipped me with a leather belt. Gladys worked as a cutter for the studios. She took me to the movies a few times. The Bolenders considered the movie theater a very sinful place and my mother a great sinner. "We're churchgoers, not moviegoers," they said.

A—I've noticed there are more churches and churchgoers in America than in Europe. More people obsessed with Bible and religion, too.

M—I was one of them until I was seven, that's for sure. Then I lived with Gladys for a few months. She brought me to Hollywood to show me her office at Columbia. I sat on a stool and watched her cut film. She wore white cotton gloves. She cut the film with a machine, then she repaired it with tape. So why did she cut it in the first place? It didn't make sense. Then she was taken away to a lunatic asylum and a friend of hers, Grace McKee, took care of me. Sometimes I lived with Grace, sometimes with relatives or foster families. I even spent two years in an orphanage in Hollywood.

A—You see, fate lets you grow up in Los Angeles. Half the people there, and your own mother, work for the cinema studios. Then you don't enjoy a standard childhood, so you

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don't follow the flock. You live in many families, you try to be all kinds of different girls and adapt, you learn to play pretend. Nature gives you a pretty face, so you end up being an actress in Hollywood. I'm sure you're a good actress, otherwise people wouldn't like you so much. None of this would be possible if you had lost your childhood genius altogether. You would be just another face in the crowd.

M—No actor is a genius in the sense that you are. At least, no actor in Hollywood. Maybe some actor playing Shakespeare in the theater.

A—If my parents had moved to America before my birth, I might have become an actor instead of a physicist. What would have become of my so-called genius? I used to come to Los Angeles every winter around 1930. I gave lectures in Caltech university. I became friends with Charlie Chaplin. Isn't he a genius?

M—Gee, I guess you're right.

A—I tell you something more. If I hadn't discovered a secret of the Universe or two, somebody else would have, sooner or later. For example, Newton invented a new branch of math called "calculus." Very useful. He needs it and uses it himself, but doesn't bother to mention it to anybody else. Then Leibniz invents calculus too. When people praise Leibniz, Newton becomes quite angry. "Hey, I have this thing in my drawer for twenty years!" He wasn't an easygoing fellow, you know. Well, if neither Newton nor Leibniz had invented calculus, then Lagrange would have, and so on. But if Charlie Chaplin hadn't made *City Lights*, nobody else would have. So I believe he is the greater genius.

M—I had never thought about that. Let me read what I wrote... I understand. You're putting artists above scientists, because a scientist can be replaced, whereas an artist can't. But mankind needs the collective genius of scientists as much as the individual genius of artists.

A—You're not just an actress who plays pretend. You know how to use your brain, too.

M—I often play dumb blondes, so people think I'm stupid. If you're really dumb, you can't play dumb.

A—Thus, if you had been born in a family of teachers or scientists, you might have become a famous physicist.

M—Are there many women physicists?

A—A pertinent question. If a woman couldn't be a physicist at all, because she lacked a rational brain maybe, then there would be none. I have known a few, though. My current

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assistant is a woman, Bruria Kaufman. I'm sure you've heard of Marie Curie. She was a very close friend. In Poland she was born. In France she studied and lived.

M—I saw a movie about her. Greer Garson played her.

A—She received two Nobel Prizes. That is, twice as many as me. Her daughter, Irène Joliot-Curie, also received a Nobel prize for physics. Everybody agrees that Lise Meitner deserved a Nobel prize, too. Maybe the Nobel Committee is somewhat prejudiced against women.

M—Were your parents teachers or scientists, Albert?

A—As a fact, no. But fate put me in the right place at the right time. My father, Hermann Einstein, believed he was a born businessman. Nobody else agreed, alas. The companies he founded always ended up bankrupt. He had a company in Ulm, where I was born in 1879. Two years after my birth, the company goes kaput.

M—Where is Ulm?

A—In the South of Germany, in a province called Swabia. Because of this failure, we moved to Munich when I was two years old. This is where I grew up. Munich is the capital of a part of Germany called Bavaria. There my father founded a new company with his brother, my uncle Jakob. They make and sell electrical equipment. While my father manages the company, my uncle invents all kinds of electrical gadgets. I'm sure you know I'm Jewish. When my father was a young man, Jews were not allowed in German universities, so he hadn't receive any formal training. My uncle was younger. He was lucky: just when he came of age, the law changed and he could study. He became an engineer.

People were falling in love with electricity at the time, so only a real failure artist like my father could go bankrupt. All the cities wanted electrical public lighting. My father and my uncle installed such lighting in several small cities, including a suburb of Munich. Then they invested a lot of money to prepare a big project: lighting the whole city of Munich. Although they were experienced, had won awards for their dynamos, electric meters, circuit-breakers and so on, and had their factory right in the center of Munich, the city counselors chose an out-of-town company that knew nothing about street lighting. It was said the counselors didn't want to grant such a large contract to a "Jewish" company. My father had borrowed large amounts of money to prepare the project. He had to declare bankruptcy once more. I was in the middle of my last year of high school at the time.

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Now I tell you what this has to do with my career as a scientist. An electrical equipment workshop or factory is the very best place to grow up in if you are going to solve the big riddle of classical physics.

M—Is this what you did, Al? Solved the big riddle?

A—I'll explain what this big riddle was about. There were two very different branches of physics in the 19th century. One branch studied how things move. Newton was its god.

M—Hey, an apple fell on his head or something.

A—I don't know whether that story is true. A falling apple is a moving object, that's for sure. Nobody was much interested in falling apples, actually. One thing only they wanted to know: where would a cannonball fall? If you master calculus, you compute the cannonball's trajectory and kill lots of enemies. Newton also studied the movement of the moon. He showed that the moon is similar to a big apple or cannonball, or at least moves the same way. Before Newton, Galileo was the first person to really study movement. In his books, he used ships as examples. In mine, I use trains. Today, when young scientists write books, they send rockets into space to explain the laws of motion.

M—When I fly, I always wonder how the airplane stays in the air.

A—The shape of its wings does the trick. When the plane moves, air pressure is stronger under the wings than above them. This pushes the plane upward. When it reaches a certain speed, the upward push overcomes its weight, so then it leaves the ground and flies.

M—You're a living encyclopedia, Albert.

A—Air pressure is elementary physics. Here in America, they talk about it all the time. That's why some of your compatriots were the first to fly, maybe.

M—We talk about air pressure all the time?

A—Sure, on the radio. There's a weather bulletin, then two minutes later another one. Air pressure helps you predict the weather. When it's low, you can expect rain. When it's high, you leave your umbrella at home.

M—Next time I hear a weather report, I'll listen more carefully. You were telling me about a big riddle and two kinds of physics, you know. See, it's all written here on the preceding page. You only mentioned the first kind.

A—The second branch of physics deals with electricity. It has a grandfather, Faraday, and a father, Maxwell. They wrote equations that apply to electricity as precisely as Newton's equations apply to movement. So here are two wonderful theories in the big room of physics. Now do you know something? They each fill a side of the room and there

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is a gap in the middle of the room and nobody knows how to breach it. This is a theoretical gap. I mean, the equations refuse to fit together. In practice, electricity and movement are close friends. This I could see every day in my father's factory. Axles and blades rotated as if they were obeying some kind of magic. Do you know how electricity is made, Marilyn?

M—I only know how movies are made. And how babies are made, I think.

A—Electricity is a flow of particles called electrons. These particles are attracted by magnets. If you move a magnet near a copper wire, the electrons in the wire follow the magnet and you have an electric current.

M—Is that all?

A—This is the general idea. I'm sure you've seen a cylinder-shaped dynamo on a bicycle. A copper wire is coiled around the cylinder. There's a kind of crown linked to a magnet. The magnet rotates inside the copper coil, producing electricity. A power plant has bigger dynamos. To set the magnets in rotation, you heat water by burning coal or oil, then you send the steam to a turbine. So movement creates electricity. But the reverse is possible too, as you certainly know.

M—The reverse of what?

A—The reverse of movement creating electricity is electricity creating movement. The reverse of the dynamo is the electric motor. Do you sometimes use a vacuum cleaner or a blender, Marilyn?

M—Of course. Do you think I'm some kind of princess living in a palace with an army of servants? The journalists may call me a star, but I'm under contract with Fox and I earn peanuts, believe me.

A—I guess that "peanuts" means little. Well, electricity moves the fan of your vacuum cleaner and the blades of your blender. Whenever I entered my father's factory, I could see movement and electricity creating each other. I didn't know that the greatest scientists of the age were scratching their heads about the mystery of it all. One of my earliest memories concerns this very same riddle. I was four or five.

M—You could speak, but were careful not to say anything foolish.

A—I was ill. My father brought me a gift, so I could play in my bed: a toy compass. I played with it and looked at it for hours. How does the needle move? Some invisible hand is pushing it, I think. Whichever way you turn the compass, the needle always comes back to its starting position. I loved to look at things. I hoped to understand the world I belonged

to. I thought that I would unravel the secrets of objects, plants and animals if I examined them carefully and used my brain.

I distrusted adults. I felt it was useless to ask them questions like all the other children did. Their answers were condescending, vague or just stupid. Most of the time, they knew nothing. I asked my father anyway.

“Why does the needle of the compass always return to the same position?”

“Because the needle points to the North. You know North, South, East and West? The sun rises in the east and sets in the West.”

“Why does it point to the North?”

“The needle is a magnet. Magnets point to the North.”

“The magnet knows where the North is?”

“Magnets are attracted by iron. There are great amounts of iron near the North Pole.”

“How does it turn? If I want to move something, I push it. Who pushes the needle? Or does it have tiny legs like a bug?”

“This is called magnetism. You’ll study it in school.”

When he showed me his electrical gadgets, my uncle mentioned magnets too. They didn’t move by themselves, like the compass needle, but were pushed by electricity. This mysterious electricity, what was it? A kind of invisible fluid... My uncle knows how to create electricity with his dynamo, he can measure its intensity and power with meters, but he can’t tell me what it is made of really.

I wondered about the riddle for years. What hidden hand was moving the needle? According to my father, a huge quantity of iron near the North Pole somehow “attracted” it. I refused his explanation. How could the hidden hand be at the North Pole? It was right here under our noses.

M—This is not the same riddle that you mentioned before. There is no electricity involved.

A—To physicists, electricity and magnetism are two sides of the same coin, which we call “electromagnetism.” What actually pushes the needle is the Earth’s “magnetic field,” which is present everywhere. It is indeed a local force, as I thought. We now think that the molten core of the earth acts like a gigantic magnet. Its rotation produces the magnetic field.

M—You already had a scientist’s mind when you were four or five.

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A—I had a child's curiosity, that's all. My uncle was a scientist of sorts. He helped me keep my curiosity. He explained things to me. He taught me elementary mathematics and physics.

M—So you were born in the right place and you had a fairy godfather take care of you. A straight road started right there at your door. You followed it, marching to your own beat, all the way to the Nobel prize.

A—It wasn't as easy as you make it sound. My father and uncle pretended that I would be given the keys to all the mysteries in school. I was quite disappointed. The master insisted on teaching me the alphabet and the multiplication table, which I already knew. When I asked him how iron attracts magnets, he answered it is too difficult a question for a boy my age. He didn't know the answer, obviously. He didn't care about the wonders of the universe. He was happy when we marched like soldiers and sang patriotic anthems.

The school was Catholic, like most schools in Bavaria. The other boys said their prayers: "Our Father in Heaven..." There are seventy boys in our class. I am the only one who keeps silent. My parents have explained to me that I am not a Catholic. I study catechism with the others, so I could pray, but I find this Father in Heaven business rather strange. Since the master knows more than me, or pretends he does, I ask him about it.

"When you pray, you talk to God as if he could hear you."

"Of course he hears us."

"He lives in the sky?"

"That's right."

"In the sky, I see the sun, the moon, the stars. I don't see God."

"He is invisible, so you can't see him."

"Invisible like electricity?"

"Well, maybe that's a good way to put it. You don't see electricity, but it is very powerful. This is true of God, too."

"Electricity is powerful, but when I talk to it, I don't expect an answer. Your God doesn't answer either. I think it's useless to talk to him."

My parents told me our ancestors were Jewish. The Jews have a church called a synagogue. They rest on Saturday rather than Sunday. My parents didn't go to the synagogue. "We won't waste our time with these old superstitions," they said.

M—Maybe there are more churchgoers among the Jews in America than in Europe, too. Synagoguegoers?

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A—Shulgoers sounds okay. While my grandfather was named after a Jewish patriarch, Abraham, I guess he wasn't too fond of the old superstitions already, so he gave my father a German name, Hermann. If my parents had followed tradition, they would have named me Abraham, like my grandfather. They tried not to stray too far and named me Albert.

The only Jewish primary school in Munich had just closed for lack of pupils, that's why I went to a Catholic school. The Jews considered that their children would have to live with the other Bavarians anyway, so it made sense to begin as soon as possible. I knew I was different from the other boys, since I didn't pray with them. One day, the religion teacher brought a long nail in class and said: "With such a nail did the Jews nail Jesus onto the cross."

After losing my time in school, I went home. My mother, who was a good piano player and loved music, wanted me to study the violin. Herr Schmied, my teacher, gave me precise instructions.

"Bend your fingers slightly when you hold the bow. Your little finger too."

"What happens if I don't bend them?"

"The sound isn't as full."

"I don't hear any difference."

"You should believe me. I have been playing the violin for forty years. Before me, thousands of violin players have bent their fingers for centuries."

He reminded me of my schoolteacher. They thought they knew everything. I told my mother the violin lessons bored me.

"I don't like music."

"You shouldn't give up. You'll regret it later."

M—I had some piano lessons as a child. I regret I stopped! In this new movie, *The Seven-Year Itch*, I play a little piano with two fingers, just for fun.

A—My sister Maja¹ played the piano. She was born two years after me. She obeyed her teachers and other adults without a hint of revolt. I tried to convince her she was wrong.

"You have a brain."

"Yes, Albert."

"You can think by yourself."

"Yes, Albert."

¹ Pronounced : "Maya".

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“So then why do you accept that Papa, Mama and your teachers decide everything in your place?”

“They know better.”

“Of course not. Nobody knows better than you do. Say, do you think I know better than you?”

“Yes, Albert.”

“So you’ll obey me?”

“Yes, Albert.”

“Then I order you to disobey me.”

“Yes, Albert.”

As she wasn’t stupid, she understood she had got herself entangled in a paradox. She laughed loud and long. She was the only girl I knew, and also my only friend.

M—You can’t complain she was your only friend. At least you had one friend. I had no sister.

A—I guess you’re right. Besides, she was the only friend my age, but I considered my uncle Jakob a true friend. He lived in our home. Having neither wife nor child, he took me to the zoo or circus. While my teachers pretended I had to learn what I already knew or didn’t want to know, my uncle guessed what could be of interest to me and tried to satisfy my curiosity.

“Do you see this ape, Albert? Well, you know, our ancestors were apes like this one.”

“My grandfather Abraham too?”

“Papa? He may have looked like him slightly... I mean our remote ancestors, who lived millions and millions years ago. Yes, apes are our relatives. Actually, all animals are cousins.”

“We are animals?”

“That’s right. The great English scientist Darwin proved it.”

“Do you believe that animals think like we do?”

“Why not? This ape might be wondering whether you’re going to give him a banana. It’s a pity he can’t talk.”

“It seems to me that if he doesn’t talk, then he doesn’t think.”

“Let’s see... Deaf-mute people don’t talk. They do think, though, I’m sure you’ll agree about that.”

“The ape isn’t deaf.”

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“Indeed, my dear Albert. He may have learned the German language by listening to the zoo’s visitors. I bet he heard quite an amount of utter foolishness. He thinks like you and me, this dear ape, but we’ll never know, because he doesn’t speak.

“Hey, you ape, I brought a banana for you! See, uncle Jakob? If you were right, if he understood us, he would hold out his hand.”

“This poor ape just arrived from Africa, probably, so he hasn’t had time to learn our language yet.”

“You should come every day and give him lessons, uncle Jakob!”

M—I had no sister and, of course, no father at all, but it seems you had two of them.

A—German fathers were often strong and stern men, who hit their wives and children when displeased. My father and uncle were rather gentle and even weak. Traditional father figures I saw in school. I finished my primary studies and entered the Luitpold high school. If the elementary school masters seemed to me like drill sergeants, the high school teachers were like lieutenants. We had to learn lots of useless stuff: battle dates, Latin grammar rules, long lists of Greek verbs, mathematical formulas and theorems. My teachers were influencing my life in a negative way, turning me into an enemy of history, Latin, Greek and math.

I was lucky that uncle Jakob opposed his strong magic to their evil charms, at least as far as mathematics were concerned. He gave me a modern version of Euclid’s *Elements*, which I called “my little geometry Bible.” It was one of my favorite books. There I discovered the theorem of Pythagoras. Euclid demonstrates the theorem in a very clever manner. When I was eleven or twelve, I worked hard to find my own demonstration. I still try to remember various demonstrations of the theorem now and then, as you might do with your favorite poems. A good mathematical demonstration has a special kind of beauty or harmony that rejoices the mind.

Don’t worry, Marilyn. I won’t bother you with the clumsy demonstration I found as a teenager, nor with Euclid’s clever one. I mention this great theorem because it played an important part in my life. To obtain the first important result in my famous theory of relativity, all you have to do is apply the theorem of Pythagoras to the movement of a light ray.

My uncle considered my high school teachers moved too slowly. He said I was advanced enough to study algebra.

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“Algebra is fun. You’re looking for a small unknown animal that you name x . When you find it, you hurry up and catch it, then you give it a name for good.”

M—You haven’t convinced me that everybody is born a genius. I never understood anything about algebra and I hated it. Even if you had told me about a small furry beast named x , I would still have hated it. You just said you were too fast for your teachers. You were lucky that your uncle was willing to take over.

A—Wait: another teacher appears out of nowhere! When I was twelve or so, my parents invited a medical student named Max Talmud, brother of a doctor we knew, to have lunch with us every Thursday. This is similar to an old Jewish custom, which consists in inviting a poor student to share the Sabbath dinner. Max soon discovered that I liked physics and math, but that I was frustrated in the Luitpold high school, where we studied mainly Greek and Latin. He brought me science books and encyclopedias, and also books of math problems. I solved a problem during the week and showed him my answers on the next Thursday. After a few months, he told me he couldn’t go on.

“You’re progressing too fast, Albert. I can’t follow you anymore.”

“We could study philosophy.”

“People usually wait until the last years of high school to begin the study of philosophy, but why not... Nature gave you a quick mind. What do you know about philosophy?”

“I have read Kant’s *Critique of Pure Reason*.”

“Then you’ve overtaken me in this field too! I’ve tried to read Kant, but I don’t understand a single word of it.”

M—Come on, Albert! Ordinary twelve-year old boys don’t read Kant.

A—They could if they really tried. Did I do anything extraordinary? I refused to let my teachers stifle my curiosity by filling up my head with useless stuff. That’s why the spark of genius I received at birth stayed alive, maybe. It seemed obvious to me that school was shaping robots who would serve the State without thinking. The whole system was a fraud. I began to be wary of people who chose the side of power and authority. I’ve never changed my mind about this subject.

At that time, I rejected another fraud that filled our heads with useless stuff: religion. After I had read a few science books and thought hard about what they said, it became obvious to me that a personal God couldn’t exist. Neither could an afterlife. The stories in the Bible were just stories. I often talk about God, whom I usually call The Old One, but I

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mean Fate, actually. For example, I like to say that the Old One punished me for my contempt of authority by turning me into an authority myself.

M—Moral authority is not the same thing as military authority.

A—Right. People are free to disagree with me. I don't send them to jail.

I wonder what would have happened if I had remained in high school until graduation. I might have overcome the crisis of youth and turned into a standard student. My father hoped I would study engineering and follow him at the head of Einstein & Co. Launch a new company, then go bankrupt because some city counselors don't like Jews? I didn't find this an attractive prospect.

When he failed in Munich, he went to Italy. Some of my mother's relatives lived there. They had helped the Einstein company win contracts with Italian cities. My father and my uncle decided to build a new factory in Pavia, near Milan. They moved to Milan with my mother and Maja in 1894. I was fifteen. They left me in a Munich boarding house, because I was supposed to pass my final exam at Luitpold high school a few months later. This final exam, called *Abitur*, is very important in Germany. You can't enter university without your *Abitur*.

I found school useless. There is a legend that I was bottom of the class. Maybe I was for Greek or geology, but I was top of the class for math and physics. I liked to read books and scientific reviews about the latest discoveries. I knew more than the teachers. They repeated things they had learned, but never used their brains. I got into arguments with them. I told you they were like army officers. A private should not be fresh with officers.

I didn't like the people in the boarding house any more than my schoolmates or teachers. I missed my talks with Maja. My violin provided my only consolation. As my mother had predicted long ago, I had learned to love music. I had discovered that Bach's and Mozart's pieces have the same kind of strong magnificent structure as Euclid's most beautiful theorems.

As time went by, I felt I was wasting my youth. While I had to obey morons, my parents were picking up oranges and singing barcaroles under Italy's luminous sky. I decided to join them.

M—You're just like a hero in an American movie. He won't obey stupid orders, he decides what's right and follows his own agenda. He overcomes all the hurdles and gets the girl in the end.

A—I couldn't just flee, actually, because the headmaster of Luitpold high school would have sent the police after me. After asking my friend Max Talmud for advice, I consulted his brother the doctor.

“Did Max explain my situation? I want to leave school for medical reasons.”

“Yes, he told me about you. He says you're some kind of genius. Your teachers must seem worthless to you. I can prescribe a six-month suspension for nervous exhaustion.”

“That would be perfect. Six months is just right.”

“Now I have to warn you that you're taking a risk. Suppose that someday you want to become a university teacher. If they discover you suffered a nervous breakdown when you were fifteen, they'll probably refuse to give you the job.”

“I understand. Listen, why don't you give me the medical certificate, and then I'll see whether I use it or not.”

What am I to do? I talk to my math teacher. He also writes a certificate, stating I am too far ahead in mathematics to stay in high school and thus should enter university as soon as possible, even without an *Abitur*. Now I have two certificates. While I am wondering which one I'd better use, the headmaster takes the decision for me—he expels me from school because I “disturb the class.”

I didn't feel I was disturbing the class. I certainly didn't intend to. I sat quietly in my corner, thinking about various subjects. I did refuse to learn stuff by rote, as I found it a useless custom. Maybe they are upset that I never really tried to climb a rope or kick a ball during sport sessions. When we march in step, going to the stadium or elsewhere, I keep losing my step. This may have disturbed the class, or at least the staff. In the end, the Greek teacher gives me a convincing reason: “Your mere presence undermines the class's respect for me.” I fail to respect my elders! If the other pupils decided to imitate me, the card house of German authority would tumble down. The German army wouldn't march in step anymore and the great German empire would be torn to pieces by its enemies.

M—This movie hero I told you about, who rebels against unfair authority and so on, becomes a great leader of men in war movies. The American army must be very different from the German army!

A—Not only the German army, but other institutions like schools or hospitals had rigid hierarchies with feared bosses and submissive employees. You saw what happened with all these nazi criminals. “Who, me, a criminal?” they asked. “I obeyed orders. This is the

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right thing to do, isn't it?" They were convinced they had no choice. During World War I, soldiers who refused to obey orders were shot, and everybody thought it was right.

So I buy a ticket and board the first southbound train. I am humming: "I'm free! I'm free!" and laughing like a madman. I decide I'll never return to Germany. I am fed up with wearing a uniform, marching in step, shouting *Jawohl, mein Herr*¹ while banging my heels. They call it education, but their real aim is to train kids for military service. You just wrote "military service" in your notebook, Marilyn, but please try to imagine: three full years of compulsory military service!

My parents and my sister were glad to see me, of course, but didn't understand what had happened. I am dropping out of school six months before graduation! I have been expelled! What will become of me? I ease their worry by showing them the math teacher's certificate. I have progressed faster than the rest of the class, that's all.

But then I bring up another painful matter. I want to give up the German nationality. My father finds this rather puzzling.

"It's not a thing you can decide on a whim, Albert. Think about your future. Maybe someday you'll want to work for a German company, or teach in a German university."

"They're already dreaming of the next war against France, all of them. I want no part in their military tomfoolery. They'll force me to become a soldier and shoot at poor guys labeled *enemies*. I don't know them, I don't care about them, I don't see why I should consider them my enemies.

M—Just like that? You renounce your nationality? Do you sign a paper or something?

A—I couldn't, actually, because I had not reached the age when you're allowed to take your own decisions. My father was supposed to act as my spokesman and inform the Germans that I had been one of them long enough. He dallied for several months. He hoped I would change my mind. Young people decide in a rush, often. Then they regret. He thought maybe I would return to Munich and graduate from high school and become a professor in a German university. I was stubborn. He relented and sent the letter eventually, so that I became a stateless person at the beginning of 1896.

M—There you certainly differ from the American movie hero. I've never heard of anyone, in life or in movies, giving up the American nationality.

A—My father still expected me to become an electrical engineer.

¹ Yes, sir.

“There are very good schools outside Germany. You could receive a first-class training in Switzerland, for example in the Zurich Polytechnikum. They speak German there.”

“Engineers are needed to build new machines, no doubt, but I’m not sure this would be a good profession for me. I’ve watched uncle Jakob. He is very skillful. He handles the tools even better than trained workers. I feel very clumsy when I compare myself to him.”

It seemed obvious to me that intellectual endeavors attracted me more than manual work.

“You can choose to study theoretical subjects in the Polytechnikum,” my father said. “You don’t even need the certificate of your math teacher, you know. All you have to do is pass an exam that’s open to everybody.”

I had left Germany at the very end of 1894. The next Polytechnikum exam was to take place in September, 1895. This left me plenty of time to visit the monuments in Milan and Pavia and to explore the colorful Italian countryside. The Italians have invented so many kinds of pasta that you need to be quite good at mathematics to count them. I loved to stop in a village inn and try a new kind.

M—My husband is Italian, so he tried to teach me how to cook pasta. It seems simple, doesn’t it? Just throw them into boiling water. Well, I just can’t learn. He always ends up shouting at me because they are overcooked or sticky or something.

A—Pasta don’t taste the same outside Italy. You won’t eat real sauerkraut outside Germany either.

In Italy, I enjoyed life more than ever before or afterward. For months, I didn’t worry about anything. Sometimes, people in the villages are celebrating their saint’s day by singing and dancing. Often, they are singing and dancing although there is no holiday to celebrate, as if their happiness was just overflowing. I looked at schoolchildren in the streets. Never do they march in step like soldiers!

I hiked to Genoa, a harbor on the Mediterranean sea. Jakob Koch, who was my mother’s brother, lived there. I had the strong legs of a sixteen-year old boy and never got tired. The distance is the same as between Princeton and New York City: sixty miles or so. While I chewed an ear of wheat and shouted *Buongiorno* to the peasants working in their fields, I wondered about my future life. Engineer? Successor to the honorable Hermann Einstein? Italian? Swiss?

I slept in cheap hotels. The birds’ *bel canto* woke me up at dawn. On the way back from Genoa to Pavia, as the weather was warm and dry, I slept under the stars for the first time

in my life. I felt overwhelmed by the night sky's width and depth, amazed when I looked at the millions of twinkling dots and thought of them as so many exploding suns. Even though science was rushing forward, most of the universe remained a mystery. So many things hadn't been discovered yet. I didn't want to build machines as the heir to Hermann Einstein. I wanted to wrestle the world's secrets as the heir to Galileo and Newton.

Lying on my back in an Italian meadow, I tried to imagine the fantastic journey of a light ray. Born millions or billions of years ago in the hot blaze of a remote star, it started on its way fearlessly. Straight ahead! It traveled freely, without meeting any obstacle, before ending its long life at the back of my eye. While it was whizzing across space, dinosaurs, mammoths and human beings were appearing and vanishing on our tiny planet.

M—I trust you, Albert, but it seems so strange. Absurd, really. I've heard or read somewhere that maybe the star doesn't exist anymore when we see it.

A—When we say we see "it," it means we see its light, actually. We knew little about light then. It is the fount of life, though. While I couldn't hope to discover the meaning of life, I could at least try to decipher the mystery of light. How does the star create this radiation that flows continuously like a river? Why does the wire of Edison's light-bulb begin to shine when an electric current heats it? For thousands of years, blacksmiths have laid pieces of iron on embers. The gray metal turns red, which means it is emitting red light. Where does this light come from? Was it hidden inside the iron?

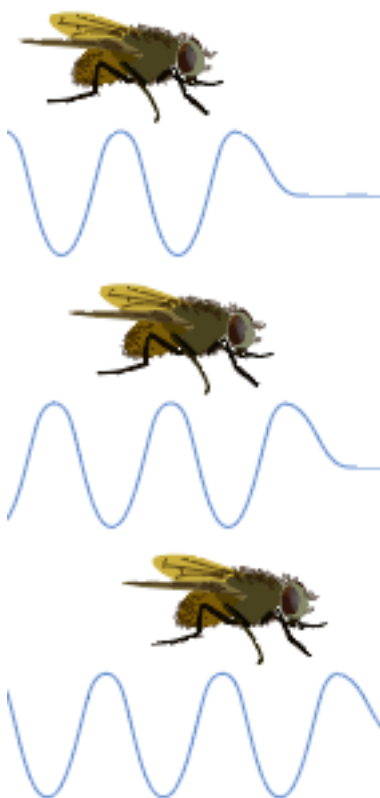
I wondered whether human beings would build spaceships some day and fly to the stars. Could such a spaceship reach the speed of light?

I imagined I was riding a ray of light. In real life, this is quite impossible, but nothing prevented me from doing it in my mind. I call this a *thought experiment*. At the time, light was considered a wave moving over a mysterious fluid called "ether." Have you ever thrown a pebble into the water, Marilyn?

M—Hasn't everybody thrown a pebble into the water? I shot a movie in the Canadian Rockies last year, *River of no Return*. It was a mountain stream rather than a river. I threw stones into the water, and I often fell into the stream myself. There was a lot of water in *Niagara*, too. That was two years ago.

A—Not in a mountain stream or the Niagara Falls. You throw the pebble in a quiet pond or lake. Then round ripples appear and spread out. Molecules of water, or a piece of cork floating on the water, are not moving away from where the stone fell, but only up and down. What moves away is a wave carrying this movement or vibration outward. Now

imagine that you are a fly following a wave. What do you see? A small motionless hill of water. For the fly, there is no moving wave, no vibration.



If I rode a ray of light, I would be like that fly. I would see no vibration. Light would stand still. If I tried to look at myself in a mirror, I would see nothing.

M—Like a vampire.

A—A vampire?

M—This is how you recognize them. No reflection in a mirror. Haven't you seen *Dracula*, with Bela Lugosi? It is the most frightening movie I have ever seen.

A—In a movie with a vampire, everything I possible. In real life, light always moves at a very high speed and reflects you picture in a mirror.

The laws of physics allowed me, at least in theory, to ride a ray of light, but what I saw contradicted these same laws of physics.

M—I write everything, then when I'm home I'll read it until I understand it—or not.

A—Maybe you have friends who ride the waves of the Pacific ocean.

M—Surfers? Oh, I can find one, certainly.

A—You show him your notes. He'll understand and explain. You can also create a moving wave by shaking a carpet or a rope. Some object at the other end of the carpet will maybe fall. Every fiber of the carpet or rope stayed at its place, but the vibration moves away from your hand. What moves is the energy that you provide by your shaking.

In September, 1895, I took the entrance exam of the Zurich Polytechnikum. While the minimum age for candidates was eighteen, I was only sixteen and a half. The headmaster gave me a special permission when I showed him the laudatory certificate of Luitpold's math teacher.

I knew this exam meant a lot for my parents. My father had never been able to attend university, you remember. I received perfect marks in math, but I hadn't bothered to study botany and the French language. Thus—well—in a word, I failed. My mother, who had come to Zurich with me, was quite disappointed. As for me, I felt a kind of relief. Fate was winking at me: I wouldn't become an electrical engineer, after all, and build machines that people didn't really need.

My math score impressed the headmaster, though.

“We are sorry to let you go, Herr Einstein. Our professor of physics, Herr Weber, thought you might attend his class as a free student. I suggest something else. You could spend a year in the Aarau cantonal school, where you would polish your humanities, then you'd take the exam again.”

Do you know where Aarau is, Marilyn?

M—In Switzerland somewhere?

A—Yes, and also, on the very first page of the dictionary!

The Greek and Latin teacher, Herr Winteler, invited me to live in his own home. Being a romantic young man, I fell in love with one of his three daughters, Marie. He also had four sons. I felt so happy there that I called the professor and his wife Papa and Mama.

Switzerland is a blessed country, my dear Marilyn. For centuries, it has been an island of peace and democracy in the middle of an ocean of tyranny and war. The cantonal school teachers didn't pretend they were army officers. They were free of these scourges of German schools: fear, force and artificial authority. They listened to us, talked to us, never tried to force their prejudices on us, but helped us expand our abilities. A good teacher is an artist in the field of pedagogy. He creates his own methods so that students will acquire

a love of knowledge. The subjects studied do not matter. What matters is the process of studying.

The city of Aarau rested its old walls in the bosom of a green valley. When the sun shined, Herr Tuchs Schmid, our physics teacher, gave his course on mountain paths.

“This is just what the philosopher Aristotle did in his famous Academy,” he told us. “Walking frees and stimulates the mind. What’s more, in case I don’t teach you anything of interest, you may still see a gentian or a bearded vulture and draw a nice picture in your scrapbook.”

“I once hiked from Milano to Genoa, Herr Tuchs Schmid. I did think a lot during my journey. Maybe I should walk to Vladivostock to heat my brain and cook some new ideas.”

M—I love to walk along the beach in Santa Monica. I can stay in New York a week or two, but I miss my beach.

A—I find beaches a little boring, I must say. I enjoy walking on a mountain path. But of course, when I saw the Pacific ocean, I was fascinated by those “surfers” on their wooden boards, who reminded me of my riding the light-waves.

At the end of the school year, in June, 1896, I took the Polytechnikum exam again and I was admitted. I spent my summer vacations in Pavia, then I came back to Switzerland with my sister Maja. I had praised the pleasant pedagogy of the Aarau school so highly that she decided to train as an elementary school teacher there.

During the next four years, I studied mathematics, physics, astronomy, geology, philosophy, anthropology, economy. Since I intended to become an intellectual—rather than manual—worker, mathematics should have appealed to me. They did, but not as much as physics. There were too many kinds of math. They were spread too wide. Why would I choose one kind rather than another? The evolution of modern math seemed arbitrary to me. Physics, on the other hand, had one clear purpose: to describe and understand nature. Besides, although I didn’t want to become an engineer, I liked to play with the machines in the physics lab.

In a world-famous institution like the Polytechnikum, the teachers couldn’t be as easy-going and friendly as in Aarau. I found most of them awfully stiff and slow. Science was rushing ahead too fast for these solemn gentlemen. The physics teachers, Herr Weber and Herr Pernet, weren’t ready to enter the 20th century. They didn’t teach the physics introduced by Maxwell thirty or forty years before, but knew only Newton.

As I hate to waste my time and endure useless strain, I studied the subjects I favored on my own, by reading books in the joyful public room of Café Odéon—while old goats expounded outdated science in the stern halls of the Polytechnikum.

M—We have the idea that a great scientist and inventor works day and night. But you seem to be, what’s the name, a hedonist. You take very long vacations in Italy, then you loaf in cafés instead of attending class.

A—My friend Grossman let me copy his notes, so I knew what they were studying. The teachers did find me a bit lazy, like you. They took offense at my absence. They blamed me officially for “lack of application.” They also pretended (I had heard the same thing in Luitpold high school) that I was haughty and impertinent. It seems I had flaunted my remarkable insolence by saying “Herr Weber” instead of “Herr Professor.” That was quite possible. I didn’t even notice this kind of distinction. And still don’t.

The students, my comrades, interested me more than the teachers. They came from the farthest corners of Europe. We were young and careless. We hiked in the Alps. We slept in mountain farms with the cows. I learned to maneuver a sailboat on the lake of Zurich. All the physicists love sailing, as you need to balance the force applied by the wind to the sails with the reaction of the water on the keel and rudder blade.

I told you about my assistant, Bruria Kaufman. There are women students in Princeton, of course. In 1896, this was unheard of in most European universities (as well as in most American ones, I think). Although the Zurich Polytechnikum had a few stiff oldsters in its staff, it was a very progressive institution in many ways: several young ladies studied and hiked with us. One of them, Mileva Maric, also played the piano. We played sonatas by Mozart and Beethoven together—she at the keyboard, me on my violin. She was born in a Serbian province of Hungary.

After four years, in August, 1900, I graduated. The final exams weren’t difficult—once I overcame my tendency to balk at studying mandatory subjects. All my comrades graduated too, except Mileva.

Graduate students who looked forward to a career in research and teaching expected to be enrolled as paid assistants by the Polytechnikum. Thus, Grossmann, my best friend, became an assistant in the math department. One of the two physics teachers should have offered me a position. Neither of them did. They intended to punish me, I guess. *So you want to follow your own rules, Herr Einstein? Why don’t you go to the South Pole? Nobody will bother you there.*

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I felt awfully hurt and disappointed. I had already imagined a quiet life in Zurich with Mileva. We would have played music every evening. I would have sailed on the lake every Sunday.

M—You're back to the part of the American movie hero. He doesn't want to play by the rules, so the staid honest people reject him. He knows hardship and humiliation, but he doesn't give up and everything ends well.

A—He gets the girl, right? But maybe it's the wrong girl. I spent the end of the summer in Italy, as I usually did. My sister Maja came back from Aarau. She was engaged to Paul Winteler, one of the sons of the Greek and Latin teacher. I told my parents about Mileva Maric.

"Where does she come from, exactly?" my mother asked.

"She is born in Hungary, but her parents are Serbs."

"Serbs? I guess they're not Jewish."

"Er, I don't think they are."

"Well, you can't expect all the female students in the Polytechnikum to be Jewish. It doesn't matter, anyway."

I felt it did matter, actually. Paul Winteler wasn't Jewish either, but my parents didn't seem to care. Maybe they thought that a Jewish mother was needed to raise children properly. They wondered whether a student of physics could become a good housewife.

M—She can't. Only a stupid woman can accept to become a full-time housewife.

A—Maybe they thought I needed a stupid housewife to give me soup and iron my shirt, not another person like me who dreams about stars. I was careless and messy. I took after my father, in a way. The Pavia factory had failed. It had prospered for a while. Then, Italian companies started making electrical equipment. When cities decided to switch to electricity for their lighting, they preferred to deal with Italian businessmen than with foreigners. My uncle Jakob had given up and become an employee in a Vienna factory. My father was trying to launch a new company in Milan. He worked hard at keeping it afloat, but his worries had affected his health. As I couldn't expect his financial support, I had to find a job. I sent letters to many professors, asking them whether they needed an assistant. Some answered no. The others answered nothing.

I spent a few weeks in the Zurich observatory as an intern, in order to get a residency certificate. I needed this piece of paper to conclude a long process: I had requested the Swiss nationality one year earlier. The Swiss Federal authorities are very careful before

granting citizenship. I had to swear that I was not a drunkard and that no member of my family was suffering from syphilis. The police investigated. They even sent a detective to Milan. He checked I hadn't made up my whole story, I guess. At last, in February, 1901, I became a Swiss citizen. I was lucky: I escaped compulsory military service, which lasted three months, because I was found to have flat feet.

During my internship in the observatory, I sent a short article to *Annalen der Physik*, the top German review: "Conclusions on the phenomenon of capillarity, by Albert Einstein." Capillarity is what pushes sap up trees and melted tallow up candles' wicks.

M—What about soda pop up a straw?

A—No, that phenomenon is called drinking.

M—You don't say!

A—I mean, you drink the air in the straw, so the liquid fills up the void.

My article was nearly worthless, actually, built on shaky ideas, but you can imagine how proud I was to see my name, for the first time, in this famous review.

I hoped universities and labs would consider my application, now that I was a Swiss citizen with his name in *Annalen der Physik*, instead of a stateless nobody. I sent letters everywhere, but I received only one offer, in May, 1901. A math teacher in a technical school in Winterthur had been called away for a two-month military training period. I was to replace him. I would have preferred a real job, but I didn't have a choice. I was quite delighted, anyway, when I thought I would soon earn my first salary.

Having fond memories of my hike between Pavia and Genoa, I decided to walk across the Alps from Milan to Coire, in the South of Switzerland, then to take a train to Zurich and Winterthur. The road climbed low hills covered with blooming orchards and green fields, followed the bank of lake Cuomo, crossed the sleepy Swiss city of Lugano, then wound its way between gigantic mountains. The peaks were so high that I felt I was shrinking and would soon vanish.

I made a great discovery: hiking on mountain paths stimulates the mind even better than walking in the plain. The number of subjects worth thinking about was increasing every year, too. The world of physics was in turmoil. There were tense debates in several fields. Something had to happen soon.

This wasn't my first mountain hike, since I had walked in the Alps often with my Polytechnikum comrades, but it was the first time I was hiking alone. I need solitude if I want to think hard. Indeed, the pleasure I feel when I talk to myself is detrimental to my

relations with other human beings. I wore strong hiking shoes I had bought in Zurich, a thick woolen shirt, a pair of comfortable corduroy pants, a waxed cotton cape that could protect me against the worst mountain storm. Although I followed a well-trodden path, I hadn't forgotten to bring a compass. A low cloud may wrap the mountain in a dense mist, a snowstorm may fall out of nowhere even in May or June. Without a compass, you risk running circles and getting utterly lost. This wasn't the compass my father had offered me long ago, of course. What had become of it?

When I came to a village, I bought a loaf of rye bread, a goat cheese, a few apples. Then I looked for a pleasant clearing in a wood, or a flat rock near a mountain stream, and I halted there to eat my lunch.

M—Have you read *Walden*, by Thoreau?. It's about the simple life. I'm sure you'd like it.

A—Good shoes, bread, cheese, sun rays—I didn't need anything more to feel perfectly happy. At the same time, I knew that my happiness didn't matter in the general scheme of things. Here I am, a mere specks not much bigger than an ant, lasting no longer than one flutter of a butterfly's wings, crawling upon the coarse skin of a small planet. Almost nothing. Strangely, though, the mind of this insignificant ant is so large that it can contain the whole world! The tall peaks, the wild forests, the clouds that drift in the sky like fluffy foam, the other planets, the remotest stars... What I can't see, I imagine.

The Earth's electromagnetic field surrounds me. Since our planet is a gigantic oscillating magnet, it probably emits Hertzian waves. All the stars are likely to emit Hertzian waves on top of light waves. These waves vibrate everywhere around me, but they remain invisible. Today, human beings emit lots of Hertzian waves that transmit sounds and pictures. In 1901, Guglielmo Marconi had just sent the very first Morse code radio signals. Wilhelm Röntgen had discovered other invisible waves and named them X rays. Henri Becquerel had noticed that uranium ore emitted a strange radiation.

I would have liked to perceive these invisible waves in the same manner I saw the sunlight dancing among the trees and playing with the stream's water, to feel their pulsation as I felt the pleasant warmth of the sun on my skin. Well, although I didn't see the magnetic field, I could show it existed by pulling my compass out of my pocket. We knew how to measure the power of X rays and the radioactivity of uranium. What totally escaped our grasp was the ether that was supposed to carry all these waves.

I wore a warm blue sweater that my mother had knitted years ago. As the path rises higher, the air becomes colder and its pressure decreases. This means simply that there are fewer molecules around. After thinking about the mysteries of the infinitely great, I turned my mind's eye toward the invisible springs of the infinitesimal. Most scientists agreed that matter was made of tiny bits of stuff. Just think a minute, Marilyn: can you imagine dividing matter forever?

M—I can imagine it, but I can't do it.

A—Good answer. Since the 17th century, most scientists believed in the existence of elementary bits of matter called corpuscles, particles or molecules.

I had become a student at Zurich University at the same time as at the Polytechnikum, in order to get a doctorate of physics. I studied gas molecules. When you bring energy to a room by heating it, the air molecules move faster, so that more of them hit the walls every second. We say the pressure increases. We can measure it with an instrument called a manometer. Our microscopes aren't powerful enough to let us see the molecules, but we know how to calculate their speed and their size. That is, the physicists act *as if* molecules existed. At least I did, to write several articles and prepare my doctoral thesis. The skeptics said: "Your molecules don't exist. They are just words in a theory." This was precisely what I liked about physics. Molecules are a word in a theory, like Hertzian waves, but it doesn't mean they don't exist.

Is a molecule the smallest bit of matter? In the 19th century, it was found that water was composed of hydrogen and oxygen. Thus, you can divide a water molecule into several parts. Democritus, a scientist who lived five centuries before Christ, called *atomos*, which means "can't be cut," the smallest bits of matter. We say a water molecule is made of hydrogen and oxygen "atoms." Toward the end of the 19th century, Lorentz, a Dutch physicist, and J. J. Thompson, an English one, showed that our "atom" could actually be cut. It contains smaller particles, called "electrons," which carry electric power.

Electricity seems to flow continuously, but it doesn't. It is produced by the movement of these electrons. In 1900, the German physicist Max Planck put forward a bold hypothesis. Since matter is discontinuous, maybe the energy it emits—for example, when you heat a piece of metal, or when a vibrating electric circuit sends Hertzian waves—is also discontinuous. Max Planck called the elementary bit of energy a "quantum."

M—The elementary bit of energy... Isn't that the electron?

A—The electron is an elementary bit of matter. It carries electrical energy when it moves.

So I walked and thought and reached Winterthur. What can I tell you about my stay there? I spent thirty hours a week teaching descriptive geometry and I studied physics during my free time. Then a former Polytechnikum comrade found a job for me in a boarding school in Schaffhausen, north of Zurich, as the personal teacher of an English pupil. I was rather unhappy when I discovered that the owner of the school gave me only one tenth of what my student's parents paid for his tuition. He wasn't satisfied with me either. He found me too lax with my pupil. He was quite different from the congenial Aarau teachers.

M—Today your former pupil is a gray-haired gentleman who brags in his London club: "I was taught by professor Einstein himself," but nobody believes him.

A—I was saved from gloom and doom by my friend Marcel Grossmann, or rather his father, who recommended me to Herr Haller, director of the Swiss Patent Office in Bern. This office, founded a dozen years earlier, was looking for employees "with a thorough university education in mechanical-technical and physical directions." This sounded just like me, didn't it? I wrote to Herr Haller in December, 1901. He received me in March, 1902.

"See, young man. Here's what a patent request looks like. These pages contain a detailed description of the invention, and we also have a working prototype. What do you think of this one?"

"Er... It is a photographic camera, obviously. The written description isn't clear..."

"This is what makes the job arduous. With experience, you'll understand the most tangled texts. Here, the inventor doesn't request a patent for the camera, but for the plate-changing system."

Herr Grossmann's recommendation was potent and Herr Haller was lenient. He signed me in as "technical expert third class," with an annual salary of 3,500 Swiss francs. I was to start on June 23, 1902.

My first pay day was more than three months away. I had barely enough money to rent a small room under a roof and eat bread and cheese, like a desperate character in a naturalistic novel.

M—Or an American movie, of course. In Hollywood movies, the poor but fearless young man works hard and becomes President of the United States. In real life, poor hard-

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working young men become poor hard-working old men. Our presidents are always born rich.

A—I was poor until I received my first salary. I needed to eat, though. Instead of borrowing money in the bank, I published an ad in a Bern newspaper: *Albert Einstein, graduate of the Zurich Polytechnikum, private lessons in physics and mathematics, 3 francs per hour, free trial lesson.*” A Rumanian young man, Maurice Solovine, rang my door.

“I’m studying philosophy in the university. I would like to understand modern physics so I can have an up-to-date vision of nature.”

“An excellent idea, no doubt. I liked philosophy myself when I studied it in high school, but I thought that it gave a very vague and arbitrary description of reality, so I chose to become a physicist.”

My student was two years younger than me. Like Herr Tuchschnid, my teacher in Aarau, I often gave my lessons outside. We left Bern on Sunday morning and hiked to the lake of Thun, more than fifteen miles away. We walked most of the day, but I only charged for a one-hour lesson. Then we took a train back home. Two former Polytechnikum students, Conrad Habicht and Michelangelo Besso, soon joined us. We called our small circle “The Olympia Academy.” We wondered whether atoms existed, whether the Earth moved relative to the ether, whether the speed of light was constant. I had met Michelangelo Besso in a private concert in Zurich. At first, he had thought I was a professional violinist, which was quite flattering. We had become such good friends that I had introduced him to the Winteler family, with the result that he was engaged to Anna, the eldest daughter of Mama and Papa.

M—So he was your sister’s brother in law. Everybody called the Winteler’s Mama and Papa, I guess.

A—In October, 1902, I went to Milan, where my real papa was dying. He was only fifty-five years old. The terrible hardships and frustrations he had suffered trying to sell power generators to Italian cities had worn him out. He had never been able to repay the capital he had borrowed from his cousin Rudolf Einstein, his brother in law Căsar Koch and other members of the family. He had been ill for years already. “Marry her and be happy,” he told me in a feeble rasping whisper. When he felt the end coming, he asked all the people in the room to leave, as he wanted to die alone.

M—This is very sad. One good thing about having no father is that I didn’t see my father die. My crazy grandfather died in a nuthouse before I was born. My crazy

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grandmother lived across the street when I was a baby. She couldn't take care of me, because she sailed to India and China to convert the heathens, that's why my mother left me with the Bolenders. When I was one year old, my grandmother returned from overseas and then died.

When I was seven, Gladys bought a white house in Hollywood and I went to live with her. She didn't earn enough money to pay the mortgage, so she rented the house to some English people named Atkinson. She just kept a room for both of us. We often had dinner with the English people, then Gladys would play cards with them, drinking beer or stronger stuff. I knew they would all go to Hell. I prayed for their souls all the time. Mr. Atkinson was a stand-in for a famous English actor, George Arliss. Mrs. Atkinson was an extra, playing parts in crowds and so on. Their daughter, Vivian, was also an extra, but she hoped to become a stand-in someday.

After about six months, Gladys started breaking things and hitting me. She was always afraid she'd become crazy, because her father and her mother had died crazy. One day, when I came back from school, Mr. Atkinson was waiting for me in front of the house. He took my hand.

"Your mother is ill, Norma Jeane. She's gone to the hospital for a while."

The hospital was a lunatic asylum. I remained with the Atkinson family.

Grace McKee cut film with Gladys. She was her best friend. She came nearly every day. She replaced Gladys as my mother, sort of. She bought me new dresses. She took me to the movies all the time. She said I was very pretty and would certainly become a star when I grew up. She knew all the actors, even the extras, because she cut all their films and met them on the lot. I dreamt of becoming a big star, that's for sure, like Gloria Swanson or Jean Harlow. My given name was Norma Jeane, but I changed it to Norma Jean because I admired Jean Harlow so much. Today my name is Marilyn and I am as famous as she was.

A—More famous. I have never heard of this Jean Harlow, but I knew about you.

M—I was only eight years old, you know, so my dreams were just dreams. The Atkinsons went back to England. Grace petitioned to become my mother's guardian or something. She sold the white house. I lived with some other neighbors, the Giffens. Just then, Grace met Doc Goddard and married him. He was an engineer, someone like your uncle maybe, that's why they called him Doc. He worked as an extra in the movies, too. He was quite tall and handsome. He had three children already. I lived with them for a few

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weeks, but the house was small and they didn't have much money, so they sent me to the *Los Angeles Orphans' Home Society*. I was nine years old.

I spent two years in the orphanage. I wasn't an orphan, of course, but neither were most of the other girls. Because of the Great Depression, many parents were too poor to take care of their own children.

Grace came on Sunday and took me to the movies. We saw *Mutiny on the Bounty*, with Clark Gable. I had this fantasy that he was my father. Gladys might have met him, after all. I tacked his picture to the wall above my bed, next to a picture of Abe Lincoln, who abolished slavery.

A—But President Lincoln couldn't be your father.

M—Clark Gable couldn't be my father either. No father is no father, whatever you dream and fantasize.

Sometimes, Grace wouldn't come for several weeks on a row. I really felt an orphan then. Eventually, the Court named her my guardian, so I lived with Grace and Doc and his children again. I liked his daughter, Bebe. They had moved in a bigger house by then. Doc had a good job in some factory. He was much younger than Grace. Sometimes he drank too much and tried to touch my breasts and other parts of my body. One night, he tried to get into my bed. This was very unpleasant. I screamed. I couldn't go on living with them. I stayed with some remote cousins of Gladys, then with Grace's aunt, whom I called Aunt Ana. She was a truly good person, without any evil in her. I loved her dearly.

I had changed schools often. I got lousy grades, but I was popular. I was fourteen years old. A war had started in Europe, but who cared? Nature had given me breasts. I was a girl, after all. I looked good, I guess, especially when I wore a tight sweater. I liked it when the boys at school looked at me. I went to the movies a lot with Bebe. We saw *Marie Antoinette*, with Norma Shearer. Gee, I cried so much when she climbed to the guillotine... I liked Norma Shearer, because we had the same first name. Gladys had told me I was named after Norma Talmadge, who played in silent movies.

What happened next is that Doc's factory was moved to West Virginia or someplace. Maybe they were afraid the Japs would bomb it if they left it near the coast.

"Can't I just stay with aunt Ana?" I asked Grace.

"I'm afraid not, Norma Jean. You see, I give her the pension I receive from the State as your guardian. As I am going away, the State will stop paying the pension. Aunt Ana is not

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rich enough to feed two people. If you really wanted to stay here, you could get married, of course.”

This seemed to confirm something Bebe had told me about Jim.

A—Who was Jim?

M—Jim Dougherty. He was a neighbor who worked in an airplane factory. He had driven me to school before I moved with Aunt Ana, so I knew him a little. He owned a nice blue Ford. He was only eighteen, but he earned good money in the factory. The best thing about him was his mustache. He didn’t look like Clark Gable, though. More like Errol Flynn. I danced with him at a Christmas party. I went with Bebe to the powder room. That’s when she told me about Grace’s project.

“She wants you to marry Jim.”

“You must be kidding. Why don’t *you* marry him?”

They didn’t know what to do with me, really. Grace talked to Jim’s parents. Then they asked him whether he would agree to marry me. He liked me, so he said yes. Grace gave me a choice between marrying him and going back to the orphanage until I was eighteen.

Since my very birth I had been moved about like a dog. Taken from one place and sent to another, transferred from home to home, given away to the State. And now they were selling me to Jim because they wanted to get rid of me. Marriages don’t usually happen that way.

A—They do in many parts of the world. The Jews in Europe used to have a person called a *shadchen*. The parents asked him or her to find a husband for their daughter, maybe a doctor, or a wife for their son.

M—A matchmaker. There’s a new play in London called *The Matchmaker*, by Thornton Wilder. It’s opening next year on Broadway.

A—Grace was your matchmaker.

M—I knew life from the movies, you know. I thought marriage began with a courtship under the moonlight or something, and then the young man asked the girl’s father for her hand. But of course, the girl’s father was precisely what was lacking. I would have appreciated a few nice words under the moonlight, though, but Jim didn’t talk much.

I married him two weeks after my sixteenth birthday. He didn’t even take a day off. My mother wasn’t fit enough to leave the asylum and come to my wedding, but Ida and Albert Bolender attended. The minister who married us complained about my name.

“Is it Baker or Mortensen?”

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“It used to be Mortensen, but Mortensen isn’t my father, so my name is Baker, although he’s not my father either.”

“This is not clear at all.”

“What does it matter?” Jim said. “From now on, she’s going to be Norma Jean Dougherty.”

He didn’t speak much, but when he spoke he made sense.

I left school for good, since I was to become a housewife. We rented a small wooden house in Sherman Oaks, in the Valley.

A—What Valley?

M—This is the part of Los Angeles north of the Santa Monica mountains. The rent was lower there, you understand. Our house was so small that we had a Murphy bed, which folded into the wall during the day, but oh Gosh, for the first time in my life, I was not moving into someone else’s house. This was my own home. My stove, my refrigerator, my vacuum-cleaner. Oh boy, I loved to wash and iron and dust and cook in my home!

Cooking was not my strong point. Other girls have a mother who teaches them those things.

“Carrots and sweet peas again?” Jim complained.

“The cookbook says that bright colors increase your appetite.”

Aunt Ana had told me I could add a pinch of salt to my coffee to boost its taste. I forgot what she had said and added a spoonful...

On week-ends we took the car and drove out of town. We often went to Sherwood Lake, where we swam and rowed a boat. Jim was a great fisher and hunter. I tried to overcome my disgust when he asked me to take a fish off the hook or skin a rabbit.

“If you really loved God,” I told him, “you wouldn’t feel the need to kill living beings.”

“If you really loved God, Norma Jean, you wouldn’t eat hamburgers.”

Jim had brains. He had dropped out of school even earlier than me, though. His parents were so poor during the Great Depression that they lived in the street under a tent. He was a very good football player, but he had to drop out of school to earn a living. When he was fifteen, he worked in a funeral parlor, embalming corpses and what not.

A—What you mean, he could have received a scholarship as a football player. This is one thing I find very strange about American universities.

M—He performed well above average in all the sports. He was a natural. He loved our week-end trips and was pretty frustrated when gasoline was rationed.

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Sometimes we went horseback riding together. One evening, as we were coming back late, I asked him how the horse could see in the dark.

“Why don’t you turn on the headlights?” he suggested.

“Oh yeah, I’ll do that. But where’s the headlight switch?”

Then I understood that he was kidding me. “Why are the big dorks laughing so much?” our horses wondered.

America was at war with Japan and Germany, so it needed airplanes. Jim worked hard in the factory. He got a raise and we moved to a slightly bigger house near his parents’ home. Then his parents moved elsewhere so we moved into their vacated house. I didn’t have much to do. I couldn’t vacuum the house all day. I liked to go to the beach in Santa Monica, get a tan and swim. I liked to watch the men with the big arms and legs who came to train on parallel bars and to show off on “Muscle Beach,” near the pier. They liked to look at me too. They tried to talk to me, but I told them that I was a married woman and showed them my wedding band, so then they left me alone.

Although we got married to please other people, Jim was now my husband and so I loved him. When he worked on the night shift, I put a message in his lunch pail: “Dearest Daddy, when you open this I will be asleep and dreaming of you. Love and kisses. Your baby.” His factory pal, a big Irish guy named Bob Mitchum, joked about my sandwiches.

“Your old lady made this egg sandwich?”

“You ought to see my old lady.”

“I hope she looks better than her sandwiches.”

He brought a picture of me, then Bob Mitchum stopped joking.

Jim thought he would serve his country better if he became a soldier than if he stayed in the factory.

A—I beg to dissent. I believe a worker building airplanes plays a bigger part in a modern war than a foot soldier.

M—I wouldn’t have become Marilyn Monroe if he had stayed in the factory.

A—How do you know? How can you be sure?

M—I can’t be sure, you’re right. He enrolled in the Navy anyway. He looked real handsome in his uniform. Seeing he was such an accomplished athlete, they gave him a job as a physical education instructor for new recruits. We moved to the naval base on Catalina Island.

A—Where is Catalina Island?

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M—A bit to the South of Los Angeles, about twenty-five miles from the shore. I was seventeen. This was my twelfth home already, give or take a few. We spent one year there. We had a great view of the ocean, actually. My next door neighbor said she had moved even more than me. Her husband was the master-at-arms in the cafeteria.

“There’s no Navy base east, south or west of this country, where we haven’t lived during these last twelve years.”

The sailors were very friendly with me. A colleague of Jim gave me instructions in weight-lifting and other physical fitness exercises. I felt like a new recruit. There were dances in the cafeteria every Saturday. Jim and I became quite good at the jitterbug.

A—Is it a game?

M—A dance. Sort of fast and fun. I danced with him and also with the other sailors. He insisted on taking me home before midnight. I could have danced all night. He was jealous. He said my dress was provocative. It wasn’t my fault if all these nice sailors found me pretty. He should have been proud rather than jealous.

The war got in the way of our happiness. The Japanese and the Germans sank many ships, so the new recruits were spending less time in the base before going to sea. They skipped physical training. Jim didn’t feel useful anymore. So he embarked on a navy freighter headed for Townsville, Australia.

“You go live with Mom, Norma Jean,” he said.

I moved in with the Doughertys in North Hollywood. Mr. Dougherty had retired, but he went around repairing houses to earn some money. Mrs. Dougherty has taken a job as a nurse with the Radioplane Company in Burbank. They made radio-controlled planes used as targets for anti-aircraft practice. I was pretty well alone at home most of the time. Wondering how long I’d last before dying of boredom, I asked Mrs. Dougherty whether she could find me a job at Radioplane. I told her I wanted to feel useful while our country was at war. I didn’t tell her I wanted to buy a new sweater, but truly there was no way I could do it with what the Navy gave me out of Jim’s pay.

All these companies working for the military had plenty of jobs available. I folded parachutes, then I worked in the dope room. This dope was a kind of stinking goo that we applied with brushes on the fabric covering the body and wings of the target plane.

I worked ten hours a day, six days a week. I had taken a driving license after Jim was gone, so on Sunday I drove the Ford to West Los Angeles to see aunt Ana. I also went to the beach, of course.

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Then I got lucky. I didn't think of becoming an actress, I didn't work at it in any manner. I wasn't set on a purpose from my earliest age like you were. Just plain dumb luck. This photographer, Dave Conover, came to the factory...

A—Ach, we talk about luck when we lack an explanation. What do we know about luck? I had a big fight with other physicists about tiny particles. They say luck moves the particle here and there and I say there is no luck. Someday, we'll be able to explain how the particles move. Luck I have known in my life, too. Herr Weber refused to enroll me as assistant, so I found a job in the patent office. As I knew electricity and physics, I was asked to review patents with electrical clocks and new cameras, so I looked at the interaction of time, electricity and light from very close and it helped me solve the great mystery.

But what if luck had kept me in university? I guess I would still have solved the big riddle one way or another. Even if you hadn't got work in Radioplane factory, a photographer would have found you, maybe another photographer, and you would have become a star anyway. Maybe another name instead of Marilyn Monroe.

M—Yeah. Monica Mortensen, or Barbara Baker. I've never liked Marilyn.

A—You didn't have a name yet. You were still just a face in the crowd.

M—He worked for *Yank*, an army magazine. They were doing a piece about women replacing men in factories. He shot me putting on dope and carrying a dope can and folding parachutes. I found our blue overall quite sexy, but he also photographed me in my tightest red sweater. Do you know why he chose me? I don't think I'm pretty, honest. I was young and clean-looking. I ironed my clothes every morning before going to work. The other girls were sloppy. They drank and smoked and never talked about anything but boys. Now see what happened: when he developed his films, he discovered I looked quite good. Something about my face catching light the right way. So then Ron Reagan put my picture on the cover of *Yank* magazine. He was the editor in chief. He is a famous actor, you know.

A—I don't know famous actors. Only Emil Jannings and Peter Lorre. I haven't gone to the movies in a long time.

M—Well, maybe not so famous. Other actors know him because he was the head of the Screen Actors' Guild until a few years ago. Now he has a show on television. As soon as the magazine came out, another photographer, Potter Heweth, wanted to make pictures. He suggested we go to the countryside on a Sunday so he could take pictures of me in the fields.

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“In front of a haystack, you know, that kind of thing. You have the look of a young clean country girl.”



Potter introduced me to miss Snively, who owned the Blue Book model agency in Hollywood. She was a plump English lady with a wide smile.

“You’re wasting your time and talent in a factory,” she said. “I can teach you modeling in three months for a hundred dollars, but I’ll find modeling jobs for you that will cover the costs.”

She already taught me something. I was wearing my tightest white dress.

“Never wear white on a modeling job. It’s just no color.”

Mrs. Dougherty was not very happy when I told her about miss Snively.

“Modeling? Maybe you should write to Jim and ask him about it.”

“I’ll write to let him know, but I can’t wait for his answer. It will take months. I’ve got to grab the opportunity.”

What was bothering her, of course, was that nice girls don’t take jobs like modeling, and married women even less. Gee, I hadn’t even told miss Snively I was married. I meant to tell her, but I just forgot.

A—Models had a bad reputation in Germany, too. So had actresses, actually. Women were supposed to stay at home and raise their children. There is an expression in German: *Kirche, Küche, Kinder*. Church, kitchen and children.

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M—Aunt Ana said that loving God was more important than going to Church. I loved God, or thought I did. I believed that nothing wrong could happen to me.

Miss Snively sent me to a man from the Holga Steel Company, who needed a hostess at the Industrial Show. I earned ten dollars a day and it lasted ten days, so it paid for my modeling course. I didn't tell Radioplane that I worked at the Industrial Show. Officially, I was on sick leave. Miss Snively said I'd better keep my job at Radioplane for the time being.

"You're lucky to have that security, Norma Jean. Some girls just starve because they can't even type. Just be patient: I'll have you out of there for good in less than six months."

So I was back in the dope room, but I drove to Hollywood every evening after work to study posing, makeup and grooming. I wasn't at home much. As the Doughertys didn't approve of my modeling, living with them was becoming difficult. I moved in with aunt Ana.

Soon, I was being photographed for all kinds of advertisements and magazines. As a model, I earned five dollars per hour, whereas at Radioplane I earned five dollars a day. I left Radioplane for good. It all happened so quickly!

Douglas Aircraft hired me for a week at twenty-five dollars a day. They even sent a car to pick me up every morning. I posed in nightgown in the sleeping berth of their new airplane, the DC4. Lots of people came and watched on the sly. They said that work slowed down in the whole factory because of me.

Miss Snively suggested I bleach my hair, so it could catch the light better. I appeared on thirty-three magazine covers in six months.

A—From your tone, I guess it is a high number.

M—Yes, people were beginning to say I was overexposed as a cover girl. Miss Snively hoped I might eventually find a job in the movies.

"Successful models often get contracts with one of the Studios. This pays more than photographs. It would mean security to you, Norma Jean. But you must first remember what I told you: lower your smile!"

"Oh, I haven't forgotten, miss Snively. I practice in front of my mirror every day. Also, I bought an anatomy book to study bone structure and understand what my body can do. I talk with the photographers about it. I bring their pictures home to look at them real good, then I ask them to explain what's right and what isn't."

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"If only my other girls worked as much as you do! You're quite young. If you don't make it in the movies, you can learn typing and become a secretary, or else get married."

"But I am already married."

"Well, you can say you fooled old Snively, which is quite a feat."

She pretended to laugh about it, but I could see she was disappointed. I felt tears welling inside me.

"Don't cry, Norma Jean. I know what it is: you were afraid to tell me."

"My husband is at sea. I lived with his parents, but they didn't approve of my modeling, so now I live with a friend."

I paid twenty-five dollars to insert my picture in the Blue Book agency catalog. Miss Snively added the following legend: *Height—5 feet 5 inches. Weight—118 pounds. Measurements—36, 24, 34. Hair—medium blond, too curly to manage, bleach and permanent recommended. Eyes—blue. Perfect teeth.*

Jim wasn't so happy about my new profession.

A—You told me about this Jim, but I forget again who he is.

M—My husband. In August 1945, when the war in Japan ended, he was in a ship somewhere off the coast of Argentina. A few weeks later, he phoned from New York City, but I was not home. Aunt Ana told him I worked hard. Until then, I guess he had thought my modeling was a kind of hobby, a way of passing time while waiting for him. He wanted to resign from the Navy and fly straight to Los Angeles, but they didn't let him. Although the war was over, they needed the ship and its crew to bring the troops home from Europe and wherever.

All he got was a twelve-day leave. His skin was as yellow as a banana because of a sickness he had caught in New Guinea. I kissed him and it felt good.

He scolded me because I owed money for dresses and shoes and makeup and stuff. What the Navy sent me should have been enough, he thought. He had saved three hundred dollars and intended to spend most of it having fun, but once the bills were paid, there wasn't much left.

"In this job," I told him, "they pay higher fees if you're dressed well."

"Sure, Norma Jean, I understand. It's such a fantastic job that you must spend your own money to practice it."

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It so happened that I had several assignments during his leave, so we didn't see much of each other. He was worried that I was escaping to another world—limousines, swank hotels, and all that. Photographers bothered him more than anything else.

"These guys are slick talkers with lots of dough. You'll fall for one of them while I'm in Europe and I won't be able to do anything about it. He'll make you unhappy and you'll regret it, but then it will be too late for us."

A—Your Jim was already settling in his life and satisfied about it, maybe. You hadn't gone through all the stages of childhood. You were still curious about the world. You looked for people who could help you grow up.

M—Lots of people helped me, for sure. I was willing to listen and learn. I met a slick talker, just as Jim had foreseen. His name was André de Dienes. Halsman knows him. He is Hungarian. Maybe he wasn't as strong and handsome as Jim, but he kissed my hand and sent me flowers, and used some kind of scented cologne. He spoke in a soft voice, with an accent similar to Count Dracula's. He was thirty-two.

The first thing he asked me was:

"Will you pose in the nude?"

I didn't know what to answer, being a married woman. These European guys can read your thoughts.

"It doesn't have to be now," he said. "You can take your time and think about it before you give me an answer."

So he photographed me on the beach in a bathing suit. He drove out of town and shot me in a meadow with a lamb in my arms. He booked me for a week and photographed me under the redwood trees north of San Francisco, then in Oregon and other places that I had seen only in the movies so far. One night, it was snowing. We came to a small lodge in the mountains and there was only one bedroom left. André was a real gentleman.

"Let's go and find another place," he said.

Here we were driving on mountain roads at night, in the middle of a snow storm, and the next lodge also had only one room left.

"Listen, Norma Jean, we can't drive on in this snow storm. Why don't you take the bedroom... I'll sleep in the lobby."

"There is no bed in the lobby. I don't want you to sleep on the floor. Come on in."

A—Fate was playing one of its little tricks. Twice only one room left, eh?

Albert & Marilyn

M—I did consider this strange replay a sign from above. As you said, it would have happened anyway. I had to divorce Jim. Miss Snively said I needed to be single if I wanted to sign a contract with one of the studios. André proposed to me. I didn't say no, because I didn't want to ruin our Western trip. But I was careful not to say yes either.

“Let me divorce first, then we'll see what we do.”

When he photographed me, I tried to imagine I was in love with the lens, because it made me prettier and more desirable. Maybe André thought I was in love with him. We agreed that, as a compensation for my taking off my clothes every night, he would give up his idea of photographing me in the nude.

Miss Snively gave me the name of a lawyer. I went to Las Vegas. The lawyer sent a letter to Jim in Europe. If he didn't come to Las Vegas on a certain day, this was in May 1946, see a certain judge, the divorce would be pronounced *in absentia*. I stayed six weeks there. They were shooting a movie. I stopped and watched, then one of the actors talked to me. I met Roy Rogers, a movie cowboy, and even rode his famous horse, Trigger. I had dinner with them. Everybody thought I was in the movies, too. I'll soon be, I thought. I liked these people better than the girls in the dope room.

Jim accepted the divorce. He even let me keep the blue Ford. He was a good person. I've never seen him again. Are you married, Albert?

A—Twice I have been married. I divorced from my first wife, Mileva, but I didn't intend to become a model.

M—She could have become a model.

A—Oh, she was, how do you say, quite plain. Let me tell you something, Marilyn: I married too hasty, just like you. When I work here and there, Winterthur, Schaffhausen, sometimes Mileva comes to my city and we live together, very discreet and hiding, a kind of secret marriage. Swiss people are quite strict, you know, like your puritans. Then the patent office offered me the good job in Bern, third class technical expert. I would become Swiss federal employee. A respectable Swiss citizen can't have a hidden mistress, you know. This is when we married.

M—How old were you?

A—Not yet twenty-four.

M—Well, I was only sixteen when I married Jim, not twenty yet when we divorced. Didn't you love her?

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A—Our couple was a capsized boat already before we married. I'm an old man now. I'll tell you about things happened very long ago. Nobody knows. Mileva is dead 1948. The reason we do not marry right away, we sleep together and hide, is my mother doesn't like Mileva, even though she has never met her. When I visit in Italy, my mother cries and cries all the time. She writes a letter to Mileva's parents, telling them the Einstein family will never welcome their daughter. My father is ill. Not a good time to marry against my mother's will and add to my father's troubles. So we sleep together, young fools we are, and what happens?

M—She is pregnant.

A—You know about life.

M—It happened to me too, believe me. More than once.

A—Oh. I understand, maybe. In Los Angeles, miss Snively she knows a lawyer and also a doctor for, how do you say...

M—Abortion.

A—In small Swiss cities I knew no doctor. Also, we were so ignorant, both of us, Mileva found out too late about being pregnant. Having baby without being married in Switzerland fifty years ago, you become outcast.

M—Things are not much better here. I'm glad my mother didn't have an abortion, though.

A—She goes back to her parents in Hungary and has a little girl, Lieserl. When I receive the letter (written by Mileva's father, as she is probably too weak) announcing the birth of my daughter, I am overjoyed. I write to Mileva right away: "Is she healthy? Does she cry properly? What are her eyes like? Which one of us does she more resemble? Who is giving her milk? Is she hungry? She must be completely bald. I love her so much and don't even know her yet! Couldn't you have a photograph made of her when you've regained your health? Is she looking at things yet? Now you can make observations. I'd like to make a Lieserl myself someday. It must be fascinating! She's certainly able to cry already, but won't know how to laugh until much later. Therein lies a profound truth. When you feel better, you'll have to draw a portrait of her!"

I was ready to love this baby, my own flesh and blood. But then, I thought about Switzerland. I couldn't register the child, born out of wedlock, just when I was entering the Federal administration.

M—Even if you are the baby's father? Gee.

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A—Couldn't marry an unwed mother either. We gave our sweet Lieserl for adoption. Mileva's parents found a family in Serbia somewhere, Belgrade maybe. We promised never to look for her. I don't know whether she is still alive.

M—I hope she is. Oh, Albert, this is so sad! I feel for this little girl, you know, because my mom gave me away to the Bolenders when I was two weeks old. My father is a great scientist, maybe, and your daughter a famous actress over there in Belgrade.

A—All sorts of things happen. Fate often is whimsical. In novels, long-lost relatives are sometimes found. When this happens in real life, I think that people may find it quite disappointing.

While Mileva was away, I began working in the patent office. I received vegetable mashers, player pianos, self-winding watches. I had to study technical drawings, mock-ups, prototypes, operation manuals, then accept the good inventions and reject the bad ones—those that somebody else had already patented, those that didn't work as advertised, those that pretended to change lead into gold or work forever without any fuel. People invented all kinds of electrical devices that reminded me of my father's factory or relied on Maxwell's equation to emit Hertzian waves. I could see right away what the thing was all about, so that after a while I left the vegetable mashers to my colleagues and became an expert of avant-garde technology.

I spent most of my time editing the inventors' written descriptions of their gadgets. They were obscure, full of technical and logical errors. I can say I learned how to write clearly—and maybe also think clearly—by editing hundreds of patent requests in Bern. Herr Haller taught me to be a sharp critic.

"When you look at a patent application," he said, "you should consider that anything the inventor says is wrong."

Michelangelo Besso, whom I recommended warmly to Herr Haller, became my colleague at the office. He found an apartment close to mine, so that we often walked home together after work.

After more than one year in Hungary, Mileva came back to Bern. She returned a different person. She spoke little and never smiled. I thought childbirth had depressed her.

M—Are you kidding? She had given away her own child!

A—It's true, but it was past and done. Worse things happen. Life has to go on.

Her character had always been somewhat sullen and distrustful. It was now more so. She had never told me much about her childhood. She had suffered a form of tuberculosis

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that had bent her joints, so she limped slightly. She didn't love me anymore. In the meantime, on his death bed, my father had told me to marry her and be happy. I obeyed his last wish, but I knew I wouldn't be happy.

I could solve a differential equation better than tackle human problems. I had certainly loved Mileva at first. I called her my dollie, my froggie, my sweet kitten, my lovely angel, my tiny black darling—because her hair was as black as a crow's feathers. Now she had become a good friend, maybe, like Marcel Grossmann or Michele Besso. I didn't feel the noble passion called *love* anymore. But then, a kind of blurry conception of honor compelled me to marry her as a way of making amends for the harm I had inflicted. I would have considered myself a scoundrel if I had left her just after asking her to give up our baby.



We got married on January 6, 1903 in Bern. We celebrated by dining in a good restaurant with our two witnesses, Maurice Solovine and Conrad Habicht. I had found a new apartment, slightly larger than my room under the roof.

M—This is quite a story. It would make a good movie. Have you had other children?

A—Our elder son, Hans-Albert, was born less than one year after our wedding. I guess we were trying to replace Lieserl. Then Eduard seven years later.

M—Are they still alive?

A—Hansi is a physics teacher in California. Eduard played music and wrote well, but there was something wrong with his mind. He lives in a mental institution in Zurich.

M—Like my mother. Actually, she was out for a few months and we lived together just when I was leaving my husband. André de Dienes kissed her hand and brought her flowers, but my quickie divorce was too much for her and she went back to the asylum. When did you divorce, Al?

A—A loveless marriage can last a long time. We separated in 1914, because of the war.

M—Did Switzerland go to war?

A—Switzerland never goes to war. It is a neutral country. We had just moved to Berlin. Let me tell you the whole story.

In 1905, I published several important articles in *Annalen der Physik*. Much later, I became so famous that several authors wrote my biography without waiting for the end of my life. They all apply the same Latin expression to the year 1905: *Annus mirabilis*, which means “miracle year.” This is a flattering reference to a previous miracle year, when Newton moved to a country home outside London to avoid the plague and made all his great discoveries.

In the first article, *A new Determination of Molecular Dimensions*, I deduced the size of sugar molecules dissolved in water by measuring the viscosity of the solution. The article was a shorter version of my university thesis. I had given up my first idea, which was to write a thesis about gas molecules, because everybody else did it.

As I knew that many physicists were reluctant to believe in the actual existence of molecules, I gave another proof in my second article, *On the Movement, Demanded by Molecular-Kinetic Theory, of Particles Suspended in Liquids at Rest*. This is not a very elegant title. As the great physicist Boltzmann said, “I leave elegance to tailors and bootmakers.”

M—Just a minute. How do you spell his name?

A—B-o-l-t-z-m-a-n-n. He was the main proponent of the idea that the behavior of gasses could be explained by the movement of many invisible molecules. There was a big conference in St. Louis in 1904 where physicists rejected atoms and molecules. This depressed him so much that he hung himself in 1906. He was the teacher of my friends Paul Ehrenfest and Lise Meitner.

The subject of my article was “Brownian movement,” a phenomenon discovered by a Scottish botanist, Brown, in the early 19th century. Looking at pollen particles suspended

in water through a microscope, he had seen that they never stopped moving. I looked at Brownian movement through a microscope myself. The particles were indeed swimming to and fro like small fish, without ever getting tired. I found it fascinating, but also quite funny. I thought of all these crazy inventors who pretended they had mastered perpetual motion. If Nature requested a patent for Brownian movement, I would have to admit that it had invented perpetual motion. Why do the particles never cease moving? The reason is quite obvious. Every grain of pollen is similar to a tiny soccer ball. As soon as it comes close to a water molecule, it receives a kick that sends it elsewhere!

When you measure the pressure of a gas or the viscosity of a sugar solution, you get numbers that describe the molecules in an indirect and abstract manner. But when you look at the Brownian movement through a microscope, you perceive the molecules with your senses. While you don't actually see them, the nautical ballet of the pollen is a kind of amplified echo of their vibration. I gave equations for the relationship between the average course of the particles and the number of water molecules in a given volume. A few years later, when I was already famous, a French scientist, Perrin, set up an experiment that verified my equations.

M—Couldn't you do that yourself?

A—I am a theoretical physicist. I work with pen and paper. Experimental physicists set up experiments in labs. Perrin's experiment proved that molecules existed. Boltzmann was right.

In my third article, *A Heuristic¹ Viewpoint Concerning the Generation and Transformation of Light*, I expanded the hypothesis introduced by Max Planck in 1900 about "quanta" of energy. He had supposed that the atoms of a hot metal emitted energy in discontinuous bursts he called quanta. He thought the emitting was discontinuous, but light was nevertheless a continuous wave. Imagine that you fill up your bathtub by using a one-quart measuring cup, Marilyn. It would take you a long time! This is a discontinuous process, but the water becomes a continuous mass in the tub. Thus, you can draw water with a smaller cup, or even a thimble. What I asserted is that the water stays in quarts inside the tub. You can't draw out a thimble or a cup of water, but only a quart. Or, back to light: it is emitted as quanta, it stays as quanta, it is made of quanta! Light is discontinuous.

¹ "Stimulating interest as a means of furthering investigation" (according to Webster's unabridged dictionary).

Newton had already imagined grains of light, actually. The modern particles of light—some American scientist called them “photons” in 1925 or so—are different from Newton’s corpuscles. They carry their own wave—which is why people could think they were a vibration of the mysterious ether. I suggested in my article that my hypothesis be checked by experiments on the “photoelectric effect,” discovered by Hertz and J. J. Thompson at the end of the 19th century. Light jiggles electrons and produces electricity when it falls on certain atoms. The experiments were made about ten years after my article was published. They are not easy. You need to count the number of electrons released when you vary the light’s intensity and color. You work with photographers, Marilyn, so you’ve seen they measure the quantity of light with a light meter. It uses the photoelectric effect.

M—They’ve tried to show me how it works, but I am a lazy student.

A—Now I’m coming to my famous June, 1905 article. Today, everybody knows I have discovered the “Theory of Relativity.” The article had a very different title, though: *On the Electrodynamics of Moving Bodies*.

M—“Relativity” is simpler.

A—Of course, but Henri Poincaré, a great French scientist, used it to describe Galileo’s theory of moving bodies. Movement is always relative to something, Galileo says. I extended the theory to electromagnetic waves. I reconciled Newton and Maxwell. It was not so difficult: all you had to do was change Newton’s equations. This required a young man’s temerity, I guess. I had the gall to get rid of ether, too. My article impressed the great physicists of the time. Max Planck, one of the greatest, found it bothersome to say “Electrodynamics of moving bodies.” He said “Einstein’s relativity,” to distinguish my theory from Galileo’s relativity.

You work with other people, Marilyn.

M—A movie set is a crowded place. I feel very lonely in this crowded place, though, if I don’t have a close friend to talk to.

A—That’s who Michele Besso was: my close friend. I made the big discoveries by myself, but I could talk to him. He helped me refine my thoughts when we walked home together in the evening. At the end of my article, I thanked him.

After my new theory of moving bodies, which is a theory about time and the speed of light, was published in *Annalen der Physik*, I went to Novi Sad, in the South of Hungary. Today, this city is part of Yugoslavia. Mileva wanted her husband and two-year old son to meet her parents. While I hadn’t talked much (so I’ve been told) before the age of three,

our Hansi was already quite a magpie. His grandparents worshiped him right away like a god. They didn't like me as much as my son, I'm afraid. They thought I could have found a better-paying and more prestigious job than third-class technical expert in the patent office. I was a Polytechnikum graduate, after all.

We spent a few days on the Adriatic sea. I rented a boat and went sailing with Hansi and Mileva. Sailing has always stimulated my mind somehow. I wrote a letter to my friend Conrad Habicht. "I have thought of yet another consequence of the electrodynamic paper. By combining the relativity principle with Maxwell's equations, I can show that the mass of a body is a direct measure of the energy it contains. You could say that light transfers mass. You know that radium emits great quantities of radioactive energy. If my hypothesis is true, then there should be a noticeable diminution of radium's mass. The idea is amusing and enticing, but whether the Almighty is just laughing at me—that I can't know."

As soon as I came back from my vacations, I sent a short article on that subject to *Annalen der Physik*. Its title was *Is the Inertia of a Body Dependent on its Energy Content?* The formula that links a body's mass and its energy content is very simple: $e = mc^2$

M—I've heard that formula before, but of course it's all Chinese to me.

A—It means that mass is a kind of very concentrated energy. The letter E stands for energy, the letter m for mass. In the title, the word "inertia" means the same thing as mass. The letter c is the speed of light.

This small post-scriptum to my theory explains the mysterious phenomenon of radioactivity. Becquerel, Pierre and Marie Curie wondered where the energy emitted by uranium and radium salts came from. I gave the answer: the salts lose weight by and by, as a very tiny proportion of their mass turns into radiation. Since c^2 , the square of the speed of light, is a very high number, a tiny mass becomes a huge quantity of energy. This is altogether different from what happens when you burn something, which is a plain chemical reaction. The sun has been shining for billions of years because its enormous mass turns slowly into energy. If it burned like coal, it would be consumed entirely in fifteen hundred years.

M—So actually you explained where the sun's light comes from.

A—That's right.

M—Before your theory, people didn't know how come we get sunshine?

A—They didn't.

M—Didn't they wonder about it?

A—Did you?

M—Well... I didn't wonder about the compass either. I drive my car, but I don't look under the hood. I take things for granted. Maybe I shouldn't.

A—Few people noticed that I had found why the sun shines. I didn't become the famous Professor Einstein all of a sudden. *Ach*, I was a bit surprised and disappointed. Nobody seemed to notice I had just thrown current physics into the dust bin and launched a new era.

The following summer, a young German physicist, Max von Laue, came to Bern in order to meet me. He found the patent office and asked for me. They told him I'd come right away. When I entered the waiting room, he didn't stand up, because he expected the author of the *Annalen der Physik* articles to look like a dignified Herr Professor, not like a young man wearing a short-sleeved shirt and sandals. He worked in Max Planck's Berlin laboratory. He said that my articles had impressed everybody. Max Planck himself had quoted and commented them during a public conference. As the inventor of quanta, he had read my article about the discontinuous nature of light very carefully.

"You know, Herr Einstein," von Laue said, "the old man doesn't agree with you at all. The energy is emitted as quanta, but we have no proof that it stays discontinuous. All the experiments show that light behaves like a wave, not like a stream of particles."

"Then we'll have to do new experiments. Have you read my other article, about the electrodynamics of moving bodies?"

"Yes, but I'm not sure I understand it. It seems more metaphysical than physical to me."

"You've seen that I suggest we abolish ether, anyway. Without ether, light can't be a standard wave. If you admit that a star spits billions of tiny light grains that fall into your eye and into mine, then everything becomes crystal clear."

He told me people read my articles in Würzburg, Göttingen, Breslau, and as far as Cracow. Professor Witkowski had told Professor Loria: "A new Copernicus!"

M—Wait! Please write all these names in my notebook, Albert.

A—All right. I hope I spell them right. Today, Breslau is called Wrocław.

After a while, Max von Laue and the other physicists ceased to find my ideas metaphysical, philosophical or poetical. It didn't follow that they accepted them. For years, I wrote articles to answer objections put forward by the great professors of that time. They were the great professors of the 19th century, actually. Lorentz, for example, was fifty-five

¹ Copernicus lived in Cracow.

years old in 1905. The Nobel prize had crowned his career in 1902¹. He wrote to me, I answered. Exchanging letters with that great man, whom I had always admired, brought me a feeling of intense satisfaction. It was useful, too, as it helped me consolidate my theory. He believed that objects contracted at great speed. I tried to convince him that objects didn't actually contract, but seemed contracted.

Many scientists called my theory false, foolish, absurd and so on. Some grumpy fellows objected to my person. How could a twenty-six year old civil servant dare suggest a new vision of reality—right under the (wrinkled) noses of famous professors who had spent their whole lives trying to resolve the contradictions of modern physics? They were willing to accept the new theory, but they denied I was its father. They said I had stolen the ideas from Lorentz and Poincaré.

The Swiss newspapers got wind of these controversies. They didn't display my photograph on the first page, as they did later, but published ironical articles in the national section. "A YOUNG SWISS PHYSICIST PRETENDS TIME IS ELASTIC! DON'T BE SURPRISED IF YOUR WATCH LOSES TIME WHEN YOU TRAVEL ON A TRAIN! *The excentric theory of a Patent Office employee.*"

M—Does it?

A—Does it what?

M—Does my watch lose time when I travel on a train?

A—Not on a real train. The theory applies to a kind of theoretical train that moves along a straight line at constant speed. This is called uniform motion. In a real train, the time on your watch may differ from the time on a watch outside the train, but if you want to compare the watches you have to slow down and stop, so then the change of speed cancels the time difference.

While many physicists didn't even bother to refute my theory, an outsider restated it in a very clever way. Herr Minkowski had been my math teacher at the Polytechnikum. He used to say I was "a lazy dog who doesn't give a damn about mathematics." He now taught math in Germany, in the great Göttingen university. Something in my theory of relativity struck him at once: I treated time and space in the same manner. In 1907, he suggested that

¹ Nobel, a Swedish businessman who invented dynamite and earned lots of money, created this prize in his will. He died in 1897. Röntgen received the first physics prize, in 1901, for his discovery of X rays. After Lorentz, the 1903 prize went to Henri Becquerel, Pierre and Marie Curie.

time be considered a fourth dimension of space. He used the expression “space-time continuum,” but everybody just says “space-time.”

The fourth dimension appears as ict , where i is an imaginary number whose square is -1 , so that the squared length of a space-time vector is $x^2 + y^2 + z^2 - c^2t^2$. Although I may understand this formula better than you do, Marilyn, I found it rather strange at first. I had discovered that space and time were relative, but they were still real. The high mysteries of mathematics can arouse a feeling of awe in a non-mathematician. It seemed to me that Göttingen’s crazy algebraists were hijacking my theory and turning it into an abstraction that I didn’t recognize. I wondered whether they wanted to move knowledge forward or simply to impress the physicists. Then, by and by, I admitted that I didn’t have a choice—I had to study modern mathematics to widen the range of my theory. This would have been easier if Minkowski, who could have helped me, hadn’t died suddenly, in January, 1909, of acute appendicitis. He was only forty-four years old.

He had been my most zealous propagandist. He was said to be obsessed by the theory of relativity. Moved by his enthusiasm, by the commotion my theory had provoked in the world of physics, the Swiss authorities eventually found out about me. These poor authorities felt foolish when they had to acknowledge that the famous Albert Einstein was a second-rate employee in a federal office in Bern.

M—You were the Van Gogh of physics.

A—Quite flattering.

M—I mean, he was the greatest of them all but never sold a painting.

A—I did get better recognition than he did, eventually.

In any civilized country, a scientist whose ideas were admired and attacked by the luminaries of his profession would have been a tenured university teacher. The authorities certainly knew that several eminent Swiss professors didn’t even teach the forty-year old Maxwell equations yet. By giving me my due, Switzerland could move to the vanguard of science all at once. Thus, the authorities decided I was to enter university. Professor Kleiner, who had supervised my doctorate thesis in Zurich, was willing to take me as his assistant. Ah, but this was against the rules. In Switzerland, you don’t go around breaking the rules. I couldn’t become an assistant unless I climbed the ladder like anybody else, beginning as a *Privatdozent* or “private tutor.” It didn’t make sense. It meant giving private lessons to university students, with no salary.

M—No pay? How is that possible?

A—You earn money by giving private lessons. This is possible if you are a young man willing to live like a student. As I had a wife and a child, I couldn't renounce my patent office salary. So I requested a *Privatdozent* position in Bern university rather than Zurich. I still laugh when I think about it (I didn't laugh at the time): the physics teacher in Bern, a stupid old mummy, refused my application. Seventeen published articles and my Zurich PhD weren't enough. He had never heard about me, obviously. He wanted "a new project." I felt so angry that I was ready to give up Bern university and Zurich university. Mileva kept me in line.

"Think about your future. You must take care of your family."

"I didn't request this great honor. Professor Kleiner asked me, and now there's trouble. Forget about it."

"Give them your next article. Call it your new project."

I followed this wise advice and became a *Privatdozent*. Three persons listened to my first course: Michele Besso and two of his friends. During the second semester, a real student joined them. For various reasons, my three friends stopped attending my lessons, so that I had only one student. I explained relativity to him in my home, or on mountain paths.

The patent office knew nothing about my growing fame. What impressed them was my writing a university thesis and becoming "Herr Doktor Einstein." They promoted me to second-class expert and raised my salary to 4,500 Swiss francs. We moved to a slightly larger apartment. Mileva always complained about our living conditions. We moved seven times in the seven years we spent in Bern. I worked on my physics in my office when I had finished my work with patents, or at home in the evening.

Hansi was growing up. I built a small cable-car for him, including a working electric motor. He loved mechanical toys. Although I tried to have him learn the piano, nothing came out of it. The power of music didn't seem to affect him.

My sister Maja lived in Paris for a while, then came back to Switzerland to get a Ph.D. in Zurich university. The subject of her thesis was medieval French. She married Paul Winteler and they settled in Luzern.

M—Is this a Swiss city?

A—Oh yes. Halfway between Bern and Zurich, on a pretty lake. This is all the German part of Switzerland. There is also a French part in the South-West. The main city there is Geneva. The university of Geneva had been founded three hundred and fifty years before

by Calvin. They decided to celebrate this anniversary with solemn ceremonies and included me in a batch of people who were to receive *honoris causa* diplomas. The letter they sent me was covered with ornery characters and failed to get to the point in the first paragraph, so I thought it was some kind of publicity. It looked like they were trying to sell me expensive Burgundy or Champagne wine. I crumbled it and threw it into my wastebasket with my equation-covered sheets of paper. Mileva complained all the time. I never tidied up my desk, I lost all kinds of things, I didn't help her. I can't deny I often drifted somewhere in the clouds or beyond the moon.

The university of Geneva wrote another letter and sent it to my lone student, who happened to be a graduate of the university. As I liked to make fun of him, he played a practical joke on me. He said I was invited to a celebration in Geneva and gave me the train tickets, without telling me anything about the honorary doctorate. There were maybe a hundred meritorious scientists marching in the streets of Geneva, all in black academic robes and mortars—except one, Herr Doktor Einstein, who wore his old tweed jacket and his straw hat. After listening to many boring speeches, I ate like a pig at the biggest banquet I have attended in my whole life. You know who Calvin was?

M—Er, some kind of religious guy.

A—According to him, all the pleasures in life were great sins. He lived on bread and water. With so many people committing the sin of gluttony while pretending to honor him, he was certainly turning in his grave.

A few months later, in September, 1909, I was invited to my very first physics conference—in Salzburg, Austria. I met Max Planck at last. We had exchanged letters for years. The great man praised me so much that I felt quite embarrassed and blushed like a shy maiden. He seemed somewhat surprised when he first saw me, although Max von Laue had certainly told him what to expect. You won't offend me if you compare me to a scarecrow, Marilyn. I am not too careful about the way I cover my body. I refuse to carry tons of luggage when I travel. Once or twice a year, some special official event compels me to wear a tie. Otherwise, I don't see why I should squeeze my neck with this ridiculous silk ribbon. Max Planck, on the other hand, wore a stern gray suit made by a stern gray Prussian tailor. He was tall and stood straight. Thick hair grew under his nose and on both sides of his head, but none on top. His wire-rimmed glasses seemed to enhance the boring power of his gaze. His eyes saw a lot and helped him understand things instantly.

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He gave my theory its common name. Later on, when a larger public heard about “relativity,” people used the word in domains outside physics, for instance politics or history. They credited me with an obvious truism: “Everything is relative, as Einstein says.” This may be true in politics and sociology, but certainly not in my theory, since the speed of light is absolute. I replaced absolute space and time by absolute physics laws: what my theory really asserts is that the laws of physics do not change when you switch from an inertial reference frame to another. You might as well call it “the theory of invariance.” Or even better, “the principle of invariance.” As many experiments have proved it right, it is not a hypothesis or theory anymore.

M—Your Planck’s authority is good enough for me. I’ll stick to “theory of relativity.”

A—In Salzburg I met Max Born, who became a good friend.



He had been the assistant of poor Minkowski in Göttingen. He asked me lots of questions, since he had to introduce Minkowski's mathematical formulation of my theory during a plenary meeting. As for myself, I gave a conference about "The Nature and Constitution of Radiation." I suggested that light and other radiations possessed a double personality.

"Many experiments show light behaving in a way consistent with Newton's corpuscle hypothesis. Other experiments can't be explained unless light is considered a wave. I think that the next step for theoretical physics will be to combine the corpuscle and the wave models. We'll need to change our vision of nature."

Max Planck had initiated the return of the corpuscle hypothesis, but he still refused to follow me.

"Our present ideas of physical reality are the result of three centuries of work by the best minds in many countries," he said. "We can't forsake these ideas without very strong reasons. Any talk of change is premature."

I went on with my conference. I suggested we try to see the particle and the wave character of energy quanta as two faces of a medal, in the same manner that, according to my equation, a body's energy and its mass are two aspects of the same reality. The older physicists frowned at what they considered wild ramblings, but my younger colleagues, for example Arnold Sommerfeld and Lise Meitner, seemed entranced and enthusiastic.

The top European scientists had discussed my theories more than anything else at the Salzburg convention. I wasn't becoming a big movie star, but a small physics starlet. My lowly situation in Bern didn't fit with my growing fame.

M—In America, they recognize your worth faster, I think.

A—Everything goes faster in America. The Swiss are slower than other Europeans, too. Professor Kleiner convinced the authorities that theoretical physics should be taught in Zurich university. He meant to choose me as professor, but then it appeared that his own assistant, Friedrich Adler, was first in line for the new position. He had become a physics student in the university at the time I entered the Polytechnikum, then he hadn't lost years in a musty office. The authorities wouldn't let a newcomer become a *Herr Professor* when there was an old university hand around. Besides, Friedrich Adler wasn't just anybody. His father, Viktor Adler, was the leader of the Austrian social-democrats. He had just won a measure of democracy for the citizens of the Austrian empire and had been chosen as the

head of the Socialist International. Most members of the university's board were socialist... Quite a tangled affair. Mileva, who was pregnant, wasn't keen on moving to Zurich.

M—I thought she liked to move.

A—“Hansi has good friends in school” she said. “He is learning to read. He'll soon have to share his parents with a baby brother or sister. He doesn't need another disturbance in his life.”

“Let them pick up Adler. I don't care. I didn't apply for this job.”

“You'd earn more money, though.”

“But not at all. I'd say less. I wouldn't be a full tenured professor, but what they call 'extraordinary' professor. What's more, the patent office is willing to give me a raise to keep me. I'm quite a top-rate patent clerk, you know. It seems they hadn't noticed until today.”

“A big raise?”

“A reasonable Swiss raise. I'm much too young to become a first-class expert. This would be unheard of.”

“If you won't earn more in Zurich, then it's not worth it. The rent would cost twice as much over there.”

The university of Zurich hesitated for a full Swiss year before offering me the job. Friedrich Adler had made a scene in front of the board.

“Come on! I hope you won't promote me to professor when you could choose a man like Einstein! As physicists, we don't play in the same league. This is a unique occasion to raise the level of our university.”

Friedrich Adler had a fiery character. His father had sent him to Switzerland so he wouldn't get involved in Austrian politics, which interested him much more than physics. After he refused to become professor, the board found another candidate—who promptly withdrew from the race, too, by dying of tuberculosis. Then they turned to me, half-heartedly. They offered a ridiculous stipend. I protested and refused. They accepted to match my salary at the patent office: 4,500 francs per year. Well, I could hardly go on refusing. They were creating the position for me, after all.

My new colleagues knew so little about theoretical physics that they had never heard of me. A new chair of physics was founded for an unknown employee of a minor federal office, who hadn't bothered to climb past the first rung of the academic ladder. They knew I was a *privatdozent*, but they didn't know I had only one student! What really amazed

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them is that the famous Herr Professor Nernst of Berlin and the no less famous Herr Professor Sommerfeld of Munich came to Zurich especially to meet Herr Einstein.

M—The world of physics is not as different from Hollywood as you might think. People need to work on their reputation. They're jealous and mean. They hate and worship the big stars.

A—The new star of physics had to sublet part of his home to students, life was so expensive in Zurich. Mileva was angry. She scolded me for all kinds of reasons, or without any reason.

"You were supposed to bring Hansi back from school."

"*Ach*, that's true. I'll go right away."

"You were to get him at two o'clock, but now it is five. I can't count on you."

"Five o'clock? Where is my watch? He's going to worry."

"He came home long ago. Mrs. Müller brought him back. I felt quite embarrassed."

"Who is Mrs. Müller?"

"Our neighbor. You don't even know our neighbors. I had to lie to her. I told her you didn't feel well. She found Hansi crying in front of the school at three o'clock. I wonder what she thinks of us. Parents who forget their own child!"

"He could come home by himself. It's not so far."

"How can you say that? He's only seven. He can't cross the street. It is very dangerous, with these new automobiles."

I had offered Hansi a toy sailing-boat. I sometimes took him to the lake of Zurich. There, he sailed his boat in a special basin where other children played with their own boats. One day, when we came back from the lake, Mileva screamed at me.

"What happened? The child is all wet!"

"Hey, I hadn't noticed. Is it raining? I guess not, since I'm dry."

"How did you drench yourself so, Hansi?"

"I fell into the basin."

"My God! He fell into the basin and you, Albert, didn't notice anything!"

"I must have been thinking. It is not very deep, anyway."

"The great scientist was thinking! Maybe you should think a little less about your physics and a little more about your son."

We lived in the same building as Friedrich Adler and became the best friends in the world. Hansi is now fifty years old, Marilyn. A few weeks ago, he told me he had been in love with Assinka Adler, Friedrich's daughter, who was his age, but I don't remember her.

In March, 1911, we moved again. I accepted a position as full professor in Prague's German University.

M—I've moved a lot, like you. I couldn't count the houses, apartments and hotels, where I've lived first as a child, then as an adult. But I've always stayed in my country. I'm not sure I know where Prague is. I feel so ignorant.

A—The country is called Czechoslovakia today. It is behind the iron curtain. In those times, it was part of the Austrian empire.

I had remained only eighteen months in Zurich. I wasn't unhappy there. I liked the lake and the mountains. The university was small and nobody cared about theoretical physics, so I could count my students on the fingers of my hands, or even sometimes of one hand. This allowed me to give my courses in a café or on the banks of the lake. I brought them to my home for tea, even though Mileva complained that I never asked for her permission.

Ah, but the German University in Prague was a famous institution. The great scientist Ernst Mach, who was still alive but very old, had long taught there. As he had studied sound, his name has been given to the unit of sound speed¹. In one of his books, he criticized Newton's absolute space and time. This shaped my own thoughts, in a way. He also had original ideas about mass. Under his influence, the university had reached a high level in scientific matters. What attracted me, actually, was the vast library. I felt I was moving from a village to a big city. Mileva didn't object to my plan. A full tenured professor earned twice more than an "extraordinary" one. In Prague, we would live in a large apartment and be able to employ a maid. Hansi rejoiced because we would have electrical lights. In Bern, we used oil lamps, in Zurich gaslight.

When the board of the Prague university inquired about me, Max Planck recommended me warmly: "If Einstein's theory should prove to be correct, as I expect it will, he will be considered the Copernicus of the twentieth century." They wanted me to join the faculty as soon as possible. Things turned messy, though, and the whole project came close to failure. The representative of the Imperial ministry of education brought in his own

¹ The speed of sound depends on the pressure of the air. It is something like 700 miles per hour. A plane is said to fly at Mach 2 if its speed is twice the speed of sound, etc.

candidate, Herr Jaumann, who didn't believe in atoms but happened to be Austrian and catholic. While both sides were ready to fight a long battle, Herr Jaumann withdrew his candidacy: "I'll have nothing to do with a university that is fascinated by so-called modernity while being blind to real established merit." Then the representative of the Imperial ministry noticed that I never mentioned my religion in official papers. Without a religion, I couldn't swear allegiance to the emperor—a necessary step on the way to professorship. I had to go to Vienna and explain to some fool in the ministry that I considered myself Jewish, even though I seldom entered a synagogue. "Mosaic," the fool wrote in my file. What did I care? It was just a word on a piece of paper.

To swear allegiance and become an imperial civil servant, I had to request the Austrian nationality. They let me keep my Swiss citizenship. For years, I had lived without a nationality. Now I had two.

M—Without a nationality?

A—You remember I left Munich before graduating from high school, then renounced my German nationality.

M—Oh yes. Your father worried that you might regret it, in case you wanted to become a university professor in Germany. Well, you did become a professor in a German university after all.

A—You mean in Prague? It was called "German" because the students belonged to the German-speaking community, but it was Austrian. As soon as we settled in Prague, actually, I discovered that nationality and religion played a primary part in public life there. Out of one hundred inhabitants of the city, ninety-five were Czech. They had their own university. The Germans and the German-speaking Jews were facing the Czech majority together. The Germans hated it. "*Ach Gott*, we have to ally ourselves with these damn Jews !" Antisemitism was increasing. Being caught between the Germans and the Czechs wasn't a comfortable position for the Jews. Many of them became interested in Zionism, a new movement that had the strangest idea: Jews would move to Palestine and become happy peasants there.

My Jewish colleagues introduced me to Zionist circles. I met the writers Max Brod and Franz Kafka.

M—He wrote this awful piece about a man who becomes a bug. Yecch!

A—Whereas Max Brod never became as famous as his friend Kafka, he is the only writer I know who wrote a novel about physics. Its heroes are the great astronomer Tycho

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Brahe and his student Kepler, who lived in Prague. People said that Brod based the character of Kepler on me. The novel's Kepler knows nothing about human life because he is only interested in the stars. Not a very flattering portrait.

M—He didn't really know you.

A—Thank you, Marilyn.

The Prague Zionists were friendly enough, but their wonderful Palestine didn't attract me. I couldn't go to some god-forsaken place and work alone, as I used to do. If I wanted to extend my theory, I needed mathematics and mathematicians.

I notice that I haven't mentioned my dear violin for a long time. I played sonatas for piano and violin with the sister of one of my colleagues. She was an old piano teacher. If I made the slightest little mistake, she insisted we start the whole piece again. Quite a dragon!

You'll think me restless, Marilyn. I stayed only eight months in Prague. I was a full professor, I earned a good salary, but I liked neither my colleagues nor my students. They didn't care about modern physics. They lacked curiosity. After wasting my time with them, I had to spend hours filling forms in triplicate for the Austrian imperial bureaucracy. Mileva was unhappy, too. On top of what she found wrong with life in general, or maybe mainly with her husband, she felt uncomfortable amidst Prague's religious and political tensions.

M—Europe seems a very complicated place. I guess that's why so many people chose to leave and came to America.

A—I might have remained longer in Prague if I hadn't been offered better jobs elsewhere. The board of Utrecht university, in Holland, sent me a first proposition, which I refused, then a second and better proposition, which I found rather tempting. In Holland resided the great Hendrik Lorentz, whom I called my master.



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I saw him for the first time in 1911. I spent a few days with him in Leiden, his city. I had exchanged so many letters with him that I considered him an old friend. With his gray beard and solemn eyes, he looked like a warm and wise grandfather.

We went together to Brussels, in Belgium. Ernest Solvay, a Belgian industrialist, was financing what he called *Le Conseil de physique Solvay*, a gathering of the eighteen greatest scientists in Europe. He had asked Walther Nernst to choose the scientists. I was quite flattered that he included me in the lot. Although the public at large had not heard of me yet, I was already well known in the scientific community.

Lorentz presided the meeting. He was a perfect president. He spoke German and French fluently and treated all his colleagues with the sweetest courtesy. He created an atmosphere of happy cooperation through some magical quality of his.

I met Marie Curie, who had just received her second Nobel prize. She was a small nervous woman, whose face brightened when she spoke of her dear radium and polonium. The dear radium had burned her skin, though. She rubbed the tingling tips of her fingers constantly.



M—I told you I saw a movie where Greer Garson plays her. She didn't rub her fingers, as far as I remember.

A—Movies and reality are two different things.

I tried to speak French, since I had studied the language in Munich and Aarau, but she spoke good German. I also met Henri Poincaré, Paul Langevin, Jean Perrin, Ernest Rutherford. I was glad to see Max Planck, Nernst, Sommerfeld, and other German and Austrian physicists who had attended the Salzburg conference. The scientists who were

meeting me for the first time stared at me as if I had just arrived from another planet. Some accepted my ideas, others didn't. Poincaré and Lorentz, who had come closer to special relativity than anybody else, stuck to 19th-century science. They just couldn't admit that ether didn't exist. Also, they couldn't consider that Newton was wrong. It would have meant killing their father, in a way.

M—You seem to imply it didn't bother you to kill the father. Maybe this has to do with your temerity as a young man, which you mentioned earlier.

A—*Ach*, but I recognize Newton as the father of modern science. He was right most of the time. The cannonball does fall exactly where he predicted. His model of reality is true in our everyday experiences. It only fails at very high speeds, near the speed of light. He couldn't know about it.

M—What about Lorentz? Wasn't he also your father?

A—Yes, I killed his flattened-atoms hypothesis, certainly.

Right in the middle of the conference, we learned that a ridiculous scandal was shaking Paris. The newspapers accused Marie Curie, who had been a widow since 1906, of seducing Paul Langevin, a married man and father of four children. Didn't she flee with him to Brussels, pretending that some unknown science-crazed millionaire had invited them? As Marie Curie was born in Poland, the far-right newspapers remarked that foreigners weren't to be trusted. They wondered whether she wasn't secretly Jewish. Poor Pierre Curie had been crushed by a heavy cart as he was crossing the rue Dauphine absent-mindedly.

M—Walter Pidgeon played the husband in the movie. His death marked the end of the story. There was nothing about Lenzhvon

A—Langevin. The journalists insinuated that Pierre Curie had discovered his wife's infidelity and had committed suicide. You should have seen Paul Langevin and Marie Curie! They certainly didn't look like lovers, much less scheming lovers. They told us they worked together every day in Paris. Becoming intimate would have been easy. They didn't need to go to another country. Paul Langevin and his wife had grown apart long ago. He had filed for divorce. Madame Langevin was trying to get a more favorable divorce settlement by accusing her husband of adultery. It was obvious that Marie Curie was deeply moral, utterly honest and modest. Her purity and austerity were striking.

Today, Marilyn, I am seventy-four years old. Good scientists spend their lives asking questions like children. Their naive curiosity lets them soar to the far reaches of knowledge.

Once they're roaming amidst numbers and galaxies, though, they lose sight of the rough wheelings and dealings of society. Marie Curie and Paul Langevin didn't know how to face the scandal, which cruel journalists pumped up every day. They felt guilty, as if they had indeed committed a crime. It was a pity that the situation couldn't be described with numbers and equations. The best minds in the world would have worked on it and found a solution in no time!

During my stay in Brussels, the university of Utrecht sent me a new proposition. The salary was so high that I wondered whether I hadn't made a mistake converting the Dutch guilders into Swiss francs. At the same time, Lorentz himself invited me to consider replacing him in Leiden, as he was soon going to retire.

In the end, I accepted another offer. I went back to Zurich.

M—You keep going back to Zurich. It must be a nice place.

A—Mileva, who loved that city, was delighted. I liked Zurich, no doubt. I was still a Swiss citizen. I didn't return to the university, but to my alma mater, the good old Polytechnikum, which had just become a regular university and was creating a chair of mathematical physics for me. The authorities no doubt remembered me as the rascal who had insulted professor Weber by calling him *Herr Weber* instead of *Herr Professor*. The authorities had refused to offer me a job on my graduation. I wondered whether they had changed their minds or were playing nice for political reasons. My comrade Marcel Grossmann, who taught math and headed the department of fundamental research, had spoken vigorously in my favor. Marie Curie had sent a very laudatory letter of recommendation, calling me the leader of a new generation of physicists. Henri Poincaré had sent one, too. He said I had so many brilliant ideas that at least some of them would prove true and useful. He still couldn't accept special relativity, but when I read his generous letter I felt he was anointing me as his successor. He died soon afterwards.

While the authorities were writing a contract slowly and carefully, in the Swiss manner, I found new offers in my mailbox every week: from Columbia University in New York, from Vienna, from Berlin. I preferred the Polytechnikum. To sail on the lake of Zurich again! To walk on the mountain trails! My little Hansi asked me every day: "When are we going home, Dad?"

Nernst and Planck invited me to Berlin. They wanted to show me the university and the lakes (somebody had told them I loved sailing). I didn't stay in a hotel, but in the home of my aunt Fanny, my mother's sister. She had a daughter, Elsa, whom I hadn't seen for ages.

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Elsa was divorced and lived with her two daughters, Ilse and Margot, in the same building as aunt Fanny. I enjoyed the meals with them, the special feeling of warmth that we Germans call *gemütlichkeit*. They reminded me of my childhood. I couldn't help comparing my cousin and my wife. Elsa was blond, placid and pleasant. Her warm smile went straight to my heart. Mileva was dark, stern and surly, moody, humorless, full of anger. As she had failed to become a physicist, my success made her jealous. She wasn't happy with life, so she tried to spoil other people's happiness. I doubt you've ever met anybody as sour as she was. Elsa was proud of her cousin the famous *Herr Professor*.

M—Hey, Albert, you're revealing the plot too soon.

A—*Ach*, yes, I am still in Prague. Journalists made up explanations, as they like to do, for my departure. My backward colleagues had rejected me, they said. The Imperial administration had mistreated me because I was Jewish—and besides, it favored Vienna over Prague. I wrote to the university's dean that he shouldn't mind these silly rumors. I had been perfectly happy in Prague, but I had promised the Zurich authorities I would come back if they offered me satisfactory conditions.

Just before leaving Prague, I met a man who became one of my closest friends, Paul Ehrenfest. Born in Vienna, he had taught in Saint-Petersburg. I hadn't been "mistreated as a Jew," but he had. He had left his job after a sudden burst of Russian antisemitism. He came to Prague as a candidate to replace me, but he refused to declare that he observed the rites of the Mosaic religion, as I had done. "I am a free-thinker," he told me.



"It doesn't make sense. Do you want your children to starve? Once you are a *Herr Professor*, nobody will check whether you go to the synagogue."

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He was a stubborn one. He refused the job.

While he was in Prague, he lived in my home with his wife Tatiana, a Russian physicist, and their four children. We had long talks about physics. We found that we disagreed about relativity, then we found that we agreed after all. We played Brahms's third violin sonata together.

M—You remember what you played after all this time?

A—It's a difficult piece, so I had to work hard. It was Tatiana's request. Maybe I remember because I liked Tatiana and played for her, in a way.

Philip Frank accepted to declare himself Jewish and replaced me in Prague. Ehrenfest replaced Lorentz in Leiden. I visited him several times there. I don't know whether I am as insensitive as Max Brod's Kepler. I do admit that I tend to keep my intercourse with my fellow human beings to a minimum—but the friendship that linked me to Paul Ehrenfest was born in a few hours and never waned.

He wasn't my only friend either. In Zurich, my comrade Marcel Grossmann was waiting for me. I needed his help again. You see, the math in Special Relativity is easy...

M—Easy for you, Al.

A—Only second-degree equations. Any student who graduated from high school can understand it. But now I was crawling on the steep path leading to General Relativity. I had started in 1907 already with something I called the "principle of equivalence," which I found while imagining a lift in free fall. Then I imagined a new model of four-dimension space-time. Classical math didn't fit this unknown space. I needed new mathematics. Marcel became my private tutor. He taught me the non-Euclidian geometry that Riemann¹ had invented in the early 19th century as a kind of game. Now some Italians were perfecting it. I studied hard. I even exchanged letters with the Italians. I was quite proud that I could write in their language! In 1913, Grossmann and I published an article about General Relativity together. I felt I was moving ahead, but I hadn't reached my goal yet.

I also saw Friedrich Adler again. He still hadn't decided whether he was a physicist or a politician.

"So what about your big theory?" he asked me.

¹ Important German mathematician (1826-1866).

“Nature shows us only the tip of the lion’s tail. I’m quite confident there’s a lion at the end of the tail, even if he’s much too big for us to see in his full splendor. I can just hope to be a flea exploring his fur.”

M—If you were a flea, they say, you could jump to the top of the Empire States Building.

A—That’s precisely what I did when I jumped from Special to General Relativity! I wasn’t as close to my goal as I thought, actually, so I still had to jump a lot.

In March, 1913, the *Société Française de Physique* invited me to Paris. The whole world wanted me to give lectures and attend conferences. Mileva came with me. We both looked forward to visiting the capital of France. Marie Curie took care of us. The French government wanted to honor her, as she was the only person in the world who had received two Nobel prizes, so it was building the *Institut du Radium* for her. Today, it is called *La Fondation Curie*. Her daughter Irène Joliot-Curie does her research there.

In 1913, Irène was only fifteen years old. She knew a lot about physics already. When we went to the top of the Eiffel tower with her mother and her sister, Eve (who was nine years old, like my Hansi), she showed she had read my articles.

“I hope the cable doesn’t break. I’d hate to experiment a free-falling Einstein lift, even with its inventor!”

“We should have taken the staircase, miss Irène.”

“This would be fine with me, but tough for Maman.”

“My daughter is right, monsieur Einstein. You’re young and strong and used to climbing the Swiss mountains. For an old woman like me, it’s impossible.”

“As your emperor Napoléon said, ‘Impossible is not a French word.’ Why don’t you come visit me in Zurich next summer, madame Curie? You’ll see that there is no age limit for hiking in the Alps.”

Marie Curie accepted my invitation. She came with her daughters in July, 1913. As I earned the highest possible Swiss university salary, I lived in a large house and there was room enough for her to stay with us. We went hiking every day. She walked fast. In Paris, the burden of her work and obligations weighed heavily on her shoulders, but she wasn’t that old—forty-three years only. We talked at length about physics.

M—People imagine a great scientist sitting at his table or standing in front of his blackboard and writing lots of strange formulas, but it seems the best place to do physics is a mountain path.

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A—I'll show you the best place to do physics: right here!

M—I write in my notebook: "He shows his head."

A—"Do you remember Rutherford, monsieur Einstein?" Marie Curie asked. "You met him in the Solvay conference."

"A tall Englishman, yes."

"He comes from New Zealand, but he does work in England. He experiments with great skill. He was the first to analyze the rays of radioactivity."

"He found more than electromagnetic radiations, right? Some rays are electrons expelled at great speed, others helium atoms."

"He suggested the atom be compared to a solar system, with negatively charged electrons rotating like planets around a heavy nucleus, charged positively."

"Ehrenfest told me about this. It seems a fellow in Denmark or some place refuses this hypothesis."

"Niels Bohr, in Copenhagen. He studied with Max Planck and also with Rutherford. He says a planet-like electron constitutes a small electrical circuit that has to emit electromagnetic waves. Thus, it loses energy, shortens its orbit and crashes on the nucleus very soon. According to him, there are stable or 'preferred' orbits corresponding to various levels of energy. When an atom absorbs a quantum of light, an electron jumps from its orbit to a higher one. When the electron returns to a lower level, the atom emits a quantum of light."

"This is a clever idea. Very clever. Wonderful! A quantum model of the atom! I wish I had time to study quanta some more. General relativity is taking all my time. There are so many things to discover... Be careful not to slip, madame Curie."

"I'm glad I followed your advice and took a cane. This glacier is amazing."

"It is melting in the sun. That's why water is running along the path. We couldn't walk on the glacier itself unless we were tied with ropes. Look, here, and also there: these are very deep crevasses. They develop because the glacier is breaking as it moves forward. We're such meaningless cogs in the magnificent mechanisms of Nature! At least we can try to understand them."

"Tell me, monsieur Einstein, what is the name of that snowy peak over there?"

"Well, I don't know."

"Really? As a Swiss citizen, you should know your mountains."

"It is the Woolf's Tooth, Maman."

“Miss Irène knows more than I do.”

“I’ve seen the Alps in France. All the peaks are called the Woolf’s Tooth or the Dog’s Tooth.”

M—In America, they’re called Little Horse Peak and Sacagawa Peak.

A—Other important visitors admired the Woolf’s Tooth during that same summer of 1913. Max Planck and Walther Nernst came all the way from Berlin to look me over as if I were a prize hen. The first one tall and gaunt, as serious as the Pope; the second one short and round, radiating a contagious good mood. These two giants of German science brought a tempting invitation.

“We’ve been admiring certain American research institutes for a long time, Herr Einstein. Since 1911, we’ve worked on creating such an institute in Germany.”

“What kind of institute?”

“Pure research. What Steinmetz does in the labs of the General Electric company in the United States. A similar project is planned in England.”

“And our friend Madame Curie just opened her *Institut du Radium*¹.”

“Some of the biggest banks and companies are backing our project. We’re already building a laboratory of chemistry, to be headed by Fritz Haber, in Berlin. A physics lab will be next.”

“The emperor accepted to sponsor our institute, so we’ve named it the *Kaiser Wilhelm Society for the Advancement of Science*.”

“Excellent. Whatever may help science move forward is excellent. But you haven’t told me the reason of your visit, gentlemen.”

“We’d like you be the director of the physics institute, Herr Einstein. You’d receive a professor’s pay, but you wouldn’t have to teach, since the purpose is pure research.”

“Moreover, the Prussian Academy of Science is ready to offer you Van’t Hoff’s seat.”

“Van’t Hoff² is dead?”

“He died two years ago. They didn’t replace him, because he had a special position in the Academy, which entitled him to a high pension. They couldn’t pick up just anybody.”

“The Academy would add the pension to your salary, so that you’d earn 12,000 marks per month.”

¹ Its name is *Institut Curie* today.

² He received the very first Nobel prize for chemistry, in 1901.

Albert & Marilyn

Don't ask me how much this would be in dollars, Marilyn!

M—Let's say: lots of dollars.

A—“This is, hmm, unexpected,” I told them. “As you know, I came back from Prague last summer. I'm afraid my Swiss friends might feel offended if I left after just a year. I like it in Zurich. My wife and my boys like it too. Well, obviously, I can't compare the level of physics. Much higher in Berlin, of course. Much higher. I wouldn't have to teach anymore, which is a good thing, certainly... You should let me think about it for a while.”

“You're a fast thinker.”

“We'll go visit the lake of Zug tomorrow. This is our summer vacation, after all. Why don't you give us an answer when we come back?”

“Tell you what, gentlemen. I'll wait for you at the railway station. If I refuse, I'll stick a white rose in my lapel. A red rose will mean yes.”

Berlin was the world capital of science. An emperor lived in a palace there somewhere, but as far as physics was concerned, they offered me to be the king. Did I need more money? Well, there's nothing wrong with honestly earned money. I figured the *kolossal* salary would let me give my sons the best possible education. In a way, I was trying to justify a decision that my subconscious mind had already taken. I knew perfectly well what some rich parents did with their marks or dollars: they offered glitzy gifts to their children in place of attention and affection. How long would I go on living with Mileva and my sons? I couldn't stand her anymore. If she still felt any love, she hid it carefully. The world's mounting admiration for me seemed to feed her contempt. Our apartment was as lively as a graveyard.

You've guessed what attracted me to Berlin, Marilyn, even more than glory and a big pot of gold. I had been exchanging secret letters with my cousin Elsa ever since my visit. She wrote to me at the Polytechnikum. I bought a red rose for Elsa's blue eyes.

M—I'm glad to hear that your life wasn't entirely guided by equations. Your heart played a part, too.

A—There is a strange word in English: “serendipity.” All kinds of things influence our actions. Maybe I wouldn't have completed my work on General Relativity if I had worn a white rose, or maybe I would have done it faster, then perfected my big unified theory, which I failed to do.

One more visitor came from Berlin during that long summer: Freundlich, an astronomer. In the article I had published about General Relativity with Grossmann, I showed that light

didn't zip straight ahead, as was believed, but was bent by any mass it came near to. Freundlich had just married. "Believe me, darling," he told his bride, "while Zurich isn't as famous as Venice as a honeymoon destination, it is just as romantic." I waited for them at the railway station. He recognized me, having seen my photograph in the newspaper, but he seemed to wonder whether this Swiss peasant, wearing a handkerchief on his head instead of a hat, was really the famous professor Einstein.

Freundlich hoped to prove that light rays from distant stars were deflected by the huge mass of the sun.

"An eclipse is going to take place in Crimea next year. The Berlin Observatory won't spend money for what they consider a big joke, but they let me take an unpaid vacation. I'll have to finance the whole expedition. We use lots of heavy expensive equipment. Cameras that take pictures through a telescope, super-sensitive photographic plates, special tripods."

"I'll write to Max Planck. He was here last month. He knows many people in Germany. If he doesn't find enough rich backers, I'll break my piggy bank. I guess I can find two or three thousand marks."

"I'm quite sure I'll measure a deflection, you know. We'll amaze the world, Herr Einstein! The Observatory fools will gnash their teeth and rent their clothes!"

"My dear Freundlich, frau Freundlich, please come with me to Frauenfeld. I have to give a talk about General Relativity there."

In Frauenfeld, I invited them to have lunch in a typical Swiss inn with Grossmann and Otto Stern—my young assistant in Prague, who had followed me to Zurich. When the bill came, I discovered I didn't have a cent on me.

"Can you lend me a hundred francs, Stern? My offer to finance the expedition still holds, Freundlich!"

The Krupp iron works financed the expedition eventually, so I kept my savings.

M—Did he see bent light rays? I wonder what that looks like.

A—Not like a bent nail. I'll tell you about it later. First, I have to move to Berlin myself. The Prussian Science Academy elected me in November, 1913. In February, 1914, having taught three semesters altogether in the Polytechnikum, I packed my books and my papers once again. My colleagues gave a small party for me. I walked home with Marcel Grossmann.

"Are you happy, Albert?"

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"I'm glad I'll spend all my time on research, but I feel uneasy at the prospect of living in Germany."

"You were born there, weren't you?"

"That's why I feel uneasy. I came to Switzerland because I loathed Germany and Germans. They are stiff and intolerant. They distrust people who won't join the crowd. They reject new ideas. They wear blinkers like horses, you know."

"They're expecting you like the Messiah."

"This worries me too. They're buying the golden goose, but I don't know whether I'll be able to lay eggs. I hope I won't be tempted to publish bad articles just to feel I deserve my salary. At least, when I was teaching, I felt useful. I'll become an academician without any obligation, a kind of living mummy. I'm looking forward to this tough job."

My sister, Maja, now lived in Luzern with her husband. My mother had moved in with them. I went there to say goodbye. My mother glowed with pride. Who would have thought that her son would ever belong to an Academy?

In April 1914, I arrived in Berlin with Mileva and the boys. My name was stuck on the door of a huge office in the Prussian Academy building, on the *Unter den Linden* avenue. Administrators of the *Kaiser Wilhelm Society for the Advancement of Science* often came to see me. They were laying the foundations of the Physics Institute. They wanted to know how to design the labs.

"What do you need for your own use, Herr Professor?"

"Paper and pencils, which I'll bring myself, and a large paper basket to throw away all my junk."

Even today, Marilyn, I never leave home without taking a notepad and a pencil. I jot down the ideas that flow through my mind when I stroll around. Otherwise, they fly away.

I saw Freundlich nearly every day to help him prepare his expedition. As I was having dinner in his home one evening, I pushed my plate without thinking and wrote some equations on the embroidered tablecloth. I guess I had left my notepad in my coat pocket. A friend told me he met Frau Freundlich recently. She's sorry she washed the tablecloth. If she had kept it, it would be worth millions today!

M—Hey, Albert, look at all the equations on this blackboard here: you erase thousands of dollars several times a day. You should use large paper sheets instead of the blackboard, then sell them! And get rid of the waste basket, of course.

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A—I'll do that, Marilyn, if you stop throwing away your chewing gums. Your fans would pay good money for them, I'm sure.

M—I could sell lollipops licked by Marilyn Monroe, too.

A—On June 28, 1914, a Serbian nationalist student murdered the heir to the Austrian empire in Sarajevo. Since I was dreaming of seeing hidden stars during a sun eclipse, I knew nothing of events taking place in some remote corner of our tiny planet. Mileva did hear the gunshots, though. She saw the future like Cassandra in old Troy.

"You can't go on playing with your equations and telescopes as if nothing had happened."

"What happened?"

"Total war will engulf Europe pretty soon. We must go back to Switzerland right away."

"Total war? Back to Switzerland? I am giving my first talk to the Academy tomorrow!"

"Don't you read the papers? The Austrians want their police to start an inquiry in Belgrade about the shooting. Serbia can't accept such a flouting of its sovereignty, obviously, so it will refuse. The Austrians will enter Serbia anyway. This means war."

"One more war in the Balkans, maybe. I don't see how it could lead to total war in Europe. Most countries just don't care."

"I care. I'm a Serb."

"Come on, you're Swiss. You were not even born in Serbia, but in Hungary."

"The Austrians and the Hungarians will persecute their Serbian minorities even more. Russia and France are allied with Serbia, Germany with Austria. I don't feel safe here."

"Nobody will attack you."

"The Germans despise all the Slavs. I hate them. Put on your fancy uniform and go to your Academy. I'll go back to Switzerland. You told me that you renounced the German nationality because your countrymen were obsessed with war. It doesn't seem to bother you anymore."

M—She was right, wasn't she?

A—I hadn't signed a pledge never to change my mind about anything. I admired these old Romans who fell on their sword rather than compromise, but I didn't believe in carrying a sword. I had been moving back and forth for years. Eight months only in Prague, you remember. I wasn't going to leave Berlin after only three months.

On July 2nd, I put on my fancy uniform and went to the Academy. Decrepit oldsters who knew everything about Java spiders or the Quechua language listened to me politely—

or slept as if I was singing a lullaby. I thanked them for electing me. I talked about my work. A theoretical physics hypothesis remains a kind of mind game, I told them, until someone proves, by performing practical experiments, that it does describe reality. "Nature is an inflexible and unfriendly judge. It never says *yes*. In the best case, it says *maybe*, and most of the time simply *no*. A Berlin astronomer will travel to Crimea before the end of the month in order to prove my theory. Then we'll see whether light accepts to follow the path I imagined."

Mileva and I signed a separation agreement on July 24. Michele Besso came to Berlin and helped her move back to Zurich. They took a train on July 29. I felt relieved. A quiet empty home was what I needed to work day and night on General Relativity. I went to the railway station with my colleague Fritz Haber to say goodbye. Hansi was eleven, Eduard was four. I loved them, but I found them too noisy. They shouted, they fought, they cried. If I tried to interfere, things went from bad to worse. I lost hours exchanging bitter recriminations with Mileva. A dark angry mood seemed to poison the air in my home as well as all over Europe. I felt lucky that I could find consolation in stars and equations.

I was approaching the great mystery. I felt a kind of bliss when I thought I would soon get a glimpse of the Good Lord's original design for the universe.

Were we really on the eve of a war? I didn't know when I would see my boys again. When the train vanished in the distance, I don't know what came over me, I fell into Haber's arms and cried like a child.

M—Did you marry your cousin?

A—Not yet. I had to divorce first. Mileva hoped I would come back to her. The war didn't help. Neither in Germany nor in Switzerland do they have a Las Vegas where you can divorce *in absentia*. We divorced after the end of the war, actually. Then I married Elsa.

M—I have often tried to imagine the life of Norma Jean Dougherty. I mean, what would have happened if I hadn't divorced? Jim wasn't a bad man, you know. Norma Jean Dougherty lives in a house in Los Angeles with her husband, her dog and her children. She is happy. I see a quiet street, palm trees, a boy on a bicycle, a girl in a white dress, a baby in a pram. She goes to the movies and admires the famous actors and actresses. Instead of rejoicing because she is an ordinary wife and mother, she dreams of being a movie star. She thinks being admired can make you happy.

A—I know what you mean.

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M—As long as fans are remote, they don't affect you. When they come too close, they become frightening. The people I work with don't admire me. They despise me. They think I owe my fame to my boobs.

A—What are boobs?

M—These two guys.

A—Oh, I see.

M—When I was a young girl being tossed around from family to family, I suffered because nobody loved me. That feeling went away when I met aunt Ana, then Jim. Now it's come again. People may love Marilyn, the famous star, but nobody loves the real me, poor forgotten Norma Jean. There were a few good years, when I was just an actress like others.

A—Halsman told me you're a good actress. It's not only the, er, boobs.

M—I studied acting. When I came back from Las Vegas, Miss Snively introduced me to one of her friends, Helen Ainsworth. She also had an agency, the National Concert Artists Corporation, specialized in representing actors for the movies. I got my own agent, Harry Lipton. He said my character seemed fragile, due to my hectic childhood, which made me different. This meant it was a good thing.

He set an appointment for me at the Twentieth Century-Fox, the biggest studio in the movies. They shot seventy-five movies every year. They own several blocks on Pico boulevard, in the middle of Los Angeles. When you walk in, you go through a gate, then you enter a full-sized city, except certain streets look like they belong in Manhattan and others in a small Western city. I felt foolish: at first I saw real houses, but in fact they were just fronts held in place by scaffolding.

I met Ben Lyon, the casting director. He was a former actor. He had even made a movie with Jean Harlow. I shot a film test on the set of a Betty Grable movie after most of the crew was gone. They just asked me to walk around as if I wanted to attract attention. I rolled my hips the way I'd done ever since I was thirteen or so when I wanted men to look at me. Whitey Snider, Miss Grable's makeup artist, told me I had got too much makeup on.

"You don't need to paste such a thick layer of stuff on your face. Movies is different from still photographs."

I felt very nervous. I stammered when I talked to Ben Lyon or Whitey Snider. I was lucky this was a silent test. The cameraman said I was fine: charming and sexy. What

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matters in the movies is to express things visually. This suited me fine, as I knew I could attract men without saying a word.

A—Let an old man tell you something, Marilyn: you have a very pleasant voice. Maybe you attract men with the curves of your body, but you keep them with words.

M—I agree, but it took me several years to learn that.

On August 26, 1946, Ben Lyon showed the test to the big boss, Darryl F. Zanuck.

“Who’s this gorgeous babe?” Zanuck asked.

“Norma Jean Dougherty, a model.”

“Is she under contract with us?”

“We have an option. That’s why I shot this test.”

“Well, exercise the option and sign her.”

When Ben Lyon told me the good news, I was so happy that I cried. Maybe my life would turn out okay, after all. I felt I had spent twenty years in jail, looking at a locked door. Now the door had suddenly opened. What a break!

I signed a six-month contract at seventy-five dollars per week. I needed Grace Goddard’s authorization, as I was still under age. She had come back from West Virginia. My friend Bebe had married someone there and already regretted it.

Grace was quite proud for me:

“I always said you’d become a great star, Norma Jean, like Jean Harlow.”

Mr. Lyon said Norma Jean Dougherty was no name for a movie actress. Too long and ugly. What’s more, people wouldn’t know how to pronounce Dougherty. Dog Artie? Doe Artee? Doffertee? Miss Snively had said it too. She sometimes introduced me as “Jean Norman.” Mr. Lyon suggested “Carole Lind.” Then he remembered a theater actress he knew in New York City, Marilyn Miller.

“You look like her, really. As she died long ago, she won’t mind if you take her name.”

“I’d hate to steal someone’s last name, even though she’s dead. What about my mother’s maiden name, Monroe?”

“Marilyn Monroe? That’s perfect. From now on, you’re Marilyn Monroe.”

When I came home, I regretted my decision. I pretended I liked Marilyn in front of Mr. Lyon, but in fact I found the name ridiculous. Jean Monroe would have been better. Well, it was too late.

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A—If I had taken my mother's name, I would have become Albert Koch. If I wanted a consonance like Marilyn Monroe, I would have chosen something like Karl Koch. But why change name?

M—In Hollywood, actors are like products on sale in supermarkets. You pick up a brand name that the people will remember, like Coca-Cola or Crest.

So then the studio sent me to theater class at Actors Lab, where the teachers were two New York actors, Morris and Phoebe Carnovsky. Not that I really needed to act. I would go with other Fox starlets to movie premieres, restaurant or supermarket openings, golfing tournaments. All we had to do was wear tight dresses and look gorgeous. There were several dozens of us. Sometimes I had to wear a ridiculous low-cut dress and serve drinks and cigarettes with the other girls when the bosses played cards. They called us "the Gin Rummy Girls." I didn't work much, actually. I did come to the studio every day. I visited all the departments and tried to learn about costumes and lighting and stuff. Whitey Snyder, the makeup guy, gave me some advice. He explained how I should make up my face for black and white and for color, for indoor and for outdoor. Although I hadn't shot a single reel, the studio renewed my contract after six months, raising my pay to one hundred dollars a week.

The first semester may have been a kind of training period. At the beginning of the second semester, I got my first movie part at last, in a farm comedy, *Scudda Hoo! Scudda Hay!* The star was June Haver, but there were also plenty of cows and pigs and especially mules, who're supposed to move forward when you shout *Scudda Hoo!* I played a peasant girl who rowed June Haver across a pond, but my scene "fell on the cutting-room floor," as they say, except for about half a second. I was quite disappointed, of course. A stupid editor could decide of my future. How unfair. Nobody knew that my mother had been a movie editor.

Well, I came to the studio every morning, taking great care not to wear the same dress two days on a row. Driving all the way from Aunt Ana's place every day wasn't very convenient, so I rented a small apartment near the studio. I was beginning to know lots of people: prop men, cameramen, sound engineers, directors' assistants, other actors and actresses.

Since I had nothing to do, I worked hard learning parts for my classes at the Actors Lab. Many people there came from Broadway. We studied modern plays by Clifford Odets and other young playwrights.

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A—Broadway is where the theaters are, right?

M—Near Times Square. Several are on Broadway, others on 42nd street and nearby. You should go and see a musical someday, Albert.

A—Last time I went to the theater was in Berlin, I'm afraid.

M—One day, a huge limousine stopped by me. Mr. Schenck, who had founded the Twentieth Century studio long ago with Mr. Zanuck, rolled his window down.

“Who are you, my dear?”

“My name is Marilyn Monroe, sir.”

“Are you a Fox employee?”

“I have a 100-dollars-a-week contract as an actress.”

“Here's my card. Come to my place for dinner next Tuesday.”

“Yes, Mr. Schenck.”

“Call me Joe. Everybody does.”

I spent several evenings in Mr. Schenck's great house in Bel Air. He was maybe seventy and looked like a fat buddha. He liked to have pretty girls around the table when he gave a dinner party, but then he became interested in me, by and by, as if I had been his own granddaughter. We dined together just the two of us, after a while. He said I would certainly succeed in the movies. This boosted my self-confidence, which tended to be rather low. I was afraid my dream would vanish and I'd turn back into Norma Jean Dougherty. Thousands of starlets hope they'll become great stars. I told myself I was different—nobody dreamed as hard as I did.

I became, er, very close to Joe Schenk. Not out of ambition, but just because I liked him. Miss Snively used to say I didn't have to sleep with all the guys, like the other girls, because I had enough talent not to need it.

Joe Schenck had been married to Norma Talmadge, but he didn't know that my mother had given me his first wife's name.

“She started this whole footprint rigmarole in front of Grauman's Chinese Theater,” he told me, “when she stepped on a patch of wet cement by mistake.¹”

A—I saw these prints. In Germany, they would have poured more fresh cement right away. They hate anything untidy.

¹ Not true: Sid Grauman stepped into the cement himself, by accident, when the theater was being built (in 1927), then asked his partners, Mary Pickford and Douglas Fairbanks, to do it too.

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M—Toward the end of my second semester, I played a cynical waitress in *Dangerous Years*, directed by Arthur Pierson. I appeared on screen for several minutes, and even in close-up! Although Arthur Pierson was satisfied with my work, Fox didn't renew my contract. I tried to talk to Mr. Zanuck, but his secretary always said he was playing golf. Oh Gosh, I cried and cried. Aunt Ana's health had taken a turn to the worse. I went to visit her in the hospital.

"Don't worry, Norma Jean," she said. "Things will turn out all right."

I was back where I had started one year before. Miss Snively booked me for magazine covers and other photographs. I earned very little. I still attended courses at the Actors Lab, but the studio wasn't paying for them anymore. The Carnovskys said I would pay later. Harry Lipton was still my agent for the movies. I called every day to ask him whether he had found a part for me.

I couldn't afford my apartment anymore. I lived in hotels, motels, cheap rooms. On many a day, I ate a hot dog and nothing else. I was lucky that I could stuff myself when Joe Schenck invited me for dinner. He couldn't help me at Fox, because he was half retired, but he still wanted to help me.

"You shouldn't give up on the movies, Marilyn. I'll talk to Harry Cohn about you."

Mr. Cohn was the boss of the Columbia studio. Like Joe Schenck, Sam Goldwyn, Louis B. Mayer, the Warner brothers, he was one of the founders of Hollywood. They all came from Russia at the turn of the century. They belonged to theater families over there. When they arrived in New York City, they wanted to open Yiddish theaters on Broadway, but there were already too many of them, so they decided to go into the movies, which were a new thing. They chose California because they needed lots of sun. The camera lenses didn't open wide enough or something and the film stock wasn't as sensitive as today. They played poker together and exchanged jokes. They often said the punch line in Yiddish, so I couldn't get it. Even when they used English, I didn't always get the punch line.

A—I've heard a Jewish joke a few days ago. A Jew named Zweistein goes to the doctor.

"So what's wrong, Mr. Zweistein?" the doctor asks.

"*Ach*, doctor. I can have sex with my wife only once a week."

"How old are you, Mr. Zweistein?"

"Seventy-four, doctor."

"Then you shouldn't worry. At seventy-four, once a week is not so bad."

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“But my neighbor, Weinstein, tells me he has sex twice a week and he is eighty-two years old.”

“Oh, he *tells* you. It’s easy. All you have to do is *tell* him that you’re having sex three times a week.”

M—I think I get this one. Now I understand why Joe Schenk didn’t have dinner with me every evening!

Anyway, the next time he played poker with Harry Cohn, he told him about me. Harry Cohn said Max Arnow, the Columbia’s casting director, would take care of it. On March 1st, 1948, six months after leaving Fox, I signed a contract with Columbia.

At the time, I was living with John Carroll and his wife, Lucille Ryman. He was an actor who had played the lead in several movies. She worked for the Metro Goldwyn Mayer studio as a talent scout, which means she found new actors for them. They had given me shelter when I was out of work. They believed in me. They lent me money so I could pay the Carnovskys. I signed an agreement saying I considered John my official manager. Harry Lipton didn’t approve, but many actresses had an agent and a manager at the same time.

After five or six months, Lucille became edgy. She suspected me of wanting to steal her husband, I think. I rented a house in Hollywood, but it was so old that I was afraid it would fall down on me, so I moved to the Bel Air hotel, then to the Beverly Carlton. As Columbia only paid 125 dollars per week, I couldn’t afford these expensive places. I moved to the Studio Club, a young women’s residence in Hollywood, near the Paramount studio. It was a very strict place, with a curfew at ten thirty. It reminded me of the orphanage, which was a few blocks away. I shared a room with another starlet, Clarice Evans. John and Lucille deposited the first six months of rent. I brought my books, my bike, my professional hair dryer, my pictures of Clark Gable and Abe Lincoln. Clarice Evans was surprised that I read books. She thought I was another stupid actress, you know.

I wasn’t stupid, but foolish, maybe. As I had never been able to juggle numbers, I always spent more than I earned, so I ended up owing money. I couldn’t pay a full rent. After Clarice Evans, I shared the room with Shelley Winters, another young actress. She’s the one who told me about the Russian Jews, as she was Jewish herself. Have you seen *A Place in the Sun*?

A—Is this a film?

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M—A pretty good one, too. She was nominated for an Oscar as best actress. I met her recently. She just shot a movie directed by Charles Laughton, the actor, called *The Night of the Hunter*. Monty Clift murdered her in *A Place in the Sun*, and now Bob Mitchum murdered her in *The Night of the Hunter*. She always ends murdered.

A—Only in movies can you be murdered several times.

M—And it's painless, too.

Columbia wanted me to take singing lessons, so I could play in musicals. My teacher, Fred Karger, was the sweetest man. He had thick blond hair, large velvety eyes, a warm smile. He didn't laugh when he heard my thin tinny voice.

"You need to extend your register upward and downward, miss, and to sing louder. But first, you must learn to breathe and to open your mouth."

"I thought I knew how to breathe and to open my mouth. Otherwise, how could I live and eat?"

Actually, he noticed I ate very little. I wanted to save money and repay my debts. He invited me for dinner in his home. He lived with three women: Terry, Mary and Ann—his daughter, sister and mother.

Ann Karger was a wonderful woman. Everybody called her Nana. She said I could come to dinner whenever I wanted. So then I came every evening, except when I ate at Joe's. I fell in love with the whole Karger family, but especially with Freddy. We were made for each other, obviously. I was sure we'd marry.

"I've just divorced," he said. "Give me a break. I'm discovering the joy of freedom. We can love each other without getting married."

"Real love is for life. Nana also says you should marry me."

"Yeah. Well, she should mind her own business."

He took me to the beach, to a dance, to the best restaurants. We went to the Hollywood Bowl and listened to classical music concerts that bored me to death. He played the piano for me. We loved each other without getting married, but he was afraid of committing himself to a long term relationship. He didn't love me as much as I loved him. He often criticized me. He said I didn't think enough and cried too much. He pretended I wouldn't be a good mother for his daughter.

"You're made for the movies, Marilyn, not for housekeeping. You don't inhabit the real world, but some kind of dreamland. Often, you behave like a sleepwalker. How could you cook and sweep the dust and choose a school and supervise her homework?"

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A—This if *Kirche, Küche, Kinder* again. It seems to me that some actresses do marry and have children.

M—They have maids and nannies, too. Or they become good mothers but stop working in the movies.

There had been something wrong between him and his first wife. He was a bitter man. He loved me and hated me at the same time. We decided to call it quits. I kept him as a music teacher and Nana as a close friend.

Was it because he was a good teacher or because I was in love with him? I made good progress. When he recorded me on the studio equipment and let me hear my voice, I could barely believe my own ears: I sounded like a professional singer. Indeed, a Columbia producer, Harry Romm, gave me the second best part in a musical, *Ladies of the Chorus*.

Mr. Romm and Max Arnow, the casting director, agreed that I sang well enough, but that I still needed to improve my acting. They asked Natasha Lytess, Columbia's head coach, to help me.

I found Mrs. Lytess rather frightening. She was very tall and thin. She had wild gray hair, black eyes that shot darts at you, a harsh German accent. I thought she was angry because I was late for my first lesson. As this lesson mattered a lot to me, I had gone to the hairdresser and spent more time there than planned.

By and by, we got used to each other. She had studied acting in Berlin with Max Reinhardt.

A—I met him a few times, so maybe I saw her too.

M—She told me he had the best theater company in the world.

"We had to leave when the nazis came to power, she said. Everybody was either Jewish or queer."

She owned a whole library of books about the theater. She lent me some Chekhov plays and Dostoyevsky novels.

She spoke with a steady voice, without ever hesitating. She knew what she wanted to say. I usually found her opinions quite convincing, but then, when I thought about them for a while, I discovered that I often disagreed. She gave me the same advice as Fred.

"You should open your mouth and speak louder."

"So what was I so far? Some kind of ventriloquist who spoke out of a closed mouth?"

"You're not talking just to me, but to thousands of people. You should emphasize consonants. This is the secret of a clear delivery."

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I felt that if I followed her suggestions exactly, I would end up speaking with her German accent.

In *Ladies of the Chorus*, I played a chorus girl who meets a rich young man. As he belongs to the upper reaches of society, his mother opposes the romance, but it turns out okay in the end. Natasha told me this was a variation on the Cinderella story. I sang *Every Baby needs a Da Da Daddy*.

When the film came to theaters, I saw my name on a marquee for the first time: Marilyn Monroe! I drove by the theater in Westwood several times a day, in the new Ford convertible I had just bought. Oh boy, I was so happy!

Three weeks later, in September 1948, grief replaced happiness once again. Columbia didn't renew my contract. Harry Cohn said I couldn't act. According to Lucille Ryman, Columbia didn't need another blonde, as they already had Rita Hayworth. Same thing at Fox with Betty Grable and at MGM with Lana Turner.

I was only twenty-two, so I could expect to overcome a reversal of fortune or two.

A—Acting is a precarious profession in any case, but even more so, it seems, when these Hollywood, how do you say, moguls, hold your fate in their hands.

M—There was nothing I could do about it right then. I sought comfort with Nana Karger, Lucille Ryman and Natasha Lytess, but Aunt Ana couldn't help me anymore, as she had just died of a heart attack. While I hadn't spent as much time with her lately as when I was Norma Jean Baker or Dougherty, she was the only person who really really loved me. She convinced me that God's generosity is unlimited. As long as she was alive, I sometimes remembered Norma Jean.

My agent, Harry Lipton, took better care of me now that he was competing with John Carroll and Lucille Ryman. In 1949, he showed my reels in the first two movies to Lester Cowan, who was producing a Marx Brothers comedy, *Love Happy*.

A—Oh, I have seen some Marx Brothers films. Very funny.

M—It was their last film. They had stopped making movies during the war and now they were more than fifty years old, so how could they still be funny?

A—This is not so old, believe me.

M—Groucho Marx accepted to see me.

"Can you walk?" he asked.

"I learned when I was one year old."

"Yeah, but can you walk in such manner that smoke will shoot out of my nostrils?"

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That was precisely what I could do. I rolled my hips across the room. Groucho dispelled the smoke in front of his nose with his hand.

“You’re in, lady.”

“Don’t walk in the street like this,” Harpo said.

Gee, I thought he was mute.

In the film, Groucho plays a detective. I enter his office, as if I was a client looking for help.

“What seems to be the trouble?” he asks.

“Some men are following me.”

“Really? I can’t understand why!”

I appeared less than a minute on screen, but this wasn’t a low-budget flick like *Dangerous years* and *Ladies of the Chorus*. The budget was so high that the producers sent me on a promotional tour around the States. In the press release they gave everywhere, they described me as “a poor orphan, born right here in Hollywood.” Louella Parsons, a great Hollywood gossip columnist, wrote about me for the first time, repeating the “poor orphan” baloney. I remained a poor orphan for years, until some wise guy located my mother in her asylum.

I borrowed money to buy a white leather suitcase and a vanity case for my make-up stuff. I enjoyed the silky wood paneling and smooth sheets of first-class sleeping cars, the china plates and silver cutlery of the dining-car. Luxury suited me fine!

I saw New York City for the first time in my life. I found the skyscrapers too high: you never saw the sun.

A—Just what I’ve always thought, too. The city is not built to human scale. I guess you need to be born there to like it.

M—Even without any sun, the place was hotter than Los Angeles. I boiled in the wool dresses I had brought on my trip. The New York papers published a picture where I was fanning myself with a magazine. The picture’s caption said: “Marilyn Monroe, a new hot starlet.”

I bought light cotton dresses that put my shape to better advantage. André de Dienes lived in New York City. He photographed me on Jones Beach for the sake of old times.

Albert & Marilyn



Somebody noticed me in *Love Happy*: Johnny Hyde, one of the top agents in the business. He offered to buy my contract in the name of the famous William Morris agency. How could Harry refuse? His company, National Concert Artists Corporation, was quite small and didn't handle well-known actors, not to mention stars. Besides, he liked me and wanted me to succeed. Mr. Hyde had launched the careers of Betty Hutton, Rita Hayworth and many other stars.

As soon as I met him, I felt he was going to help me more than anyone had so far. He was a short man, rather frail. He was maybe fifty-five, but looked older. I expected his voice to sound like a little boy's, but it was low and powerful. His real name was Ivan Haidabura. He was one of the Russian Jews.

"You'll become a great star," he said when we signed our contract in his office.

"Wow! I love to hear you say that, but right now, I owe money on my car and I can't pay my phone bill."

"Plenty future stars sat right where you are, miss Monroe. I discovered Lana Turner. You have more potential than she had, I tell you. You'll go far, it's a cinch."

His secretary seemed bewildered when he told her he was taking the day off to be with me.

"I'll call later," he said.

We had lunch at Romanoff, a restaurant where all the famous people used to go. He introduced me to Mike Romanoff, whom everybody called Prince Romanoff (although

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Johnny said he was no prince), and to his wife Gloria. Then we went to Beverly Hills and he bought new clothes and shoes for me. He spent several thousand dollars.

I hoped to become a star some day, but I was not so sure. Johnny didn't doubt. He really believed in me. He was a sweet man. He fell in love with me and wanted to marry me.

A—Who, this Johnny?

M—There were two good reasons why he couldn't. One, he was already married.

A—This reason is good enough. You don't need the second one.

M—He left his wife and rented a gorgeous house in Beverly Hills, right on North Palm Drive. Although I didn't love him as much as Freddy Karger, I liked him enough to move in with him. Gee, we had a cook, a butler and a chauffeur! Do you want to know the real reason I couldn't marry him, supposing he had divorced? He had a heart condition. He could collapse and die any minute. I wanted the father of my children to live a long time. Also, let's say we marry and he dies. Then people would say I caught him in my net to inherit his property.

Hey, Albert, look at my nose. Johnny sent me to a surgeon who shortened it slightly. It looked too long in pictures.

I sang about a baby and a daddy. I never had a daddy, and not much of a mommy either. That's why I felt good with an older man, I guess. Looking for my daddy. Or so everybody seems to think, anyway.

A—Although I had a mother, I married older women. Both Mileva and Elsa were three years older than me.

M—I don't call that older. Johnny was at least thirty years older than me, and Joe Schenck forty.

A—At least Elsa watched over me like a good mother. I was quite alone in Berlin. Mileva had been right. On August 1st, Germany declared war on Russia (which had declared war on Austria because Austria had declared war on Serbia—what a mess). My poor Freundlich was in Crimea already. The Russians arrested him and seized his expensive Carl Zeiss equipment. Cameras? Telescopes? The man was a spy, no doubt. He saw the eclipse from his prison cell. They exchanged him for some Russian prisoners, so he came back to Berlin at the beginning of September. I was glad to see him alive, but sorry I had to wait until the next eclipse to know whether nature was willing to answer *maybe*.

Although I had noticed since I was a child that the Germans liked to march in uniform and dreamt of conquering the world, I did expect my colleagues, my fellow scientists, to

use their brains and choose peace over war. *Ach!* Otto Stern, my assistant, volunteered to fight on the Eastern front. My friend Max Born went to work in an army lab. The great Nernst himself began to look for new ways of manufacturing high explosives. Max Planck encouraged his students to go and risk their lives. “Having exhausted its remarkable patience,” he said, “Germany had no other choice but to draw its sword against the fetid spring of perfidy.”

The most ferocious of them all was Fritz Haber, who headed the chemistry institute of the *Kaiser Wilhelm Society for the Advancement of Science*. He was born a Jew, but he had converted and become a Protestant to erase any doubt he wasn’t a real Prussian. He wore a monocle. His face was marked with scars—a stupid custom of the students in imperial Germany. “See, I fought duels to protect my honor,” the scars said. He wept when the Army found him too old and refused to send him to the front.

He had invented a clever way of manufacturing fertilizers out of thin air.

M—Can you do that?

A—Air is eighty per cent nitrogen. He made ammonia with this nitrogen. Now he found how to transform the fertilizer into a strong explosive. Do you know what he said? “I work for mankind in time of peace, for my fatherland in time of war.” His main assistant died for the fatherland right there in the lab, when some fertilizer exploded. Haber also invented these awful gases that killed so many poor soldiers. When the emperor rewarded him by naming him a honorary captain in the army, tears of joy ran along his scars.

Ninety-three intellectuals—writers, painters, theater directors, but also Wilhelm Röntgen, Max Planck, Walther Nernst, Fritz Haber and most of my Berlin colleagues—signed an *Appeal to the Civilized World* declaring that Germany was a peaceful power defending the legacy of Goethe, Kant and Beethoven, whereas France and England had allied themselves to Russia and were driving Negroes and wild Mongolian hordes against the white race. How could these great thinkers sign such crap? Some of them spurned me because I didn’t sign. They had caught a kind of contagious mental illness, which reminded me of the witch hunts and other religious perversions of past centuries. Was I the only sane human being left in Germany? How sad! I did find a kindred soul after a while: Georg Nicolai, a famous doctor, whom the emperor himself had consulted for his heart. We wrote an *Appeal to Europeans* to counter the ninety-three warmongers. We noted that our continent was shrinking, as new means of transmitting information and faster ways of carrying goods and people were invented. Culture now jumped over borders, blurring

differences. Europe was facing an easy choice. It could either advance toward unity, peace and prosperity—or get bogged in a hopeless war opposing brother to brother in such a way that nobody would win but everybody would lose. We suggested that educated men bypass narrow-minded politicians and create an international organization with the aim of uniting Europe. The first step on the way to this *League of Europeans* was simple: they just had to sign our manifesto.

Two people signed. The authorities sent Nicolai to jail, then he moved to Denmark. They left me alone, because I was Swiss. I joined a new pacifist party, the *Union for a New Fatherland*. Its influence seemed close to nil, but the authorities noticed its existence—they banned it.

M—I’ve heard it said that war reveals the best and the worst in man, or something. I say “man,” because women don’t start wars, do they? Men love to fight, not only in movies. War gives them plenty enemies beyond the borders, but they like to find some in their own country too. I bet they enjoyed calling this doctor a traitor and throwing him into jail.

A—I felt quite upset that my colleagues were trying to invent new techniques for killing as many people as possible. I wrote bitter letters to Paul Ehrenfest in Leiden. “Europe has gone crazy and provoked an incredible catastrophe. We belong to such a stupid animal species! This ‘free will’ we’re so proud of is really a joke. Obviously, men have always needed some idiotic illusion that they could use as a pretext for war. Yesterday, it was religion, today it is the State. As a true believer in internationalism, I feel disgusted and quite lonely. I dream of a quiet island where mild and moderate people could live in peace. In such a place, I would accept to become an ardent patriot.”

I worked day and night on General Relativity. I had admitted, reluctantly, that I had chosen a wrong path with Grossmann in Zurich three years earlier, and I had started all over again. I wrote to Grossmann: “With our equations, the apple wouldn’t fall on Newton’s head.” I wrote to my friend Ehrenfest in Holland: “What a fool, this Einstein. Every year, he erases what he wrote the previous year.”

I was approaching my goal. Many generations of scientists had progressed toward an understanding of the universe over the centuries. They had reached an agreement that Newton’s description and theory of reality was exact and perfect. I was going to tear everything down.

M—But you told me you had already proved Newton wrong.

A—Special relativity modifies Newton's laws of movement slightly. General relativity overturns his great theory of gravitation. It seems that the apple and the moon obey his equations, but actually they don't. They obey mine.

When I became fully confident that I understood the deep structure of the universe, I felt palpitations and a kind of dilatation of my breast. I was the only person in the whole world who knew the ultimate secret of the fabric of space. I had been singled by God—or Fate, or Nature—to be a new prophet and announce untold marvels. I felt a painful euphoria. The unique beauty of my theory dazzled me. I was drunk with joy.

The math was so devilish that I went to Göttingen and asked the best mathematician in the world, David Hilbert, to help me. Some weeks later, back in Berlin, I received a letter in which he gave me the ten last equations. I had found them on my own a few days before, which proves I wasn't such a bad mathematician after all.

I revealed the new theory in November, 1915, at the Academy of Science. I needed four of my weekly visits. I told them that I was updating Newton's view of the world. This bit of news wasn't amazing enough, I guess. The geologists and biologists and other old fellows fell asleep as soon as I started writing equations on the blackboard. They didn't carry me in triumph on their shoulders. I wrote an article and sent it to *Annalen der Physik*, which published it as a stand-alone fifty-page booklet in 1916. It didn't make as much a splash as my 1905 articles. People were more preoccupied by war than by the shape of space. My colleagues were perfecting bombs, airplanes, submarines. Those who made the effort to read the booklet thought I was giving a new mathematical description of the universe, no closer to reality than Minkowski's imaginary time. Max Born and Freundlich understood my theory quite well, though. Both of them published simplified versions for physicists who were not familiar with the tricky math involved.

Now that my big endeavor was over, I felt exhausted and strangely depressed. I found it rather sad that men were killing each other instead of admiring the magnificent harmony of nature. I became aware that my stomach hurt. This had begun months before, actually, but I had focused my strength on the equations so thoroughly that I had ignored the pain. I thought it might be a cancer. I was going to die happy, in my thirty-eighth year, having reached my great goal. I consulted a doctor whom Elsa recommended. He said my stomach was protesting against my fanciful eating habits. He weighed me: I had lost sixty pounds.

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M—Sixty pounds ? Wow! There is something I don't understand, Albert. You said your cousin Elsa took care of you like a mother. How could you lose sixty pounds? Didn't she feed you?

A—Oh, but she did. I ate an excellent dinner in her apartment as soon as Mileva was gone. "See you tomorrow at six," she said. The Kaiser Wilhelm Institute wasn't built yet, so I worked at home. Now you have to understand that equations are stubborn creatures, sometimes. I am trying to solve an equation, or modify it to go ahead with my grand design, but it refuses to cooperate. Something is wrong, obviously. Yeah, I see... A glaring mistake. I should have noticed it before. I carried it over from the previous equation. Wait, maybe even the previous one. So I move forward and backward, and I compute and simplify, and I sharpen my pencil and I look for my eraser. I am beginning to feel hungry. I hope it isn't six yet, as I don't want to be late at Elsa's. I look at my watch: Dear God, it is midnight already! Sometimes, I can't even find my watch, or it has stopped, and no clock is in working order in my whole apartment.

There is an expression: "I lose track of time," no? This is funny, because my big discovery in Special Relativity is that time doesn't flow regularly like a river, as was believed before. Time can play all kinds of tricks. You know, I became so famous that there were jokes about me. Do you want to hear one?

M—Of course.

A—This old Jew, even older than me, he is very proud that his grandson goes to a very good school. When the boy comes for a visit, the old man asks him a question.

"Tell me, David, Who is this Einstein, about him all the newspapers are talking? And what is this relativity business?"

"Dr. Einstein is the greatest living scientist, grandpa. And relativity—well, it ain't easy." He doesn't really know, you understand, but he wants to impress his grandfather. "I'll tell you what it is. If a man's girlfriend sits on his lap, an hour feels like a minute. On the other hand, if the man sits on a hot stove, a minute feels like an hour. That's relativity."

"Nu, is that it?"

"Yes, grandpa."

"And from this your Einstein he makes a living?"

M—I'm like the grandfather. I know nothing about relativity. There's no way I could understand anything about it, I'm sure, but I wonder whether you could give me let's say some kind of hint, Albert.

A—Maybe next time, okay? I need a few days to think about it. I once wrote a book, “On Special and General Relativity, Quite Understandable.”

M—A strange title.

A—I translate the German title. In English, it was only “Special and General Relativity.” Anyway, I wrote a foreword, saying: “Dear reader, there is nothing in this book beyond your understanding if you know and remember high school math and physics.” Max Planck joked that saying “dear reader” wasn’t enough to make it “quite understandable.” My dear Marilyn, you don’t know high school math and physics, so I’ll have to find a way of explaining things to you.

M—You said something already: that time plays tricks.

A—It played tricks on me when I was working on General Relativity. I didn’t have a girlfriend sitting on my lap, but a bunch of equations keeping my mind busy. After I missed Elsa’s dinner several evenings, she asked an old lady to prepare a meal for me at home. She cooked a soup with a few antique potatoes and shriveled turnips.

“What with this war, there’s scant anything in the market,” she said.

So I became as skinny as an Indian fakir. The old woman also washed my shirts and swept the dust away. But in my office she could not enter. Top secret, you know.

M—Were you afraid that she would steal your equations? Maybe she was some kind of spy, like Mata Hari. Have you seen the movie? Greta Garbo plays Mata Hari.

A—I am joking. Whether she was a spy I don’t know, but I can say she didn’t look like Greta Garbo. Elsa had chosen her very old and ugly. She was not jealous, maybe, but careful.

M—You do need to dust now and then, you know. Here, for example, with all these books...

A—I’ll tell you what. A certain equation seems just useless, so I crumble the page and throw it on the ground. But the next day, or maybe even next week, I am exploring a new direction and I remember this equation, I thought it useless... Where is it? I go down on all four and look at all the crumbled pieces of paper until I find it. If the cleaning lady came in my office and threw the crumbled pages away, then no General Relativity.

In 1916, I went to Switzerland.

M—To see Mileva and your children?

A—One reason for my visit was that I wanted to divorce. When I told Mileva, there was much screaming and crying. She said I was behaving like a coward. She refused to consider

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divorce. Michele Besso, our common friend, tried in vain to reconcile us. He didn't really know what was wrong between Mileva and me, as I had never told him about our lost daughter Lieserl. He thought that I was the guilty party, that I was selfish and heartless. She pretended to be very ill. I wondered whether she wasn't faking it somewhat.

"Don't be selfish, Albert," Michele told me. "You're two intelligent adults, Mileva and you. You should be able to find some common ground. Think about the boys."

"She's intelligent, that's why we're in trouble. I'm fed up with her tricks and her recriminations. Now that I live alone, I feel I have escaped gloom and become younger."

"She's very unhappy."

"She has a good life. She lives in a beautiful city, far from the war, with two wonderful boys. She's as free as a lark. What's more, she basks in the halo of hurt innocence."

M—Forgive me for saying so, Albert, but I have to agree with your friend Besso. Your sentence does sound, well, heartless.

A—I know. I sometimes think I have sold my soul to science. I have given up the "I" and the "We" in favor of the "It."

M—All the people in Hollywood consider they have sold their souls. They don't give up the "I", though. They love the "I" more than anything.

A—I must say that my boys agreed with Mileva, Besso and you. They were quite angry. They barely spoke to me. A doctor who was a common friend, Zangger, told me Mileva was really ill. He thought she might suffer from tuberculosis. Michelangelo and Zangger represented me in Zurich. They found schools for my sons. They wrote to me when Mileva needed money. I felt partly responsible for her illness. "I won't bother her about the divorce anymore," I told Besso. It wasn't tuberculosis after all, so she got better by and by.

Another reason I went to Switzerland was to meet Romain Rolland. He was a famous French writer and pacifist. I had sent him a letter to inform him of the founding of the *Union for a New Fatherland*. He invited me to visit him in Vevey, on the lake of Geneva. I told him what I thought of the Germans. They liked to obey orders and were afraid of freedom. He said the French scientists created new explosives and deadly gasses just like my colleagues.

"What a pity," I said. "All the scientists and artists in Europe used to share a common ideal and cooperate across borders. They even spoke a common language."

"A common language?"

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“Latin. If Newton had met Leibniz, they could have exchanged views in Latin about calculus.”

I had forgotten how pleasant it is to talk without being afraid of someone denouncing you to the police. “If I had not escaped to Switzerland, I would be in jail like Russell in England,” Romain Rolland said.

M—Who is Russell?

A—An English philosopher and pacifist. I met him later, here in Princeton, and we became good friends. We exchange letters now and then. He is still very active as a pacifist, although he is even older than me.

Do you remember Friedrich Adler?

M—Your neighbor in Zurich. Your son was in love with his daughter, but you never noticed.

A—He had returned to Austria at the beginning of the war. I have told you about his fiery character. Back in Berlin, I learned that he had just murdered the Austrian prime minister because he couldn’t stand his constant calls to arms. He hoped the empire would withdraw from the alliance with Germany and stop fighting. While in jail waiting for his trial and probable death sentence, he wrote a thick treatise to demonstrate that the theory of relativity was a sham. I received a letter from his father containing a copy of the treatise. “It would help us tremendously if you could read it and give us your opinion as an expert, dear Herr Professor. Our honorable judges know nothing about relativity, of course. If they don’t trust you, who could they trust? This treatise proves that my poor son is insane, obviously. He was insane when he shot the prime minister. They should let him out of jail. He belongs to a psychiatric ward.”

The treatise was silly and much too long, but not crazier than the nonsense written by respected professors against my theory. Besides, Friedrich Adler had justified his gesture without any trace of insanity during his trial. Most of the young people in Austria admired him. What would I gain by declaring him insane? I would offend him and lose his friendship.

M—Crazy people can seem quite sane at times. Then they feel hurt if you tell them they need to go back to the asylum. They think they’re cured, but it doesn’t prove they are, of course.

A—While I was wondering what to do, his father struck a deal with the authorities. The judges condemned Friedrich to death, but the last emperor paroled him and he was sentenced to jail for life. Lucky me!

The following summer, I left Germany again to visit Ehrenfest in Leiden and Lorentz in Haarlem. There was no fighting near Holland, which lay hundreds of miles north of the front and trenches. All I had to do was change trains at the border, provided I could show a piece of paper called a safe-conduct. I thought I would get it easily, being an Academy member. Well, the war-crazed bureaucracy balked. I had to ask Lorentz for an official invitation. I went several times to the Swiss embassy. I needed certificates proving I was indeed a naturalized Swiss citizen.

I was looking forward to meeting Paul Ehrenfest again. Of all the physicists I knew, he was the one I felt closest to. I imagined I would tour the stars with this good companion, far from the stupid war that rented Europe. I was confident he had been able to maintain a scientist's equanimity, like me, by observing the indifference of mother nature. I had forgotten that I was a better physicist than psychologist. Ehrenfest didn't care about the stars. He was deeply distressed—as if stuck in the mud of current events. He had gained weight and looked ten years older. He was scared.

"We're seeing the triumph of barbarity, Albert. Think of our children. What kind of a world are they going to live in?"

"Let's hope this war cures people of their nationalistic fever. Our children will grow up in a new, peaceful and united Europe."

I told you about his wife, Tatiana. She was a warm and generous person, who held him above the bottomless pit of depression. To change the subject of our conversation, she asked me about my work.

"Are you still reshaping the universe, Albert?"

"I've bent it and twisted it as if I was Jupiter himself."

"Really? Don't hurt it too much! You don't look like a brute."

"I brought the article that tells it all."

She put on her glasses and read it carefully.

M—Oh, wait. She was a physicist, right?

A—A Russian physicist he had met in Saint-Petersburg. She had stopped doing research or teaching, though, because she was taking care of their four children, one of whom was retarded.

“Old Newton would be surprised,” she commented. “You’re saying that the Earth is not attracting the apple and the moon.”

“Newton himself found it hard to believe that the Earth could ‘attract’ the moon, which is so distant. The Earth’s mass is curving space. In my theory, space is flat when there is no massive object around. Any massive object curves space into the fourth dimension. The moon doesn’t know anything about the distant Earth. It follows its path right there and then, like a train on a track. Newton’s gravitation was a force active at great distances. My gravitation is a local effect due to the geometry of space. I use the expression ‘gravitational field,’ by analogy with a magnetic field.”

M—This is similar to your story about the compass. You didn’t want to believe that some North Pole iron could attract the needle. A force was moving it right there.

A—Er, yes.

M—In a way, you pretend that you started on the track to your great discovery when you were five years old. But maybe you have boosted the compass story, in some way, because it fits so nicely with the larger perspective. I mean, if it were a movie script, people would say it’s too good to be true.

A—Boosted?

M—Enhanced, magnified.

A—You could become a good psychologist, Marilyn.

M—I’ve met many of them, and lots of strange people, believe me.

A—When we tell our own story to ourselves or to other people, we make up a fairy tale, maybe. We fail to follow the good advice of the ancients, “know thyself.” So probably, someday, a biographer will write a more realistic version of my life story.

Tatiana didn’t know about my toy compass, but she asked me an interesting question.

“What difference does it make? Does it change anything to see a gravitational field where Newton saw an attraction between distant bodies?”

“Yes, it does. When I started working on General Relativity, I found that gravitation and acceleration were equivalent. As a consequence of this equivalence, a very massive object should bend a light ray. An astronomer, Freundlich, went to Crimea in 1914. He hoped to measure the deviation of a light ray by the sun during an eclipse.”

“Paul told me about it. The Russians thought he was a spy and jailed him.”

“I felt sorry for him at the time, but actually it was a lucky accident. The angle I had computed within the frame of Newtonian physics was wrong. If I take the curvature of

space into account, the angle is twice bigger¹. We can't feel the curvature of space with our senses, but we can measure it in this manner."

"So Freundlich should try again. I guess he'll have to wait for the end of the war."

Paul seemed lost in his dark broodings, but he was paying attention.

"When the war is over, there won't be anybody left to go and watch eclipses."

"I don't really need an eclipse. There are other differences between Newton's theory and mine. More than one century ago, two French astronomers, Arago and Le Verrier, noticed that the planet Mercury was deviating from its Newtonian orbit over the centuries. This planet is closer to the huge mass of the sun than the others, so it is affected by a higher curvature of space. My theory predicts its exact orbit. In General Relativity, a mass also modifies time. Thus, the mass of the sun should decrease the frequency of its light very slightly²."

"I tried to follow you, Albert. My brain is boiling and I am exhausted. You know what you should do now?"

"What should I do, my dear Tatiana?"

"Play some music with Paul."

M—The third violin sonata by Brahms.

A—So you remember, see, and you haven't even played it yourself.

A few days later, I went to Haarlem, where Lorentz had retired. Holland is a small country, so the train ride lasts only thirty minutes. Lorentz was waiting for me at the station. A pleasant feeling warmed my heart when I saw his tall figure on the platform. My old master's beard was as white as snow now. We walked across town toward his home. We talked about the war.

"Men speed forward on the road of technical and scientific progress, my dear Einstein, but there is no such thing as moral progress."

"They are bloodthirsty beasts. Technical progress turns them into more efficient killers. As soon as they invent a flying machine, they use it to drop bombs from above. Militarism is an illness. An epidemic is ravaging Europe. Science has become a weapon controlled by murderers. You know that Haber brewed these poisonous gases that kill thousands of

¹ Approximately 1.75 second of arc.

² The shift of the spectrum toward the red is so small that we can't measure it. A shift due to a similar effect was observed in 1960 between the top and the bottom of a building in Harvard. The top was sixty feet farther from the mass of the earth than the bottom.

soldiers at random... Before the war, Germany was proud of having the best chemists and physicists in the world. Now they are inventing new ways of giving death, inspired by industrial methods. I wonder where they'll stop."

"Have you heard of Dr. Freud?"

"He is Austrian, isn't he? He invented psychoanalysis. I don't know much about it."

M—But you do know, don't you?

A—Today I know a little. I've met Dr. Freud and read his books. At the time, it was still quite new, so I knew nothing.

"I have time to read now that I am retired," Lorentz said. "While you're changing our way of considering space and time, Dr. Freud is renewing our idea of the human soul. Men may be animals, but they can learn and decide to control their instincts. On the one hand, some people exploit the work of the scientists to invent deadly weapons. On the other hand, we can hope that modern psychology will teach us how not to use these new weapons."

After lunch, Lorentz and I went to his library. He sat behind his desk, I sat in front of him. He offered me a cigar.

"So? Are you done?"

"I've brought the article."

As he knew more mathematics than Tatiana, I explained the finer details of my theory to him: the "tensorial" equation linking the curvature of space to the mass and energy of an object, and so on. He took notes with a pen that he dipped into a golden inkstand. Now and then, he muttered: "Yes, I see" or "nice touch," like a teacher encouraging a student. Having described the new costume I had designed and cut for gravitation, I stopped speaking. I smoked my cigar in silence while Lorentz checked the equations. I told myself that I had worked well: the costume fitted to perfection. Some parts of the universe still wore shabby dresses, though. I would have to overhaul the whole rigmarole. I knew how to compute the curvature of space near a star, but I needed to study the general curvature of the universe due to the cumulative mass of all the stars. Why didn't the stars fall upon one another? Where did the stars come from? Massive matter curves space and slows time. If there were no stars, there would be neither space nor time. A ray of light doesn't go straight to infinity. There is no infinity. Someday, men will travel to the planets and maybe to the stars. This strange stuff that I have discovered will belong to their daily lives and they'll find it quite obvious.

I twisted a strand of my hair, as I always do when I'm thinking hard. Maja, my sister, used to joke about that habit. She said I had inherited it from my Jewish ancestors, who let long curls grow on both sides of their face. When I lived with Mileva, she'd cut my hair. I hate to waste my time at the hairdresser's. I was sure my cousin Elsa knew how to cut a man's hair. Women always know how to do it.

M—I don't. They know when they've had younger brothers, maybe.

A—How long had I been lost in my meditation, twisting my hair and chewing a cold cigar? I looked at Lorentz. Tears filled his eyes. I thought about Minkowski. On his death bed, his last words (or so I was told): "I hate to die so soon, without knowing where the theory of relativity will lead us." The theory was now complete, but the universe remained as mysterious as ever.

M—Will we ever know?

A—No.

M—No?

A—No.

M—Gee.

A—Ah, but wait a minute. I have forgotten the most important thing that happened in Holland. In Leiden, Ehrenfest introduced me to Willem de Sitter, who taught astronomy in the university. Like all astronomers, he dreamed of finding whether the sun really bent light rays, as my theory predicted.

"Alas, Herr Einstein, the university of Leiden is too poor to go and photograph the next eclipse, and let's not forget there's a war going on."

"When and where does the next eclipse take place?"

"In May 1919, a perfect total eclipse will be visible from several inhabited lands: in Africa and in the north of Brazil. If you don't object, I'll send your article to the *Royal Astronomical Society*, in London. These gentlemen should be able to finance an expedition."

"I certainly won't object. The English physicists don't receive *Annalen der Physik* anymore, I guess. I can't even send mail to France or England."

In this manner, my article landed on the desk of Arthur Eddington, secretary of the *Royal Astronomical Society*, teacher of astronomy in Cambridge. It so happened that he belonged to the Quaker sect, which preaches universal friendship and pacifism.

M—We have Quakers in America. They founded the city of Philadelphia, I think.

A—Although my article came from Germany, Eddington didn't throw it away. I don't know whether English scientists signed bellicose petitions like their German counterparts, but some of them accused Eddington of "favoring German science" because he translated my article into English. He was utterly convinced that my theory was true. He talked to his boss, the president of the *Royal Astronomical Society*.

"The Dutch fellow who sent me the article, De Sitter, says we should set up an expedition. I think we don't need to send ships across the ocean and spend a fortune just to prove something that's quite obvious."

"This new theory may be obvious to you, Eddington. It isn't to me. I'm sure everybody would appreciate observations confirming the hypothesis. You know, I've talked to someone in the war department about it. They accept to consider you'll be serving your country by sailing to Africa and Brazil. Otherwise, they'd gladly send you to jail with Bertrand Russell and the other pacifists."

You know that the earth travels around the sun, Marilyn. This means that the stars hidden behind the sun change during the year. The eclipse's date, May 29th, was very propitious: the sun would be moving across a group of stars called Hyades, which we know especially well.

Once they have decided something, the English never give up. While a war was raging, while German submarines were prowling under the waves, they began preparing a double expedition to the Gulf of Guinea and Brazil.

M—To knock down the statue of Newton, too.

A—A true gentleman always does what's right.

In the meantime, I had gone back to Berlin. My stomach was protesting again: "Leave your stupid stars alone and take care of me," it said. I felt awfully tired. I saw Elsa's doctor, who thought I might have gallstones, unless perhaps something was wrong with my liver.

"You need rest, Herr Professor. This is the best cure, no doubt. In such cases, we also advise taking the waters."

"I prefer the first cure, Herr Doktor. Doesn't cost anything. If I wanted to go and take the waters, not only would I have to find money, but I would need to acquire a sufficient amount of superstition first, in order to believe that the money wouldn't be wasted."

I was sending seven thousand marks per year to Michele Besso for my sons' education and for Mileva's needs, as well as six hundred marks to my mother. This amounted to more than half of what I earned. The physics branch of the *Kaiser Wilhelm Society for the*

Advancement of Science was so to speak still-born. I only received my salary from the Prussian Academy. I definitely needed to save money. I moved to 5, Haberlandstrasse, the very building where my cousin Elsa lived. A tiny apartment had become available. As the rent was low and Elsa fed me my daily gruel, I didn't have to go and beg in the street.

I wasn't in want, so what happened all of a sudden? Money began to pour in. In 1917, some of the big companies that were sponsoring the *Kaiser Wilhelm Society for the Advancement of Science* complained that the funds they had earmarked for the physics institute were sleeping in the bank. There was not enough money to build a laboratory, but more than enough to set German bureaucracy in motion. We had to fill forms and appoint a board. It included Max Planck, Fritz Haber and others. We decided the institute, born officially on October 1st, 1917, would be located in my tiny apartment. I enrolled one of Elsa's daughters, Ilse, as secretary and gave a grant to Freundlich, the astronomer.

Elsa was a very careful and helpful woman. Her character was the opposite of Mileva's. She was quite different from me, too. She brought me what I lacked. I don't mean only clean shirts and tasty dishes. Her qualities made up for my flaws.

She was glad to have me near at hand. She praised me to Philip Frank, my successor in Prague, who came for a visit.

"I needed a talented physicist like our Albertle. In these times we have to buy food in all kinds of cans, often foreign made, rusted, bent, and without the key necessary to open them. But there hasn't been a single one yet that our Albertle has failed to vanquish."

M—I've sung *Every baby needs a da-da-daddy*, never *Every girl needs a phy-phy-physicist*.

A—Only when there's a war and you're starving.

The one drawback of becoming close to Elsa was that she always wanted to displace my furniture and my books to remove the dust.

"Why do you want to put away the dust? It will come back anyway."

"I don't meddle with your physics, so let me take care of the housecleaning in my own way."

"This reminds me of a joke."

"What joke?"

“My father always told jokes about Rothschild. A shnorrer¹ knocks on Rothschild’s door. When the butler opens the door, the shnorrer shouts that he wants to see Rothschild right away. He shouts and screams and makes such a frightful din that Rothschild comes down from his office. The great banker gives a few coins to the shnorrer to get rid of him. ‘My friend,’ he says, ‘I find your method rather crude and unpleasant. Let me tell you that if you had asked for some money politely, I would have given you much more.’ The shnorrer smiles. ‘Listen, your honor. I don’t give you any advice about the best way to invest your capital, so don’t try to teach me my profession.’”

What with the Prussian Academy sessions and my silly uniform and everybody calling me Herr Professor and even Your Honor, my own profession impressed Elsa so much that she accepted to grant me a great favor: she promised never to enter the room I used as an office.

I had finished my work on General Relativity, but there were still a few points to tidy up, so I kept covering pages with my scribbling. I’m sure there was as much crumpled paper on the floor as before. At the same time, I began a little work that brought me a much-needed additional income.

You told me you contributed to the war effort by folding parachutes, Marilyn.

M—I folded and packed parachutes for recovering the target planes. If I had packed parachutes for people, I would have been worried to death lest some guy crash on the ground because of my carelessness.

A—I am an old man. I don’t want to hide anything. I told you about Lieserl. What I am going to tell you now is not even a secret.

I also contributed to the war effort, while at the same time I was the best-known pacifist in Germany. I don’t remember how I justified it to myself, that I managed to be two opposite persons.

But then, it began before the war. At least, I’m quite sure it did. This young man, Hermann Anschütz, had inherited a big amount of money. He had an obsession since childhood: to build a submarine and reach the North Pole by navigating under the ice cap. His favorite book was a novel by Jules Verne, a French writer, what now is called science fiction, about a submarine named Nautilus: *Twenty Thousand Leagues under the Sea*.

¹ A beggar, who lives from the charity of others.

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M—Hey, they're shooting a movie with that title! The Walt Disney company is producing it. I've seen the submarine, actually. They've rented the big Warner soundstage to shoot the underwater scenes, because it can be turned into a huge swimming-pool. Kirk Douglas is the lead. This one actor you know, Peter Lorre, he is in it too.

A—Anschütz is dead long ago, otherwise he would have loved to see that film. Do you know who built the first submarines? You did.

M—I did?

A—I mean, the Americans. During that big war between the North and the South about the slaves, you know.

M—The Civil War.

A—The North blockaded the main harbor in the South, unless it was the other way around. So the South couldn't receive food, maybe, but especially arms and ammunition, from wherever they bought them. Someone had an idea of a small submarine vessel. It would cross the harbor under water and stick explosives to the hulls of the blockading ships. They didn't know how to make a good electric engine, so the submarine was a pedal boat. Some poor sailors were pedaling to rotate a propeller. I say "poor sailors" because the first submarine went to the bottom and then the second one also did, so they didn't build a third one.

Later, other countries made submarines. Anschütz studied art history, but his obsession compelled him to draw submarines all the time. A submarine that would go under the ice cap needed a special electric engine with long-lasting batteries, and also a special compass. Let me mention my toy compass again, although you doubt its importance in my life.

M—I accept its importance in the *story* of your life, as told by yourself.

A—Well, it was a magnetic compass. Ships need such a compass to navigate, of course. A submarine spends most of its time above water, like any ship, so it can also use a magnetic compass.

M—Doesn't it navigate under water? Why is it called a submarine?

A—It dives only when necessary, to escape an enemy or attack it. Its regular engine can't work under water, for lack of air, so it has to use an electric engine whose batteries are depleted very fast. Anschütz wanted his polar submarine to stay under the ice cap a long time. A magnetic compass doesn't work well inside a steel box. A diving submarine is a steel box, you understand. Besides, when you approach the pole, the north is everywhere and the magnetic compass becomes useless. Anschütz had to find some other

way to stay his course. He thought of a gyroscope, a kind of spinning top that keeps pointing the same direction. In 1904, he took a patent for what he called a “gyrocompass.”

He had money, but not enough to buy or build his polar submarine. Ah, but the German navy found his gyrocompass a very interesting gadget. Anschütz started making gyrocompasses for the navy in Kiel, a city on the Baltic sea.

Now you remember I worked for the Swiss patent office in Bern. I was third-class technical expert, then second-class. I would have reached first-class if I had stayed there, I’m sure. They were satisfied with my work. I had a good knowledge of all kinds of machines, especially electrical. I gained experience by and by, so that I could see whether a patent application had flaws and whether the machine would work as advertised. People in the patent world knew me and respected me. When I was a professor in Zurich, they called me sometimes as an expert in a patent litigation.

My reputation followed me to Berlin. In 1914, I was asked to give an expert opinion in a conflict between Anschütz and an American company, Sperry, about the gyrocompass. Each company accused the other one of having infringed its patents. I received a fee of one thousand marks, which was not to be neglected. It was a tangled case. Sperry said the Anschütz patent was worthless, because it copied an older Dutch patent. I studied the Dutch patent, the patents by Sperry and Anschütz. I went to Kiel and made experiments with the Sperry and Anschütz gyrocompasses. I concluded that the Anschütz patent had nothing to do with the Dutch one, and that Sperry had infringed the Anschütz patent. I certainly knew that submarines played an important role in modern warfare, like, well, explosives and poison gas.

M—A compass is a useful object. Its purpose is not to kill. Explosives and poison gas are just designed for killing.

A—The German submarines sank enemy ships and also civilian ships. Anschütz was making them more efficient and I was helping him. I criticized Haber and all the other warmongers, but I was closer to them than they thought.

I don’t really understand why I did it. I liked to look at patents, because it reminded me of the good old times in Bern. I liked compasses, too, whether magnetic or gyroscopic. I couldn’t resist the temptation of solving a tough problem. I was so overwhelmed by the euphoria of deciphering the riddle of the universe, of seeing God face to face, that I believed I could do anything I liked.

M—During a war, everything is topsy-turvy. Young men die before they've lived. Women send "Dear John" letters to their husbands. Maybe a fool becomes a hero, maybe a wise man loses his bearings.

A—This is a good expression. I studied compasses so hard that I lost my bearings. Who is this John?

M—Just another expression. The kind of letter many women send: "Dear John, you've been away in Europe—in the Philippines—so long—I felt so very lonely—I worried I would soon be too old to have children—I met this nice Hungarian photographer—my boss at the office promoted me and then he invited me to have dinner with him—Now I'm pregnant..."

A—I know people consider me a wise man, but I have never been one. Giving away little Lieserl wasn't wise. Not wise at all. I treated Mileva too harsh. And my sons, too. My mind was crisscrossing the universe, bending space and stretching time. I forgot about human beings.

M—So you're saying that this writer who took you as a model, wait, I'll find him in my notebook, here: "more interested in stars than in human life," Max Brod, he was right?

A—I can't complain if I'm seen as, how do you say, the aloof scientist, or maybe the absent-minded professor. This book was written before the war. Later, after millions had died because of new explosives and machine-guns and gasses, scientists were seen as killers, too. There were some films, a mad scientist, Dr. Mabuse. Fritz Lang, an Austrian man he made these films.

M—I know him. I was in a movie he directed, *Clash by Night*. Not a nice man.

A—I was the most famous scientist. When people started distrusting scientists, they thought I was a Dr. Mabuse. They believed I had invented the atomic bomb, built it with my own hands and dropped it on Japanese cities. Maybe that's what you think, Marilyn.

M—Er, I don't know.

A—I had nothing to do with the bomb. Nothing. Some scientists were involved, but I wasn't one of them. The American government kept me out of this big project. They thought I was a pacifist and maybe a communist. They were afraid I would give the secret formula to the Soviets. I spent World War II right here in Princeton. I became friends with Bertrand Russell, who was there too. He was a real pacifist. While I was helping submarines get better gyrocompasses, he was in jail because he refused to bear arms.

He made this very strong film with Peter Lorre, *M*.

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M—Who, Bertrand Russell?

A—Fritz Lang. *M* stands for *Mörder*. The story of a madman who kills little girls. Police is everywhere to find him, this disturbs the gangsters. So the gangsters get together and catch him and decide to execute him. A government of gangsters, just like the nazis, but the film was made before Hitler came to power. The nazis were the gangsters and also the child killers, of course.

M—He gave me one of my first important parts. RKO produced the film. Fox had loaned me to RKO because they didn't need a blonde just then. The leading lady was Barbara Stanwyck, but I was on screen longer than in previous movies. I played a fisherman's girlfriend who canned sardines in Monterey. This was easy: I just had to remember the Radioplane factory, where I folded parachutes and applied dope during the war. Some critics said I was the best thing in the film. This convinced Fox they could use me, after all.

A—I thought Fox had not renewed your contract.

M—Oh yeah... Fox let me go, then Columbia too. But now that Johnny Hyde, the best agent in town, was taking care of my career, Lucille Ryman tried to outdo him and sent me to a casting call at Metro Goldwyn Mayer. They wanted a dumb blonde to play in a movie to be directed by John Huston, *Asphalt Jungle*. This was a very dark gangster movie. The leading man, Sterling Hayden, often played losers. He couldn't smile, just snarl. Louis Calhern played a corrupt lawyer who helped the gangsters. He needed money to keep his young mistress, Angela, in silk and mink. I played the dame.

I had never played such an important part. I was scared. Posing for photographers is easy. Learning dialogue and saying it in a natural way is much tougher. What if I failed? My career would crumble before it had even started. I didn't sleep anymore. I read the script and spent a week rehearsing with Natasha. She drove me to the huge MGM lot in Culver City. John Huston was a tall Irish fellow who reminded me of my husband, Jim Dougherty. He asked me to play a scene where I was supposed to be lying languidly on a couch, but there was no couch so I just sat on the floor. Mr. Huston's assistant played the lawyer. Mr. Huston didn't talk much.

"Okay," he said.

This was too easy. Lucille told me that Mr. Huston liked to drink whisky and play poker and bet on the horses. The kind of guy who spends more than he earns and borrows money from all his friends. He had already chosen an actress, Lola Something, but he had to give

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me the part because he owed John and Lucille twenty thousand dollars. Not because I could play, you understand.

I was very nervous when the actual shooting began. Would I be able to say my lines properly? I asked Mr. Huston if my coach, Natasha Lytess, could stay on the set and help me. He is a good man. He said okay. This is not usual. He pointed at Louis Calhern: "Look, the old fellow is shaking like a leaf. If you were not nervous before playing, you wouldn't be an actress."

In a first scene, I had to show that I didn't care much about the lawyer. Then, when he tells me he'll soon get a big amount of dough and we may go on a cruise, I rejoice like a child: "Oh gee, I'll be able to try my new bathing suit!" In my last scene, I tell the police he has spent the night with me. I am his alibi. But then, I begin to understand that things have gone wrong and I am scared. So I really had to play. Not just move my ass and pout, you know.

A—What is pout?

M—Like this. Well, I can only give you a pale version. I need Whitey's magic.

A—Just remind me who Whitey is.

M—Whitey Snyder, a makeup man I met at Fox the first time I went there. Now he has become my own private makeup man. He has this brush, just like an artist. He paints a special red gloss on my lips. There's a gloss for black and white film and a gloss for color film.

Asphalt Jungle was released in 1950. Although my scenes lasted no more than five minutes altogether, some critics wrote about me and people in the studios noticed me. Johnny said I still had much to learn, but I was on the right track.

"You must be careful to choose roles that will help your career. Working with a good director like John Huston is worth plenty. A good cameraman is even more important. Whatever talent you've got, you can't do much about it within the next hour, but you can always change the lighting on your face."

I had cameo parts in other movies. I even shot a commercial for television. I was not very busy.

Joe Schenk was still my friend. Johnny Hyde convinced him to talk about me to Zanuck, so then I got a part in a Fox movie, *All about Eve*. The director was Joe Mankiewicz, who had also written the script. This Eve, played by Bette Davis, was a famous theater actress

who felt threatened by a younger rival. This part, I mean the younger rival, seemed just right for me.

“Yeah, you did a good job in *Asphalt Jungle*,” Mr. Mankiewicz said.

Most of the film was shot on location in San Francisco. We stayed in a big hotel there. Mr. Mankiewicz and the leading actors, Bette Davis and George Sanders (he is a very cynical Englishman), talked about books and stuff at dinner. I felt pretty stupid. As soon as the shooting was over, I enrolled in a World literature course at UCLA in Westwood.

A—Could you go to university without having completed high school?

M—This was a special course for ordinary people. You didn’t get a diploma.

While I was reading Dostoyevsky and Rilke, Johnny was rushing around town, urging producers and directors to consider me. I told you about his heart condition. His doctors advised rest. He didn’t listen to anybody’s advice. My career seemed to be the only thing that meant a thing to him. It turned into an obsession.

“I’ll make a star of you while I can still do it, Marilyn.”

His heart couldn’t take it. Johnny spent more and more time in the hospital. In November 1950, although he was so weak that the chauffeur had to carry him out of the car, he got an appointment with Darryl Zanuck and convinced him to offer me a seven-year contract at Fox. I was to earn 500 dollars per week the first year, then 750 the second year. Ten times more than when I had started four years before, but not yet a lot. Joe Schenk and Johnny Hyde also convinced Zanuck to put Natasha Lytess on the payroll at 500 dollars per week.

Johnny was very happy for me, but just then he had a massive heart attack. He died on December 18, 1950. He was only fifty-four. One more person was deserting me. On the very next day, his family sent a lawyer who expelled me from the house and told me I’d better not come to the funeral. His wife hated me, for sure. She thought I had killed him, because he had worked too hard on my behalf.

I took refuge at Natasha’s. She gave me a large glass of whisky and some pills to soothe me. I was very sad. I couldn’t stop crying. I had been with him during the last year of his life, after all. I wanted to die. She guessed how I felt and stayed near me, fearing I’d do something foolish.

I did go to the funeral, with Natasha Lytess, hidden behind a black veil. I remained quite far from the grave while all the other people were there, then I went and sat on the ground near the grave until nightfall. There was a stupid rumor that I threw myself on the bier and shouted: “Johnny! Johnny! Please come back!” or something.

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All the Hollywood people had sent flowers, of course. I plucked a single white rose and kept it in the pages of my Bible. It is still there today.

As my agent, Johnny gave me one last present: he convinced *Life* magazine to publish a flattering article about me.

A—Is this is when Halsmann photographed you?

M—No, that was two years later, when I had become really famous.

A—He showed me some pictures where you jump.

M—Did you also jump for him?

A—He didn't ask me. I'm too old already. He was afraid I would break my hipbone and he would be responsible for my early demise.

M—So Fox had me under contract again, but they kept giving me dumb blonde parts. I played sexy secretaries, barmaids, gold-diggers.

A—Are there women working in gold mines?

M—Oh no, this is an expression. A young woman trying to find a rich old man. I appeared on screen for just a few minutes in several low-budget flicks: *As Young As You Feel*, *Love Nest*, *Let's Make it Legal* (with Claudette Colbert, whom I admired so much when I was a child), *We're Not Married*, *O. Henry's Full House* (with Charles Laughton). I was often billed as "co-star," with my name in big letters, but I was sure they would have given me better parts if Johnny had still been alive.

"Try to see the positive side," Natasha said. "With every new film, you improve your acting skills and gain experience."

She attended all my shootings. She helped me rehearse my scenes. I needed her to overcome stage fright. I couldn't expect the producers or directors to teach me anything. They only wanted me to be sexy. We adopted a kind of code. Natasha pointed to her mouth when she thought I should speak louder, bent her hand if my back wasn't straight enough. The guys in the crew laughed at me. They said I kept looking at Natasha to get her approval.

The studio was foolish not to give me better parts. I was not a star, but I received more mail than anybody else at Fox, several thousand letters every week, just because of my appearances in *Asphalt Jungle* and *All about Eve*. I was very happy when they lent me to RKO. Do you know why? Because I used to see the big red RKO sign from my dorm window at the orphanage. It was part of my dreams, so to speak. I wasn't so happy when Fritz Lang shouted at me. He hated Natasha, too. They quarreled in German all the time.

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There are always reporters on the set, you know. Instead of interviewing Barbara Stanwyck or Mr. Lang, they always asked for the girl with the big tits. This miffed him, you bet.

A—Tits are boobs?

M—Sure. They loved my tits, but they spoke of my performance in their reviews. Fox then decided to take me seriously. For the first time, they gave me a leading part. I played a crazy baby-sitter in a movie called *Don't Bother to Knock*. The leading man was Richard Widmark. The girl is crazy because her lover died in the war. She has spent some years in an asylum. Richard Widmark is just an ordinary nasty guy, the kind he usually plays, but she believes he is her lover who has survived and returned. I knew about asylums, of course, as I had gone and visited my mother a few times. I had seen crazy people. I didn't really try to play crazy, though. I just played scared, and this was easy because I'm terribly scared on a set. That's why I'm always late. I try to compose myself, but then I feel sick and I vomit and Whitey has to do my makeup all over again. The director is angry at my being late and so I'm even more scared.

The reviews were great. So what do they do? They give me one more part as a dumb blonde in *Monkey Business*. I can't complain, because I work with Cary Grant and Ginger Rogers and a director who never shouts at me, Howard Hawks. He is one of the best directors in Hollywood. He made *Scarface*, *To Have And Have Not*, *The Big Sleep* and many other famous films. Besides, this is the funniest movie I've ever been in. I'm the sexy secretary of an old geezer played by Charles Coburn.

A—A gold digger?

M—Oh, I play a gold digger in *Gentlemen Prefer Blondes*, also with Charles Coburn and Mr. Hawks. In *Monkey Business*, I'm just a secretary. I like my boss, but he is really too old. Older than Joe Schenk! He hopes to become young again to seduce me.

A—Like Dr. Faust?

M—He doesn't plan to sell his soul. He owns a lab where a scientist, this is Cary Grant, is looking for a youth potion. He isn't exactly your kind of scientist. He experiments his potions on chimps. So this chimp opens the door of his cage when nobody is around and starts mixing colored liquids to imitate the scientist.

A—The chimp makes a youth serum?

M—You should write for the movies, Albert!

A—This kind of thing does happen, sometimes. For example, Becquerel, a Frenchman, discovered radioactivity by chance. A chunk of uranium that his father had brought back from Africa was left in a drawer near a photographic plate...

M—Well, the chimp pours the liquid into the water dispenser, then Cary Grant is thirsty and drinks some water. This is the funny part. He turns into a teenager, buys flashy clothes and a sports car and so on. But his face doesn't change. It's just the way he plays. He is a fantastic actor.

A—I wouldn't say no to a glass of youth serum right now. But it shouldn't contain alcohol. My doctor says: "No alcohol and no tobacco, Albert."

M—Hey, I have heard something, I think it has to do with relativity. You travel in a rocket, then when you come back to Earth you're younger than when you left.

A—I'm sorry to say, you can't become younger. What is true, you do not age as fast. Suppose there are two twins, one stays on Earth and the other travels. When he comes back, he is younger than his twin. Not younger than he was when he left.

M—You could come back and be younger than your children.

A—Younger than your children? This would be a very awkward situation. I wouldn't expect to count the time gained in years, you know. More like a few seconds.¹

M—That's all?

A—You don't even have to travel. If you live on a mountain, time flows a little slower than at the level of the sea.

M—Next time I'm late, I'll say it's because I live on the fortieth floor of a skyscraper.

In a novel someone told me about, the hero travels in time and must help his parents meet each other. If they don't meet, he may vanish all of a sudden. Poof! Do you understand?

A—I understand quite well. Writers imagine what they like in their novels. While books may describe spaceships that go to remote galaxies by exceeding the speed of light or by taking a shortcut through hyperspace (whatever that is), reality has all kinds of rules and laws and restrictions. The theory of relativity has changed the way we deal with very tiny

¹ This is known as "Langevin's paradox." Luke Skywalker goes to planet Dagoba. When he comes back home, Princess Leia has been dead for centuries! In Special Relativity, time seems to go slower for Luke as measured by Leia, but the effect is reciprocal: time goes slower for Leia as measured by Luke. Langevin's paradox is a consequence of General Relativity. People who spend weeks in the Space Station gain a few seconds.

things like atoms and very big things like stars and galaxies. It doesn't affect our daily life¹. We do not live in Einstein's strange universe, but in Newton's sensible solar suburbs.

I published two new articles in 1917. In the first one, I looked into Niels Bohr's quantic model of the atom. When an atom absorbs a quantum of energy, an electron climbs to a higher level. The atom is like a pregnant woman. It can't keep its fat belly forever. The electron will climb down sooner or later and the atom will then emit a quantum of energy. I predicted that by feeding the atom more energy than it could absorb, we could control the energy it would emit. Many people are still working on this. Foolish journalists and politicians thought I had invented some kind of "death ray."²

M—They always have death rays in science fiction movies. They look good and don't cost much. All you need is a green flashlight.

A—Why green?

M—Gee, I don't know. Red will do, too.

A—In my article, I remarked that the expression "sooner or later" wasn't very rigorous. We hadn't found the exact mechanism of the emission yet, so its timing seemed to obey a random law. I thought there was no place for randomness in physics. Does the electron decide by itself when to climb down? I spent many years trying to answer that question. I'll tell you more about it later, Marilyn.

The second article revived an old science: cosmology, the study of the whole universe. It had been sleeping for centuries. We knew almost nothing about the universe. We saw lots of stars out there, but nobody knew whether their number was finite or infinite. Some astronomers imagined a finite number of stars gathered like a sort of island in the middle of an infinite space. General Relativity said this was impossible, as space was now linked to matter intimately. An infinite number of stars wasn't possible either, since their infinite mass would have created infinite gravitation forces. There was only one possibility: a finite number of stars in a finite universe. Space is curved locally—a little near a light star, a lot near a heavy star. It also has a general curvature due to the total mass of the universe. I mentioned a familiar two-dimension example in my article: our good old Earth, with its

¹ After Einstein's death, artificial satellites and sensitive instruments did introduce General Relativity in our daily life. If we didn't adjust time and space parameters to take relativity into account, GPS data (which result from roundtrips to satellites) would be quite false.

² The special "coherent" light was perfected a few years after Einstein's death. It is the laser, of course. There is no doubt that some foolish scientists are still trying to turn it into a death ray.

local hills and mountains and its general curvature as a globe. Because of its general curvature, the universe closes on itself. Like the surface of the Earth, it is finite but has neither rim nor center. It is not easy to imagine such a universe, but I found my hypothesis pleasant and rather harmonious. What do you think, Marilyn?

M—Let me write, but don't ask me to think.

A—The ten equations that describe the local bending of space near a mass, I tried to apply them to this new cosmology. As observations and data were lacking, I had to rely on guesswork. I must say that I made several mistakes. I estimated the size of the universe to one hundred million light-years, whereas we now consider it at least one hundred times larger.

I discovered something rather surprising. My equations seemed to call for an expanding or shrinking universe, but the ancient Egyptians and Babylonians had already described most of the stars we see today. I took it as proof that the universe had always existed and didn't change, so I refused to believe my own discovery. I wasn't bold enough. I introduced a "cosmological constant" to counter the destabilizing effect of my equations. As soon as the article was published, de Sitter, the astronomer I had met in Leyde, showed that my cosmological constant wasn't necessary. Soon afterward, a Russian mathematician, Alexander Friedmann, found a simple way to apply the equations to the cosmos. In his solution, the curvature of space was decreasing—or the universe expanding. To use the analogy of the Earth once more, you have to imagine that you're inflating our globe like a balloon; all the cities are moving away from each other.

Despite the healthy food Elsa gave me, my silly belly was still bothering me. I had to cancel a trip to Holland. Elsa's doctor had mentioned gallstones and the liver. This time, I consulted a well-known stomach specialist, Dr. Ehrmann. He became a good friend and moved to America, so that he is still my doctor today. He said that whoever had mentioned gallstones was a perfect fool. I suffered from an ulcer of the duodenum, obviously.

"Look at the X-rays, professor Einstein."

"I doubt that this new X-ray magic can help in any way. Medicine would like to be a science, but it is far from it. The only diagnosis that merits to be called scientific is the one you do *post mortem*."

"I'll prescribe a simple diet and complete rest. You stay in bed and let Mrs. Einstein take care of you."

M—You had married Elsa?

A—She was my cousin, so her maiden name was Einstein. She had dropped her husband's name, Löwenthal, after her divorce. I spent the first few months of the year 1918 in my bed. I wasn't forty yet, but illness had pushed me across the threshold that separates youth from ripe age. My hair had become quite gray.

I was still married to Mileva, anyway. I began a divorce procedure. What a waste of paper! I went to the post office several times a week to send or retrieve registered letters. Michele Besso acted as go-between. Lawyers were involved, too. Mileva, pretending she had helped me, claimed a share of my income. I couldn't refuse, since she had to raise the children. Where would the money come from? The expected defeat of Germany cast a shadow on the future of the *Kaiser Wilhelm Society for the Advancement of Science*. Besides, the German mark wasn't worth as many Swiss francs as before. The universities of Leiden and Zurich knew it and tried to lure me away. They were willing to pay me even if I stayed in Berlin, as long as they could add the name of the famous professor Einstein to their roster. I hesitated. It seemed wrong to earn money without working. Besso told the lawyers I could expect to receive the Nobel prize soon, so we agreed that I would invest the prize money—a huge sum—in a fund in a Swiss bank. The interest would constitute Mileva's pension.

My Dutch friends sent me good news: Eddington, the Englishman, was preparing the expeditions that would look for bent light rays during the 1919 eclipse.

In October, 1917, while I was reading books and thinking about the universe in my bed, there was a revolution in Russia and the communists came to power. "Why should we die in a war started by the czar, opposing capitalists to each other?" they wondered. So they asked for a cease-fire, even though it meant giving away quite a lot of territory. The German authorities called the "Russian surrender" a great victory and promised that a general triumph would soon follow. This was wishful thinking, maybe. The emperor and the inner circle of generals and politicians knew that Germany was losing the war in the West. The gullible crowd, as well as some foolish generals and politicians, believed the propaganda.

I was so weak I couldn't even stand up and play my violin. My skin turned yellow because my liver decided to take some time off. "If the stomach goes on strike, why should I go on working?" it asked. I spent my days in bed or in an armchair on the balcony for at least six months. In June, 1918, I went to a resort on the Baltic sea with Elsa and her daughters. There I really regained my strength. Walking barefoot on the beach did me more good than any medicine.

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M—I'm flying back to Los Angeles next week. I'll think about you when I walk barefoot on the Santa Monica beach.

A—I did return to Berlin at the end of the summer. I resumed my work. In October, there were rumors that the government had started secret negotiations with the United States to stop the war. People didn't understand how this was possible, since Germany was supposed to be winning. On November 4th, 1918, the sailors of the Baltic fleet rebelled and demanded the end of the war. Then something amazing happened: the soldiers also went on strike. Then workers in factories, too. On November 9, a gigantic crowd marched on the Reichstag and demanded peace. That very same day, the Republic was proclaimed and the Kaiser abdicated and fled to Holland. The war ended on November 11.

M—You must have been very happy.

A—More than the situation deserved. I was glad I had seen German militarism crushed forever (or so I thought). I believed that the people, having learned the cruel lesson of the war, would give up their love of uniforms and their dreams of military conquests. I was very naïve.

For the time being, I certainly rejoiced that young men were not dying anymore. I felt young again myself, as I became very popular with the students all of a sudden. I was the most famous pacifist in Germany, wasn't I? My time had come.

Striking and revolutionary students seized the university and locked up the dean and the rector. My colleagues were scared and begged me to do something. I went to the students' council with my friend Max Born. The students recognized me. I asked them whether they wanted more freedom in the new order of things, or less freedom. If the answer was "more freedom," their first action shouldn't be to lock up people. They said the prisoners had been transferred to the care of the government. So I went to the office of the new president, Herr Ebert. There, too, they recognized me. Herr Ebert signed a release order right away.

M—How old were you?

A—I celebrated my fortieth birthday soon afterward.

M—You see, you were already forty when you became famous. As you were also very smart, you could understand what was happening to you and avoid pitfalls.

A—I became really famous the following year.

M—You just said people recognized you.

A—In the university and in government. Quite a small circle.

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M—I became famous when I was still too young. I took decisions without thinking, on the spur of the moment. What the hell! In 1949, when I had been let go by Fox and Columbia, I accepted any kind of assignment. I was twenty-three. I needed money for rent, of course. As I was still supposed to be a model, I did the most common thing models do: work for advertising. One day, I was driving on Sunset Boulevard. As I was going to a modeling appointment, I checked my make-up in the rear-view mirror. Well, I didn't notice the car in front of me had stopped and I crashed into it. I wasn't speeding or anything and nobody got hurt, thank God, but my car refused to start again. Some guys helped me push it to the side. One of them gave me his card.

"Tom Kelley, photographer? Gee, I'm a model."

"I know."

"How do you know?"

"The portfolio on the passenger seat."

"Oh. My name is Marilyn Monroe."

"Well, miss Monroe, give me a call some time. I could take a few shots of you, maybe."

He lent me five dollars, as I didn't have any money for the taxi ride to my appointment. I had to pay the monthly installments on my car, so I called Mr. Kelley a few days later.

"Yes, miss Monroe, I remember you quite well. Did you have your car fixed?"

"My agent took care of it."

"You're in luck. I've got to make a picture for a beer poster, but the girl just told me she was sick and couldn't come."

So I went to his studio. Wearing a swimsuit and carrying a beach ball, I became the new Pabst Beer girl. The following month, Tom Kelley called me.

"A fellow who prints calendars in Chicago or someplace says he saw you in the beer ad and would like you in a calendar."

"A calendar? Sure."

"He wants nude pictures. Nothing vulgar, of course. He trusts me to make them artful, you know."

"Why not?"

Kelley didn't do smut. He was an artist. He spread a red drape on the floor of his studio. I lay on the drape. He climbed upon a ladder to photograph me from above. This was easy work. I thought nothing about it, really. The Chicago man printed two of the pictures in his calendar. The first one was captioned "A New Wrinkle," the second one "Golden Dreams."

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I received fifty dollars. You see these calendars in garages and truck cabins. A naked woman for every month of the year, that kind of thing.

A—I have a calendar with flowers. I would prefer naked women, I think.

M—Now what happens? The picture is inside the calendar for 1950. The plumbers and truckers like it so much that the calendar maker prints another picture of me on the 1951 issue, taken during that one session Kelley had shot. By then, I was under contract with Fox again, a somewhat well-known young actress. If not a star yet, let's say a rising star. Hollywood actresses don't lie naked on rumpled red sheets, you know.



At first, there was just a rumor that the “miss Golden Dreams” inside the calendar was actually Marilyn Monroe. The studio asked me about it. Sure, I said, I’m miss Golden Dreams. Why would I lie? I’m not ashamed of my body.

Instead of considering I had breached my contract and sending me back to the gutter where I belonged, the Fox public relations department tried to make the most of it. They called Aline Mosby, a journalist for the gossip press, and suggested she interview me.

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“Yes, I made those nudie pictures,” I told her. “At the time, I had no money for food or rent. Gee, I earned only fifty dollars for those shots. The photographer was a swell guy. His wife was there all the time, actually, so nothing dirty could happen. It was to be an art calendar. Now they say it may ruin my career. Isn’t this unfair?”

I wasn’t really starving, but the story sounded better than having to pay the installments on my new convertible. It fit nicely with my reputation as a poor Los Angeles orphan. Hey, this Aline Mosby became famous herself last year, you know, by going naked to report on a nudists’ convention.

All the newspapers talked about me. A new magazine, *Playboy*, published my pictures in its first issue. I guess you don’t read *Playboy*, Albert.

A—I don’t think I have seen it ever.

M—It’s a magazine for men. Miss Golden Dreams appeared on the cover and as a luscious center spread. Everybody in Hollywood sleeps with everybody, but they were talking about the whole thing as if there was reason for scandal. They pretend not to know anything about sex. In movies, you don’t see a man and a woman together in a bedroom unless they are husband and wife. What’s more, there are two separate beds in the room and the people, even though they’re lawfully married, seem to keep their pajamas or nightgowns on when they go to bed. Otherwise the “Legion of Decency” and other crazies raise such a ruckus that the film is bound to fail.

Well, this legion and other groups who hate the human body ranted and raved. The States of Pennsylvania and Georgia censored the calendar. So many journalists looked into my life and my work that one of them found about Gladys. It didn’t really matter. The story got lost in the overflow of true and not so true stuff they published about me. Instead of being a poor orphan, I became a poor forsaken child who was ashamed of her crazy mother.

Thousands of letters came to Fox every week, requesting pictures of me. The good soldiers who were making war in Korea wanted to post me near their bed. The mail bureau said I was the troops’ number one favorite, way ahead of Betty Grable and June Haver. A whole regiment stationed over there offered to marry me. Several magazines wrote cover stories about me. They called me the new Jean Harlow, they compared me to Lana Turner and Rita Hayworth.

Joe hated the whole business, of course.

A—Joe Schenk? Why would he hate?

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M—Oh no: Joe DiMaggio, my husband. We weren't married yet. He didn't want his future wife to pose naked for horny photographers. Or clothed, for that matter. Do you want to know something? He was rich and famous at an even younger age than me, except I was only famous.

A—What does he do?

M—You don't know Joe DiMaggio?

A—An actor like you?

M—He plays baseball.

A—*Ach, so.* This baseball I have never been able to understand. Relativity is easy, compared to baseball.

M—He was the most famous player in the world (even though he had retired the year before). He saw my picture in a magazine. Photographers always look for new ideas. One of them had photographed me in a baseball jersey, holding a bat. Joe doesn't know anything about photographs and movies. He believes I choose my own outfits. "Gee, this girl likes baseball," he thought. He asked to meet me. Fox's public relations department was eager to oblige, you bet. They set up a dinner in an Italian restaurant in Hollywood. A mere dinner is enough to stir up lots of publicity, of course. The papers would publish photographs: "Marilyn Monroe, the rising star, with the great Joe DiMaggio."

Joe had imagined a certain girl after seeing me ready to bat in the picture. He was a bit disappointed that I was somebody else. I know as little about baseball as you do. As he knows nothing about the movies, we didn't waste our time posturing, playing our usual roles, being stars. He is a simple guy and I am a simple girl. I felt he saw me as Norma Jean, not as Marilyn.

I have slept with many men, Al. Too many, no doubt. They want to sleep with Marilyn, but I always hope they'll see Norma Jean once we are naked in the same bed. When they don't, I am so sad that I feel like crying.

A—I had a similar dinner experience long ago, but it didn't end in marriage. I spent an evening in a Berlin restaurant with Dr. Freud. We enjoyed a lively conversation about all kinds of subjects. I was told he described our encounter in the following manner: "Since Professor Einstein understands as much of psychoanalysis as I do of physics, we had a very pleasant chat."

M—When the public relations people told me I would meet a baseball player, I imagined an apish brute wearing checkered pants and a pink tie, but actually he was quite

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a refined fellow and behaved like a gentleman. I guess I had seen players in movies, where things are always exaggerated. He looked like a bank executive in a well-tailored dark suit, except for his strange head—eyes set too far apart, thick eyebrows, extralong nose, gigantic mouth. I thought that if he moved to Hollywood, he could play gangsters, but I didn't tell him. Later, I met his pals here in New York. When he spends the evening with them in their favorite joint, he becomes less of a gentleman.



He is quite tall, thin but athletic, with black hair. All the girls went after him. He married one of them and they had a boy, but then they divorced.

He told me he had left school early, like me. He became a professional player when he was only seventeen. This was before the war. He is twelve years older than me. At first he played in San Francisco, where he grew up, but he was so good that the Yankees offered him a contract. This is a famous team in New York City.

A—If he is twelve years older than you, he is still a young man.

M—He was thirty-seven when he retired. Some of them play longer, but he had been injured often. He explained to me that a baseball player is a piece of machinery submitted to great stress. Sooner or later, the weaker parts will break. In his case, it was the elbow, which is quite common. For some players, it is the knee or the shoulder.

He works for TV now. He reminded me of Jim Dougherty, who was also quite an athlete. Joe had been a physical ed instructor during the war, just like Jim. We had dinner together for twelve days on a row. With some prodding from the Fox public relations department, the journalists began to write that the rising star and the baseball champ were considering

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marriage. The Fox PR guys had made up my past to suit their whims, and now my future. I didn't even belong to myself. I was a slave, actually, I understand it now.

I told you I sometimes imagined my life as Norma Jean Dougherty, in the suburbs with children.

A—And a dog.

M—This is the kind of life Joe had in mind for me. I would retire, like him, and become a housewife. He hates it when I kiss the leading man in a movie. He was afraid I would accept the marriage proposal of the regiment in Korea. Plenty of rivals out there. He was even jealous of Natasha. Send her away, he says. How could I do such a thing? I needed her. He should go out with one of his female fans, not with a movie actress.

Gee, he was mad at me because I told some reporters that I wore no underwear.

A—Few people know about my work, but many people know I wear no socks.

M—I can see you like comfortable clothes, Al. You don't want to bother about the latest fashions. In my profession, clothes do matter. I don't discard underwear for the sake of convenience or comfort. I want to avoid bulges when I wear tight dresses. Often, a seamstress sews a dress right on my body before I enter the set.

Italian housewives wear honest cotton underwear, of course. What he can't stand is that millions of American men (and women) imagine Marilyn naked under her dress. So what? Don't call it prurience, call it publicity.

He wants me out of the movie set and into the kitchen. The man retired because his elbow is crushed to bits. I don't see why I should retire too. My professional attributes are still in working order.

I've been an actress eight years already. It's a job like any other. I have experience. I know how to do it. I like it, even though the set scares me. I've heard that many opera singers are scared, but they do step onto the stage and reach their high Cs or whatever. If I gave up my job, I would lose part of myself. Whether it's the best part I don't know. But it makes me proud to become someone else on screen and give pleasure to people in movie theaters.

I told you I needed Whitey Snyder to turn me into Marilyn with his magic brush. It's not even true. I can do it myself. I know makeup, I know hairdressing. I know sound recording, I know lighting. I'm a movie professional. I don't want to do anything else.

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You know something, Al? We're both interested in light. You bend light rays or whatever. Well, light is my truest friend. Enhances my red lips and my golden hair. Never lets me down.

Lighting technicians have these big projectors, with all kinds of lenses and accessories. They can produce a flood of light or a thin light beam. Then light goes through a camera lens and plays chemical tricks on the film.

I've never seen a bent light ray, though. When you look through the camera's eyepiece, you see what's in front of you. Cameras don't shoot around corners. Straight as an arrow.

A—An arrow doesn't follow a straight line. Eventually, it falls onto the ground.

Well, if you look at a camera lens from very close, you'll see that light changes direction when it enters the lens. So the Marilyn who appears on screen is the result of many bent light rays.

Such an effect puzzled the ancient Greeks. If you plant a straight stick in clear water near the shore of a river or the sea, with half of it under water and half outside, it seems broken. The reason is that light rays move a little slower in water than in air, so they change direction when they enter water. This is true for glass too. The bending of light rays by lenses is what allows your pictures to appear on film.

General relativity's bent light rays are something else altogether. They change direction because space is curved near a massive body, for example a star. The sun being the nearest star, Eddington measured the deflection of a light ray near the sun.

M—The sun is a star?

A—Oh yes.

M—But it's so much bigger than a star.

A—It's quite a small star, actually. It seems big because it is close. Most stars are so far from us that they appear like dots in the sky.

M—I want to ask you a question. Even during an eclipse, the sun bends light rays?

A—An eclipse means the moon is hiding the sun. Although it's hidden, it's still there. We don't usually see any star, near the sun or anywhere else, in the daytime. That's why we need to wait for an eclipse.

Let me draw a picture on your notebook to explain what happens.



The actual star is hidden behind the sun. If light went straight, we couldn't see it. But we do see it, near the sun, slightly off its usual location. The offset is tiny: like a penny one and a half mile away. You could say that Eddington's camera shoots around the corners, with the help of the sun. Nothing now stood in the way of his expedition. I was convinced he would see the bent rays. It couldn't be otherwise.

I hoped the various countries of Europe would reconcile after the awful slaughter. As I hadn't been very successful with my pacifist ideas during the war, I had stopped meddling in politics. Besides, I was busy exploring the fourth dimension. Now that the war and my exploration were over, I climbed down from my ivory tower. I went to meetings of the *Union for a New Fatherland*, which had survived underground after being banned. I sent a petition to the heads of State who were meeting in Versailles, near Paris, to sign a peace treaty: "Please don't design a peace that will give birth to a new war!" They didn't listen to me. The sanctions they forced onto the German people were so harsh that hunger and misery spread over the land, building up hidden resentment.

I refused to become an absentee professor in Leiden and Zurich, but I accepted to give conferences. I went to Zurich in February, 1919. I was to explain Special and General Relativity in my good old Polytechnikum. So many people wanted to listen to me that the authorities decided to sell tickets, which was really unheard of.

M—In America, free tickets are unheard of.

A—Here I am, trying to enter the conference hall.

"Where is your ticket?" the guard asks.

"I don't have a ticket."

"If you haven't bought a ticket, you can't come in!"

At the end of my conference, some students asked me to talk about quantum theory.

"I'm not sure I understand the latest developments," I told them. "You'd better consult a specialist."

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I had played a leading part in the launching of quantum theory, but it was moving in a direction that I couldn't accept. My colleagues were discovering, as I had done, that particles sometimes seemed to act in a random manner. The youngest physicists were willing to consider chance a normal component of particle behavior. I found that impossible. I thought the theory wasn't complete.

While I was in Zurich, Mileva and I were divorced by the cantonal court. Our lawyers had provided an official reason—my adultery. As I had committed this terrible crime (and confessed), I deserved to be punished. The judge ordered me not to marry again for two years.

I traveled to Zurich again in May for my next conference. People now knew that, after one or two feeble introductory jokes, I wrote equations and Greek letters on the blackboard for hours. The conference room was almost empty. The authorities and I agreed to put an end to the series of lectures.

As soon as I was back in Berlin, in June, 1919, I married Elsa.

M—Although the judge had forbidden it?

A—I didn't have to go to Switzerland again, so there was no risk I'd be jailed for disobeying the authorities.



I exchanged my small abode for an attic located just above Elsa's apartment. There I moved my office, which still doubled as the headquarters of the *Kaiser Wilhelm Institute for Physics*. I found a place on the wall, between my bookshelves, to hang my pictures of Newton and Faraday.

M—The two pictures behind you?

A—Yes, Newton with the wig.

Elsa left me alone as a physicist, so I accepted a few things she required of me as a husband. I combed my hair now and then. I began using a toothbrush, although I considered this gadget perfectly useless. I let her sew my hanging buttons and torn hems, and wash my shirts more often than I thought necessary.

M—You considered a toothbrush useless?

A—Do you think Socrates and Plato used one?

M—Sure. It was made with boar's bristle or something.

A—Exactly what Elsa said. But she couldn't prove it.

The small world of physics was entering a period of turmoil. Dignified professors were as jittery and feverish as molecules in a heated gas. According to a rumor, the victorious countries demanded that Walther Nernst and Fritz Haber be captured and handed over, so they could be judged as war criminals. Meanwhile, the Nobel committee gave the 1918 chemistry prize to Haber. While it rewarded his technique for extracting fertilizer from thin air rather than his invention of high explosives and deadly gases, it did seem somewhat questionable. The Solvay conference announced that its first post-war meeting would take place in April, 1921. Lorentz wrote to me.

"We haven't invited the Germans, because their presence in Brussels right now would arouse painful feelings. However, we haven't said that this policy applies to all Germans. The door is open for you. Let us hope that the others will be allowed to return in the future too."

I had neither signed the manifesto of the ninety-three intellectuals, nor perfected deadly gases. The secretary of the Solvay conference declared I could be invited because my nationality was "undefined." They knew I was German, but had decided to consider me "international" so I could join them. I don't know whether I felt German, international or undefined, but I refused to go to Brussels without my colleagues.

I became the target of attacks by stupid people on both sides of the border. When Marie Curie and Paul Langevin invited me to Paris, a French professor protested: "Do we really need to invite the citizens of neutral nations who have spent the entire war in Germany?" Among my dear colleagues, some still thought that only Germany could "save the White Race." They considered me a traitor. I had not only rejected my nationality as a teenager, but also supported the enemy by calling for peace.

On September 27th, 1919, I received a telegram from Lorentz.

Eddington found deviation. According to preliminary results, between one and two seconds of arc.

When a postman delivered the telegram, I was talking to a young woman who worked with Haber. I handed the piece of paper to her.

“Look, this might interest you.”

“But, Herr Professor, this is fantastic! The theory is confirmed! You must be the happiest of men. This is the grandest day in your life!”

“Well, I knew the theory was right.”

“Yes, but what if the telegram had announced that the expedition had found no deviation?”

“In that case, I would have felt sorry for the Good Lord. The theory is really right!”

I went to Holland so I could get more details.

On May 29th, the day of the eclipse, Eddington had set his special telescopes, coronoscopes and cameras on Principe, a Portuguese island in the gulf of Guinea. Davidson, his colleague, was ready to tackle the same experiment in Brazil. Do you know why they chose two different places?

M—How should I know? Has this anything to do with astronomy or geometry or what?

A—Weather, my dear. If the sky is cloudy, you see no sun, eclipse or no eclipse. That’s why observatories are usually located in fair-sky places like Southern California or Arizona. They hoped to have good weather in one of the two locations at least.

M—I guess they succeeded. You told me this was the event that made you famous.

A—Don’t jump to conclusions. There were clouds in both places. On Principe, the sky was gray, but the clouds parted just before the end of the eclipse. An assistant changed the photographic plates as fast as possible. Another removed a screen he held in front of the lens, measuring exposure length with a metronome. Because of the clouds, only nine photographs out of sixteen could be analyzed. On one of them, five stars were clearly visible.

In Brazil, the observations were to take place in a remote and wild region. The peasants who lived there admired the strange machines pointing toward the sky.

“Please use your magic wands to call the gods,” they asked the astronomers. “Tell them to send some rain. Even the very old people who have great-grandchildren don’t remember

a dry spell that long. Cattle and people are starving. Soon, there won't be any more water in the rivers and we'll die of thirst."

I don't know how the astronomers did it, but as soon as they pointed their telescopes and special high speed cameras at the sky, it started to rain and it rained and it rained. The natives were delighted, of course. They thought the foreigners had magical powers. They hoped they'd leave the rainmaking gadgets behind so that nobody would starve anymore. Eddington and his assistants were not delighted at all. In the end, the gods granted them a few seconds without rain during the eclipse, so they were able to take seven photographs.

M—How long does the eclipse last?

A—Five minutes at most.

They had to stay another two months to photograph the Hyades stars at night, with no sun bending the light rays, in order to establish reference pictures.

The astronomers in Greenwich and Cambridge spent months comparing the eclipse pictures and the night pictures. The deflection of the light rays appeared on the plates as a tiny shift of the stars—less than a thousandth of an inch. Measuring the shift with a micrometer, under powerful magnifiers, confirmed my predictions.

On November 6th, Eddington reported his findings to the Royal Astronomical Society, under a big portrait of Newton. The sun did bend a ray of light. The angle was 1.75 second, as predicted by General Relativity. They told me that you could feel the same kind of silent tension in the public as when Othello prepares to kill Desdemona. All the princes and lords of English science were there. J. J. Thompson, president of the *Royal Society* and Newton's heir, made a speech.

"This is the most important result since Newton's day, and it is fitting that it should be announced at a meeting of the Society so closely connected with him. The result is one of the highest achievements of human thought."

The next day, press agencies and newspapers spread the news around the globe. Suddenly, I wasn't "professor Einstein" anymore, but "the famous professor Einstein, whose theory of relativity has knocked over our conception of the universe." A mere eclipse had given weight to my theory, which had ceased to be a vague mathematical abstraction. Not only did people compare me to Newton, as J. J. Thompson had done, but also to Euclid, Aristotle, Copernicus, Darwin. Journalists and photographers kept a vigil in front of my door.

M—I know that.

A—You must understand something, Marilyn. I brought good news. After the big butchery of the war, all the mass-killing with the help of science, here was a British scientist proving the theories of a German one about the vast reaches of space. Instead of fighting in the mud of the trenches, the former enemies were looking at the sky together. Seen from the stars, the miserable conflicts that shook our planet didn't seem so important. Of course, people didn't really know what it was all about. When Eddington talked to the Royal Society, most of the members understood as little as the Berlin academicians to whom I has explained the theory four years before. Afterward, during a small cocktail party they had, one of them came to Eddington.

"Say, Eddington, I have heard that three men only understand this theory of relativity."

"Er, I don't know..."

"Don't be so modest. You're surely one of them, old chap."

"It's not what you think. I was wondering who the third man might be."

M—You're the first one and he is the second one, is that it?

A—Indeed, I am presumed to understand my own theory. Journalists outside scientific magazines are allowed to write without worrying about truth or plain common sense. They spread the rumor that only twelve people understood relativity. This was a clever excuse for their laziness. They didn't take the time to study it themselves. I knew more than a dozen physicists who could be called relativity specialists, and each of them had more than twelve students who understood the theory perfectly well. Baffled journalists, especially in America, used their famous common sense to ask silly questions: "This gentleman may be a great astronomer, but he is a sad logician. If space is finite, will Mr. Einstein please tell us what lies beyond the end of space?"

M—Isn't this a good question? What does lie beyond the end of space?

A—The surface of the earth is finite. There is no end to it, though.

M—You mean that if you try to go to the end of space, you'll go around and come back to your starting point?

A—You would if you could go straight. This is not possible, because space is full of bumps. Even a light ray can't go straight. If you started walking straight ahead on the earth and rowed a boat across the oceans, you wouldn't come back to your starting point either. Every hill and mountain would put you off your intended straight path, then at sea you would be tossed by wind and waves and currents.

As you know, you can go around the earth in eighty days. To go around space might take eighty billion years.

I wrote to my mother: “Good news. The English expeditions did prove the deflection of light rays.” I thought she’d enjoy my success more than I did. Fame, the ultimate dream of so many men and women, crowned me all of a sudden. If I had hoped that it would make me happy, I would have been disappointed. I felt just the same as the day before. My stomach still hurt like hell.

Max Planck complimented me.

“So once more you’ve linked beauty, reality and truth. You told me several times that you didn’t doubt the validity of the theory, but this expedition is a good thing nevertheless. Unbelievers do have to accept proven facts, after all.”

The whole world sent me invitations. I received so much mail that I threw most of the letters away without opening them.

M—Didn’t you have a secretary? Elsa’s daughter, if I remember well.

A—She had married and another young lady had replaced her, but she was gone, too.

The newspapers published articles that I found closer to science fiction than to physics. Max Born, Freundlich and Eddington published good books. Several other authors published not so good books. *The Times* of London, considering that nobody knew my theory better than I did, asked me to explain it.

At the beginning of my article, I thanked England. While the war was still raging, it had set up expeditions to check theories completed and published in the country of its enemies. This proved that bridges were not broken between the scientific communities and that a reconciliation between the nations was possible.

I hope the technical part of my article was clear enough for the readers of *The Times*. I gave a short history of physics, from Galileo to Newton and from Maxwell to Lorentz. I showed we couldn’t accept a fixed speed for light without changing our ideas about space and time. I described the curved space of General Relativity. I concluded with a joke: “By an application of the theory of relativity to the taste of readers, today in Germany I am called a German man of science, and in England I am represented as a Swiss Jew. If I come to be regarded as a *bête noire* the descriptions will be reversed, and I shall become a Swiss Jew for the Germans and a German man of science for the English.” Could I know I was actually predicting the future?

I wasn't the only person who joked about my theory. Physicists and other people had lots of fun with its quirky features. J. J. Thompson advised the teachers of mathematics to give their courses on the sixth floor rather than on the first floor, since space becomes more Euclidian when you move away from the center of the Earth. The cartoonists loved to draw in the popular press a scientist with wild hair and thick mustache. In one of the cartoons, a young woman asked this ink Einstein what his profession was.

"I study physics."

"Really? But you're old! I stopped studying physics when I was eighteen!"

Somebody published a parody of *Alice in Wonderland* where space and time played tricks on her. The scientific magazines were full of comical poems about Einstein and his theories. Here's my favorite one:

*There was a young lady called Bright
Whose speed was much faster than light
She went out one day
In a relative way
And came back the previous night.*

M—Can you go faster than light?

A—No, you can't.

M—Why it that, actually?

A—When you reach a very high speed, not only are space and time modified, but also mass. It increases, so then to accelerate you need more energy. If you approach the speed of light, your mass tends to infinity and you need all the energy in the universe to accelerate. Only light can reach the speed of light.

Now I need to tell you about some scientists, including eminent physicists, who didn't understand my theory, or declared that nobody could understand it because it was rubbish. Not ordinary rubbish: Jewish rubbish.

M—You are Jewish, but how can a theory of physics be Jewish?

A—Troubled times followed the end of the war. Far-right and far-left groups fought a kind of civil war. I told you how a general strike forced Germany to surrender. The people who believed we were winning considered the strike an act of sabotage and treason. They imagined some kind of communist plot, controlled by the Russian Bolsheviks. Now, some of the top Soviets were Jewish. You may have heard of Trotsky, who was in charge of the Red Army. His real name was Bronstein. The proportion of Jews in the Russian revolution

wasn't that high, but still higher than in the general population. Many Jews embraced communism because it promised equality and the end of discrimination and antisemitism. So a small group of stupid Germans, which included disgruntled army officers and most of the future nazi leaders, pretended that a "Jewish plot" had deprived Germany of its victory. We lost, but it's not our fault. The Jews are guilty. The Jews were, what's the name in English, *Sündenbock*, you kill a he-goat...

M—Scapegoats.

A—Trotsky announced that the revolution would spread to the whole Earth. The rightists said this proved the Jews were plotting to dominate the world. A Polish—and Jewish—communist militant, Rosa Luxemburg, happened to be in a German jail at the end of the war. The workers freed her. Rightist army officers murdered her.

Some cranks founded a "German Scientists Workgroup for the Defense of Pure Science." Hitler himself, then an obscure foot soldier in a tiny group, wrote that the Jews had hijacked German education in order to muddle young Aryan minds with their poisonous ideas and bring down the German Nation. I had already acquired some fame in Germany, because of my pacifism, and now international glory put me on a pedestal. These crazy people saw me as a prominent member of the Jewish plot. They attacked the theory of relativity in public meetings. This Jewish and Bolshevik theory pretended to replace real honest German science. According to them, French science was superficial and English science was commercial. German science was deep and truthful. Then there was the fake Jewish science, which weaved vicious paradoxical inventions into a Talmudic cloth of lies. The theory of relativity was a typical Jewish hoax, which muddled minds by twisting space and distending time.

In Newton's physics, there are "forces" that move things. In General Relativity, I had replaced the forces of gravitation by a gravitational "field." These defenders of pure science pretended that forces were a sound powerful Aryan idea, which we cowardly Jews couldn't tolerate, so we tried to promote the weak disgusting field instead. This was all part of the Jewish plot! What could we do but laugh at their mumbo-jumbo? Later, of course, we stopped laughing.

Ehrenfest had told me about venomous antisemitism in Russia, but I hadn't expected such medieval prejudices to be revived in Germany. I was still young and foolish. I wrote an article in a popular Berlin daily to defend my theory. "You shouldn't stoop to answer this scum," my friends said. To assess the situation first hand, I went to a conference of the

German Scientists Workgroup with Max von Laue. I stood up and tried to correct an orator's obvious lie, but the crowd shouted and booed me to silence.

M—Max who?

A—Von Laue. I told you about him. He came to see me in Bern when I wrote my article in 1905.

M—Let me check something. All your friends are named Max. There's Max Planck, Max von Laue, Max Born.

A—I don't think there's a scientific law behind this strange phenomenon.

The most striking thing about this so-called conference took place outside the conference room, in the entrance hall. Several groups and political parties had set up booths. They were giving away hate literature and recruiting new members.

The German Scientists Workgroup for the Defense of Pure Science died in infancy, but its ideas survived and prospered. A true scientist, Philipp Lenard, adopted them and became my main opponent in the scientific community. At first, he was just a staunch nationalist. Everywhere in the world, the unit of electrical intensity is called "*ampère*." In his Heidelberg university lab, Lenard called it "weber," to avoid the disgusting French name.



He was a good physicist, who had received the Nobel prize in 1905 for his research on cathode rays. He was also a specialist of the photoelectric effect, which I had studied as part of my research on quanta. I had met him several times in conferences. He had never shown any hostility. At first, he seemed to oppose the theory of relativity for scientific reasons, but later it became clear that he hated me as a man and as a Jew.

M—Jesus said “Love thy neighbor” and even “Love thy enemies.” If people already loved everybody, you wouldn’t need to give them this advice. They have lots of hate in them. There’s lots of hate in America.

A—During the war, people hate the enemy. Once the war is over, they hate the neighbor. Here in the States, Mr. McCarthy convinced the Americans to find enemies in their midst and hate them.

M—But this is a good thing for the movie business. The brave cowboy or soldier or detective kills bad people on the screen, then everybody is happy.

A—Elsa was worried.

“Think about your health, Albertle. Your digestive tract is in shambles, the doctor said. I don’t like those circles under your eyes.”

“I wake up one morning and I have become the most famous Jew in Germany. I attract the hate of the antisemites like a lightning rod. I have never desired nor decided to become famous. I find the price to pay slightly too high.”

“This turmoil will settle down by and by. Time heals everything.”

“Maybe I should go to Leiden and play Mozart sonatas with Paul. I’ve also received a proposition from the university of Cambridge. I would work with Rutherford. He isn’t very fond of me, but he is a fantastic experimenter.”

“You forget that you don’t speak English.”

“I’ll learn. You’ll learn too. They say England is a beautiful country.”

Arnold Sommerfeld, who had just become president of the Society of German Physicists, begged me “not to desert.” He said that all the important physicists supported me, except Lenard. Then Max Planck asked me whether I wanted to punish the real German physicists for the despicable slanders of mock scientists. “True German science needs you, Einstein,” he said. Intellectuals like the writer Stefan Zweig and the theater director Max Reinhardt wrote articles to express their solidarity.

A journalist interviewed me.

“Are you going to leave Germany?”

“If I left, would that be surprising? I feel like a man lying in a magnificent bed, but plagued by bedbugs. I haven’t decided anything yet, I must say. Let’s wait and see.”

I remained in Berlin, after all. The German republic was young and fragile. If people of good will let it down, what would become of it? My fame put me in a position to help my human brothers by praising democracy and peace. I couldn’t forfeit my duty. I didn’t want

to let down Max Planck and my other German colleagues just when the world was shunning them. Also, I hated to imagine Lenard and his clique rejoicing because I was gone.

I went to a lake most afternoons and sailed, hoping to restore my serene mood. In the evening, I played the violin with friends. When I performed some Bach or Beethoven piece, I couldn't curse all the Germans anymore.

Some people I knew in the new government told me I should stay away from the far-right crazies. They were dangerous. I was even advised to leave Berlin for a while. I couldn't go right away, because my mother was staying in my home with my sister Maja. She was terminally ill with cancer. She was sixty-two. I tried to find the best doctors, but she died after three months.

M—Oh, I'm sorry.

A—Everybody has to die. I talked about it with Hedwig, the wife of my friend Max Born, who had lost her own mother too. "One feels right into one's bones what ties of blood mean," I said. "I saw my poor mother in torturing agony. There is no consolation. We all have to bear these terrible blows of fate, for they are an inescapable part of life."

After my mother's death, I went to Kiel, sailed on the Baltic sea and worked on improving the gyrocompass. I had an idea for eliminating friction in the gyroscope. Friction is a big problem in machines. Usually, we try to solve it with oil or grease. I imagined a magnetic system that would keep the main rotating wheel floating in the air. No more friction!

As Denmark wasn't far, I went and met Niels Bohr, who had devised the wonderful new quantic model of the atom. Now he was one of the young Turks who pushed quantum theory beyond what I considered decent borders.



He looked like a huge and childish Scandinavian peasant, with both feet set solidly on the ground.

“Come on, Bohr, you seem to own a good mind and lots of common sense. How can you accept these crazy ideas? Atoms that act as if they had a free will. A reality that we won’t ever be able to know and understand fully...”

“You’re a theorist, Einstein. You build a theory as simple and harmonious as possible, then you check that it does describe reality. I start from reality. I observe and experiment. If what I find doesn’t make sense, so be it!”

In spite of our differing ideas, we became good friends.

I also visited my friends in Holland. Then I gave a conference in Prague. I saw Philipp Frank.

M—Frank. I wrote his name recently, I think.

A—He had taken over my job in the German university.

M—Oh yes. He came to Berlin and Elsa told him there was no better husband than a phy-phy-physicist.

A—He had just married. As he hadn’t found an apartment yet, he lived with his young wife in his university office—that is, my former office. They let me sleep in that strange bedroom and moved next door into a chemistry lab. I slept very well, actually.

Before the war, Prague belonged to Austria and the German minority held the reins of power. Now that Czechoslovakia had been created, the Germans were considered second-class citizens. Their newspapers announced my visit on their front page, glorifying “the German race that has produced a man like Einstein.” I didn’t want to hold the flag for the supposed superiority of Germany. I didn’t want to represent the supposed Jewish race either. I just wanted to be Albert Einstein.

I gave a first conference in front of a crowd who asked me wacky questions about light and time, then a second conference in front of the university professors, who asked the same questions. Then the mayor or whoever invited me to a cocktail party where I was to meet the so-called important people. They asked me to make a speech. I thought I had spoken enough already.

“I’m sure it will be more pleasant and easier to understand if I play a piece for you on my violin.”

The next day, some students came to see me in the office. One of them said he had been hoping to meet me for a long time.

“Herr Professor, I have studied your equation . Look at this picture... I have found a way to use the energy contained within the atom to produce a new kind of explosive. Much more powerful than dynamite! We need to discuss it.”

“I don’t want to discuss such a thing. Your equations and pictures are foolish. It doesn’t make sense at all.”

M—Had he invented the atom bomb?

A—Certainly not. In the bomb, neutrons break the nucleus of uranium atoms. The neutron hadn’t been discovered yet, and nobody knew that the uranium nucleus could be broken.

By the way, there’s something I need to tell you about my wonderful formula. Lenard thought it might become useful someday. He also imagined amazing high explosives, I guess. So, in a book he wrote, he distinguished it from the “fake and vicious Jewish science” of relativity. He attributed its invention to Hasenöhl, an Austrian physicist who had studied “radiation pressure.” I had met Hasenöhl. He admired me sincerely. He couldn’t protest against this erroneous attribution, alas, as he had been killed during the war. Jews are plagiarists. This was a common slander. Richard Wagner wrote a whole book to say that Jews cannot compose music, but only copy it. .

From Prague I went to Vienna. The young Austrian republic had declared an amnesty and Friedrich Adler was free. I was glad to see him again, of course. Later, he became a great socialist leader.

I gave the usual lectures. I was staying at the home of a physicist. His wife found it surprising that I traveled with a small bag containing a pair of pants and a shirt.

“Haven’t you forgotten anything, Herr Professor?”

“Well, I don’t know.”

“You don’t have any socks.”

“I don’t believe in socks.”

“No slippers.”

“Who needs slippers?”

“No toiletries?”

“Oh, you’re right... I forgot them!”

M—Not really. You didn’t believe in toiletries either. No toothbrush, no comb. If you wanted to shave, you could go to a barber.

A—In any case, when I carried too much luggage, I left most of it abroad. Elsa laughed about it when I came back home.

“You’re lucky your head is screwed tightly on your shoulders, otherwise you would have left it over there.”

The wife of the Vienna physicist ironed my spare pants before the conference, but I forgot all about it and spoke to the students in my wrinkled pants.

The mark was losing its value fast. I gave conferences all over Europe to earn real money and send it to Mileva. This real money couldn’t transit through Germany, where it would have vanished into thin air. Ehrenfest became my secret banker. We communicated in code. “The new salts have arrived,” he wrote to me. “The *Au* ions concentration is $6,7 \times 10^3$.” *Au* is the chemical symbol for gold. He had received 6,700 florins, which he sent to Mileva in Zurich.

My trips doubled as vacations. After working night and day for years, I was entitled to some rest. Besides, I considered that I promoted reconciliation. My enemies denounced my “internationalism.” They wasted ink and paper to rant about me. “Einstein goes abroad and shakes hands with people who starve Germany. Although he renounced his nationality as a teenager and refused to support Germany during the war, he pretends to represent German science. He tries to impress the masses with his bogus theories, which failed to convince most serious scientists.”

Do you know what, Marilyn? This hurly-burly produced one remarkable result: for the first time in my life, I felt Jewish. I can thank the antisemites. They forced me to recognize my Jewishness, which I now consider an important part of myself. The enemies of the Jews turned me into a Jew. When Lenard attacked “Jewish science,” he meant me. The antisemites didn’t wait long before mentioning me by name.

M—Most of the men I felt close to were Jewish, you know. Joe Schenk, Johnny Hyde, Fred Karger.

I’ve fallen in love with a Jewish man, Arthur Miller. I was shooting one of my worthless Fox movies. He came on the set with his friend Elia Kazan. I was going out with Kazan at the time. Three years ago. Arthur Miller is a playwright who wrote a famous play, *Death Of A Salesman*. He is very tall and slender and wears glasses like a professor. He reminded me of President Lincoln (except for the glasses). As soon as we looked at each other, we fell in love. They call this “love at first sight.” We’re going to marry.

A—Are you not married already? I’ve forgotten his name—the baseball player.

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M—Joe? You've never seen me with him, have you? He's playing cards and drinking with his ball pals. He won't let me be myself. It's all over between us. We'll divorce and I'll marry Arthur. He'll also divorce, of course.

A—A married man.

M—He has children, too, but it doesn't matter.

A—He didn't fall in love with the star?

M—I wasn't a star yet when we met. I had shot the calendar pictures, but only the first year had been published and nobody had recognized me.

My first movie as a star was *Niagara*. My first color movie, too. I played a difficult part. Joseph Cotten was my husband. I wanted my lover to kill him. I was graduating from dumb blonde to vicious blonde. I did have to roll my hips, though. I also got to sing a sexy song. It was supposed to take place at Niagara Falls, so we shot some scenes there and got soaked through. I was afraid I wouldn't be up to the task. The whole movie rested on my shoulder, since I was the female lead. I had never carried such a heavy responsibility.

A—What about the crazy babysitter?

M—You've got a good memory, Albert. This was different. *Don't bother to knock* belonged to what we call the B series, quickly and cheaply made movies. Besides, I shared top billing with Anne Bancroft. *Niagara* was A series. Fox invested big money and expected good returns. The director, Henry Hathaway, had made that great love story, *Peter Ibbetson*. He had a reputation for treating actors harshly, but he was nice to me. He said I played quite well. He blamed the studio for not recognizing my natural talent sooner.

While we were shooting in Niagara Falls, I would go to New York City and meet Joe. We were not married yet. I went to Yankee Stadium and watched some stupid baseball game with him. The papers put our picture on the front page. After the match, we ate with his pals in some Italian joint near Yankee Stadium. All they talked about was baseball. I was bored to death and could hardly keep my eyes open. I would have liked to spend my evenings at the theater, but this was just something he didn't ever do. What a guy!

I knew I had become a real star when the studio people stopped calling me Marilyn.

A—What did they call you?

M—Miss Monroe. They gave me a first-class dressing-room, known as Marlene Dietrich's room. My fans were sending more than five thousand letters every week.

Then they put me in a very good movie, *Gentlemen Prefer Blondes*.

A—Wasn't *Niagara* a good movie?

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M—I don't know. It wasn't much fun. The story was rather unpleasant. I'm not sure you'd want to see it twice.

Gentlemen Prefer Blondes is a comedy; and a very funny one. Howard Hawks directed it. You may remember he had directed *Monkey Business*, which was really hilarious. I shared top billing with Jane Russell. I was the real star, though. The title says it all: she was the brunette, I was the blonde. What do gentlemen prefer?

We played two gold-diggers trying to seduce rich old geezers on a steamship sailing to Europe. My old geezer was Charles Coburn, the same one as in *Monkey Business*. He is a great old guy. He was already sixty or so when he started acting. So you could still do it, Albert.

A—I'll wait till I'm sixty.

M—Jane Russell has grown up in Los Angeles, like me, and we have both been pupils in Emerson High. She has dug gold in real life: her boyfriend, Howard Hugues, is one of the richest men in America. He founded the TWA airline company. He built airplanes during the war, I think. He started to produce movies so he could launch Jane's career. Although the journalists pretended we were rivals, at each other's throat, we became good friends. She saw that the camera made me nervous and joked to help me relax.

I am always afraid I'll look ugly or seem stupid. I get up at 6 in the morning and come to the Studio on time, but then I spend hours getting made up and dressed. Gladys Rasmussen takes care of my hair. She begins with a perm, then she bleaches my hair with peroxide and tints it with a platinum-silver decoction. Whitey Snyder lays a base, paints my eyes, applies my secret lipstick formula—adding a not-so-secret touch of vaseline to keep my lips looking wet. Then my dresser helps me put on my dress. This is when she may sew it right over my body so it fits tightly. At this precise moment, I notice something awful: I'm such a fool—I forgot to take my shower! I tend to be absent-minded, especially in the morning. This is because of the darn sleeping-pills. Shooting the film makes me so edgy that I can't fall asleep at night, although I feel exhausted. I know sleeping-pills are bad, but what can I do? I mean, if I don't sleep, I bet I'll have bags under my eyes and ugly red blotches on my skin. Okay, so I take my shower, then Gladys and Whitey and the dresser begin all over again. While I was supposed to play my scene at 10, it is already 2 PM. I'm so late that I panic. Mr. Hawks will be mad at me, I'm sure. When I come to the set, I try to read his mood. He pretends to joke, but his eyes do not laugh. I forget my lines. I can't speak anymore. Gee, I feel so stupid! I return to my dressing room and cry. I go to

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the toilet and throw up. Mr. Hawks sends Jane after me. She comforts me and consoles me: “Don’t worry, Marilyn. Take it easy...” and so on. How would I cope without her?

Scared as I was, I performed a big musical number. I sang “Diamonds are a Girl’s Best Friends” while dancing with men on the ship’s stage.

A—Diamonds? That they be so expensive is a mystery to a physicist. They’re just crystallized carbon, you know.

M—You should invent a way of making diamonds. Then their price would go down!

Mr. Zanuck found me so good that he wouldn’t believe I was singing myself. He thought I had been dubbed.

Although I was the blonde and the star, I only earned my contract salary: 1,250 dollars per week, which amounted to 15,000 dollars or so for the length of the shooting. Jane received 150,000 dollars. Ten times more. I had to pay Natasha and my agents, send money for my mother’s upkeep, buy food. Besides, I was now taking theater lessons with Mr. Chekhov, a nephew of the famous Russian author, who studied in Moscow with Stanislavski. Natasha helped me prepare for my roles and rehearse them, but I wanted to enlarge my range as an actress.

Mr. Chekhov had his own method for teaching theater acting. He invented strange exercises. I had to stretch while imagining I was extremely tall and heavy, then shrivel up and think I was a midget.

“You must find your inner self,” he said, “develop the harmony between your body and your mind, let your guts control your playing. When you know yourself better, you’ll be able to decide whether a part is for you or not.”

Hey, Al, you told me you saw the prints of the stars’ hands and feet in front of Grauman’s Chinese Theater.

A—Oh yes.

M—Well, Jane and I printed our hands and feet in cement when *Gentlemen Prefer Blondes* had its premiere there. This was in August 1953, a little more than one year ago. I really felt I had made it. Even if my career collapsed, my mementoes would remain engraved forever near Gloria Swanson’s and Greta Garbo’s. This is like receiving a star’s diploma. As Jane had even bigger boobs than me, I suggested she print them.

“I’ll do it if you leave them an impression of your number one asset.”

“What’s that?”

“Why, your ass, of course!”

A—When I first came to your country, I did notice that Americans were fascinated or obsessed by “boobs” and “ass.”

M—When was that?

A—In 1921. This was the time when the antisemites had turned me into a Jew and the police advised me to leave town. So you know what? Just then, Chaim Weizmann, the head of the international Zionist organization, invited me to go on a tour of America with him.

In Berlin, I sometimes met a Zionist leader, Kurt Blumenfeld.

“The Jews won’t be safe until they have their own country,” he said.

“You want to change our Jewish intellectuals into peasants! Moreover, the Turks won’t let you settle over there.”

“The English have expelled the Turks from most of the Middle East during the war.”

“I’m still opposed to nationalism in all its shapes, but I’m beginning to admit that Zionism may be necessary. Let me know if I can make myself useful to the cause, now that I’ve become a famous Jew.”

The Zionist project didn’t seem as foolish to me as when Max Brod and others had tried to convince me of its worth in Prague. Before the war, I didn’t even feel Jewish. I never entered a synagogue. Mileva was Serbian orthodox when I married her, then had converted to catholicism with the boys during a trip in Austria. I certainly knew more about the catholic religion, which I had been taught in school in Munich, than about the Jewish one. My friend Michele Besso, who belonged to an old Italian Jewish family, used to tell me I was making a mistake: “You’re Jewish, Alberto. This is not something you can ignore and forget. You shouldn’t, anyway.”

Most German Jews disliked Zionists. “We’re good Germans,” they said. “We like our country. We’re proud of our great men: Kant, Goethe, Beethoven. Why should we go and settle among Arabs in some far-away land?” They pretended not to notice that the number of ugly acts against Jews was rising. Or they blamed the turmoil on an invasion of uncouth Polish and Russian Jews, who were not as civilized as good German Jews. Did they hope to earn the respect of the so-called “Aryans” by despising their own Jewish brothers? I told Blumenfeld what I thought about their cowardice.

“A German Jew who works for the Jewish people and for the Jewish homeland in Palestine doesn’t cease to be German any more than a Jew who becomes a Christian and changes his name ceases to be a Jew.”

M—Wait. Does a German Jew belong to the German people or to the Jewish people? What is a Jew exactly? None of my Jewish friends has ever been able to explain it to me.

A—I've thought about that a lot. You can feel Jewish, as I do, without observing religious rites. I don't believe in the Bible's God. I don't follow the dictates of religion or custom. I don't think I belong to a specific Jewish "race" or "nation," but only to a kind of group sharing some traditions and memories. I think some common traits have united the Jews for thousands of years: an ideal of mutual aid and social justice, an almost fanatical love of justice, a moral attitude favorable to life in all its forms, a kind of crazy joy and amazement at the beauty of this world. The Jews freed slaves and canceled debts every seventh year. All the people on earth who rest one day out of seven owe it to the Jews.

M—Some people even rest two days! I bet you didn't stop on week-ends when you were reshaping the universe, Al.

A—I was exhibiting another vital Jewish trait: the devotion to intellectual work. I hold it responsible for the extent of contribution by Jews to the progress of knowledge. The Jews love knowledge for its own sake. What's more, they move it forward by keeping a strong critical component in their intellectual striving.

What we Jews know for sure is that we exist in the eye of others. They accused us of poisoning wells and murdering babies. Then they said we were pretending to assimilate, but were actually hiding so we could plot and seize power. At the same time, we were so inflexible that we could not fit in any society. This doesn't make sense.

Do you remember Haber? He was a converted assimilated Jew.

M—He invented these awful explosives and gasses.

A—*Ach*, but Chaim Weizmann did the same thing on the other side. He was born in Russia, then he emigrated to England. He was a chemist, like Haber. At the end of the war; all the empires vanished, including the Ottoman empire. England took charge of Irak, Palestine and other spoils. To reward Weizmann for his wonderful explosives and gasses, Lord Balfour, who headed the Foreign Office, declared that the Jews had a right to a homeland in Palestine. Blumenfeld told me that Weizmann was preparing a grand American tour and wondered whether I might accept to go along. He hoped to convince the American Jews to finance the settling of Jews in Palestine, and also the founding of a "Hebrew University" in Jerusalem.

"I'm neither an orator nor a politician, Blumenfeld. You don't want me for my abilities, but only for my name. Its publicity value is so high that a substantial effect is expected among the rich tribal companions in Dollaria."

"Don't play down your abilities, Herr Professor. As a scientist, you can explain to the Americans that we need a world-class university in Jerusalem."

While I hadn't decided anything yet, Fritz Haber entered my office in the Academy. Well, he was certainly not a Zionist.

"Are you crazy, Einstein?" he asked me. "Whether you like it or not, to the whole world you are today the most important German Jew. If you fraternize just now with the British and their friends, people in this country will see it as evidence of the Jews' disloyalty. Many Jews gave their blood for their country during the war, like the loyal Germans they are, so the number of people who call them 'foreigners at heart' has decreased to a few handfuls. Do you wish to wipe out this gain by your behavior? By helping Weizmann, you're reviving the slander: you're implying that the German Jews are getting ready to leave Germany for this so-called homeland in Palestine. You would hurt the career of many Jews in the universities and elsewhere, as well as your own."

"Dear Haber! Far more is involved than loyalty or disloyalty. The very future of our Jewish tribe is at stake. The creation of a Jewish university fills me with particular joy, as I've seen recently how the German universities prevent splendid young Jewish students, especially the Polish and Russian ones, from receiving the true reward of their labor."

Whenever I saw Haber, I thought about these deadly gases he had brewed. His visit helped me make up my mind. I told Blumenfeld I was ready to go.

M—So Haber helped Zionism, in a way.

A—The antisemites made me feel Jewish. An anti-Zionist turned me into a Zionist.

M—You have a contrarian character.

A—I like to consider myself a rebel. Actually, I was a half-hearted Zionist at best. I exchanged letters now and then with my former student Maurice Solovine, who had settled in Paris. I wrote to him before sailing. "I am not so keen about this trip to America. The Zionists are bringing me as bait to fish dollars from the deep pockets of the American Jews. I'd be glad to let you go in my place if it were possible. You know I don't have a patriotic fiber in me. I hope that the Jews, because of the small size and weakness of the colony in Palestine, will escape the madness of power."

I sailed on March 21st, 1921 on the *Rotterdam* with Elsa, Blumenfeld, Chaim Weizmann and his wife. Weizmann had a jolly mujik's head, with a mustache and a goatee like Lenin.

I was somewhat surprised to discover we were traveling first-class.

"I thought you would have bought third-class tickets, Herr Weizmann. The purpose of our trip is to gather some funds, isn't it? So we should try to save money rather than spend it."

"Bah. To such a situation, mathematics don't apply. You know nothing about politics, Einstein. We're the official delegation of the Zionist Organization. If we traveled third-class, the American Jews would see us as shnorrers and give us bread crumbs."

"Then maybe you should shave your beard, Herr Weizmann. You look like Lenin. This will frighten our American brothers."

When we entered New York harbor, a tugboat came alongside our ship. A swarm of journalists and photographers climbed aboard.

M—Your fist encounter with the hounds of the great American press.

A—I didn't understand right away why they were running and where to. Me? Why me? This was quite unexpected. They came straight to the point.

"Professor Einstein, could you explain your theory in one sentence?"

"Gentlemen, your European colleagues are less direct, but they sometimes ask me similar questions, so I have a ready and maybe whimsical, if slightly simplified, answer to your question. Will you allow me two sentences?"

"Go ahead, professor! Three if you like!"

"Before, it was believed that if all material things vanished from the universe, time and space would remain. According to my new theory of relativity, time and space disappear with material things."

M—It may be simplified, but it is still too difficult for me.

A—The journalists were happy to have two sentences that they could reproduce, but what did they understand? Nobody can really understand what it means. The universe is made of the things in it, that's all. Our mind can barely grasp the implications.

Hoping to get an explanation fit for the standard American reader, they talked to Elsa.

"Mrs. Einstein, do you understand your husband's theory?"

"Oh no I don't, but it doesn't prevent me from being happy."

Some desperate fellows tried their luck with Frau Weizmann. She gave a clever answer.

“Professor Einstein explained his theory to me every single day of the crossing, so now I am fully convinced that he understands it.”

The journalists soon discovered that she was more interesting than poor old me. Mrs. Weizmann was something entirely new: a doctor! I guess there were no female doctors in America at the time. Even more surprising: she smoked!

A huge crowd was waiting for us on the dock. The mayor of New York himself stood on a wooden platform to welcome me. I wore my old coat and my everyday clothes. I carried my pipe in one hand and my violin in the other one. The journalists wrote that I looked like an artist. I’ve always thought there was a kind of kinship, actually. When I invent a theory to explain new observations or to simplify older theories, it seems to me that something like an artistic passion is moving me. This is similar, maybe, to what attracts a composer to music. The scientist and the artist are people who try to overcome the limitations of human nature.

Elsa glowed with pride.

“Look, Albertle, all these people came for you!”

“*Ach*, they would receive a victorious boxer with still greater enthusiasm.”

M—You could have said: “a movie star.”

A—A fifty-year old man with a familiar face was waiting for me in the hall of our hotel.

“Hey! Hey! Max Talmud! What a pleasant surprise! How long has it been? Twenty-five years?”

“My name is Talmey now. I have taken the American nationality.”

“I wouldn’t be here if you hadn’t offered me all these scientific books when I was a child!”

M—One more Max.

A—He was the first in the series, actually.

Well, I attended noisy Zionist meetings with Weizmann. I let him talk and talk, but it was obvious that the public was more interested in my silent self. They saw me as a heir to the great Jewish commentators of the Talmud—Rashi and the others. The meeting halls were always full, the public applauded with plenty of zest. They weren’t very much interested in Zionism. Weizmann expected a manna of dollars. He collected a drizzle.

I also gave conferences about relativity in universities and elsewhere. I spoke German while an interpreter translated my words into English. They often introduced me as a Swiss scientist, because the Germans, being former “enemy aliens,” were not welcome. The

students were not as serious as in Europe. They laughed loudly when I forgot to wet the sponge before erasing the blackboard, when I looked for my glasses which stood on my forehead, and so on. I enjoyed the great privilege of meeting professor Michelson in Chicago.

M—Is he famous? I have never heard about him.

A—He had set up an important experiment to prove that light obeyed Newton's laws. The experiment failed again and again. I told you about the big gap in 19th century physics: massive objects obeyed Newton's laws, but light didn't. Michelson was still trying to improve his tools and lenses, hoping that light would fall in line. I explained Special Relativity to him. His experiment hadn't failed. It was consistent with my theory.

By the way, Michelson sounds like an American name, but he was born in Poland and Jewish. His parents had moved to the States, when he was still a child, to escape persecution. He had been named Abraham, like my grandfather, before changing his name to Albert. I wondered what Lenard would have made of him. When he was trying to extend Newton's theory beyond its reach, was he practicing Jewish science?

In the university of Princeton, someone told me about a professor Miller, who pretended that Michelson had made a mistake. To prove his point, Miller had written many pages and built a very intricate apparatus. This was preposterous. All the newspapers quoted my comment: "Subtle is the Good Lord, but malicious he is not." The Princeton people liked this sentence so much that they engraved it on the wall somewhere.

We spent nearly three months in the United States. The president of the country, Mr. Harding, welcomed me to the White House as if I was an official representative of the whole Jewish people. I wondered whether I deserved such an honor. I saw my picture many times on the front page of your newspapers, with legends like: "The new Columbus of science, sailing the strange seas of pure thought."

I shared the front page with Thomas Edison, the famous inventor, who had just criticized higher education, saying it failed to teach anything really useful. Whoever applied for a job in his company had to answer a bunch of "practical questions," then got a position according to the results of this exam, without any consideration of diplomas or previous experience. The journalists, who loved a good quarrel, asked me to answer Edison's questionnaire.

"Here's the first question, Mr. Einstein. What is the speed of sound at sea level?"

“I don’t know. I won’t stuff my memory with chaff. When I need the answer to such a question, I look it up in a book.”

M—Edison wouldn’t have given you a job in his factory.

A—I heard that he excluded Jews anyway. Michelson was a skillful tinkerer, like Edison, but he was also a good physicist.

Your countrymen are sometimes excessive, Marilyn, but I found them younger and livelier than the Europeans, more social and helpful to each other, full of hope and enthusiasm. This explains the economic superiority of America, I think. I also noticed that women were freer and more fun than in Europe.

Strangely, I felt I had also met the Jewish people for the first time, in its diversity and singularity. The American Jews came from many different countries. Their Jewishness was what they had in common. A mysterious thing, this Jewishness. In spite of assimilation, however much the Jews adapt themselves in language and manners, a feeling of strangeness remains, and antisemitism doesn’t disappear. Nationalities do not want to fuse. Thus, we Jews should become more conscious of our being a people. The gathering of Jews in Palestine could help in that respect.

This trip would have exhausted me if Elsa hadn’t served as my manager. She kept the journalists at bay, telling them I needed to rest. She checked the food I was offered, because of my stomach’s weakness. She forced me to change into clean clothes before official receptions. Weizmann admired her, or maybe felt jealous.

“Your Elsa takes good care of you.”

“Bah, when women are at home, they take care of their furniture. Always moving and dusting it. When we’re traveling, I am the only furniture around, so my wife can’t help fussing and messing with me all day.”

M—You can’t say that, Al.

A—Can’t say what?

M—“When women are at home, they take care of their furniture.” As if all women did. I don’t. What about Marie Curie or Mrs. Weizmann? You chose a woman who liked dusting, so you shouldn’t complain. Or maybe you like to complain about your wife.

A—Let’s say I liked to joke about my wife. You’re right, though. Such a sentence should be seasoned with “often,” or “on the average.” Can’t say “Germans are murderers” either. Nor “Jews love money.” Maybe we scientists tend to generalize more than other people. When we say “protons,” you know, we mean “all the protons,” because they are

all alike. Whereas all the human beings are different. At my age, I find it difficult to change my manner of speaking. A true sentence would have been: "When she is at home, she takes care of her furniture." There are some definite differences between women and men. Thus, "Women carry babies in their womb" is right.

M—I hope it will be right for me some day.

A—On the way back from America, I stopped for a month in England. I met J. J. Thompson and many other scientists—including Eddington, to whom I owed my excessive fame—as well as George Bernard Shaw, Lord Rothschild and other important people.

I sat next to the archbishop of Canterbury during a big formal dinner.

"I tried to read several books on the subject of relativity, professor Einstein, but they have driven me to what I would call a state of intellectual desperation. Could you please just tell me one thing: can relativity affect religion?"

"It is a scientific theory, so it has nothing to do with religion. Physics helps us understand the world, but doesn't show us the path we should follow as human beings. This is the field of religion. It gives meaning to our life. It pretends to know this meaning through divine revelation, but I believe we actually owe its insights to the strong personalities who founded and developed the various religions."

Most newspapers wrote that my visit contained a promise of reconciliation, but some were hostile. The Royal Astronomy Society gave me its medal, then changed its royal astronomical mind. For the first time in thirty years, there was no medal in 1920. They did give it to me a few years later.

Do you remember Paul Langevin?

M—I don't always follow you when you speak about science or politics, but I get the racy parts. Marie Curie and Paul Langevin were suspected of having eloped to Brussels. In a movie, they'd end up falling into each other's arms.

A—Maybe they did. Anyway, Paul Langevin shared my pacifist outlook. In 1922, he invited me to give a lecture in Paris. I thought it was too risky and told him I had to refuse, although I would have loved to see him and dear Mrs. Curie again. The word *reconciliation* could be uttered in England or America, not in France. Some enlightened intellectuals would welcome me, but what about the rest of the French people? What would the Germans say? Then I happened to meet Walther Rathenau and asked him for advice. He was the son of the founder of the big electrical company AEG, which had contributed to the Kaiser Wilhelm Institute. He sat on the board of the Institute and I knew him well.

He had revamped the German economy during the war (which had extended the butchery by at least one more year, actually). He was now the minister for foreign affairs in the new government, and also the highest-ranking Jew in the German State. After consulting the other ministers, he advised me to accept.

“It can do no harm,” he said. “The French will love you!”

“Why would the French love me?”

“They’ll be happy to see a German who doesn’t look like a German. Reconciliation is vital for Germany. If our poor country goes on wallowing in resentment and bitterness, it will lose its spirit and die.”

As Paul Langevin worried about my safety, he found a “secret” apartment for me. I gave my address to Maurice Solovine, but he was supposed to keep it strictly for himself.

M—Your former student.

A—Right. He lived in Paris and translated my works into French.

The train went from Berlin to Cologne, then across Belgium. Paul Langevin and Charles Nordmann, an astronomer who had written a book about me, “Einstein and the Universe,” came all the way to the border between France and Belgium. They were quite surprised to find me in a second-class car. A crowd of journalists and photographers was waiting for us at the train station, where we arrived around midnight. I didn’t want to talk to them. Langevin was afraid some nationalist hoodlums might be hiding among them. So we found a side door and escaped into the subway.

I gave my lecture on March, 31st at the Collège de France, then again a few days later in the Sorbonne. The public understood neither my French nor my science, but applauded nevertheless. The philosopher Henri Bergson, Marie Curie and many other famous Parisians sat in the first row either in the Collège de France or in the Sorbonne. A few burly policemen listened politely to both sessions.

Maurice de Broglie, who had attended the Solvay conference in Brussels, introduced me to his brother Louis.

“He was studying medieval history. When I came back from the conference and told him about relativity, it surprised him so much that he switched to physics. You said we would someday reconcile the wave and corpuscle aspects of light. He’s working on that.”

“Well, I came here for another reconciliation.”

The reconciliation half of my visit wasn’t as successful as the relativity half. The *Société Française de Physique* simply refused to welcome me. The *Académie des Sciences*

hesitated. When thirty members said they'd boycott my lecture because Germany hadn't joined the League of Nations yet, it was canceled. Several newspapers defended me: "If he had invented a cure for tuberculosis or cancer, would the thirty gentlemen take the medicine or would they wait for Germany to join the League of Nations?"

M—America didn't join the League of Nations either, did it?

A—It should have. I'm glad it belongs to the U.N.

To celebrate my visit, a person who had too much money offered a five-thousand dollar award for the best explanation of my theory in three thousand words or less.

"He can't find jurors to grade the answers," Paul Langevin told me, "because all the physicists in Europe are trying their hands at it."

"Except me. I would never be able to do such a thing."

A sixty-year old Irishman won the award.

Before leaving France, I wanted to look at the battlefields of the Great War. For miles and miles, there was just no more landscape. Villages that had been built with love centuries ago had vanished. Fire and brimstone had erased the green hopefulness of life, leaving behind a black desert petrified by the despair of death. I was so shocked that I shivered uncontrollably. I turned toward Paul.

"This is worse than anything I had imagined. Terrible. Awful. All the students in Germany, all the students in Europe, should be brought here to see how ugly war really is."

The French, who love to eat, had already built a restaurant in the ruins of Reims. We had lunch there. Two French officers sitting at a nearby table recognized me. When we left, they stood up and bowed politely. That gave me some hope.

Visiting America, England and France was fun, but I didn't do much physics. Applause is a dangerous drug.

M—At least you were your own master. When I got favorable reviews, Fox decided my next step. As I had brought in good profit by playing a gold-digger in *Gentlemen Prefer Blondes*, they made me a gold-digger again in *How to Marry a Millionaire*. To improve the odds of striking gold, there were three of us this time. My two co-stars : Betty Grable and Lauren Bacall, were quite famous, but the newspapers called it "Marilyn Monroe's new movie."

Although Lauren Bacall is only two years older than me, she helped me and protected me like a mother hen.

Hey, I just thought of something funny: the hen called me a goose.

Albert & Marilyn

“You’re Fox’s number one box office attraction, Marilyn: their most precious asset, the goose that lays golden eggs. I have read in a trade paper that your three last movies brought in 25 million dollars. But you cost them only 1,250 dollars a week. So if you want to be late on the set, be late. If you botch your lines twenty times, let them shoot the scene thirty times!”

“I don’t want to be late. I’d rather say my lines right. I just can’t help it.”

There was a scene where I was supposed to pour some coffee and answer the phone. I raised the cup to my lips without having poured the coffee, or I answered the phone before it rang. Even though I looked at Natasha to get my cues, I couldn’t remember to pour the coffee and wait for the phone’s ring at the same time. Everybody became rather tense, but eventually we did shoot this scene, as well as all the others.

The director, Jean Negulesco, was a very civilized and polite man, born in Romania or somewhere.

A—It sounds like a Romanian name. There’s a Romanian violinist and composer named Enesco.

M—He reminded me of André de Dienes. He never scolded me, but he said I depended too much on Natasha’s support and approval.

“It makes you stiff. Without her, you’d find it easier to be just yourself,” he said.

In this movie, I played a shy woman who hides behind thick glasses. When I read the script, I was afraid the glasses would make me ugly.

“On the contrary, miss Monroe,” Mr. Negulesco said. “With the eyeglasses, you’ll be able to demonstrate what a fine actress you are. Instead of exhibiting your sensuality like you’ve always done so far, you hide it. Then it blooms when you remove the glasses.”

The critics agreed. They wrote I played well and found me very funny, and even sexier than usual, when I removed my glasses and bumped into furniture.

“Are you going to marry Joe DiMaggio?” Lauren Bacall asked me.

“He has bought an Italian restaurant in San Francisco. He wants me to be there and welcome the customers and so on. The retired ballplayer and the ex-actress.”

“You’ll cook spaghetti instead of being a movie star?”

“I am twenty-seven. I’d like to have kids before I’m too old. I hate spaghetti, actually. Don’t tell Joe!”

Lauren Bacall is married to Humphrey Bogart. He is a very famous actor. Their little boy, Steven, came on the set one day. Such a sweet kid! I would so love to have children...

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"How old are you, Stevie?" I asked him.

"Four."

"My, you're quite tall for your age. I would have thought you were only two or three."

Lauren laughed.

"If he's tall for his age, he should seem to be six or seven, not two or three."

"Yeah, I'm all mixed up sometimes."

"I understand why you're always late."

Numbers are your friends, Albert, and my enemies.

A—Scientists make that kind of mistake all the time. They add when they should subtract, or vice-versa. If you give them instructions to go someplace and tell them to turn right, they'll turn left every time.

M—Then you should just say "left" when you want them to turn right.

A—I was exaggerating slightly. The probability of their going right or left is close to fifty per cent, whatever you tell them.

M—Mr. Negulesco tolerated my mistakes and my whims. I felt safe working with him. He was supposed to direct my next movie, *River of no Return*, but at the last minute Fox replaced him with Otto Preminger, who wasn't such an easy-going guy. Everybody said he was a cruel man. He was European and Jewish, though.

A—What you told me, many Jews in Hollywood came from Russia. In Russia, people are often good-hearted and jolly, whether Jewish or not. If your Preminger was German, he was perhaps an assimilated Jew, like Fritz Haber. Good Germans don't like people to be late.

M—Compared to him, Fritz Lang was an angel. I lost my silly illusions about European men. Nasty brutes can grow up anywhere, obviously. As soon as the shooting began, he got into a scrape with Natasha.

"Just go to hell and stay there! I don't want to see you on this set again."

I called Mr. Zanuck.

"He told Natasha to go to hell. You know I can't act without my coach. The only thing I can do without her, maybe, is cook spaghetti. It so happens I've received a job offer in that line."

"Yeah, I've heard about it. Well, I'll talk to him. Don't worry."

So Natasha came back on the set. Mr. Preminger didn't seem too happy about it.

Albert & Marilyn

River of no Return was a western movie. I think Fox wanted to punish me for being a bad girl. They had chosen an awful script. I mean, awful for me. My partner, Robert Mitchum, didn't care. He is a big bear of a man who doesn't seem bothered by anything. We shot the outdoor scenes in the Canadian Rockies. We went down a river on a raft. They couldn't control the raft well. I spent most of my time in the water. Whitey Snyder and my hair people worked hard to turn me into Marilyn Monroe after every dip.

When the raft didn't capsize or break into pieces, the camera fell into the river. Shooting was then interrupted for hours or days. Bob Mitchum just sat down, his back against a tree. He moved so little that I never knew whether he was awake or asleep. The camera certainly didn't frighten him.

"I've seen pictures of you naked, Marilyn," he told me on the first day.

"Oh, these stupid calendar pictures."

"No, five years before that. I worked in the Lockheed factory with a guy named Jim Dougherty. He showed me pictures he had taken of his new wife."

"You knew Jim? I remember these pictures. They were supposed to remain private. He didn't tell me he showed them to his pals in the factory."

"He also showed me messages you inserted in his lunch pail: *Daddy, I think about you. Your baby.*"

"If he still has these pictures, they're worth a lot."

"Does he need money? What happened to him?"

"Last time I met him, he was a cop in Los Angeles. He was married, but he said he was still in love with me."

"Are you going to marry DiMaggio?"

"I guess so."

Joe came for a few days with fishing poles and tackle or whatever it's called. He wore a checkered shirt, corduroy pants, rubber boots, so he looked like a fellow who goes fishing in a cartoon. I thought he was jealous of Bob Mitchum and wanted to keep an eye on me. We went away together while they were repairing the raft or the cameras. When we sat by a mountain stream, just the two of us and Mother Nature, far from the crazy movie crowd, everything seemed simple.

I had long talks with Whitey Snyder every morning while he worked on my face. He liked Joe.

“You’ll never be happy in Hollywood, miss Monroe. Look at this wonderful landscape. You should marry him, buy a ranch in the Rockies and raise twelve kids.”

“I’ll find the river wonderful when I stop falling into it ten times a day.”

I’m a good swimmer, but the water was freezing cold. Every time I fell, my heart stopped beating. I was afraid I’d break a bone on a rock or worse. At the end of the day, I was exhausted. I tried to sit against a tree and take a nap, but it didn’t work. This is when my troubles began. Shooting a movie costs a lot of money, you know.

A—I can imagine that.

M—If on a certain day the shooting has been delayed and postponed a lot, it’s much cheaper to go on after five o’clock and pay extra hours than to add another full day of shooting. There’s always a doctor on the set. When actors are tired after a hard day’s shooting, or after repeating a dancing routine twenty times, he gives them “hot shots” to revive them.

A—What does “hotshot” mean?

M—It’s a Hollywood expression. The first time the set doctor wanted to give me a hot shot on the bank of the river, I asked him what was in it.

“Oh, a mixture of amphetamines and vitamins.”

“Amphetamines? That’s strong stuff, no?”

“Not much stronger than a dozen cups of coffee. I’m also giving you these sleeping pills. You’ll take them tonight, otherwise you wouldn’t be able to sleep and you’d be a wreck tomorrow.”

The sleeping pills were also very strong stuff: barbiturates. As the shooting dragged on, I got used to the hot shots and addicted to the barbiturates. Now I can’t fall asleep at all without them.

A—The studio is like a big company that makes cars, and you’re like a factory worker. They give you orders and you must obey.

M—They don’t treat actors like factory workers. More like cattle.

When you become a big star, you can pressure the studio. Bette Davis told me she had done it. I had shot *All about Eve* with her, remember? Jean Harlow had also resisted the Studio and got it to modify her contract. When *River of no Return* was in the box, they said they had another movie for me, *Pink Tights*, where I was a sexy blonde again. My partner was to be Frank Sinatra. I was not complaining about that. I just didn’t want to play any stupid part to please them. I asked to read the script. The Studio said no. Letting me read

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my part in advance seemed the least they could do, considering I cost them so little and brought in so much. They didn't respect me. Actors who weren't even stars could read their scripts and earned three times more than I did. They had always despised me. They had known me long ago as a clumsy beginner and they believed they could still treat me as one.

I just stayed home instead of going to the pre-production meetings. Fox said I was breaking my contract and removed my name from the payroll.

Joe was delighted. He hated everything about the studio. Besides, he couldn't stand Natasha.

"Since you're not working anymore, we can marry. The Japanese have invited me to launch their ball season and play in exhibition games. Let's make it our honeymoon."

Two days later, on January 14, 1954, as we were in Joe's restaurant in San Francisco, he called a judge he knew. We went to City Hall with our two witnesses, the restaurant's manager and a baseball old-timer who had taught the game to Joe. The City Hall employees were not expecting us and couldn't find a typewriter to type the contract. While they were looking for a typewriter in the basement or the attic or somewhere, I found a public phone and called my favorite journalists.

"This is Marilyn Monroe. Want to know something? I'm getting married! Of course, to Joe. Who else?"

A—A strange thing to do.

M—Hey, I'm sure you have pictures of your weddings, Al. I wanted some photographers to come and immortalize the event.

Joe gave me a gold ring with tiny diamonds set all around it. I gave him some pictures of me that weren't printed in the famous calendar because they revealed too much. I requested a promise.

"If I should die before you, you'll lay flowers on my grave every week, like William Powell did on Jean Harlow's."

"Sure. I promise, Marilyn."

I guess the journalists called their pals in radio stations, who spread the news right away. There was quite a crowd in front of City Hall. They applauded and shouted: "A kiss! A kiss!" So we got plenty of photographs.

"How many children will you have, Marilyn?" the journalists asked me.

"Six," I answered.

"One," Joe said.

“Where will you live?”

“In San Francisco,” Joe said.

“I’ll go on with my career,” I said. “I’ll be glad to be a housewife, too,” I added to soften Joe’s glare.

Before leaving for Japan, we spent two weeks in my lawyer’s mountain lodge near Palm Springs. There was no TV. As Joe couldn’t watch baseball or football games, he had to take care of me. He taught me how to play billiards.

I was eager to visit Japan. I had gone to Mexico and Canada, but never across the ocean. Joe knew Japan already.

“The Japanese are crazy about baseball,” he told me. “I’m even more famous over there than here. In polls, the Japanese name General MacArthur and me as their favorite Americans.”

A—I went to Japan in 1922. Whether I was their favorite German, I don’t know.

I had worked for peace by going to France. Back in Berlin, I spoke at a meeting of the main pacifist organization. I called for the unification of Europe. I accepted an active role in an “International Committee for Intellectual Cooperation,” the ancestor of today’s Unesco. I recommended that children learn foreign languages, so people in Europe could understand each other better. But then, something dreadful happened. Berlin became dangerous for me again.

On June 24th, 1922, two months after my return from Paris, two young nazis killed Walther Rathenau as he was driving his car in the street. Or maybe he had a chauffeur, I don’t remember. It was an open car. The new republic tried to avoid anything that would remind people of imperial pomp, anyway. I guess the American Secretary of State doesn’t go around by himself in an open car. He has bodyguards and a police escort. Rathenau was a friend, I told you that. They hated him for being Jewish, for signing a treaty with the Soviet Union, for displaying “Jewish servility” toward Germany’s former enemies (which meant he was trying to talk to them). Another Jewish minister had just escaped an attack. The police said the nazis had also condemned me to death secretly. But when some fool sent me a threatening letter, they punished him with a ridiculous five-mark fine.

The government decreed one day of national mourning for Rathenau’s death. Schools and universities were closed, but Lenard gave his course at Heidelberg university as if nothing had happened. Some factory workers entered the university and grabbed him. The police saved him just as they were going to throw him into the river.

How had we reached such a level of violence? I was disgusted. I wanted to give up all my national and international public roles, leave Berlin, become a private citizen again in Switzerland or Holland and resume my research in physics. Marie Curie, whom I had convinced to join the *International Committee for Intellectual Cooperation*, asked me not to resign from this new institution. "They need you," she wrote. "Germany needs you too. You can't leave it to the barbarians."

I couldn't make up my mind. To leave or not to leave? I had moved many times, I had never felt a special bond to any corner of the earth, but now it seemed that age kept me in place.

M—You were not that old, were you?

A—Forty-three. You're right, but my parents hadn't reached old age. A weak heart has shortened my father's life, a cancer my mother's. I did settle in one place eventually: right here in Princeton. I would have gained ten years if I had left in 1922. I was waiting for fate to send me some kind of signal.

Fate sent me an invitation, which let me postpone my decision. A Japanese publisher offered me a nice lump of money for a series of lectures. I would at least put some distance between this awful mess and me—and also, escape would-be killers for the time being. The long trip at sea would give me time to regain my composure and think about my future.

M—You didn't fly.

A—To Japan? There were no passenger flights yet. A few days before the sailing date, Max von Laue suggested I cancel my trip.

"A Swedish colleague let me know that, er, a pleasant event might happen in November, that would make it desirable for you to be in Europe in December."

"I have accepted the Japanese offer long ago. I will escape the turmoil here and discover the Orient. Tell your Swedish friends to wait one more year."

So I was to receive the 1921 Nobel prize. I couldn't decently complain. I didn't rejoice either. Because nobody in the Swedish academy understood relativity, they had waited until the fall of 1922 to give me the prize for the preceding year. There was quite a tangled tale behind this. People had suggested my name for the prize as far back as 1910. Theoretical physics being still a new science, nobody knew anything about it outside Germany, England and France. A chemist had tried in vain to explain relativity to his Swedish academy colleagues. A biologist hadn't done any better. There wasn't a decent physicist in the academy, but there was at least one Lenard crony, who later became a

personal friend of Hitler and Göring. This man declared that many first-rate scientists considered relativity a fraud. According to Nobel's will, the prize was supposed to reward useful or ground-breaking inventions and discoveries, not fuzzy theories that fed controversy. The secretary of the academy, who had consulted the former winners of the prize, said they called me the most important living physicist. They bickered so much that they missed the date for the 1921 prize. They settled on a compromise to avoid mentioning the fuzzy theory of relativity (which smacked of Jewish science, no doubt): they gave me the prize for my explanation of the photo-electric effect, part of my 1905 article about quanta. Lenard crowed as if he had won a great victory. The Swedish academy, by giving me the prize for something else, had recognized that relativity was worthless. I would find no consolation in riches, since I had promised the prize money to Mileva.

M—What do you care about these stupid Swedes? You have seen God face to face, like Moses, and he gave you the blueprint of his creation. How many equations did you say you have in General Relativity?

A—Ten equations.

M—You see: ten commandments to Moses, ten equations to Einstein. In my profession, there are prizes called “oscars.” The jury is rigged. Bad actors get an oscar, good actors are not even nominated. This happens all the time. It doesn't matter. The public, or posterity, is the only true judge.

A—We sailed from Marseille on the *Kitano Maru* in October, 1922. In Berlin, my stomach accepted to leave me alone, seeing I was so busy facing my enemies. Now that nobody threatened me anymore, it began to complain. “I'm your only stomach, after all, so please take care of me.”

The ship's doctor, Mr. Miyake, knew our language.

“Japanese medical students use German books,” he told me. “They usually spend two or three years in a medical school in Germany before they get their diploma.”

He recommended complete rest, letting nature and time cure me, which proves he was a good doctor. I spent quiet days in my cabin. I kept a diary during my trip. Here's the first entry: “Marseille. Bugs in the coffee.” I missed the visit to the Pyramids. Elsa saw them without me.

“They're just tombs,” she said. “These pharaohs were quite intent on having the biggest tomb around. I don't remember what you told me, Albertle. Somebody climbed on top of the great pyramid to measure the perimeter of the earth?”

“No. Eratosthenes calculated the perimeter of the earth by measuring the shadow of a stick. A few centuries before, Thales had also measured the shadow of a stick to calculate the height of the pyramid.”

M—Wait, Al. How do you spell the names?

A—E,r,a,t,o,s,t,h,e,n,e,s. T,h,a,l,e,s.

When we stopped over in Colombo, on the isle of Ceylon, I felt well enough to step ashore. Here's the entry in my diary: “We visited the city in tiny carts pulled by small trotting men. Frail-looking, but herculean strength. Ashamed to share responsibility for the terrible treatment accorded fellow human beings, but unable to do anything about it. They surround the foreign tourist and beg so movingly that they break one's heart.” Colombo is the main city of Ceylon, which was then a British colony. The Englishmen I knew were quite civilized, so I wondered why they tolerated this degrading custom.

M—They work to earn money and feed their family. They need your dollars.

A—I guess you're right. I should have given this poor human horse more than he requested.

In another British town, Hong Kong, the local Jewish community invited me to a five o'clock tea. Most of these people came from Egypt or Syria. This unexpected meeting at the end of the world moved me deeply. From my diary: “Am now quite convinced that the Jewish race has more or less kept itself pure over the past centuries, as the Jews from the Euphrates and Tigris shores are very similar to ours. Strong sense of belonging together.”

Between Hong Kong and Shanghai, a telegram confirmed that I had received the Nobel prize for the year 1921. The 1922 prize went to my Danish colleague, rival and friend, Niels Bohr. A second telegram arrived a few days later: “Congratulations. I'm happy to get the prize too, but even happier that I didn't receive it before you! Niels Bohr.”

When the ship entered Shanghai harbor, the choir of the German colony, which was waiting for us on the wharf, sang *Deutschland über Alles* in our honor. I found this bombastic welcome definitely unpleasant. I felt Swiss, all of a sudden.

M—Do you feel American, now?

A—I look at the stars, and I feel I belong to the Universe. In a certain measure, when I visited Japan, I regretted that I wasn't born Japanese. I fell in love with the country. Either because of the latitude and hygrometry, or because peasants and gardeners worked at it for centuries, nature seemed more beautiful there than anywhere else. I fell in love with the

people, too. They seemed healthy and happy, and very kind. Of course, they became ferocious and made war like all the others after all.

They welcomed me with such enthusiasm that I kept wondering whether they knew who I was. I confided my misgivings to Elsa.

“I have this stupid feeling that the whole thing is a mistake. They’ll discover I’m an impostor and throw me into jail.”

I gave lectures in front of attentive friendly audiences. There were more than two thousand people for my first lecture in Tokyo. The publisher who had brought me over had promised me high royalties. I soon understood that my revenue was but a small share of the general profit. The seats were as expensive as for a recital of the famous tenor Caruso. We didn’t shortchange the public, though, as I lectured for hours. I mean, I spoke for ten minutes, then the interpreter spent half an hour translating my speech and answering questions. I wondered whether clever students criticized the translation, or whether the interpreter explained some of relativity’s fine points. He was a competent physicist, Jun Ishiwara, whom I had met before the war in Zurich. When he let a few questions get through, I always found them remarkably pertinent. I had known several Japanese students in Germany. I guess I tended to underestimate them because they seldom spoke proper German.

Someone told me that the government discussed relativity during a cabinet meeting. The ministers wondered what it all meant. One of them explained that human beings couldn’t actually “understand” everything, so then they felt better.

Jun Ishiwara said that all the newspapers published poems about the speed of light and the fourth dimension, but that they had a hard time fitting my name, Ainshutainu, into their haiku.

M—They don’t distinguish l and r, so I’m Mariryn Monroe or Malilyn Monloe.

A—I was invited to celebrate red maple leaves’ day—or something—at the Imperial Palace. Kimono-wearing musicians played Japanese classical music, which I found rather strange. I prefer Bach and Mozart. I was introduced to the emperor and empress. All the courtiers and other guests wanted to shake my hand. I believe I eclipsed the emperor, even though he is a great-grandson of the Sun goddess.

Dr. Miyake, my doctor on the ship, invited me to a tea ceremony in his house. I had been told that I would have to take off my shoes, to keep the *tatami* mats clean. As I was afraid my bare feet might not be as clean as the *tatami*, I put on some socks. A Japanese

home looks a little bigger than it is, because there is very little furniture—no tables, no chairs, no beds. The windows and the partitions between the rooms are made mostly of paper. The tea ceremony takes place in a special empty room, where the only decoration is a very simple and tasteful “flower arrangement.” The tea is green, frothy and quite bitter. Tiny cakes that look like sculptures are served with it. I found everything fascinating and wonderful, but my old knee and ankle joints kept protesting: “Hey, enough already with all this sitting and kneeling on the floor!”

M—The poor Japanese women are all bow-legged, because they sit so much on their ankles as children already.

A—They may be bow-legged, but they are very polite. They bring you what you want even before you know you want it. Whereas the Jewish women in Palestine are about as rough as men. *Ach*, I shouldn’t generalize. Many Jewish women in Palestine are about as rough as men.

We left Japan at the end of the year 1922, having stayed there six weeks. On February 1st, 1923, we landed in Port-Said and took a train to Palestine. I was to cut a ribbon and declare the Hebrew University of Jerusalem open. The British High Commissioner, Sir Herbert Samuel, a well-read man who understood the general outline of my work, treated me like a head of state. He sent a Rolls-Royce with a chauffeur to drive us around. They shot the canon for me, which I considered a little too much, and gave several official dinners. Elsa complained.

“I am a simple German housewife, Albertle. I like things to be cozy and comfortable and I feel unhappy in such a formal atmosphere. For you it is a different matter. When you grab the wrong fork, they say you do so because you’re an absent-minded genius. When I do it, they say I lack culture and refinement.”

The joyful liveliness of the pioneers who were growing all kinds of marvels in the desert dispelled my worries: our Jewish intellectuals were succeeding in their new lives. I remembered the Zionists I had met in Prague. This man Brod who wrote a book about Kepler, maybe his friend Kafka. These book-worms and library-rats pretended they’d become peasants and construction workers in Palestine. I didn’t believe it possible, and indeed I found it highly comical. Well, I was wrong. They built a magnificent new city in Tel Aviv. It seemed to me that a spirit of friendship was cementing the unity of the new country. The pioneers were dressed in a simple manner (I fit quite well in their midst), talked without any excessive formality, danced in the streets at the end of the shabbat.

The city of Jerusalem lived up to my expectations. I felt that the ghosts of a glorious and tragical past lived in the old cobblestones and walls. Some living ghosts disturbed me, though: the men in medieval dress rocking back and forth in front of the temple wall. What a waste of time! The best way to thank the Creator for the wonderful mind he gave us is to use it. It seemed to me that these dull-minded tribal companions had a past, but no future.

M—They do no harm. Do you remember my crazy grandma, Della? She spent lots of time praying God, too. But she also went to India or wherever and converted the people there so they gave up their gods and took up Jesus. This destroys ancient cultures. If people live naked, the missionaries tell them to cover their shame and so on.

A—These narrow-minded Jews also want you to cover you skin. If they saw you, Marilyn, they would throw stones at you.

So I cut the ribbon. I inaugurated the university by pronouncing a Hebrew sentence I had learned phonetically. “There must be something wrong with my brain,” I then said in French. “Please don’t expect me to ever learn Hebrew...”

Everybody begged me to stay in Palestine rather than return to Berlin, where crazy murderers were waiting for me. My heart was willing, but my reason refused. Until today, Marilyn, I’ve never gone back to Jerusalem.

“Our Jews are really amazing!” I marveled when we left the country. I meant it as a comment on their capacity to change and adapt. Elsa heard something else in the sentence, because a kind of chauvinist pride colored her views of the Jews. She thought they were a superior people, so that when they became peasants, they became better peasants.

“They are so active, and the Arabs so lazy...”

“It seems so, no doubt, but you shouldn’t attribute this apparent difference to any innate quality of the Jews.”

“So how do you explain the difference?”

We had been married a few years only, but we usually agreed like old spouses about most subjects. She did bicker about my not dressing up properly for the big dinner and such things. No big deal. However, when two Jews discuss Jewish questions, there are at least three contradictory opinions.

M—This is true also when two Jews talk about a script in Hollywood. They call it *kibbitzing*.

A—I think the nazis considered the Jews a superior people, like Elsa, in a murky unconscious way. That’s why they wanted to put them down. This is just stupid. No group

is superior to any other. The early Jews invented a God to allay their fear of the unknown. This God is just the result of childish superstition and human weakness. Then they decided the God they had invented had “chosen” them. It’s like a dog running after its tail. We invent him, he chooses us. The book is true because God wrote it. How do we know that God wrote it? Well, the book says so and everything inside the book is true.

“The Jews are beginning a new life and building a new country,” I told Elsa, “so they have to be active. You need lots of willpower, anyway, to leave your home, your friends and relatives, and move to a strange land. The immigrants who went to America were also very active.”

“Not only do they work more, Albertle. They work better, too. The Arabs use stone age tools. The Jews have modern machines. They’re bringing the whole land into the twentieth century.”

“Do you think the Arabs shun the machines? They don’t have the money to buy them. I’ve heard that the first zionists considered settling in Uganda. As they needed money, they went to the bankers and other rich Jews. Lord Rothschild promised to invest in the project, but only if the Jews settled in their ancestral home, Palestine.”

“What’s wrong with that?”

“Why this ancestral home? Why not Spain or Egypt? It gives the whole endeavor a kind of religious tinge, for one thing. Besides, if they had gone to Patagonia or some other empty place, they would not have bothered its inhabitants. Rothschild is famous everywhere. He is supposed to control the world’s money, as part of the Jewish plot. The Arabs believe that Rothschild’s secret fortune explains all the Jewish successes. If we had a Rothschild, they think, we would also grow flowers in the desert. They’ve endured a kind of servitude for several centuries as inferior citizens in the Ottoman empire. Now the Turks are gone and the English have replaced them. Who is the English governor? A Jew.”

M—Oh, sir Herbert Whatshisname, he was Jewish?

A—Samuel. In England, a Jew can climb up to the top. They had a Jewish prime minister, Disraeli, already in the 19th century.

I applied the scientific method to the Jewish question. “The American Jews should send money not only to the Jews in Palestine,” I told Elsa, “but also to the Arabs. Otherwise, the Arabs will resent the unfairness and there will be bad blood between the two tribes.”

“So, Albertle, next time you talk to American Jews, you can tell them to buy tractors for the Arab peasants.”

She was ironic, but the advice made sense. I told you I worked in Pasadena in the early thirties. There had already been Arab riots in Palestine. Jewish settlers had been killed. When I gave a conference in a hall full of Jews in Los Angeles, I suggested they send their money to the Arabs. They decided I was a crazy scientist who couldn't think straight outside his equations. But what happened in the end? There was a war between the Arabs and the Jews. I admired the happy Japanese, who had been at peace for two centuries, but then they became ferocious warriors. The Jews had been the most peaceful people for twenty centuries. They were famous for their scholars and writers. In this respect they could be considered superior to other people: they were protected from the worst excesses of human nature by their lack of power. So what happens? Now the Israeli army is considered one of the best in the world. I've always despised armies and soldiers. What a shame!

M—When I visited Japan two years ago, it was at peace again. The Japanese were so very friendly. They seemed happy and harmless. The war was a bad memory. Israel was born in a war, like the United States, but we can hope that this first war will also be the last one.

A—America's first war was not the last one, was it?

M—Actually, while we were in Japan so Joe could launch the baseball season, I was invited to entertain the American troops in Korea. One more American war!

A—How do you entertain the troops?

M—I sing. I pout. I move my boobs and my ass. Joe hated it when I played sexy. He felt he was sharing his new wife with thousands of hungry wolves.

The whole trip began on a wrong footing. In the plane already, I didn't feel so good. I had flown a few times before. I found it quite frightening, but I had always traveled with a gang of movie people who joked and drank to fight their own fear. Joe didn't joke. He never talked much. He didn't even notice that I was clutching the armrests of my first-class seat. I wondered whether I hadn't made a terrible mistake. He has the perfect body of a Greek athlete, okay, but I'm sitting next to him and I am bored. What can we talk about? His favorite subjects are baseball and boxing and maybe golf. If Whitey Snyder or some other Hollywood friend had come with us, we could exchange gossip and I would be laughing instead of brooding. I hoped to improve my life. My usual ill-luck is catching up with me. What a mess! Do I really want to turn into an Italian mama? I love his body, but do I love him? Maybe I thought I loved him because I saw him so unhappy. His brother

drowned. When he wept in my arms, my heart melted... I can't stand to see somebody cry. But nobody consoles me when I cry.

When we landed in Hawaii, battalions of people invaded the tarmac as soon as the plane ceased to move. I had never seen such a wild mob. Joe was ready to tell them about his batting average and home runs, but I'm not even sure they recognized him. They rushed toward me. They screamed and shouted. Didn't expect it at all. We have to get off the plane, which needs to be refueled and checked and won't be able to fly for another four or five hours. My fans shout and scream, they rush at me, they want to touch me. Joe tries to keep them away. They pull my hair. Awful! This reminds me of riots I've seen in newsreels. My heart is pounding like hell. I'm beginning to feel really scared.

A—At least they don't pull my hair.

M—When I flew with the movie people, the studio kept it a secret, or warned the local authorities so that the police would put up barriers. Now the studio didn't control me anymore. It didn't protect me either.

Could things get worse than this? You bet. In Tokyo, the crowd was much bigger. Policemen kept it at bay, but they advised us to exit through a trap in the hold. Better avoid a stampede, they said. We climbed into an open convertible car. Millions of people lined the road going into town. "Mon-chan! Mon-chan!" they shouted. According to our hosts, this is an affectionate way of saying "Miss Monroe." Joe was beginning to understand that his life had changed. When we left San Francisco, he was still the most famous baseball player in the world. Now he had become "Mon-Chan's husband." He didn't enjoy it, believe me.

The human sea that seethed and churned in front of the Imperial Hotel, behind a phalanx of cops, wouldn't quieten until I opened the window of our room and waved to them. "I look like Stalin on the Kremlin's balcony," I thought. I turned toward Natasha to ask her what to say, but she wasn't there.

I had expected to take it easy and enjoy the sights as Mrs. DiMaggio, a baseball player's bride on her honeymoon. What if she wears blue jeans and lets her hair down? Gee, I was such a fool! I never see ahead. The people wanted the famous Marilyn Monroe, of course. I had to play my character, which was much harder than usual because the persons who spend hours every morning creating me had remained in California. I had to make up my face myself, find the best hairdresser around and ask a chambermaid to hand-sew one of

Albert & Marilyn

my glamorous dresses on my body. I had to work every day like I did in Hollywood. This honeymoon was no vacation.

I was beginning to understand that something terrible has happened: I was locked inside the Marilyn persona. I couldn't escape my character. Wherever I went, I had to play the part.

A—This is true for all famous people, in a certain measure. So you could say that when you become famous, you have to learn acting, whatever your usual trade.

M—Maybe you're more famous than other scientists because you're a better actor!

In Korea, I sang on a stage, my first time in front of a live audience. When some American embassy officials asked me whether I would accept to sing for our troops, I said: "Yeah, sure." At least, while I was away, Joe would be able to visit baseball clubs without being bothered by my fans. Instead of being grateful, he sulked because I was leaving him alone during our honeymoon.

"What's more, it's pretty dangerous."

"But it's the least anyone can do."

The troops were more disciplined than the airport crowds, but as enthusiastic. When ten thousand soldiers yelled "Marilyn" together, I felt a kind of warm pride glowing inside me. I bet the birds in the sky were scared to death. These poor GI's are risking their lives far from home, far from their girlfriends. My songs bring happiness to them and to me. Ever since I was a small kid, I had a vague feeling that "nobody loves me." In Korea I discovered the opposite feeling: "Everybody loves me." Singing and talking to the soldiers was easy. My hair wasn't perfect and I wasn't dressed properly, I had no coach, but I never stammered or hesitated. I wasn't scared at all.

A—The public loves you, so you feel happy on the stage. Some of the people in your profession are critical, some seem to despise you, so you're afraid to come onto the movie set.

M—So maybe I should become an actress in the theater. Sing in musicals on Broadway.

I sang ten times or so on outdoor stages. I couldn't say: "Oh, it's too windy here" when whole regiments had been waiting for me for hours. It rained. It snowed even. So I caught a nasty flu. I flew back to Tokyo with a high fever, a doctor even said I had pneumonia, but of course I was delighted.

"It was amazing, Joe. You've never heard such cheering!"

“Oh yes, I have. Be careful: don’t let yourself be carried away. You miss a ball once and you find that the boos can be noisier than the cheers.”

Gee, Japan was so clean and pretty. I knew that things would be messy in America. Fox would try to get me back. A photographer whom I liked a lot, Milton Greene, hey, he was Jewish, he had made magnificent pictures of me for Look magazine, thought my name was worth millions. We should start a production company together, he said, then make good movies and sell them to Fox or whoever. This seemed a neat idea. So what did I do when I came back? I sat in an Italian restaurant that was neither clean nor pretty, like a stupid mascot or something.

A—Nothing can appear really clean or pretty when you come back from Japan. I also found a very complicated situation when I returned to Berlin. I had been away for six months. The strangest thing, my nationality had changed without my knowledge. When the Swedish Academy gave me the Nobel Prize, I was in Japan. The Swiss ambassador in Stockholm had to go and get it in my place. The Swiss never hurry. When he arrives at the Swedish Academy, they tell him that someone has already taken my prize.

“Who has taken the prize?” he asks.

“Let me check. Ah, here: the ambassador of Germany.”

“How is this possible? Professor Einstein is a Swiss citizen.”

“I don’t know about that. The ambassador of Germany showed us a telegram, confirming the German nationality of Dr. Einstein. I’ve got it somewhere...”

M—Were you actually German?

A—Certainly not. The Germans could play this trick because I was away at sea. I was obviously German, they said, since I belonged to the Prussian Academy. The purpose of this noble institution was to gather the best minds of Germany, after all. I guess they made up this clever line of reasoning on the spur of the moment, then rushed to send a telegram to the ambassador. They knew this was not a very convincing proof, so they asked lawyers to look into the case and prove I was indeed German. Well, the lawyers found all kinds of papers saying Professor Einstein could do this or buy that *although he is a foreigner*. On paper, I was Swiss, there was no doubt about that. I remember that some Zurich students invited me after I came back from France. I needed rest and wanted to return to physics, so I sent them the following letter: “As an old Zurich boy, I was pleased no end by your invitation, but I desperately need peace and quiet. What I could say on the subject of physics is so well-known everywhere by now that even the birds on the rooftops can whistle

it. Please don't say, 'He went to Paris but didn't come to us.' I have accepted the Paris invitation to promote international ideals, devotion to which is now more necessary than ever. Of course, there is no need of reconciliation in the case of my own countrymen, who have always retained their sobriety, equanimity and toleration." When I mentioned "my countrymen," I meant the Swiss, not the Germans.

So, when I came back from Japan, I went to the Swiss embassy in Berlin to retrieve my medal. They told me the Germans had pilfered it. I sent a letter of protestation to the German Academy: "You know I have retained the Swiss nationality when I entered the Academy in 1914. Just ask Planck and Haber."

To avoid further embarrassment and scandal, I told the authorities that I would accept the German nationality if they didn't tell anybody about it. After a year or two, I stopped protesting when some official introduced me as "our great German scientist."

M—You lived in Germany. An official couldn't introduce you as "our great Swiss scientist."

A—In July, 1923, I gave a lecture in Stockholm in front of the King of Sweden, the academicians and other distinguished guests. This was a kind of atonement for missing the Nobel ceremony. To keep my promise, I deposited the Nobel prize money in a trust account in a Zurich bank, with instructions that the interest should be credited every month to Mileva. She was very angry. She had forgotten our deal and wanted to spend most of the capital right away on a new house. She convinced my sons that I was a bad father, which was true in a way. My elder son wrote me a very unpleasant and even insulting letter. I wanted to cancel the vacations we were supposed to take together on the Baltic sea, but Dr. Zangger and Besso acted as mediators and reconciled us, so we sailed together in Kiel. I had a permanent home in Kiel, a small flat belonging to Hermann Anschütz, as I often went there to work on my magnetic gyrocompass. I also visited Ehrenfest and Lorentz in Holland.

The Berlin police kept telling me the city was dangerous for me. For example, I spent the month of September, 1923, in Leiden with Ehrenfest. I knew no greater pleasure than spending a few weeks with the Ehrenfest. Tatiana was a wonderful hostess. I could stay in bed as long as I wanted, eat bread and aged Gouda cheese at any time of the day, go everywhere barefoot. I loved to swim in the sea with the Ehrenfest children, play some music with Paul, talk about physics and other subjects while smoking a pipe in the warm light of the setting sun. One of the living-room walls doubled as a visitors' book: all the

guests signed their names on it. This was an old Russian custom, Tatiana said. My signature could be seen right in the middle of the wall, as it was one of the earliest ones.

I returned to Berlin in October. At the beginning of November, the police warned me of a very high risk, so I went back to Leiden on November, 7th. Two days later, on November 9th, Hitler and his group tried to seize power in what was later called the “Beer Hall Putsch.” I had always thought the danger would come from Prussia. Well, the beer hall was not located in Berlin, but in Munich, the quiet city where I had grown up. The people refused to follow Hitler and march on the Bavarian parliament. Ten years later, they would follow him on the road to Hell. The police told me that the conspirators had decided to murder me and other famous Jews. They had friends in the press. The papers wrote I was in Moscow, as if I wanted to plan the next steps of the Jewish plot with my Bolshevik accomplices. Who made up these fake news? I suspected Lenard and his gang.

I liked it in Leiden. I played music with Ehrenfest. Why return to Berlin? Max Planck wrote to me once again. “Please think of those here who love and revere you, and don’t let them suffer too much for the abject infamy of a pack of mad dogs whom we must get under control. You could at least keep your official residence in Berlin and give a lecture now and then.”

M—I bet you returned to Berlin. I can feel that you liked it there.

A—The mad dogs stopped barking for a while. Optimists thought they had learned the lesson and would never be heard of again. I don’t know whether some lucid pessimists guessed that they were working discreetly on sharpening their fangs. At least they let me alone. Hitler had been condemned to five years of prison. They let him out after nine months for good behavior, but his influence had become negligible. The misery and anger that brought new recruits to his party were on the wane, as the economy was improving. Until the terrible crisis of 1929, Berlin became a magnet for the best artists, musicians, singers, writers in Europe. Concert halls, theaters, cabarets, dancing halls, cinema theaters, lined the main avenues. People drank, danced and loved night and day. They hoped to forget that millions had died and that Europe had lost its very soul.

M—Did you?

A—Did I what?

M—Drink, dance, love and forget.

A—I enjoyed the glitter, certainly. I was happy to meet talented artists, like the violinist Fritz Kreisler, the pianist Arthur Schnabel, the writers and brothers Heinrich and Thomas

Mann. I tried to work, too, but I discovered what you certainly know: when you're famous, some people consider they own you, in a way. Or at least, they own a portion of your time. They kept ringing at our door. The whole world knew Einstein's address: 5, Haberlandstrasse in Berlin. Elsa became a gatekeeper, telling them I was too busy to see anybody. Her daughter, Ilse, took care of reading and throwing away the mail. Some Jews came from Poland as if on a pilgrimage, as they considered me a kind of Jewish saint.

To honor a man like a kind of minor deity is just stupid. There is a tremendous difference between my real capacities and achievements and the superhuman powers of mind that people attribute to me. I do rejoice that they admire intellectual work in this materialistic age. So-called great men are lauded and applauded, but their real influence is very small.

As I was supposed to know more about the universe than most people, I received all kinds of inquiries concerning my good friend, the creator of the whole doodad. A New York rabbi wrote to me that a Boston cardinal had attacked the theory of relativity: "It befogs speculation, producing universal doubt about God and his Creation, cloaking the ghastly apparition of atheism." In order to answer the cardinal, the rabbi asked me a simple question: "Do you believe in God?" I sent him the following telegram: "I believe in Spinoza's God, who reveals himself in the orderly harmony of what exists, not in a God who concerns himself with fates and actions of human beings."

M—Wait. Who's Shpinoza?

A—He was a Jewish philosopher who lived in Holland in the 17th century. He didn't believe in a personal God, but found something divine in the mystery of existence and the harmony of Nature. The rabbis, who considered this pantheism sacrilegious, excluded him from the Jewish community.

At least the American rabbi's inquiry made sense. I told you I had become a character in Jewish jokes, like Rothschild, and now I was also a target for *shnorrer*. I received more plans for absurd inventions than when I worked as a patent clerk: a new flying machine, a method for changing coal into food, a bed so restful that you could sleep two hours per night and be perfectly healthy.

M—I wouldn't like to eat coal, but I could do with a bed that put me to sleep.

A—Young ladies sent me marriage propositions. I was offered a fortune for declaring I used a certain shaving lotion. Adepts of spiritualism begged me to come and turn tables with them, because the theory of relativity obviously confirmed their ravings. I had shown

that the world wasn't what it seemed to be, so it could contain ectoplasms and poltergeists, couldn't it?

I wasn't as rich as Rothschild, so I didn't give my lose change to the crazy inventors, but I always tried to help students who knocked on my door. Leopold Infeld, who became my assistant in Princeton in 1936, told me he had seen me in Berlin twelve years earlier.

"Mrs. Einstein gave me a very friendly welcome. I was arriving from Cracow, where I had been a student. I waited for you in a room full of furniture and trinkets."

"There was too much stuff. I told Elsa, but she hated to throw things away."

"You were talking with the education minister of China."

"*Ach, ja.* He asked me how to teach science to Chinese children. They came to me from everywhere. China, India, Argentina. They invited me to their countries. I did go to Argentina, actually."

"I felt somewhat flustered. You walked the Chinese minister to the door, then you let me enter your office. You wore an old dressing gown. I told you I couldn't go on studying in Cracow, because of growing antisemitism. You said there were antisemites in Berlin too. You wanted to help me by writing a letter of recommendation to Max Planck, but you couldn't find a blank sheet of paper—although there was a mountain of paper on your desk. I laughed and you laughed. The memory of your warm laugh often comforted me when life turned sour."

M—I work with people, but they see me as Marilyn, so I don't have many true friends. You need to be alone to work, but you like people and you make friends easily.

A—I've always thought that the best job for a physicist would be lighthouse keeper. Nobody bothers you out there. Every Thursday afternoon, I went to the university, where advanced graduate students were giving lectures. I liked to listen, they liked me to comment or criticize. Max von Laue supervised another kind of advanced class, where university professors described new discoveries to physicists who worked in industry and could create useful inventions. There I used to meet Max Planck, Walther Nernst, Fritz Haber, Lise Meitner and others. I attended the Academy's sessions and took care of the Kaiser Wilhelm Institute for Physics.

Why did I waste my time with artists, Chinamen, students, professors, academicians? Because I was going nowhere with my research, I guess. General relativity gave a good description of the gravitation fields that shape the vastness of space. It was tempting to compare these fields to the electromagnetic fields produced by vibrating particles. I looked

for a “Unified Field Theory” that would apply a single set of equations to gravitation and electromagnetism. I also hoped to explain the deep nature of matter. I supposed that a particle, say an electron, could be a very concentrated field. I worked on my Unified Field theory in Berlin. Some people call it a “theory of everything,” adding a dismissive laugh. I wrote about it on the ship going to Japan and coming back. I thought I had found the big truth, but I hadn’t. Thirty years later, I am still looking for it.

Meanwhile, my colleagues didn’t give a damn about fields. They studied my neglected early babies—quanta. The theory of quanta was my own unruly child, but it went its own way, laughing at its old father. In 1923, in America, Compton did an experiment with X rays which proved that light was made of quanta. Until then, nobody had believed in quanta. I was really their only champion. All of a sudden, all the scientists changed their minds. As I had supposed long ago, light behaves both like a wave and like a flow of particles. I told you someone called them “photons.” I think I also mentioned Louis de Broglie¹, who studied this question with Langevin in Paris.

M—He switched from history to physics when his brother told him about relativity.



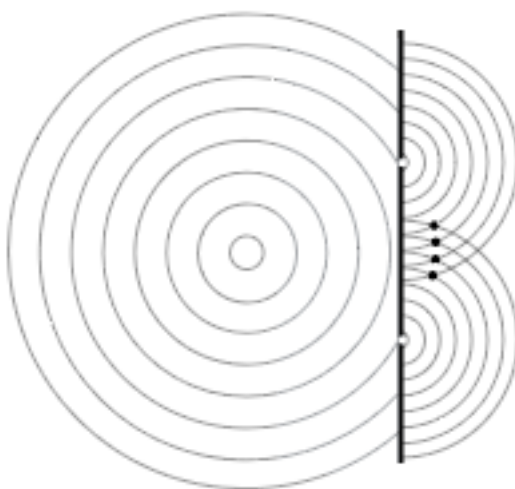
A—Before I tell you about a startling proposition he made in his PHD thesis, I need to tell you a little more about waves. You remember the example I gave you: a pebble thrown into a lake. What happens exactly? Water molecules all around the impact point jump up. Then they come down, which pushes their neighbors upward, so you see first one circle, then a second circle, then a third one and so on. Water molecules go up and down. This we

¹ This is pronounced something like Broy or Broil.

call an oscillating phenomenon. Water doesn't move outward—the ripple moves outward. This is the propagation of the phenomenon. What is propagated horizontally, using water as a medium, is energy. Sound is a wave that uses air in a similar manner for its propagation.

If you throw two pebbles in different places at the same time, two waves appear, then meet and interact. Let me draw a picture in your notebook. See, here is one pebble and one mother wave. A barrier with two holes replaces the two pebbles. In this manner, the two daughter waves are born at the same time and have the same strength.

When two wave crests overlap, they reinforce each other and you get a higher crest. I'll mark some of these higher crests with black dots. When two troughs overlap, you get a deeper trough. When a crest meets a trough, they cancel each other. This special pattern that appears when two waves meet is called "interferences."



M—Wow! Next time I see waves, I'll take a good look. I wonder whether the surfers know about this stuff.

A—Near the shore, there are other processes involved, because of the slope at the bottom of the sea. Maybe some surfer physicists have described it fully.

M—What about the tide? Somebody told me it has something to do with the moon.

A—It plays a part too, certainly. The mass of the moon bends space in a way that affects the oceans. You could spend a lifetime studying the moon, I'm sure.

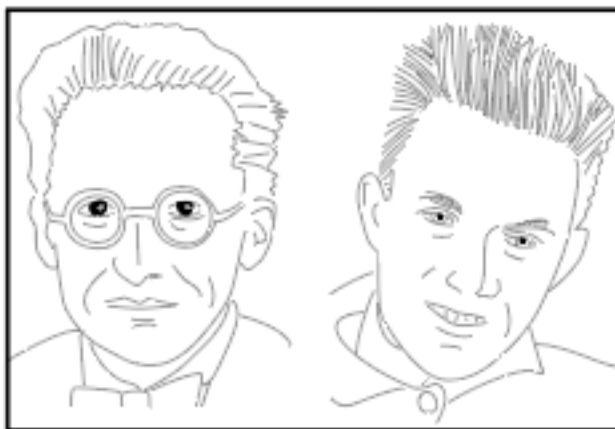
Now I'll tell you about an English eye doctor and physicist, Thomas Young. In 1801, he performed experiments with light in order to study our vision. He cut slits in a sheet of

cardboard and put it in front of a light source. A typical interference pattern appeared on a screen behind the cardboard: very bright stripes where crests or troughs reinforce each other, dark stripes where light is cancelled. Until then, people were not sure whether light was made of waves (this was the theory of Huygens) or particles (Newton's opinion). Young's experiment settled the argument in favor of waves—until Planck discovered quanta and I suggested light might have a dual nature. Although it is made of pure energy, it can behave either as waves or as particles. This Thomas Young was quite a clever fellow. He invented the word “energy,” for example.

I told you De Broglie made a startling proposition. Material particles like electrons, he wrote in his thesis, have the same dual personality as light. They can behave like waves and produce interferences. “He has lifted a corner of the great veil,” I wrote to Langevin when I read his work. For his PHD thesis he received the Nobel prize in 1929, which is unusual. Some years later, someone proved he was right by performing the Young experiment on electrons.

De Broglie's “material waves” fascinated my young colleagues. Erwin Schrödinger, an Austrian physicist, wrote their equation—a very important first step for a new branch of physics that he called “wave mechanics.” He performed a magic trick, which turned a certain kind of waves, called “stationary,” into the preferred orbits of Niels Bohr's atom.

There remained a basic question we couldn't answer about De Broglie's material waves: what kind of creature were they? What vibrated or oscillated exactly? My good friend Max Born suggested a strange answer. What oscillates, he said, is the probability that the electron be found at a certain place. The material waves became probability waves. This wild theory went far beyond a mere new branch of physics. Wave mechanics were already stale. Born considered his hypothesis the linchpin of a new kind of science, which he named “quantum mechanics.”



Erwin Schrödinger and Werner Heisenberg

Everybody accepted and admired this clever theory—except me. “We don’t know where the electron is,” I said, “but it is nevertheless somewhere.” I had always thought that the purpose of science was to make things clear. Now it was making them fuzzy. A young German physicist, Werner Heisenberg, added a layer of mystery. According to what he called the *uncertainty principle*, we have to give up some knowledge. For example, if we try to add to our knowledge of a particle’s location, we have to give up some of our knowledge about its speed. This can be compared to what happens if you want to photograph me in my garden with a regular lens. You told me you learned how to use a camera, Marilyn.

M—Oh, please remind me, Al: I want to take your picture.

A—Well, when you photograph me, either I’ll be crisp and the background will be fuzzy, or the background will be crisp and I’ll be fuzzy. Unless you use a special wide-angle lens, you have to choose the foreground and give up the background, or vice-versa.

Light plays a part in the uncertainty principle, actually. To observe or measure something in nature, we always use light or some kind of radiation, for example x-rays. But we know that a single quantum of energy dislodges an electron from its location. So the energy we use to observe things changes them. We can’t know what they are by themselves, when no one is looking at them.

Reality was vanishing like the Cheshire cat under our very eyes. An enigmatic smile floated in mid-air. These young fellows didn’t mind giving up the very principle of causality, which says that the same cause always produces the same effect. Do you play billiards, Marilyn?

M—Joe tried to teach me, but I can't really play.

A—If you hit the ball under a certain angle and with a certain force, classical physics lets you make precise predictions. "If we know the present, we can calculate the future." You know where the ball will be and how fast it will be going after so many seconds. The new physics weaved some luck or randomness into our predictions. Democritus knew it already: "Everything that exists in the Universe is the fruit of chance and necessity," he said. If balls were electrons, you could only say: "There's a sixty percent chance that the ball will be here and a forty percent chance it will be there." Thus, a same cause doesn't produce the same effect every time. Sometimes here, sometimes there. The law of causality was good enough for Galileo and Newton. According to Heisenberg, what's wrong with this law is not the second part, calculating the future, but the first one: we can't fully know the present.

Max Born—who was only three years younger than me, actually—tried to convince me that I was the father or grandfather of his theory, hoping maybe that I would give it my blessing. "I have simply followed one of your ideas," he wrote to me. "You have said that light was made of quanta, and that the light-wave was a kind of ghost field guiding the quanta." I sent him a perplexed answer. "My dear Max, quantum mechanics certainly calls for a great deal of respect. But an inner voice tells me we're not there yet. Although the theory offers a lot, it doesn't bring us much closer to the Old One's secret. As for myself, I am convinced that he doesn't play dice."

This letter became quite famous, at least in the small world of physics. I seemed to refuse the evolution of science. Niels Bohr gave me some playful advice: "Don't try to tell God what to do, Einstein!"

M—You were not trying to tell God what to do. You were trying to second-guess him. It had worked once, so why not twice?

A—Second-guess?

M—Read his mind.

A—*Ach*, yes, precisely. We're trying to read his mind. This is the whole purpose of science.

Max Born's wife, Hedi, was religious in her own special way. Maybe Max was religious too, but there was no God in his science. I liked to talk with him.

"With your theory, Max, nature doesn't act in a rational manner anymore. How could I accept that?"

“It acts rationally at our level, but what happens at the atom’s level follows other rules. Imagine a huge insurance company. It can compute its profit and losses and next year’s budget. If you single out an insured man, though, he lives in complete uncertainty.”

“If we knew every parameter of this man’s life, we could predict his future. We’re unable to predict a particle’s future because we haven’t found what laws it obeys. We’ll find them someday, I’m sure. We’ll get rid of probabilities. When we have an explanation so simple that a child understands it, everybody will be relieved. I’m looking for that explanation.”

“You still think you can study nature’s laws objectively. It is impossible, Albert. Science is subjective. You are not a spectator looking at a theater show, you’re an actor belonging in the show. You can’t describe reality, but only its interaction with the instruments you observe it with. We’ll never get rid of statistics and probabilities. Uncertainty lies at the very heart of matter.”

“This is not physics, this is metaphysics! I believe that the world exists objectively and we can know it.”

“Your stubborn belief in the universe’s objective existence resembles an act of faith. When you said that God didn’t play dice, I thought you meant nature. Now I wonder whether you don’t actually mean God.”

“Whoever studies physics seriously has to conclude that a rational and harmonious mind, vastly superior to ours, manifests itself in the laws of the universe. What’s obvious, of course, is that this superior mind doesn’t care about our miserable lives and doesn’t look over our shoulders to check our every action. In other words, morals may play a primary role in our life, but it has nothing to do with God. The idea of a God who rewards or punishes his creature, or has a will similar to ours, seems very childish to me. ”

M—You seem to be saying there’s a God, but no Devil. I guess you don’t send us to hell when we sin. But neither do we go to paradise. Do we have a soul?

A—Democritus, who spoke of chance and necessity, described the universe in a very complete way: “There are only atoms and void,” he said. So, no souls. Atoms and void. Everything else is illusion.

M—Then what about God?

A—I see a wonderful harmony in the way that the atoms interact between themselves and with the void. The principle behind this harmony I call God. I am convinced that all human beings share a fundamental emotion that lets us experience the mysterious harmony.

This stands at the cradle of true art and science. He who doesn't know this sense of wonder at the marvelous structure of reality is as good as a snuffed-out candle. The feeling that something of profound reason and radiant beauty lies beyond our experience constitutes the truly religious attitude. In this sense, I am a deeply religious man.

Ach, I have to admit that quantum mechanics works quite well. Using its ideas and equations, physicists have made great discoveries. I still think that it is a kind of temporary theory, and that in the future God will stop playing dice.

M—God can't really play dice. He knows what number will come out.

A—Or we might say that when we throw a dice, we don't know what number will come out, but God knows. If we could measure all the parameters, the strength of our fingers, the thickness of the air, if we could use all the power of these new machines called "computers," we would certainly find the number as soon as the dice leaves our hand. In this process, "chance" or "luck" is only apparent. We use such a word because the complexity of the process overwhelms our limited means.

Uranium, radium and other radioactive materials emit electrons and other particles. Let's say you have a certain quantity of radioactive uranium. After a period of time, half of the uranium has ceased to be radioactive. We call this period of time the uranium's "half-life." We can measure this precisely. But we don't know which half of the original uranium will cease to be radioactive. Now please consider one atom of uranium. There's a 50% chance it will expel an electron before the end of the half-life. Will it or won't it? We don't know. We can't know, Heisenberg says. It is as if the uranium atom decided for itself. I find this very hard to accept.

M—As if it had a mind. Or a soul! This contradicts the idea that they are all exactly alike.

A—There are many things we don't know. Many things. I was unhappy when my young colleagues pushed physics in a direction I found distasteful. I was also disappointed with the Hebrew University. I hoped it might become a leading research center, but things were turning out otherwise. As you know, people who have money often control human affairs. Who financed the university? Wealthy American Jews. They named as director of the university a failed rabbi, who shamed his influential family in America by his antics. They very much hoped to send him honorably to some exotic place. In Jerusalem, he surrounded himself, as usually happens, with weak and mediocre persons, who would not threaten him.

Albert & Marilyn

As a result, the level of the university remained very low. I wanted to resign from the board. Weizmann begged me to stay.

While I had fathered a still-born research institute in Jerusalem, a beautiful healthy baby was growing up in your city, Marilyn. You know what I am talking about, of course.

M—A beautiful healthy baby in Los Angeles? I have no idea.

A—Caltech! One of the finest universities in the world.

M—Oh, Caltech. I don't really know that much about Caltech, or any other university for that matter.

A—I think it was a small vocational school, for plumbers and such, founded at the beginning of the century. Its trustees decided to change it into a first-class scientific institution. In 1921, they brought in Robert Millikan from Chicago. He was Caltech's president between 1921 and 1945. He was a very good experimental physicist. He had measured the charge of the electron. He refused to accept that the photoelectric effect could be due to quanta of light, as I had suggested in 1905, so he imagined and performed several clever experiments, which all proved I was right. He received the Nobel prize in 1923.

Edwin Hubble, a great astronomer, taught at Caltech too. In 1925, Millikan and Hubble invited me to visit Caltech. I had to refuse, because I had promised Weizmann I'd tour South America. I discovered a magnificent continent, a true Eden—but I should never have gone there. I wasted months explaining relativity yet again in dozens of cities and universities, as well as soliciting rich brethren like a *shnorrer* for the Hebrew University of Jerusalem

I have always thought that I missed the opportunity of a lifetime, or at least a half-lifetime, when I postponed my visit to Caltech. Hubble was beginning to look through the big telescope on Mount Wilson. He would soon discover that the milky way wasn't the whole universe, as was believed, but a small provincial bunch of stars. When he examined white stains that had been considered clouds of gas until then, he found other galaxies everywhere. Some were located at a great distance. Studying the color of a star's light lets us know whether it is coming toward us or moving away. Hubble observed that all the galaxies were moving away from the Milky Way. The farther they are, the faster they recede. I told you that a Russian mathematician, Friedmann, had applied the equations of General Relativity to the universe and said it had to be expanding. Do you remember my analogy, Marilyn? The universe can be compared to an earth painted on a balloon. If you inflate the balloon, all the cities move away from each other.

Now Abbé Lemaître, a young Belgian priest who was studying astronomy in Boston (not the first astronomer wearing a cassock: think of Copernicus), put forward a simple and obvious idea: if the universe is larger tomorrow than today, it means that yesterday, it was smaller. Last week, smaller yet. Abbé Lemaître went backward in time and saw the universe shrink and shrink in his mind's eye until it was no bigger than a "primeval atom" or "cosmic egg"—containing enough energy, however, to expand into the gigantic universe we know. I find it rather ironic that a priest should discover a physical explanation of the world's creation or, if you prefer, genesis. Later, my friend George Gamow described the actual reactions that may have happened at the beginning of everything. His colleague Fred Hoyle, by way of joking about Gamow's hypothesis (which competed with his own), called it the *Big Bang*.

So you see, while my colleagues in Germany were fascinated by quantum mechanics and considered General Relativity a settled subject, my theory was very much alive in California. If I had gone there, I would have worked with Millikan and Hubble. I'm sure I would have moved to your beautiful city. I wouldn't have wasted my time and energy on my hopeless quest for the unified field. Fate smiled at me when I was young, then laughed at me.

M—It's hard to guess what would have happened if you had done this instead of that.

A—I know what did happen. After the triumph of General Relativity, most of my intellectual babies died young and were buried in the graveyard of failed hopes.

M—But you told me you worked in Caltech in the early thirties, didn't you?

A—It was too late. In 1925, it was a young university, willing to welcome me in the faculty to benefit from my prestige. In 1930, it had become a big institution, whose powerful backers objected to my politics.

In Germany, only Freundlich still cared about relativity. He had never overcome his resentment over the failed mission in Crimea. Being a stubborn man, he went to the South Pacific to look at an eclipse of the sun. He photographed many more stars than Eddington and removed any lingering doubt about the deviation of light rays by the sun.

He built a new observatory in the Potsdam university campus. He hoped to find a red shift due to General Relativity in the light of very big stars. The observatory's architect, Erich Mendelsohn, had relied on the properties of concrete to design a very modern shape: it looked like a sixty-foot cucumber. Everybody called it "the Einstein tower." The students joked that its rounded geometry was non-euclidian. Many tourists came to look at it. My

enemies blamed me for this tower, as if I had conceived it myself. Its “Jewish” shape, they said, offended German good taste and proved I wanted to destroy ancient German traditions. While I was certainly willing to discard some of the ancient German traditions, I didn’t like “my” tower at all. I have always been fond of classical architecture and art. Freundlich and Mendelsohn had never consulted me about the tower, anyway.

M—Jewish physics, Jewish architecture. When they didn’t like something, the nazis called it Jewish.

A—And now, an echo of this: when the Americans don’t like something, they call it communist.

My trip to Argentina had really exhausted me. In 1927, I felt a sharp pain on the left side when I rowed to bring the boat back on a windless day. I didn’t have time to see a doctor, as I went to Belgium right away to attend the Solvay conference for the first time since the war. We were to talk about quantum mechanics, the only topic that interested the physicists just then. We all stayed in the same hotel. I ate breakfast with Niels Bohr and the young fellows: Wolfgang Pauli, Werner Heisenberg, Paul Dirac.

I have told you about Bohr and Heisenberg already. Paul Dirac, an Englishman, wrote a beautiful “relativistic” equation for high energy electrons. He was amazed when he found two solutions for his equation. One was our good old electron, which carries a negative electric charge. The other one was a positive electron or “anti-electron.” Dirac wondered whether such a beast existed. Well, one year after Dirac first mentioned it, someone found it in cosmic rays coming from deep space and named it “positron.” It was the first example of what we call “anti-matter.”

Pauli followed my footsteps: he was Austrian but taught in Zurich’s Polytechnikum. He was a strange man. You never knew what he thought. He had discovered how electrons divide up the space around the atom’s nucleus. Two electrons belonging to the same layer can’t be in the same location if they have the same “spin”—a new quality discovered by two students of Ehrenfest. This “Pauli exclusion principle” explains why different atoms, like hydrogen, carbon and oxygen, are, well, different; how they interact in chemical reactions to make water, salt and big foolish creatures like you and me; and also, why they can’t go through each other although they are mostly made of empty space.

M—What do you mean, empty space?

A—If the nucleus of an atom were an orange in the middle of Central Park, the electrons would be like bees flying in the park around it. So you see, lots of empty space. But the

Pauli principle excludes other electrons from getting into the park. This is why this cup of coffee doesn't go through the table, although the whole mass of the earth attracts it.

M—You told me it doesn't attract it. It bends space, or something.

A—Well, we still use Newton's vocabulary. It's convenient. Give us a few more centuries to change our old habits.



Pauli and Dirac

Lorentz chaired the conference. He was seventy-four years old. This was one year before his death. He asked me to open the proceedings.

“Please give us the latest news about quantum physics, professor Einstein.”

“I'm sorry, Herr Professor. I do not feel competent enough. I had no part in the most recent discoveries. There are two reasons: the first is that things move too fast for me; the second is that I do not approve of the purely statistical interpretation upon which these new theories are based.”

My colleagues seemed rather disappointed. As I had played a decisive part in the birth of the quantum hypothesis, they expected me to contribute to the current research. Well, there was no way I could accept some of the wilder lectures. For example, they discussed the Young experiment—I told you about it: Young sent light through two slits and obtained interferences. Heisenberg and the others pretended that a single photon or electron will “spread” and go through both slits, then interfere with itself—but only if nobody is around. The bashful creature stops doing it as soon as you observe it. This defies common sense, obviously.

M—Common sense is something we acquire by learning to know the world around us. Your atomic world is completely different. So why should our common sense apply?

A—You're right. Our common sense shouldn't apply. It helps us build a mental model, maybe. Then our sense of esthetics steps in, too. I didn't like the where-is-the-bloody-particle model, I guess.

I kept silent during the lectures, but I couldn't help bantering and joking with my young friends during the dinner. My jolly mood and a glass of wine or two warmed my brain. Suddenly, I saw a clear objection, based on an intricate hypothetical experiment, to the uncertainty principle or some other pillar of the quantum theory. All the young physicists had been Bohr's students in Copenhagen. While they listened politely to my objection, Bohr stopped eating his chocolate mousse and frowned. Ehrenfest told me he knocked on his door at one in the morning. "Just a word, Paul..." He stayed two hours. He came to breakfast with red eyes above dark shadows. He pulled his notebook from his pocket.

"Listen, Albert..."

He crushed my house of cards with a large grin on his face. At least, I slept better than he did. I improvised new comments. During the morning lecture, the young puppies exchanged messages on bits of paper, then sent me notebook pages covered with graphs and equations. Often my objections had a philosophical flavor.

"Even when we use the most abstract mathematical tools, we want to describe the real world. A good theory should let us predict what happens in this real world."

"At the atom's level, there is no objective reality," Heisenberg answered. "We can't observe the atom with our senses. We must accept to limit our knowledge to a series of equations, a kind of mathematical map, without expecting to nail down any 'real' world."

Paul Ehrenfest was sad to see me standing on the shore and refusing to sail along on the stream of science.

"What a topsy-turvy situation, Albert! You're opposing the quantum theory exactly in the same manner your enemies were rejecting the theory of relativity."

Heisenberg told me a story about the theory of relativity.

"I attended one of your lectures in Leipzig in 1922. When I entered the hall, a Lenard follower handed me a leaflet saying that your theory was a hodge-podge of silly speculations, that it would have petered out long ago if Jewish newspapers hadn't chosen to use it as a battering ram against German genius. I barely knew your theory, but I thought

it was probably right. Otherwise, Lenard wouldn't have used irrational arguments against it. He would have built a plain scientific refutation."

M—I write all the scientific stuff without understanding most of it, but I have learned at least one thing: science is not as rational as I thought. There's lots of emotions in it, jealousy and spite and so on. It reminds me of Hollywood!

A—Although I disagreed with these young scientists, I admired them. As a former Nobel laureate, I was allowed to recommend candidates for the prize. I recommended Louis de Broglie (he got it in 1929), then Werner Heisenberg and Erwin Schrödinger (they shared it in 1933).

I still went to Kiel to perfect my magnetic gyrocompass. It was such a wonderful machine that Anschütz sold it to most of the navies in the world. Only if they had submarines, of course. After World War I, Germany was forbidden to sell military equipment, so Anschütz founded a separate company in Holland. My royalties were paid to a bank account I had opened in Leiden. This helped me later.

I also worked on another magnetic gadget. Elsa used an old-fashioned icebox. She wondered whether an electric refrigerator would be better.

"Stick to the icebox," I told her. "Refrigerators use very dangerous chemicals. I read in the papers that a whole family died of asphyxiation because of a leak."

"Since you're the greatest scientist in the world, Albertle, you should be able to invent a better refrigerator."

"A better refrigerator? Why not?"

I worked with a young Hungarian scientist, a very clever man, Leo Szilard. He had called on me to ask my opinion about some relativity ideas and we had become friends. He was a short chubby fellow who wore wrinkled clothes and kept losing his comb, so that most of the time his hair looked even wilder than mine. Our refrigerator used an electromagnetic pump. The coolant was liquid sodium, which was not as dangerous as the previous chemicals, although it could certainly give you nasty burns. The nice thing about our machine, it was completely silent. It took us a while to make it really safe and patent the main ideas. By the time we were ready, the Frigidaire company had introduced a perfectly safe and nearly silent refrigerator, so we gave up our plans to improve the life of German housewives¹.

¹ Einstein and Szilard's system is still being considered now and then to cool nuclear reactors.

Albert & Marilyn

M—One side of me longed to become a good American housewife and mother. I would have been the perfect sucker for your magnetic refrigerator, Albert. The other side wanted to go on being a glittering star in Hollywood. Fake stars. They glitter like gold, but they are tinsel.

A—What is tinsel?

M—Paper stars on Christmas trees, you know.

A—Oh, tin. A cheap metal.

M—After our trip to Japan, I tried being Mrs. DiMaggio in the San Francisco restaurant. Tourists came and took my picture and asked for autographs. The restaurant was always full. I can't say I was discovering boredom, because I had known it already when I was waiting at home for Jim Dougherty. I was back to square one, in a way. When I was Mrs. Dougherty, I could at least iron Jim's shirt to pass the time away. Now a Mexican maid ironed the shirts. Actually, I couldn't get Arthur Miller out of my mind. I had just married Joe, but I dreamed secretly of marrying Arthur. Gosh, this didn't make sense.

Joe's brother is a commercial fisherman, as were his other brother (who drowned) and his father. We spent a day at sea on his trawler. Joe was red with pleasure. I was green.

When I wanted to go for a walk in the streets of San Francisco, I had to wear a wig and sunglasses or risk being mobbed. In Los Angeles, nobody walks in the streets. In New York, nobody cares who you are. Well, if I'm a star, I'd rather live like one. I'd be a fool to give up the bliss I felt, oh the thrill, when the love of ten thousand soldiers rushed at me like a hot tidal wave.

And what do you know? Fox decided to make amends, all of a sudden. Everybody had predicted they would come after me. They didn't like me, but they liked the cash I earned for them. Yeah, *Pink Tights* was a ridiculous script, they said. Let's forget about it. Why don't you come back, Marilyn? We'll double your salary. We have a script made to measure for you: *The Seven Year Itch*.

A—What you are shooting now.

M—We've just begun.

I had to admit the project was quite attractive. A witty comedy, directed by a great master, Billy Wilder. Okay, then!

As the script wasn't ready yet, they gave me a supporting role in a worthless musical, *There's No Business Like Show Business*. What the heck! I would have accepted anything to escape from the Italian restaurant. I played a hat-check girl in a music-hall who ends up

on the stage. I had stopped working for one year, so I had to practice my singing and dancing real hard. Common wisdom says that if you stop working just one day, you slip back already. I found it tough to learn my lines, too. Nana Karger, whom I stayed with when I needed solace, said I should go easy on alcohol and sleeping pills if I wanted to keep my memory and my voice.

Natasha Lytess was back on Fox's payroll as my coach, but I was beginning to wonder whether I really needed her. When I followed her advice, I tended to exaggerate my postures and gestures. My main dance number, which should have been provocative and sexy, came out vulgar and ugly.

I quarreled with Joe, too. We lived in a big house in Beverly Hills. He refused to see my Hollywood friends. While I had been bored to death in San Francisco, it was now Joe's turn to be bored waiting for me. He spent his days watching stupid baseball games and variety shows on TV. When I came home, he was awfully cranky.

A—Watching baseball all day is certainly bad for the brain. This TV doesn't seem such a good invention to me.

M—Gee, he certainly didn't give me the affection and support I needed. He said I dressed like a whore and played whores in my movies. He said the Hollywood people were worse than whores. He didn't want to see any of them, so I couldn't bring my friends home. I felt even lonelier than usual, since I couldn't meet my friends. Often, he stopped talking to me for days. I didn't even know why.

"What's wrong, Joe?" I asked him.

"Stop nagging me!" he answered in a threatening voice.

He became violent, sometimes. He insulted me. He hit me. How could I stop taking sleeping pills? If I tried, I kept pondering the failure of my marriage and I couldn't sleep. I was afraid I'd become crazy.

When *There's No Business Like Show Business* was released, the journalists wrote crushing reviews and my fans were disappointed.

My mood improved as soon as I began shooting *The Seven Year Itch*. Mr. Wilder is a real genius! He grew up in Vienna, like Otto Preminger, but his German accent evokes waltzes and pastries. He sports a small comical hat that nobody else could wear without being ridiculous.

A—Did you say "comical"?

M—I said "comical," but maybe "conical" is right too.

Albert & Marilyn

Billy Wilder is the second director, after Howard Hawks, who understands how to draw out and enhance my personality. He gives me time to find my own way of doing things. Instead of expelling Natasha from the set, he considers her his ally, talking to her when I don't agree with the way he asks me to play.

I came to New York for publicity, you know. *The Seven-Year Itch* is supposed to take place in Manhattan, so we pretended to shoot a couple scenes on location just to attract a crowd. The Studio hopes this publicity stunt will bring in some advance buzz. I play the lovely neighbor of Tom Ewell. He is a married man, left alone in his New York apartment while his wife is gone away to escape the summer heat. We did shoot a scene in a real house on 61st street. When we work in a Hollywood sound stage, the public doesn't attend the shooting. In New York, how could you keep the bystanders away from the streets? Hundreds of them came to see me. Even though barriers kept them at a distance, we heard their shouts ("Marilyn! Marilyn!"), so that we'll have to record the dialogue later, back in Hollywood.

The main event was staged at night on Lexington avenue. As the story takes place during a sizzling New York summer, I look for a cool breeze by standing above a subway ventilation grating. An impish draft slides under my white skirt, which billows like a parachute so that you can see my legs and even my underwear. Gosh, the guys loved it! All the papers published pictures! Meanwhile, carpenters in Hollywood are building a set so we can shoot the real thing far from the crazy crowd. Puritans rave just like Joe when I show my thighs. According to their radio stations, I encourage sexual perversion and I shame America. Family groups write angry letters to the Studio and the newspapers. I would like to be respected, but I am not a respectable woman. It is said that fifty million men dream of cheating on their wives with me.

Do you know Walter Winchell?

A—An actor?

M—He's a nasty journalist, who earns lots of dough writing a gossip column. He called Joe in Beverly Hills and convinced him to come to New York, then he brought him to the mock shooting on Lexington avenue just so he could record Joe's reaction. What do you think? Joe went mad when he saw all the men hooting and whistling. "What the heck is going on here?" he asked. He ended the night in a bar with his baseball and billiards cronies. They're full of beer, of course. They laugh at him, they scoff and jeer. Back at the hotel that night, he shouted very bad words at me and hit me harder than before. Whitey Snyder

had to cover the bruises with makeup. I called my lawyer. I'll file for divorce as soon as I'm back in Los Angeles. We've been married eight months.

A—Divorce is a liberation, but also a failure.

M—This will be my second divorce already. Joe is a good man, actually, but he doesn't understand Hollywood at all. I didn't try to understand baseball either. I see it as a game for kids. Why do adults waste their time playing and watching it? Quite a mystery. When he is jealous and gets violent, he is a child, really.

A—I divorced only once. Mileva was jealous, but not Elsa. Our union was a kind of partnership, maybe. We were good friends first. Love was a second thought.

M—When you say she wasn't jealous, are you implying that you gave her reasons to be jealous?

A—Not right then, at least. She watched over me not like a jealous wife, but like a good nurse. There was something wrong with my heart.

I had this first alert when rowing in 1927. In March, 1928, I spent a few weeks in Zuos, a Swiss mountain resort. I was supposed to rest, but I couldn't refuse when some people suggested I give a lecture and play the violin for students of a new Davos school. The poor kids were residing in the Alps because they suffered from tuberculosis. Then I accepted a generous amount of money to give my opinion about a patent in a Leipzig court. On the way back, I took a train from Leipzig to Stuttgart, then another from Stuttgart to Zurich, then a bus from Zurich to Zuos. In the end, I started climbing a steep snowy path to reach my chalet.

I was carrying a suitcase full of patent files. All of a sudden, my legs gave up. "This is as far as we'll go," they said. I just couldn't move anymore. I felt life ebbing from my body. "So this is it," I thought. Well, it wasn't. Dr. Zangger came from Zurich in the morning. You remember he was a friend who acted as my official representative (together with Michele Besso) in my relationship with Mileva and the boys. "He took great care of my corpse," I wrote to Michele. "I was close to croaking, which of course one can't put off forever." Zangger called an ambulance and reserved a special medical berth in a sleeping-car so I could be carried safely to Berlin.

There I called Dr. Plesch. He diagnosed a pericarditis, an inflammation of the heart's envelope. I knew two famous doctors in Berlin: Dr. Ehrmann had treated my ulcer, Dr. Katzenstein was my sailing partner. They criticized my choice.

"How can you trust this Plesch with your health? He knows nothing."

“No doctor knows anything, as the human body is much too complex a system for our limited mind. Dr. Plesch gives wonderful dinners, where I’ve met all kinds of fascinating people.”

“Precisely. He is more interested in society life than in medicine. I’ve heard that he rented the opera for a costume ball.”

M—There are glamorous doctors in Los Angeles, too. I’m not sure any of them would rent the opera to give a costume ball.

A—I haven’t heard of a scientist doing such a thing either.

M—Movie producers might, of course.

A—Plesch prescribed rest and a saltfree diet, which couldn’t hurt. He said I didn’t exercise enough. I told him I played the violin. He said I should switch to the drums and the trumpet. So you see he was not such a bad doctor.

I stayed three months in bed. Elsa went to Lübeck and rented a small house so I could regain some strength by walking on the beach and breathing the invigorating Baltic sea air. Elsa was honorary president of a foundation that helped Jewish orphans. She asked the foundation’s secretary, Rosa Dukas, whether she knew of an orphan who would take care of my mail and telephone calls while we were away.

“I’m not sure I can find someone,” Rosa said. “Why don’t you publish an ad in the papers?”

“I’m afraid I’d attract cranks or, even worse, journalists under disguise.”

“Wait: I’ve found someone. My sister Helen had a job with a publisher, but the company just failed. She’s free.”

Helen Dukas entered my bedroom a few days later. She was a bit shy, especially seeing I was lying in my bed.

“Don’t be afraid of this old corpse,” I told her.

She laughed. She was so pleasant and efficient that she is still my secretary today.

M—Oh, she’s the lady who brought the coffee.

A—If I believed in a personal God, I would thank him for giving me such a marvelous, er, what’s the best word? Factota?

M—A strange word.

A—The feminine of factotum. She sees to it that I ingest warm meals and rest in a warm bedroom. She keeps to herself the tiresome details I want to forget and reminds me of the important things I need to remember.

M—You might try governess. When your wife was alive, miss Dukas was just a secretary. Now she's taken over some of your wife's tasks.

A—She already looked after our apartment, back then, while I enjoyed the Baltic sea. I discovered that full rest was a rather pleasant activity. Sitting in a comfortable deck-chair, I watched the birds, the waves, the clouds. Perfect movements, endlessly renewed. I felt that contemplating nature would help me understand it better.

From my deck-chair, I canceled a trip to Geneva, where I was supposed to attend a meeting of the *International Committee for Intellectual Cooperation*. I belonged to a group trying to set up an international meteorological office. Giving up another responsibility, I resigned from the board of the Hebrew University.

During my long stay by the beach, I designed a new geometry, halfway between Euclid's and Riemann's. I believed I had found a path leading to my grail—the unified field. “Not only do I feel much better,” I wrote to Dr. Zangger, “but I am blessing my illness, which gave me time to lay a wonderful egg in the area of General Relativity. Whether the bird hatching from it will be healthy is still in the lap of the gods.”

Elsa wrote to one of her friends in Berlin: “My husband is very happy. He solved the problem which he had been working on for years. Now he has realized his life's dream.” The news reached *The New York Times* somehow. EINSTEIN ON VERGE OF GREAT DISCOVERY, the headline said.

I came back home at the end of 1928. As I was still too weak to speak on front of the Academy, Max Planck presented my theory in January, 1929. The journalists couldn't understand my equations, but this didn't prevent them from honoring me with the front page: EINSTEIN SOLVES RIDDLE OF UNIVERSE! I was foolish enough to give an interview to an English journalist and brag.

“Now, but only now, we know that the same force moves electrons around the nuclei of atoms, moves the Earth in its annual course around the Sun, and brings to us the light and heat which makes life possible on this planet.” This was quite premature. We still don't know, Marilyn.

M—Will we ever know?

A—We're still in kindergarten. Maybe we'll know a little more than we do. But the real nature of things, that we shall never know. Never.

That we can know anything at all is a great wonder. We're building a model of the universe, so to speak. The more we study it, the better we understand it. *Ach*, but the "it" in my sentence is not the actual universe. It is the model we made up.

My colleagues were wondering whether I had lost my mind. Heisenberg, Dirac and Pauli were famous for their harsh tongues, but Pauli was the best (or worst) by far. He shouted *Falsch* in a unique way when somebody said something false. When a student gave a worthless answer to a question, he crushed him by saying: "This is not even false!" He sent me a virulent letter: "Should I congratulate you or express my condolences? You're giving up your own interpretation of the deflection of light by the Sun and the precession of Mercury's perihelion. Are you trying to demolish the general theory of relativity? Allow me to stick to that fine theory, even if you're betraying it. I bet that within a year, if not before, you'll give up this new whim, like you renounced the previous one." He lost his bet: it took me two years to throw my failed attempt into the waste basket. I joked when I met him in 1932. "So you were right after all, you rascal!"

I changed the equations, I tried a fifth dimension¹, This was more than twenty years ago. I'm still trying.

M—Can you just decide to add a dimension?

A—On paper, everything is possible. Then nature sneers and there's one more crumbled sheet in the wastebasket.

Even for Einstein, time refused to slow down. On March 14, 1929, I reached the ripe old age of fifty. I received telegrams and gifts from at least three continents. The Sorbonne gave me an honorary degree, the Zionists planted an "Einstein grove" near Jerusalem. A German peasant sent me a pouch of tobacco with a note: "The amount is *relatively* small, but I gathered it myself in a good *field*."

I wasn't allowed to smoke more than one pipe a day, because of my frail heart.

"Smoking again?" Elsa would ask.

"It's the first one."

"I've seen you smoke another one this morning."

"All right, the second one."

"At least the fourth."

¹ He explored an idea put forward by two young physicists, Kaluza and Klein. Extra dimensions are back in vogue today, as part of "superstring" theories.

“Are you pretending you can count better than I do?”

To escape the onslaught of journalists and photographers, I took refuge in Dr. Plesch’s country house—or rather, palace.

“You should have a country home of your own, professor Einstein,” he said.

“My city apartment is large enough.”

“You don’t rest there. Mrs. Einstein told me that all kinds of people ring at your door. Then you go to the university and the observatory and the academy. I’ll tell you what: as your doctor, I am prescribing the acquisition of a country home.”

What with giving dinners and balls, Plesch knew all the right people in Berlin, so he convinced City Hall to offer me a house on one of the lakes for my fiftieth birthday.

M—Gee, a great gift. You would be able to sail, too.

A—Wait. This is just the beginning of the story. When Plesch came back from his first visit to City Hall, he said: “I had to explain to the mayor who you were. He has never heard of you.” This was a bad omen, actually. People told the mayor who I was and City Hall found a small residence on the Havel river. It belonged to a large estate, with a castle and several outbuildings, which the City had purchased recently.

The newspapers published photographs of “Einstein’s house.” As an orchard was blooming next to it, the house looked quite inviting. I walked a little every day, but I was still quite weak, so Elsa went to take a look without me. She wanted to check whether there was any work to be done before we could move in. When she came back, I saw a mischievous light in her eyes. She laughed.

“Well, what about the house?” I asked her. “What happens? Is it rotten? What’s so funny?”

“You would love the house, Albertle. It is perfect, just perfect. It looks even better than in the pictures. The photographer forgot to show the tenants, that’s all.”

“Tenants?”

“Unpleasant people, too. The former owners of the castle. Told me I had no business there. When they sold the castle, they retained a ten-year lease on the residence.”

City Hall apologized for the mistake. The newspapers joked about stupid municipal bureaucrats. The mayor was embarrassed. City Hall found a piece of land near a lake. There was no tenant because there was no house. City Hall supposed I was rich enough to build my own villa. Now, some other unpleasant people appeared on the scene: neighbors. It

seemed that no building was allowed on the land, as it would have spoiled their view of the lake. We could buy a tent and camp on our land.

M—You said the newspapers joked. If such a thing happened here, the newspapers would joke too, but then they would send their hounds and find what's what.

A—What's what... The American press is unique. *Ach*, the story had been entertaining for a while, and now it was boring. City Hall found a piece of land that was quite far from the water, but close to a busy and noisy tram terminal. They just couldn't find a quiet house near the water. As a way out of this mess, they suggested I look for a piece of land myself. The city would buy it, then I would build a house on it. Some people who read about this in the papers sent us pictures of a perfect plot, one third of an acre between a wood and a lake in the village of Caputh, near Potsdam. They were willing to sell it for 20,000 marks. I fell in love with the place right away. I definitely preferred the location to the first one. A young architect, hoping to benefit indirectly from my fame, brought me a well-designed project for a simple but comfortable wooden house in the modern Bauhaus¹ style.

Then what? City Hall had to find the money to buy the land. This wasn't as easy as donating a City property. The City Council had to decide—and vote—whether to withdraw 20,000 marks from the land acquisition funds “to honor Prof. Einstein on the occasion of his fiftieth birthday.” I was told that the nationalist and nazi councilors asked whether I really deserved such a gift. They debated and debated, and then postponed the decision until the next session of the Council. Well-informed friends told me that the bureaucrats who had bungled the whole thing by finding unsuitable houses were neither careless nor stupid, but knew what they were doing from the beginning. They admired Hitler, that's what.

I wrote to the mayor: “My dear Mr. Mayor, I thank you for the friendly intentions of the City Council. Human life is short, however, while the authorities work very slowly. Now my birthday is already past. Thus, I ask you to please give up the idea of offering me a present.”

I bought the Caputh plot with my savings. The young architect built the house. He insisted on installing the epitome of modern luxury: central heating and taps with hot water. My friends, who were more generous than City Hall, offered me a magnificent boat, with

¹ Architecture school founded in 1919 in Weimar. It influenced most of the great architects of the 20th century.

mahogany fittings and even a toilet: the *Tümmeler*—which is, I think, Porpoise. I liked the house and boat so much that I settled in Caputh and seldom returned to the hustle and bustle of the city. As a result of this clumsy nazi plot, I enjoyed the happiest years of my life. Well, until their next plot sent me to Princeton, where I've been quite happy too.

M—Let me read what I wrote on the preceding page: “a simple but comfortable wooden house.” This could also describe this very house, don't you think?

A—The Caputh house was made to order, so to speak, so I really enjoyed living in it. A large window in my office let me see the lake, with my *Tümmeler* moored to its pier. The water shivered in the wind and blushed when clouds sailed across the sky. Instead of the grumbling and coughing and honking of the trucks in the streets, I heard the rustling of the leaves and the singing of the birds. My heart was so serene that it stopped bothering me. I seldom went back to Berlin. People who wanted to meet me came to my paradise. Elsa and I both had our own bedroom. Mine was also my office. There was a bedroom for our maid and two more for our close friends: Elsa's daughters, my sons, my sister Maja, Max Born and Hedi, Philip Frank and his wife, and so on.

Ah, do you remember we talked about jealous wives? Now comes the time when Elsa could have been jealous. The lake was linked to others lakes by a river and some channels. I used to take my boat and moor it at Toni Mendel's pier. She was a merry widow who owned a big house and a big car. The young architect told some journalist that women were drawn to me like iron fillings to a magnet. This is quite an exaggeration. Being a famous person, I did attract some women in spite of myself. I was too weak to resist the temptation.

M—Did your wife know about it?

A—You noticed we slept in separate bedrooms. Often, she stayed in Berlin. She liked the bustle of city life. Besides, she enjoyed seeing her daughters and grandchildren. I would eat what she left behind, then after a while I would begin to starve. So I crossed the lake and ate with Toni and spent the night with her rather than sail back in the dark. Also, I needed her car and chauffeur, because I did have to go to the Academy now and then. Sometimes, Elsa was in Caputh and I had to spend the evening in Berlin. Toni would come in her big car. Elsa wasn't very happy to let me go.

M—I can understand that.

A—After Toni came Estie, then Grete. What could Elsa do, except shrug and bear it? She hated Grete even more than the others, I must say, because she was young and pretty—

what Jews call a *shiksa*, with blond hair just like you, Marilyn. *The Seven-Year Itch*, it that it?

M—Yes.

A—The institution of marriage pretends to change a flash of passion into a lasting fire, but this can't be. We had been married a little more than seven years, but we had been very close for fifteen years or so. We were not young. For young people who fall in love and marry, I would think their passion might still be blooming after seven years. I would talk of a twenty- or thirty-year itch. This wouldn't do for one of your Hollywood movies, of course, because the people would be too old. But that's the way Nature intended, I think. If Nature wanted men and women to spend their whole lives together, society wouldn't have to establish so many rules to bind them together. Have you ever read Schopenhauer's writings, Marilyn?

M—I read more books than I used to, but I still have some catching up to do.

A—He was a German philosopher at the beginning of the nineteenth century. When I was going to high school, I intended to go to university and become a professor, but I hadn't decided whether to study and teach physics or philosophy. I liked our great German philosopher Immanuel Kant. His abstract ideas soar toward an ideal world, far from common life. It didn't bother me, as I was a young man who knew nothing about real life. Later, I came to dismiss this kind of philosophy as useless mind play, akin to pure mathematics or chess. I preferred Schopenhauer, who took a good look at real life. What did he see? Human beings are two-legged animals, puppets of nature. Whether you call the great puppeteer God or Nature makes no difference. It wants one thing of us: that we reproduce. We grow up and eat and learn all kinds of tricks just so we can seduce someone belonging to the other sex and reproduce. Dr. Freud gave a name to this urge to reproduce: *libido*.

M—I don't know Kant and Shopping Hour, but I know libido. It is a vital fuel in Hollywood.

A—You told me you had affairs with older men. Well, nature plays a cruel trick on women: they can reproduce only until a certain age. So a man marries his girlfriend and after thirty years he wakes up one morning and sees a fifty-year old woman in his bed. Nature still urges him to reproduce, you know. That's why he can't help looking at younger ladies.

M—Wait a minute. When you moved into Elsa's apartment in Berlin, how old was she?

A—Maybe forty.

M—You were not obeying nature.

A—My mind planned my life one way, but ten years later my body itched and I sailed across the lake... I'll tell you something that nobody knows. I did think that Elsa might be too old. I told you she was three years older than me. We lived together for a while, waiting for Mileva to agree to a divorce. Then she did and I married Elsa. Well, at the last minute, a strange thought welled up from deep within me. Why not marry Ilse instead?

M—Her daughter? She was your secretary before miss Lukas, wasn't she?

A—Well, she married someone else and stopped working for the institute. I also gave up my duties at the institute, actually. After the war, it came to life and grew up, which means it had a budget and a staff. I found it was too much trouble for me, so I asked my friend Max von Laue to take charge.

M—You were still hesitating between your wife and a younger woman when you crossed the lake.

A—I played with the urges of nature, but Elsa remained my good companion.

Oh, I must tell you about another *shiksa* who became my friend in 1929. I went to Leiden to give my annual lecture in the university and see the dear Ehrenfest family. Lorentz, my old master, had died in 1928, alas. As Holland is close to Belgium, I spent a few days in Antwerp with my uncle Caesar Koch—my mother's brother. Queen Elizabeth of Belgium, having heard I was visiting her country, invited me to the royal palace in Laeken, near Brussels. The royal chauffeur was to wait for me at the Brussels railway station. I don't know how he imagined a professor, but he didn't see any. Just an old tramp carrying a violin. So he drove back to the palace. I entered a café and asked whether I could use their phone. I talked to the operator in my best French.

“Hallo, mamoiselle? I want to queen Elizabeth speak!”

The people in the café expected an ambulance to come and take me to the insane asylum. They were a bit surprised to see the royal limousine.

Elizabeth was a Bavarian princess. She had grown up in Munich, like me, at about the same time, and played the violin too. We had both rejected our Bavarian roots. The Belgian people love her. Although she is German, she condemned German barbary during World War I.

We played the solo parts of Bach's double violin concerto, then drank some tea in the garden while I tried to explain relativity. I stayed for dinner. We ate spinach and eggs. The

queen was vegetarian and liked simple things. There were no servants, actually, so we helped ourselves. King Albert was away on some official trip. Back in Berlin, I received photographs that a courtier had taken when we played the concerto, with a letter from the king saying how sorry he was that he hadn't enjoyed the pleasure of meeting me. The queen had added a sentence: "I'll never forget that you came down from your peak of knowledge and gave me a tiny glimpse into your ingenious theory."

As long as I lived in Europe, that is, during the next four years, I always played some violin with the queen between my annual lecture in Leiden and my sailing to America. I haven't seen her for twenty years, but we still exchange letters often. Life wasn't kind to her. Her husband the king died in a mountain accident. Her son the new king didn't oppose the occupying Germans as firmly during the second world war as she had done during the first one. As a result, he was advised to abdicate after the war and went into exile. Her grandson reigns over Belgium today.

M—You told me you found paradise in Caputh. Why did you go to America? This was before Hitler, wasn't it?

A—The chairman of Caltech's board called on me in Berlin. Robert Millikan, Edwin Hubble and Richard Tolman (a teacher of mathematical physics who had just evaluated the size of the universe) invited me to come and talk shop. A businessman was offering to finance my trip, a two-month stay and a seven thousand dollars salary. I accepted because exciting things were happening there. While I was stuck in my research, the teams in Pasadena and the Mount Wilson observatory were rushing ahead. The renewal of cosmology attracted many young astronomers. They tried to answer very tough questions: How old is the universe? Will it go on expanding forever, or will it reverse its course and shrink to the size of an atom?

You can't sail on a frozen lake, you know. I had to choose between the Prussian winter and California plus seven thousand dollars.

America was looking forward to my new visit. People over there didn't consider me an expert about tensorial equations or patents, but about religion. The New York Times had published my answer to the rabbi who wanted to know if I believed in God. Now they asked me to write an article about *Science and Religion*. I distinguished three stages of religious development. At first, among primitive people, a religion of fear. Later, a moral religion. Among the most advanced contemporary men, a cosmic religious sense that needs neither dogmas nor a God made in man's image. This feeling of cosmic harmony, of the

miraculous order that manifests itself in nature, is the strongest and noblest mainspring of scientific research, so that the only deeply religious people in our materialistic age are the earnest men of research. We do not try to communicate with a God we know nothing about, but spend our life studying his creation, amazed by what we observe and discover.

I had simply and honestly expressed my beliefs. Several progressive rabbis approved me, but some New York Times readers protested because their newspaper had published a text they considered subversive, anti-religious and thus anti-American.

M—Many of them are stuck at the primitive stage, you know. When something awful happens to someone, they think God is punishing him for his sins. Then they pray and expect God will reward them because they've been good.

A—This is very naïve and childish. They see God as a father. All our actions are explained by causality, with either external or internal causes, so reward or punishment for our actions would be unfair and stupid.

I stopped in Leiden to say hello to Ehrenfest. I attended the Solvay conference in Brussels (where I was confident I had at last refuted quantum mechanics, until Bohr refuted my refutation, as usual). I played violin with the queen (and met her husband, Albert). Then I embarked in Antwerp on a Belgian steamship.

M—I'm not sure I could find Belgium on a map. I've never gone to Europe, you know.

A—You're still young. I was already forty when I crossed the ocean for the first time with Weizmann. Fifty-one when I crossed it for the second time, at the end of 1930, to go to San Diego and Los Angeles by way of the Panama canal. Five persons were travelling with me: Elsa, her daughter Ilse with her husband, Helen Dukas and Walther Mayer, my calculator. I told you that in high school I considered math a pleasant but useless activity, like chess or crossword puzzles. I used very little math for Special Relativity. But when I enlarged the scope of my research to General Relativity, I had to learn advanced math. The only way I could build the new theory was with equations. I regretted I had been so light-headed as a student in the Zurich Polytechnikum. I didn't even attend math class, trusting my friend Grossmann to show me his notes. One thing was clear to me: if I wanted to find the diamonds of the unified field, I had to dig into a mountain of equations. I felt a lazy miner, so I got into the habit of working with a math wizard, letting him grind the numbers while I took care of the deep thinking.

Mayer was a splendid mathematician—who certainly deserved a professorship, but didn't get it because he was a Jew. We were working on yet another new unified field formula.

You remember I had travelled first-class ten years before. The businessman's pockets were so deep that I traveled in a three-room apartment on the top deck. A steward stood near the door to answer my every beck and call. This excessive luxury and attention made me uncomfortable, but I did find the three rooms convenient. I felt like an impostor, unfit for the ceremony of dinner. I looked at myself in the mirror and saw a disguised peasant. I left my princely staterooms as seldom as possible, as all the passengers wanted to photograph me and get autographs.

When we left Belgium, I begged the journalists to take care of important world events rather than call me in the middle of the ocean, in the middle of the night, to ask me whether I was sleeping well.

M—Did you sleep well?

A—When I didn't, I stepped out on the deck. The sky looked like a black silk curtain embroidered with silver stars. There's no better place than the middle of the ocean to watch deep space and ponder the big questions. I had passed the age for discovering new things and reached the age for meditating.

I hadn't made a deal with the American press. They kept sending telegrams, so that the ship's radio operators were as wet and salty with sweat as the dolphins swimming alongside the hull. When we approached New York harbor, fleets of fast boats carrying reporters and photographers attacked us. The reporters rushed at me like a pack of wolves. Just then, six million people had voted for Hitler's party in general elections. The number of nazis in parliament had jumped from twelve to one hundred and seven. Some journalists asked me what I thought of Hitler.

"I do not enjoy Herr Hitler's acquaintance. He is prospering on the empty stomach of Germany. As soon as economic conditions improve, he'll vanish into the background."

"Professor Einstein, professor Einstein! Is there a relationship between science and metaphysics?"

"Science itself is metaphysics."

"Can religion bring peace to the world?"

Albert & Marilyn

“It hasn’t so far. As for the future, I am no prophet. I believe your great country, my friends, with its wealth and power, could indeed destroy the dreadful tradition of military violence.”

M—There have been rich and powerful countries before. I’m pretty sure they made war like the others. Or maybe more than the others.

A—America is unique. People escaping from tyranny went there and tried to build a better world. The project still carries hope.

The journalists were delighted. They asked all kinds of stupid questions, which I answered with cheap jokes. I thought of hiding in the purser’s safe, but then the photographers would have taken pictures of the safe.

There was a five-day stopover in New York. I had hoped to stay aboard.

“Why should I go ashore?” I asked Elsa. “I know New York City already. I’d rather avoid noisy crowds and useless speeches.”

How foolish of me! All kinds of people had made plans for me. The mayor gave me the keys of the city, which made me an honorary New Yorker. The Jews expected a speech and the pacifists ditto. To the pacifists I revealed my great plan: “Under the present system, any person can be compelled to commit murder in the name of his country. The best way to oppose war is to refuse military service already in peacetime. Objecting to a government that wants you to accomplish criminal acts may be unlawful, but it is legitimate. If only two percent of those called up refuse to serve and demand that international conflicts be settled in a peaceful manner, governments will be powerless.” Many newspapers reported this speech. Some people in America printed “Two Percent” on buttons, which students and other young men wore to show their approval.

The pastor of Riverside Church invited me to see my statue in a long series of men—scientists, thinkers, artists—who had “enriched the world.” I was flattered to stand in the company of Moses, Kant, Beethoven and many others.

“Am I the only living person among all these great men?” I asked the pastor.

“Yes, that’s right, professor.”

“Then I’d better behave.”

I was glad to leave New York. My fellow human beings love me too much. I felt flattered but exhausted.

Albert & Marilyn

M—At least they love Albert Einstein and you are indeed Albert Einstein. In my case, they love the wrong person. Not even a person: a picture they have seen on a screen. I am not really Marilyn, I am Norma Jean.

A—Ah, but you can stop being Marilyn and become Norma Jean again. Then they'll stop bothering you. Whereas I can't stop being Albert Einstein.

I spent a few hours ashore in Cuba, where I was shocked at seeing luxurious hotels and clubs side by side with abject poverty, affecting mostly the black people. Then I jumped from the Gulf of Mexico to the Pacific Ocean over the spine of the American continent. While the Suez canal had meandered across a flat desert, the Panama canal went over mountains by using locks as stairs. A clever and useful invention, locks. The captain showed us that, due to the twisted shape of the Panama isthmus, the sun rises over the Pacific ocean and sets over the Atlantic.

It seems the two oceans have different levels. Nobody knows why. We know as little about the Earth's geology, the oceanic currents, the submarine volcanoes, as about the birth of the stars. Scientists will be busy for centuries, I'm sure.

When we landed in San Diego, the mob of journalists was so frantic that two of them fell into the water. I remember answering an old question:

"Professor, are there men living elsewhere in the Universe?"

"Men? Other beings, maybe, but not men."

Several thousand schoolgirls dressed in white waited for me on the shore. They danced, sang, agitated paper flowers. Some launched balloons, others threw canes into the air. I thought it was some kind of symbolic demonstration of gravitation, but I was told it was just for fun. Then the city offered us a "parade" with brass bands and flower "floats" and mermaids before releasing us so we could be driven to Pasadena. The whole crazy feast lasted four hours.

"These Americans are like children," Elsa remarked.

"I have heard the Barnum circus has such a parade. I'm sure it is more amusing to see an elephant or a giraffe than an old scientist."

You live in heaven, you know, Marilyn. The sunshine, the clear air, the blue sky, the palm trees! Caltech gave us a choice between a gigantic palace full of servants and a small gingerbread house with an automatic washing machine and other convenient gadgets. We chose the gingerbread home, of course. The wonderful American technology makes houses so convenient that you don't need servants anymore. Thus, everybody is equal and much

Albert & Marilyn

happier than in Europe. Have you noticed that American people always smile on photographs?

M—I don't know about that. I'm supposed to smile all the time, but I don't even remember the last time I felt really happy. In Hollywood, it is said that funny actors are always sad people.

A—I met a funny actor. I was such a very important person that the press, the Caltech trustees, the mayor, were ready to satisfy all my wishes and whims. I said I wanted to visit Hollywood and meet Mr. Charlie Chaplin. Okay, they said. We had dinner in his home in Beverly Hills. He wasn't as funny as his little tramp, but he was full of life and a pleasant companion. He did express some bitterness at the replacement of silent movies, which showcased his pantomime skill, by the talkies. Although he was ten years younger than me, he shared my feeling that our productive years were past. He was mistaken—he was still to make several wonderful films.

He had read the article I had written for the New York Times.

“I bet you didn't intend to shock the Americans, but you certainly did. Your ideas are too bold for them. Now they consider you a dangerous communist. Like me, my dear fellow! Just wait until you know them as well as I do. You'll discover they are sanctimonious and insidious bigots.”

I had forgotten he was English, so I wondered why he criticized the Americans as if they were foreigners. He invited us to the premiere of his latest film, *City Lights*. I laughed because it was so very funny, and I cried because it was so very sad and moving. But Charlie Chaplin laughed at the sad parts, too. When we came out of the theater, the crowd applauded. While he didn't speak in his films yet, he was a witty man.

“They cheer me because they all understand me,” he commented, “and they cheer you because no one understands you.”

M—Hollywood people like to say this kind of thing, whether it makes sense or not, hoping the newspapers will quote them.

A—It is true, isn't it? People understand him, but not my theories.

M—They don't understand Pauli or whoever, but they don't cheer him. They applaud you because you're famous. They've seen your picture in the newspapers. They think they know you. When they try to grab my hair, is it because they understand me or don't understand me? It is because I'm famous. They see us as half-gods, belonging to some kind of heaven on earth. Besides, people didn't understand Charlie Chaplin.

A—They didn't?

M—Why did he keep marrying teenagers? This was difficult to understand. Then he made this strange movie, *Monsieur Verdoux*. People didn't understand it. In the end, the insidious bigots sent him back to Europe.

A—Well, I enjoyed *City Lights*. You know a funny thing? A few days after seeing the film, I met people who hated city lights. Not the film, but the actual lights of the city. Can you guess who they were?

M—Gangsters who brought prohibited liquor to the speakeasies.

A—Oh, I don't know about those. I mean the astronomers trying to observe the night sky. Professor Tolman drove us to mount Wilson, so I could look through the new 100-inch Hooker telescope. Mount Wilson is too close to the city. They built a new observatory a few years ago on Mount Palomar, in the desert far from city lights.

M—Hooker?

A—The man who paid for it.

M—I know Mount Wilson: it is just above Pasadena. I have never gone there, actually.

A—The night I spent in the observatory I'll never forget. Hubble let me look through the eyepiece of the big telescope. Many more stars became visible than with the naked eye—billions and billions of stars whose light keeps flowing in all the directions. I couldn't imagine a remote corner of the universe where you didn't see all these stars. There are certainly large tracts of space without any matter, but not one millimeter without light. Everywhere, energy and fields curve space. Total emptiness doesn't exist.

I saw the newly-found galaxies.

"I figure there are at least thirty million galaxies bigger than our Milky Way," Hubble said. "The remotest are moving away very fast—close to the speed of light. See this very shiny star, professor? It is Sirius. It has a very dense companion star, which we can see only on photographs. Well, we have found a gravitational red shift in the spectrum of Sirius's companion. This confirms General Relativity once more."

"Good news. Except for Freundlich, who is still looking for a red shift in the sun's spectrum."

"The sun is too small."

Hubble and Tolman convinced me without a doubt: the universe was expanding, which meant I didn't need my cosmological constant. I had never liked it, and indeed considered it one of my biggest blunders, so I was glad to forget about it¹.

In the car going back to Pasadena, Tolman boasted to Elsa about his toy.

"Our 100-inch telescope is the biggest in the world. With it, we are going to establish and understand the structure of the universe."

"Bah, my husband doesn't need a telescope. He does that on the back of an old envelope!"

M—But you need the telescope to confirm it, right?

A—Oh yes. You can do some physics on the back of an envelope, but the purpose of physics is the knowledge of nature, so you also need to observe and experiment.

I had just looked at stars located on the outskirts of the universe, whose movement confirmed my scribblings. This was truly heart-warming. I smiled like a happy American! At the same time, I experienced a feeling of awe. By discovering new galaxies, Hubble had increased the size of the universe by an order of magnitude. It had suddenly become billions of times larger than before, when we didn't know it extended beyond the Milky Way. But of course, I could as well say that I had become billions of times smaller in relation to the size of the universe, which was somewhat humbling. Now I'll tell you something rather strange about knowledge: the more we know, the smaller we become.

M—Aren't you being modest, Al? You're implying that you're much smaller than I am, since you know so much more.

A—Oh, oh, that's not what I mean at all. I think of the ancient Hebrews, who imagined the garden of Eden. It was larger than my garden, but maybe not bigger than Central Park. Adam and Eve could run to the end of their universe! There was a blue roof, sometimes hidden by clouds. At night, the roof turned black, but God lighted small lamps up there. You could say that this first universe was human-sized. Then they ate the fateful apple and were expelled outside. I guess they were surprised to discover a wider world outside the garden. How wide? Well, pairs of all the different animals in this world could fit inside an ark that was 300-cubit long, which is maybe 500 feet. The earth was still quite small, I think. No kangaroos.

¹ The cosmological constant made a sensational return, as "dark energy," toward the end of the twentieth century. Instead of stabilizing the universe, however, it turns its expansion into a much faster "inflation."

M—There were no kangaroos in the ark?

A—The people who wrote the Bible knew neither kangaroo nor caribou. Their earth was limited to the Middle East and the Mediterranean sea. You couldn't run to the end of the earth in one day, but you met travelers who came from the farthest reaches of your world. How long had they been on the road or on the seas? A year or two, maybe. Then Alexander the Great explored the world. He went all the way to India in five or six years. A century or so later, in a city he had founded in Egypt, Alexandria, there was a mathematician named Eratosthenes.

M—You spelled the name before, so I'm okay, although I don't remember what he did.

A—He calculated the exact circumference of the earth: 26,000 miles, by measuring the shadow of a stick at noon on June 21st.

M—Can you do that?

A—Eratosthenes found how to do it. He was a clever man. I'll prepare a picture and explanations on the blackboard when you come for your lesson on relativity. The point is that the world was growing up. Walking and sailing around it would take ten years or so. But I'd say this world, which you could visit more or less within a lifetime, was still human-sized.

Note that Eratosthenes didn't measure the earth itself. He used geometry. He drew triangles on the back of an envelope, or let's say a papyrus.

Sixteen centuries later or so, Galileo began looking at the sky with a kind of toy spyglass—the grand ancestor of the 100-inch telescope. The world hadn't changed much since the time of Eratosthenes. People had even forgotten its exact size, which is why Christopher Columbus believed he could reach Japan in a few weeks by sailing westward. The sky was a big sphere, called the firmament. You could see it was painted blue when the sun was on. At night, tiny holes let the light of paradise shine through.

So what happened? As soon as he looked through his spyglass, Galileo saw new stars everywhere. The Milky Way was not made of white paint spayed on the firmament, but of millions of stars. There was no sphere, actually. His observations seemed to confirm what some Greek scientists had already supposed: the stars were similar to the sun, only located much farther away. Galileo increased the size of the universe by an order of magnitude, just like Hubble later did. The Church didn't like it. Instead of being decent-sized creatures, human beings had become specks in the universe, all of a sudden. You know that the Church condemned Galileo and forced him to abjure, or renounce, the hypothesis he

defended in his book: that the earth wasn't the center of the universe, but rotated around itself and around the sun.

M—Isn't there a story that he muttered: "But it does move" under his breath?

M—It's just a story. If he had muttered such a thing, he would have burned at the stake like Giordano Bruno.

At least one Greek scientist, Aristarchus, supposed that the earth might well be turning around the sun. Using observations and geometry like Eratosthenes, he said that the sun was probably much bigger than the small disk we see in the sky. It looks small because it is very far away. The stars could very well be other suns, much farther away yet. Giordano Bruno found it quite likely. He wondered whether other worlds like ours might exist elsewhere in the universe. This the Church could not accept. Did God sacrifice his only son in these other worlds? Were there other Popes out there? So you see, Giordano Bruno and Galileo were condemned because their theories made man quite an insignificant cog, a meaningless dot, in the machinery of the universe.

Aristarchus didn't have a telescope. The size and distance he suggested for the sun were much too small. Astronomers began building better telescopes after Galileo's death. A Dane, Roemer, working in the new observatory erected in Paris at the time of king Louis XIV, measured the time that light needs to come to us from the sun: eight minutes. He gave a good number for the speed of light. The exact number was measured in the 19th century. So we know that the sun is ninety million miles away or so. Obviously, the distances are not human-sized anymore. The nearest stars are a million times farther away than the sun.

Oh, I must tell you something about Roemer. King Louis XIV expelled him in 1685 in the very same manner that the nazis sent me away in 1933.

M—Why would he do that?

A—He expelled all the protestants from France. Many settled in Berlin, actually. With Roemer also went Huygens, the Dutch physicist who was the first to say light might be a wave. France sent away many intellectuals and artists. Spain did it in 1492, you know, when it expelled its Jews and Arabs. There's an expression here in America: shooting yourself in the foot.

Something else I want to tell you. When Hubble increased the size of the universe, he increased its age too. We measure distances in the universe by the time it takes light to get across. We say a star is ten light-years away. It means light needs ten years to come to us from the star. If a star is one million light-years away, we see it as it was one million years

ago, when its light started on its way toward us. Maybe it has crumpled since and doesn't emit any light right now. Anyway, before Hubble found the galaxies, we thought the universe was a few million years old. The ancient Hebrews thought it was only a few thousand years old, of course. Its age increased with its size, by and by, from a few thousand years to a few millions. So then Hubble looks through the big telescope and finds galaxies billions of light-years away. This means the age of the universe jumps from a few million years to a few billions. Our size decreases relative to the size of the universe. The length of our life decreases too. What is one hundred years, compared to several billions? Nothing, really. Nothing.

M—You thought about all this in the car coming down from Mount Wilson. Wow!

A—It was quite late in the night. Maybe I slept in the car. I thought about the new size and age of the universe in the following days and weeks. What I found striking about this momentous resizing is that nobody seemed to notice it.

M—But you also said that Europe was shrinking because there was faster travel and communication, at the time you were writing a petition for peace.

A—You're right. Quite clever of you to remember this. The whole planet is shrinking. We cease to be ridiculous ants on its surface. We soar like birds. Someday, we'll travel to the moon and maybe farther, so the Universe will begin shrinking in the same manner. Our minds are already soaring.

Caltech gave a grand formal dinner to honor old Michelson and old Einstein—and to offer two hundred rich sponsors the chance of seeing us in the flesh. I had already met Michelson in Chicago, during my first visit in America. He was now seventy-eight years old and in poor health. He worked on Mount Wilson: he measured the size of stars with the 100-inch telescope and his interferometer. I improvised a speech at the end of the dinner.

"I have come a long way, but the people I'm meeting tonight are not strangers. You have been my colleagues and comrades for many years. Dear Professor Michelson, when I was still a boy hardly three feet high, you uncovered a defect in the ether theory of light. Your wonderful experiments led Fitzgerald and Lorentz onto new paths. Without your work, the Special Theory of Relativity would today be scarcely more than an interesting speculation."

I also gave a speech for the students of Caltech. I asked them to keep concern for man as their chief objective. The result of our scientific work should be a blessing for mankind rather than a curse. "Don't turn men into slaves of the machine!" I advised them.

I had written a foreword for a book by Upton Sinclair, an author who wrote about the dark side of America. Have you read *The Jungle*?

M—Upton Sinclair, *The Jungle*. I'll go to a bookstore and buy it.

A—"Come and visit me," he had written in his last letter. "Bring your violin. We'll play some music." It seems his wife was looking out of the window one day. "There's a strange old man outside," she told him. "He wears a wrinkled suit and carries a violin case. He seems lost." We became good friends. He took me to a movie theater and we saw *All Quiet on the Western Front*, which was banned in Germany because it showed World War I exactly as it was.

So what do you know? Millikan and the rich Caltech trustees had planned to offer me full tenure, hoping to raise the prestige of their university. But now they hesitated. "This Einstein is meeting dangerous socialists, like Charlie Chaplin and Upton Sinclair. Let's wait and see." They offered me a temp job: "Why don't you come here every winter and spend a month or two?" I found this good enough and accepted gladly.

I also disappointed some Zionists who gave a party for me, by suggesting that Jews should settle in some desert spot like Patagonia where they wouldn't disturb anybody. "We should look for a place without dangerous animals and poisonous snakes," I added.

M—You said some early Zionists wanted to go to Uganda.

A—There are too many people there. Patagonia would have been perfect.

We crossed the United States by train, so we could see the Grand Canyon and other wonders. Some Indians offered me a nice feather headdress and named me "The Great Relative."



I talked about peace in the Chicago railway station and about Palestine in a New York hall. Huge crowds applauded me in both places. People wanted to touch me and kiss my hands as if I was some kind of holy man. The papers called me “a prince of the mind” and “a Jewish saint.”

An American publisher wanted to fill my bank account with dollars, so I let him publish a text I had written ten years before or so. I tried to describe my character: “I place truth, goodness and beauty above all other ideals. I care not about property, luxury and success. My sense of social justice contrasts strangely with my lack of any need to relate to individuals or groups. I am a lone traveler. I have never belonged to my country, to the circle of my friends, or even to my own family, with all my heart. By setting limits to mutual understanding and sympathy, I gain freedom from influence, opinions and judgments.” An often quoted sentence of mine is to be found in this text: “That a man can take pleasure in marching in step to the strains of a band is enough to make me despise him. He has been given his brain by mistake; his spinal cord would suffice.”

M—In that case, most men received their brain by mistake and most women deserve theirs.

A—Well, maybe I shouldn’t have said it. I am like Charlie Chaplin: I can’t resist the pleasure of uttering a quotable sentence.

On the ship sailing back to Europe, I wrote to Queen Elizabeth of Belgium: “America is a country of contradictions and surprises, where one alternates between admiration and headshaking. I realize I am attached to the old Europe, with its problems and its pains, and am glad to see it soon.”

Here’s something I wrote in my diary, after a storm that shook the ship like a baby’s rattle: “The ocean has a look of wrath that can’t be described. It is especially striking when the sun falls on it. I felt that the insignificant blob of molecules called Einstein was dissolved and merged into mother nature. Strangely, this made me happy.”

Soon after my return to Germany, I packed my bag again and went to Oxford, where I was to receive one more honorary doctorate and give some lectures. I tried to avoid staying in Berlin, where nazi thugs were fighting the communists and attacking Jewish stores. You should go to Oxford if you need a complete rest, Marilyn, except you might die of boredom. Also, it is raining all the time and they haven’t heard of heating houses. Another tidbit from my diary: “Calm life in freezing monk’s cell. Evening—solemn sacrament of the High Table with holy brotherhood in tails.”

I enjoyed the calm life so much (despite the cold room and the constant rain) that I accepted to become a “research student” of Christ Church college. The English people like to play games with words. They call their private schools “public,” and an Oxford “research student” would be called “senior professor” anywhere else. I signed a five-year contract to give a month-long series of lectures every year. I promised I would learn English. I felt that I needed to earn money outside Germany, and keep it outside, in case the situation in Germany worsened.

M—You still had your account in Leiden. Did you earn lots of money with your gyroscope for submarines?

A—I earned money here, I earned money there, but I had a staff now: miss Dukas and Mayer.

In November, 1931, I sailed to America again. I was beginning to think that my steady life in Berlin was over. I would be a bird of passage for the rest of my life, lecturing in Leiden, Oxford, Pasadena. Seagulls were flying above the ship as far as the Azores.

“They are my new colleagues,” I told Elsa.

In Los Angeles, there was less hullabaloo than the previous year. Willem de Sitter, the astronomer, was also visiting. We wrote a little thing together about the expansion of the universe. I found it hard to work under the palm trees, I must say. California held too many temptations. Helen Dukas showed me an article in a newspaper: “Professor Einstein attends all the society lunches and dinners, all the movie premieres, all the weddings and two divorces out of three.”

I did find time to write letters and sign petitions concerning two obvious miscarriages of justice. Eight young black men had been condemned to death in Scottsboro, Alabama for the alleged rape of two white women, although one of the women had testified that nothing had happened. Two labor activists, accused of detonating a bomb that had killed several people during a parade, were in jail for life in California. My Caltech friends were embarrassed. They would have liked to welcome me as a permanent colleague, but the millionaires who controlled the university’s board refused to sponsor someone they considered a full-blooded communist. They didn’t change their minds when the eight black men and the two labor activists were declared innocent. Professors are not supposed to sully their moral authority by playing violent sports like politics. Obviously, our views about morals differed.

M—California is more open-minded than the rest of the United States, you could even call it wild, but there are very conservative people there too.

A—I enjoyed the balmy weather and the parties so much that I was almost ready to sign a pledge to behave. Then I would have become “Einstein of Caltech,” I guess. As you know, I became “Einstein of Princeton” instead. Let me tell you how it happened. Abraham Flexner, a well-known expert in education, who had reformed colleges and medical schools in America, was touring the country with a project for a new institute. As he wanted it to be the best in the world (a typical American obsession), he visited the leading universities and asked teachers and administrators for advice. He had spent a few days in Los Angeles and was ready to go back east. Just then, Millikan had an idea.

“Hey, why don’t you ask Einstein? His views are always quite original.”

“Professor Einstein is here ? But my train is leaving in ninety minutes.”

So we had a very short meeting. He spoke good German. He explained to me that he was representing two New Jersey millionaires, a Mr. Bamberger and his sister.

“They intend to create a new institute, where selected scientists could work without any worry. They wouldn’t teach or lecture, just do pure research. I call it a haven for scholars. What do you think, Herr Professor?”

“I certainly approve. Such places are needed if we want science to move forward.”

“The scientists would be paid handsomely, of course.”

“What really bothers scientists in big universities is not too much teaching or too little money. It is the devilish bureaucracy. This is the real enemy of scientific progress.”

“Millikan was right about your original views. Nobody mentioned bureaucracy yet. I wish we could continue this conversation, but I have to catch my train. I’ll be going to Europe next summer. I’ll try to see you there.”

“Come and see me in Caputh. We’ll sail on the lake!”

In March, 1932, I returned to Europe. I met Ehrenfest in Holland.

“Life is becoming difficult here, Albert. I am thinking of finding a position in the United States, like you.”

“You would soon be sorry, Paul. Apart of a handful of fine scholars, it is a boring society. Most Americans are just ignorant children.”

M—Would you still say it today, Albert?

A—Certainly. But after what the Germans did in the war, I would rather live with ignorant children than with murderous adults.

I spent only two weeks in Berlin between California and Oxford. Old decrepit marshal von Hindenburg had been elected president of the country with eighteen million votes. Hitler had come in second with thirteen million. Hindenburg chose as chancellor (or prime minister) a far-right politician, von Papen, who declared martial law and dissolved the parliament. The republic was dying. The newspapers attacked the Jews every day—and Einstein every other day.

Flexner included Oxford in his tour of famous universities just I as was residing there. We went for a walk on the perfect lawn of Christ Church college.

“We have chosen a name, professor Einstein: the Institute for Advanced Studies. As Mr. Bamberger and his sister would like it to be in New Jersey, where they reside, we have made a deal with the university of Princeton. The institute will be located near the university, so we can use some of its facilities, for example the restaurant and the library. It will be an independent institution, though.”

“Ah, this will make life easier for the scientists. Very good.”

“Professor Einstein, there is something I haven’t said yet, because it is so obvious. If by any chance you considered that our new institute could offer you satisfying working conditions, you would be very welcome. Very welcome. On your own terms, of course.”

“This is an unexpected but tempting offer. Would you give me a little time to think about it?”

“I am going to Germany. Why don’t you give me an answer next month in Berlin?”

Flexner came to Caputh in September, 1932. Although it was a cold and rainy day, I was just wearing a light shirt.

“Aren’t you cold, Herr Professor?” Flexner asked.

“I dress according to the season, not according to the weather. It’s still summer, isn’t it?”

“I have brought you a contract.”

“I could spend half the year in America, I guess, for I have obligations in Oxford and Leiden. I’ll keep my Berlin apartment and this little house, too, as I want to hope that things will improve eventually.”

More and more ordinary people were talking openly like nazis, saying the Jews should be sent away or even exterminated like vermin. Flexner went to the main universities and recruited the best Jewish scientists for his new institute. “We’re letting first-rate merchandise go at bargain prices,” one the university presidents deplored.

Albert & Marilyn

The crazy nazis were convinced there was a Jewish plot to destroy Germany, and were even ready to believe that I was the plot's mastermind.

M—You, Albert? Master of the world! Gee, maybe Hitler wanted to take the world from you. You remember Chaplin as Hitler playing with the balloon planet?

A—I didn't want to own the world or any part of it, of course. Many of my friends begged me to escape before it was too late. I accepted Flexner's offer. He could see that nazi militias were patrolling the streets of Berlin, so he knew I would say yes. If I was the hidden leader of the Jews, killing me would deal a severe blow to "International Jewry." He had prepared a contract.

"I haven't filled in the salary line. You remember what I told you in Berlin: we'll welcome you on your own terms."

"Oh, so I have to choose a salary myself. Well, I have noticed that things in America are rather expensive. What about three thousand dollars?"

"Er, three thousand? Are you sure, professor?"

"Maybe I could manage on less."

"I don't know about that. Tell you what: I think I'd better settle this whole question with Mrs. Einstein."

Elsa had bought potatoes in Pasadena, so she knew how many dollars we needed. She obtained a salary of ten thousand dollars after tax for me, free travel to Europe once a year for both of us—so I could honor my commitments, and maybe come to Caputh if the sky cleared—and a separate position in Princeton for Mayer the calculator. Actually, once I came to Princeton, Mr. Bamberger raised my salary to fifteen thousand dollars, because a rather obscure professor of mathematics earned that much.

Marilyn, you know I've been ill recently.

M—Oh, we should stop this conversation, Albert. You need to rest.

A—I'm fine. I recovered because I have an excellent doctor, my friend Gustav Bucky. His son Thomas is a doctor too. Well, I met them during the summer of 1932. Dr. Bucky was born in Germany and had studied there, then he had moved to New York City and become an American citizen. He was a born tinkerer. He had invented the "Bucky diaphragm," which vastly improved the quality of X-rays, and is still used today. He had been offered a good job in Berlin and had moved back there in 1930. Elsa's daughters consulted him for X-rays and thought I'd enjoy meeting him, so they invited him to spend an afternoon in Caputh. Thomas was a child then. He taught me how to use a yo-yo. I

understood the physics of the yo-yo better than he did, but his skill was vastly superior to mine.

M—My mother gave me a yo-yo in 1932, or maybe 1933. It was a big craze then. She came and took me to stay with her. Until then, I had lived with a family named Bolender, as I told you. We barely knew each other, so she offered me small toys and ribbons and so on as a way to make friends.

A—I'll tell you now of one of the last things I did in Germany. You remember, or at least you wrote in your notebook, that I worked now and then for the International Committee for Intellectual Cooperation, a branch of the League of Nations. They hoped to deter violence with words, so they thought of asking famous people to exchange letters about peace. They published a first batch under the title "League of Minds." A League of Nations gentleman came to my house in Caputh.

"Would you accept to exchange letters with someone, professor Einstein? Whoever you like."

"Let me think... I should exchange letters with a Frenchman, I guess, since Germany and France are not yet fully reconciled. My friend Paul Langevin. About the history books, you know."

"What history books, professor?"

"The ones they use in classrooms in France and Germany. Why don't we teach the same history on both sides of the border? *A Short History of the World*, by H. G. Wells, would make a good book to be used across borders everywhere instead of nationalistic books. Removing the differences that lead to feelings of national hostility seems a simple concrete step."

The gentleman came again two days later.

"I am sorry, professor. I called Paris on the telephone. It seems Professor Langevin is traveling in China for the Committee."

"What do you think of Dr. Freud, then? I'd ask him whether psychoanalysis could help improve the education of children. Tamper their aggressive instincts, maybe. Dr. Freud thinks people kill each other because they hate their own father or something. I loved my poor papa, that's why I didn't kill anybody, I suppose."

M—I never knew my poor papa, so I didn't kill anybody either.

A—Freud's theories do not apply to women. He said they were a complete mystery to him.

We had already exchanged letters. He had written to me in 1929, for my fiftieth birthday, that I was a happy man. I answered that he had looked under the skull of many people, but not under mine, so how could he know whether I was happy? It turned out to be a misunderstanding. He meant I was lucky¹, since people who knew nothing about physics didn't dare contest my theories, whereas people who didn't have the faintest knowledge of psychology didn't hesitate to criticize psychoanalysis. In 1931, it was my turn to send him a letter for his seventy-fifth birthday. I told him that I didn't pretend I understood his writings, but I loved to read them. Few people wrote German as well as he did, in my opinion. I admired him first as a marvelous writer, who composed beautiful and clear German prose, then also as a thinker. Even people who pretended to refuse his ideas had accepted them and used his concepts in their approach to the world.

Actually, I agreed with him that most of the workings of our mind are unconscious. My own ideas seem often to pop up from nowhere when I am daydreaming or playing the violin. I preferred to remain in the darkness of not having been analyzed, though. I was afraid it might kill the golden goose, in some way

M—Nobody contests his ideas in Hollywood. He is a great favorite in the movie business. There are even movies about psychoanalysis, for example *Spellbound*, where Ingrid Bergman is a psychoanalyst.

A— We both belonged to a very exclusive group. I don't mean unbelieving Jews, but the quaint quartet invented by people who say that Marx, Darwin, Freud and Einstein fathered modern thought.

According to the rules of the game, I wrote an open letter to him. I asked him about man's lust for war and destruction. "As an expert explorer of the human soul, do you think it might be possible to diminish man's aggressive tendencies someday, so as to cure the collective psychosis that provokes so much harm?" He answered that he couldn't prevent the threat of war. He left this task to the politicians. As a student of our mind, however, he had discovered two contrary impulses. On the one hand, our erotic and sexual drives let us love our neighbor, create art and study science. On the other hand, we need our aggressive instinct when a tiger or any other enemy attacks us. "These two urges are necessary and always go together. The aggressive or destructive instinct is needed to protect us, so we can't suppress it. Some say that in some blessed islands in the South Seas, where Nature

¹ The same word, "glücklich," means happy and lucky.

gives away its fruits generously, there flourish races whose lives go gently by, unknowing of aggression or constraint. I don't know whether I can believe that. I would like further details about these happy folks. Civilization and culture are the best safeguards against our urge to fight and kill, it seems to me. The main reason we should despise and avoid war is that it trips cultural progress. This progress is fragile, precious, dangerous maybe (because we risk turning our violence against ourselves), but it lets human beings develop what's best in them. To conclude in a hopeful but realist manner, I think that war might one day be ended through a combination of two factors: on the one hand, man's cultural disposition; on the other hand, a well-founded dread of the extreme violence of future wars."

His letter covered several pages. Its tone was dark, almost desperate. Reading it didn't brighten my own gloomy mood.

M—You felt at home in the distant galaxies, but you did worry about the destiny of the human specks.

A—Europe seemed ready to give up civilization and culture. It craved destruction and death once again. This might mean the end of science, too.

Our exchange of letters was published under the title "Why War?" The book was banned in Germany. *Ach*, I felt the International Committee for Intellectual Cooperation was a pretty useless outfit. It delegated its power to national commissions, which often appointed warmongering members. They never tried to reduce nationalistic trends in education. Neither did they help the people who fought against military service. As I didn't believe letters could cover the clang of arms, I resigned. I was even beginning to wonder whether I would be able to remain a pacifist forever.

I still had to spend the winter in Pasadena. Flexner made it known that it was the last one. On the following year, I would become the main attraction of the new Institute for Advanced Learning. The migratory bird was going to settle in an American nest. When I first saw California, I thought I had reached paradise. Now that Germany was turning into a kind of hopeless hell, any place in America was a paradise. Well, the difference is not as great as you might think. There's a snake hidden somewhere in the garden of Eden. What happens if it takes over? Even before I entered the country, the snake hissed. A "Woman Patriot Corporation" was trying to keep dangerous foreigners away. Before that, it had failed to prevent women from getting the right to vote. They wrote a sixteen-page letter to the State Department to bar me from coming to America, saying that I was a Communist, affiliated with more communist groups than Stalin himself. That I wanted to shatter the

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military strength of free countries, as part of the communist—and, maybe, Jewish—plot to take over the world. That I had made up a worthless crazy confusing theory, whose real purpose was to undermine religion.

M—There are all kinds of cranks in the States. This is because we have complete freedom of speech. It doesn't really matter.

A—It doesn't matter, you say. What about senator McCarthy? Hasn't the snake taken over? Who called me a communist, before these wonderful ladies? The nazis, that's who. Who's seeing communists everywhere today and sending two poor klutzes to the electric chair? The United States, that's who.

The lady patriots also sent their letter to the press. I found it rather funny, at the time, so I joked about it. I said I had never been spurned so vigorously by the fair sex. But maybe they were right, these vigilant women citizens, since I devoured hard-boiled capitalists for breakfast every morning. I advised America to listen to its patriotic women and remember that the Capitol of mighty Rome had been saved by the cackling of its loyal geese.

Then it wasn't so funny. When I went to get my visa at the American consulate in Berlin, some assistant consul called me to his office for questioning. This had never happened before.

"Are you a communist?" he asked me.

"What is this? The holy Inquisition? I didn't ask to go to America. Your countrymen invited me. If I don't have my visa by noon tomorrow, I'll stay in Europe and that's it."

As journalists followed me wherever I went, I told them what had happened.

"Isn't it ridiculous? If they don't let me in, the whole world will laugh at America."

Of course, there were also intelligent women in America. Some of them castigated the State Department for sending the silly letter to the Berlin Consulate. "Professor Einstein is a pacifist," they said. "This doesn't make him a communist." A newspaper called the Consulate's action "an all-time low for official stupidity."

We gave up the idea of moving to America. Instead of going to the Berlin apartment to pack our luggage, we went back to Caputh. But the Americans called me the next day at eleven on the telephone, saying the visa was ready. They didn't apologize, though.

So we left the little house in Caputh. I had told my friends and the Academy's people that I would be back in April. When we locked up the house for the winter, though, I felt a dark foreboding.

"Take a good look," I told Elsa, "because we'll never see it again."

M—Did you ever see it again?

A—Never. I don't want to go there and see honest German citizens who have forgotten they were nazis. Caputh is in East Germany now. They've erased the past even more thoroughly than in the West.

So I left Germany at the end of 1932 for my third winter in Pasadena. I stopped over in Brussels and played a little violin with my friend the queen, then sailed from Antwerp. I arrived in California at the beginning of January, 1933. On January 30th, Old Marshall Hindenburg asked Hitler to lead the German government. This marked the beginning of the nazi era.

This was worse than anything I had foreseen in my most pessimistic moments. Crazy gangsters had seized power in my poor country after a few pleasant years. Europe had tried to commit suicide during World War I, then had seemed to recover. Wonderful works of art had bloomed under the Weimar Republic, together with a feeling of a new life, of well-being after an illness. And now this terrible relapse, like a sudden metastasis... Dictatorships were popping up everywhere in Europe—in Italy, Russia, Spain, Poland, Hungary. The world was falling into a sinkhole, or a black hole.

Please note that something maybe more important, or maybe not, happened at about the same time. In Cambridge, in England, James Chadwick discovered a new particle in the nucleus of atoms. As it had no electrical charge, he called it "neutron."

On February 27th, the nazis burned the Reichstag, the seat of parliament. They accused a poor Dutch *schlemiel*, said he was a communist, started putting communists and other supposed enemies in concentration camps, declared a state of emergency and turned Germany into a totalitarian dictatorship. To a journalist who asked me about these events, I said I couldn't live in Germany anymore.

"As long as I have any choice in the matter, I shall live only in a country where civil liberty, tolerance, and equality of all citizens before the law prevail. These conditions do not exist in Germany at the present time."

Whether these conditions existed in America was open to debate. They certainly didn't exist for black people. When I went across the States by train before sailing back to Europe, I stopped in Chicago and met Clarence Darrow. He was a great lawyer, who had won the famous Scopes trial in 1925. Mr. Scopes, a teacher in Tennessee, had committed a terrible crime: he had taught Darwin's theory of evolution. I'm not sure I would call the Tennessee prosecutors who wanted to send him to jail tolerant.

M—You said you couldn't live in Germany anymore. Why did you sail back to Europe?

A—I had agreed to spend half the year or so in Princeton. I hadn't decided where to pitch my tent for the other half. In Belgium? In Switzerland? Right then, I hoped I could spend maybe a few days or weeks in Berlin to get my papers and books. I had a drawer full of letters I had received from Lorentz, Marie Curie, Ehrenfest and other good friends. I had left my good violin there, too. This was no Stradivarius, but a faithful companion, born in Bavaria a century ago or so. We got along pretty well, without exchanging a word. When I traveled, I always took a spare violin that could stand the salt at sea and the tropical heat of Panama, not to mention a tumble or two.

We spent a few days in New York. I attended dinners and meetings. I spoke to the pacifists and to the Zionists, as usual. To the journalists, I said I trusted the German people. It would soon understand that it was making a terrible mistake by backing Hitler and his militias.

M—Not a very good prediction.

A—Not a scientific one, anyway. Politics, or sociology, or whatever you want to call it, is not an exact science.

The German consul, whom I had known for a long time now, visited me in my hotel room.

"You're German, Herr professor, so you can go back. Between you and me, though, I advise you not to. They'll drag you through the streets by the hair."

While at sea, we heard the nazis were expelling all the Jews and "half-Jews" from the administration and universities. Bruno Walter, the musical director of the Berlin opera and one of our greatest conductors, had gone to Austria. Most other famous Jews were preparing to leave. Many Jews, not so famous maybe, stayed in Germany and died later in the camps. We can't blame them for hoping that good would vanquish evil. I didn't have a choice, so I didn't have to decide. The nazis had targeted me. It would have been very foolish to go back.

I went to the German consulate in Antwerp, handed them my passport and renounced my German citizenship for the second time. The German newspapers rejoiced: "Good News from Einstein," they wrote, "He is not Coming back!" The nazis had crushed the opposition completely in less than two months and the newspapers licked their feet already.

I also resigned from the Prussian Academy. This made the nazis quite furious, as they were planning to expel me from the Academy on April 1st, a so-called "boycott of the

Jews” day. On that day, storm-troopers prevented people from entering “Jewish” shops and kept Jewish students out of the universities. The secretary of the Academy accused me of spreading “atrocious propaganda” against Germany in America. “For this reason,” he added, “the Academy has no reason to regret Einstein’s resignation.” My friend Von Laue protested this statement. I am sorry to say that Fritz Haber and Max Planck didn’t.

The city of Ulm, where I was born, had named a street after me when I had received the Nobel prize. Now this *Einsteinstrasse* became *Fichtestrasse*.

I was sad when I thought I would never see my Caputh house again, nor my dear Tümmeler. When a light wind blew, wrinkles ran over the lake and the brave boat tried in vain to catch up with them.

In May, a huge crowd burned my books in the streets, together with books by Freud, Thomas and Heinrich Mann, Stefan Zweig and many others, including Jack London, Hemingway and even Helen Keller.

M—Helen Keller? The blind and deaf woman? They just made a big documentary movie about her. Why would they burn her books?

A—She is blind and deaf, but no fool. She is a pacifist and a socialist. She couldn’t be a friend of the nazis, who considered that handicapped children don’t merit to live.

Storm-troopers broke into our Berlin apartment and into the Caputh house. At first, I thought they wanted to take revenge because I had escaped them. But it seems they were not only spiteful, but very stupid: they actually expected to find arms and bombs, since I was supposed to be the leader of the Jewish plot. They searched the Berlin apartment five times but didn’t find anything interesting. No arms except one bread knife. The nazis had all kinds of amazing ideas. They thought that secretaries wearing headphones worked day and night in my basement, listening to short-wave radio sets and writing Moscow’s instructions.

M—This is the kind of thing you see in the daffiest spy movies.

A—Daffy?

M—Crazy.

A—Well, the nazis were daffy enough. Lenard was busy inventing “Aryan science.” He attacked Hertz, his teacher, who had been dead for forty years, because he was Jewish and thus had brought an “Asiatic spirit” to physics.

All the Jews had been expelled from the civil service—which included university. Most universities lost twenty to thirty percent of their faculty and students. It is said that the big

Göttingen university lost fifty percent. Max Planck, for once, acted bravely: he met with Hitler in person and protested.

“This will kill German science. Jews can be good Germans.”

“We don’t have anything against the Jews, Herr Professor, but we must protect Germany against Communists who plot its destruction.”

“Fritz Haber is certainly no communist.”

I was told that Hitler then shouted like the madman he was.

“Those who are not Bolsheviks openly are so in secret!”

Isn’t this daffy? Then did most of the Jewish scientists leave Germany. Before, America had some clever inventors, like Edison, but no real physicists. Its scientific magazines were so crude that they seemed to come from Bulgaria or Bolivia. All of a sudden, the best scientists in the world began teaching in American universities. The *Physical Review* became a must-read if you wanted to know what was new. At the same time, virtuoso violinists and famous orchestra directors, like Otto Klemperer, crossed the Ocean. Bruno Walter left Austria in 1938 and came to America too. The level of American orchestras shot up. Theater directors like Max Reinhardt came to Broadway, architects brought the know-how of the Bauhaus school. You told me you met many Jewish people in Hollywood, Marilyn. Some of them came from Russia at the beginning of the century. I bet many came from Germany in 1933.

M—I couldn’t begin to count all the Jewish people with foreign accents I know.

A—You said you made a movie with Fritz Lang. He went away, although he was not Jewish. Marlene Dietrich, too. Artists need freedom to work. Scientists don’t care. They can go on working in their ivory tower whatever the conditions outside. Otherwise, even non-Jewish or so-called “Aryan” scientists would have escaped abroad rather than serve crazy killers. Only Schrödinger did. Von Laue stayed in Germany, but remained 100% noble. Otto Hahn, a chemist who worked with a Jewish physicist, Lise Meitner, tried to convince his colleagues to protest, in vain. Lise went on working with him, actually, because she was Austrian.

Max Born had been an officer in the war, so he could have kept his University job despite being Jewish. He chose to go to England. Fritz Haber was also protected by his marvelous war feats. He had more war medals than a five-star general—beside being blond and scarred and a catholic convert. He surprised us by resigning from the Academy and leaving Germany. “For more than forty years,” he wrote the authorities, “I have selected

my collaborators on the basis of their intelligence and character, not on the basis of their grandmother. I am not willing to change, for the rest of my life, this method I have found so good.” He went to England, but he wasn’t welcome there. Rutherford was the grand old man of British science—although he was born in New Zealand. He refused to see Haber. “I don’t want to shake hands with the inventor of chemical warfare,” he said. Haber then wrote to me, asking whether I could recommend him for a post in the Hebrew University in Jerusalem. I answered that I was delighted to know his former love for the blond beast has somewhat cooled off. “Honest people have no place in Teutonia,” I wrote. “Surely there is no future in working for an intelligentsia that lies on its belly before common criminals and even, to some extent, sympathizes with them.” As far as the Hebrew University was concerned, however, I couldn’t help him.

M—Last time you mentioned the university, you compared it to a still-born baby.

A—You have a good memory, Marilyn.

M—Let’s say the expression “still-born baby” has a special meaning for me, because I have had several, er, miscarriages.

A—Oh, I’m sorry. Let’s say the place was a pigsty, a feeding trough for crooks and charlatans. Later, the trustees listened to me and gave some kind of honorary position to the failed rabbi I told you about. A competent team took charge eventually. My reason for not recommending Haber had nothing to do with that. He was sixty-five years old. Let him retire! So many young promising scientists had lost their jobs in Germany. My heart bled when I thought of them. They needed a job more than he did.

Haber went to Switzerland. There he met Weizmann, who found a position for him in some chemical company or lab in Palestine. He died before reaching the promised land, like Moses. His beloved Germany was committing suicide under his very eyes. It broke his heart.

Meanwhile, the Hebrew University could take in only a very small proportion of the crowd of students and teachers who had been expelled, so I thought of creating a “Jewish Refugee University.” I imagined a kind of nomad institution for wandering Jews. Teachers and students would meet and work wherever they were. I described my idea in a letter to Solovine. You remember him?

M—Last time you mentioned him, he lived in Paris and translated your works.

A—“If you see academic refugees,” I wrote, “tell them to get in touch with me.” When he was my student in Berne, a member of our so-called Olympia Academy, we walked in

the mountains and talked about physics. This was a pretty good model for a wandering university. Solovine and other people spread my idea around.

The mayor of Antwerp had lent us a house. After a while, we settled near Ostend, in a quiet seaside resort called Le Coq sur Mer. Elsa's daughters, whom the nazis would have loved to keep as hostages, had escaped the country with their husbands. They came to live with us. They brought good news: they had saved my papers.

"We put everything in a trunk."

"Where is that trunk now?"

"What a mess! There were papers everywhere, in Berlin and in Caputh."

"Did you find letters in a small black cabinet?"

"Oh, the letters from your girl friends? Of course."

"Letters from Michele Besso and Hedi Born, and my children, and many others."

"You remember Dr. Bucky."

"Your doctor. Of course."

"He's American, you know, so they leave him alone. He put the trunk in his big car and carried it to the French embassy. They sent it across the border in the diplomatic pouch. So I'd say it's in Paris right now."

As I was preparing to cross the sea to England for my annual Oxford session, I received a letter from Mileva. Our younger son, Eduard, was locked up in a Zurich psychiatric hospital again. He had been a patient there, on and off, for three years already. The doctors were not sure what was the matter. Maybe a deep depression after a failed love affair, they ventured. They gave him shock therapy. Dr. Zangger said there was nothing to worry about. His tone wasn't fully convincing, so I didn't believe him. Eduard seemed to recover somewhat. He wanted to study medicine. He played the piano tolerably well and wrote tolerably good poems, but his mood tended to swing wildly. So now he had relapsed. They wondered whether it might be schizophrenia. One day he felt and looked fine, the next day he went out and got lost one block from home.

M—This reminds me of my mother. Poor kid!

A—I blamed heredity. Mileva was quite moody, of course. One of her sisters was crazy enough to be locked up somewhere. As there was nothing we could do, we had to accept what fate had in store for him. The doctors said he would be taken care of in the hospital, so he would be as happy as could be. I went to Zurich and saw him for the last time. What

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could I say? I played some violin. Eduard had always been fond of music. I liked the boy, but I'm not sure he liked me. I had not been a perfect father. I let Mozart be my spokesman.

While I was surrounded by crazy people inside the insane asylum, I couldn't help thinking about the lunatics who had taken over my poor country.

M—What about your other son?

A—Hans Albert? He had married a woman nine years his elder—without my blessing, I must say. I had ceased communicating with him. Human beings are such strange beasts. I was conscious I mimicked my mother's intolerance of Mileva. But she was right, in a way, wasn't she? I learned I had just become a grandfather. The baby's name was Bernhard Caesar Einstein.

What happened next is that I went to Oxford—in June instead of May. I attended a lecture by Rutherford. I felt rather depressed. Germany was sinking into a bottomless pit, my son had escaped to some obscure dreamland, I couldn't imagine my own future. When his talk was over, Rutherford called me to the rostrum. The public applauded me with such warm enthusiasm that I couldn't help laughing. Much better than shock therapy!

For the first time, I gave my lectures in English.

In London I met Szilard. We had invented a magnetic refrigerator together in Berlin, remember? Two things about Szilard: One, he has more energy than other people. He doesn't sleep. He carries all his belongings in a suitcase and never stays in one place for a long time. Two, he doesn't respect his elders or anybody.

"I've heard of your refugee university project, Einstein," he said. "Quite stupid. There are perfectly good universities here in England. The refugees accept low salaries, you know, so the existing English universities are willing to give them jobs. I've taken care of everything already, by creating an *Academic Assistance Council*, which finds positions for the refugees."

A turning point in my life took place when I went back to Belgium. While I was lecturing in Oxford, the Belgian police had arrested two young men for refusing military service. I found two letters in Le Coq sur Mer. One from their lawyer, a well-known French pacifist, asking me to support them. The other one from the Royal Palace: "The husband of the second fiddle would like to see you on an urgent matter." Do you know who the second fiddle was?

M—The queen of Belgium.

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A—Yes. This was a kind of private joke. In a string quartet, there are two violins, plus a viola and a cello. The first violin leads and the second one follows. Trying to act like a gentleman, I had offered the queen to play first violin the first time we played a quartet.

“Protocol puts you ahead, Elizabeth.”

“Are you kidding, Albert? You come before everybody else. No false modesty, please.”

Playing second fiddle is easier, of course. You can keep a free mind and listen to the music or dream. That’s why the queen liked it, I suppose. As a true gentleman, I let her play second fiddle. So I went to the palace and met King Albert. He wanted to convince me not to side with the two objectors.

You might think that there is no better position on earth than king or queen. Not only were Albert and Elizabeth very simple people, but they had read the best philosophers and knew that royalty was a human institution like others, which didn’t amount to much in the general economy of things. In me, they saw someone who had risen above human institutions, since I had reshaped the universe itself. I won’t deny that I influenced the way we view time and space, but I think the king exaggerated my influence over world politics.

When he talked to me, I made a surprising discovery: I agreed with him. Three months before, I still spoke like a true pacifist in Chicago and New York. I had changed my mind without noticing. The news from Germany festered deep down in my brain, obviously. This unconscious U-turn would make a good example in a book by Dr. Freud, I thought. I can neither express nor explain the feelings of dread and disarray provoked by the mad violence of the nazis. We had to resist, no doubt about it. Pacifism made sense just after world war I. If all the countries in Europe had become pacifist and buried their arms, the world would have avoided a second disaster. The time for pacifism ended in 1933. The nazis were taking over German souls much faster than I had thought possible.

“Your Majesty,” I said, “I shall not intervene in this case. A foreigner enjoying your country’s hospitality shouldn’t meddle, for one thing.”

“We are delighted and honored to have you here, Albert. A man of your intellectual stature represents mankind rather than a single country. You can certainly intervene.”

“I do not wish to. I do believe that in the present situation, considering the events in Germany, Belgium’s army can only be regarded as a means of defense, not an instrument of aggression. Now, of all times, such defense forces are urgently needed. I’ll write to the lawyer.”

“Thank you, Professor, thank you.”

“I would like to add something, though. Men who won’t carry arms because of their religious or moral convictions should not be treated as criminals. Maybe they could help their country by working in mines or factories without pay, or some other form of civil service. I’m sure they would accept.”

I sent him a letter to confirm what I had said in our private conversation. I also sent an open letter to the French pacifist lawyer.

“Until quite recently, we could assume that personal refusal of armed service was an effective way of fighting militarism. But today, a power in the heart of Europe, Germany, is obviously pushing toward war. This has created such a serious danger to other countries, especially Belgium and France, that they definitely need to strengthen their armies. I’ll tell you candidly that if I was a Belgian citizen, I would not, in the present circumstances, refuse military service. Rather, I would enter such service cheerfully, in the belief that I would help save European civilization. This does not mean that I’m giving up the principles for which I used to stand. I hope a time will come when refusal of military service will once again be an effective way of serving the cause of human progress.

“Please bring this letter to the attention of your friends, especially the two who are in jail.”

This letter sent shock waves throughout the pacifist movement. Their most famous militant was letting them down. Or betraying them, if you prefer. Romain Rolland was quite angry. “Being a pacifist in peace time is easy,” he said. “But what kind of a pacifist changes his mind as soon as war threatens?” He added that I was great as a scientist but not so great outside my own field, which was probably true. While his pacifism was absolute, mine was relative.

The pacifists also remarked that civil service helps a country at war, so it’s not very different from military service.

M—How does it help a country at war?

A—Say a country needs coal for the trains that bring the soldiers to the front. It needs miners to extract the coal from the earth. If the conscientious objectors go into the mines as part of their civil service, the former miners become soldiers and strengthen the army.

M—This is exactly what I did during the war.

A—You went into the mine?

M—In the Radio Plane company. I was doing a kind of civil service to replace my husband, who was drafted in the Navy.

A—I do believe there's a difference. In civil service, nobody asks you to shoot other human beings. The pacifists were angry, but they didn't make plans to kill me. The nazis did, or at least the Belgian police thought they did and sent two burly bodyguards to protect me.

An English member of parliament, Mr. Locker-Lampson, whom I had met in Oxford a few years before, read my open letter to the lawyer and came to see me.

"You're showing the proper spirit, professor Einstein. Eddington, Russell and their pacifist cronies are rather miffed, but I wish some of our politicians were as brave as you. Do you know what? You should come to London with me. You'll tell them who this Hitler really is."

I wrote "cronies", "miffed" and "politicos" in my notebook between two equations. There are too many words in your language, Marilyn. I despaired of ever learning them all.

M—I don't know all the words either. When I read a book, I keep a dictionary handy.

A—I went to England with Locker-Lampson and met Winston Churchill, Lloyd George, Chamberlain and other English "politicos." I told them that Hitler wanted to dominate the world and to exterminate the Jews. I've met important thinkers like Freud, important artists like Thomas Mann, Arnold Schoenberg, and Charlie Chaplin. I guess that Churchill is the most important politician, or world leader, I was privileged to meet. I felt he listened to me and understood what I was saying. I wrote to Elsa: "Winston Churchill is an eminently clever man, and I am convinced these people are well prepared and will act resolutely and soon." I thought I had convinced him. In a way, I shared King Albert's illusion about my great influence. But of course, the English did nothing. They let Hitler breach the Versailles treaty by rearming and breach it again by sending troops to the left bank of the Rhine. Then they let him grab a province in Czechoslovakia, then half the country.

Lloyd George, who had been prime minister during the great war (Winston Churchill was his war minister), received me in his Surrey country home. When I signed the visitor's book, I wrote *ohne*—which means "without any"—on the line for my address. This *ohne* impressed Locker-Lampson so much that he made a big speech the next day in the House of Commons. "The most eminent men in the world agree that Einstein is the most eminent of them. Today, Einstein is without a home. The Huns have stolen his savings and even his violin." He asked the parliament to give me the English nationality. Then he introduced a bill to "promote English citizenship for Jewish refugees." Parliament found this a very good idea. Let's talk about it after the summer vacation, it decided. But then, it forgot.

M—They could have saved the Jews, and so could have America.

A—They couldn't imagine that the nazis would try to kill all the Jews, otherwise they would have been more generous.

I went back to my house behind the dunes in Le Coq sur Mer. One day, while I was grappling with the fourth dimension, hoping that it would at last cough up a few elementary particles, I heard some noise outside. The two burly policemen had pinned a man to the sand. Elsa was shouting.

“No, no, this is professor Frank!”

They released him. I did recognize my successor in Prague. He was rather miffed! I was laughing so much that I could barely talk.

“How did you find this house, Frank?”

“What do you think? I just asked around. I am taking a ship in Ostend on the way to a conference in England. As this place is quite close to Ostend, I came to say hello.”

“The people in the resort have strict orders not to reveal where I live. These two gentlemen are here to protect me.”

“Please thank them for letting me live.”

“The police told me the nazis have put a bounty of five thousand dollars on my head.. I didn't know I was worth so much! A journalist showed me an article denouncing the enemies of the German State. There's a legend under my photograph: 'Not yet hanged.' A former nazi thug came last week. He wanted to sell me secrets for fifty thousand francs. What would I do with nazi secrets? He thought I had to be interested, as the leader of the plot against Germany.”

“The German border is too close, really. They did send thugs to kill Professor Lessing in Czechoslovakia recently. You should be careful.”

“Bah, I'm going to Princeton in one month. Don't worry.”

Elsa worried. She called Locker-Lampson on the phone and asked him to invite me again. She stayed in Belgium to prepare her trunks for our semester in Princeton.

M—Wait a minute, Al. How do you spell Czechoslovakia?

A—You'll check in the dictionary.

Locker-Lampson was an eccentric adventurer in the British mold. He had been an airplane pilot and a tank driver during the war. He pretended that, being a friend of grand duke Nicholas, he had helped him kill Rasputin. I was one more adventure in his adventurous life. The newspapers loved to publish his yarns. They wrote he had sent a

submarine to pick me up in Belgium. What's true is that he hid me in a country house and enrolled strange sentries: two pretty secretaries armed with rifles. "Whoever trespasses without a permit will get a bullet in the head," he told the journalists. They found me easily enough. Locker-Lampson brought some photographers, too, so that newspapers all over the planet published pictures of the sentries trying to look fierce.

Szilard, Rutherford and others were trying to develop the *Academic Assistance Council*. I accepted to attend a meeting and help them. I thought I would talk to a few professors and students, but Locker-Lampson said it would be a pity not to exploit what he called "my publicity value." He rented the Royal Albert Hall and advertised the meeting, so that I talked to a full house—more than ten thousand people. Rutherford, Churchill and other luminaries were there, too. I read an English translation of a text I had written in German.

"How can we avoid a new disaster in Europe? How can we save mankind and its spiritual acquisitions, of which we are the heirs? I hope that, in the future, it will be said the freedom and honor of this continent were saved by its western nations. I trust England's traditions of justice and tolerance. I am going to spend a semester in America, then I'll return here and become a naturalized Englishman."

One last Locker-Lampson lark: a sculptor, Jacob Epstein, came to make a bust of me. I sat for several sessions lasting two hours each. Quite a job! He turned a lump of clay into a new Einstein, just as the Good Lord created Adam. Then he sculpted a stone bust which was exhibited in a London art gallery. It seems that someone came when the room was empty and tried to break it. Even in England, I had enemies. Some groups admired Hitler, said that England should become his ally against the Soviets, and accused the Jews of plotting "to weaken the white race."

In October, 1933, I went to Southampton and sailed to America. The *Westernland* was coming from Antwerp, with Elsa, Helen Dukas and Mayer already on board. This was more than twenty years ago. The coast of England receded in the distance. I didn't know it, but I would never see Europe again.

* * *

Albert & Marilyn

A—I was quite happy to hear you on the phone, Marilyn. And now I am even happier to see you.

M—I live in New York, now. How are you, Albert?

A—As you see, the old corpse is still moving. Not much. The old pump finds it harder and harder to send blood to the farthest extremities. The whole machinery will stop working pretty soon, I guess. It is a pity that the mind will have to be thrown into the garbage can with the rest, as it is still in good working order.

M—you're still unveiling secrets of the universe.

A—you didn't go to college, but the Good Lord gave you a fine brain, Marilyn. You shoot an arrow right on target: I haven't unveiled any secret of the universe for a long time, so the old mind is ready for the garbage can like its decrepit casing.

M—That's not what I meant. At least you can talk to me.

A—Are you shooting a film in New York again?

M—Oh no, I moved to New York for good. See my white Thunderbird? It's not a rented car this time, it's my own. I think I told you about Milton Greene, a photographer, who suggested we create a production company together. Well, we did. His lawyers have found a loophole that let me cancel my Fox contract. They can sue us, then what? We'd spend fifty thousand dollars for lawyers, maybe, but they would lose their golden goose. Everybody says that *The Seven-Year Itch* is a very good movie. They expect a profit of three or four million dollars. Instead of making the next movie themselves, they'll buy it from Marilyn Monroe Productions and earn almost as much money.

A—Then what's different from the former situation?

M—After *The Seven-Year Itch*, they wanted me to play a stripteaser in one of their worthless movies, *How To Be Very, Very Popular*. The script was awful. So I told them to get lost. Do they think they can take me for a ride until the next century? As the head of my own company, I'll choose projects that don't cast me as a stupid doll. Milton will help me. I live with him and Amy, his wife, and Josh, their darling baby boy. They have a big house in Connecticut, a refurbished farm with a photographer's studio in a barn. Acres of meadows and woods. Gee, they have their own river and lake! I'm sure you would like it, Albert. I discover ice, snow, seasons. I can take strolls by myself. Josh is learning to walk and talk. I tell him I'm aunt Marilyn. I babysit when his parents spend an evening in town. I sing lullabies to put him to sleep. I'm beginning a new life, really.

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I've got a small apartment in Manhattan, too. If you ask me what's different, well, I can walk in the streets. In Los Angeles, you need a car if you want to go out and buy a sandwich. I wear sunglasses and blue jeans, then nobody knows I'm Marilyn Monroe. I love Times Square. It's so busy! Just looking at all the people is fun. New York feels like a real place, you know. Los Angeles sometimes seems to belong to another planet. Do you know what they call Hollywood? The dream factory. Life can be a dream over there, and also a nightmare. I'm not homesick, believe me.

A—What about your husband, the Italian man?

M—He is history. We divorced last October. As soon as I was back in Los Angeles, he flew in from San Francisco and appeared at my door with a bunch of roses.

"I still love you, Marilyn."

"So you hit me and you hurt me and someday you'll kill me, but I should accept it because you love me. You're a slugger, Joe, but I'm not a ball. I can't live with you anymore. I'm scared."

We had nothing in common, really. He liked beer and TV. He hated my movies. He hated actors and actresses. Who did he think he was marrying when he married me? Gee, he was so stupid! What can you expect from a man who spends his life playing ball like a kid? The failure of our marriage made me sad, so I cried. It made him mad, so he took a bat and broke stuff. He's just a big brute. He was going to hurt Hal, too, but we were lucky.

A—Who's Hal?

M—Hal Shaefer, my singing teacher and coach since *Gentlemen Prefer Blondes*. I'm not in love with him like I was with Fred Karger, but oh, he's such a sweet man! He listens to me and understands me. He boosts my self-confidence. He teaches me a technique of deep breathing and relaxation that helps me sing better. We're recording some songs together. People will spend money for my voice. Not for my ass and tits.

Hal consoled me when I cried. Ten days after the divorce, I was spending the evening with him in a friend's apartment. We were rehearsing some songs for the recording. I won't tell you whether we intended to do anything else. This is a private matter. We're two single free adults. It shouldn't concern Joe either. We're divorced, for God's sake. Well, he doesn't understand why I've left him. In Italy, a man can toss away his wife and cheat on her, but she is not allowed to leave him. If she does, it means some other guy seduced her. She's got no free will, you know, but always obeys a man—her father, her brother, her

husband, her son. When she leaves, the cheated-on husband has to go and kill the other man, of course.

A—I have Italian friends, you know: Michele Besso, Enrico Fermi, and others. They wouldn't kill anybody.

M—Let's say he's Italian and a ball player. Italian scientists may be different. Gosh, he is still awfully jealous. He needs the sweet balm of revenge. What does he do? He hires a private detective and has me followed. Enrico Fermi wouldn't do that, I'm sure. The private dick calls him: "She's with the music man." Listen to this, Albert. He has an Italian pal, Frank Sinatra. Famous singer, you know. They grab baseball bats and drive to the place. I bet they're drunk, too. Otherwise, they wouldn't break the wrong door and enter our neighbor's place! She's a nice old lady with a strong voice. She hollers as if she was acting in a horror flick and discovering a headless corpse. "Help! Police! Police!" We hear everything, as we're just next door. They run away, jump into their car and flee at top speed before the police comes. I find it rather funny, but Hal is shaking like a leaf. He's the one who escaped broken bones, after all. The newspapers joked about it. "The Wrong Door Raid," they called it.

The very next day, the studio gave a huge bash for the opening of *The Seven-Year Itch*. Everybody who counts in Hollywood was there. The fat cats: Sam Goldwyn, Jack Warner, Darryl Zanuck. The big stars: Claudette Colbert and Clark Gable, Humphrey Bogart and Lauren Bacall, Gary Cooper, James Stewart, Doris Day, and many others. I found it rather surprising that in real life these giants of the screen were just ordinary people, some of them quite short. This must also be true of me, I'm afraid. She's gorgeous on the screen, Gary says to Jimmy, but not much in the flesh!

Ronald Reagan came to me with a wide grin on his face.

"Hey, Marilyn, remember me? I launched your career!" The crowd around me is waiting for the punch line. "I published her picture on the cover of *Yank* magazine during the war!"

His first wife, Jane Wyman, is there too, as well as my former music man Fred Karger. They married last month, someone tells me.

Hollywood is beginning to admit, mainly because they can't play deaf when the public is speaking, that I shine in the firmament with the other stars. I'm quite flurried, though. To begin with, I'm one hour late. It isn't my fault: my car ran out of gas! Besides, I didn't know that such a fine crowd would be there, so it was a surprise party, sort of. Mr. Zanuck

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said that Frank Sinatra was supposed to sing, but he called to say he was in bed with the flu.

Hey, Al, you haven't said anything about my new dress.

A—New dress? Well, er, my eyesight is failing because of old age, so I haven't noticed your new dress. A pretty dress, certainly.

M—It isn't as tight as my old dresses. Amy Greene says that if I look like a floozy, I can't complain that they give me floozy parts. Milton and Amy are so well-dressed and refined, they've read so much, I feel like a peasant girl when I'm with them. Amy asked some of the best fashion designers in New York to renew my wardrobe. Our production company is paying for this. We've seen bankers. I didn't try to understand what they said, but well, Milton decided to take a mortgage on the barn and finance the company himself. He says I must maintain my star's standing. He rents the apartment in the Waldorf Towers, a first-class building, so I can stay in New York and show myself in public now and then. He bought the white Thunderbird for me. He pays the hairdresser, the makeup man, the masseur, the doctor, and so on. He found a press agent, Lois Weber, who'll take care of my relations with the newspapers.

He spends four hundred dollars per month so that my mother can live in a private psychiatric home rather than in the State hospital. He intends to spend about fifty thousand dollars per year, on top of the money for the lawyers.

We're creating a new Marilyn Monroe, actually. I'm fed up with playing showgirls and gold-diggers, with doing the same thing over and over. I want to keep growing as a person and as an actress, to be more myself. Gee, I want to be true. So often, I feel I'm a fake, a phony... I'll become a real person and a serious actress. I want to play romantic roles, like Greta Garbo in *Camille*. Or maybe some heroin of a Russian novel. Do you know Grushenka, in *The Brothers Karamazov*? I've started studying at the Actor's Studio. Have you heard about it?

A—*The Brothers Karamazov* I know, the studio for actors I don't.

M—It's the best acting school in America. Elia Kazan founded it with some partners after the war. Elia introduced me to Lee Strasberg, the studio's artistic director. He used to be an actor and director in a company called The Group Theater. The Carnovskys, whom I studied with at the beginning of my career, worked with him there. He is a small gray-haired man, rather stern, fifty years old or so. He reminds me of a taxi driver I know, except for his very peculiar voice—quite soft and convincing. All the most famous young actors

are Lee's students: Marlon Brando, James Dean, Paul Newman, Montgomery Clift. My friend Shelley Winters, too. We shouldn't say "students," actually, but "members." The Studio's most famous member, Marlon Brando, happens to be my favorite actor: We've gone out together a few times. Although he plays violent characters, he is really a sweet guy.

Lee teaches us to find the resources we need deep within ourselves—so we don't just play a part, but live the part. We learn to tap our hidden energy. We're supposed to play very short scenes, five or ten minutes, in front of the other members. I don't dare. They're professional theater actors. I feel so foolish. Besides, the sessions begin at noon on every Tuesday and Friday, so I miss the beginning, being always so goddam late. Lee gives me private lessons. His daughter, Susan, says he loses his temper easily.

"He becomes enraged and foams at the mouth like a dog," she says.

He's always nice to me. He asks me to sing a song, first without moving at all, then jumping up and down a low stool. For another exercise, I must close my eyes and evoke a childhood memory. I remember the day when I tried to escape from the orphanage with another girl. The housemother caught us, but the directress, instead of punishing me, let me try her makeup and perfume on.

It's a family affair. Lee's wife, her name is Paula, is a very nice person. If I need a coach for a shooting, I'll ask her.

A—What about the other one?

M—You mean Natasha Lytess? She's in Hollywood, employed by Fox, while I'm here. She was too rigid, anyway. She prevented me from learning about myself.

"You must find the inner key that opens the treasure chest of your emotional memory," Lee says. "You should dig into your unconscious and make use of every experience you ever had."

A—This sounds close to psychoanalysis. I refuse to waste my time diving into my mind's murky depths, but I can understand it might be useful for an actor.

M—Lee says I have tremendous energy. If I don't control it, it overflows and spoils my acting and makes me sick. I can't control and channel it, though, unless I unlock my repressed memories and feelings. Which brings us indeed to psychoanalysis. Milton Greene has been seeing a Mrs. Hohenberg for years. I mean, Dr. Hohenberg. He introduced me to her. She comes from Hungary and studied psychoanalysis in Vienna. She looks like a good grandmother: sixty years old, a bit plump, white hair. When she talks, I remember

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André de Dienes, the photographer, because of the Hungarian accent. I'm having my first session with her next week.

Oh, *The Seven Year Itch* was released last week, you know. The movie critics find me so fascinating that they tend to forget Tom Ewell, my partner. I wish they'd talk a little less of my sex appeal and a little more of my acting. This is difficult, I guess, when a sixty-foot picture of me standing on the grating is displayed on Times Square. A vent or something blows my skirt up, so then you can admire the biggest white panties ever painted by poster artists. Billy Wilder came to New York City for the movie's premiere.

"This Lee Strasberg is messhugge, Marilyn. You don't need to study acting. Just go on being yourself in front of the camera, as you've always done. If you want to learn something, you'd better go to Switzerland and study punctuality at the Patek Philippe academy."

"Who's Patek Philippe?"

He showed me the name on his watch. What a joker!

A—I've always wondered why the Swiss have this obsession with time-keeping and watch-making. When I worked in the Bern patent office, I saw all kinds of designs for new mechanical and electrical clocks. Synchronization of railway station clocks was a big worry. They wanted the trains to be on time, you understand. Thinking about time all the time probably helped me reach my big insight about special relativity.

M—You promised you'd explain it to me.

A—Oh, that's right. Can you come again next week?

M—Sure.

A—I need to draw pictures in advance on the blackboard. You are not as busy as you were last time.

M—Not too busy. No new movies before our lawyers agree with their lawyers. I've got my acting lessons and my psychoanalysis. I do have time to read and go to museums.

Hey, I have new friends. Norman and Hedda Rosten. I was shooting some photographs and it started to rain quite hard. The photographer had seen I was reading a book of poetry while he was getting his lights right and so on.

"If you like poetry, Marilyn, I know a good poet who lives in the next block. Let's go there so we can dry my cameras and your hair."

I liked Norman and Hedda right away, and also their daughter, Pat. She's eight years old and a dear heart. Norman has written wonderful poems for her. We were so wet that

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we rushed to the bathroom and didn't talk much at first. The photographer didn't introduce me properly. They heard my name as "Marion." Hedda asked me whether I was a professional model.

"Well, not really. I am studying at the Actor's Studio."

"Oh, an actress. Have you done any play I may have heard of?"

"Gee, I have never been on the stage. I have done mostly movies."

"What is your movie name?"

"Er, Marilyn Monroe."

Now the best thing about this meeting is that Norman was in the same class as Arthur Miller in college. He knows him well. He'll invite us both to dinner next week. What a week: I'll meet the man I want to marry, I'll have my first psychoanalysis session, and I'll learn about relativity.

He had a very successful play last year.

A—Who had a successful play?

M—Arthur Miller. It was called *The Crucible*. It tells about a trial in Salem, in New England, in the seventeenth century. Women were accused of being witches, there were false testimonies and mass hysteria, and many innocent women were hanged in the end. This is based on historical facts, but people understood the play to allude to what happened with senator McCarthy.

A—What does "crucible" mean?

M—Oh, I don't know. I'll ask him next week¹.

A—I told you about these women who pretended I had more communist friends than Stalin himself. This kind of slander seems to have a life of its own. During the war, several physicists who worked on the big atomic bomb project told me that I had been kept out of it because the FBI considered me a dangerous communist. Well, I had condemned the Soviet dictatorship already in the twenties. At the top of society, I said, power-hungry men fight each other like dogs. At the bottom, people have lost their basic freedoms, so that life is hardly worth living anymore. This is clear enough, isn't it? But even now, they still suspect me of being some kind of Soviet spy. I'm old and frail, so the FBI doesn't interrogate me, but they summoned my secretary, Helen Dukas, to their office and asked her all kinds of questions about me. This happened last month.

¹ A harsh test or trial.

A well-informed friend has told me that my FBI file is thicker than the phone book. The most secret stuff always seeps out eventually, so I know a few things about my file. The first document it contains is the letter of the patriotic ladies. Then there are reports of my meeting Charlie Chaplin, Upton Sinclair and other subversives. Now listen to this, Marilyn: my FBI file contains some of the nazi reports about me. Before the war, the FBI cooperated with the Gestapo, the nazi police. You see, policemen in a certain country feel closer to policemen in another country, as colleagues, than to the “subversives” in their own country, whom they consider their enemies. So Mr. Hoover, who founded and still heads the FBI, hates any American citizen labeled communist or anarchist by his services, but trusted and respected Herr Himmler, his German counterpart. A communist I have never been. I have been a half-baked, fair-weather pacifist. I am an old man famous for not wearing socks. Even this they find suspect, I guess. Good American citizens wear socks.

M—I know this is a stupid question, which you’ve been asked a million times, but why don’t you wear socks, Albert?

A—When I was a young man, I made an experimental discovery: the big toe always ends up making a hole in the sock. As soon as some inventor solves this problem, I’ll wear socks again.

M—And become a good American citizen.

A—What I said about good American citizens was ironic. Some people, like senator McCarthy, and some institutions, like the FBI, have little tolerance for people who do not adhere to the norm. They really remind me of the nazis. Sometimes I’m afraid that the German calamity is just repeating itself here. I saw in Germany how it can spread like a disease. Now I recognize symptoms of the disease also in this country. People align themselves with the forces of evil and I’m standing powerless, like in a nightmare. If the dear Americans are similar to the Germans, there is nothing to hope about mankind in general. They even attack books. I’d laugh if it wasn’t so sad. They want to ban Robin Hood because he preaches communism. You know—take from the rich to give to the poor. Of course they attack Sinclair Lewis, Theodore Dreiser, but also jolly Mark Twain.

M—They don’t burn the books.

A—They remove them from the libraries, then what do they do with them? They don’t burn them in public, but they do burn them in the end. Then they dismiss teachers who insist on studying subversive books. Most of the teachers investigated by the McCarthy inquisition were Jewish. Senator McCarthy and Mr. Hoover suspect all Jews to be inclined

to communism and subversion. Just what Hitler told to Max Planck. I wrote a letter to the New York Times to help a teacher. To people summoned by the McCarthy committee, I gave good advice: "Just refuse to testify, even if it means going to jail for contempt of Congress." This I call the Gandhi stance. I was afraid they would ask me to testify, too. I imagined myself in jail already. Not a pleasant thought.

M—You're too famous. They wouldn't dare.

A—I've been told they considered revoking my citizenship because I supported the Spanish Republicans against Franco during the Spanish war. Do you know what they do? They send FBI agents to interview crazy people who accuse me of controlling their brain waves or what not. They spend the taxpayers' money for such foolishness. I have invented a death ray and a brain control machine, too. I guess you're right. I'm famous, so they leave me alone. They know I'm not really dangerous, of course.

Thousands are not so lucky. They have lost their jobs because they refused to cooperate with the McCarthy hounds.

M—Some people lost their jobs in Hollywood. Some squeaked and everybody despises them.

A—All these investigations of suspected communists are a greater danger than the few actual communists could be, as they have already undermined to a considerable extent the democratic character of American society.

Ach, I am hopeful, though. The American people will never be like the nazis. What's great about them is they love their freedom more than anything else. They got rid of senator McCarthy after all. Someday, I'm sure, they'll send away Mr. Hoover.

Do you know why I never returned to Europe? One word sums it up: the sweatshirt.

M—The sweatshirt? Wow!

A—A sweatshirt, an old pair of pants, comfortable shoes but no socks, what else do I need? Americans have invented the sweatshirt for me. Let me tell you of my first day in Princeton, in 1933.

When we entered New York harbor, a launch came alongside the ship and took us directly to the New Jersey shore. Flexner was waiting for us there. He drove us to Princeton.

"This saves half a day, Herr Professor. The mayor was waiting for you on the pier with a thousand journalists and photographers and the usual crowd of gawkers. They wanted to parade you to some hotel in Manhattan."

“The mayor? What are gawkers? They must be disappointed. I bet they’re angry at me. Waiting in the rain, poor people. If I had known...”

“Don’t worry. This is just politics. O’Brien needs to court the Jewish vote if he wants to be reelected. La Guardia is way more popular right now.”

“If I understand well, O’Brien is the current mayor and La Guardia his rival. By sending the boat for me, you hurt Mr. O’Brien, so I guess you favor Mr. La Guardia.”

“I don’t care one way or another. I live in New Jersey.”

M—La Guardia was half-Jewish, wasn’t he? So the Jewish vote was his anyway.

A—He often attacked Hitler in his speeches. Although he belonged to the Republican party, he was what you call “liberal.”

Flexner had reserved rooms for us in a small hotel, the Peacock Inn. While Elsa was unpacking our trunks, while the mayor of New York and an army of gawkers were still waiting for me on a Manhattan pier, I went out and explored Princeton. I walked along the main street, called Nassau street. I looked at the people. Most of them are students, I thought. Some of them, even girls, wear shorts. They don’t seem to worry about anything. Europe felt constricted and gloomy, but the very air in America seemed light and carefree. In a small pink and green store, I saw a waitress hand a student a three-scoop ice-cream cone. I stepped in, pointed at the ice cream cone and at myself and gave the waitress a quarter.

“This one goes in my memory book,” she said.

The student and the waitress stared at me as if I had been painted pink and green like the store. They recognized me because they had seen me in the film newsreels, so they probably thought I existed only on the movie screen.

M—Oh boy, do I know that stare!

A—I liked Princeton’s tree-lined streets, happy students and pastel ice-creams. Flexner found a pleasant house for us to rent. I could walk to the Institute for Advanced Study, which was at first located in a corner of the university. Later, they erected a separate building. Flexner had recruited eighteen people—twelve “workers” and six “professors.” Many of them were famous scientists, like the mathematicians Hermann Weyl and John von Neumann, but people called the new place “the Einstein Institute.”

Most of my colleagues came from Europe, so we tended to speak German. I could understand and read English, but I was unable to ask my way in the street. In case of

trouble, I would call the dean of the university, Mr. Eisenhart, who knew German. Once, a woman answered in English.

“Hello.”

“Hello, miss. I would like speak to Mr. Dean, please.”

“The dean Eisenhart is out. May I help you?”

“Perhaps you tell me where Professor Einstein lives.”

“Oh, I’m sorry, I can’t do that. We don’t want journalists to bother the professor, you know.”

“*Ach*, but I am he! I go for a walk and I forget where the home is.”

M—Your English is not so bad. Your accent is very strong, though. You should try some lessons with a voice coach.

A—I found a perfect English teacher when I arrived in Princeton: a six-year old girl, Amy, our neighbors’ daughter. I helped her with her arithmetic homework. I bought a compass and showed her that the needle always points to the north. I felt sorry I had missed the opportunity to be closer to my boys when they were children.

Our neighbors, as well as all the inhabitants of Princeton, were very nice with us. I’m not sure America remembered I had invented such a thing as the theory of relativity. It saw me as a valiant opponent to the brutal dictator in Germany. The governor of New Jersey gave a dinner for me. Then Mr. Roosevelt invited us to the White House.

M—Wow! I would have liked to meet Roosevelt. Eisenhower isn’t so sexy.

A—Wait: I didn’t receive his invitation. Flexner, who pretended he had to sift my mail for antisemitic and nazi threats, answered I was too busy to go to Washington. He acted as if he owned the institute and all the people who worked there. I heard he had told off some students who wanted to interview me for a campus magazine. Then, when three teachers asked whether I’d join them to make a string quartet, he had refused in my name. He hoped I’d stay in my office and bring glory to the institute and its founder by finding the secret of the universe before the end of the semester.

During my previous trips in America, I had met rabbi Wise, a famous Jewish leader. He called me on the phone.

“When are you meeting the President, professor Einstein?”

“What president?”

“Mr. Roosevelt. Didn’t you get the invitation?”

“Not that I know of.”

Albert & Marilyn

“He hasn’t lifted a finger on behalf of the Jews in Germany. I thought you might talk to him. His secretary promised me he’d send an invitation.”

I wrote to the White House to accept the invitation. We had dinner with the President and his wife and even slept there. We talked about the situation in Europe. He spoke good German. I sent a postcard to my friend the queen of Belgium:

In the capital city
Of this great country,
Where the future is being created,
I have been invited
By a brave man,
Who fights as hard as he can.
While we talked of things old and new,
I thought about you.
To let you know, I decided I’d better
Send you this letter.

I complained to the Institute’s trustees about Flexner.

“No self-respecting person could tolerate such interference. If you can’t ensure undisturbed work, I suggest we discuss ways and means of severing our relation in a dignified manner.”

M—He reminds me of bossy managers I’ve had in my career, who wanted to control me. Gee, I’m so glad I am not under contract anymore!

A—Flexner apologized and ordered the mail to be delivered directly to me. Miss Dukas did find antisemitic letters now and then. She kept them in a special file, because she knew it amused me to read them. “You are a Jew faker and a communist and should be barred from the United States,” they said. “The Jews are as dangerous today as they were when they killed Jesus. They deserve to be starved to death. They insult the human race. No wonder the whole world hates these swindlers, these snakes, these skunks, these friends of Satan. They must be done away with.”

It took me several years to understand that antisemitism was also quite common—in a less blatant guise, of course—in the high spheres of American academia.

M—There are many private clubs in American cities that are barred to blacks and Jews. To women too, of course. Do you know the story about Groucho Marx? He was invited to

enter a very exclusive club. "If you accept people such as me, I certainly won't go," he told them.

A—A pleasant paradox. A good question would be: "Should I enter this very exclusive club if they open it to the Jews—but not to the black people?"

M—There's a nightclub in Hollywood called the Mocambo. Do you know Ella Fitzgerald? She's a very good jazz singer. Her agent asked the Mocambo whether she could sing there. Well, no black person had ever performed in the club, so they refused. I heard about this and I thought, gee, maybe I can do something about it. I told the Mocambo people that if they let Ella sing, I would come every night and take a front table. This would bring more journalists and photographers than they had ever seen. They said okay. So Ella sang and I came every night.

A—I also know a black singer, Marian Anderson. Maybe she sings jazz sometimes. She sings classical music mostly. When she came to Princeton, I invited her to stay in my guest room, because no hotel accepted a black person.

This was before the war. Then, after years of suffering, we thought a new world was born, free of ugly prejudices. Black men had fought bravely against the Germans and the Japanese. They had faced death as equals on the battlefield. But then, there was no more equality when they came back to America. They encountered a sudden surge of killing and lynching. The same thing happened to the few returning Jews in Poland. Right here, in Princeton, there were no black students until quite recently. No Jews either.

Many things could still improve in America. There have been times, with all this McCarthy business, when I thought of moving away. I even wrote to a distant cousin in Uruguay to ask her how was life there.

In 1934, I hadn't decided to settle in Princeton yet. After six months, I was to go to Europe for my Oxford penum.

I had to attend a Zionist benefit concert in New York City. Leon Watters invited us to stay in his Fifth Avenue apartment, right across Central Park. He was and is a good friend, a biochemist who has his own pharmaceutical company and is quite wealthy. He financed some research at Caltech, I think. He is Jewish and tells good jokes, so he had revived me when I was dying of boredom at a dinner for Caltech backers. He came to fetch us in Princeton with his big American car and his chauffeur. I asked him whether we could go and look at the countryside. What did I expect? We saw farms, fields, hills and woods. It

reminded me of Bavaria, where I have spent my youth. Mr. Watters had a camera. The chauffeur took some pictures of us.

“It seems easy,” I said. “May I try?”

I took pictures of Watters and Elsa. I had reviewed many patents for cameras and camera parts in Bern, but it was the first time I was using an actual camera.

M—You own neither a car nor a camera.

A—I have a radio set and a record-player.

The benefit concert was in Carnegie Hall. There I met the composer Arnold Schoenberg, a Jewish refugee like me. I liked the man better than his music. A benefit dinner followed the benefit concert. The newspapers called the evening a farewell occasion, as we had cabins reserved on a ship two days later. At the last moment, I changed my mind. Elsa agreed with me. Dark clouds were hovering over Europe. We liked it in Princeton. Why move? I explained my misgivings to Schrödinger, who happened to be in New York for a conference.

“Congratulations for your Nobel prize, Erwin.”

“Thanks, Albert.”

“So you left Berlin. You’re a good man.”

“What else could I do?”

“The others stayed, didn’t they? Not the Jews, of course. But you are not Jewish.”

“Even if you were not Jewish, Albert, you would have left too.”

“You went to England, is that right?”

“Oxford. We’ll be able to work together. They’re eager to see you over there. They told me you’ve decided to become English.”

“Well, last year, yes, but now... If I go to Oxford, I’ll also have to go to Leiden.”

“Why would you go to Leiden?”

“I was very close to Ehrenfest and Tatiana, his wife, you know.”

“Oh, I heard he shot himself, is that right?”

M—Your friend Ehrenfest, whom you played the Brahms sonata with? That’s awful.

A—He was depressed. He felt a complete failure, not worthy to go on living. Because of the situation in Germany, maybe, and also because he was stuck with his research. When we reach the age of fifty, it’s all over for us as scientists. Time to become bureaucrats. He always felt inferior to his very high standards. He was more critical toward himself than toward anybody else. When I crossed the ocean, I often walked on the deck at night. “Why

don't I step over the railing and be done with it?" I wondered. Instead of becoming a useless old man and suffering all kinds of painful illnesses. But then I looked at the sky. I was still quite curious to know what my young colleagues would find about the universe. He shot his poor retarded boy too, but the child survived.

M—What a sad story! This must have been a terrible shock for the kid, even if he was retarded.

A—Better he had died.

M—How can you say such a thing, Al? Maybe he enjoyed looking at the stars, just like you, even if he didn't know about the expansion of the universe and what not.

A—You have a kinder heart than I do. I didn't really think about him, but I pitied Tatiana. "The least I can do is go and console her," I told Schrödinger. "Then I've promised to give lectures in Paris and Madrid. Opponents to Hitler would ask me to attend meetings everywhere. How could I refuse? Besides, Elsa has relatives all over Europe. They hope we'll help them. I'm afraid I lack the courage to undertake all this. Why shouldn't an old fellow be able to enjoy some quiet once in a while?"

"But I read in the paper that you were sailing to Antwerp tomorrow."

"Next year, maybe. I think I'll spend the summer here. Sailing... I think you knew Dr. Bucky, in Berlin. He's American, you know, so he moved back here when the nazis took over. He's renting a big house by the sea during the hot season, in a place called Rhode Island. He said I could come and stay there any time. As soon as he made his offer, I imagined a boat... I was ready to go to Europe, Elsa has packed her trunks, we have the steamship tickets, but I'm thinking about that boat in Rhode Island all the time."

Elsa did go to Europe after all. Her daughter Ilse, who had settled in Paris, was seriously ill. She left in May. A few weeks later, I went to Rhode Island with Helen Dukas.

Bucky told me how the X-ray diaphragm he had invented worked. His son had a small Kodak camera. Bucky was wondering whether he could adapt a version of his diaphragm for a camera such as this one.

"You got your Nobel prize for a study of the photoelectric effect, didn't you, professor Einstein?"

"I see what you're aiming at. If we had a small light-sensitive electric circuit, it could power a motor that would open or close the diaphragm."

"Right. Where would you put your light-sensitive circuit?"

Albert & Marilyn

Dr. Bucky and his son thought I was an expert about cameras and everything else, since I was the famous professor Einstein. I was lucky I had photographed Watters and Elsa not long before. We invented and patented a primitive “automatic camera” together.

Bucky’s sons were skillful too. They had built a short-wave radio and a directional antenna, so we could listen to broadcasts coming from Europe. We laughed when we heard Hitler’s ridiculous yapping. People in Germany were not allowed to laugh about it, of course. We were lucky to be in America.

M—I remember hearing Hitler on the radio when I was a kid. German is quite a harsh language, don’t you think?

A—*Ach*, certainly not. You should listen to poetry by Goethe or Hölderlin, or songs by Schubert. Italian is quite beautiful in opera, too, but it was ugly when Mussolini barked it.

M—I hope I’ll go to Europe someday.

A—I hadn’t given up on Europe. I just wanted to rest. I rented a sailboat. The wind was much stronger and the waves certainly higher than on my lake in Caputh. I even broke my mast once. The coast guards towed me back to the harbor with their motor boat.

Watters came from New York several times and we sailed together. At first he wasn’t sure he could trust me. I didn’t bring a chart. I knew neither the nautical signals nor the names of the ropes and things in English.

“Don’t you wear a life jacket, professor?” he asked.

“Bah, if I have to drown, then let it be honestly.”

“Better not to stray too far from the land, so we can at least swim ashore.”

“Oh, I can’t swim, anyway.”

In August, I received a telegram from Elsa: her daughter Ilse had died in Paris. She was only thirty-seven. Margot, her other daughter, came to America with her. Elsa was quite distressed, of course. Although Ilse had worked as my secretary in 1917, and I considered her a close friend, her death couldn’t affect me as much as her own mother. Elsa seemed to resent this.

“Your thick skin looks pretty hale, with all this sailing around. Nothing tragic really gets to you. That’s why you can work so well, I suppose.”

“If I stopped sailing, would it change anything?”

M—You had even thought of marrying her.

A—Just for a minute or two. In the Bible, coveting a woman is almost as sinful as going to bed with her, but in real life such thoughts do not matter.

Albert & Marilyn

My elder son, Hans-Albert, soon came to America too. "I just want to see how it is," he said. He stayed three months and found a job as an engineer in the South somewhere. He went back to Zurich to bring over his wife and his two sons.

Thousands of refugees dreamt of crossing the ocean. I tried to help as many as I could—teachers and students I had known in Berlin, members of the Einstein and Koch families. I sent certificates called "affidavits," which had the miraculous power of generating visas. Watters was very active too, but otherwise I didn't understand why the American Jews didn't do more for their European brethren. There were quotas for foreigners coming from different countries, like Germany and Austria and Hungary. Year after year, the quotas went unfilled. Someone told me that there were people in the State Department who didn't like Jews, and thought there were too many of them in the States already.

Many influent people, like Henry Ford, who made automobiles, and Lindbergh, the famous pilot, found the European dictators wonderful. They were ready to believe that our world was becoming too complex for democracy and needed tyranny. Order, prosperity and peace reigned in totalitarian countries. Books were burned and people who refused to conform tended to vanish, but that was a fair price to pay for the happiness of the greater number.

The nazis hated the Jews because the Jews have this old critical tradition. They tend not to conform and obey. Thus, they threaten the totalitarian State. Why Ford, Lindbergh and their friends also hated the Jews I don't know. One of the ugliest things in America is that there is no limit to the power of wealth. I'm afraid it could reach totalitarian proportions eventually.

My FBI file says I signed affidavits for "anti-nazis," whom Edgar J. Hoover probably considered as red as cooked lobsters. What did he expect? Pro-nazis didn't ask me for affidavits. For every affidavit, you have to deposit some money. It was a good thing I received a high salary.

M—You signed one for Halsman.

A—That was later, when he lived in Paris—when the Germans had invaded France, but were not at war with America yet.

Anyway, the Institute for Advanced Study didn't pay me to take care of refugees, but to advance the study of physics. I had to overcome a small hurdle first: Mayer, my faithful assistant, decided to work on his own. My assistants usually left after a while, Marilyn. They got tired of following me in my vain endeavors. I kept trying to goad equations into

hatching a unified field theory, but the equations weren't in a hatching mood. I needed someone to do the math, you know. I play with the deep thoughts. Let somebody else compute and calculate.

M—I guess that “Einstein’s former assistant” looked good on Mr. Mayer’s résumé.

A—Flexner became stingy, all of a sudden, and refused to pay a new assistant. He had not forgiven my disparaging letter to the trustees, obviously.

Nathan Rosen, a Brooklyn student, asked me whether I would read his Ph.D. thesis. We met and I found him a very nice fellow. I couldn't offer him a regular job, but I took him as a kind of stringer. Flexner accepted to sign a short-term contract, which he renewed grudgingly a few times. Rosen was a clever one. He didn't want to waste his time looking for the philosophical stone of the unified field. He thought he knew why I had failed in my quest. Pushing General Relativity and quantum mechanics toward each other so they could meet half-way was a mistake. General relativity was as perfect as a Michelangelo sculpture. I shouldn't try to change anything about it. On the other hand, quantum theory was still a half-baked idea. Rosen suggested we study some of its flaws. We might be able to convince the theory's great priests to amend their views and explore new directions, more compatible with General Relativity.

Such a project was precisely what I needed. I felt ten years younger as soon as we started working.

M—Like Cary Grant in *Monkey Business*!

A—Work is the best youth serum, you know. Things developed so well that Podolsky, a “worker” at the Institute whom I had met when he was a Caltech student, soon joined us. In May, 1935, we published an article that became known as “the EPR paradox,” for Einstein—Podolsky—Rosen. We started with two physical systems, for examples two particles such as photons or electrons. We supposed that the two particles interact in some way. Maybe they collide. When they do, they become one system. Then they go their own way, but—according to the equations of quantum mechanics—they remain “entangled” in a mysterious manner. When you study the first particle, the entanglement limits what you can know about the other one, even though it may be at the other end of the universe. As if information were traveling instantly across space. Ah, but instant action at a distance can't exist. So says special relativity.

Perhaps you've read in the papers this kind of story: two twin brothers who were separated at birth, being reunited by chance when they are forty years old, discover that

they both married a woman named Brenda and drive a blue Ford. So what do you suppose? When the first twin bought his blue Ford, the second twin decided to buy a Ford car too. He hesitated between a red one and a blue one, but he felt he was losing his free will and was compelled to choose the blue car.

I called this “phantom action at a distance.” It doesn’t make sense¹. After having said that the Good Lord didn’t play dice, I now added that he didn’t practice telepathy either.

M—If there’s a God, he can do everything. This includes playing dice and telepathy.

A—My God is the general harmony of Nature. It prefers simple laws to quirky mechanisms. Actually, the purpose of our article wasn’t to say that quantum mechanics was wrong. We just suggested it wasn’t “complete” yet. Well, we caused quite a stir in the small world of modern physics. Wolfgang Pauli mentioned the article in his course at the Zurich Polytechnikum: “Einstein has once again come out with a phony objection to quantum mechanics. If one of your first-year comrades raised such an objection, I’d consider him a promising student. I wish somebody would bring Einstein to the second-year level in quantum mechanics so he’d stop bothering serious people.”

Niels Bohr wrote a refutation of our objection. When you study the first particle, he said, it doesn’t affect the second one, because it destroys their entanglement.

The only physicist who found some merit in my work was Schrödinger. Although his great equation stood at the very center of quantum mechanics, he just couldn’t accept a theory that relied on probability. He made up his own paradox, with a cat in a box who was neither dead nor alive, to show that quantum mechanics didn’t behave like a solid physics theory should.

M—How could a cat be neither dead nor alive?

A—A cat can’t. But a particle can be either this or that, depending on the way you look at it. This is a basic tenet of quantum mechanics.

Physicists who were not quanta experts, or were too lazy to do their homework, thought I had to be wrong with my paradox because I was old and foolish. Lenard’s gang, which now included most of German scientists, knew why my influence was shrinking: the world was beginning to understand that fake Jewish physics had failed in its devilish plan to poison pure Aryan science.

¹ See appendix.

Podolsky went back to Caltech. I worked with Rosen on gravitation. Looking for that elusive link between gravitation and quantum mechanics, I tried to compress the mass of a star to the point where it becomes what professor Wheeler, my neighbor, calls a “black hole.” I hoped the gravitational energy in the middle of the thing would be high enough to create particles that would seem to come into being elsewhere, having crossed a kind of singularity called an “Einstein-Rosen bridge.” This manner of generating particles would explain why all the electrons in the universe have the same mass. We found equations, but failed to convince anyone that particles are indeed born this way.

Then we turned our attention to gravitational waves. A magnet or electric circuit produces a field. When the circuit changes or vibrates, it sends forth electromagnetic or “Hertzian” waves, which can be tamed to bring radio or television programs into your home. The gravitational field of a star can also change or vibrate in some cases—for example, when the star explodes, or when two stars rotate around each other. Then gravitational waves roam across the universe at the speed of light. We wrote the equations. Maybe someone will detect such waves in the future¹.

Rosen’s “temporary” contract couldn’t be renewed forever. Some Soviet university offered him a good position, so he left me. I took a new temporary assistant, Leopold Infeld, whom I had met in Berlin. With Banesh Hoffman, an English “worker” in the Institute, we showed how the equations of General Relativity could yield equations for the movement of things.

In the spring of 1935, when I should have gone to Europe for my summer jobs, I balked again. I just didn’t feel like it. I hesitated, though. Not for the sake of my colleagues in Oxford or locked-up son in Zurich, but because I could have comforted another widow, my friend the second violin. She was now the queen mother, as King Albert had fallen to his death in the Belgian Ardennes mountains. The new king, Leopold III, was Elizabeth’s son.

Flexner offered to extend my contract from half the year to the whole year. I accepted. My English was improving. I thought I might as well become an American citizen. We did leave the country. We went to Bermuda to request immigrants’ visas in an American consulate.

¹ Gravitational waves due to the merger of two black holes 1.4 billion light-years away were detected for the first time on September 14, 2015. It means they merged 1.4 billion years ago.

We rented a beach house in Connecticut. I found a pianist and played some music. I wrote a book about elementary physics with Infeld. He needed money, since Flexner had not renewed his temporary contract.

M—Maybe I should read it.

A—I’m not sure it’s elementary enough for a, er...

M—Dumb blonde?

A—Complete beginner. Maybe you should go into a library or bookstore and ask for a beginner’s book.

In the middle of the summer, some of our Princeton neighbors called us on the phone. “A pleasant old house has just been put up for sale on Mercer Street. We think you would like the trees in the garden.” We bought this house. People joked that the *Institute for Advanced Study* should have been called *Institute for Advanced Salaries*. I was well paid, but I hadn’t accumulated enough capital in my bank account yet. Americans have a very realistic approach to money. A colleague advised me to sell a manuscript. I found the manuscript of an article I had written in 1912. Although a big financial crisis was undermining the American economy, somebody paid a high price for it—more than enough to buy the house and renovate it.

While I played the violin, sailed and worked with Infeld, Elsa took care of the renovation. She opened a large window in my future office so I could look at the trees while meditating on the universe. She was tired and in poor health, but I thought the work would keep her from thinking about her dead daughter all the time.

Helen Dukas had been able to bring my portrait of Faraday from Berlin. I also hanged a portrait of Gandhi on the wall. He was the only politician I really admired.

M—But people killed each other on a grand scale in his country, and then killed him, too.

A—He said things people didn’t want to hear. This doesn’t mean he was wrong. I hope his dream of a non-violent world will come true someday.

A publisher told me he was burying a “time capsule” that would be opened in a thousand years. He sent me a sheet of special extra-strong paper, guaranteed to last a thousand years, and asked me to write a few words for posterity. Here’s what I wrote:

“Dear Posterity,

If you have not become more just, more peaceful and especially more rational than we are, or were, well, the Devil take you.

Albert & Marilyn

Having, with all respect, uttered this pious wish,
 I am your (former) friend
 Albert Einstein.”

Soon after we moved into our new home, Elsa noticed that her eyes were swelling. She consulted some specialists, who diagnosed a severe circulatory and kidney weakness. They recommended complete rest. She stayed in bed for two months. Helen Dukas took care of the house. Watters had an electric refrigerator delivered to us, so we wouldn't have to go shopping every day. He liked Elsa and she liked him. His own wife was dead. He showed me her photograph when I was in his apartment (I used to sleep there when I spent a few days in New York City). I thought I might become a widower too.

“The individual counts for little,” I told him. “We place too much importance on the trivialities of living. Man is insignificant compared to the vast mysteries of the universe.”

My friend Marcel Grossmann died. I wrote to his wife that few people had helped me as much as he had. He had taken notes in the Polytechnikum while I was playing truant. He had asked his father to recommend me to the director of the Patent Office in Bern. He had collaborated with me on General Relativity.

Elsa left her bed and we rented a house near a lake in the Adirondacks mountains. Watters was a frequent visitor.

“Albert is in very good form,” she told him. “He has accomplished a lot lately. He believes his latest work is the best he's ever done.”

She was happy when I worked a lot, but then, when we returned to Princeton in the fall and she had to take to her bed again, she was happy that I stopped working.

“You wander around like a lost soul, Albertle. My illness does upset you after all. I never thought you loved me so much.”

She died on December 20th, 1936.

M—What a pity! She wasn't so very old, was she?

A—Sixty. She had never overcome the shock of Ilse's death two years before.

Mrs. Eisenhart, the wife of Princeton's dean, criticized my apparent callousness. “Your wife seems to do absolutely everything for you,” she once told me. “Just exactly what do you do for her?”

Elsa had answered this kind of question in a letter to Watters, which he showed me after her death. “You cannot analyze Albert, otherwise you'll misjudge him. Such a genius should be perfect in every respect. But nature doesn't behave like this. Where she gives

extravagantly, she takes away carelessly. You have to see him all of one piece. You cannot put him under one heading or another. Otherwise you have unpleasantness. God has given him so much nobility, and I find him wonderful, although life with him is exhausting and complicated, and in more ways than one.”

I was fifty-eight. Infeld and Hoffmann suggested we take a break.

“You look exhausted, professor. Your skin is as white as chalk. We could stop at least a week or two.”

“No, more than ever I need to work. I have to go on.”

Bucky and Watters invited me to spend some time in this or that country house, but I refused. Not only does work make you younger, but it is common knowledge that there’s no better medicine against grief. I lived with my stepdaughter Margot, who had nursed Elsa through her illness and was very sad. Helen Dukas went on taking care of most practical things.

I wrote to Max and Hedi Born now and then. He taught in Edinburgh, in Scotland. As they had spent a year or two in India, she had become interested in Indian culture and wrote poems about yoga and what not. I sent news to Max. I told him that Rosen had gone to Moscow and that I was now working with Infeld, but that helping Jewish refugees was difficult because of the antisemitism in Princeton. I explained how I tried to consider heavenly bodies as singularities of the gravitation field. I told him that antisemitism was a small problem in the United States compared to the terrible racism against black people. I did like America, though. “I have settled down splendidly here,” I wrote. “I hibernate like a bear in its den, and really feel more at home than ever before in all my varied life. This bearishness has been further enhanced by the death of my mate, who was more attached to human beings than I.”

All the scientists who had spent years in Berlin or Göttingen were now coming and going across the ocean. Weyl told me that Max Born, whom he had seen in England or somewhere, mentioned my letter: “Einstein writes five pages about his research and his assistants and the sorry condition of black people in America. Then, in the middle of a paragraph toward the end, he announces his wife’s death incidentally. Isn’t it strange? Despite all his kindness, sociability, and love of humanity, he is totally detached from his environment and the human beings included in it.”

M—This Max is the detached one, maybe. He doesn’t know human psychology. What you write is one thing, what you feel may be something else altogether. Your grief was so

great that you couldn't find the words to express it. I think that people who wail and pull their hair and then forget have an easier life than people who repress their emotions and let them simmer for years.

A—I found solace in work. I often walked to the university with a neighbor who taught political science. He knew I was working hard, as he could see the lights in my office late at night.

“Do you feel you are nearing your goal, professor?” he asked me.

“God never tells us whether the course we are following is the correct one. I have tried ninety-nine solutions and none works, but I have learned a lot. At least I know ninety-nine ways that won't work. I publish one of them now and then.”

“Why would you do that?”

“To save another fool from wasting six months on the same idea.”

The Institute was still located inside the university. I liked to attend physics seminars and meet promising students. In this manner, I could try to keep abreast of the latest discoveries. In the Princeton cinema theater, they were playing a film where an Egyptian mummy came back to life—with unpleasant consequences, I suppose. To the students, I was just another mummy.

M—Undead people are usually bad in movies. Vampires are worse than mummies, and zombies are the worst.

A—My theories hadn't aged, though. I was thrilled when the young physicists explained the clever experiments they had set up to verify the equivalence of mass and energy. They measured and studied the energy of radioactivity, hoping to exploit it in some way.

Marie Curie (who had died in 1934) used to tell me that she studied radioactivity because nobody else did. Such a worthless subject was considered fit for a woman scientist. Things had changed a lot. Everybody hoped to find the new philosopher's stone: unlimited energy!

In radioactivity, the atom's nucleus spits various bits of stuff: alpha rays, similar to helium nuclei; beta rays, which are just electrons; gamma rays, made of pure energy. When an atom of uranium emits an alpha ray, it loses two protons. This turns it into an atom of thorium. Then thorium also emits an alpha ray, which turns it into radium, which turns into radon, which turns into polonium, which turns into lead. The nuclear reaction stops there, because lead is stable. The whole process smacks of alchemy. Instead of turning lead into gold, however, nature starts with precious uranium, worth much more than gold, and ends with vile lead. At every step, a little mass vanishes and some energy appears.

The American Association for the Advancement of Science invited me to be its guest of honor in Pittsburgh, where it held its annual meeting. I talked about mass and energy. I spoke in English to people who were not the usual university crowd, so sometimes they didn't understand a technical term. Watters saved my life by acting as an interpreter. American people are more lively than Europeans. I had covered the blackboard with equations and formulas. After going through some of the easy ones, I said: "So you see, it's quite simple". They shouted: "No! No!"

One of the journalists attending the lecture asked me a question: "There's lots of energy in your equation, professor. Do you think it will be possible to release it by splitting the atom?"

"I feel it will not be possible for practical purposes. The nucleus of the atom is chipped in the phenomenon of radioactivity, but we can't control it. Besides, it produces very little energy. Splitting the nucleus by aiming alpha rays at it is like shooting at birds in the dark in a region where there are few birds."

M—People were already thinking about the atom bomb.

A—Most of the scientists who gave any thought to the harnessing of nuclear energy hoped it might replace coal and gas, to produce cheaper electricity and transportation. Some may have been thinking of new arms.

Science and technology give us useful and pleasant inventions. We can fly, talk to remote friends, store food for weeks, read at night, avoid pain and overcome many illnesses. The best thing about progress, in my opinion, is that rational human thought lets us discover and understand the universal laws of Nature, replacing arbitrary laws depending on invisible powers, ghosts and spirits.

There's a dark side to scientific progress, obviously: while the sword killed one person at a time, cannons and machine guns killed dozens and now we'll soon be able to annihilate millions in one shot. As a consequence, fear increases, passions and panic spread like in the times of the great epidemics, reason can't be heard, objective and humane thinking is suspected and persecuted as unpatriotic. Reasonable people need to support progress, otherwise it trips itself and falls on its nose.

I never gave a thought to the atom's nucleus, you know. For a long time, instinct or luck had brought me as much success as a person could wish. This made me arrogant and stubborn, I guess. I kept looking for the united field although I wasn't getting anywhere.

At least my instinct set me to the right path when it convinced me to forgo my pacifism. I was sorry that French and English pacifists had not followed my example. Even the politicians became pacifists. In 1938, Hitler gobbled up Austria, then annexed part of Czechoslovakia. Daladier and Chamberlain met the Germans in Munich and accepted the done deeds.

M—I have no memory of this at all. In 1938, I was twelve years old. I didn't care what happened in Europe. I knew nothing about it, really.

A—Maybe America was reacting like a twelve-year old girl. If it had become involved from the beginning, the price in human lives might have been lower.

I often thought about my friend the queen mother of Belgium. Her son, Leopold III, instead of siding with France and England, declared his country "neutral"—as if you could remain neutral when facing Hitler.

When I wrote to Elizabeth, I told her about my life and my thoughts.

"Dear second violin,

"I just came back from Long Island, near New York, where I spent my summer vacations. I rented a house near a place called Peconic, on a quiet cove, next door to some Princeton colleagues and amateur musicians. We played Beethoven's ninth quartet, but I have to admit that the final fugue is a little too fast for my old bow. I find Beethoven too dramatic and personal, actually. While Bach and Mozart are my favorites (but don't expect me to say whether one or the other means more to me), I am quite moved by Schubert right now. I admire his superlative ability to express emotions and his amazing power of melodic invention. I always feel that Handel is good, but that he has a certain shallowness. I could say the same thing of Mendelssohn. Schumann and Wagner lack structure.

"My son is living in America now with his family. My sister, Maja, just came over from Italy. Although Mussolini isn't persecuting his own Jews like Hitler, he did expel foreign Jews. Her husband, Winteler, was in poor health, so he preferred not to cross the ocean. He is living in Zurich with his sister and her husband, my good friend Michele Besso.

"I have two new assistants, Bergmann and Bargmann. People pretend they never know who is Bergmann and who is Bargmann, but they are quite different from each other. I don't know whether I'll discover anything with them, or indeed before death comes calling.

As Lessing¹ said: ‘The search for truth is more precious than its possession.’ I am grateful that fate gave me an interesting and maybe useful life, anyway.

“I do regret that I can’t immerse myself in work as deeply as I used to. When I was looking for the equations of General Relativity, I forgot the war raging around me. Now I just can’t escape the awful feeling that Europe will soon face new horrors. The tragedy seems to be already written on the tablets of fate, so nobody tries to avoid it. Before the life of nations moves forward again, they will have paid a heavy price in human lives.”

M—It is amazing, in a way, that it seemed obvious to you and also, I guess, to many other European people, but Americans had no idea of what was coming.

A—Right now, probably, there are lots of obvious future events that we don’t see coming.

On March 14, 1939, I celebrated my sixtieth birthday.

“You look much younger,” Watters told me.

“Looks can lie. I find my physical powers decreasing. Taming the boat become harder. Also, I require more sleep now. My mental capacity hasn’t diminished, thank God. I grasp things as quickly as when I was younger.”

“Even if your mental capacity decreased a lot, we ordinary mortals wouldn’t notice.”

M—I can’t imagine your intelligence being even greater than it is now.

A—Memory and some other capacities diminish, but wisdom increases, or at least we like to think it does. “Intelligence” is a very vague word. You’ve met many people and lived many lives, Marilyn, although you’re not thirty yet, so you understand the feelings and emotions of human people and you can also reproduce them when you play. This is a kind of wisdom or intelligence that should grow with age, since you’ll know even more people. My particular ability lies in visualizing the effects and possibilities of a theory. I grasp things in a broad way. Before looking for meaning and logic, I look for beauty. When I’m judging a theory, I ask myself: ‘Is this the way I would have arranged the world if I were the Good Lord?’ It is quite obvious to me that the Old One likes things simple and beautiful.

I spent the summer in the Peconic house again. I sailed in the bay, played music with my neighbors, went into town to eat an ice-cream cone. My three women—Margot, Helen and Maja—came often. I was happy. I liked to sit in the sun at the bottom of a dune and

¹ German writer (1729-1781).

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look at the dance of surf and foam. The drops of water have been jumping for eons. As we can't pin down the precise causes of each drop's movement, it seems utterly random to us.

Let me quote the great Newton:

"I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore and diverting myself in now and then finding a smooth pebble or a prettier shell than ordinary whilst the great ocean of truth lay all undiscovered before me."

M—He had reached wisdom, too.

A—He lived eighty-five years. He found everything when he was quite young, put it in a drawer and almost forgot about it.

Now listen, Marilyn. Here's where I begin to play my part in the atom bomb story.

In July, 1939, I am working lazily on the patio in front of my house, I see two men in city dress coming across the dune with a boy. I am barefoot, I wear an old sweater full of holes and a pair of short pants, so I find their suits, ties, black shoes and felt hats rather ridiculous. When they come close, I recognize one of them, a chubby fuzzy-haired fellow. I also know the other, actually.

"Szilard! Wigner! Hungary in Long Island! Only Von Neumann is missing. Are you on a visit from England, Szilard?"

"Nice to see you again, Professor Einstein. I've been working in Columbia University for the last few months. I went to Princeton to find you. There I met Wigner, who drove me here in his car. This young gentleman's name is Jimmy. Say, this is the end of the world."

"You had a hard time finding me?"

"They told us to ask for the house of Dr. Moore in Peconic. We've crisscrossed Peconic for hours. Nobody knows this Dr. Moore."

"I don't know him either. He owns this house."

"We were ready to go back to New York City, but then I saw Jimmy and asked him whether he knew where Professor Einstein lived. He brought us here."

"May I go now, sir? Will you be able to find your way back to the car?"

"Yes, Jimmy, thank you. Here's a dime to buy some candy."

M—If this was a movie, the boy would be very important. He is like a switch operator, putting the plot on the right track. The director would look for a young actor with red hair and a funny voice, the kind of guy who steals the scene.

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A—You need funny boys in movies, but history is made by boring gentlemen. I asked Szilard why he had decided to trek over the dune in ball-room shoes.

“Niels Bohr said he saw you briefly in Princeton, professor Einstein. He worked with Wheeler, then went back to Denmark. He told you nothing, I guess.”

“Told me nothing about what?”

“I’ll reveal a secret matter to you. Did you know that Lise Meitner and Otto Hahn were shooting particles at uranium in the Kaiser Wilhelm Institute?”



“Everybody is bombarding uranium. Marie Curie’s daughter. The Italian fellow, Fermi. I met him when he was Ehrenfest’s assistant in Leiden. It’s an old song. I remember that Rutherford pelted nitrogen with alpha rays around 1920 and produced some oxygen. They dream of harnessing the atom’s energy. Some people are making experiments in Princeton. They spend more energy than they get. I’ve listened to a lecture or two. I don’t know much about that subject. We all need to find a way of wasting our time, I guess.”

“Still after the unified field?”

“The ultimate equation is just around the corner.”

“Listen, professor Einstein. In 1934, I filed a secret patent with the British admiralty.”

“A secret patent? I have never heard of such a thing.”

M—You were a patent expert, though.

A—“The military dwell in their own separate world,” Szilard said. “They have their own clothes, their own food and their own patents. Anyway, when Chadwick discovered the neutron, in 1932, I thought it would make an ideal bullet to shoot at the nucleus. Much

better than alpha rays¹. As it is neutral, the protons of the nucleus do not repel it. If you break a nucleus with a neutron, it is possible that two neutrons escape and go break two nuclei, which will send forth four neutrons, and so on.”

“*Ach*, I have never thought about that... Quite frightening. Are you sure it is possible?”

“I call it a chain reaction. My secret patent covers the theory. Breaking nuclei with neutrons is possible, but can we really do it? Fermi found a way: you need to slow down the neutrons with hydrogen. So now it seems that Otto Hahn actually split uranium nuclei.”

“In Berlin? When everybody says that war is coming? You’re scaring me, Szilard.”

“I came here to scare you, precisely. But wait for the rest of the story. You know Lise Meitner?”

“I met her thirty years ago in Salzburg. I saw her in Berlin now and then.”

“You know she’s Austrian and Jewish. In 1938, when Austria vanished, she became German and so the Institute threw her out as a Jew. She found refuge in Sweden. Hahn went on with the experiments they were doing together. He bombarded uranium with slow neutrons. He used some barium to carry away whatever small quantity of radium might appear. As a good chemist, he weighed all his residues carefully. He found more barium after the bombardment than before. He wrote to Lise Meitner, in Sweden.”

“He didn’t file a secret patent, like you?”

“You’re joking, but just imagine the Germans use the chain reaction to make a bomb. We’re lucky they’ve expelled all their best scientists. Otto Hahn experimented and Lise Meitner explained. He questioned her, as he always did: ‘Where does this extra barium come from?’ They’d been working together for more than thirty years.”

“I know Hahn. He is no fool. He protested strongly when the Jews were sent away, then he kept Lise with him as long as he could. He doesn’t believe in Aryan science and all that crap. He thinks knowledge belongs to everybody. He knows what he has found and he wants the rest of the world to know.”

“Writing to Lise was certainly the best way to spread the news. Her nephew, Otto Frisch², was working in Copenhagen with Niels Bohr. Toward the end of December, 1938, he went to Stockholm to spend the Christmas holiday with his aunt. During a walk in the woods, Lise showed him the letter and explained what had happened: Otto Hahn had

¹ Alpha rays bear positive charges.

² He was known then as Robert Frisch. He switched to his middle name when he worked in Los Alamos, because there were already too many Roberts there.

broken uranium nuclei. This can produce barium, krypton and other elements that weigh about half as much as uranium. Frisch suggested the name ‘fission’ for the splitting of the nucleus. He went back to Denmark and told Bohr about it. Bohr compares the nucleus to a drop of water.”

Have you ever seen a drop of water as big as a tennis ball, Marilyn?

M—Er, no. A drop of water is always a tiny thing.

A—If its volume gets too big, its surface can’t hold together anymore and it breaks down. This is what happens with the uranium nucleus when you add a neutron.

Szilard went on with his story.

“Bohr’s work with Wheeler seems to show that the neutrons break only the nucleus of uranium 235¹, which is especially unstable because it has an uneven number of neutrons. The main isotope is uranium 238. The proportion of 235 is one atom out of one hundred and forty.”

“This is good news, in a way. Uranium 238 absorbs the neutrons and prevents your chain reaction.”

“Don’t rejoice too soon. Irène Joliot-Curie and her husband have reproduced Hahn’s experiment and shown that the nucleus of uranium 235 does emit neutrons when it breaks, as I had predicted². Fermi confirmed it here in New York.”

“Fermi is in New York?”

“He went to get his Nobel prize in Stockholm and decided not to go back to Italy. His wife is Jewish. They have milder racial laws than the Germans, but his children would be barred from several professions.”

“I’m thinking. All you have to do is separate uranium 235 from 238. Then you can make a bomb. It’s not an easy task, though.”

“Who’ll do it first? The Germans? Whoever wants to try needs huge quantities of uranium to extract the active isotope from. I thought about you.”

“Me? Do you think I own an uranium mine in my Princeton garden?”

“Most of the uranium ore is in the Belgian Congo. You, my dear Professor Einstein, know the queen of Belgium personally.”

¹ The nucleus of an uranium atom always has 92 protons. The number of neutrons can vary. Two atoms with the same number of protons but different numbers of neutrons are called “isotopes.” The uranium 235 isotope (92 protons, 143 neutrons) is radioactive and unstable.

² The French team even filed a patent for an “atomic bomb” in 1939.

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“Queen mother. Her husband, the late king Albert, had told me he didn’t have a say in his country’s affairs. She’s only the new king’s mother. Besides, she’s born in Germany. Tell you what: I’ll write to someone I know in the Belgian administration. They shouldn’t sell the Congo uranium to the Germans, is that it?”

Szilard had prepared a letter, actually. I just had to sign it. He went back to New York with Wigner. I started thinking about the separation of uranium. The 235 isotope is three neutrons short when compared to 238, so it’s lighter in the proportion of 3 out of 238. Let’s say some grains of sand in the dune are slightly lighter than the rest. How would you separate them?

M—If you move the sand a lot, they’ll come to the top by and by.

A—You could still become a physicist, you know!

M—If I had remained in Radio Plane company, maybe I would have found better ways of applying glue or something.

A—Ten days later or so, Szilard came again.

“You found yourself a new driver, Szilard.”

“Wigner is gone to California. Let me introduce Edward Teller, another countryman.”

“I’ve heard about you. You worked with Heisenberg in Leipzig. So, Szilard, did you send the letter?”

“Well, to tell you the truth, no. I wanted to clear the whole thing with the American authorities first. I talked to Alexander Sachs, a banker who knows President Roosevelt. He told me the President has a lot of respect for you, Einstein.”

“I had dinner with him in the White House.”

“Sachs says you should write to Roosevelt.”

“All right. The same thing? Belgian uranium?”

“I talked with Sachs, Wigner and Teller. We should go straight to the point.”

Szilard had written a letter in English. Wait, Marilyn, it’s in this book somewhere, so you can just copy it.

“Sir:

“Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation seem to call for watchfulness and, if necessary, quick action on the part of the administration. I

believe, therefore, that it is my duty to bring to your attention the following facts and recommendations.

“Joliot in France, as well as Fermi and Szilard in America, have shown it may become possible to set up nuclear chain reactions in a large mass of uranium. Extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port with some of the surrounding territory. However, such bombs might prove to be too heavy for transportation by air.”

M—Do I have to copy everything?

A—Oh, the two first paragraphs are enough. It was quite a long letter. When I wasn't sure I understood a sentence, Szilard translated it into German. I made some remarks in German. He amended the English text with Teller's help. We worked hard. In the rest of the letter, we recommended that some trusted person be chosen secretly to act as coordinator between the government and the people doing chain reaction research in Harvard, Columbia, Princeton, California. This person would also talk to diplomats so they'd explain the uranium problem to the Belgians, get funds from government services or private companies, and so on.

We added that Germany had acquired the large Joachimsthal uranium mines¹ by seizing Czechoslovakia and that people were working on uranium in the Kaiser Wilhelm Institute.

I signed the letter.

You remember you wrote: “Here's where I begin to play my part in the atom bomb story” a few pages ago? Well, here do I end playing my part.

M—That's all? Then why does everybody think you invented the bomb?

A—Many scientists had a hand in it, and I am the most famous scientist. The politicians who decided to use it... Well, nobody really decided, maybe. Roosevelt died at the last minute. He hadn't even told Truman, whom he despised, that the bomb existed. At first the politicians saw Hiroshima as a great success and were proud, then they were not so proud and decided to blame Einstein.

I did write the equation, but this is just a law of nature. I'm sure people would have understood how the sun produces its energy eventually. Hans Bethe found the actual

¹ These were silver mines in the Middle Ages. Some common silver coins were called “Joachimsthaler,” then simply “Thaler.” This is where the word “dollar” comes from.

nuclear reaction that takes place inside the sun. I never did any research on uranium, alpha rays, neutrons. Becquerel, Pierre and Marie Curie discovered uranium's radioactivity. Rutherford found there was a nucleus in every atom. Chadwick discovered the neutron. Fermi shot it at atoms. He broke atoms, probably, with slow neutrons, and so did Frédéric Joliot and Irène Joliot-Curie, but they didn't understand what had happened. Otto Hahn broke uranium and, this time, Lise Meitner understood. Niels Bohr found that only uranium 235 split. Harold Urey in Columbia and Robert Lawrence in Berkely found how to separate it from uranium 238. Fermi made the first nuclear reactor in Chicago. Someone, a student I believe, thought that uranium 238, which everybody considered useless, would turn into plutonium inside the reactor. Plutonium explodes even better than uranium 235. Wigner made lots of plutonium in a secret facility somewhere in Washington state. Oppenheimer coordinated the whole project. Everybody contributed, except me, because I was supposed to be a communist.

If I had known how things were to turn out, I wouldn't have signed the letter. Today, I regret it. Sometimes, I think it is the greatest mistake of my life.

M—What about the cosmological constant?

A—Maybe the cosmological constant was not a mistake, but a blunder. No consequences. But then, the atomic play would have gone to its conclusion even if I had not added my scribbling at the bottom of a page. If I hadn't sent the letter to President Roosevelt, the Americans would have made the bomb anyway. While Bohr had come to America and talked to Wheeler and others, Frisch had gone to England. Teams were already splitting the nucleus of uranium on both sides of the ocean. The only difference is that my name wouldn't have appeared in the story of the bomb's genesis.

Lise Meitner in Sweden and Max Born in Scotland refused to do any research that could be used to make weapons. The scientists can't always prevent the military from using their discoveries, but they can avoid encouraging them.

On September 1st, 1939, Germany invaded Poland and started World War II. Although Americans didn't seem to notice that a war had begun, much less a world war, President Roosevelt was following the events closely. Sachs thought this wasn't the best of times to give him our letter. He waited until October 11th.

Having spent an evening with Roosevelt, I knew he was a clever man. He interrupted Sachs even before he had finished reading.

"Alex, what you're after is to see that the Nazis don't blow us up. This requires action."

Albert & Marilyn

A few days later, I received a letter from the President.

“My dear Einstein,

“Thank you for your recent letter. I found this data of such importance that I have convened a board consisting of the head of the Bureau of Standards and chosen representatives of the Army and Navy to thoroughly investigate the possibilities of your suggestions regarding the element of uranium.”

As soon as October 21st, that committee met with Fermi, Szilard, Wigner and Teller. Then nothing happened. The generals and admirals didn't agree with the President that “this required action.”

Szilard was furious.

“You know what these fools say? ‘You don't win wars with new gadgets, but with foot soldiers.’ They joke that we should ask you to make a ‘death ray.’ Some of them actually believe you invented such a thing in Germany, but didn't tell the Nazis.”

M—In Hollywood, army people are just considered plain stupid. During the war and after the war, Hollywood had to make patriotic movies, where great stars played wonderful soldiers and officers. If you want to know what they really think of the army, you should watch western movies, especially when General Custer is fighting the Indians.

A—Remember: you don't need a brain to obey orders and march in step, only a spinal cord.

In March, 1940, Szilard asked me to sign a new letter to Roosevelt. It contained the latest news from Germany: Heisenberg was in charge of the uranium research at the Kaiser Wilhelm Institute. He worked with von Weizsäcker, a specialist of the nuclear reactions that take place inside the stars. We didn't know how fast they were progressing, but at least they were moving, which was more than we could say. Also, the Joliot-Curies had published results in a French physics review. This was to be avoided, as friends and enemies could read it.

The committee met again. They invited me to attend, but I declined the offer. I said I had the flu, which was a kind of half-truth. Friends in the know had told me that the committee cared neither about the war in Europe nor about uranium, so I preferred not to waste my time.

I learned after the war what happened next. A delegation of first-rate English scientists crossed the ocean and went around the labs to check how the research was coming along. “They haven't started yet,” the delegation reported. In England, Frisch and others had

worked out the theory of the bomb on paper. You need a “critical mass” of uranium 235 and so on. They were stuck because they lacked uranium ore and the huge quantities of electricity needed to separate the useful isotope. America the rich was supposed to provide the ore and the power. If you want to know who really pushed the whole bomb project forward, then I say it was Churchill. He scolded Roosevelt: “More than two years have passed, and you’ve done nothing, except give one thousand dollars to a team in Columbia university. Is this a joke? If you were bombed by the Teutons like we are, you’d worry in earnest about their next bomb.”

Roosevelt found what you call “can-do” men to head a more efficient committee. The grand endeavor known as *the Manhattan Project* was born during a White House meeting on December 6, 1941, two and a half years after I had signed the letter. America was in no hurry to follow my advice. Does this date mean anything to you, Marilyn?

M—You bet. This is just when I began dating Jim Dougherty in earnest. I was only fifteen. He invited me to the Christmas dance at Adel Precision Products. This is when we exchanged our first kiss.

A—I’m sure you also know that it is the very eve of the day when the American fleet was sunk in Pearl Harbor. Three days later, Hitler declared war on the United States.

Most of my colleagues vanished suddenly. I supposed they were working in some secret lab out West. I was told I could reach them by writing to a PO Box in Sante Fe, New Mexico.

Nobody told me anything. Scientists who worked for the Manhattan Project weren’t allowed to talk about it. One of them, Vannevar Bush, remembering I had studied the movement of gas molecules long ago, gave me a problem to solve: if a gas is diffusing across a porous barrier, what is the relationship between the diffusion speed and the weight of the molecules? This was easy. I was glad I could help, but nobody asked me anything else. Aydelotte, the new director of the Institute for Advanced Study (the board had sent Flexner away in 1939, as everybody was complaining about him), told me Bush had received instruction not to work with Einstein. The FBI took great care to monitor Gestapo ramblings about me, but they didn’t even know that I had played a part in the Manhattan Project by sending two letters to the President.

Of course, I understood what Vannevar Bush was trying to do. He had probably combined the uranium atoms with chlorine or fluorine to obtain gaseous molecules, which he wanted to send across porous barriers. As the lighter molecules cross the barrier a little

faster, their proportion in the gas increases slightly. By using many successive barriers, you can get a greater proportion of the uranium 235 isotope.

M—So this is how you separate the heavier grains of sand from the lighter ones?

A—There are other ways. Lawrence and his Berkeley team were exploring an electromagnetic method. I'm sure they are trying new top secret techniques right now.

Wolfgang Pauli came to Princeton. He had been teaching in the Zurich Polytechnikum since 1928, but he didn't feel safe there anymore. The Nazis controlled all of Europe except England and Switzerland. If they wanted to go and get the Jews in Switzerland, they didn't need to cross a sea, but just a few narrow lakes. The Swiss might even decide to expel the foreign Jews to prevent a German intervention. Pauli didn't consider himself Jewish, but his father was a converted Jew, which was enough for the Nazis.

Although he had often criticized me, I was glad to see him. We walked together and talked for hours about the universe and all that. He had become somewhat mystical in Zurich, under the influence of Dr. Jung—a famous psychoanalyst. He said duality played a great part in the structure of the universe and in our lives: mass and energy, wave and particle, good and evil, yin and yang.

“He told me he met you, Einstein.”

“Who met me?”

“Dr. Jung.”

“True. When I lived in Zurich, I attended a few formal dinners in his house. I found his ideas about the ‘collective unconscious’ rather muddled.”

“You shouldn't apply the same criteria to ideas in psychology as in physics. He gave me good advice: to look for archetypes of knowledge in the work of Kepler, Newton, Maxwell and the other great scientists of the past.”

“So did you find archetypes?”

“I certainly did. For example, you.”

“Me? I am an archetype?”

“That's right. You're world-famous because the collective unconscious sees in you the very type of the lonely and absent-minded professor, living so far from daily reality that he can unveil the deepest secrets of the universe. An incarnation of the mythical Dr. Faust, in a way.”

M—Hey, this explains why people think you invented the bomb. Being Dr. Faust, you sold your soul to the devil when you signed the letter to Roosevelt.

A—Pretty stupid of me. I sold my soul, but what did I gain? At least Dr. Faust became a young man again. That would be kind of nice right now.

Another luminary of the Institute for Advanced Study walked and talked with us: Kurt Gödel, an Austrian mathematician who had left his country in 1938. He wasn't Jewish, but many people believed he was, so life under the Nazis would have been dangerous. The staid Austrians and Germans didn't really know what "Jewish" meant. They used the word as a synonym for "strange" or "different from the others." Gödel was definitely strange. He considered that most of the food sold in stores was poisonous (especially in America), so he ate very little and looked like a ghost. I think he had spent time in psychiatric asylums.

People had left Germany in 1933 and Austria in 1938. The invasion of France in May, 1940 also sent Parisians across the ocean. Two French pianists, Robert and Gaby Casadesus, and a Czech composer living in Paris, Bohuslav Martinu, now taught in Princeton. Martinu wrote five easy pieces for me, which I played with one of the pianists. I gave Martinu the manuscript of a small article I had written.

My current manuscripts weren't as valuable as my old ones. A *Book and Authors War Bond Committee* sold manuscripts signed by famous authors to buy war bonds. I gave them an article about fields I had just written with Bargmann, but they weren't satisfied.

"Don't you have a 1905 manuscript?"

"I didn't know they would become more precious than gold, so I threw them away. I just kept printed copies."

The Princeton librarian found a way.

"Why don't you copy a printed article by hand, professor?"

"Really? Why not? It's an excellent idea! When others are doing so much for the war, this is the least I can do."

Helen Dukas dictated my *On the Electrodynamics of Moving Bodies* to me. I had to stop now and then.

"Did I really write this?"

"Look for yourself, Herr Professor."

"Well, I could have said the same thing more simply."

An insurance company paid 6,5 million dollars for the manuscript. A few pages of paper aren't worth that much. I thought there was a kind of fetishism involved, which made me uneasy.

M—This is an actual memento of your great invention, written and signed by you, so I don't see any fetishism in this. It is different from that tablecloth you told me about.

A—Tablecloth?

M—The wife of the astronomer is sorry she washed it.

A—Oh, yes, *Freundlich*.

M—If I leave an old bra in a hotel room and nobody knows it belonged to me, it's worthless. But this same piece of cloth becomes very valuable if it is known as Marilyn Monroe's. This is fetishism, I think.

A—I guess you're right. So I should sign my old sweatshirts, maybe, and give them to charity. I remember a conversation with Szilard. He came to visit me now and then.

"With so many tailors in New York, you could buy a new suit, Szilard. You already wore this one when we worked together in Berlin twenty years ago."

"Look who is giving sartorial advice!"

He never mentioned New Mexico, but he knew what was taking place there, obviously. He always brought first-rate information.

"Heisenberg and von Weizsäcker have to overcome many tall hurdles. They don't know what to do about you, to begin with."

"About me? Why would they bother about me? An old man smoking his pipe across the ocean."

"You and your Jewish theory! Lenard and his quacks have convinced the Nazi leaders that relativity is a Jewish joke. They need to backtrack in some way, but they must be very careful, lest they be accused of having become puppets of the Jews. So they're busy rewriting history. You've stolen your ideas from honest men, you know."

"Lorentz invented my theory?"

"He did indeed. He wasn't German, but at least he was 'Aryan.' As he never came really close to relativity, they say you also stole from Poincaré."

"A Frenchman? I remember that Lenard had replaced the ampère by the weber in his lab."

"They prefer a Frenchman to a Jew. They lost months because of this foolishness, anyway."

"Good. Then maybe you won't have to pursue your project."

"What project?"

"Okay, I know nothing of a project in New Mexico."

“Whatever happens there or elsewhere has become some sort of national priority, so they don’t consult the scientists. We are requisitioned like soldiers and are just allowed to obey orders.”

“At least you don’t have to prove that your equations are Aryan.”

“That would be difficult. All the Jewish physicists work on that non-project—except you, actually.”

“You seem to know all kinds of people. You could tell them that I’m willing to help my new country in these tough times.”

“I remember you as a staunch pacifist.”

“When the moral values which sustain human life are threatened, we must defend them, by using force if necessary.”

M—You were volunteering for civil service, in a way.

A—A Navy officer came to see me in 1943.

“Would you accept to do some theoretical work on explosive shock waves, professor?”

“Well, I can try, I guess.”

“For example, we wonder whether we could get more power by launching two torpedoes at the same time. How can we be sure that the shock waves will enhance each other?”

“And not cancel each other?”

I found a solution. They tried it and it worked. They told me that they had saved five hundred thousand dollars (or some such sum) by avoiding the old-fashioned method—trial and error. They only gave me twenty-five dollars a day, but this was more than enough, as I enjoyed the wonderful pleasure of feeling useful.

“I am in the Navy,” I told Pauli, “but I was not required to get a Navy haircut.”

I saw Pauli every Thursday. We had tea at my home with Kurt Gödel and the English mathematician, philosopher and pacifist Bertrand Russell, who had arrived in Princeton in 1943. We talked about reality. I was the only one to believe that we would be able to describe reality completely someday. They called me a hopeless idealist. In his most famous theorem, Gödel had shown that it was impossible to build a perfect mathematical theory. Russell and Hilbert, who had tried, were bound to fail. This was similar to the Heisenberg uncertainty principle, Pauli said. Building a complete theory of nature was impossible and would remain so forever.

Russell was slightly older than me. His white mane was as long as mine, but not as tangled. Few philosophers knew science as well as he did. He said that physicists shouldn't try to think like mathematicians.

"Gödel, while your mathematical systems are human inventions, we haven't created the universe. The inner reality of matter escapes us today, but it doesn't mean that we'll never know. To a philosopher, it doesn't make such a great difference. Even if our knowledge increases, we'll never be able to answer the ultimate questions: What is this universe? How did it appear (if it appeared)? Why does it exist?"

M—It's hard to believe it can exist just by itself. That's why people believe in a god, I guess. But religion doesn't really explain anything.

A—When we stopped wondering about the universe, we came back to Earth and commented the war news. At the beginning of 1943, the Soviets beat the Germans in Stalingrad. We hoped the nightmare would soon come to an end. Nobody had heard of the terrible Nazi crimes yet, but we knew that millions had died already.

On Thursday, I had tea with Pauli, Gödel and Russell. On every other Friday, I received another guest: George Gamow, who worked for the Navy, like me. He was a jolly Russian giant, whom I had met a few times in Europe. He had just published one of the best—and funniest—books about relativity for the general public, *Mr. Tompkins in Wonderland*. You should read it, Marilyn!

M—I'll buy it. On the first page, I'll write: "This book belongs to Marilyn Monroe."

A—Gamow brought new requests from the Navy brass. Can we invent an electromagnetic gimmick that will let a torpedo explode when it comes close enough to a ship, even if we don't have a direct hit? So now I was contributing to lethal explosions, like Nernst and Haber during the previous war. Bucky invited me to spend some time in his summer house, but I preferred to stay in Princeton and work for my country.

The American newspapers didn't know I had become such a fierce patriot. Some of them called me "the refugee Einstein." They didn't like Russell either and called him "Russell the nudist." He had spent six months in jail as a conscientious objector during the great war. Although he admitted the necessity of the current war, he still considered himself a pacifist.

"The German people have embraced the Nazis because we treated them too harshly after the war. This time, we'll have to forgive them sincerely and help them rebuild their country."

“What are you saying, Russell? They’ve destroyed Europe. The European culture, the civilized life, have vanished forever. All the Germans have marched behind their Führer like a single man. Back to the old groove: they love to obey orders and march in step. We must punish them without pity, so as to convince them not to try again.”

M—He was right and you were wrong, no?

A—It looks like it, so far. I have been wrong many times. Right a few times, when it really mattered.

I saw Niels Bohr in 1943.

“How did the Germans let you leave Copenhagen?”

“I escaped with my son. We crossed the straits that separate Denmark from Sweden on my sailboat.¹ The English sent a special high-flying warplane to Sweden for us. I had to lie in the bomb rack or whatever it’s called, in place of the bombs. They gave me a helmet, but it was too small.”

“I know lots of people with big heads, but yours is the largest. A real pumpkin!”

“I didn’t hear the instructions they gave me in the headphones, so I didn’t put the oxygen mask on when they climbed to twenty thousand feet. They needed to fly higher than the Germans fighter planes, you see. I fainted. They thought me dead.”

“Nice death for a physicist.”

“They revived me when we landed in Scotland. They gave me a fake passport. My name is John Baker, now. ”

M—I had been Norma Jean Baker, you know, but in 1943 I was Norma Jean Dougherty.

A—There was a singer and dancer in Paris, Josephine Baker. She came to Berlin a few times. She was quite wild.

“Why the fake passport and the new name?” I asked Bohr.

“They said the Americans needed me for a secret project. I am not supposed to tell anybody, not even you.”

“I hear bits and pieces, so I have a pretty good idea of what they’re doing. Fermi managed to start a controlled chain reaction in Chicago toward the end of 1942, by alternating uranium bars and graphite bars that slowed the neutrons. Then they went to some secret place in the desert. I wonder what the Germans are doing.”

¹ Bohr was half-Jewish. A friend in the German embassy warned him that the police was going to arrest all the Jews. He escaped to Stockholm and convinced the king of Sweden to make his country a haven for the Danish Jews. Danish fishermen carried the Jews across the Baltic sea.

“Heisenberg came to see me in Copenhagen. He says he wants to use uranium to generate electricity, since our embargo prevents Germany from buying petrol.”

“So he pretends his purpose is peaceful. Did you believe him?”

“Heisenberg was my assistant. I know him well. He is honest. He decided to stay in Berlin and prepare the future by working with students. People will be needed to rebuild Germany after this disaster. He lives in fear. I had the feeling that he was suffering terribly. When they asked him about a bomb, he told them it would take at least four or five years, knowing they refuse any project that can’t be accomplished in six months¹.”

“I’m worried, Bohr. I’m afraid the next war will be even worse than this one. Imagine that several countries build these new bombs. The military will want to start preventive wars. There are influential scientists in all the countries. They should get together and warn the politicians.”

“I thought so too. I was lucky enough to meet the English prime minister, Churchill, then President Roosevelt. I suggested they tell the Soviets about the new bomb. Spreading the knowledge is the best safeguard against its misuse. They didn’t like my suggestion. I saw I’d better not insist, otherwise they’d send me to some camp as a dangerous suspect. This isn’t a scientific project, Einstein, but a military one. They don’t want our advice. They know that Germany won’t make such a bomb. They’re already thinking of a war against the Russians.”

M—Remember what Dr. Freud said. Men hate and enjoy war at the same time. It wasn’t much fun when we had that bomb all to ourselves. We had become the big bully whom nobody dared attack. Now that the Soviets also have bombs, fighting becomes possible again. Our bomb against their bomb. Some of the generals on both sides are eager to enter World War III, I’m sure.

A— At that time, we were still allied with the Soviets. During the year 1944, the Red Army kept crawling westward. On June 6th, the Americans and English armies landed in Normandy. It was obvious that the Germans couldn’t win the war anymore.

On March 25th, 1945, a chubby frumpy visitor came to Mercer Street.

“How are things in the desert, Szilard?”

¹ Today’s historians aren’t as gullible as Bohr. Heisenberg failed because he followed a wrong path and was too stubborn to admit his error. The Americans succeeded because they tried many different methods.

"I can't tell you anything, Professor Einstein. I do need to talk to you, though. Things are not going so well, actually. Do you remember your letters to President Roosevelt?"

"Of course."

"You warned him he had better hurry if he wanted to make a bomb before the Germans. Now the Germans have given up any idea of making a bomb. They're crushed and will surrender soon. So why do we continue?"

"I talked to Bohr last year. He says the people in charge of the secret project are not interested in knowing what the scientists think."

"Precisely. The generals want to try their new toy. They say the war ain't over till Japan cries uncle."

"Japan isn't Germany. They don't intend to make this new bomb."

"I wouldn't bet my head on that. What's for sure is that they have even less petrol and electricity than the Germans, so it would take them years to separate the uranium. Let me tell you what many scientists think: our politicians don't care about Japan. They want to impress the Soviets. Show them what America can do."

"You mean they'll attack Japan with this bomb just to send Stalin a message?"

"Professor Einstein, we must stop this craziness. I want to see Roosevelt and talk to him in the name of the scientists. If you could write one more letter..."

M—This one man at least believed that your letters could influence American policy.

A—Let me tell you what I think now. Churchill was a visionary politician. He understood that if such a bomb could exist, then someone would make it sooner or later. The Russians, or the Chinese, or whoever. Better be prepared. But then, the politicians didn't tell the scientists what the ultimate purpose of the game was. The scientists thought they were trying to prevent the enemies of mankind from making the bomb ahead of us. Given the mentality of the Nazis, they would have destroyed half the world and enslaved the other. The scientists delivered this deadly weapon into the hands of the American government in good faith. When they found they had been used as pawns, they felt sorry and foolish and guilty.

I didn't know all the particulars at the time, and I'm sure nobody will ever know them. I couldn't resist Szilard's unique energy, anyway. We wrote a shorter letter than the previous one and I signed it again.

“Mr. President,

“The terms of secrecy under which Dr. Szilard is working at present do not permit him to give me information about his work; however, I understand that he now is greatly concerned about the lack of adequate contact between scientists who are doing this work and those members of your cabinet who are responsible for formulating policy. In the circumstances I consider it my duty to give Dr. Szilard this introduction, and I wish to express the hope that you will be able to give his presentation of the case your personal attention.”

I had guessed what was brewing, of course, but I had to pretend I hadn't. We both knew that the generals were stupid enough to accuse Szilard of having revealed strategic secrets to me.

Szilard was very careful, or maybe too careful. Instead of going directly to the President's office, which might have aroused the curiosity of his military aides, he solicited Mrs. Roosevelt, whom one of the scientists knew well. She answered that the President would see Szilard on May 8th, 1945. As you know, Marilyn, President Roosevelt died suddenly on April 12th, 1945.

M—I remember that people were crying everywhere. This seemed strange to me, as I was the happiest gal in town. I had just left Radio Plane company because I was so busy being photographed. I had never even heard of Truman.

A—Roosevelt had chosen him as Vice President because he brought Middle West votes or something. They told him about the Manhattan Project several days after Roosevelt's death. He met Szilard and read our letter. This whole business was so new that he didn't know what to think. As he didn't want to take a hasty decision, he sent Szilard to Byrnes, the Secretary of State, who was firmly in favor of using the bomb. Byrnes listened to Szilard politely and dismissed him politely.

Szilard wrote a petition with James Franck, one of the most respected scientists around. I knew him well in Germany, as he was only three years younger than me. The petition warned that whatever military gain the bomb might bring would be offset by the blow to the moral standing of the first nation to use such an awful weapon. It then suggested to explode the bomb on some desert island near Japan. Many scientists signed it in Chicago and other places, but in Los Alamos (by that time, I knew the name of the secret place in New Mexico), Oppenheimer asked the military censors to intercept it. Many Los Alamos scientists knew of the desert island option and favored it. Not Teller. Do you remember

him? He had driven Szilard to my house in Peconic in 1939. He said this toy bomb didn't really matter. He wanted to make a much more powerful bomb, using the hydrogen fusion reaction that takes place in the sun. With such a bomb, the end of the world would become possible, so no country would dare begin a war.

A few brave men, for example Harold Urey and Joseph Rotblat, resigned from the Manhattan Project when they understood that the bomb wasn't needed against Germany.

M—Japan was also a ferocious enemy, so it wasn't very different from Germany.

A—They said we had to make the bomb before crazy Germany got it and used it. There was no such fear about Japan. Where do you stop? Some general wanted to use the bomb recently in Korea, you know. The only way out of this mess is international cooperation to eradicate barbarous arms like the A and H bombs, poison gasses, chemical and bacteriological weapons.

I went to stay with the Bucky family at lake Saranac, where I had spent my last vacations with Elsa, in 1936. On the evening of August 6th, Helen Dukas entered my office without knocking, which was very unusual. She seemed scared.

"Herr Professor, they just announced on the radio..."

"What's wrong, Helen? What did they announce on the radio?"

"In Japan, a bomb... They destroyed a whole city with a new bomb!"

"Oh, *Weh*¹! They've done it."

The energy of the Hiroshima bomb was due to the fission of uranium 235. On August 9th, the Americans dropped a second bomb on the city of Nagasaki. It didn't use uranium, but plutonium. I thought the military had wanted to compare the two kinds of bombs.

On August 11th, a journalist came to the lake to interview me. I felt I had to fight a kind of irrational panic which was already sweeping the world.

"In developing atomic energy, which we should properly call 'nuclear energy,' science did not draw upon supernatural strength, but merely imitated the action of the sun's rays. Atomic power is no more unnatural than when I sail a boat on Saranac Lake."

"Have you worked on that bomb, professor Einstein?"

"Not at all. I am interested in the bomb in the same way as any other person. Perhaps a little more. However, I do not feel justified to say anything about it. I hope we shall use atomic energy for commercial purposes someday, for example to make electricity."

¹ This is the same word as the English "woe."

The *New Yorker* magazine published a whole issue about Hiroshima, written by John Hersey. I bought a thousand copies and gave them to my friends. He had interviewed survivors and reported what happened on the ground. People who had not vanished instantly were vomiting their internal organs, liquefied by radiation sickness, days or weeks after the explosion. People are still dying today, as you know.

M—They told me about it in Japan. Beside radiation sickness, they get leukemia and other cancers.

A—Before the end of the year, an authorized story of the bomb's genesis was published by some government bureau. It didn't say anything about Churchill's long term vision, but it mentioned my letters to President Roosevelt. People barely knew Oppenheimer. They knew neither Szilard nor Fermi, Bethe, Wigner, Teller, von Neumann, Weisskopf, Rabi, Alvarez, Kistiakowski, Bohr, Otto Hahn, Lise Meitner and Otto Frisch—but they knew Einstein. That's when public opinion called me the "father" of the bomb.

I kept trying to set the record straight whenever I met a journalist.

"I have only signed that letter. I hadn't even thought that a chain reaction was possible. When I was told about it, I didn't believe atomic energy would be obtained in my lifetime. If I had known about the Szilard-Franck petition, I would have signed it. These terrible weapons give such an advantage to offense over defense that even a responsible statesman may find himself compelled to wage a preventive war. The only way to avoid it is to give ultimate military power to a strong world government. The United Nations organization should have its own army. Then it would have real effective powers to intervene and stop war. If we do nothing, the threat of destruction will turn out to be unbearable. As long as sovereign States continue to have separate and secret armament programs, new wars will be inevitable."

M—So you were becoming a pacifist again.

A—I was in good company. Szilard founded an *Emergency Committee of Atomic Scientists* with Urey, Rotblat, Weisskopf, Bethe and others. I accepted to become its chairman, but I knew the whole thing was useless. Research on the hydrogen bomb had already started under Teller's leadership. This new bomb is so powerful that it takes a uranium or plutonium bomb to start it. The United States thought they'd be the only big power to have it, but the Soviet Union needed only six months to catch up.

The American armed forces became so powerful during this war that they can't and won't shrink back to their former size. A military mentality has seeped everywhere. It

reminds me of Bismarck's Germany. It doesn't like freedom and justice. It wants to keep an eye on the school system and the press. It enjoys witch-hunting. It controls the scientific programs that rely on the expensive gadgets invented to make the bomb, like nuclear reactors and cyclotrons, which are too expensive for private financing.

Pauli and Russell went back to Europe. I was sad when Pauli left. I told him I considered him my son and heir, as far as physics was concerned. Kurt Gödel remained in Princeton. We had talked so much that he began to work on the math of General Relativity, hoping to simplify the equations¹.

I stayed too. I don't feel fully American, Marilyn. I find your countrymen somewhat superficial. While they pretend to put liberty above everything else, they restrict the freedom of scientists, since they don't really allow them to criticize the arms race. As soon as one of us talks of peace, they suspect him of having given the secret plans of the atomic bomb to the Soviets. This is stupid. Hiroshima gave the secret away. The Soviets made the bomb on their own. Many other countries will also get the bomb, sooner or later. McCarthy and his followers went after Oppenheimer—who had become chairman of the Institute for Advanced Study. He was neither condemned nor fully cleared, so he's quite bitter. This poor man Julius Rosenberg may have given to the Soviets a few tidbits that made no difference. His wife's only crime is that she didn't report what she knew of his activities. I signed petitions for Julius and Ethel Rosenberg, for Oppenheimer. My FBI file is getting heavier. I'll add pages to it as long as I live, trust me! Hoover and McCarthy believe communism is a complete fraud and failure. So then, how could the Soviets get the science and the technology to make this wonderful bomb? Only by having spies who steal the plans.

M—These people have seen too many spy movies. This is like the nazis saying you had copied the ideas of that Frenchman, Poyncarry, because a Jew can't create anything original.

A—Poincaré. I guess people need to invent inferior beings like Jews and Communists so they can feel superior themselves. If American freedom is the best system, we should communicate freely with the Soviets until they understand that our freedom is superior to their totalitarian servitude.

¹ Gödel didn't do much. Someone simplified the equations slightly in the sixties.

Toward the end of the war, Otto Hahn and Werner Heisenberg were brought to England with von Weizsäcker and von Laue. They were kept not in a concentration camp, but in a country house somewhere. Then they returned to Germany and founded a “Max Planck Institute” to replace the Kaiser Wilhelm Institute. They invited me to come and work there. The allies have treated Germany with great leniency. I don’t think the Americans have become pacifists like Russell. Rather, they expect to create a buffer against the Soviet advance. People do say that Germany has changed completely. *Ach*, but I can’t forgive. I hate the country of my birth and shall never go back. How could I walk among the men who murdered my people? They used industrial methods, poisonous gases perfected by chemists, to kill millions of men, women and children.

I wrote to Heisenberg.

“The conduct of the German intellectuals—seen as a group—was no better than that of the mob. The crimes of the Germans are really the most hideous that the history of the so-called civilized nations has to show. There is not even a trace of a sense of guilt or remorse in Germany. In these conditions, I feel a deep aversion to being involved in a business that represents part of German public life, simply out of a need for cleanliness.”

Max Planck died in 1947. He was a close friend and a good man. He didn’t oppose the Nazis, but he suffered because of them. His younger son was executed for taking part in the generals’ plot against Hitler. His elder son had died on the battlefield during the great war.

M—If you stay in Germany but don’t oppose the nazis, you’re helping them. It’s like these conscientious objectors we talked about, who accept to work in a mine. I told you about all these people in Hollywood who speak with an accent. They often discuss this. They forgive ordinary German people, who had no choice, but not famous philosophers, writers, composers, who could have gone away like you did. Your friend Max and the others chose to stay, really. At least they should show some guilt and remorse, as you wrote in your letter.

A—I was so disgusted with scientists creating bombs and helping monsters like Hitler that I once advised young people to become plumbers rather than physicists¹. A plumbers’ organization then named me an honorary member. It made me quite proud.

¹ After the war, Szilard gave up physics and became... not a plumber, but a biologist.

Science has become a nightmare that has everybody scared. These bombs have changed everything except our awful instincts. Thus, we drift toward a ghastly catastrophe.

After the war, I lived with three good lady friends: Maja (my sister), Margot (my stepdaughter) and Helen Dukas (my secretary). People had read about me in the papers, so they wrote more letters than ever. Maja and Margot could help miss Dukas answer them. As for myself, I try to answer at least children, although I refuse to do their homework, which is a common request. Recently, a little girl asked me: "Do you exist?"

M—What did you answer?

A—I believe the most honest answer would be: "No." We barely exist, our life is so short compared to the age of the universe. But I answered yes, of course.

Maja ceased to exist. She suffered a stroke in 1947 and spent a lot of time in bed. This made me very sad, as we had become quite close since she came to live here. I read books by Xenophon and other good authors to her every evening—including our friend Bertrand Russell, who had received the Nobel prize for literature. She died in 1951. I miss her more than I would have thought.

My own health wasn't too good either. I am lucky that several of my friends belong to the medical profession. Doctor number one suspected that my longstanding stomach pains might be due to my gallbladder. Certainly not, said number two. There's a cyst in his abdomen. Are you kidding? asked number three. It is an intestinal ulcer, obviously. They asked a surgeon to open me up. They found an aneurysm or swelling of the abdominal aorta—without any of them admitting he had been wrong, of course. It was as large as a grapefruit, they told me, so they couldn't remove it. Well, I have lived with it for more than twenty years, so I can expect to survive some more. I have promised young Bucky to give up my pipe, eat boiled potatoes and drink sugarless tea.

I feel so weak that I can't hold my violin for any length of time. I play the piano, which I have studied a little as a child. A journalist asked me what I believe in. I answered: "Human fraternity." Actually, my faith in mankind is based on my daily encounter with Bach and Mozart.

Both sides now stock so many bombs that radioactive poisoning of the atmosphere and the end of all life on earth is becoming technically possible. At the end, looming ever clearer, lies general annihilation. The universe won't shed a tear when the earth vanishes, but it will be a pity that nobody plays Bach and Mozart anymore.

M—My own faith in mankind would increase, maybe, if I listened to Bach and Mozart, like you.

A—You should, definitely. It's an acquired taste, you know. You may have to force yourself a little at the beginning. Then, by and by, it will grow on you. What's wonderful with great musical genius is that the more you listen, the more you enjoy.

While I can recommend music to you, I won't try to recommend equations. They still give me great pleasure, though. I am working more than ever. I don't intend to stop. I wrote a letter to Max Born, who returned to Germany.

"I admit, of course, that there is a considerable amount of validity in the statistical approach, which you were the first to recognize clearly as necessary. I cannot seriously believe in it, though, because the theory cannot be reconciled with the idea that physics should represent a reality in time and space, free from ghostly actions at a distance. I am quite convinced that someone will eventually come up with a theory whose objects, connected by laws, are not probabilities but considered facts, as was until recently taken for granted. I can't base this conviction on logical reasons, but can only produce my little finger as witness. That is, I offer no authority which would command any kind of respect outside of my own little finger."

Some of my old friends have come to Princeton: Niels Bohr, Max von Laue, Maurice Solovine. Max Born is willing to come, but he can't get a visa because he is an honorary member of the Soviet Science Academy.

I often walk to the Institute with professor Wheeler, who lives across the street. He once invited me to listen to a lecture by one of his students, Richard Feynman. Then he brought him to my home and we had tea together. Feynman perfected a branch of quantum theory called Quantum Electrodynamics. His description of reality seems to come straight out of a fairy tale. Time can run backward. A particle leads several lives or "histories" out of our reach. Our clumsy senses and instruments let us perceive a resulting echo of the particle's adventures, which he calls "sum over histories." What's truly amazing is that his topsy-turvy theory fits experiments with a wonderful precision. Feynman seems to imply that uncertainty and randomness play no part in the life of the particle, but result from our limitations. His reality is much stranger than in standard quantum mechanics, though.

The next morning, professor Wheeler was waiting at my door and we started together.

"So what do you think, Professor Einstein? Doesn't this new way of looking at quantum mechanics make you feel that it is completely reasonable to accept the theory?"

"I don't know. I may be wrong, but perhaps I have earned the right to make my mistakes."

M—We've come to the present time, haven't we? There's something I wanted to ask you. I think I read about it in the papers, or heard it on the radio. You were asked to become president of Israel, is that right?

A—*Ach*, I hoped the Jews would reach reasonable agreement with the Arabs and live together in peace. Much better than a Jewish State. The essential nature of Judaism, as I see it, resists the idea of a State with borders and an army. It has survived without any kind of representative organization. Being free from any attachment to a land, it could embody the conscience of the Western world. I was afraid a narrow nationalism would appear as soon as a new State was created, so that the moral, intellectual and spiritual tradition that held the Jews together so long would begin to recede in the background. I thought the Jews shouldn't sell their souls to a government of professional politicians. I believed they should try to create a berth for an old culture and a spiritual center for all the Jews in the world, not one more political society. But then, I did support my tribal companions when they founded Israel in 1948. The prime minister, David Ben Gurion, never failed to come here say hello when he gave a speech in New York at the UN or when he met with Truman or Eisenhower in Washington. Israel's prime minister leads the country, but there is also a president, who plays a symbolic role. The first president was Chaim Weizmann, whom I crossed the Atlantic ocean with in 1921. He died in 1952. He was seventy-eight years old. The Israeli newspapers suggested I become Israel's second president. Wasn't I the greatest living Jew—as well as a generous grandfatherly figure for the new State? I was told that Ben Gurion accepted the suggestion reluctantly.

"What shall we do if he says yes? He knows nothing about politics and doesn't listen to advice. We'll be in trouble!"

Abba Eban, the Israeli ambassador in Washington, called me on the telephone to offer me the job. I just didn't know what to reply. I held the phone in my hand as I had been stuck dumb. "I need to think about it," I said. "I'll give my answer in writing."

I sent a letter to Ben Gurion.

"I am deeply moved by the offer from our State of Israel, and at once saddened and ashamed because I cannot accept. All my life I have dealt with objective matters, hence I lack both a natural aptitude and the experience to deal properly with people and to exercise official functions. For these reasons alone, I should be unsuited to fulfill the duties of high

office, even if advancing age was not making increasing inroads on my strength. I am the more distressed over these circumstances because my relationship to the Jewish people has become my strongest human bond since I became fully aware of our precarious situation among the nations of the world.”

This was a diplomatic letter, you understand. If I were to become president, sometimes I would have to tell the Israeli people things they would not like to hear. I think there were other reasons for my refusal, some unconscious. I do know one thing: although many a rebel has become a bigwig, I couldn’t make myself do that.

* * *

A—Good morning, Marilyn.

M—Good morning, Al.

A—Please sit down. See, I have written formulas and drawn pictures on the blackboard.

M—Is this a train?

A—Let’s say it tries to be. Do you remember the title of my big 1905 article?

M—Well...

A—*On the Electrodynamics of Moving Bodies*. The subject was “moving bodies” or, if you prefer, movement. To give an example of moving bodies, I use a train. Galileo used a ship. In modern books, they use airplanes, even rockets and spaceships. Did you come in your white car?

M—Yeah, sure.

A—You moved from New York to Princeton. Have you ever thought about movement? Do you know what it is?

M—Doesn’t everybody know what it is? What a strange question.

A—Right now, Marilyn, are you moving?

M—I’m sitting in this comfortable armchair. I don’t intend to move much right now.

A—Are you motionless? Is your speed zero?

M—I’d say yes, that’s right, zero.

A—You do turn around the Earth’s axis and around the sun, don’t you?

M—Ah, I see what you mean. Gosh, I’m moving very fast, actually. I’d better be careful not to fall from my comfortable armchair.

A—At least, you’re motionless relative to the Earth. Do you agree with that statement?

Albert & Marilyn

M—I’m as motionless as can be.

A—Are you really sure?

M—Well, yes, I mean...

A—Please imagine now that you wake up after a short nap. I’ll suppose this room is a sleeping-car in a train. Please think carefully, Marilyn. Can you tell me, when you wake up, whether the train is moving or not?

M—If it moves, it is noisy. Also, I can look through the window and see the landscape speeding by.

A—Good remarks. I suppose the train moves slowly, noiselessly, without jumping and shaking, and that the curtains are lowered.

M—I see. I can imagine a situation where I can’t tell whether the train is moving or not.

A—Right. There is no difference. If you’re inside a train moving at constant speed on a straight track (we physicists call this “uniform motion” and say the train is “an inertial system”), you are not aware of your movement relative to the Earth. It is as if the train didn’t move. When you walk at three miles per hour inside the train, you feel you’re walking at three miles per hour, even if the train is moving at thirty miles per hour. Galileo was the first to notice that the sentence: “this stone doesn’t move” is meaningless if you don’t add: “relative to the boat” or “relative to the Earth.” In physics, a movement is always *relative to something*.



M—I remember now. You told me that Galileo had invented the first theory of relativity.

A—He gave a striking example. Bales of wool are tied in the hold of a ship. A merchant in Venice says: “They came from Cyprus to Venice.” But when someone asks the ship’s captain whether they moved, he answers: “They didn’t budge. They were tied tight.” And Galileo adds: “If a mouse jumps from one bale to another, that’s a big move for him. He knows nothing about Cyprus and Venice.” The movement of an object is always *relative to a system of reference*. The bales do not move if you take the ship as the system of reference, but they do if you take the Earth.

Galileo asks you to imagine an aquarium in the hold. If the ship is accelerating, the fish are attracted toward the back of the aquarium. If it is slowing down, they are attracted toward the front. You’ve noticed this when you travel in a train or a car, of course. Now comes the important fact: if the ship moves at a constant speed in a straight line, the fish swim around without feeling any effect of the ship’s movement. They live their fishy life inside the aquarium, as if it was motionless relative to the Earth.

A movement relative to a ship in a state of uniform motion is similar to what it would be if the ship was motionless in a harbor. This means that you can’t detect the ship’s movement by doing mechanical experiments inside the ship. Galileo imagined a man doing long jumps inside the cabin. He jumps the same length whether the ship is moored to the wharf or sailing at sea. Galileo also imagined a pierced bucket and a bottle under the hole. Water drips into the bottle whatever the speed of the ship, as long as it is constant. In the 17th century, people didn’t go very fast and had never really thought about speed. Thus, to explain precisely what he meant by “uniform motion,” Galileo had to invent the modern idea of speed (“instant speed,”) which is what you read on the speedometer of your white car. He also invented what we call “inertia”: an object in a state of uniform motion keeps the same speed and direction as long as nothing interferes, or as long as “no force applies to it.” This is known today as Newton’s first law of motion.

M—Wait a minute. When I ride a bike, supposing my speed is uniform, the damn thing doesn’t keep moving forward forever. I have to apply some force on the pedals.

A—You reason like Aristotle. The Greeks thought that things were lazy and wanted to rest. Aristotle’s mental system of reference was his own body. We do want to stop when we run. Galileo and Newton understood that what slows your bicycle down is the force of

friction. Objects are indeed so very lazy that they won't modify their state of motion unless something forces them to.

You may have noticed that Galileo saw no difference between rest and uniform motion. For him, immobility doesn't exist in the universe. For Newton, there is a difference. What about you, Marilyn? What do you think? Are there any motionless objects in the universe?

M—The sun?

A—The sun is an ordinary star in the Milky Way. It moves like the other stars. Newton was careful not to consider the sun at rest. The map of the night sky had changed already since antiquity, so he knew the stars moved. This motion of the stars bothered him. He needed an absolute system of reference so he could distinguish moving bodies from a motionless background. For lack of a better way, he decided that the universe itself, the stars' container, was motionless because that's how God created it. He said that God, at least, knew whether a thing was at rest or moved. You'll admit that "God only knows" may be a fruitful formula for philosophy, but looks rather out of place in a theory of physics.

In the 19th century, the physicists tried to replace Newton's God with some other motionless thing. Can you guess what I am talking about?

M—I'm not a 19th century physicist, I'm afraid.

A—I'm talking about ether. It represents what's at rest in the universe. Except it doesn't exist.

M—There is no absolute space?

A—No. Everything is relative.

M—I'm glad that ether doesn't exist, in a way, because then I don't have to understand what it is exactly.

A—Do you know something? If we were on the moon right now, we couldn't have this pleasant conversation.

M—We couldn't?

A—There is no air on the moon, so no sound.

M—Complete silence? It must be a very restful place. If we can't breathe, we can't talk, I guess.

A—Maybe we could breathe with oxygen bottles. But if I played my violin, you wouldn't hear me. Sound is a wave transmitted by air. Air molecules vibrate and push their neighbors and so on, I told you about it. So when light was believed to be a wave and only a wave, it needed a vibrating medium playing the same role as air for sound. This was

ether. It was a very strange fluid. If we wanted light's properties to agree with the observations of physicists, ether had to be as elastic as Jello and as rigid as steel, but at the same time the earth and other heavenly bodies went through it without any damage.

M—So it couldn't exist, actually.

A—Classical physics needed it, though.

Now, before I begin to explain the pictures on the blackboard, I need to remind you of the gap I told you about: between Newton's physics, which concerns the mechanical movement of material objects, and the physics of electricity and light, which seems to concern the movement of energy. Classical physicists who worried about the gap believed that ether existed and filled an absolute space.

Newton's mechanics applies quite well to waves in water—or to sound, a wave of energy transmitted by air molecules. If light is a wave of energy carried by ether, we should be able to apply Newtonian mechanics to it. You told me you had a small car accident in Los Angeles while you were looking in the mirror instead of watching the road.

M—Yeah, that's how I met Tom Kelley, who shot those famous calendar pictures.

A—Imagine you're driving your white car at thirty-two miles per hour. Can you do that?

M—Sure.

A—Now imagine you crash into a red car moving at thirty miles per hour. Will you be hurt?

M—Wait. You didn't tell me whether we were driving in the same direction or toward each other.

A—Does it make a difference?

M—You bet it does. If we're moving in the same direction and I'm kind of catching up with the other car and I want to overtake it and bump into it, nobody will be hurt. If we're moving in opposite directions, we're talking of a major accident. If I don't die, then maybe I spend the rest of my life in a wheelchair. I hope it never happens!

A—The difference is due to plain Newtonian mechanics. You add the speeds when you're rushing at each other. It's as if you were crashing into a wall at sixty-two miles per hour. When you're going in the same direction, you subtract the speeds. If you crashed into a wall at two miles per hour, you wouldn't hurt yourself.

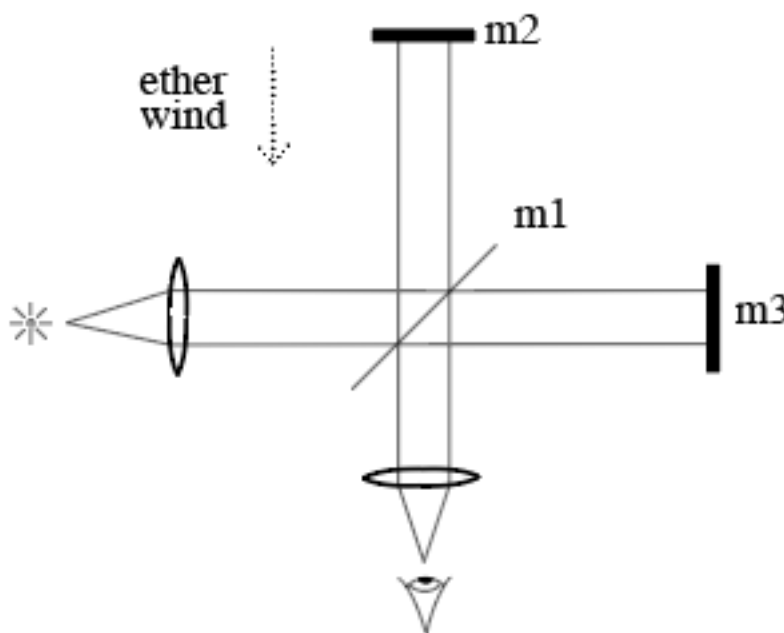
Well, let's replace the cars by the earth and a particle of light. Forgive me for using letters and formulas! I call v and c the speeds of earth and light as they move through Newton's absolute space. When earth meets a particle of light rushing toward it head on,

we should be able to measure a speed of light $c + v$ relative to the earth. On the other hand, if a ray of light goes in the same direction as earth and overtakes it, we should measure a speed $c - v$. Several Frenchmen measured the speed of light with great precision in the 19th century. They always found the same number: 186,300 miles per second. The earth moves pretty fast when it circles the sun, you know, maybe twenty miles per second, so the apparent speed of light should change. It never did.

M—It's like a mystery in a detective novel. You're Sherlock Holmes. He played the violin like you, didn't he?

A—Yes. I've always thought that the scientist is a cousin of Sherlock Holmes¹. Nature is full of enigmas. The scientist examines facts and gathers clues. There comes a time when he feels he has enough clues. Then he plays his violin, or sits in his armchair, smoking his pipe. He looks for relationships between the clues. Often, in detective novels, there are several things that everybody agrees about, and then clues and mysteries. The problem gets solved when the detective questions one of the things everybody agrees about.

Now look at this picture. It represents Michelson's big experiment with a complex instrument he invented, called an interferometer.



¹ An English author, Colin Bruce, had written a history of modern physics as a series of Sherlock Holmes enigmas. The title is *The Einstein Paradox* in the States (Perseus Books, 1997), *The Strange Case of Mrs. Hudson's Cat* in England.

At left, a light source and a lens produce a parallel beam of light. It is split in two parts by m_1 , a two-way mirror. One part goes to the mirror m_2 , is reflected, goes through m_1 and arrives in Michelson's eye. The other part is reflected by the mirror m_3 and by m_1 again before it reaches Michelson's eye.

Michelson wanted to prove the existence of the mysterious "ether wind," due to the movement of the earth across space—represented in the picture by an arrow. While the first half-beam of light goes upwind between m_1 and m_2 , then downwind between m_2 and m_1 , the second half-beam enjoys a crosswind back and forth between m_1 and m_3 . A simple calculation involving $c + v$ and $c - v$ and so on shows that the second half-beam should reach Michelson's eye slightly before the first one. The difference is large enough to create interferences. The experiment failed: Michelson didn't see any interferences.

This is it: the gap between Newton's mechanics and electromagnetism. Light refuses to obey Newton's laws. Its speed doesn't add.

Several physicists tried to explain why Michelson's experiment failed and why the speed of light never seemed to change. Fitzgerald, an Irishman, and Lorentz suggested what is known as the Fitzgerald-Lorentz contraction: speed flattens fast-moving objects. They imagined that atoms, which nobody knew anything about then, were physically flattened by the ether wind. The distance between m_1 and m_2 is shorter than the distance between m_1 and m_3 because the interferometer is flattened by its movement across ether, so in the end there are no interferences. This is not a very satisfying hypothesis. Ether is already an invisible Jello, as hard as iron. As if it wasn't strange enough, Fitzgerald and Lorentz want it to flatten atoms.

M—You spoiled the suspense, I must say, when you told me that ether doesn't exist.

A—Whether ether existed or not, the flattening of atoms seemed a clumsy *ad hoc*, or made to purpose, explanation. I wanted to find another one.

See, Marilyn: here I come now, questioning something everybody agreed about since Galileo and Newton: why do we add speeds? We do it because we are told it should be done, but we don't really analyze what it means. If we give up the adding of speeds, then the speed of light can be constant.

M—When the white car crashes into the red car, the relative speed is not the sum of the two speeds?

A—It is in our daily life, as people who drive cars know perfectly well. It would not be if cars could reach very high speeds, close to the speed of light.

If I wanted to understand why speeds seem to add and how they combine if they don't add, I needed to examine the very concept of speed. What is a speed? What is the top speed of your white car, Marilyn?

M—Gee, I don't know exactly. A hundred miles per hour, more or less.

A—A speed is a distance, like a hundred miles, divided by a time, like an hour. Running champions cover a hundred meters in ten seconds, or ten meters per second. Light goes faster: 186,300 miles per second.

So if I want to answer the question: "What is a speed?", I have to answer two other questions first: "What is a distance? What is time?"

I asked you whether you knew what movement was. You thought you knew, but I told you there were several ways of considering movement. What's more, the Greeks' idea of movement was just plain wrong. Time seems more mysterious than movement, actually. While we can try to control movement, time flows whatever we do. Now I ask you a new question. Do you know what *time* is, Marilyn?

M—You bet I know: time is my enemy. I don't want to be late, I know I'll suffer if I'm late, but I can't help being late. People tell me to get up earlier. I get up at six, you know. I come to the studio early enough. But then, when we get close to the time I should appear on the set, mysterious mishaps just happen and keep me from being on time. Seeing this Patek Phillips or whoever wouldn't help. I need to talk about it to the psychoanalyst.

A—How do you know you're late?

M—The director shouts at me.

A—How does he know you're late?

M—Gee, he looks at his watch, I guess.

A—Would time exist if we didn't have watches and clocks?

M—They would just wait, playing cards or reading the newspaper. I'd arrive on the set and nobody would shout at me. "Let's start," the director would say.

A—In prehistorical times, a caveman went hunting and his wife didn't know whether he would come back before sunset or in a few days.

M—"Before sunset" is a way of marking time. Maybe she could distinguish two days from three days, too.

A—You've just mentioned a clock.

M—The sun?

A—The sun let them count days. The actual clock is not the sun, but the rotating earth. The moon gave them lunar months. Then clever people invented the sundial, which allows you to cut time into hours. With the clepsydra, a kind of water clock, you could count minutes. Galileo counted his heart beats. When I was a patent clerk in Bern, I saw many patent applications for clocks. They often referred to the 18th-century patents of an Englishman, Harrison. He made very precise clocks that helped sailors reckon their longitude. With his clocks and his marine chronometers, people measured seconds and even fractions of seconds.

Did you notice what we just talked about? Did we talk about time?

M—I know you, Albert. You're leading me to something. We didn't talk about time, we talked about clocks.

A—Yes. We talked about the way we measure time. I mentioned professor Mach, who taught in Prague before me. He thought hard about the nature of physics. The subject of physics is not lengths, weights and time, he said, but the measure of lengths, distances and time. The numbers we use in our equations result from the measuring. With our measuring and our numbers, we make a kind of map of reality.

I had a fantastic revelation after an evening chat with Michele Besso in Bern. My mind worked during my sleep, if such a thing is possible. When I woke up, everything was quite clear. I ran to Besso's apartment and woke him up.

"Michele, Michele, there is no absolute time," I shouted.

"Hush, Albert. The wife and kids are sleeping."

"Dress up quick, Michele. Come with me outside. I'll show you something."

I pulled him to City Hall square.

"Look at the clock on the church's bell-tower. I can set my watch by the chime of the clock, can't I?"

"You sure can."

"I have to take the speed of sound into account. How far would you say the clock is?"

"Three hundred feet maybe."

"Sound moves at nine hundred feet per second. I should set my watch one third of a second forward when I hear the chime. If I am moving while I am setting my watch, I should add or subtract my speed from the speed of sound. With light, I can't do that."

"You mean, if you set your watch by looking at the clock."

“Yes. If I am moving, I can’t add my speed to the speed of light, since it is constant. Hey, would you say we are half-way between the church and City Hall?”

“More or less.”

“There’s also a clock on City Hall’s belfry. If I hear both chimes at the same time, I can consider the two clocks give the same time. I can also check that by looking at them. But what happens if I am moving?”

I have mentioned my 1905 article, *On the Electrodynamics of Moving Bodies*, many times already.

M—It’s full of mistakes.

A—Mistakes?

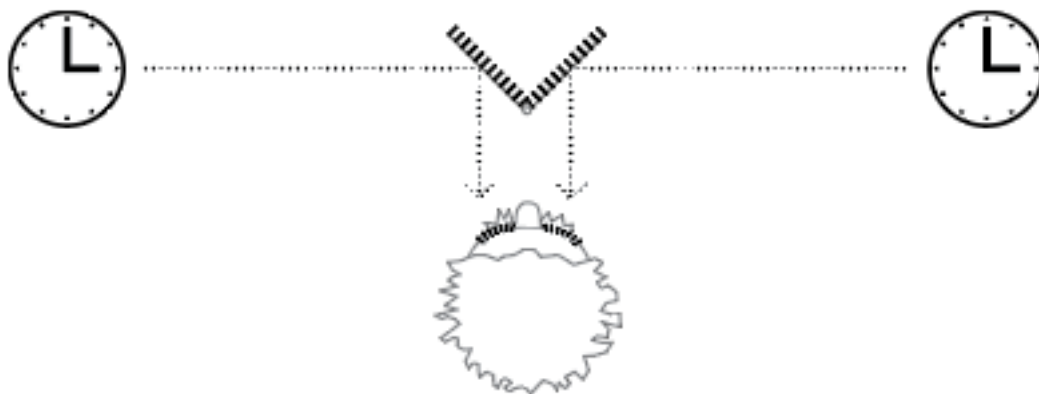
M—That’s what you said to Miss Dukas when she dictated it to you during the war. You made a copy by hand and gave it to people collecting money for the war effort.

A—Oh, clumsy expressions, not mistakes.

Well, I began the article by taking a fresh look at the way we measure time. Some readers found it rather naive, I think.

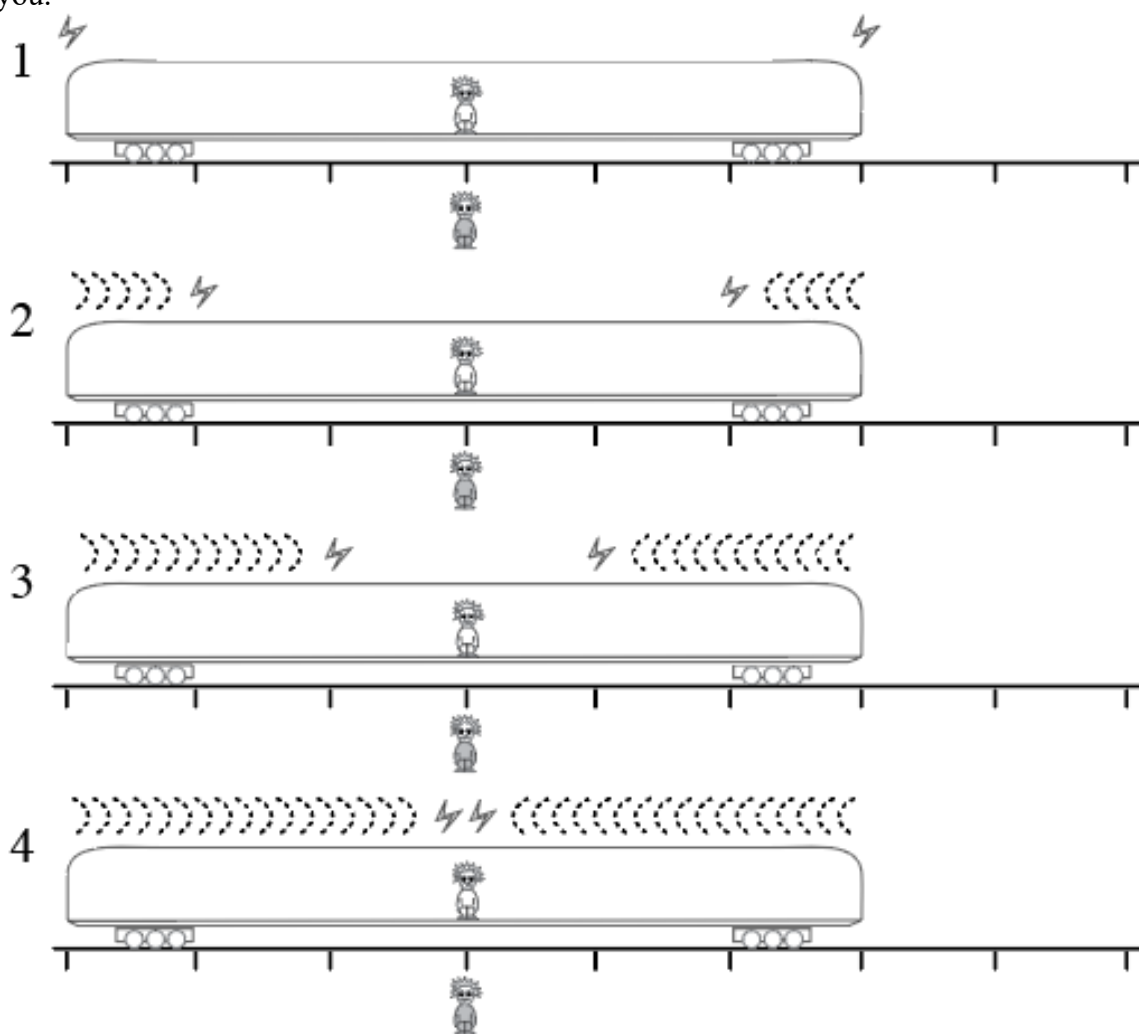
When we talk of measuring the time that elapsed between two events, I wrote, we don’t notice that we actually talk of *simultaneousness*. I look at my watch and say: “The train arrives here at seven.” What I mean is: “The train’s arrival and the small hand of my watch pointing to the number seven are simultaneous events.” How do I know? A light ray coming from the train and a light ray coming from the watch might hit my eye at the same time. Hey, but isn’t the train farther from my eye than the watch? The train’s light ray takes a longer time to reach my eye, which means the two events are *not* simultaneous.

I introduced a simple tool, made of a double mirror.



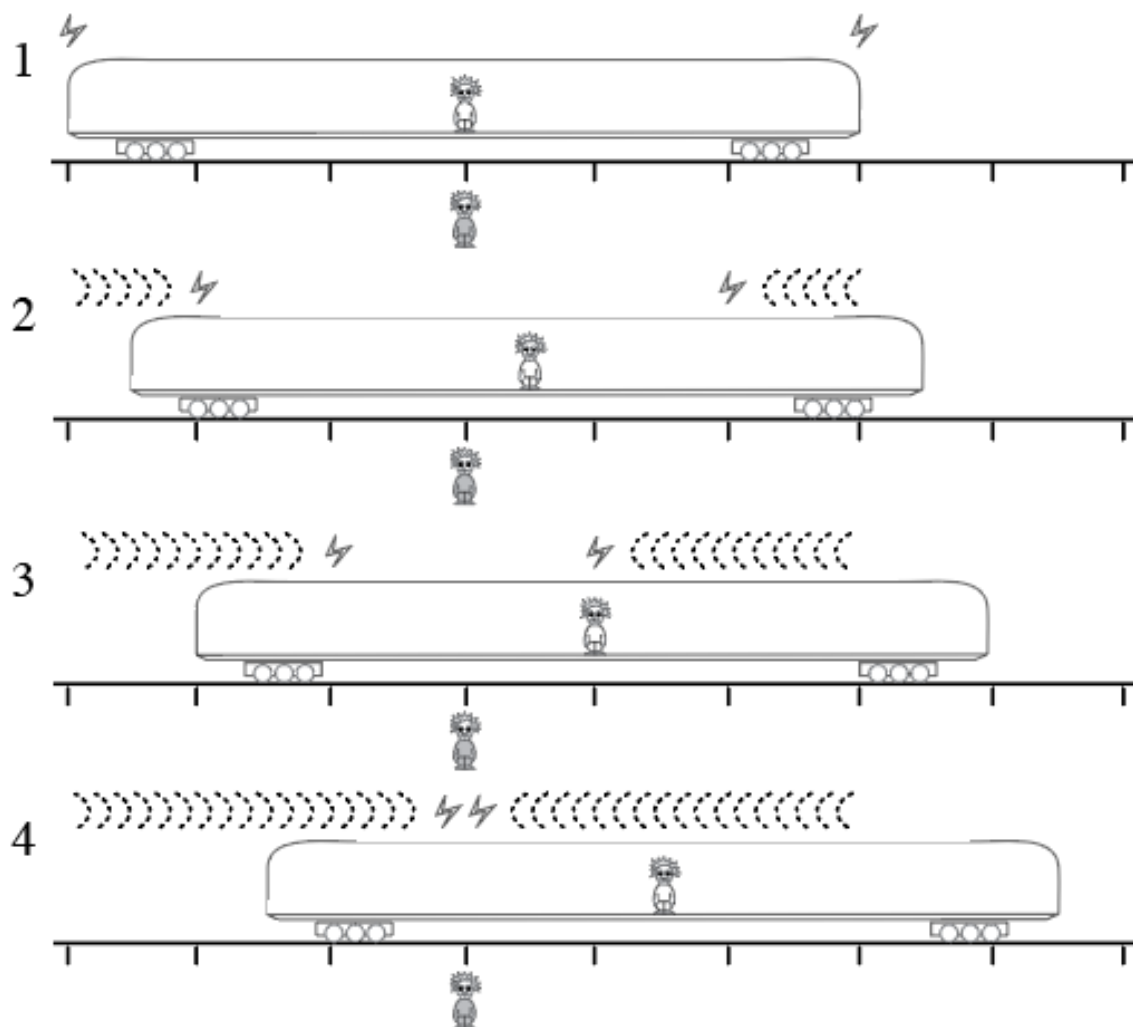
With this tool, I can position myself halfway between two clocks, for example, and check that their arms point at the same numbers simultaneously—that is, I can synchronize the clocks.

Now in this example, the observer doesn't move relative to the clocks. What if he does? Let's imagine two observers. One in a very fast train, the other on the ground. You've been wondering what these big pictures on the blackboard mean, Marilyn. Now I explain them to you.



Let's first consider a stopped train. Instead of the small hand of a clock pointing to a number, I'll use flashes of lightning as my "events." One observer stands in the very center of the train, the other one just outside. Using double-mirrors, they perceive the two flashes

at the same time and they both call them simultaneous. Notice that I've drawn graduations on the rail. You can see that the light moves one graduation ahead from one picture to the next.



Now the train is moving at half the speed of light—half a graduation from one picture to the next. In picture 1, the two flashes occur. In picture 2, nobody has seen anything yet. In picture 3, the inside observer sees the first flash. In picture 4, the outside observer sees the same thing as before: two simultaneous flashes of light. Ha, but the inside observer has still seen only one flash. For him, the flashes are not simultaneous at all.

This experiment shows that simultaneousness is a relative notion. Events can be simultaneous in a system of reference, but not simultaneous in another system. In one

system, the time elapsed between two events is zero; in another system, it is not zero. As our way of measuring time relies on simultaneousness, it means the measure of time is relative.

When Newton imagined an absolute space, he imagined an absolute time too. Newton's God knows what part of the universe is motionless. He also knows what time it is. My God doesn't have a watch in his pocket.

M—Your God is not the God of religion, obviously. The God of religion has full powers. He knows everything.

A—Newton believed there was only one God for science and religion. Although Galileo lived before Newton, he was careful to distinguish science from religion.

M—Not careful enough.

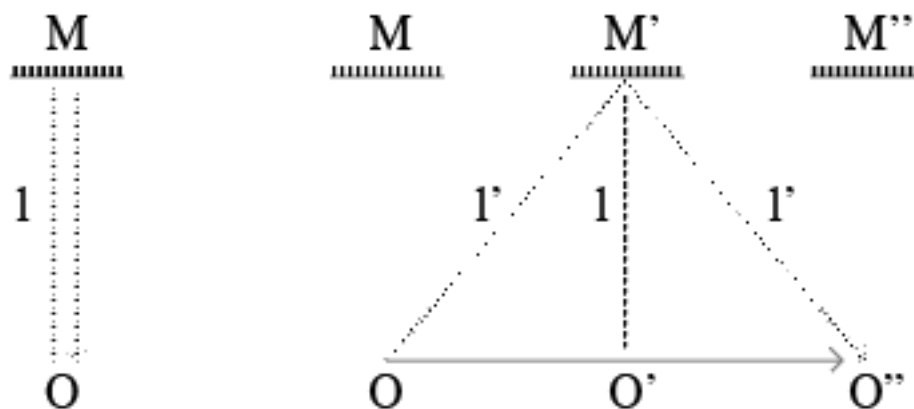
A—He thought that what science found was valid in science's realm. God and religion belonged to another realm altogether, which we can say nothing about. The Inquisition disagreed. It considered that his scientific writings attacked religion.

Now look at our two observers again. The inside observer can measure the length of the train with a wooden ruler. The outside observer can't use a ruler to measure the length of a speeding train. I suggest he enrolls an assistant and asks him to stand one hundred feet apart from him. They look at their chronometers when they see the nose of the train, so they know how long it takes the train to move one hundred feet. That is, they measure the speed of the train. The main observer also looks at his chronometer when he sees the tail of the train, so he knows how long it takes the train to pass him. The speed is the distance divided by the time. The outside observer knows the speed and the time, so he can compute the distance, meaning the length of the train.

It is easy to show that the train seems shorter and time seems to flow faster to the outside observer.

M—What do you mean, easy? Easy for whom? This is relative, too.

A—Easy for the readers of the 1905 article, who were professional physicists. I have drawn this picture here. It may not be so easy for you, but you should still copy it in your notebook.



O is the location of a passenger of the train, whom I called the inside observer before. He uses a quirky clock. The time that a beam of light spends going to a mirror M and coming back is the clock's beat.

At left, the train doesn't move relative to the outside observer.

At right, it moves with the speed v toward the right. The outside observer sees the passenger send the beam from O to the mirror M, but by the time the beam reaches M the passenger is already in O' and when the beam comes back the passenger is in O''.

I'm quite sure you studied the Pythagorean theorem in school, Marilyn.

M—How can you be so sure? I missed whole years, you know. I don't remember a single theorem. You'd better not ask me what a theorem is, anyway.

A—The Pythagorean theorem is considered to be easy, no doubt about that. It says that the square of the big side of a right triangle is equal to the sum of the squares of the small sides. Anyway, I apply the theorem to the triangle $OO'M$:

$$l'^2 = l^2 + OO'^2.$$

Then I replace l' with ct' (c is the speed of light, t' the time for the outside observer), l with ct , OO' with vt' . The equation gives the ratio between the time t' for the outside observer and the time t for the train passenger:

$$\frac{t'}{t} = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

If the train moves at half the speed of light, the passenger's watch seems ten minutes per hour slow as compared to the outside observer's watch.

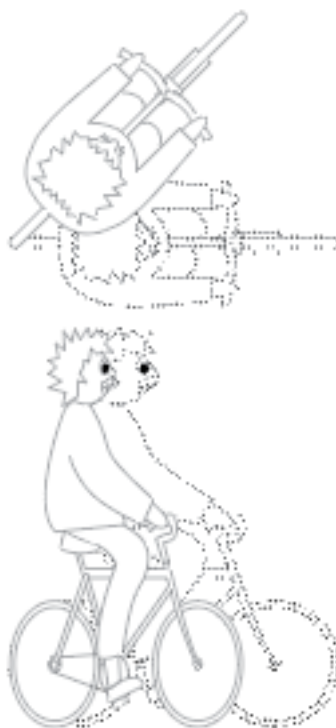
A similar formula gives the ratio for the apparent lengths of the train to both observers.

When the speed v is much lower than the speed of light, the value of v^2/c^2 is close to zero and both observers measure the same lengths and time. It means that Newton's mechanics work fine. You don't shrink like Alice in Wonderland when you run very fast or fly in an airplane, Marilyn, and your watch keeps good time. Things begin to go strange when an object moves at one fourth the speed of light relative to another object or system. This has been verified with particles like electrons, which can reach very high speeds in big machines called cyclotrons.

Do you remember I tell you about Gamow's book, *Mr. Tompkins*?

M—Oh yes. I said I would buy it. Well, I'll buy it for sure.

A—Mr. Tompkins falls asleep during a conference about relativity. He dreams of a world where light moves very slowly, so that the effects of relativity can be seen in ordinary life. You don't need to imagine a very fast train. A person who rides a bicycle seems contracted to onlookers already.



This is a little like perspective. The cyclist rides slightly sideways. The onlookers and the buildings in the street seem contracted to him.

You remember I told you about the Fitzgerald-Lorentz contraction. My equations are the same as the equation for the Fitzgerald-Lorentz contraction, but my hypothesis is very different. For Lorentz, the cyclist is flattened because his atoms are flattened, and I guess it hurts a bit. The buildings and the onlookers, belonging to absolute space, do not change. For me, a fast-moving object may seem flattened, but it is not actually flattened in a physical sense. The cyclist seems contracted because we have to use light to measure him. If he measures the buildings (which move relative to him at the same speed, of course), they seem contracted in the same manner to him. The effect is reciprocal. An object in system A seems flattened to an observer in system B, an object in system B seems contracted to an observer in system A. Time in system A seems to run slower to an observer in system B, and vice-versa.

Whatever we measure, we use light. Thus, relativity applies to all the characteristics of an object. For example, we can measure the mass of an object at rest. If we could measure the mass of the same object when it moves very fast relative to us, we would find a higher number. This is why no material object can reach the speed of light.

M—Oh yes, you told me about it. We would need all the energy in the universe.

A—Do you understand why?

M—You're going to tell me why and I'm going to write it in my notebook, then I'm going to read it at home a few times. Then I'll know whether I understand.

A—If we could accelerate your white car to half the speed of light, or nine tenths the speed of light, its mass would increase and increase until it becomes as massive as an ocean liner. Well, you know that you need more energy to accelerate an ocean liner than to accelerate your white car. So we need more and more energy to go on accelerating it. When we come close to the speed of light, the mass of the car is so high that we run out of energy and can't increase its speed. Only light, which has no mass at all, can move at the speed of light.

We use energy to accelerate the object. When it accelerates, its mass increases. So I say that the energy is changed into mass. This is the meaning of my famous equation $E = mc^2$.

In the Hiroshima explosion, the reverse happened: mass was turned back to energy.

Hm, where are we now? I've told you what Special Relativity is about. So the time has come to tell you about General Relativity.

If we wanted to reduce Special Relativity to one sentence, maybe I would choose: "The speed of light is constant." But I need to introduce another way to look at Special Relativity,

in order to move to General Relativity later. You remember Galileo's relativity and Michelson's experiment. It is obvious that Michelson can move and play billiards in his lab like the fish in Galileo's aquarium, because the lab is an inertial system.

M—Fish playing billiards? I'd like to see that.

A—I wanted to spare you our technical language. Michelson could perform any kind of classical, mechanical, Newtonian, experiment, as if the lab didn't move through space. Or let's say that no experiment with billiards or other moving bodies could prove the lab's movement through space.

You notice I describe the lab as an inertial system. You could object that the earth doesn't follow a straight line. It turns around its axis and around the sun.

M—I object, your Honor. The earth doesn't move at constant speed straight ahead like Galileo's ship.

A—Look at the water in your glass, Marilyn. It is as motionless as you might wish. If it contained a small fish, the creature wouldn't be pushed in any direction by an acceleration. We can consider Michelson's lab an inertial system for any local experiment that doesn't last too long. The Earth's rotation does affect sea currents, hurricanes and such things. Have you heard of Foucault's pendulum?

M—I've read a ghastly story, *The Pit and the Pendulum*. It's by Poe, I think, not Fucco.

A—Foucault used a giant pendulum to make the Earth's rotation visible, in Paris around 1850 or so. The pendulum swung very slowly, so you had to wait quite a while. That's why I mentioned "any local experiment that doesn't last too long."

Now listen carefully. According to Galileo and Newton, Michelson can play billiards and accomplish any short-lasting *mechanical* experiment without worrying about his lab's movement through space. The theory of Special Relativity says that if he tries *electromagnetic and optical* experiments, the lab's movement won't affect them either. I extend Galileo's relativity to electromagnetism. No mechanical *or electromagnetic* experiment can prove the lab's movement through space. Thus, Michelson's experiment has to fail. I told you that I dislike: "Theory of relativity," and would prefer: "Principle of Invariance." So here's another one-sentence formulation of Special Relativity: "The laws of nature are invariant within an inertial system, whatever its speed."

Note one thing: the theory of Special Relativity applies only to an inertial system with uniform motion along a straight line at constant speed. Oh, I was forgetting... Miss Dukas has tried making an American specialty, chocolate bit cookies.

M—Chocolate chip cookies.

A—Chip? Well, let's eat them and drink tea. Then I'll explain General Relativity.

* * *

M—I find them quite tasty, honest. Gee, I'm sorry, I eat like a pig. There are crumbs all over the place.

A—This is exactly how it all started.

M—How what started?

A—My journey toward General Relativity.

M—Cookie crumbs?

A—You remember that glory didn't come knocking at my door after my miracle year, 1905. I kept my job as a patent clerk in Bern. I had shown that the laws of nature do not change within an inertial system. All kinds of interesting consequences ensue. The most striking one is that mass and energy are two sides of a same coin and you can blow up a whole city with a small mass of uranium. I had moved our knowledge of nature a few inches forward, but my theory was restricted to inertial systems. Can you give me an example of an inertial system, Marilyn?

M—You said Michelson's lab could be considered an inertial system for a short while.

A—So why do we use this temporary mock-inertial system as an example? Because we don't have a real long-lasting inertial system. There is no such thing in our universe. The lab turns around the axis of the earth and around the sun, so it doesn't move in a straight line. Neither does an object that I throw as fast as I can: it follows a parabola and falls on the ground after a while, like these crumbs, because of the earth's attraction.

I needed to study real systems that change speed and direction, and see whether the laws of nature could stay invariant in them.

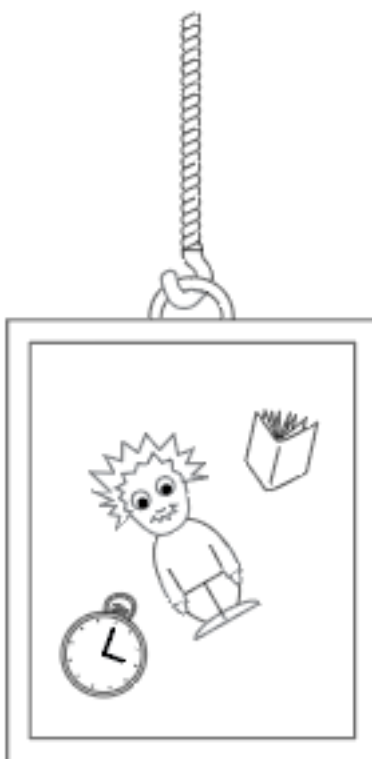
I examined and edited patents in my office in Bern. In a drawer of my desk, which I called my secret lab, I kept a few notebooks so I could go on with my physics research. I entered my secret lab at lunch time. Instead of going out to a cheap restaurant with my colleagues, I covered the pages of my notebooks with pictures and equations. I ate a sandwich and an apple. Maybe I wondered what law of nature produced all the messy crumbs. I liked to look outside and day-dream. A man is repairing a roof across the street.

Ach, this is not a job for me. I'd be scared stiff. Now he's sitting and eating his own sandwich and apple. What if his apple rolls down the roof and he tries to catch it?

M—It is not a job for you, but a job for Buster Keaton or Charlie Chaplin. They try to catch the apple and hang from the edge of the roof, but nobody gets hurt in the end.

A—I saw myself falling from the roof. I am falling, and the apple is falling too, and I notice something obvious but amazing. As the apple and I are falling at the same speed, the apple is not moving relative to me and thus I can catch it easily. It doesn't push my hand downward as usual. It feels as if it weighed nothing at all. Of course, I can see the windows of the buildings rushing by me, so I know I am falling. If this weren't a day-dream, I would worry. In less than a second I'll be as flat as a pancake!

I imagined a slightly different day-dream, or what I called a "thought experiment." I am falling in the same manner, and the apple is falling too, but we are inside a lift. Its cable is broken, I guess. Now I don't see any rushing windows. There is no way I can know whether I am actually falling. It feels more like floating or flying. My hair dances around my head like the tentacles of an octopus. The apple is suspended in mid-air. If I take my pipe out of my pocket, it floats too. Everything inside the lift seems utterly weightless.



Then I moved my lift (known by physicists as “Einstein’s lift”) into empty space, far away from the Earth and Sun. I am still floating! My pipe and apple too! Someday, Marilyn, we’ll build spaceships. Imagine a brave astronaut floating freely inside the cabin. When he wakes up in the morning, he can’t tell whether he is inside a falling lift or a spaceship.

M—I already find ordinary airplanes quite unpleasant places. I’d hate to float inside a spaceship. I’m afraid I could get quite seasick.

A—I guess they’ll create some kind of artificial gravity by rotating the ship. I was not interested in real spaceships, however, but only in imaginary ones.

I imagined a strange event. An angel is holding the lift’s cable, up there in space, and pulling with constant strength. Today, I could add to the lift one of those rocket engines the Germans experimented with at the end of the war. If I light the rocket engine, the lift accelerates. Note I mentioned a “constant strength.” With no strength at all, the speed stays the same. This is the principle of inertia. With constant strength, there is constant acceleration. The speed increases in a regular manner.

I stop floating. I am thrown toward the floor like Galileo’s fish toward the back of the aquarium. All the objects floating in the cabin “fall” toward the floor. Suppose I have taken a nap. I wake up during a phase of acceleration. Hey, I’m sitting on the floor! My watch and my apple are lying on the floor too. What does it mean? Is the spaceship accelerating? Or has it landed on some planet that attracts apples and other stuff, like the Earth? My mental experiment shows that the two situations are *equivalent*. In 1907, I wrote an article about what I called “the principle of equivalence.”

So long ago... Nobody could even imagine a spaceship. Airplanes were quite new. Now we live in a different world. You could experiment the principle of equivalence for yourself, Marilyn.

M—I refuse to embark in a spaceship. Please, Albert.

A—In an airplane. I think I didn’t tell you about my flying.

M—You always seemed to cross the ocean in a steamship and the States in a train.

A—I went up there in a small airplane once in Germany. I needed to test some navigation equipment as a patent expert. Before the airplane takes off, it speeds on the ground faster and faster. You can feel the acceleration as your seat pushes your back. Later, when you are in the air, you sometimes feel the seat pressing your dorsal muscles. So maybe the plane is accelerating. Or maybe it is rearing like a horse to climb higher. Right now, you could tip back on your chair. If you have sensitive dorsal muscles, you’ll feel the

back of the chair pressing them. This is due to gravity, of course. Your chair is not speeding anywhere. In the airplane, the feeling in your muscles is the same whether the plane is accelerating or rearing. You could also experiment with a glass marble. Just leave it on the floor of the airplane. If the airplane is accelerating or rearing, the marble rolls toward the back, but there is no way you can distinguish acceleration from gravitation.

This principle covers a lot of ground, actually. I've used the word "mass" until now without defining what the mass of an object is.

M—Don't ask me whether I know what it is!

A—What it truly comes to is the number of atoms in an object. But in classical physics, there are two different types of mass. One is the mass of an object falling to the ground. The force that earth's gravity exerts on the object, which we call the object's weight, is proportional to this mass. You may know that we would be lighter on the moon.

M—Really? So we could go to the moon instead of dieting. Gee, I guess we would get our full weight back when we'd return to the earth.

A—The reason is that the moon is smaller than the earth, so the force of gravity is lower. On the moon, we could jump higher.

Now you remember the awful accident when your car was going thirty-two miles per hour and another car was rushing at thirty miles per hour straight at it. You were afraid you'd be hurt. This depends on the mass of the two cars, you know.

M—All the cars I know are pretty heavy.

A—Obviously, you would be badly hurt if the other car was as big as yours, and it would be even worse if you hit a truck. But imagine something very light replacing the other car. Let's say, a bee flying at thirty miles per hour. It would crash on your windscreen and you wouldn't be hurt at all. So the mass of the objects plays a part in the result of the accident. This mass is the other kind of mass, called "inertial mass." It is not influenced by gravity. Hitting a truck would be exactly as bad on the moon as on the earth.

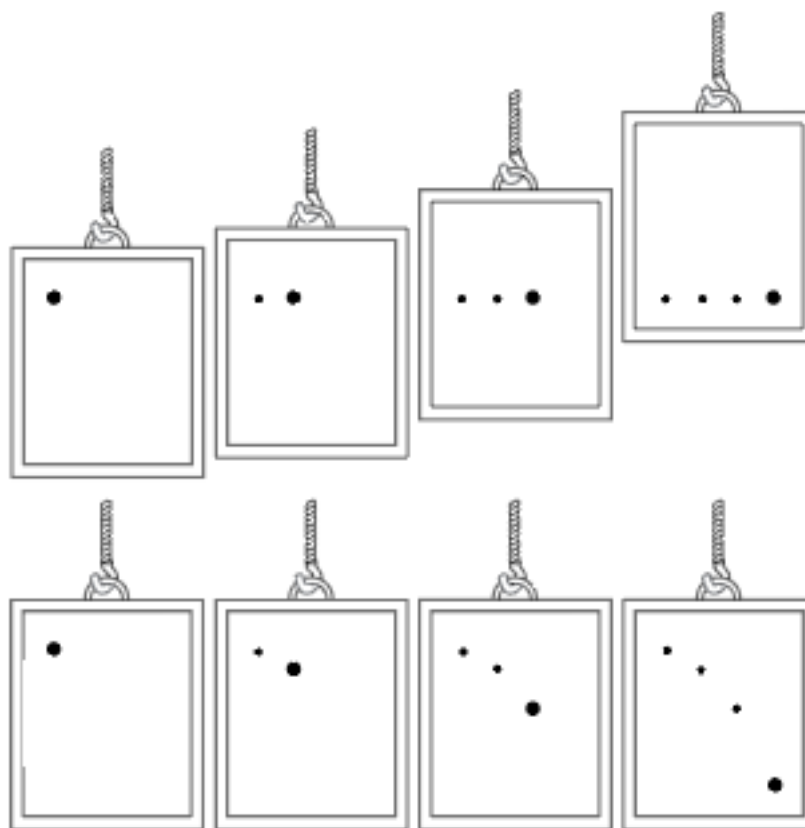
In my space-lift, there is no way of knowing whether a mass is moved by gravity or by acceleration. This proves that gravitational mass and inertial mass are equivalent. The main equivalence is between gravity and acceleration. Sometimes maybe I say gravity when I should say gravitation.

M—Is there a difference?

A—Gravitation is the force of attraction between two masses anywhere in the universe. Gravity is the force that attracts massive objects to the earth. Gravitation or gravity is a

mysterious beast anyway. I told you I found it difficult, even at age five, to accept action at a distance. If I can replace gravitation by acceleration in my thought experiments, I feel much better. Acceleration is a familiar friend, described by plain-vanilla mathematics.

In 1911, I published a new article about Einstein's lift. I asked a simple question: what happens when a light ray crosses the spaceship? This particular space-lift has portholes, otherwise light couldn't go across it. Adding portholes doesn't cost me anything. In thought experiments, you can do what you want. I may suppose that I follow a single particle of light. It enters through an upper porthole on the left. As the space-lift is accelerating, its "floor" is moving toward the light particle, which exits through a lower porthole on the right.



The first series of pictures shows what an outside observer sees (if the lift has a glass wall). The light particle moves on a straight line from left to right. The lift is accelerating upward.

The second series of pictures is seen by an inside observer. The particle moves faster and faster toward the floor of the spaceship, just like an pebble falling to the ground on the

Earth. The inside observer sees a light ray that doesn't follow a straight line, but a parabola.¹

My principle of equivalence says that light behaves in the same manner whether the space-lift is accelerated by an angel or parked on a planet that attracts apples. This means that light falls toward the Earth. Light rays appear to follow straight lines because our planet has a small mass and a low power of attraction. What about the Sun? I wrote in my article that we should be able to measure the very slight bending of light rays near the Sun. This is what Freundlich wanted to see during an eclipse in Crimea, and what Eddington did see in Africa and Brazil.

M—But Freundlich was looking for the wrong angle, so you were lucky the war started and the Russians jailed him.

A—Well, I was still working within the boundaries of Newton's theory. Newton himself believed that light could fall, since he thought it was made of particles that were lighter than cannonballs, but not weightless. Galileo had dropped cannonballs and marbles from the leaning tower in Pisa to prove that they would reach the ground together. If bodies fall at the same speed whatever their mass, even weightless particles could fall. An English scientist, Henry Cavendish (1731-1810), understood that we can't see light falling on the Earth, because our planet is too small, but that the huge mass of the Sun may attract a light ray visibly. He computed the angle of deflection in 1784: 0.85 seconds.

The astronaut can also do interesting experiments with a clock inside the accelerated spaceship. I'll spare you the calculation, but I give you the result: acceleration or gravitation slows a clock. This is different from what happens in Special Relativity: it is not reciprocal. In Special Relativity, you think the man on the fast train shrinks and stays young while he thinks you shrink and stay young. The twin who travels in space comes back younger than his brother because of acceleration and General Relativity.

My principle of equivalence had brought me only halfway between Special and General Relativity. To cover the rest of the ground, I needed to take a closer look at gravitation. I couldn't accept the force of gravitation that Newton had described, because it wasn't compatible with special relativity. Nothing prevented Newton's force from accelerating things forever. An object could go faster and faster and eventually move faster than light—

¹ The pictures are not realistic at all. The lift seems to move faster than light. In a realistic picture, the light ray would barely moves away from a straight line.

which I had shown was impossible. Besides, Newton's gravitation seemed to act without any delay, whereas I refused instant action at a distance. I considered that the speed of light was a limit for the action of forces, too.

My bent or curved light ray followed the shortest path between the star and my eye, since nothing can go faster than light. In so-called Euclidian geometry, which we learn in school, the shortest path between two points is always a straight line. I was beginning to perceive what lay ahead: I would have to tweak the very geometry of space.

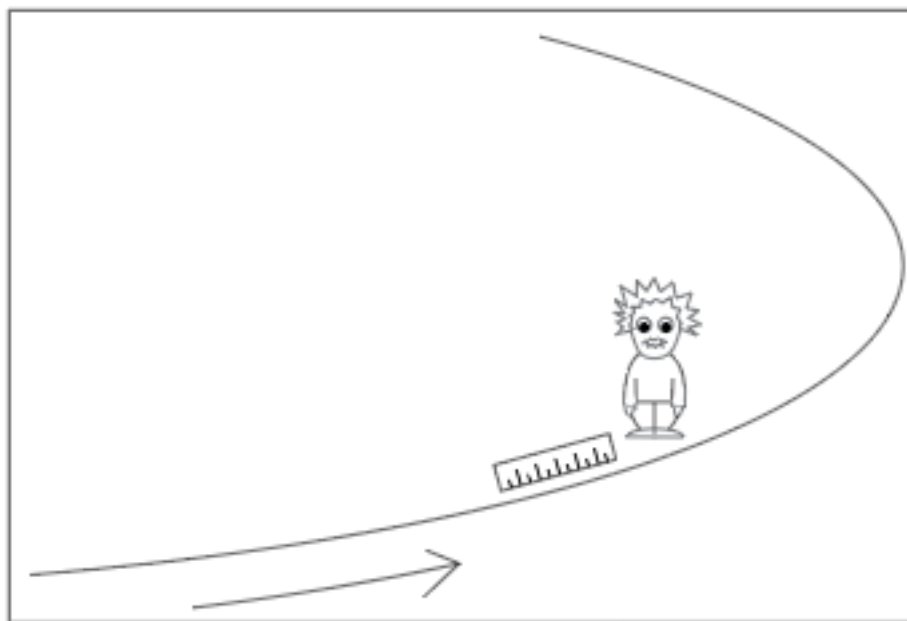
I thought of another mental experiment. Look at this picture.

M—The little gentleman is a brother of the inside and outside observers in the train. He seems to be looking at a wooden ruler that follows an orbit around the earth or maybe the sun.

A—Close but no cigar, as you say. The observer is standing on a huge rotating disk, similar to a merry-go-around.

M—Merry-go-round.

A—He is measuring distances with the wooden ruler.



He measures the circumference of the disk. As the ruler is very short compared to the circumference, we can consider it moves on a straight line. If the speed of the rotation is

very high, the ruler contracts in accordance with Special Relativity, so the observer measures a greater length for the circumference than if the disk wasn't turning.

Now the observer measures the radius of the disk. The ruler doesn't contract in that direction, so in the end the observer finds a circumference longer than $2\pi R$.

M—Wait. Is that a special formula?

A— R is the radius of the circle. π is a strange number that gives us the ratio between a circle's circumference and its diameter. Its value is 3.1416, more or less. The circumference of any law-abiding circle is equal to $2\pi R$. If the circumference is longer, then there's something wrong out there.

Special relativity's inertial systems move in a straight line at constant speed. When a system doesn't move in this manner, it undergoes acceleration. Thus, a rotating disk is considered an accelerated system. Because of my principle of equivalence, we know we would get the same inflated circumference if we replaced the forces of acceleration by the forces of gravitation. This is the beginning of my great discovery: gravitation modifies the geometry of space.¹

You do know some geometry, Marilyn. You know what parallel straight lines are. Two parallel straight lines never meet. You know that a triangle has three sides. This geometry was invented by Greek wizards: Thales, Pythagoras, and many others. Euclid gathered it all in his book *The Elements*. You may remember I told you Max Talmud offered it to me long ago and it became my favorite book. In Euclidian geometry, if you have a point outside a straight line, you can always draw one straight line parallel to the first one going through the point. One, only one. This is a basic given tenet, also called an axiom. There are a few axioms, five maybe. Using them as foundations, Euclid built a wonderful house full of lines, triangles, circles and so on. A triangle has many remarkable properties in Euclidian geometry. For example, the sum of its three angles is always 180 degrees. This Euclid demonstrated by using the five axioms.

A property of circles in that their circumference is always equal to $2\pi R$. In my thought experiment with the rotating disk, I found a circle that doesn't obey the law of circles. In

¹ A technical note. In this example, acceleration (or gravitation) increases when you move away from the center of the disk. This kind of gravitational field doesn't exist in Nature. Gravitation decreases when you move away from the center of the earth. In our universe, as we'll see later, the circumference of the circle would be lower than $2\pi R$, not higher. But we can see a nice centrifugal gravitation field in the spaceship of *2001, a Space Odyssey*.

Euclidian geometry, such a thing is just not possible. Euclidian geometry is a kind of map of reality, like the rest of science. People had been using this map for two thousand years and were quite satisfied with it. Architects built houses and bridges that didn't fall down, engineers made marvelous white cars, and so on.

M—I see where my white car has four circles, five if you count the steering wheel, but I'm not sure the engineers needed triangles.

A—You never wondered how the front wheels can turn right and left. If you look, you'll see articulated steel triangles. All the cameras used in Hollywood rely on the laws of optics found by Galileo, Descartes and others, which are based on Euclidian geometry.

Some mathematicians imagined non-Euclidian geometries at the beginning of the 19th century. In one of them, there were no parallel lines at all. In another, you were not limited to one parallel to a straight line going through an outside point. You could draw as many as you wanted. They had invented these strange geometries for the fun of it. They had no use for them. But then, one century later, I needed them to describe the universe.

We draw the figures of Euclidian geometry on a sheet of paper or a blackboard that stands for a boundless plane. We can use a system of coordinates made of two axes to locate points on the plane. To know where a point is located, we need two numbers, called its coordinates. Like streets and avenues in New York. Where is your Waldorf Towers?

M—50th street and Park avenue.

A—*Ach*, the avenue doesn't have a number. Let's move the hotel to 5th avenue. So we say the plane has two dimensions. As you know, our familiar space has three dimensions. What floor do you live on?

M—27th floor.

A—Your three coordinates are 50, 5, 27. We can measure the three dimensions of this cupboard: its length, width and height.

Let's forget the third dimension for the time being. I want you to think of a two-dimensional world, peopled with two-dimensional creatures. You know such a world quite well, Marilyn.

M—I do? Two-dimensional creatures?

A—Yes, flat persons, enjoying lively adventures in a flat world.

M—I'm a dimwit for solving riddles, really. I give up.

A—You shot this *Seven-Year-Itch* film and now there's a flat Marilyn on a flat screen having a summer tryst with a flat married man.

M—Oh, I see. Flat creatures. The screen is the two-dimensional world.

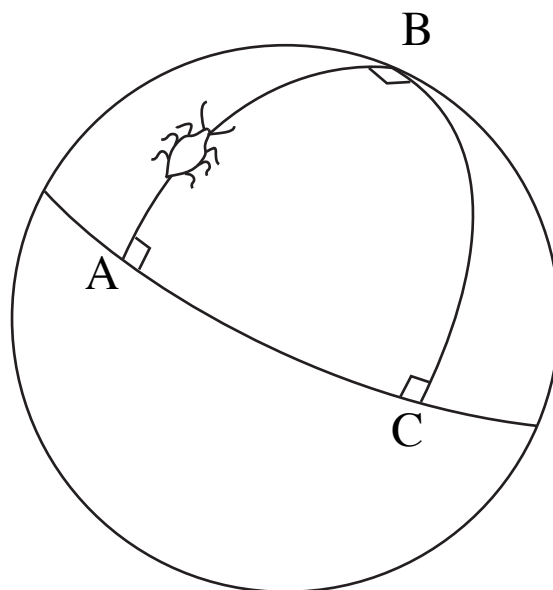
A—The physics of the two-dimensional creatures is a bit strange. They seem to go through each other at times. We should try to suspend our disbelief and imagine they live a pleasant life in their flat world. Can you imagine that you are the flat Marilyn Monroe on the screen? She looks very much like you, after all.

M—I can try.

A—You know nothing about a third dimension. You move on the screen in a mysterious gliding way, but that's the way everybody moves in your world.

In the flat world, you've graduated from high school, so you've studied straight lines and triangles. The Euclid of the flat world had demonstrated that the sum of the angles of a triangle always amounts to 180 degrees and so on.

One more thing I want you to imagine. The screen is not vertical like most movie screens, but it lies on the ground in all directions, so it covers the whole earth. Now, let's suppose there's a straight road going north. You are at A, on the Equator. You begin drawing a straight line with a flat pencil of some sort on the road.



M—I've become a bug, all of a sudden?

A—I had drawn it in advance, before thinking about the movie screen. I can't draw a flat Marilyn, anyway.

M—It will take me a long time to glide all the way to the Pole.

A—As this is an imaginary mental experiment, it doesn't matter.

M—Hey, how do I know I reached the pole?

A—You measure the distance with a ruler. You stop when you have covered 10,000 kilometers. Once there you use a flat protractor or carpenter's square to turn at a right angle. Now glide for 10,000 kilometers southward. At C, on the equator again, you do another right turn and glide back to A. So you've drawn three straight lines and you're back where you started. What do you call a plane figure bounded by three straight lines?

M—A triangle.

A—Exactly. You've drawn a triangle with three angles measuring ninety degrees each. Their sum doesn't add to 180 degrees, but to 270.

M—Yes, but the Earth is not a flat plane. Your so-called straight lines are circles. You're playing games with me."

A—The surface of the Earth is a two-dimension space, though. You locate any spot on the Earth with two coordinates, its longitude and latitude. What we can say about this particular two-dimension space is that it is not flat like a plane, but curved.

M—A curved two-dimension space... I see what you mean.

A—Note that locally, on the screen, on the length of road that the bug or flat gliding Marilyn would cover in one hour, we can consider the space as flat. A short portion of a meridian doesn't differ from a straight line. The flat Marilyn and the bug can't discover that the space is curved by using their senses or their simple flat tools. They have to do a complex experiment, like going all the way to the Pole to draw a gigantic triangle, and even then they'll be able to imagine the actual shape of space only if they use their brains and their scientific knowledge. Do you know who discovered that the Earth was round?

M—Christopher Columbus?

M—The Greeks knew it many centuries before. Who was the first one? Maybe some fisherman sees that the hull of a boat vanishes under the horizon before its mast. What does this mean? *Ach*, the earth's apparent two-dimensional surface is actually the skin of a three-dimensional volume! The fisherman can understand this because he has seen a sphere, or at least an orange. He lives in three dimensions, so he is familiar with two-dimension surfaces and three-dimension volumes. Not so the flat Marilyn and the bug, of course. They've never seen a sphere.

M—Nor an orange.

A—All they have is some figures and numbers on a piece of paper. They can say that the surface is “curved.” They can use words like “sphere” and “third dimension,” but they can’t really imagine the three-dimension space because their flat senses don’t let them apprehend a sphere.

The first flat person to discover that the space is curved finds it difficult to give up Euclidian geometry and replace it by the non-Euclidian geometry of convex two-dimensional spaces (which we call Riemannian, because it was invented by Riemann, a 19th century mathematician). His children will get used to it, though, and find the new geometry more natural than the old one. Our own earth seemed flat to early human beings, and probably to most human beings until recent times. The collective mind of mankind accepted by and by to consider it warped in the third dimension. The Greeks and the scientists knew it all along. Christopher Columbus knew it, but some of his sailors doubted it. They were afraid they’d come to the end of the world, where a gigantic waterfall would throw them into hell.

Note that the flat scientists can measure the curvature of the two-dimensional space in the third dimension¹ without leaving their two-dimensional space. If the sum of the triangle’s angle is 181 degrees instead of 180, they say the space isn’t curved much. If the sum is 240 degrees, it is curved more. If it is 270, it might be the surface of a sphere. The sum could be even higher.

M—I think I understand. Later on, I’m sure I won’t understand anymore, otherwise I would be Einstein.

A—Einstein himself had a hard time understanding space. Let me sum up what we have found so far: we can consider the surface of the earth a non-Euclidian two-dimension space, curved in the third dimension. What about our familiar three-dimensional space? To us three-dimensional creatures, it seems Euclidian or “flat.” A straight line, or a ray of light, can go all the way to infinity. We can imagine a second straight line parallel to the first one. Why not?

M—I bet you’re going to show me that the second line is not really parallel to the first one.

A—Wait and see. I’ll begin with another example. Imagine you’re at the North Pole. A glaring whiteness surrounds you.

¹ Known as the “intrinsic” curvature.

M—Am I flat again?

A—As flat as a flounder. Now go one mile south.

M—South is everywhere, so I can start in any direction.

A—You could have a one-mile long piece of string. Or maybe you glide at a regular speed, so you can use your watch. When you reach one mile, you draw a cross on the ground.

M—On the snow.

A—Go back to the Pole, then rotate one degree and start again: go one mile and draw a cross. Do it again and again, until you're back at the very first line. How many crosses have you drawn in the snow?

M—You are asking me how many degrees there are in a circle. Do you know the answer yourself?

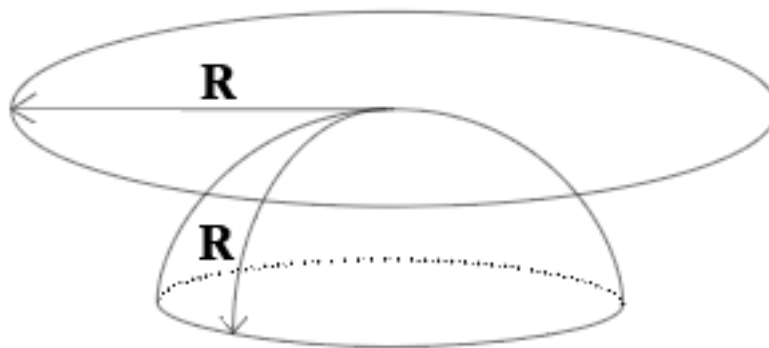
A—Of course.

M—Then why do you ask me?

A—All right. Three hundred and sixty. This number doesn't even matter, actually. Now please use your imagination to draw a circle going through all the crosses. How long is its circumference?

M—Oh, I should use the formula with the radius and so on. Let me look in my notebook. The circumference, $2\pi R$... The value for π is 3,14. The radius is one mile. Er, 6.3 miles or so.

A—Mathematics can tell you the exact length: 2π miles. Now look at this picture and tell whether it is really the exact length.



M—This looks like the some kind of modern table. I think I understand what you mean. The actual circle is smaller than what the flat people would expect on a flat earth.

A—That's right. The length would be 2π miles if the Earth was flat. The circle actually defines a segment of a sphere. Its length is smaller than 2π miles. Less than a fifth of an inch smaller for a one-mile radius. But this is enough for you to prove once again that your two-dimension space is curved. Do you understand why I asked you to do this second experiment?

M—It is quite similar to the first one. Where you had a kind of curved triangle, you now have a curved radius.

A—This second experiment is easier to reproduce in a three-dimension space. You're now a regular three-dimension human being. Imagine you're somewhere in deep space, far from any star or planet. You still have your one-mile long piece of string. You start from a certain point P in space. You go one mile away and you leave some kind of marker, let's say a pin head. Then you go back to P, rotate one degree and so on. If you try all the directions, you'll leave lots of pin heads at one mile of point P. They define a sphere with a radius of one mile. The formula for the surface of a sphere is $4\pi R^2$, so the surface of our sphere is 4π square miles.

This result is correct in a three-dimensional Euclidian space. Do you remember what happened when you were a flat creature? By doing clever experiments and using your knowledge of mathematics, you discovered that you flat space was warped—but you couldn't feel the curvature of space with your limited senses. Now you're a normal woman again, living in a three-dimension space. Your limited senses won't let you know whether this space is curved into the fourth dimension, but you can measure the surface of the sphere defined by your pin heads. If the surface's value is 4π square miles, then the space is Euclidian or 'flat.' If the value is smaller than 4π , then we can say the space is curved, by analogy with our two-dimension example. You can't feel or even imagine this curvature, but you're able to prove it and measure it because you're a clever being.

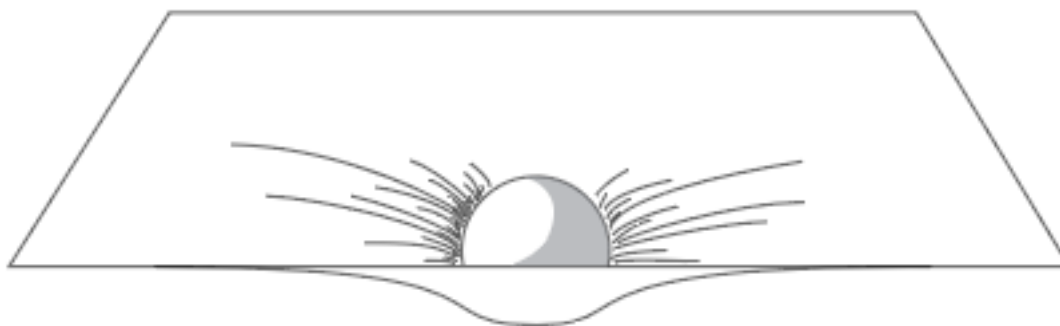
M—So space can be either flat or curved. Does it matter? Does it make a difference? What's the point of all this?

A—You remember I wanted to investigate the mystery of gravitation. Well, this is the result of my investigation: what we call gravitation is actually the warping of space into the fourth dimension.

I'll try to describe my new space by going back to two dimensions. Imagine a bedsheet stretched on a horizontal wooden frame. Now, to curve this two-dimension space, let's deposit something heavy, like a billiard or croquet ball, on the sheet. The ball depresses the sheet. Maybe the sheet should be made of rubber. Then you would have a nice dip—representing a dip in the fabric of spacetime.

M—I've seen people on the beach in Santa Monica jump on an elastic sheet. They call it a trampoline.

A—That's a good name. So please consider in your mind your depressed trampoline. As we're back in our two-dimension fantasy, you're the flat Marilyn. I have tried to draw the trampoline here.



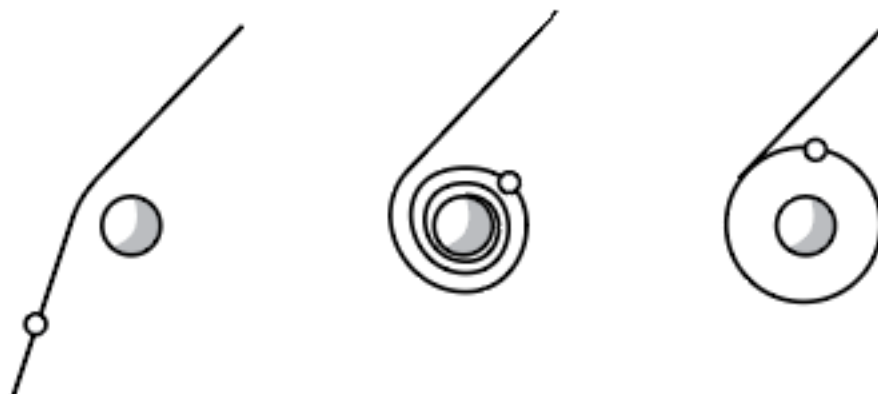
M—That ball has three dimensions. A heavy disk would be better.

A—Very good remark. Actually, you don't need to know what depresses the sheet. In our thought experiment, it's a disk. If we want to experiment with a real trampoline, a ball works better. I guess we would also replace the flat Marilyn with a rolling marble. Whether you're a flat woman or a marble, you can follow a straight line at a constant speed as long as you're far from the depression. If it so happens that you are gliding toward the center of the dip, you'll feel by and by that you're accelerating and falling... If you're not gliding in the direction of the dip, but sideways, you won't be able to keep gliding along a straight line. There is no straight line inside the rim of the depression. There, the shortest path between two points follows a circle. The depression will bend your trajectory. If your initial speed is high, you'll climb out of the hole. What will your trajectory look like ?

M—A kind of bent straight line, I suppose.

A—What if your initial speed is low ?

M—I'll follow a kind of spiral curve that will bring me closer and closer to the center until I hit the ball.



A—Of course, if your speed is neither too high nor too low, you'll describe a circle around the center without escaping the depression or falling into it. What you need to understand is that you're not "attracted" by the billiard ball. You don't know anything about this ball. All you know is that your speed is increasing or changing direction because of the shape of space.

It is an illusion to believe that the sun "attracts" the earth, or the earth attracts the apple. You could as well say that the ocean attracts the water in a river. The water follows the slope, that's all. The earth and the apple follow the easiest path in a warped space.

M—The ocean doesn't attract the water, but it doesn't shape the mountain either. Whereas your sun, okay, so it doesn't act at a distance on planet Jupiter, but it does warp space at a distance.

A—There is no difference in our daily life, but the equations are not the same. With my equations, the deflection of a light ray near the sun is twice higher than with Newton's equation. Finding the new equations was the hardest part of my quest.

I told you about a point in a two-dimensional (or three-dimensional) Euclidian space having an address made of two (or three) numbers called its coordinates. We also say "cartesian coordinates," because the whole thing was invented by René Descartes, a 17th century French mathematician. The numbers measure the point's distance to two (or three) axes at right angle to each other, which we call the space's "system of reference" or "frame of reference." For example, in New York City, the two axes are Houston Street and the East River Drive, which would be the street and avenue numbered zero. What's nice with

the Cartesian coordinates is that you can change the frame of reference easily. Let's say the mayor of New York decides to switch to new axes: 14th street and 1st avenue.

M—Why would he do that?

A—This is where the grid becomes really regular, I think. To a scientist, it makes sense. Don't worry: he is not going to do it. This is just a thought experiment! Anyway, changing all the coordinates is a cinch: you just subtract fourteen from all the street numbers and one from all the avenue numbers.

As the lord mayor of my new non-Euclidian space, my task was much harder. What can I use for axes if I don't have straight lines anymore? Gauss, a mathematician who studied non-Euclidian geometry at the end of the 18th century, thought of replacing the straight axes by curved lines. I told you of two Italians, Ricci and Levi-Civita, whom I exchanged letters with. They invented a refined successor to the Gaussian system, a set of tools called "absolute differential calculus." A moment ago, I took this cupboard as an example of a three-dimensional object. These three straight edges here make an Euclidian frame of reference. Well, in the non-Euclidian space of General Relativity, I replace this cupboard of reference by a kind of "mollusk of reference." My ten equations link the curvature of space to the mass of matter that warps space. It's all a bit difficult when the mass is not homogenous, when its shape is not regular, when you want to change your mollusk of reference. That's why I had to work so hard.

If the matter is homogenous and contained in a simple shape like a sphere, then you can do all the calculations on a single blackboard like this one. For example, supposing the earth to be homogenous (which it isn't) and a perfect sphere (which it isn't either), then supposing we could dig all the way to the center of our planet, we would find a slightly longer radius than predicted by Euclidian geometry. The difference is half an inch, maybe. Why is it longer? Because the warping of space shrinks the surface slightly.

For the much bigger mass of the sun, the difference reaches 1,500 feet or so.

Do you remember my second one-sentence formulation of Special Relativity?

M—I remember vaguely, but my notebook remembers precisely. Wait a minute.

A—I can tell you again: "The laws of nature are invariant within any inertial system of reference." Here's a similar formulation for General Relativity: "The laws of nature are invariant whatever the mollusk of reference."

As I told you, we live in Newton's world. To people with a love of knowledge and a philosophical bend of mind, however, Newton's theory and mine are very far apart. In

Newton's theory, God lords it over an absolute space that goes on forever in all the directions—an infinite void that contains stars and planets. The universe discovered and described by Hubble, Gamow and others, based on my theory, is altogether different and quite strange. It is made of matter and energy—no void. It is finite but unbounded, like the surface of the earth for a flat creature. It was created ten or twenty billion years ago in a crazy explosive event called the Big Bang. It is still expanding at great speed. Nobody knows whether it will expand forever, lose its curvature and become colder, or stop expanding some day and begin shrinking back to its initial pinhead size. Newton's world was quite simple and easy to describe. The mystery in it could be summed up in one short word: G-O-D. The more we study it, the more we find that we know almost nothing. The most puzzling thing about the universe is that we can understand anything at all.

Now that I've told you about my life and findings, Marilyn, I can rest a little.

M—Gee, Albert, I made you work a lot today. You look tired.

A—I'm an old man. My friend Michelangelo Besso died last week.

M—Oh, I'm sorry. You must feel sad.

A—He has preceded me a little by leaving this strange world. This means nothing. For a physicist, the distinction between past, present and future is just an illusion. I am not afraid of death. It is an old debt that we all have to pay eventually. Yet we can't help doing our utmost to postpone this final settlement. Such is the game that nature plays with us.

People say that "everything is relative." This applies to death, too. My end may seem a momentous event to me. The whole universe will cease to exist suddenly. I just told you I'm not afraid to die—but I'm sad when I consider I'll lose you and Helen Dukas and my good neighbor Professor Wheeler, and Bach and Mozart.

To an outside observer, however, it doesn't make much difference whether I'm alive or not. As you've met me a few times, you'll be troubled by a momentary feeling of sadness, but the event is a minor one in the history of the universe. A bunch of molecules, gathered through a rather strange process for a very short time, just go their own way again.

I've done or found a few things in my life that may survive me for a while. Science is the work of many generations. Thus do we mortals, in the permanent things that we create in common, achieve immortality.

* * *

M—I don't need the blue pencil anymore. I still want to write in this notebook, though. I feel he was my only true friend. He didn't care that I was a Hollywood star. He was interested in much bigger stars. He soared so high above petty human worries.

There were long articles in the newspapers. I read them all. His last official act took place on April 11th, four days after he explained relativity to me. Having exchanged letters with Bertrand Russell and Joseph Rotblat, he signed a petition against the bomb. They call it the "Russell-Einstein manifesto."¹

On April 12th, Bruria Kaufman, his assistant, saw him wince in his office.

"Is everything okay, professor?"

"Everything is okay, but not me."

On April 13th, he received Abba Eban, the ambassador of Israel.

"Would you agree to say a few word on television on April 27th for Israel's seventh anniversary, professor Einstein?"

"Of course. I consider the birth of Israel one of the few political events with a true moral value."

"Sixty million people will see you on television."

"Sixty million? Then maybe I'll become famous."

He seemed very weak, Abba Eban said.

On April 14th, Miss Dukas heard him collapse and fall in his bedroom. Several doctors came right away.

"You aneurysm is beginning to rupture. We'll call an ambulance to take you to the hospital."

"I'd rather stay at home."

"This will give Miss Lukas lots of work."

"Then let's go."

Rudolf Ehrmann, his old Berlin doctor, and Thomas Bucky, who had given him a yoyo long ago, came from New York City. His son Hansi flew from California, where he lived. Einstein asked for his glasses and a notebook to write a few more equations.

¹ It launched the Pugwash pacifist movement (named after the city of Pugwash, in Nova Scotia). Joseph Rotblat (1908-2005) and Pugwash received the Nobel Prize for Peace in 1995 for their efforts toward nuclear disarmament.

Albert & Marilyn

Thomas Bucky called one of his masters, who pioneered new operations and had repaired rupturing aneurysms.

"I do not believe in artificially prolonging life," Albert said. "My time has come."

Hansi thought he'd be able to convince him to change his mind.

"Just give me a little time," he said on April 17th. "I'll get him to say yes tomorrow."

At 1:15 A.M. on April 18th, 1955, the night nurse noticed that Einstein's breathing was becoming strained. He said a few words in German—but she didn't understand that language—and died. The autopsy showed that an operation would have been useless. He was seventy-six.

Eight months after you've left this world, I still talk to you in my head now and then, Albert, so I can as well write for you.

Good news: we've just obtained what Milton Greene hoped: Fox accepts to sign a seven-year contract with Marilyn Monroe Productions. They don't have much choice, considering *The Seven Year Itch* brought five million dollars into their bank account. Every new million feels like a dagger through the heart of the Fox shareholders. "Jesus, why did you let her go?" they ask.

According to the new contract, I must play in four movies at least. I can choose the director and the cameraman and refuse the script if I don't like it. I'm allowed to shoot movies for other studios. My company will receive one hundred thousand dollars per film, plus a percentage of the profits if any. I get a one hundred thousand bonus for *The Seven Year Itch* already, which is only fair, considering what everybody earned.

More good news: my dinner with the Rostens and Arthur Miller was followed by a dinner with Arthur but without the Rostens, then another, then our first night in my Waldorf Towers suite. Gee, I love that man. He is ten years older than me, which is just right. He is tall and looks like a professor, but once he undresses he is quite athletic. Not as strong as Joe, but strong enough for me. What's more, he talks more like Joe than like a professor. Why do I mention Joe, all of a sudden? I'm still seeing him. He escorted me to the New York premiere of *The Seven Year Itch* last June. I mean, Arthur is married. We're just beginning something that may go nowhere. We're on flying trapezes, trying to grab each other tight. Joe is my safety net.

Albert & Marilyn

I don't say I won't ever play in a comedy or a musical again, but I want to do dramatic parts. I have seen Kim Stanley, a member of the Actor's Studio, playing William Inge's *Bus Stop* on Broadway. Milton Greene agreed that Marilyn Monroe Productions should buy the rights. I would like John Huston to direct the movie, but he is not available, so we choose Joshua Logan. He is a good theater director. He's made movies, too. He directed *Picnic*, where Susan Strasberg, Lee and Paula's daughter, had a starring role. Afterward, Marilyn Monroe Productions will enter a partnership with some English companies and Warner Bros to shoot *The Prince and The Showgirl* in England—with Laurence Olivier, the greatest actor in the English theater.

People will see I'm not just a sexy blonde. I'll play with Marlon Brando. We hope Charlie Chaplin, too. When I meet him, we'll talk about you, Albert.

Laurence Olivier and his wife, Vivien Leigh (who played Scarlett in *Gone With The Wind*) came from London especially to hold a press conference at my side.

"Marilyn is a brilliant actress," he said.

"Mr. Olivier has always been my idol," I said.

The usual stuff.

Half-way through the conference, a shoulder strap suddenly snapped, promoting my low-cut dress to extra-low. The photographers loved it. All the newspapers published my picture. Is this good publicity for our future film or what? Sourpusses say this is a prank and I sabotaged the strap myself before the conference. They're right: the strap button was held by a single thin thread and I even rehearsed the scene with my dresser. If I wasn't able to make up this kind of script, I wouldn't be the most famous star in the world.

I'm back in Hollywood to shoot *Bus Stop*. While Lee Strasberg must stay in New York to take care of the Actors Studio, Paula has come with me.

I don't need Natasha Lytess anymore, since I have Paula Strasberg. Even when I stopped working for Fox, they kept Natasha as head coach. Now Paula is going to become a Fox employee to help me on the set, so they send Natasha away. That's the way it is. What can I do about it? I haven't seen her for one year. I don't feel like seeing her. When she phones, my secretary says I'm away. She's angry. She says that I owe her everything, that she created me, that she wasted her life to help me succeed, that I wouldn't have become Marilyn Monroe without her. She's got cancer, too. Trying to pin the blame on me. This is

crazy. I ask my lawyer to threaten her with a lawsuit if she goes on harassing me. She can't complain. She earned big bucks. She even bought a house in Beverly Hills.

Joshua Logan at first refused to let Paula Strasberg near the set. Milton Greene convinced him to relent. Natasha prevented me from being my natural self. Paula helps me find my character deep inside me. I know I have a lousy reputation because of my coach, my lateness, my whims and my pills, but I'm the star after all. The film gets made eventually, one way or another.

Milton and Amy Green followed me to Hollywood. We live together in a large house in Westwood, close to the Fox Studio. Not only is Milton my business partner, but he worked on the script (with George Axelrod, who wrote *The Seven Year Itch*) and supervised the design and lighting of the sets.

Bus Stop takes place in a small Arizona town. We shoot some scenes on location out there and some in Hollywood. I play Cherie, a second-rate barroom singer whom an innocent young cowboy falls in love with. Joshua Logan understands he should not rush me. He is really patient with me. He discovers—hey, what a surprise—that I can act and even think.

"This flashy costume won't do," I tell him. "I mean, the girl isn't a showgirl in Las Vegas. She sings in a lousy cowboy joint. Look, I have brought one I found in the Fox wardrobe department. Shabby, you know."

"Yeah, I guess you're right."

"Wait, I'll tear the fishnet stockings. The girl thinks nobody's going to notice the hole, the bar is so dark... She sleeps in the daytime, you know. She never sees daylight, so I thought of a very white makeup, kind of ghostlike. My accent okay?"

"Sure. Everybody will believe you're a born Ozark girl. I should have told you sooner how good it sounds. You can drop it now."

"Oh, but Mr. Logan, I don't want to drop it. I try to speak like this day and night, so I can really become Cherie."

This is the Actors Studio's method. Gosh, I really think Lee Strasberg helped me become a better actress. Lee himself told me that Marlon Brando and I were his most talented students. Joshua Logan says I'm one of the greatest actresses of the day, but that Hollywood wasted me and never gave me a chance.

"You created a personal take on the dumb blonde character," he says, "in the same manner that Charlie Chaplin created his own version of a tramp."

Albert & Marilyn

In New York City, I don't live in the Waldorf Towers anymore, but in an apartment rented by Marilyn Monroe Productions. Arthur Miller is getting a quick divorce in Reno, Nevada. As soon as he comes back, we'll marry and I'll live with him.

I've adopted a cat, Mitsou. She's pregnant. Oh my God, she's going to have her babies! I find a vet in the phone book.

"Hello, Doctor Webster? I've got a Persian cat who's going into labor. Could you come and help? I live real close to your place."

"Okay. I'm coming. What's your name and address?"

"Marilyn Monroe, 2 Sutton Place."

"This is not funny, miss. I'm a busy man."

He hangs up. I try two more vets, with the same results. Being Marilyn Monroe is tough. Several kittens are born already. I call Lois Weber, my New York press agent.

"Don't worry, Marilyn. I'll be over soon. Also, I'll call a vet without giving your name. I'll meet him in the lobby and come up with him."

Eight kittens are born altogether. The vet says Mitsou won't have enough milk, so we should give them goat's milk.

As Arthur is Jewish, I decide to convert. I'm not sure I believe in God, but I know one thing: all religions are alike. You just have to love God, what else? Rabbi Goldberg agrees with me anyway. He teaches me the main rules of Judaism a few days before the religious wedding ceremony. Some cynical people laugh at me because I've only spent two hours with the rabbi. Actually, I already know the main holidays and customs. I mean, I'll draw a list of the men I celebrated Pesach and Yom Kippur with: Joe Schenk, Fred Karger, Johnny Hyde, Milton Greene, Norman Rosten. If I racked my brains, I would find others. I've heard Billy Wilder and Lee Strasberg tell Jewish jokes. Now I'll be able to understand them.

After the rabbi, my next teacher is Arthur's mother, Augusta. She shows me how to prepare *gefillte fisch* (a kind of stuffed carp), borscht (beet soup) and other Jewish specialties. She and Isadore, her husband, live in a small house they share with another family in Brooklyn. They are very simple people.

As rumors keep mentioning my relationship with Arthur, journalists are beginning to lurk near his Connecticut country home, where we live together. We decide to play our

cards face up and tell them about our marriage plans. Arthur asks Lois Weber to call a small press conference.

"I figured we could do it here, in my country house. Of course, as we're outside New York City, I don't know whether they'll come. I guess four or five of them will."

"Four or five? I think you don't understand who's the gal you're marrying. There will be so many of them that they'll be hanging from the trees."

Lois is right, of course. Several hundred journalists invade Arthur's property. They just stay there for days on end, trampling the lawn, hoping they'll be able to follow us and attend the wedding. When we go to town for errands, a whole battalion chases after us. This is ridiculous. On June 29, Arthur's cousin, who is driving our car, accelerates to shake them off. We hear a loud noise: a car went straight ahead in a curve and crashed into a tree. I must not lose my composure and scream, otherwise they'll publish terrible photographs of me everywhere. I feel as scared and panicky as when fans pulled my hair in the Honolulu airport—as if the Marilyn Monroe character escaped my control and attracted grief.

Arthur's cousin stops the car and pulls over.

"Stay in the car. I'll go and see," Arthur says.

A woman who works as New York correspondent for the French magazine *Paris-Match* is lying in a pool of blood. She went through the windshield. Shards have slit her throat open. The air is so hot, all of a sudden. I'm sweating and very cold at the same time.

We decide to marry at once. We must end this craziness. Just as the manager of Joe's restaurant has done last time, Arthur phones a judge he knows in White Plains. To escape the journalists, who cooled down anyway after the accident (an ambulance carried the woman to the hospital, but we all knew she was dead already), we let them take a few pictures in front of the house. I try hard to smile my Marilyn smile. I kiss Arthur, and so on. Okay, they don't try to chase after us when we leave. The judge weds us at 7 PM, in four minutes. I wear a plain skirt and a sweater. Arthur doesn't even wear a tie. Arthur's cousin and his wife are our witnesses.

Two days later, we celebrate the Jewish wedding. This time, we invite twenty-five guests or so: the Strasbergs, the Greenes, the Rostens and my other New York friends. I wear a wedding-dress and a veil, Arthur a penguin's tailcoat. We stand under the wedding whatchamacallit (some Hebrew name) and break a glass as a reminder of the Temple's destruction. I am thirty years old, Arthur is forty-one.

Albert & Marilyn

I'm still Marilyn Monroe, but I also become Marilyn Miller. This is the name Ben Lyon wanted to give me at the start of my career. The name of an actress he had known, who was dead.

* * *

Gee, I was so glad when I found this notebook again. My Einstein notebook. I forgot to take it along when I went to England, I guess. Seven years ago.

Or maybe I took it along. I registered twenty-seven suitcases, containing my main wardrobe. The airline charged us 1,500 dollars for the extra weight. The rest of my luggage, I mean my trunks, followed by boat.

This was a turning point in my life. I should have been the happiest gal in the world. Married to the man I loved. Head of my own company. Going to shoot a story I had chosen myself. But things went wrong on a grand scale. Then from bad to worse. Didn't have time to write. Oh Gosh.

My life seemed to be stammering. An improvised wedding, then a flight across an ocean for my honeymoon. Mobs in the airport. Policemen clearing a path through the crowd so we can reach the plane. Arthur stiffening at my side. My fans love me so much that they'll crush me to death.

"Can't breathe!" Arthur says. "I'm drowning in a human sea."

"Joe wasn't ready for this new role. He never got used to it."

"What new role?"

"Marilyn Monroe's husband."

The movie was called *The Prince and The Showgirl*, but I felt like an unwitting princess, surrounded by a court of retainers—Paula Strasberg, Milton and Amy Greene, Whitey Snyder. Hedda Rosten, Norman's wife, came along as my private secretary. Arthur liked neither Paula Strasberg nor Milton Greene.

"She knows as much about acting as a cleaning woman," he said. "He tries to control you by stuffing you with drugs."

Milton did give me all kinds of pills. He used a lot himself, got them from his brother the doctor. At least Paula and Milton didn't unite against Arthur, as they hated each other.

Albert & Marilyn

Laurence Olivier and Vivien Leigh welcomed us at the airport. We lived in a gorgeous country estate. We met plenty of famous Hamlets and Ophelias, and also more dukes, duchesses and such than I could count. This nice cozy English honeymoon didn't last long. Things turned sour as soon as we began to shoot.

I have often felt that people despised me, but Laurence Olivier was the worst of the worst. I mean, the big guys in Hollywood despised the starlets. They saw us as little more than hookers, ready to go to bed with whoever could boost our standing. So maybe Joe Schenk and Mr. Zanuck despised me. They liked me at the same time, though. Deep down, they were good guys. Hey, when Lew Wasserman, my agent, asked Joshua Logan whether he would direct *Bus Stop*, he said it was a good play. He liked the idea of shooting on location in Arizona and so on.

"Who's playing Cherie?" he asked."

"Marilyn Monroe."

"But she can't act!"

He changed his mind when I played Cherie and said I was a good actress and became quite friendly. He asked me what I thought, trusted me, let me improvise in front of the rolling camera without worrying about the cost of the reels of film.

First day on the set, Laurence Olivier talked to the crew. He asked them to be patient with me.

"She's such a delightful little thing."

He despised everybody. He considered the Actors Studio method a hoax and Paula a nuisance. He corrected my mistakes in an icy voice that sent needles through my flesh. Gee, I felt so stupid—and scared—when he delivered one of his sarcastic remarks to me. His aristocratic British accent made them even more stinging. He seemed more foreign to me than all the foreigners I had known so far, including the Japanese. There is a saying: two sister countries separated by a common language, or something. Whenever I suggested a change in the dialogue or some other improvement, he smiled at me in a condescending manner.

"All you have to do is be sexy, dear Marilyn."

He wanted me to accept his exact vision of every scene, as if he knew my character better than I did. Vivien Leigh, who played my part in the theater version, came to the set one day and also smiled in a patronizing way.

"This poor Marilyn is so very vulgar," her smile said.

I had a crowd at my beck and call, but I felt oh so lonely. Lee Strasberg spent a few days in London, quarreled with Laurence Olivier and went back to America. Hedda Rosten drank so much whisky that she was useless. They pretended to work for me and I paid them, but truly they wanted to control me as if they owned me. My usual sleeping potion of a half bottle of champagne and a handful of pills seemed to be losing its power. I cried all night. I fell asleep at dawn. Laurence Olivier called Arthur.

“Why isn’t she on the set yet?”

“She’s not well. I’ll see what I can do.”

I hated it when they asked my husband to act as my manager.

“Why are you getting involved in this?” I asked him.

The strain was spoiling my brand new marriage. Arthur wasn’t ready to face the fuss—the airport crowd trying to smother me, the people on the set hating each other, the champagne and the pills. Sure, I was late once or twice or a thousand times. I was scared, I panicked, I pretended to be sick and then I was really sick. Gee, I knew I wasn’t a pleasant companion during a shooting. I should have told him: “Don’t come, Daddy. Stay home and take it easy. You’ll see the Tower Bridge some other time.” I would have maddened Paula Strasberg, Milton Greene and Laurence Olivier with my wild moods, but that was okay, as they were paid for it anyway.

One day, Arthur left his black notebook on the living-room table. Here I am picking up my script and right next to it, did he leave it there on purpose so I would read it, this little leather-covered notebook where he scribbles his bright ideas, going to use them in his next play I suppose, right there for me to see: “Laurence Olivier says she’s a bothersome bitch—beginning to understand him—couldn’t find a decent answer—thought she was an angel—how wrong—same mistake twice—just like Mary.” I couldn’t read more through my tears. Mary, his first wife. He told me she let him down, whatever that means.

The fumbled shooting was nothing unusual. Arthur didn’t know it would turn out okay in the end. Joe hated it too. He compares me to Mary and I compare him to Joe. Wow, what a mess!

If Laurence Olivier had played in front of the Actors Studio members, everybody would have said he couldn’t act. You haven’t found your inner key, they would have said. You should get in touch with your emotional memory, man. He played the prince regent of Carpathia, an imaginary country in Central Europe. His acting was precise, his Teutonic

accent perfect, but there was no life in his performance. He didn't dig into his own deep self to create the character. Besides, he lacked experience as a director. As I had worked with the top guys in Hollywood, I noticed it right away. He tried to compensate for his meager skill by an excess of authority, as if the prince regent of Carpathia was trying to direct a film.

Then when we looked at the rushes, people only stared at the "delightful little thing" on the screen. Okay, so he could play Richard II and III, but I was stealing this movie right under his nose. I'm sure there's a quotation in Shakespeare somewhere about sweet revenge.

I felt exhausted. Belly cramps kept me in bed. Gosh, this was much worse than the usual pain. I went to London, where a doctor sent me to a hospital right away. I suffered a miscarriage in the middle of the night.

"Do you drink a lot of liquor? Take pills?" the doctor asked.

"Well, I don't know what you call a lot."

"When you're pregnant, you'd better stop altogether, otherwise you'll never be able to have a baby. You have an inflamed uterus, what we call endometriosis."

"But, Doctor, I didn't even know I was pregnant."

"Don't drink so much anyway. Don't take so many pills. Doctor's advice!"

I was so sad. I really wanted to have Arthur's baby. I didn't tell anybody what had happened, but I showed a doctor's certificate saying I'd better rest for a week or ten days. The shooting was interrupted. Tensions ran high. Milton Greene acted as go-between between people who didn't speak to each other anymore. In the middle of the crazy farce, thinking I was just sulking, he had an idea: he sent a plane ticket to old Mrs. Hohenberg, our common shrink. He hoped she would convince me to get out of bed.

We could have given her a part in the movie—the prince's plump governess or something. Her Hungarian accent was just right. I bet Carpathian ladies braided their hair on top of their head just like her. She was delighted to be back in Europe, in the very city where Dr. Freud had spent his last days. She convinced me to see Anna Freud, the great man's daughter, who was a famous psychoanalyst too. I told her about my unknown father and my crazy mother and my sugar daddies and so on.

"Rilke, the poet, once consulted my father," she said.

"Oh, I've read some of his works."

“They had a common friend, Lou Andreas Salome. Anyway, Rilke didn’t know what to do with his life, couldn’t sleep, knew no one he could really talk to, was so desperate that he thought of killing himself, and so on. I don’t remember all the details. Your neurosis feeds your marvelous poems, my father told him. Are you sure you want to get rid of it?”

Meanwhile, Mrs. Hohenberg analyzed the psychic energy circulating on the set and decided that Paula was the bottleneck.

“You depend too much on your coach,” she told me. “You can’t stand on your own two feet as long as she’s around.”

Everybody agreed with Mrs. Hohenberg. Which means that everybody agreed. The shrink had reconciled them. Bye bye, Paula. I think I could find the word “scapegoat” somewhere in this notebook. I remember we talked about it, Albert.

What do you know? I did regain my bearings without her. I felt strong and confident. She had prevented Laurence Olivier from finding his inner director’s key, too. After she was gone, he finished shooting in a few days. The showgirl charmed the prince, foiled a plot against him, gave up her love so he could return to his country. Thus, in spite of many mishaps, everything turned out okay in the end, which is just how it should be in movieland.

Before flying back home, I had to carry out a silly formality: go say hello to the queen. She invited me to attend the premiere of some English film in a theater. I was not too late. That is, I entered the theater just in time to see the word “end,” which means the dear queen was still there. The Hollywood crowd had warned me I could expect to meet the queen, so I had asked Nana Karger, the most refined person I knew, how I should behave.

“Look her straight in the eye and say to yourself: I’m just as pretty as you are.”

I felt nervous, so I tried to think about the vastness of the universe and all the stuff we talked about together, Albert. What does “pretty” mean, actually? Why should it matter? Here was the queen already. She unsettled me by saying we were neighbors.

“How is it possible? We live in the country, very far from Buckingham Palace.”

“Indeed, but you’re living near our Windsor castle.”

“Oh, the castle belongs to you? They let me ride a bike in the park. They gave me a special permit.”

“Do you ride a bike? Really?” princess Margaret asked.

She only rode horses, I guess. The queen complimented me on my curtsy.

“I curtsy in the film, you know, because of the prince, so I practiced a lot.”

Albert & Marilyn

I thought of Norma Jeane. She never imagined she would curtsy to the queen of England someday.

When *Bus Stop* was released, the movie critics discovered the new Marilyn. “Hold onto your chairs, everybody,” the New York Times guy wrote. “Get set for a rattling surprise. Marilyn Monroe has finally proved herself an actress in *Bus Stop*.” And another one: “Marilyn effectively dispels once and for all the notion that she is merely a glamour personality.”

They were still ready to make fun of my pairing with a guy who had read all of Shakespeare when he was five years old, but when *The Prince and the Showgirl* came out, they had to admit I was the best thing in the movie.

So maybe I had reached my goal. Serious intellectuals were beginning to respect me. Yeah, but I wasn’t sure I liked these guys. Worse, I wasn’t sure I liked the two movies. If I go on making that kind of stuff, I thought, my new improved reputation will spread in the Upper East Side like the round wave in the lake, but I’ll lose the mad crowds that try to touch me in the airports. Can’t expect whole regiments to proposition me anymore.

Arthur was different, though. He was an intellectual and a simple guy at the same time. I hoped the torn fabric of our love—oh, the ghastly musings in the leather notebook—could be repaired now the shooting was over. Our real honeymoon was beginning. I loved my Daddy! He called me Sugar.

His country place evoked too many memories of his failed marriage. He sold it and bought another one, also in Connecticut. While it was being renovated, we lived on Long Island. We took long walks along the beach like two lovers. I slept much better: So maybe I needed two or three pills, that’s all. We moved into the new house, and also into a 57th street apartment. Arthur let me paint it a pure white color. I bought a white piano in an auction. I tried to play *Little Bo-Peep*. Well, I heard *Little Bo-Peep*, but Arthur didn’t.

“Last time I played it was more than twenty years ago, so what can you expect?”

Just my Daddy and me. I didn’t miss all the parasites who drank my blood. Arthur didn’t like Milton Greene.

“Why should you let him have half of your company’s profit? You don’t need the man. I could help you choose scripts that would really highlight your talent. I know you well enough.”

Albert & Marilyn

He intended to write a script himself, based on *The Misfits*, a short story he had written for Esquire magazine.

To please him, I sacrificed Milton. Having a former lover as a business partner while you're married to a new guy is not such a bright idea, anyway. My lawyers took care of everything. Milton wasn't too happy. He pretended I owed him two million dollars for the broken contract. The man was out of his mind. He had earned plenty on my back. My lawyers called his bluff. Then he sold me his share of the company for a hundred thousand dollars. My lawyers were surprised, as they were ready to settle for a lot more.

"My interest in Marilyn's career wasn't for gain," he told the press. "She needed me at the time and I put at her complete disposal whatever abilities I possessed."

I couldn't go on seeing his psychiatrist. I called Anna Freud in London for advice.

"Oh but you should see Marianne Kris," she said. "She's my best friend since we were children. Her father was my pediatrician. She came so often to our Vienna home that Dad considered her an extra daughter."

"Almost a daughter of Dr. Freud? I can't find much better than that, can I?"

But she was just another old woman with a German accent who wanted to know about my father and mother.

In July, 1957, my doctor said I was pregnant again. I hoped everything would turn out fine this time. I love children, truly I do. I often took care of Arthur's kids, but they were not as much fun as tiny tots. Jane was fourteen and Robert nine.

My breasts hurt. This happens when you're pregnant. I also suffered from belly pains. As I was not hungry at all, I ate very little. I needed to alleviate my cramps, but I remembered that doc in London, so I tried to control my intake of pills. Also, I didn't drink anything stronger than sherry.

On August 1st, in our Connecticut house, a sharp pain knocked me down. I mean, I screamed, then fainted like a lady in a romantic novel. Arthur, who found me unconscious on the floor, called an ambulance that rushed me to a Manhattan hospital. The doctors decided that surgery was necessary.

"It was an ectopic pregnancy," the surgeon told me when I woke up.

"Oh Gosh, did I lose the baby?"

"Fetus hadn't reached the uterus: stuck in a fallopian tube. Had to terminate the pregnancy. You could have died."

“Will I be able to have babies at all?”

“You never know. Doesn’t look too good, though. Tube seems to be blocked up. May be due to inflammation. Have you ever aborted?”

“Well...”

“Botched abortion might explain it.”

“I didn’t feel well today, so I just drank a cup of coffee for breakfast. Then I had these awful cramps. It hurt so much that I took some pills...”

“How many pills?”

“Well, at first two or three, but it didn’t really help, so maybe another two or three. Say maybe eight altogether. Eight pills on an empty stomach, I guess that’s pretty bad. Do you think it could have killed the baby, doctor?”

“I smelled some alcohol, too.”

“Oh, right. A couple glasses of sherry. So my stomach wasn’t empty after all.”

“This baby was doomed anyway. Could try to unblock the tube. Very delicate surgery. Fails most of the time. Now listen to me: if we ever unblock the tube and you want to have babies, you’d better give up the drugs and the drinks.”

“I know. A doctor said the same thing in London.”

“At least give up either one. Bad combination.”

How could I stop, really? I was so happy when I learned I was pregnant. I was married to a great guy. I lived in a fancy apartment in town. When it was too hot there, I could retire to a country estate that reminded me of the queen’s castle. This perfect life lacked the one thing I yearned for above all: children. I expected to have, oh, many of them—to breast-feed them, sing lullabies to them, drive them to school, read fairy tales, buy toys. But now, not only had I lost the baby, but they said maybe I would never be able to have another. Once more, happiness drifted out of my reach. Euphoria turned into misery. Without pills, I just couldn’t face the terrifying abyss of the night. When I woke up, the horror of my life jumped at me like a wild beast. Without a glass of vodka to keep the beast away, I couldn’t leave my bed.

Often, I felt too lazy to dress. Everybody knew I slept without a nightgown. The journalists loved to ask me about it.

“What do you have on at night, Marilyn?”

“Chanel number five.”

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I also said: “the radio,” sometimes. These answers were made up by the Fox public relations people long ago. Actually, I wear a bra, otherwise my breasts would sag. So when I didn’t dress, I stayed most of the day with my bra on and nothing else. Lena, my new maid, found me somewhat strange, I bet.

I ate too much. I gained twenty pounds. I was just plain ugly.

Arthur tried to lift my spirits by taking me out. We saw the Rostens or other friends. In Brooklyn for a party, I don’t even know these people, a twelfth floor apartment—sitting on the window sill, looking outside without seeing anything. Who’s this? Oh, Norman.

“Where are you, Marilyn? Come back with us!”

“It would take but a few seconds. Twelve floors. Nobody would notice.”

“I’d notice, and also all the other people here. Millions would notice.”

“Life is too hard.”

“This is true for everybody, Marilyn. I also want to get it over with, sometimes.”

“You, Norman? Don’t! Think of Hedda and your lovely Patricia.”

“Listen, Marilyn. Let’s make a pact. If one of us wants to commit suicide, he calls the other one, who’ll then try to talk him out of it.”

“Yeah, I guess it’s not a bad idea.”

“Promise me you’ll do it.”

“I promise.”

Did I want to die? At least to sleep and escape the fright that crushed me day and night. I gulped pills as if they were so much candy. Often, my mind got muddled. How many have I swallowed? I’ve never been able to count right. Well, I was still awake and the pain wasn’t gone, so I added a few more. I had several doctor friends who wrote prescriptions. My medicine chest was full of bottles and stuff. Arthur found me lying on the carpet, moaning noisily, with a yellow liquid dribbling at the corner of my mouth. Or maybe I seemed to be breathing by fits and starts. He called the hospital. They came with oxygen and revived me. So he saved my life once more. Thanks but no thanks.

He went to some other city where they were rehearsing one of his plays (but he wasn’t trying to write a new one, as if I had killed his inspiration). Lena found me moaning and groaning on the carpet and called the hospital. They pumped my stomach or something. When I woke up, Norman Rosten was sitting by my bed.

“How do you feel, my dear?”

“Alive. Too bad. All the goddam... Oh shit!”

We celebrated Christmas with the Strasbergs. To Arthur, I offered a new set of the *Encyclopaedia Britannica*. To Lee, books and records. To Susan, a Chagall drawing. To Paula, a pearl necklace with a diamond clasp. The Emperor of Japan had given it to me when I was in Tokyo with Joe. She had always admired it. To John, their son, I offered my white Thunderbird. He was eighteen. A nice kid. I knew he dreamed of owning a car.

People submitted scripts to my production company all the time. I received so much regular mail, fan mail, phone calls, that I hired a secretary, May Reis, to take care of everything.

Billy Wilder and I. A. L. Diamond adapted a German play, hoping I might be interested. They sent me an outline. They called it *Some Like It Hot*. I was to be a singer, one more, named Sugar Kane. She belongs to a women's orchestra in 1925 or so. Two men, musicians who play double-bass and saxophone, dress as women and hide in the orchestra to escape some gangsters. This leads to ambiguous and funny situations, but I wondered whether I'd be able to play the singer. I mean, could I really become friends with men dressed as women? I called Lee Strasberg to tell him about my reservations.

"I just can't believe this story. I'm supposed to become cozy with these two new girls, but actually they're men in drag. This doesn't make sense. After all, I know they're men, don't I?"

"You know it, Marilyn, but your character doesn't. So you must imagine they're women anyway. I'll tell you what I think. In real life, you find it very difficult to have a relationship with other women. They're always jealous of you. When you come into a room, all the men flock around, but the women keep their distance. So you've never had a woman as a close friend."

"Or at least, not many. You're almost right."

"So then, here suddenly are two women and, hey, they want to become your friends! They appreciate you. For the first time in your life, you have female friends."

"I think I understand what you mean."

After this conversation, I accepted the script. In July, 1958, I flew to Los Angeles for the shooting. I hadn't worked for almost two years. No, I mean, I hadn't shot a movie. I worked at the Actors Studio twice a week.

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I had decided never to play a silly singer again, but I sort of doubted that my career as a serious actress was going anywhere. Jean Harlow only played comedies, I think. I had performed a scene out of Eugene O'Neill's *Anna Christie* at the Actors Studio and the members had applauded, which was against the rules. Greta Garbo played Anna Christie in a movie, but I bet she'll be remembered for *Ninotchka*, where she had her only funny part. It couldn't hurt to shoot a movie while Arthur was writing his *Misfits*, especially if I considered I would receive a hundred thousand dollars plus ten per cent of the gross, which was truly unheard of.

I was a bit surprised that Billy planned to shoot in black and white. All my recent movies had been in color.

"We tried a few takes both ways," he told me, "but Tony and Jack are dark-haired guys. Even if we shave them very close, the makeup we paste on their faces looks awful in color. Chicago gangsters and charleston dancers come out better in black and white, too."

Soon after I arrived in Los Angeles, Arthur sent his first draft of *The Misfits* to John Huston, who found it great and agreed to shoot it. He suggested Clark Gable for the leading male part. Clark Gable also said okay.

I couldn't get over the loss of my baby. I felt so empty, so frail. The anxiety that wraps me like a shroud during a shooting was ten times more intense than before.

I needed more and more time, every morning, to change the poor wreck floating on a chemical sea into Marilyn the shining star. I'm four hours late when I reach the set of *Some Like It Hot*. Then I'm too sleepy or too nervous, or I could as well say nervy and sleepous, to remember my lines.

I'm supposed to say: "It's me, Sugar" as I enter my two partners' bedroom. Can't put the words in the right order. I say: "It's Sugar, me," or: "Sugar, it's me." Billy writes the words on a blackboard. They shoot forty-seven takes before I get it right. For another scene, I'm looking for a bottle of whisky. I must open a drawer and ask: "Where is that bourbon?" This is a strange question. Can't remember it at all. Billy writes it on a piece of paper, which he drops inside the drawer. He shoots sixty-seven takes.

When I had slept well and remembered my lines and Billy was happy with the first take, it often happened that I was not satisfied. I felt I had not played as well as I could. I knew what was missing in my performance. I had learned a lot about myself, week after week,

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at the Actors Studio. I haven't tapped my inner being just right. Let's do another take. So maybe Billy disagrees, then I cry and Whitey has to come and rehaul my makeup.

Jack Lemmon and Tony Curtis, who played the two musicians, complained because they had to spend hours on high heels. I also spent hours on high heels, but did I complain?

Tony Curtis hated me. He was jealous because I was the star.

"What is it like to kiss Marilyn Monroe?" a journalist asked him.

"Marilyn? Kissing her is like kissing Hitler."

I don't like you either, buster. I had suggested Frank Sinatra as leading man, but he was not available.

Billy Wilder came to my rescue.

"I have an aunt in Vienna who's an actress. Her name is Mildred Lachenfarber. She's always on time on the set. She never ever botches her lines. Now you could choose her as your leading lady, but I doubt you'd earn a nickel."

I liked Billy. He was so funny with his small hat. We fought, but he respected me. In my first scene, in the train, I was just one of the girls.

"She's the heroine," I told Billy. "You got to do something so people will know."

"We'll pan on her, then we'll have a close-up."

"This isn't enough. You should establish her character right away."

"Don't worry, Marilyn."

"Who's worrying?"

But when I saw the rushes, I knew I was right.

"If you don't find a better way of introducing me, you'd better look for another blonde, 'cause I'll be in Connecticut with my husband."

He spends the evening with I. A. L. Diamond, the scriptwriter. We called him Iz, actually, for Isadore. He said he had added A and L because it looked interesting after I. His real name wasn't Diamond either, but some crazy Rumanian name. If you want funny, you go and get Iz. He wrote *Monkey Business*, where I was the so-called secretary of good old Charlie Coburn.

Okay, so in the morning we shoot the new scene. I'm running like hell on the platform, quite embarrassed by my heels and my ukulele, as the train is already huffing and puffing. Suddenly, a great plume of steam seems to slap my bottom and I jump aside angrily. Wow, isn't that better?

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We went on location south of Los Angeles to shoot beach scenes. I was so glad to leave the stuffy sound stage and breathe fresh air that I said my lines perfectly and got all my scenes right in the first take. They shouted and threatened to resign. Because of me, they whined, we were three months behind schedule and twenty billion dollars over budget—but a movie emerged in the end, as always.

I returned to New York City. I was pregnant again. I miscarried on December 16, 1958. I felt guilty. The drugs had killed my baby, I couldn't deny it.

The Broadway premiere of *Some Like It Hot*, on March 29, 1959, was a fantastic success. The critics called it my best movie. The blonde who plays the dumb blonde isn't dumb, they said. The man compares me to Hitler, but on screen I really appear to be in love with him. This requires talent, believe me.

What's more, the movie was number one at the box office and my company made lots of money.

Arthur had visited me on the set and we had quarreled. My mood usually improved after a shooting, but the loss of my baby spoiled the moment. I expected Arthur to forgive me and comfort me. He did neither. Gosh, I couldn't gather enough strength to reduce my need of pills and alcohol. Arthur complained he had become my pill supplier and nothing else. We hardly talked to each other anymore. I found a new friend: his father, Isadore. He was not a funny guy like Iz Diamond, but a nice old man who didn't care about my fame and my money. He liked me just as I was. Arthur wanted me become a sophisticated New York matron, like Lauren Bacall maybe. He hoped I would cease to be miss Golden Dreams. If I had been able to change myself into someone else, he would have been disappointed, I'm sure. He had fallen in love with miss Golden Dreams, after all, not with some future me.

He completed the script of *The Misfits*, more or less. I was ready to work, but Clark Gable was busy with some other project.

Fox sent me a script, *Let's Make Love*. This was to be number two in my four-movie contract, after *Bus Stop*. My company had produced *The Prince and the Showgirl* with Warner and *Some Like It Hot* with United Artists, then planned to produce *The Misfits* with whoever. In *Let's Make Love*, a theater actress is rehearsing her part in a satirical musical about a very powerful businessman—who happens to be French. Being curious, the man comes to the theater under disguise on the very day when the director is casting the male

lead. As anything can happen in Hollywood, the rich man ends up playing his own role in the musical and I end up falling in love with him, believing he's just another actor.

It could have been a good script, but it was as bland as watered-down oatmeal. I asked Fox to give it to Billy Wilder. I was confident he could tighten the plot and spice the dialogue. On the set of *Some Like It Hot*, he had said he would never work with me anymore. At the Broadway premiere, though, he had told me he was willing to let bygones be bygones. Yeah, but he was shooting a new film with Jack Lemmon and Shirley MacLaine, *The Apartment*, so he was not available. The Studio suggested George Cukor, who had made movies with Greta Garbo, Jean Harlow, Joan Crawford, Ingrid Bergman and other stars.

The script needed some sprucing up, obviously, but screenwriters were on strike or something. Arthur gave a hand. Although it looked like a hopeless case and Arthur didn't usually write funny stuff, the new script was indeed somewhat better than the old one.

We had a director, but no male lead. Fox had chosen Gregory Peck, but he got upset because I upstaged him in the story as improved by Arthur. The studio offered the role to Yul Brynner, Cary Grant, Rock Huston and Charlton Heston. They were unwilling to sing and dance, busy with other movies—or afraid of me.

"Do you remember the French guy?" Arthur asked me. "Since the character is supposed to be French, we might as well get a Frenchman."

"What French guy?"

"Yves Montand. We had dinner with him and his wife last year after seeing his show."

"Oh, sure. The singer. He can sing, but can he act?"

"I told you he played *The Crucible* in Paris with his wife. I went there while you were working in London. He sent me invitations to his Broadway recital because I had met him in Paris. He has played leading parts in several French movies."

George Cukor said he'd be perfect. He sang and danced better than Gregory Peck and the other actors, and he was certainly Frencher. Yves Montand was quite eager to shoot a film in glorious Hollywood as the partner of the most famous star. I told the press he was the most attractive man I had ever met, next to Marlon Brando—and my husband, of course.

In January, 1960, we crossed the country once more. Arthur came along as my manager, sort of. He counted the pills so they didn't need to pump my stomach. He did keep a small

bag with my stuff near the door. He grabbed it when he had to drive me to the hospital in the middle of the night. No love involved, but a kind of business relationship.

When I needed to unload my heavy heart, I talked to Whitey Snyder. I had also found another confidant: Ralph Roberts, my masseur. He was so tall and strong that people called him “Big Ralph.” I had met him at the Strasbergs, as he was a theater actor and a member of the Actors Studio. He was such a good masseur that Paula recommended him to everybody. He didn’t have time to attend auditions for new plays.

“You should go to Hollywood if you really want to become an actor,” I told him.

He followed my advice, but his reputation preceded him, so that he quickly became the stars’ favorite masseur. At least he was mine. He came every morning to my room in the Beverly Hills Hotel and helped me regain some kind of human shape after the night’s decay. Strange as it is, I trusted him like nobody else. I told him things I had revealed to no other breathing soul.

I was staying with Arthur in bungalow #21 of the Beverly Hills Hotel. Yves Montand and Simone Signoret, his wife, resided in #20.

“Hey, let’s go shopping! Let me just get my wig and sunglasses.”

I took Simone to Rodeo Drive. She was not interested in fancy clothes. She wanted to buy blue jeans, which she found very exotic. She didn’t look nor sound French.

“You speak English so well... Better than me, anyway. You remind me of Laurence Olivier. I mean, not the way you look, of course, but the way you speak.”

“I taught English in high school, you know, before I earned enough money as an actress to quit.”

Yves Montand, on the other hand, knew very little English. It didn’t seem to bother him. When he didn’t know a word, he used a French one without missing a beat. He was funny. Arthur gave him English lessons so he could play his part in the movie.

“He dropped out of school and started working when he was eleven,” Simone told me. “He was born in Italy. His parents came to France to escape fascism. He worked as a barman, as a hairdresser, in a factory. At the same time, he was perfecting a song and dance number. At eighteen, he began to appear in Marseille’s music-halls, then he went to Paris.”

Arthur thought we had much in common, Yves and I—we were both artists molded by a tough working-class childhood, overflowing with vitality and sensuality. Hey, this description applies to half the actors in Hollywood. When I looked at Yves Montand, I

didn't see a male version of myself. I saw another Joe DiMaggio—a tall Italian guy with a rough face and a big mouth.

We began shooting in February, 1960. Even after Arthur's tinkering, the script was lousy. I was sorry I had agreed to sign the contract. Yves Montand knew he was playing a foil to a star in a second-rate movie, but he didn't complain. The crew would have preferred to shoot another *Some Like it Hot*. The mood on the set was rather sour.

Arthur and I barely talked to each other, so we spent as much time as possible with Yves and Simone. We had dinner with them most evenings.

Then Arthur went to Nevada, where the producer and the art director of *The Misfits* were looking for landscapes. Afterward, he flew to New York City, pretending his kids needed him, then to Europe, where some theater was rehearsing one of his plays. He couldn't stand me anymore, obviously. He was leaving me, like all the others.

We fought, it was pretty ugly sometimes, but he helped me overcome my despair. Without him, getting ready every morning became oh so difficult. I don't mean physically—thanks to Big Ralph and the others—but mentally. I needed someone to hold my hand, to build up my courage so I could become Marilyn and face the camera.

I just stayed in bed and avoided looking at a clock. Mid-afternoon, Yves called Simone and asked her to bring me over dead or alive. She knocked on my door. I heard a vague sound. I'm floating in the middle of a thick gray mist, so how could I move? A few hours later, Yves came back from the Studio. This guy has a hot Latin temper. Gets angry pretty easily. Kicks my door and shouts.

"Shooting is canceled today because there is one absent. Next time, you tell me before. I'm not your enemy, I'm your partner, but capricious little girls have never amused me."

I was too upset—and messed up—to answer. I poured gallons of bitter tears on my pillow, but it didn't help much. Around 10 P. M., I braced myself and called Arthur in Europe.

"Please call them and fix things up, tell them I'm sorry, oh please oh please."

A little before midnight, Yves and Simone knocked on my door again. Come in, come in! I fell into Simone's arms, sobbing like a child.

"Oh I'm bad, I'm bad, I'm bad. I'm so ashamed. I won't do it again. I promise. Oh please believe me..."

"Good," Yves says. "Just be on time tomorrow morning."

They didn't scorn me. I loved them both. But Simone had to go back to France.

"I play a sketch in a movie about famous love stories," she told me. "I'm a nineteenth-century woman who throws acid at her unfaithful lover."

She seemed rather unhappy to leave Yves alone with me. Please don't throw acid at me. I was having an affair on screen with her husband, just pretending of course, but we did shoot a kiss twenty times now and then. When he held me in his arms and pressed his lips upon mine, sure it was not for real, but quite pleasant nonetheless. I could tell he also found it quite pleasant.

Back from the set one evening, Simone had been gone about ten days, I was supposed to have dinner out with Yves, I felt very tired and fell asleep on my bed. He knocked on the door. As I didn't answer, he came in. I woke up, a bit dizzy and flushed.

"Is anything wrong?" he asked.

"I guess I have a fever. I caught cold on the set, maybe."

"Let me see."

He sat on my bed. He took my hand to check my pulse, or else, I don't remember, he put his hand on my brow. Well, we were so close. All those fake movie kisses were very frustrating, so we tried a few real ones and then, one thing leading to another...

In *Let's Make Love*, I sing *My Heart Belongs to Daddy*. A six-minute number, with eight dancers, which we shot dozens of times after two full weeks of rehearsal. The tight hand-made sweater I wore got so wet after every take that the knitter had to keep making new ones.

When I felt really low, I called Dr. Kris. We had a few long talks on the phone, then she recommended a Los Angeles colleague, Dr. Greenson. He was maybe ten years younger than her, a strong man with deep and heavy black eyes. He had studied analysis in Vienna, but he was born in Brooklyn and spoke without an accent—I mean, just his Brooklyn brogue. He seemed quite bright and self-assured. For discretion's sake, he received me in his Santa Monica home rather than his office. I met his wife and his children. When I faced him, I felt safe, somehow. We talked about this song, *My Heart Belongs to Daddy*. I had always longed for a father. I hoped Arthur, who was older than me and so intelligent, could play the part. I don't know why, he had become one more employee, by and by, like my make-up guy and my driver. A yes-man. Yes, Ma'am. He prepared my pills, uncorked my champagne bottles, worked on the script when I asked him to. Yves was really different. He treated me like a spoiled child. He wanted *me* to obey him.

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"You be on time tomorrow," he ordered.

Even though he wasn't older than me, he was just the daddy I needed.

Yves plotted with Dr. Greenson to control my intake of pills. I mixed all kinds of barbiturates and narcotics in a dangerous way, Dr. Greenson said.

"How do you get them?"

"I go see doctors."

"Several doctors?"

"Well... I know I shouldn't."

"You coax them into prescribing strong stuff. They don't dare refuse the demands of a world-famous star, of course. You'd better stop."

"I promise I'll stop, doctor."

"They know what you're doing. They're just like common criminals."

He wondered whether my insomnia didn't have a simple physical cause.

"You're underfed, maybe."

"What do you mean?"

"You don't eat enough. You should try a sandwich and a glass of warm milk in the evening. This will help you sleep."

"If I eat too much, I'll be fat and ugly. You know, I eat lots of raw carrots, twelve a day at least. They're delicious with champagne."

"You should eat meat and fish. Your skin is too white. You should check your blood count."

To please Yves and Dr. Greenson, I nearly stopped taking pills. That is, I took only one kind of sleeping tablets. I came to the set nearly on time, I got my lines right in a few takes. Instead of looking at Paula for approval, I felt happy when Yves was satisfied.

"You know why Yves Montand sees you as a spoiled child?" Dr. Greenson asked. "Because you choose to present yourself to the world as a child. You consider yourself a poor ill-treated orphan. When you need to feel a victim, you provoke and irritate the people around you until they become angry. Then you can say, Oh I'm a poor orphan whom nobody loves."

We didn't try to hide. We couldn't have. As soon as the rumor of "Yves-and-Marilyn" began to float in the Hollywood breeze, journalists and photographers crept into the bushes around the Beverly Hills Hotel to spy on us. We went to Tinseltown parties together. I was

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free, since I didn't live with Arthur anymore. The journalists spilled lots of ink over the affair. They tried to whip it up into a big scandal, because I was still married. Fox hoped that the publicity would bring the public to the theaters, and that nobody would notice how mediocre the movie was.

The French press asked Simone about it, of course.

"If Marilyn is in love with my husband," she said, "it proves she has good taste. For I am in love with him too."

Our idyll didn't last long. After two months, the shooting came to an end and my happiness too. Yves went back to France and to Simone. He talked to the French journalists, too.

"She is an enchanting child, I've never met anyone quite like her, but she is still a child. I'm sorry, but nothing will break up my marriage."

What else could he say? He wanted to assuage Simone's pain. I knew it was more than a small passing thing. When a man loves me, I can sense it. He revealed his true feelings to a journalist I knew.

"If I was not married and Marilyn was not married, I would not object to marrying her."

I was sorry he hadn't said it to me.

In July, 1960, I spent a few days in New York City. They were waiting for me in Reno, Nevada, for the shooting of *The Misfits*. Susan Strasberg drove me to the airport.

"I've never seen you so tired, Marilyn."

"They just left me one week between the end of the last shooting and the beginning of the next one. I feel sad because fate plays jokes on me, like giving me a taste of happiness and then depriving me of it. I met the right man, but he went away."

"Aren't you flying to Nevada?"

"I'm going to Los Angeles first. I have to attend a party tomorrow night. You know, the Democratic convention is taking place over there. The party is in the beach house of Peter Crawford, whom I knew when he was an actor. Gee, that house is grand. It belonged to Louis B. Mayer, you know, who founded MGM. You could put a battleship in the swimming-pool. Pete is honoring his brother-in-law, Jack Kennedy."

"The senator? The candidate for president?"

"I hope he is elected. It would be nice to have a young and handsome president, for a change."

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After two days in Los Angeles, I flew to Reno. When the plane landed, I saw a whole welcome committee on the tarmac. There was a fat lady who carried a bunch of flowers and several guys who looked like City Hall officials. One of them came aboard.

“Is this crowd for me?” I asked him.

“Of course, miss Monroe. The wife of the Governor came in person. She’s carrying the flowers.”

“Nobody told me about it. I’ll have to change and put on some make-up.”

They were waiting for Marilyn Monroe, but I was wearing blue jeans and tennis shoes and my own skin. I changed into one of my dresses in the plane’s lavatory. I combed my hair. I painted my eyes, lips and cheeks, and so on. I saw a half-baked Marilyn in the mirror, but what else could you expect? It took me only thirty minutes.

The fat lady and the others must have been puzzled: the door of the plane had opened, the passengers had come out, and then they had to spend half an hour in the blazing sun waiting for me. You want Marilyn? Got to merit her.

In *The Misfits*, I was playing a woman, Roslyn, who doesn’t know what to do with herself. She’s in Reno to divorce. There she falls in love with an old cowboy who catches mustangs—ponies returned to the wild—with two companions. The three guys don’t know where they’re headed either. In the 20th century, horses and cowboys have become useless. The captured mustangs are turned into dog food. Arthur had met such cowboys when he was in Reno himself for his divorce.

For the first time, I played a part custom-made for me by someone who knew me inside out, my own husband. Roslyn is confused, like me. She’s fragile, she’s anxious. She’s late, she mumbles and stutters, she says things that make no sense. People would see the real Marilyn Monroe at last.

Playing fragile and anxious is the easiest thing in the world. Gee, Yves Montand’s ghost ran circles in my head. Now that he was gone, nobody told me: “Stop taking those pills” and: “You be on time tomorrow.” My bad habits took hold of me again.

It soon became obvious to me that I had fallen into a trap. For one thing, the script lacked a plot and any trace of humor. The three cowboys catch horses and get drunk and exchange hollow words about life being meaningless and so on. They don’t need Roslyn. My part was meaningless—a kind of sorry add-on. The original short story didn’t even have such a character. The worst thing was that a man who knew me too well and hated me had injected

into this custom-made part all the dirty intimate stuff we threw at each other when we quarreled.

Three years before, when he had written the first outline of the script, he was in love with me. The Roslyn he had created then was a fine woman—generous, idealistic, radiant. She loved animals and tried to prevent the cowboys from sending the mustangs to the slaughterhouse. In the final script, she had become a bitter half-crazy bitch. What's more, Arthur rewrote entire scenes after the day's shooting, handing me my lines at midnight. He knew I liked to rehearse the next day's dialogue in the evening with Paula. When I received new lines at the last minute, I panicked. I studied the scene instead of sleeping. Hey, you really want me to be late on the set. The film rested on Clark Gable's shoulders. Arthur had pushed my character to the edge of the story. I was playing a shallow supporting role, like I had done long ago in *Asphalt Jungle*.

Why don't you go on without me, then? Why should I get up? On time? Whose time? Leave me alone... My belly hurt like hell. I couldn't eat anymore. I missed several days of shooting. Clark Gable was a good man. He became a real friend. I had always admired him so much. He understood my pain at Arthur turning Roslyn into an ugly caricature of me. His own lines kept changing all the time. He was as exhausted as I was, having to play a very physical cowboy in Nevada's summer heat. The temperature stayed over one hundred in the shade, and we shot in the sun most of the time. I reached such a state, for lack of sleep, that I could hardly stand up in front of the camera. Every morning, Whitey Snider made me up in my bed. Flipped me like a pancake. Big Ralph propped me up so I walked to the car, then from the car to the set. The cameraman said he couldn't shoot me anymore because my eyes didn't focus.

The shooting was interrupted. They blamed it on me. Clark Gable took my defense, saying Arthur should stop changing the script every night. The main culprit was John Huston, though. Maybe I was addicted to barbiturates, but he was addicted to gambling in a bad way. He also drank a lot, like the true Irishman he was. We shouldn't have chosen this guy for a movie to be shot in Reno. He spent all his nights in the casinos, losing thousands at craps. He didn't give a damn about the movie. He fell asleep in his director's chair. When he woke up, he didn't know what scene he was shooting. The casinos threatened to seize our cameras and props unless he came up with the fifty thousand he owed them.

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He needed ten days to milk United Artists, who financed the movie, for extra money. He made up a story that I couldn't act anymore and had to rest. So now I was the scapegoat. Everybody knew I swallowed too many pills. John Huston asked Dr. Greenson to wean me. At the time, I didn't understand that Dr. Greenson used the barbiturates to control me. Medication is okay, he said, if you take it as prescribed. He wrote down the exact doses. I had to obey him. He sent me to a clinic anyway. Some rest couldn't hurt, but Dr. Greenson didn't really want me weaned.

Joe DiMaggio visited me in the clinic.

"Life is strange, Joe, don't you think? Remember that stupid scene when you and Frank Sinatra broke through the door of some old lady? Me, I was hiding under my sheets with what's his name—gee, I have forgotten the fellow's name."

Frank Sinatra also came to the clinic, as well as Marlon Brando. All the top guys loved me!

When I flew back to Reno, the cast and crew gave a warm welcome party for me. They had enjoyed their ten days off, so they were quite relaxed and happy. I felt much better too. I had lost weight. Everybody said I had never looked so good. The shooting resumed without any mishap and ended a little after mid-October. The movie was wobbly but moving, as all the actors play characters close to their own selves. The critics found it boring, and so did the public.

I was back in New York on November 11. On November 16, Paula Strasberg called me on the phone with awful news:

"Clark Gable just died of a heart attack."

"Gosh, I killed him."

"Of course not. You know his heart was weak. He had an attack just after we finished shooting, and that was already his third. Look, the man smoked three packs of cigarettes a day for thirty years."

"He was always so nice to me on the set, but he must have been boiling inside when I was late."

"I felt he was much angrier with John Huston for his gambling and drinking."

"I considered him my father. I mean, when I was a kid, it was a fantasy of mine, that he was my real father. Maybe I was rotten on the set to hurt him, because my father forsook me. Now I feel I'm really an orphan."

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“Forget that Freudian bullshit, Marilyn. This Dr. Greensonofabitch isn’t a good influence, let me tell you...”

“I think he was fifty-nine. His wife is pregnant. He was so happy. His first child, you know.”

I told the press that things were over between Arthur and I.

He lived in the country house. The room where he worked in the New York apartment was empty. My inner life was as empty as this room. It certainly didn’t contain a single particle of hope. Was I to spend the night of Christmas alone for the first time in my life? Gee, can’t stand the prospect. I leaned out of the window. It would be so easy. Just have to yield to the part of me that wants to do it. Never suffer anymore... Suddenly, two strong arms grabbed my waist. Lena, my maid.

“No, no, Lena, let me die! I want to die. I don’t deserve to live. What have I done with my life? It’s Christmas... Christmas—Alone—Nobody!”

On Christmas day, the doorman called to announce a visitor:

“Mr. DiMaggio here to see you, miss Monroe.”

“Oh, sure, let him come up!”

I opened the door as soon as he knocked.

“Merry Christmas, Marilyn.”

“Oh, Joe, I’m so glad you came... What’s this, a Christmas tree?”

“It does look a little like one, but it’s some kind of Brazilian plant. It won’t die like a tree.”

“You’re so sweet.”

I sometimes spent a night with him. I also shared Frank Sinatra’s room in the Waldorf Astoria for a few days. Often, when I felt too lonely, I slept in Lee and Paula Strasberg’s apartment.

I wondered whether I would reach a ripe old age. I was getting used to waking up in the hospital after swallowing too many pills. Who brought me there? I remembered nothing. They gave me oxygen and pumped my stomach again. I wrote my will. I was not that rich, actually. If I hadn’t received a share of the profits of *Some Like It Hot*, the only box-office winner my company ever produced, I would have been poor. I bequeathed ten thousand dollars to Berniece Miracle, the daughter Gladys had with her first husband, Baker. She had written to me a few years before from Florida and I had seen her twice. Also ten

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thousand to May Reis, my private secretary (who had just resigned to get married), and five to the Rostens for the education of Patricia, their daughter. I established a trust fund for my mother's care. I left my belongings and the bulk of my estate to Lee Strasberg.

Rupert Allan, my Hollywood press agent and friend, had just moved to Monte Carlo with another client of his, Grace Kelly. After seeing *The Prince and the Showgirl*, she had decided to become a princess. Lois Weber, my New York press agent, was too busy to represent me on both coasts and travel with me, so Rupert recommended a colleague, Patricia Newcomb.

The first thing she took care of was my divorce.

"We'll do it in Ciudad Juarez. This means flying to El Paso, Texas, and crossing the border."

"You mean in Mexico?"

"Your attorney is coming with us. He knows a judge there. He's pleading incompatibility of character. We'll do it on January 20th. This is the day of Kennedy's inauguration, so I hope the press will be in Washington, D.C. and will leave you alone."

A small bunch of journalists and photographers did follow us to Ciudad Juarez, but Pat kept them at a distance. While I felt awfully sluggish, she was full of energy. I pitied all these reporters, they were working after all, so I said a few words to them before flying back to New York.

"I'm upset and I can't talk a lot right now. I'm quite hungry, too, but I didn't even have time to get a plate of tacos and enchiladas!"

I returned to New York City. My 57th street apartment. Actors Studio member. Third time divorced. Pills my only friends. Promised Dr. Greenson not to. Dr. Greenson tells me what to do. Marilyn, do. Marilyn, don't. See my New York shrink every day Dr. Kris. Prefer Dr. Greensonofabitch. Can't talk to her. Pretends to listen. Says I'm zonked. Her stupid German accent like nazis in war movies. "Herr Freut konzitert me his atoptif taughter." Suggests I stay in the hospital. "For you to rest ant pekome stronk akain."

Yeah, in Los Angeles, spent week in a clinic. Done me good. Joe came visit. Also Marlon and Frank. Fans sent me flowers, bedroom like a greenhouse. Lost weight even. Yes, yes. Never been so good-looking, they said.

I enter the hospital. Huge white buildings near my apartment, on East River. Cornell University—New York Hospital. Sign in as Faye Miller, avoid darn publicity. They take

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me to a smaller building in a courtyard. Payne Whitney Clinic. Hey what? Doesn't look like the Los Angeles clinic. Iron doors and grates. Loud locks. What kind of a place is this?

"We're following your doctor's instructions," they say.

"Please oh please, I want to keep my fur coat."

Undress? Why should I? My shoes, I need them, gimme back. Hate this hospital shitty-shirt and slippers. What are you doing to me? Gosh, what kinda bedroom, paddle cell I mean padded... No, no, don't lock, don't! Can't stand locked door, never could. Bars on the window. Glass pane in the door so they can watch me. No TV, no radio, no phone, no flowers, no nothing. They jailed me. Committed no crime, though.

I know oh I know: they locked me into a lunatic asylum like Gladys. Psycho ward. I ain't crazy! Lemme out! I ain't an orphan! My mother ain't dead! I want out! Open the door! Please please please open the door. Will you open the fucking door or what? I'll be nice, won't make any trouble. I'll talk to Dr. Greenson. I'll get off the pills. Why don't you answer when I call? They're crazy to lock me up. Dr. Kris tricked me. I hate them. I'll show you. Help! Help! They kidnapped Marilyn Monroe! I played a mad girl once, I remember, *Don't Bother to Knock*... A separate bathroom, but locked. Hey, I want to go to the bathroom! I throw a chair at the door's window pane to break it. Two hefty male nurses come in.

"What took you so long? Let me out! I ain't crazy. I haven't asked you to lock me up, have I? Hey you, don't touch me! Leave me alone! What's this syringe? Are you a doctor? I don't want a shot."

So maybe you think you can put me to sleep with a drop of pap. You must be kidding! Not unless you inject a gallon of barbiturates... They tie my wrists to the side of the bed with leather straps. Can't believe it. Is this the way you treat the number one star in the world? I'm Marilyn Monroe, you bastards!

Next day, two doctors.

"Good morning, miss Monroe. How are you today?"

"What kind of question is this? I'm mad! I mean, I'm mad at you jerks!"

"You're a famous person. Many people dream of being in your place. Why are you so unhappy?"

"Dream of being in my place? Locked up and strapped to their bed? I'd have to be nuts to be happy here and I ain't nuts."

"You aren't indeed. That's what we told the press."

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"You talked to the press? I should talk to the press, not you."

"We told them exhaustion drove a wedge between your mind and reality, as if you had suffered a bout of schizophrenia."

"But that's not true!"

"Of course not. In fact, it is not exhaustion but substance abuse that provoked the bout of schizophrenia."

"You're the biggest bouts of shittophrenia I've ever met! I want out!"

Gee, these doctors are dummies. The poor women in the other cells yell like beasts in a zoo. I decide I have to keep my composure, real quiet, play the part of a well-behaved young lady. If the prince of Mighty-Cargo had met me instead of Grace Kelly, would he have married me? Then I would have become a princess. Swarms of nurses of both sexes, doctors, secretaries and other hospital personnel come gawk at me through the glass pane in the cell door. I smile, I say Hi in my sweet-child voice. After a while, some guard-in-chief lets me write a letter and give a phone call.

I write to the Strasbergs.

Dear Lee and Paula,

Dr. Kris has had me put into the New York Hospital—pstikiatric division under the care of two idiot doctors. they both should not be my doctors.

You haven't heard from me because Im locked up with all these poor nutty people. I'm sure to end up a nut if I stay in this nightmare. please help me Lee, this is the last place I should be—maybe if you called Dr. Kris and assured her of my sensitivity and that I must get back to class... Lee, I try to remember what you said once in class "that art goes far beyond science"

And the science memories around here I'd like to forget—like screaming women etc.

please help me—if Dr. Kris assures you I am all right you can assure her I am not. I do not belong here!

I love you both

Marilyn

P.S. forgive the spelling—and theres nothing to write on here. I'm on the dangerous floor its like a cell. can you imagine—cement blocks they put me in her because they lied to me about calling my doctor and Joe and they had the bathroom door locked so I broke the glass and out side of that I havnt done anything that is uncooperative

I call Joe. He is in Florida, coaching the Yankees during their winter training. He jumps into a plane and comes to my rescue on the fourth day of this torture. As he needs Dr. Kris to give her authorization, he calls her, in the tone of voice he uses when he barks orders to the Yankees.

“You tell’m to let her out or I’ll take the damn hospital apart brick by brick!”

What a guy! We leave through the basement to escape the journalists. I hold on tight to my savior’s strong arm. He drives me across town to another big building, Columbia University—Presbyterian Hospital Medical Center. There I have a private room where I am able to rest. This time, I am in control. I appreciate not only the TV, the radio, the phone and the flowers, but especially the pleasure of receiving visitors. Joe comes everyday—the only man I can really trust. Norman Rosten also comes several times. Haven’t seen him in ages.

I check out three weeks later. Six policemen and a dozen strong orderlies keep the pack of fans and reporters at bay.

“I feel wonderful, my friends. Had a nice rest. See you soon!”

I know one thing: Toktor Kris has lost her best patient.

Although the whole world adores me, I am alone. I find my New York apartment ghastly. A kind of evil energy radiates from the empty room where Arthur used to work. Can’t even dress. Spend the day in night-gown. In winter, I don’t sleep naked. Own two blue night-gowns. Sit and stare into emptiness. Eat caviar and hard-boiled eggs while drinking champagne. New secretary, Marjorie Stengel. She has worked for Monty Clift. He recommended her to me. Hell, can’t find anything for her to do. Nobody writes to me, nobody calls. Pat Newcomb, my new press agent, receives all the mail and phone calls. Who’d call me at home? My friends? Have none.

Now and then, Joe spends a night. Nice to snuggle in his arms, but nothing to say. Outside Joe, Marge and Pat, nobody comes but the doctors who prescribe the pills.

According to the Hollywood gossip sheets, Clark Gable’s wife blames me for his death. Not me—bad heart. Now everybody is going to believe it. I sometimes wish I had died like Clark. Climb on window ledge and jump right away, not hesitate even a second, otherwise people see me on ledge and things get messy, crowd down there shouts and whistles, oh God. When fall from so high, they say you pass out before hitting ground. Close eyes,

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clench fists, ready to go, be brave Marilyn. But can't jump in night-gown. Also need to make up face and gee, my hair roots, can't die with brown hair roots.

I talk to Pat, how tempting to jump and be done with this shit. She talks to the Strasbergs, Norman Rosten too.

"Move back to Hollywood, Marilyn," they say.

I have come here to live with Arthur. Not my town. Norman says jumping outta window a New York specialty. Void attracts them. In Los Angeles, people live in low houses.

"Over there," he says, "you'll forget this jumping urge at least."

I keep my 57th street apartment, though. Be able to return to New York now and then to attend classes at Actors Studio.

I have lived on Doheny drive seven or is it eight years ago. I still have the landlady's number. Yes, there's an apartment for rent, she says.

Clark Gable's wife invites me for the christening of John Clark, their son. She doesn't complain I have killed Clark. One more press fib.

When he is not busy in Florida, New York or San Francisco, Joe comes and spends a few days with me. He is still very much in love. The only man I can really count on.

I also meet Jack Kennedy again at Peter Lawford's place. He looks pretty much the same, except he is now the President of the United States. One of his friends lends us a house in Palm Springs, where we spend a night together. I don't know whether I like the man. I do it for the pleasure of realizing what could have been a dream of Norma Jean when she was twelve. Making love to the most powerful man in the world! The secret service guys stand outside with some kind of gadget that could order bombers to destroy the whole stupid planet. So Grace Kelly has seduced the prince of some country that's smaller than our bedroom.

The most powerful man in the world has a reputation as some kind of crazy lover, needs five broads a day and so on. Gee, the poor guy can barely move. Something wrong with his back. He wears braces, is often half-paralyzed, suffers hell, but hides his handicap from the public—just like president Roosevelt, actually.

"If Big Ralph was here," I tell him, "he would at least reduce the pain."

"Who's Big Ralph?"

"My special masseur. Wait, I'll see whether I can get him to come here."

So I call Big Ralph.

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“Hi, this is Marilyn. I’m with the President. I tried to give him a lower back massage, but he’s still in pain. I told him maybe you could help.”

“Where are you?”

“Palm Springs.”

“I need at least two hours to get there. You don’t want to wait that long. Besides, I bet he’d rather get a massage from Marilyn Monroe.”

“That’s what he says, too.”

“Tell you what. I’ll explain how you should do it exactly.”

So I give the President a massage, following Big Ralph’s distant instructions. When it is over, the President grabs the phone.

“Thanks, Big Ralph. I do feel much better.”

“You know, you should strengthen your lower back muscles. There are specific exercises. Lying on your back, you bring your knees to your breast...”

He gives him some advice, and also the phone number of a good masseur in Washington.

My steadiest visitor on Doheny drive is both Joe’s and the President’s friend: Frank Sinatra. I go to Las Vegas in June, 1961, for the premiere of his new show. In August, I spend a week-end on his yacht. To attend a gala evening with him, I want to wear a golden low-cut dress that I have left in New York City. I call Lena, my Manhattan maid.

“Lena, do you know my gold lamé dress? Fold it carefully, grab a suitcase, jump into the plane and bring it to me.”

“But, miss Monroe, I don’t have enough money to buy a plane ticket.”

“Oh I bought it already. They’ll give it to you when you go to the United Airlines counter in the airport.”

I don’t see Joe or Frank that often. When they’re away, I do nothing all day long except visit Dr. Greenson. Seven days a week, Saturday and Sunday even, I go to his Santa Monica home late afternoon, when he comes back from his city office on Roxbury drive. After my therapy, which lasts one hour, we drink champagne. Sometimes I stay for dinner and then I wash dishes with Hildi and Joan. Hildi his wife, Joan his daughter, Danny his son. I often go shopping with Joan. I teach her how to make up her lips and eyes. When I feel too low, I spend the night at the Greensons’, like I used to do in New York at the Strasbergs’. I need to live in a family, Dr. Greenson says. A psychiatrist isn’t supposed to see his patients when they’re off the couch, but I’m a special case.

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Dr. Greenson says I'm beginning to control my intake of drugs. We still have to be careful, though. Instead of Nembutal, the barbiturate I gobble in quantities that would have killed a horse, he prescribes chloral hydrate.

"This is a straightforward hypnotic. It's been in use for more than a century. You'll just sleep and that's all. But you must stick to the exact dose."

"How do I know the exact dose?"

"I'll write it down on the prescription sheet."

The best thing with Arthur Miller, he counted my pills. I just hate to count. Wonder why. Should ask Dr. Greenson. Because I didn't have a father? The exact dose. Must stick. Yeah, but how many did I swallow already?

The cleaning lady can't wake me up. She calls the emergency medics. They give me oxygen, pump my stomach, the usual shit.

In December, 1961, I tell Dr. Greenson I have lost hope.

"I just have nowhere to go. I won't shoot another movie, that's for sure. I might as well die."

"You know, Marilyn, you don't suffer from full-blown schizophrenia, like your mother, but you've certainly inherited some schizoid tendencies. You shouldn't be left alone. I believe things would go better if you accepted to have a nurse in your house when you're not feeling so great. I mean two nurses: one for the daytime, one at night. They would also check the doses for your pills."

I like Dr. Greenson, but I hate his nurses. Where has he found them? I can't stand either one. They try to boss me as if I were a child. Go away! Leave me alone! This is a free country: I'll take as many pills as I want!

I accept to replace the nurses with a kind of housekeeper or governess, Eunice Murray. Dr. Greenson's friend—weird woman, who has sold him his big house. She's sixty. Her face is kind of twisted and she looks like a weasel, but she seems serious and trustworthy to me.

Dr. Greenson's colleague, Dr. Engelberg, delivers my pills. He also injects what he calls "vitamins" into my arm. This reminds me of the "hot shots" which the set doctor gave me when we were shooting *River of No Return* in the Canadian Rockies.

Joe spends Christmas with me, brings a tree, same as last year. We go to the Greensons' for Christmas dinner. Joe doesn't like them.

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“You talk about the shrink all the time,” he says. “You’ve become dependent on him. He wants to control you. My patient, the greatest star in the world! If you felt better, he’d lose you, so he prefers you stay sick and depressed. That Murray witch is his spy. Always seems to be snooping and listening behind the door. You should never have sent Big Ralph away.”

Oh yes, Dr. Greenson thought Big Ralph played too important a part in my life, so he asked me to stop seeing him.

“Too many people revolve around you,” Dr. Greenson says. “Taking advantage of you. Two Ralphs in your life are one too many, you know.”

I always call him Dr. Greenson, but his first name is Ralph.

Following Dr. Greenson’s advice, I bought a house in the Spanish colonial style, what they call a hacienda, in Brentwood off San Vicente Boulevard. It’s kind of hidden in a dead-end street called Fifth Helena Drive. It looks like Dr. Greenson’s house, really, but much smaller. There’s a big living-room and several small bedrooms, all on one level. This house needs old Mexican furniture, Mrs. Murray said. We went to Mexico together to buy stuff. I have never owned a house. Dr. Greenson hopes that being settled in my own home will stabilize my character. I have always thought I’d buy a house someday to live there with my husband and children. Buying one alone feels like a failure. Dr. Greenson made me do it.

When I unpacked my things, I found this notebook. I tried to update. Wrote when I couldn’t sleep.

I like to spend a day now and then at Peter and Pat Lawford’s Santa Monica house. Can see the waves from the verandah. Don’t have to go on the beach and be bothered by people. The water up and down. Energy surfs the waves. The ocean doesn’t age. One hour or twenty years doesn’t make much of a difference to it.

Jim Dougherty had gone to Borneo or somewhere. I watched the guys on Muscle Beach. The sea breeze cooled my skin and brought vague dreams to me. Something was bound to happen, I thought then—so long ago. I expected I’d meet a fairy godmother of some kind. “Do you want to become rich and famous, Norma Jean?” she would ask. Rich and famous! She didn’t mention a cost.

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I tried to play volley-ball at the Lawfords', like I used to, but as soon as I moved too much I began to faint. This is due to the pills, for sure. "I'll decrease the doses as soon as you feel better," Dr. Greenson says.

The Lawfords gave a dinner for Bob Kennedy—Pat and the President's brother. He was stopping over on his way to Japan. The Attorney General. They sat me at his side. He seemed as clever as the President, less harsh, also less handsome. I asked him whether he was going to do something about civil rights. I was impressed at how serious he was about the subject.

Hollywood rumor says I have become his mistress after that evening. Gosh, the man is a devout catholic, married, has at least twelve children, lives in Washington. I have spent a night with his brother as a gift to poor Norma Jean. I want—I still hope—to get a real husband who'll share my house and give me children.

Arthur Miller has met a photographer on the set of *The Misfits* and married her. I can't blame him, but tears well up in my eyes when I think about it. Even Frank Sinatra talks of marrying some starlet.

I still owe two movies to Fox. They want me to star in a remake of *My Favorite Wife*, a 1940 Cary Grant comedy. The new film is to be called *Something's Got to Give*. I don't play a ridiculous singer, but a married woman, mother of two children. Due to a misunderstanding, she thinks her husband doesn't want to see her anymore. She decides to flee to the Far East. Her plane goes down in the ocean, so everybody thinks she's dead. She survives, actually, and spends five years on a desert island with another passenger. Then a ship rescues them and she comes back home. Well, what would you expect? Her husband just married some woman. How she conquers him again is what the story is about, of course.

The film will be directed by George Cukor, like *Let's Make Love*. Dean Martin plays the husband, Cyd Charisse his new wife, Tom Tryon the desert island companion. We'll begin shooting in April, 1962.

First day of shooting. I haven't seen a camera for one year. I'm scared. I have always been scared in front of a camera, anyway. Its awesome power. I love it and I fear it.

I have never played a mother. A dancer's flashy make-up and clinging dresses wouldn't do. I need to create a sober and serious look. Now that Grace Kelly is gone, maybe I could

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try to replace her. I have been Marilyn Monroe long enough. Such a pain in the neck to turn into her every morning. The sunglasses and wig I have to wear to walk in the street. Can't visit Japan or France like other people. Where can I walk around without being bothered? Burma? Even my close friends mistake me for Marilyn Monroe.

George Cukor despises me. Despises all women actually. He's a megalomaniac and maybe a maniac. He ordered a full size copy of his Sunset Boulevard home built on the set, down to the very bushes of his garden. Who ever heard of such an outrageous idea? If a bush seems a teeny bit off-color to Mr. Cukor, he asks the painters to work on it some more. I hate this house. It is as twisted and convoluted as Mr. Cukor's mind, full of nooks and crannies where they hide lights and cameras. I often wonder where the light is coming from. I even look for the camera.

For some strange reason, what was funny in 1940 often falls flat twenty years later. Actually the story is based on an old Tennyson poem, *Enoch Arden*, which is about as funny as a funeral. A first writer worked on the script, then a second one. They brought in Nunnally Johnson, who has written two of my movies: *We're not Married* in 1952 and *How to Marry a Millionaire* in 1953. I've talked a lot with him, convinced him to polish my lines until I feel comfortable with them. But then he went to England. George Cukor replaced him with a set writer and began to change the whole bloody dialog. He wants to humiliate me by forcing stupid lines on me. The man was considered a good director in the thirties, but now he's an old cranky fellow who hasn't made a good movie in years. Oh God, I can't stand it. I feel so tired. Despite Whitey Snyder's genius, getting Marilyn Monroe to look like herself takes longer every day.

Fox has new bosses—fools, businessmen, accountants who know nothing about the movies. They're wasting millions to shoot the most expensive and boring film in history, *Cleopatra*. I was willing to play the part, but they gave it to Liz Taylor. She gets two million dollars, plus ten percent of the gross. People criticized me when I brought twenty-seven suitcases to London, but she sent one hundred and fifty to Italy. Where are my favorite cameramen and the light wizards who know how to give Marilyn her luscious skin? In Rome, on the set of *Cleopatra*. Fox is investing so much dough that it totters on the brink of bankruptcy. They have decided to sell their big Los Angeles lot to cover *Cleopatra's* budget overruns. *Something's Got to Give* is the last movie to be shot here, then the place will be torn down.

While I'm only getting the 100,000 dollars of my salary, Dean Martin is paid three times more. My movies have earned Fox sixty million dollars so far. I'm their most productive employee. With this new film, I could save the whole doomed Studio from going under. This doesn't prevent them from threatening me because I come a few hours late now and then. They check my comings and goings. When I pass the Studio's gate in the morning, I see that the guard jots down the exact hour. I get off the limousine and enter via a backdoor.

Friends tell me that Liz Taylor is much worse. They have to suspend *Cleopatra's* shooting all the time for some silly reason or other. She falls in love with Richard Burton, her partner—the newspapers put the idyll on the front page day after day. They have to stop shooting for three full weeks: Richard Burton has beaten her so bad while drunk that her face looks like mashed potatoes.

They accuse me of being temperamental, undependable, unreliable and what else. I did ask that Cyd Charisse's hair should be darker than mine. A simple and sensible request. Since people come to see a Marilyn Monroe movie, my hair should be the only one that attracts attention. George Cukor is so perverse that he hid a blonde within the crowd of extras in a street scene. He knows there's never any blonde in my movies except me. I had her sent away immediately, of course.

I caught a virus in Mexico, I guess. I throw up as soon as I try to eat. My temperature hovers between 100 and 101. According to my contract, I can go home when it reaches 103. George Cukor sees I can hardly stand on my feet, so he shoots every little scene thirty times. The man is a sadistic moron. He wants to sabotage the shooting. From the very start, he has said he doesn't want to make that film.

All the Fox people despise me because they remember me as a gin rummy girl earning a hundred dollars a week. They watch the shooting on the sly. I feel they're lurking in the dark corners of the house. They hope to see me stumble and fall.

I shoot the dog scene. When I come back home after my five-year odyssey, my dog is supposed to lick my chin, which proves he recognizes me. Cukor shoots and reshoots the scene for more than three hours. I have asked them to name the dog in the story Tippy, which was the name of a dog I owned as a kid, but his real name outside the movie business is Jeff. He is a funny but very stubborn cocker spaniel. He doesn't lick my chin even once.

"Come, Jeff," I whisper, "come and kiss me! Come on, Jeff!"

We're in a sound stage. Huge floodlights are supposed to simulate the warm sun of California. Hot is more like it. Poor Jeff's tongue hangs like a piece of red cloth and my make-up is beginning to melt. Everybody says we should change the dog, but Cukor insists: "Once more!" Meanwhile, I'm kneeling and fondling Jeff. The set doctor gives me a hot shot so I can hold on. I laugh when I see how the poor mutt tries to please us by leaping and dancing and doing all kinds of antics except what's written on the script. At the end of the day, he seems to feel fine but I am utterly exhausted.

So then the next day my fever keeps me in bed, then on another day I give up going to the Studio because I'm more than eight hours late.

What hurts me more than anything is that Dr. Greenson has gone to Europe and Israel on vacation. He has been taking care of me seven days a week for more than a year. Lately, our sessions lasted up to four or five hours. He deserved a break, maybe. His wife wanted to visit her old sick mother in Switzerland, or something. He did abandon me, though.

He ain't looking over my shoulder? Great! I send away the awful spy, Mrs. Murray. The old ghoul is trying to turn me into her puppet. When some friends came to visit me, she told them I had gone to a production meeting, although I was resting in my bedroom. She gives me orders and treats me like a child.

The Fox people refuse to believe I'm sick. They pretend that my whims—which is what they call my illnesses, although several doctors confirmed they are real—have cost them one million dollars already. They stopped shooting *Cleopatra* for five months when Liz was ill, but I'm not allowed to stay home and rest for a few days.

Go to hell with your million dollars! Get Liz Taylor to replace me. On May 17, I'll fly to New York. I have an appointment. I have told the Studio about it more than one month in advance. At the last minute, they try to prevent me from going. Are you kidding? I mean, good publicity for me will benefit the film, won't it? Or maybe you hate me so much that you don't care about benefits. Pete Lawford wants me to surprise the President. He is attending a big gala bash in Madison Square Garden on May 19 to celebrate his forty-fifth birthday. Fifteen thousand wealthy Democratic Party donors will be there, having paid one hundred to one thousand dollars. Maria Callas, Ella Fitzgerald, Peggy Lee and other celebrities are to perform. To crown the evening, I'll sing *Happy Birthday to You!*

I ask Jean-Louis, who made my outfits for the movie, to create a special dress for me.

"I'd like to wear just diamonds and pearls, so I really shine in the light like a star."

Albert & Marilyn

“You can pay one billion dollars, perhaps, miss Monroe?”

“What about five thousand?”

“Then I sink I use fake diamonds, rhinestones zey’re called.”

The stones, six thousands of them, are embroidered in a kind of transparent body stocking. They seem to be glued onto my naked body.

I have rehearsed singing *Happy Birthday to you* for weeks. I want it to sound as sexy as possible. Before leaving, Dr. Greenson has asked his children to take care of me. Joan says I sing quite well. Danny has written some political jokes I can use after singing.

Maria Callas sings first.

“And now,” Pete Crawford says, “on this occasion of your birthday, Mr. President, Marilyn Monroe!”

Everybody cheers and applauds and whistles, but no Marilyn Monroe enters the stage. I am not supposed to, and anyway the hairdresser is still working on my head. Gosh, I hope I won’t stammer or make a mistake. I drink a few glasses of champagne to relax and feel stronger.

Ella Fitzgerald sings.

“And now,” Pete Crawford says, “a woman who needs no introduction: Marilyn Monroe!”

The drums roll, the crowd roars and howls, but the stage stays empty until Peggy Lee comes running, as if to replace me. After she’s sung, Pete gives me my real cue.

“Mr. President, perhaps there has been no other female in the history of show business who has meant so much, who has done more... Mr. President, the late Marilyn Monroe!”

Pete’s assistant, Milton, helps me onstage. Even if I hadn’t been slightly drunk, I couldn’t walk by myself because the dress is sooo damn tight. I can hardly breathe, really, so when I sing or should I say whisper *Happy Birthday, Mr. President* I sound out of breath, which makes it even sexier. The people seem truly happy and this includes the President, of course.

“Everybody—sing!” I shout.

While the whole crowd sings and laughs, two chefs bring a huge birthday cake with forty-five candles. Later, the President adds a few words for me to his big speech:

“Miss Monroe left a picture to come all the way East... I can now retire from politics after having had *Happy Birthday* sung to me in such a sweet, wholesome way.”

After the gala, I drink more champagne in the home of Mr. and Mrs. Bigwig or whoever. How did I get there? Man drove a car. Sat in the back with my escort, Mr. Miller, Isadore his first name. So many people here, be careful Isadore, why don't you sit down. Jack, I mean the President, surrounded by a throng of admirers, still remembers Marilyn and talks to me.

"Mr. President, I'd like you to meet my former father-in-law."

I feel happy, but I wonder whether my happiness is for real—shrouded by a mist inside my brain and outside too. Pills and champagne thicken the mist, protect me from ugly reality.

Now I'm home on 57th street. Edgy, pins and needles. I call Rupert Allan in Monte Carlo. Often call him when I can't sleep cause middle of the night here, over there in Europe already morning I don't wake him up. Then call Big Ralph, lives in New York since Dr. Greenson sacked him. Him I wake up but he comes right away, gives me massage.

"Gosh, that was just divine. Are you very busy here, Ralph?"

"Well..."

"How about flying back with me this afternoon? I'll buy the ticket."

"I thought your shrink... My bad influence."

"Joe says the only bad influence is Dr. Greenson's. He let me down, actually, so I've decided not to obey him anymore. He wanted his spy, Mrs. Murray, to replace all my friends, but I got rid of her. She didn't massage me, anyway, that's why I need you."

I thought I had gotten rid of Murray the shrew. When I reach my Brentwood home, who opens the door? She welcomes me as if I hadn't dismissed her. I try to shout at her, I never ever want to see you again, didn't you understand, but I discover oh a strange thing, I'm more hungry than angry, my stomach takes control of my brain when I smell a fragrant mixture of herbs and spice, she has bought stuff and cooked a warm soup, gee I'll kick her out tomorrow.

But then she brings me a joyful colorful sweet fruit salad as soon as I wake up in the morning and I don't dare send her away.

The Fox people have seen me on TV, who hasn't, *Happy Birthday Mr. President*, and they are mad at me for no reason at all. I mean, I come to the set on time, ready to work, while Dean Martin stays home with a cold. They don't blame him. Nobody says he's

temperamental or what. Nobody blames the writers, who are amending the script every other day but can't make it either coherent or funny.

I shoot my big reunion scene. I meet my children, who grew up while I was believed to be dead. They don't know I'm their mother: I pretend to be a Swedish governess. I'm troubled of course when I see them after five years. Although it would feel oh so good to cry, I must not—otherwise they would wonder why and find me strange. Everybody says I play it beautifully and my Swedish accent (I practiced a lot with Paula) is perfect. I've been an actress for fifteen years, I studied with the best teachers, so I hope my skills have improved, but playing the mother's emotions is pretty easy. All I have to do is think about the children I never had, nor will ever have I fear. Real tears are welling inside me, gee what a life.

Next day Dean Martin still not there, let's play my big sexy swimming-pool scene. I'm taking a midnight swim, I love to swim after spending five years on a desert island, I'm trying to seduce and provoke my husband too. Hey, darling, are you looking? I romp and splash, he'll come to the window, he's in his bedroom upstairs with his stupid new wife.

I'm wearing a flesh-colored bikini so I seem to be naked.

"Can see a strap," the cameraman says.

"I'll take it off," I tell George Cukor. "If I'm naked, the midnight swim will feel more real."

"Okay. As long as you're swimming, it shouldn't make any difference. Then we'll have a long shot when you come out and put on your bathrobe."

"A long shot is fine for the film, but we could also ask a set photographer to come closer, so we would have some nice pictures for the magazines. Think of the publicity for the movie!"

"What a great idea, Marilyn! Great!"

He asks all the bystanders to leave the set, there are always so many people who have nothing to do there. I go to my dressing-room, remove the bikini and come back with my bathrobe on.

"Hey, Bobby, can you give me some more light up there?" someone shouts.

I laugh.

"I hope Bobby is a girl!"

I slip out of the bathrobe and into the water. Cukor shoots what he needs. Then, when I climb out of the pool, three guys are waiting for me with their cameras. Beside Jimmy

Albert & Marilyn

Mitchell, the regular set photographer, the production has summoned Larry Schiller and Bill Woodfield, whom I have already seen around. They're working on feature articles about the shooting of *Something's Got to Give* for French magazine Paris Match and some press agency. They gawk at me with saucer-sized eyes when they discover I'm just wearing a few drops of water. They recover their spirits soon enough and begin shooting like maniacs. Enjoy, my friends. This doesn't happen every day.

Gosh, I ain't ashamed of my body. Let the whole world admire me! Let Liz Taylor show her naked body if she wants to compare to Marilyn! Big Ralph says I look good, with firm muscles and a nice tone of skin. I'm following Dr. Greenson's advice and sticking to one kind of pill.

Larry Schiller brings me the pictures as soon as they are developed. Wow! I knew it: Marilyn Monroe is still gorgeous! These pictures are worth a fortune.

"You tell me which ones you want destroyed, miss Monroe."

"Oh, they're all fine. Except maybe this one. I look kind of silly, I think... And this one, with the, er..."

"Pubic hair."

"Yeah. You can keep it, but don't sell it to Playboy, okay?"

Larry and Bill go into a partnership. They convince Fox to destroy Jimmy Mitchell's films, as the official promotion campaign can't use such pictures. They give Jimmy ten thousand dollars as compensation.

Larry's agent needs less than twenty-four hours to sell the photographs in thirty-two countries.

"All the magazines will publish them on the same day," Larry tells me. "In one month. We'll earn more than one hundred thousand dollars each. We owe this to you, of course. Tell me what we can give you in exchange."

"Just give me a projector so I can look at the slides."

"A projector? While I'll be able to buy a house?"

"At least I'm making your wife happy. I'll be happy, too, to see all those magazine covers with me on them instead of Liz! Say, Larry, I hope I'm not making a big mistake by sending these pictures out. What do you think?"

"You're already famous, miss Monroe. Now you can make me famous."

Friday, June 1st. We shoot a funny scene. While buying some shoes, I try to enroll the salesman into a crazy scheme. He is a short very shy guy with thick glasses, played by Wally Cox—whom I have known for quite a while, as he is Marlon Brando's childhood buddy from Detroit.

"Excuse me, sir, I need some help."

"Help? Of course, miss. Do you want the shoes delivered someplace?"

"No, not that kind of help. Let's have lunch together, right? I'll explain everything."

"Lunch, miss?"

"Then, after work, you'd come home with me."

"Home with you? Oh oh..."

"I want you to meet my husband."

"You have a husband?"

"Yes, but he's married to another woman."

"Your husband is married to another woman, right?"

"You'll tell him you spent five years with me on a desert island."

I think I played the scene rather well. The crew seems to agree and applauds at the end. Then I bring the shoe salesman to my husband, who sees through the ploy because the real stranded fellow has already called on him, I mean he has asked for me and so on. What makes it funny is the contrast between tiny Wally and hunky Tom Tryon, who's about seven feet tall. Also, my husband plays cat and mouse with the poor shoe guy. He queries him about the island, the palms trees, the tropical fish, and enjoys the silly improvised answers.

June 1st is my birthday, of course. Thirty-six. They bought a cake, doesn't compare to President Kennedy's but nice enough. Wally sings *Happy Birthday, miss Monroe* in a hilarious imitation of my New York performance. What a clown! I laugh and cry at the same time. All those pent-up tears want to flow out. I feel oh so foolish.

I spend the evening at Dodger Stadium. I have promised Joe—who is in Europe—to attend a fund-raising game for the Lou Gehrig charity. I bring Dean Martin's son with me. He's so happy to sit in the VIP booth with Marilyn Monroe! They ask me to throw the first ball. Despite my high heels, my tight skirt, the champagne I drank at my birthday party, I throw towards the batter, well more or less. Joe would be proud of me.

Back home Danny and Joan Greenson come and offer me a champagne glass with my name engraved inside.

Albert & Marilyn

“Now I’ll know who I am when I’m drinking,” I tell them.

They are sweet, but I miss their father. He’s gone three weeks already. Thirty-six years. The most famous star in the world, but so unhappy. No husband, no kids. If I could speak to Dr. Greenson, he would cheer me up. Frank Sinatra in Monte Carlo with that slut Grace.

Night was cold, caught a darn virus in the Stadium. Set doctor comes on Monday morning examines me. Can stay home, he says.

Pills help me forget. Stick to one kind. Promised Dr. Greenson. When is he coming back? Back already? What day is this? Saturday I think. Gosh, forgot to call him.

“Hello, am I talking to, er... Hello? Greenson? This is Marilyn. Doctor? Who are you? Who? Danny? I don’t know any Danny.”

Dr. Greenson’s kids come see me. Don’t even remember their names. Manny? Jean? I am naked. Not ashamed of my body.

“How do I look? Tell me you love me, Manny. Everybody loves me. Poor and rich love me, short and tall, fat and skinny. Even the President of the United States of America Jack something. Everybody except me. I hate her. The only person doesn’t love Marilyn Monroe: herself! So ugly. A wreck. Nobody loves me. They pick me up, then throw me away. An old bag full of rubbish. Worthless. A woman with no kids is worthless. Gimme a reason, just one reason...”

“A reason?”

“A reason to go on living. What for? Tell me what for?”

“You make movies that bring joy to the whole world, Marilyn.”

“Tis over. Thirty-six. Too old. Greta Garbo stopped thirty-six. Let them take Liz. Why go to the Studio? One more stupid movie. They want to earn money by selling my ass. I shit on you.”

June 7th. They phoned their father in Europe, or somebody did. He shortened his vacations and returned yesterday. He calls Henry Weinstein, the film’s producer. He goes to the studio.

June 8th. He told them he would take care of everything. He hasn’t convinced them that he could become a movie producer. When he comes back to me, he looks embarrassed.

“I’m bringing you bad news, Marilyn. They have dismissed you from the picture yesterday. As Dean Martin refused to go on without you, they’ve decided to shut down the film.”

"You mean good news. Fug their lousy movie. What do I care? I'll die and they'll be real sorry."

They lost their marbles. Sack me for just three days at home doctor says I got virus in sinus. As if I had never done it before. The movie always gets made in the end and earns millions.

Fox's new boss, Levathes, a former advertising suit who knows nothing about movies, tells the press that the stars are destroying Hollywood.

"We've let the inmates run the asylum and they've nearly torn it down."

Pat Newcomb says they have written a special contract for Liz Taylor. Although she's pushing Fox over the cliff, they can't get rid of her.

"You're the only one they can fire. By doing it, they prove that the stars are not running the asylum. Besides, stopping *Something's Got to Give* saves lots of money."

"So I'm doing them a favor by being late and staying home."

"You must answer, Marilyn. Send a press release to the papers. Tell them what's wrong with Hollywood: all these clueless bosses looking into crystal balls to take idiotic decisions."

"Yeah, they'd better think twice before throwing their assets into the garbage can."

They say I owe them half a million dollars for breach of contract. They claim I ain't sick, but enjoying the good life in Hollywood's nightclubs. Fox's public relation people, who were my close friends and worked hard at launching my career ten years ago, go around spreading the craziest rumors: that I'm nuts, that I spend hours naked in my dressing-room while the crew waits for me on the set, that I ain't professional, that I ask for dialog changes all the time, that I can't remember more than three words and so on. George Cukor doesn't need any prodding to add his venom:

"She lost her mind," he tells a journalist. "None of the takes we shot for *Something's Got to Give* is worth anything. She's so doped that she can hardly stand on her feet. Her career is over."

They pretend that the crew technicians are mad at me because I'm depriving them of their salary, but I have talked to the guys and I know they support me. They'd rather get rid of George Cukor.

The Studio wants to replace me with Lee Remick. Jean-Louis has already measured her so he can adjust the costumes.

Dean Martin says he wanted me and nobody but me.

“Look, in the film I’m not leaving Cyd Charisse for some other woman, but for Marilyn Monroe. Who else?”

They think he’s rejecting Lee Remick, so they offer the part to Kim Novak, Shirley MacLaine, Doris Day, who refuse because they know the Studio treated me wrong. You can’t fool good actresses like these. Dean Martin just walks away. Fox is suing him for three million dollars, saying that’s what they have spent so far.

Meanwhile, Fox’s board members are getting angry at Levathes and the other big guys:

“You’ve fired our greatest star! Just when these sexy swimming-pool pictures are all over the place and the public is eager to see the finished movie.”

They’ll soon beg me to come back, my lawyer says.

Okay, but hearing all these slanders and lies about me is very upsetting. The bastards are displaying my private life in public. They describe my grandmother’s and my mother’s mental troubles, as if to imply they are hereditary. I’ve always been afraid of turning crazy, can’t deny that. Dr. Greenson helps me stay sane. If I really become nuts, Fox will be responsible.

What comforts me some: seeing my face on all the magazine covers. The nude pictures and the clash with Fox have put me in the spotlight, so Life, Vogue and Cosmopolitan want to interview and photograph me.

“How does it feel to be thirty-six?” the Cosmo girl asks me.

“As long as sixteen-year old boys whistle when they see me, I don’t feel I’m getting old.”

Vogue’s photographer, Bert Stern, shoots a series of magnificent photographs in which I wear an evening dress, a fur coat, or nothing except a veil or a scarf.

“You’re a mystery, Marilyn,” he says. “Something like a goddess, everyman’s dream.”

The Life reporter, Dick Merryman, comes several times to my home. I kind of like him and trust him (as he is “religion editor” at the magazine), so I open my heart to him.

“This industry should behave like a mother whose child has just run in front of a car. But, instead of clasping the child to them, they start punishing the child. Like you don’t dare get a cold—how dare you get a cold or a virus! Executives can get colds and stay home and phone in, but the actor? I wish they had to act a comedy with a temperature and a virus infection! I’m there to give a performance, not to be disciplined by a studio. This isn’t supposed to be a military school, after all. It might be kind of a relief to be finished with movie-making. That kind of work is like a hundred-yard dash and then you’re at the

finish line and you sigh and say you've made it, but you never have. There's another scene and another film and you have to start all over again."

"You don't like the Studio, do you?"

"I don't work for the Studio, but for the people who go see my movies. I've always felt that even in the slightest scene they ought to get their money's worth. This is an obligation of mine, to give them the best. I do have feelings some days when there are some scenes with a lot of responsibility towards the meaning and I'll wish, gee if only I could have been a cleaning woman..."

"Maybe cleaning women would prefer to be Marilyn Monroe."

"Fame can be a burden. It brings you partial happiness, it doesn't fulfill you. It warms you a bit, but the warming is only temporary. When you're famous every weakness is exaggerated. Fame will go by and... So long, fame, I've had you! I've always known it was fickle. It was something I experienced, but it's not where I live. It's nice to be included in people's fantasies, but you also like to be accepted for your own sake."

"You resent being a sex symbol?"

"A sex symbol becomes a thing and I just hate to be a thing. I don't look on myself as a commodity, but I'm sure a lot of people have, including one corporation in particular which shall remain nameless. I don't mind being burdened with being glamorous and sexual, though. We are all born sexual creatures, thank God, but it's a pity so many people despise and crush this natural gift. Art, real art, comes from it—everything. The Studio people don't understand me, but ordinary people do. Workers, young people, old folks. My two husbands, Mr. DiMaggio and Mr. Miller, had children and I got along fine with them. They brought me great satisfactions. Did you see my garden? I planted the flowers myself. You can take a dip in the pool, if you want."

"Never while I'm on duty."

"I now live in my work and in a few relationships with the few people I can really count on. I am born a gemini."

"You mean you have a double personality, like Dr Jekyll and Mr. Hyde?"

"More than double. I am so many people at the same time. It upsets me sometimes. I'd rather be just me."

"Who's always late, Jekyll or Hyde?"

"I don't want to be late, but I usually am, much to my regret. Often, I'm late because I'm preparing a scene, maybe preparing too much sometimes. When the people go to see

me and look up at the screen, they don't know I was late. And by that time, the Studio has forgotten all about it and is making money. Oh, well."

July 25th. My lawyer was right: Fox is crawling at my feet. The press on my side, the public even more. The Studio boss, Mr. Levathes, comes to my home in person today to pay amends and rehire me. Gosh, I wake up early. My hairdresser washes and styles my hair, Whitey Snyder makes me up just right.

"No one wants bad blood," Mr. Levathes says. "We're ready to start shooting on September 4. We improved the script, actually. We'll replace Cukor with Negulesco, if you want. Oh yeah: we've raised your salary to 250,000 dollars."

"Negulesco? Sure... I'll want to see the new script."

"Of course, of course."

"I have had some ideas. She has become very clumsy with a knife and fork, having spent five years eating with her hands on the desert island, so bits of food jump here and there when she eats with the family. This might be funny, no?"

"A wonderful idea. Wonderful! We've shot more than half of it, so we should be able to finish in one month. Then we have a musical, *I Love Luisa*. This would allow you to complete your four-movie contract."

What a victory! I'm delighted. *I Love Luisa* tells the story of a woman who marries four times, as her husband always dies a few days after the wedding. Gene Kelly, Dean Martin, Paul Newman and Frank Sinatra would play the unfortunate grooms.

The Studio needs someone to blame for the mess they got themselves into. Let's fire Paula Strasberg, they say. Poor Paula! Nobody likes her. Arthur Miller used to say she replaced my mother and was as crazy as her. Whitey Snyder says she prevents me from standing on my own two legs. Well it's true the shooting of *The Prince and the Showgirl* went on very smoothly without her. Dr. Greenson also says I depend too much on her. According to him, I depend too much on everybody: Big Ralph, Pat Newcomb, even Whitey Snyder. Everybody but him. How could I part from them? They've been at my side for years, like a family. I'd better find another doctor. He wants me to be his thing. He's jealous of my friends. He forbids me to play in the movie John Huston is preparing about Dr. Freud. Some famous French writer is working on the script. Anna Freud doesn't want a film to be made about her father, Dr. Greenson says.

Albert & Marilyn

Yeah, everything is quite clear. I don't need Greenson. He needs me. I'll get rid of the man and of his accomplice Madame Murray. Gee I've discovered she opens and reads my mail, under orders from her master I guess. Joe sees Greenson as a big hairy spider, caught me in his net, Murray his stooge spider. Bye bye, Dr. Greenson. Bye bye, Mrs. Murray. Joe will provide whatever comfort and solace I want. Only man who doesn't consider me his toy.

July 28th. I'm here on lake Tahoe—a new hotel-casino on the California-Nevada border—to meet Joe. He is coming from San Francisco. Pete and Pat Lawford drove me from Los Angeles. Big week-end inauguration. Frank Sinatra owns shares of the place. He is singing to-night. All his friends here, including Dean Martin.

“Thanks, Dean, for what you did.”

“What did I do?”

“Lee Remick. You refused to go on and shoot the movie with her.”

“My contract allowed me to approve or reject the leading lady. The script was rather weak, but your presence saved the film. Without you, the whole thing stank. I told them to sack Cukor.”

I throw myself into Joe's arms. Strongest arms in the world. Big news: we've decided to remarry on August 8th.

Wednesday, August 1st. The weasel just told me she's going on vacation.

“I'm flying to Europe with my sister next Monday. Unless you need me, Marilyn. I haven't bought my tickets yet.”

“No, it's okay. Let me write the check for August in advance. You know, Mrs. Murray, I'll travel too. Go East, I think. Live with Joe. So, anyway, you don't have to come back here in September.”

There!

August 2nd. I celebrate my rebirth with Whitey Snyder and Marge Plecher, who's in charge of my movie wardrobe and dresses me on the set.

“We're on, my friends. I've talked to Mr. Negulesco. I told him he wouldn't recognize me: from now on, Marilyn Monroe will be on time! And now, I'll tell you the most fantastic news. Joe and I are marrying again next week! Jean-Louis is already making a dress.”

Albert & Marilyn

“This is really great. But you know what? This will sound very corny... We wanted to tell you. We’re marrying too!”

“Whitey and Marge? Wow!”

August 3rd. I tell Dr. Greenson I want to stop my therapy. He pretended he’d wean me from the pills. He said Dr. Engelberg would write the prescription under his strict supervision, as he can’t write them himself, being my psychiatrist. But Dr. Engelberg acts on his own, obviously. He brings pills and injects so-called vitamin shots into me several times a day. I think he just wants to be near the great star. Meanwhile, Greenson gives me more pills, as if his being my psychiatrist didn’t matter anymore.

He doesn’t seem too happy to learn that Marilyn Monroe is leaving him. Blood rushes to his face. He looks like a bad guy in a movie all of a sudden, with twisted distorted features ready to spit fire. The man has got a violent temper. Often shouted at me and almost hit me once. Did hit me, but it may have been a kind of accident.

“You tend to attract people harmful to you, Marilyn, because your subconscious mind tries to reproduce unpleasant situations you’ve known as a child.”

“Sure. All the people around me are harmful and I must send them away. Except you, of course.”

“You’re very sick. You can stop the therapy, but you’re taking a risk. A terrible risk. Don’t say I haven’t warned you!”

I call Norman Rosten in New York.

“Did you read my interview in Life magazine? What do you think about it?”

“You said the right things. I think people didn’t expect such stuff. The dumb blonde isn’t so stupid after all!”

“I’ve got lots of projects. After I finish *Something’s Got to Give*, I’ll shoot *I Love Luisa*, a musical, which will be my last for Fox. With Frank Sinatra, Dean Martin, Paul Newman and Gene Kelly. Greatest guys in town! The director will be J. Lee Thompson¹. I’m meeting him on Monday. Then I’ll shoot a life of Jean Harlow. I’ve always admired her, of course. And also maybe *A Tree Grows in Brooklyn*. You know what I’m doing next week?

¹ J. Lee Thompson did shoot the film in 1963 (for a 1964 release) with Shirley McLaine—and Robert Mitchum instead of Frank Sinatra. The title was changed to *What a Way to Go*.

Albert & Marilyn

Marrying Joe yet again. I'll give a big party here in Hollywood, then I'll fly to New York. Lee and Paula bought seats for some Broadway play. Will you come to the theater with us? I want to have fun. Let's enjoy life before we're decrepit oldsters."

"Are you okay, Marilyn? You sound strange."

"I feel nervous. These doctors keep injecting funny stuff into me and feeding me loads of pills. At least, when I'm in New York, I won't see them anymore."

Dr. Greenson won't let go. Comes to my home and stays hours.

"I put my own life aside the better to take care of you, Marilyn. You're showing your gratitude in a strange manner."

He's planning some trick, I bet. Wants to keep me under his influence. I'm scared. When he leaves, I ask Pat Newcomb to spend the night with me here. Mrs. Murray is at her sister's preparing her suitcase. While I stay awake turn toss worry, writing this, Pat is sleeping like a newborn lamb. Gee people just take it easy. I feel awful bloated giddy. Merry-go-round and round can't stop. Something wrong with my head.

Saturday, August 4th. Mrs. Murray comes in 8 AM. The witch's last day. Big Ralph calls.

"Hey, Ralph! Did I tell you about my wedding? Who? Why don't you come and have dinner with me tomorrow night, then I'll tell you who!"

I order hors d'œuvre, drinks and flowers for my big party next week. Lunch with Pat. Greenson again after lunch. In my bedroom.

"Your therapy is well advanced, Marilyn. All the pieces are coming into place. Until we apply the final soldering that will guarantee a sturdy stable structure, there is a great tension. If we stop now, your personality will blow apart, shatter into a thousand fragments. This is what happened to your mother already."

"I have a half-sister, Berniece Something. She's okay. If the Studio hadn't given me all these hot shots and pills years ago and also treated me like shit, I would be okay too."

"I worked so hard to help you. My whole family participated. This is a failure not only for me, but also for them. They're terribly disappointed."

He's lucky to have children. Why does he drag them into this mess? I begin to cry. Weak helpless hopeless worthless. He tells Pat he's taking care of me and she'd better go home. He calls Mrs. Murray.

Albert & Marilyn

“Marilyn is very tense. I’d like you to drive her to the beach. She’ll walk a little and relax.”

In my bedroom get sunglasses. My mind will shatter. Already shattered? Just a few red pills prop me up. Dr. Engelberg prescribed.

She drives to the Lawfords’ house. Guests. Nobody I know. They speak too fast don’t understand a word. Gee feel underwater. Walk on beach. Quicksand can’t stand will swallow my feet. Why do they play volleyball? Throw ball up always comes down stupid. Wanna go home.

Empty house. Someone comes in after five minutes. Who? Oh, Dr. Greenson. Phone call: Pete Lawford.

“Marilyn? You went through like lightning. We hardly saw you. We’re having our Saturday night Mexican dinner, you know. Why don’t you come, say around seven?”

“Oh, thanks. I don’t think... I can’t. Thanks.”

“Come on! I promise you’ll be able to go home early. I’ll call you later in case you change your mind.”

Phone rings again and again. Who is it? Mrs. Murray answers or Dr. Greenson. Marilyn not here they say. Dinner time Dr. Greenson leaves. Asks witch to spend night. Last night. Tomorrow be gone.

If only Joe was here! Flies in from New York Sunday night or is it Monday. I’ll write letter to him.

Dear Joe

If I can only succeed in making you happy, I will have succeeded in the biggest and most difficult thing there is—that is, to make one person completely happy. Your happiness means my happiness, and

Yes, but if I send tomorrow morning... No, Sunday no mail. If I send Monday, won’t be in New York be here. Never part anymore. Never need write to him.

Phone rings. Joe?

“Hello, miss Monroe, this is Jose.”

“Who?”

“Jose Bolanos. We met in Mexico City, when you bought some furniture there. You remember?”

“Don’t know... Tired. Too tired... Some other time.”

I try to call Big Ralph. No answer. Phone rings again.

Albert & Marilyn

“We’re serving the fajitas, Marilyn. Please come! I’m sure you’ll enjoy... Marilyn? Marilyn?”

“Oh... Dunno. I... Oh...”

“Hello? Marilyn? Are you okay?”

“Pete, say goodbye to Pat. Say goodbye to the President. Say goodbye to yourself, cause you’re nice guy...”

“Marilyn? Marilyn?”

“I’ll see. I’ll see...”

Can’t write anymore. I’ll take pills and sleep. How many pills? Yellow or red—must not mix. Can’t take red, cause red bottle empty. Means I’m taking yellow. Sleepy oh so sleepy. They’ll wake me up. Otherwise what the heck.

Afterword I

Marilyn Monroe died on Saturday, August 4, 1962. The exact hour of her death is unknown—maybe between 9 and 10 PM.

Joe DiMaggio organized the funeral, which took place on August 8, the very day they were supposed to marry again. He spent the night near the body. Whitey Snyder made her up for the last time.

Joe considered that Hollywood had killed Marilyn, so he decided there would be no producers, directors, executives or stars at the funeral, but only close friends: Big Ralph, Pat Newcomb, the Strasbergs, the Greenson family, thirty people altogether. Marilyn's half-sister, Berniece Miracle, came from Florida. Until 1982, Joe had red roses delivered once a week to her tomb in the Westwood cemetery. William Powell had done this for Jean Harlow and Joe had promised Marilyn he'd do it too. Nobody knows why he stopped after twenty years.

Who killed Marilyn Monroe?

Dr. Noguchi, who got his fifteen minutes of fame as “the stars’ coroner,” wrote the autopsy report. He found amazing levels of Nembutal and chloral hydrate in her body—about twenty times what doctors would prescribe for sleeping. His logical (and official) conclusion: she committed suicide.

Marilyn's friends thought the overdose was not voluntary, but accidental. Her body was used to very high doses. Instead of counting pills, she gobbled them as long as she was awake. When she fell asleep (or comatose, sometimes), she stopped.

According to the official story, Mrs. Murray found her at 3 AM. She called Dr. Greenson and he called the police. The autopsy revealed she had died well before midnight.

People like plots. Several authors have written books to “prove” that Marilyn was murdered. The books sold very well, so you can wonder whether the authors really believed in their plots, or just wanted to earn a few million dollars easily. According to these authors, Marilyn had two lovers named Kennedy: Jack, the President, and Robert, his brother. She was angry because Robert didn't want to divorce and marry her. She knew State secrets. She threatened to call a press conference, either to reveal the secrets or to disclose that the two brothers were her lovers. Robert ordered the FBI—which he controlled as Attorney

General—to kill her. He spent that night in San Francisco. He could have flown to Los Angeles and back in a private jet, etc.

The most serious biography, by Donald Spoto, refutes the plot buffs' wild stories in a very convincing manner. The two Kennedy brothers were never really close to Marilyn. Robert never became her lover. She didn't know any State secret. Spoto agrees with the director John Huston. "Hollywood didn't kill her," Huston said (answering DiMaggio). "Those doctors did." He meant all the doctors who had been giving her hot shots and pills for years, but especially Greenson and Engelberg. While Greenson prescribed great quantities of chloral hydrate, which was supposed to wean Marilyn from barbiturates, Engelberg gave her Nembutal, a strong barbiturate. Taking Nembutal and chloral hydrate at the same time is very dangerous and can provoke death.

People tend to agree today that Dr. Greenson breached medical ethics and enjoyed controlling the biggest star in Hollywood as if she was his own private puppet. Recently, I discovered that one of my childhood friends had become a psychoanalyst and worked for the Anna Freud school or foundation in London. They entertain a very different view over there. Hohenberg, Kris and Greenson worked hard, they say, trying to keep Marilyn afloat. Okay, so maybe Dr. Kris made a slight mistake when she sent Marilyn to the loonies' hospital, but you can't judge what happened so long ago with today's criteria. At least, she didn't prescribe shock therapy, which was in vogue back then. Dr. Greenson didn't spare his own time to help Marilyn. He was devoted to her because she moved him, and also for the sake of mankind, because he wanted her to shoot more crowd-pleasing movies. He felt guilty when she died. He called Anna Freud. She consoled him: "Don't blame yourself, Greenson. You did your best. You can't prevent suicide. These things happen."

Spoto's analysis of the autopsy results and interviews with many people seem to show that Marilyn, feeling very tense, took Nembutal all day long to relax. Greenson didn't know about it, because the prescription was Engelberg's. When Marilyn told Greenson she wanted to stop her therapy, he was devastated and tried to control her by putting her to sleep with chloral hydrate. Mrs. Murray probably gave her the drug by administering an enema, which Marilyn was used to.

When Pete Crawford talked to her, a little before 8 PM., she was already dying and she knew it. That's why she said Goodbye. Dr. Greenson and Mrs. Murray tried to revive her. Greenson couldn't reach Engelberg, who usually pumped her stomach. He should have called an emergency service to give her oxygen, but he had to clear the incriminating mess

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first: the enema had emptied Marilyn's bowels. Mrs. Murray washed the body, the clothes, the sheets, the carpet. When Greenson finally called the police, at 3 AM., Marilyn had been dead for at least five hours.

Afterword II

Man of the century

2005 was declared “the Einstein Year” to celebrate the hundredth anniversary of the great 1905 special relativity and quanta articles. Fifty years after Einstein’s death, his ideas are still full of life. General relativity plays a central part in modern astronomy. For example, astronomers use massive galaxies as “lenses”—since they deflect light rays like ordinary glass lenses—the better to see what lies beyond them. In our daily life, we wouldn’t get exact GPS coordinates if we used Newton’s equations. The numbers are corrected to take relativity into account.

Quantum mechanics lets us make sophisticated machines like PET scanners (used to locate tumors in our brains, etc.) Nobody worries about God playing dice anymore. When we wonder what to do with the waste in nuclear plants, we say that a certain material has a “half-life” of two million years. This means that half the atoms will have decayed and become harmless by that time. This is a random process. If we consider one atom, we don’t know whether it will decay or not. We say the probability it will have decayed in two million years is fifty percent.

One of the hottest fields of research today is the “ghostly action at a distance” that Einstein imagined in his EPR paradox. What he said was: “Quantum mechanics seems to imply that particles stay linked in a spooky way after an interaction. This is impossible, thus quantum mechanics is not a complete theory.” Today we consider that quantum mechanics is indeed a fully effective theory, especially since Feynman and others have honed it to perfection. In 1964, an Irish physicist, John Bell, showed in a theoretical article that the EPR reasoning was quite valid—which means that particles do stay linked after an interaction. This is the exact opposite of what Einstein wanted to prove, of course. A French physicist, Alain Aspect, received the Nobel prize in 2022 for experiments showing that two “entangled” photons seemed to influence each other at a distance of forty feet. In the early nineties, a Swiss scientist, Nicolas Gisin, kept particles entangled for ten miles near Geneva. If this book is still on sale in twenty years, you’ll perhaps carry in your pocket a “quantum computer” using entangled photons. The actual computer (excluding the screen and keyboard and batteries) should be smaller than a fingernail and more powerful than today’s biggest supercomputers.

People are still debating what happens exactly in the EPR paradox. A marketing wizard found a catchy name: “Teleportation of quantum states.” As a consequence, if you look for the EPR paradox on Google, you find more sites of Star Trek fans than of scientific institutions. In real physics, you can teleport quantum states (maybe), but Scotty will never be able to beam you up.

At least one scientist, Freeman Dyson, an Englishman who worked on quantum electrodynamics with Feynman, says it doesn’t bother him that we have two incompatible theories, relativity and quantum mechanics, for stars and particles. Most other physicists hope that Einstein’s unification dream will be realized someday. His old friends and rivals, Heisenberg and Pauli, tried their hands at it after his death. There are promising and controversial “theories of everything” today. The “theory of strings” was invented in Japan around 1970. Later variants are known as “superstring theory” and “M-theory.” The strings are little strands of energy, much smaller than any known particle. They create gravitation and the various particles by vibrating in different modes. Is this possible? Well, a four-dimension space is a little cramped for such strange gymnastics, so you need a ten- or eleven-dimension space. Einstein had actually explored a five-dimension space, suggested in 1921 by Theodor Kaluza and Oskar Klein. The extra dimensions are “curled,” that’s why we don’t perceive them. The main problem with string theory is that nobody has found a way of checking whether it is true.

When Einstein was a young man, many physicists believed that they knew almost everything—and that a small contradiction between Galilean relativity and electromagnetism would soon be explained away. Einstein built his theory on that contradiction. This was the starting point of an amazing expansion of knowledge. We’ve found that the universe contains much more stuff, big and small, than we thought. So at least we’ve gained some wisdom: we now admit that we know almost nothing.

Somewhere on this planet, a young boy or girl is looking at a compass. Hey, the needle seems to move by itself! How come?

Cast of characters

Adler, Friedrich (1879-1960). Einstein's classmate at the Zurich Polytechnikum. Son of Viktor Adler, leader of the Austrian social-democrat party. In 1916, he murdered the Austrian prime minister, whom he considered too bellicose. He was condemned to death, then pardoned.

Ainsworth, Helen. West Coast manager of *National Concerts Artists Corporation*, the agency that represented the young Marilyn.

Allan, Rupert. Press agent to Marilyn and Grace Kelly.

Arago, François (1786-1853). French mathematician, astronomer and politician. Studied an anomaly of Mercury's orbit that was explained by general relativity.

Aristarchus of Samos (IIIrd century B.C.) Greek astronomer. The earth circles the sun, he said, not the other way around.

Arlliss, George (1868-1946). English actor who usually played historical characters like the duke of Richelieu or Disraeli in silent movies. Mr. Atkinson was his stand-in.

Arnou, Max. Columbia's casting director. Gave Marilyn a part in a musical, *Ladies of the chorus*.

Atkinson. Family of English actors, tenants of Marilyn's mother circa 1935. They took care of Marilyn for a year or so while Gladys was treated in an insane asylum.

Bacall, Lauren. Born in 1924, she became famous twenty years later for her parts with Humphrey Bogart (whom she married) in *To Have and Have Not* and *The Big Sleep*. Starred alongside Marilyn in *How to marry a millionaire* (1953).

Baker. First husband of Marilyn's mother.

Balfour, Arthur (1848-1930). English politician. Foreign minister during World War I, he declared that the Jews were entitled to a homeland in Palestine.

Becquerel, Henri (1852-1908). French physicist. Studying uranium salts, he stumbled on radioactivity.

Ben Gourion, David (1886-1973). Israel's first prime minister. He invited Einstein to become Israel's president after Weizmann's death in 1952.

Besso, Michelangelo (1873-1955). Polytechnikum alumnus, Einstein's colleague and close friend in the Bern patent office, member of the "Olympia Academy."

Bogart, Humphrey (1899-1957). Star of many "noir" movies, like *High Sierra*, *The Maltese Falcon*, *Key Largo*, etc. Lauren Bacall's husband.

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Bohr, Niels (1885-1962). Danish physicist. Invented the modern model of the atom. Most of the physicists who elaborated the theory of quantum mechanics studied in his Copenhagen institute.

Bolender, Ida and Albert. Marilyn's foster parents. She lived with them until age 7.

Boltzmann, Ludwig (1844-1906). German physicist. Pioneered the "kinetic theory of gases," which inspired Einstein's articles about water molecules.

Born, Max (1882-1970). German physicist. Discovered the random factor in the behavior of particles. "I can't believe that the Good Lord plays dice," Einstein told him.

Bose, Satyadranath (1894-1974). Indian physicist. He sent Einstein a statistical study of photons from Calcutta, then met him in Berlin in 1925. Dirac called "bosons" the particles that obey "Bose-Einstein statistics," for example photons.

Boyer, Charles (1897-1978). French actor who worked in Hollywood after 1935. Marilyn considered him one of the world's most attractive men.

Brando, Marlon (1924-2004). Became a star in 1951 with *A Streetcar Named Desire*. Still a star in *The Godfather* (1972). Marilyn's close friend.

Brod, Max (1884-1968). German-language Czech writer, friend of Kafka. In a novel about the astronomer Tycho Brahé, he modelled the Kepler character on Einstein.

Brown, Robert (1773-1858). Scottish botanist. Looking at pollen dispersed in water, he discovered the "brownian movement," which Einstein explained by analogy with the kinetic theory of gases in 1905.

Brynnner, Yul (1915-1985). Starred in *The Magnificent Seven* (1960) and many other movies. Refused to play with Marilyn in *Let's Make Love*.

Bucky, Gustav (1880-1963). Radiologist, invented an X-ray diaphragm still used today. Einstein's friend in Berlin, then in the United States. They patented several photographic gadgets together.

Burton, Richard (1925-1984). His wild passion for his partner (and future wife) Liz Taylor during the shooting of *Cleopatra* delayed the completion of the film and contributed to its huge cost. As a consequence, Fox tried to avoid bankruptcy by suspending the shooting of *Something's Got to Give*, Marilyn's last film.

Bush, Vannevar (1890-1974). American engineer who played an important part in the *Manhattan Project*—and contributed to the invention of the computer.

Byrnes, James (1879-1972). Secretary of State in 1945, he told Harry Truman, when President Roosevelt died, that the army was perfecting an atom bomb.

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Calhern, Louis (1895-1956). Marilyn played the part of his young lover in *Asphalt Jungle* (1950).

Callas, Maria (1923-1977). This Greek opera singer performed before Marilyn at President Kennedy's birthday bash. Her husband, the shipowner Aristotle Onassis, later married the President's widow, Jackie.

Carnovsky, Morris and Phoebe. Taught theater at the "Actors Lab." Young Marilyn studied there.

Carroll, John. Marilyn's manager and close friend in 1947 and 1948. Married to Lucille Ryman.

Casadesus, Gaby (1901-1999) and **Robert** (1899-1972). French pianists. They spent World War II in Princeton and played music with Einstein.

Chadwick, James (1891-1974). English physicist. Discovered the neutron in 1932.

Chaplin, Charlie (1899-1977). Einstein met him several times in Hollywood. Marilyn would have liked to play in a movie with him.

Charisse, Cyd. (1921-2008). Actress and dancer (for example, in 1952 in *Singing in the Rain*), she played Dean Martin's new wife in *Something's got to give*, Marilyn's last movie.

Chekov, Michael. Nephew of the great Russian playwright Anton Chekov, studied with Stanislavsky. Taught theater to Marilyn in the early fifties.

Churchill, Winston (1874-1965). English prime minister during World War II. Einstein met him in 1933.

Clift, Montgomery (1920-1966). Became a star in *Red River*, a Howard Hawks western (1948). One of the three tired cowboys in *The Misfits*.

Coburn, Charles (1877-1961). Played old gentlemen in love with Marilyn in *Monkey Business* (1952) and *Gentlemen Prefer Blondes* (1953).

Cohn, Harry (1891-1958). Columbia's founder and despotic boss. Signed in Marilyn in 1948, but failed to recognize her worth and sent her away.

Colbert, Claudette (1903-1996). Born in Paris, she stayed there only three years before moving to the States. She starred in many movies, for example *Cleopatra* in 1935. Marilyn played a small part in one of her films, *Let's Make it Legal* (1951).

Conover, David. Photographer who took the very first pictures of Marilyn while she worked at Radio Plane Company.

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Cooper, Gary (1901-1961). Great Hollywood star (*Mr. Deeds Goes to Town*, 1936, *High Noon*, 1952, etc.). Marilyn met him in 1954 when Fox gave a party to celebrate the release of *The Seven Year Itch*.

Copernicus, Nikolaus (1473-1543). Polish astronomer. He revived Aristarchus's heliocentric theory.

Cowan, Lester. Produced *Love Happy*, a Marx Brothers film in which Marilyn appeared for about thirty seconds.

Cukor, George (1899-1983). Director of *My Fair Lady* and many other movies. Having directed Marilyn in *Let's Make Love*, began to shoot her last—unfinished—film, *Something's Got to Give*.

Curie, Marie (1867-1934). French physicist and chemist. Discovered radium and polonium with her husband Pierre.

Curtis, Tony. Born in 1925. Played a saxophonist who pretended to be a woman—and loved Marilyn—in *Some Like it Hot*.

Davis, Bette (1908-1989). Theater actress, then hot-tempered Hollywood star—partner of George Arliss in the thirties. Marilyn played her younger rival in Mankiewicz's *All About Eve*.

Day, Doris. Born in 1924. Singer and actress (for example, in Hitchcock's *The Man who Knew Too Much*). She refused to replace Marilyn in *Something's Got to Give*.

de Broglie, Louis (1892-1987). Pronounced “Dobroy.” French physicist who suggested that electrons and other particles vibrated like light.

de Dienes, André. Hungarian photographer. Consolated Marilyn while her husband, Jim Dougherty, sailed with the Navy in the Pacific ocean.

de Sitter, Willem (1872-1934). Dutch astronomer. He heard about general relativity when Einstein went to Leyden during World War I, then he talked to Eddington about it. He worked with Einstein in Pasadena.

Democritus (around 400 B.C.). Greek philosopher. One of the inventors of the atomic theory.

Diamond, I. A. L (1920-1988). Wrote the scripts of three Marilyn movies: *Let's Make it Legal*, *Monkey Business*, *Some Like it Hot*.

Dietrich, Marlene (1901-1992). One of the greatest stars in the thirties and forties. When Marilyn became a star too, Fox gave her Marlene Dietrich's dressing-room.

DiMaggio, Joe. Famous baseball player. Marilyn's second husband.

Dougherty, Jim. Marilyn's first husband.

Dukas, Helen (1895-1982). Einstein's secretary from 1928 until his death.

Eddington, Arthur (1882-1944). English astronomer. Made Einstein famous in 1919 when he went to Brazil during an eclipse and checked that the sun did bend a ray of light, as general relativity had predicted.

Edison, Thomas (1847-1931). People who said there was no theoretical physics in the United States gave him as an example of the "practical" American scientist.

Ehrenfest, Paul (1880-1933). Austrian physicist. Succeeded Lorentz in Leyden. Einstein's close friend.

Ehrenfest-Afanassova, Tatiana (1876-1964). Russian physicist, wife of Paul.

Ehrmann, Rudolf (1879-1961). Einstein's doctor in Berlin, then in America.

Einstein, Eduard (1910-1965). Albert and Mileva's younger son. He suffered from schizophrenia and spent most of his life in a psychiatric institution.

Einstein, Elsa, born **Einstein** (1876-1936). Her father was Einstein's cousin, her mother his aunt on his mother's side. Einstein married her in 1919.

Einstein, Hans Albert, or **Hansi** (1904-1973). Albert and Mileva's elder son.

Einstein, Hermann (1847-1902). Albert's father. Founded several electrical machinery workshops or factories in Germany and Italy.

Einstein, Jakob (1850-1912). Albert's uncle. Engineer and inventor. Hermann's partner in some of his endeavors.

Einstein, Lieserl (born in 1902). Albert and Mileva's secret daughter. She may have been adopted by a Serb family. Einstein's letters about her were discovered by his granddaughter after Hansi's death, so she is not mentioned in early biographies.

Einstein, Mileva, born **Maric** (1875-1948). Einstein's classmate in the Polytechnikum. They married in 1903.

Einstein, Pauline, born **Koch** (1857-1920). Albert's mother.

Elizabeth of Belgium (1876-1965). Bavarian princess, wife of king Albert of Belgium. Einstein's friend and violin partner. She founded a famous violin competition after World War II.

Epstein, Jacob (1880-1959). One of the main English sculptors in the 20th century. He made a bust of Einstein in 1933.

Eratosthenes (2nd century B.C.). Greek astronomer and mathematician. Director of Alexandria's library. He gave the first precise evaluation of the earth's circumference. He also invented a method to find prime numbers.

Euclid (3rd century B.C.). Greek mathematician living in Alexandria. His *Elements* introduce most of the geometry still studied in high school and college.

Evans, Clarice. Starlet who shared a room with a young Marilyn.

Ewell, Tom (1909-1994). Marilyn's partner in *The Seven Year Itch*.

Faraday, Michael (1791-1867). Self-taught English physicist. He created the science of electricity: how to make it, how to use it. He invented a new physical entity, the "field," which plays a primary role in general relativity.

Fermi, Enrico (1901-1954). Italian physicist. He built the first nuclear reactor (then called an atomic pile) in Chicago in 1942.

Fitzgerald, Ella (1918-1996). Jazz singer. Performed before Marilyn in the Kennedy birthday bash.

Fitzgerald, George (1851-1901). Irish physicist. He tried to explain Michelson's experiment by a contraction of matter. As Lorentz worked on similar lines, the contraction's equations are known as "Fitzgerald-Lorentz transformation."

Flexner, Abraham (1866-1959). American pedagogue. Founder of the *Institute for Advanced Study* in Princeton, he convinced Einstein to work there.

Frank, Philipp (1884-1966). Austrian physicist. Einstein's successor in Prague's German University. He wrote a lively biography ("Einstein, his Life and Times").

Freud, Sigmund (1856-1939). Einstein met him in Berlin in 1926.

Freundlich, Erwin (1885-1964). German mathematician et astronomer. He wanted to photograph the deviation of light in 1914 during an eclipse in Crimea, but the expedition failed because of the war. As his wife was Jewish, he left Germany in 1933 and settled in Scotland.

Friedmann, Alexander (1888-1925). Russian mathematician and physicist. He was the first to suggest, around 1922, that the universe was expanding as a consequence of general relativity.

Frisch, Otto (1904-1979). Austrian physicist, nephew of Lise Meitner—who told him, during a Christmas visit in Stockholm in 1938, that Otto Hahn had split the atom of uranium. Later, working in England, he designed the future Hiroshima uranium bomb (with Fritz Peierls and others). He went to Los Alamos to implement his design.

Gable, Clark (1901-1960). One of the great male stars (for example, *Gone with the Wind* in 1939). Marilyn admired him so much that she imagined he was her father and hanged his picture on her room's wall. They played together in *The Misfits*, in 1960.

Galileo (1564-1642). Italian physicist and astronomer. He perfected the telescope (while pretending he had invented it), discovered the satellites of Jupiter and the moon's craters. When the Church declared the heliocentric theory of Copernicus false and heretical, he promised not to teach it anymore. Then he was condemned for breaking his promise. He invented the first "theory of relativity."

Gamow, George (1904-1968). Russian-born American physicist. His theory of barrier-jumping electrons has lots of applications in today's electronics. A rival, joking about his theory of the universe's beginnings, called it "your Big Bang." The name stayed. He wrote very good books about physics, the best of which are *Mr. Tompkins in Wonderland* and *Mr. Tompkins explores the Atom*, published in 1940 and 1945, then updated several times.

Gandhi, Mohandas (1869-1948). Indian lawyer and politician. Einstein admired his non-violent stance so much that he posted his picture on the wall of his Princeton office (next to Faraday and Newton).

Garbo, Greta (1905-1990). One of the greatest Hollywood stars before Marilyn. She stopped her career when she was 36.

Giffen family. Marilyn spent a few months with them when she was 9. They wanted to adopt her and take her to Mississippi, but Gladys refused to give her assent.

Goddard, "Doc". Grace McKee's husband.

Gödel, Kurt (1906-1978). Austrian mathematician, author of a star theorem of 20th century math, early member of the *Institute for Advanced Study*. A Princeton wartime saying: "You never see Einstein without Gödel, you never see Gödel without Einstein."

Goldwyn, Sam (1882-1974). One of Hollywood's founders. His production company fused with Metro and Louis B. Mayer's company to become MGM.

Grable, Betty (1916-1973). Main Fox star during World War II. Soldiers tacked her picture to the wall, which gave rise to the expression "pin-up." She starred with Marilyn and Lauren Bacall in *How to Marry a Millionaire*.

Grant, Cary (1904-1986). This English actor starred in many movies (for example, Hitchcock's *North by Northwest*, in 1959). He played the main role in *Monkey Business*, with Ginger Rogers as leading lady and Marilyn in a secondary part.

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Greene, Milton. This photographer encouraged Marilyn to break with Fox and founded Marilyn Monroe Productions with her.

Greenson, Ralph. Marilyn's psychoanalyst at the end of her life.

Grossmann, Marcel (1878-1936). Einstein's classmate, then colleague in the Zurich Polytechnikum. He helped him with the math of general relativity.

Haber, Fritz (1868-1934). German chemist. There are twice more people on earth today than was thought possible. The main reason they don't starve is that Haber invented modern fertilizers. He also invented the explosives used by terrorists. He was Einstein's colleague and friend in Berlin. Einstein couldn't decide whether he was a good guy or a bad guy.

Habicht, Conrad (1876-1958). Einstein's classmate in the Polytechnikum, then one of the members of the "Olympia Academy" in Bern.

Hahn, Otto (1879-1968). German chemist. He split the atom of uranium just before World War II and received the Nobel prize in 1944. He should have shared it with Lise Meitner. She worked with him for twenty years, but had to leave a few months before the decisive experiment because she was Jewish.

Haller, Friedrich. Director of the Federal Patent Office in Bern. Einstein's boss from 1902 to 1909.

Harding, Warren (1865-1923). President of the United States in 1921. Welcomed Einstein in the White House.

Harlow, Jean (1911-1937). Although she died of uremia when she was 26, she played in twenty movies and became a great star. Marilyn admired her and considered her a model. Like her, Marilyn used her mother's maiden name, was at first cast as a dumb blonde, then convinced Hollywood she was a talented actress.

Hasenöhr, Friedrich (1874-1915). Austrian physicist. The crazy promoters of "Aryan physics" pretended he had invented the equation $E = mc^2$.

Hathaway, Henry (1898-1985). Directed many movies, including *Niagara* (1953), in which Marilyn played her first leading role.

Haver, June. Born in 1926. This Fox actress was supposed to replace Betty Grable, but she chose to become a nun. She played the leading role in Marilyn's first film, *Scudda Hoo! Scudda Hay!* (1948).

Hawks, Howard (1896-1977). One of Hollywood's greatest directors: *Scarface* (1932), *To Have and Have not* (1944), *The Great Sleep* (1946), *Red River* (1948), *Rio Bravo* (1958),

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etc. He made two films with Marilyn : *Monkey Business* (1952) and *Gentlement Prefer Blondes* (1953).

Hayworth, Rita (1918-1987). Starred in *Gilda* (1946), *The Lady from Shanghai* (1948) and many other movies. Launched by agent Johnny Hyde, like Marilyn.

Heisenberg, Werner (1901-1976). German physicist. His “uncertainty principle” is one of the pillars of quantum mechanics. He headed the German nuclear program during World War II.

Hemingway, Ernest (1899-1961). American writer. Marilyn considered him one of the most attractive men in the world.

Hepburn, Audrey (1929-1993). Her career paralleled Marilyn’s. After playing small parts from 1951 to 1953, she starred in *Roman Holidays* (1953), *Sabrina* (1954), *Funny Face* (1957), *Breakfast at Tiffany’s* (1961). Her last great part was in *My Fair Lady* (1964). She retired in 1967, but appeared in a few movies in the seventies and eighties. Whereas Marilyn was a sensual and slightly vulgar blonde, Audrey Hepburn was a thin graceful brunette. Hollywood never nominated Marilyn for an Oscar, but gave one to Audrey Hepburn for *Roman Holidays*, then nominated her four more times.

Hertz, Heinrich (1857-1894). German physicist. He discovered electromagnetic (“Hertzian”) waves—as well as the “photoelectric effect,” which Einstein studied later.

Heston, Charlton. Born in 1924. Starred in *The Ten commandments* (1956), *Ben-Hur* (1959), etc. Refused to play *Let’s Make Love* with Marilyn.

Heweth, Potter. Second photographer to shoot Marilyn, after David Conover.

Hilbert, David (1862-1943). Considered the greatest German mathematician in the 20th century. Einstein consulted him about the equations of general relativity.

Hoffmann, Banesh (1906-1986). Einstein’s assistant in Princeton. He wrote a good book about relativity and co-authored a biography with Helen Dukas (“*Albert Einstein: Creator and Rebel*”).

Hohenberg, Margaret. Marilyn’s first psychoanalyst.

Hubble, Edwin (1889-1953). American astronomer. He discovered galaxies outside the Milky Way—then found that distant galaxies were moving away from us, which confirmed the expansion of the universe. The first astronomical satellite bears his name.

Hudson, Rock (1925-1985). Starred with James Dean and Liz Taylor in *Giant* (1956) and many other films. Like Charlton Heston, he refused to play in *Let’s Make Love*.

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Huston, John (1906-1987). Boxer, painter, actor, Mexican cavalry officer, writer, then movie director: *The Maltese Falcon* (1941), *The Treasure of the Sierra Madre* (1948), *Moby Dick* (1956). etc. He directed Marilyn in *Asphalt Jungle* (1950) and *The Misfits* (1961).

Hutton, Betty. (1921-2007). Paramount star (*The Greatest Show on Earth*, 1952), discovered and launched by Johnny Hyde.

Hyde, Johnny. Marilyn's agent. He launched and loved her, but she refused to marry him.

Infeld, Leopold (1898-1968). Polish-born physicist. Met Einstein in Berlin, then became his assistant in Princeton. They wrote a book about physics together ("*The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta*," 1938).

Ishikawa, Jun. Japanese physicist. Einstein's interpreter during his stay in Japan.

Jacobs, Arthur P. Public relations company in charge of Marilyn. Her main press agents were **Rupert Allan, Lois Weber** and, at the end of her life, **Patricia Newcomb**.

Jean-Louis. French couturier. Made Marilyn's dresses in several movies—as well as the shining dress she wore for Kennedy's birthday.

Johnson, Nunally (1897-1977). Wrote the scripts of *How To Marry a millionaire* and *Something's Got to Give*.

Joliot-Curie, Irène (1897-1956) and **Joliot, Frédéric** (1900-1958). Marie Curie's elder daughter and son-in-law. They discovered artificial radioactivity. In 1939, they reproduced Hahn's splitting of the uranium nucleus, then took a patent on the principle of an atomic bomb.

Jones, Harmon. Directed one of Marilyn's early movies, *As Young As You Feel*. She met Arthur Miller and Elia Kazan on the set.

Jung, Carl (1875-1951). Swiss psychologist. Freud's friend, then rival. Einstein met him in Zurich.

Kafka, Franz (1883-1924). German-language Czech writer. Einstein may have met him in Zionist circles in Prague in 1911.

Karger, Fred. Marilyn's singing teacher in 1948. She fell in love with him, but he refused to marry her. To the end of her life, she stayed close to his mother, Anne—or Nana.

Kazan, Elia (1909-2003). Theater and movie director. Cofounded The Actors Studio with Lee Strasberg. Directed Marlon Brando, James Dean and other Actors Studio alumni

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in many movies: *A Streetcar Named Desire*, *East of Eden*, etc. Met Marilyn on the set of *As Young as you Feel* and was her lover for a while.

Kelly, Grace (1928-1982). Hitchcock's favorite actress (*Dial M for Murder*, *Rear Window*, etc.). She played aristocratic young ladies before marrying prince Rainier de Monaco.

Kennedy, John (1917-1963). President of the United States from 1960 to his assassination. He probably slept once, but only once (in Palm Springs), with Marilyn.

Kennedy, Robert (1925-1968). The President's brother, Attorney General from 1960 on. He knew Marilyn, was rumored to be her lover but wasn't. Assassinated in 1968, while campaigning for the Presidency.

Kleiner, Alfred (1849-1916). Physics teacher in Zurich university. Supervised Einstein's doctorate thesis.

Koch, Cäsar. Einstein's maternal uncle. Lived in Antwerp.

Koch, Jakob. Einstein's maternal uncle. Lived in Genoa.

Kreisler, Fritz (1875-1962). Austrian violinist. Einstein's knew him well in Berlin.

Kris, Marianne. Marilyn's psychoanalyst in New York. She had her locked in a psychiatric hospital. Joe DiMaggio delivered her.

Langevin, Paul (1872-1946). French physicist who worked with Pierre and Marie Curie—and was said to become very close to Marie after Pierre's death. Einstein's friend.

Laughton, Charles (1899-1962). English actor (and director of *The Night of the Hunter*), he was Marilyn's partner in a short scene of a sketch film, *O'Henry's Full House*.

Lawford, Peter (1923-1984). English actor. Played leading young men for MGM in the forties and fifties. After being Lana Turner's, Ava Gardner's et Rita Hayworth's lover, he married Patricia Kennedy, sister of the President. Hollywood's beautiful people loved his magnificent Santa Monica beach house. This is where Marilyn met Jack Kennedy.

Le Verrier, Urbain (1811-1877). French astronomer. Discovered a quirk in Mercury's rotation around the sun. Computing the planet's orbit with the equations of general relativity removed the quirk—which was the first convincing proof of the theory's truth.

Lee, Peggy. Jazz singer. Performed before Marilyn at the Kennedy birthday gala.

Leigh, Vivien (1913-1967). English actress. She starred in *Gone with the Wind* (1939), and *A Streetcar Named Desire* (1951). Married to Laurence Olivier.

Lemaître, Georges (1894-1966). Belgian priest and astronomer. He suggested that an expanding universe had probably started quite small. He talked of a "primitive egg" or

“primitive atom.” His scientific ideas didn’t interfere with his faith: he worked as the Pope’s advisor for science.

Lemmon, Jack. Born in 1925. Billy Wilder’s favorite actor, he played a bassist pretending to be a woman in *Some Like it Hot*.

Lenard, Philipp (1862-1947). German physicist. Invented “Jewish Science” and “Aryan Science”. Hated Einstein. Loved Hitler.

Lipton, Harry. Marilyn’s agent for her first movies. Johnny Hyde replaced him in 1949.

Lloyd George, David (1863-1945). English prime minister during World War I. Einstein met him in 1933.

Locker-Lampson, Oliver (1880-1954). English member of parliament. Welcomed Einstein in London in 1933, then hid him in a country manor.

Logan, Joshua (1908-1988). This theater director gave James Stewart and Henry Fonda their first roles. He shot only ten films or so, including *Bus Stop* (1956), with Marilyn.

Lorentz, Hendrik (1853-1928). Dutch physicist. He came close to discovering special relativity. He already had the equations (as part of the “Fitzgerald-Lorentz transformation”), but didn’t really understand what they meant. Einstein considered him his master.

Löwenthal, Ilse (1897-1934). Elsa Einstein’s daughter.

Löwenthal, Margot (1899-1982). Elsa Einstein’s other daughter. Lived with Einstein in Princeton.

Lower, Ana. Grace McKee’s aunt, whom Marilyn considered her own aunt. She lived with her when she was 15.

Luxemburg, Rosa (1871-1919). Polish-born revolutionary leader. She was arrested and murdered in Berlin after the “Spartakist uprising.”

Lyon, Ben (1901-1979). Former actor, Fox’s casting director in the forties. Put Marilyn in front of a movie camera for a film test in 1946. Gave her the first half of her name: Marilyn.

Lytess, Natasha. Young Marilyn’s coach. Most directors found her presence on the set quite obnoxious.

Mach, Ernst (1838-1916). Austrian physicist and philosopher. His ideas criticizing Newton’s absolute time and space influenced Einstein.

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MacLaine, Shirley. Born in 1934. Actress and dancer. She refused to replace Marilyn in *Something's Got to Give*.

Magnes, Judah (1877-1948). American Jew, controversial director of the Hebrew university in Jerusalem.

Mankiewicz, Joseph (1909-1993). Scriptwriter, then producer and director. Marilyn played in one of his movies: *All About Eve* (1950). He directed *Cleopatra*, the film that nearly bankrupted Fox.

Mann, Thomas (1875-1955). German writer. The nazis burned his books, so he escaped to Switzerland and the United States. He lived in Princeton, where he gave grand parties. Einstein, who had known him in Berlin, found the parties too fancy.

Marconi, Guglielmo (1874-1937). Italian physicist. He made the first radio set when he was only twenty-two.

Martin, Dean (1917-1995). After being a boxer, gas station attendant and professional card player, he was Jerry Lewis's partner in many comedies from 1946 to 1956, then became a star by himself—for example, with John Wayne in *Rio Bravo*, in 1959. He played Marilyn's husband in *Something's Got to Give*.

Martin, Ida. Mother-in-law of Marilyn's uncle, Marion Monroe. Marilyn lived with her briefly when she was 11.

Martinu, Bohuslav (1890-1959). Czech music composer. As he spent World War II in Princeton, he composed small violin pieces for Einstein.

Marx brothers. The four brothers: Groucho, Chico, Harpo and Zeppo, made some of the funniest movies ever. Marilyn appeared in a very short scene of their last film, *Love Happy* (1949).

Maxwell, James (1831-1879). Scottish physicist. He wrote the equations for Faraday's electromagnetic field and showed that light was an electromagnetic wave.

Mayer, Louis B (1885-1957). He owned a movie theater near Boston, then bought another, then went West and became a producer. When his company merged with Metro and Sam Goldwyn's production company, he became MGM's big boss. Peter Lawford's Santa Monica beach palace was one of his former houses.

Mayer, Walther (1887-1948). Einstein's assistant in Berlin, then in the United States for a short while.

McCarthy, Joseph (1908-1957). This American senator, who saw dangerous communists everywhere, led a “witch hunt” from 1947 to 1954. He considered Einstein suspect because of his pacifist ideas.

McKee, Grace. Friend and colleague of Marilyn’s mother, who made her the child’s guardian when she entered a psychiatric asylum.

Meitner, Lise (1878-1968). Austrian physicist. As she was Jewish, she left Berlin in 1938 and took refuge in Sweden. When Otto Hahn, her long-time partner, wrote to her and described his experiment with uranium, she understood he had split the nucleus. She told her nephew, Otto Frisch, who alerted his master, Niels Bohr. Szilard then brought the news to Einstein. Lise Meitner refused to work on the atomic bomb.

Mendel, Toni. Einstein’s mistress in Berlin.

Mendelsohn, Erich (1887-1953). This architect built the “Einstein Tower” in Potsdam university.

Michelson, Albert Abraham (1852-1931). American physicist. The failure of his experiment to measure the “ether wind” highlighted the contradictions of classical physics. Michelson thought he hadn’t been careful or precise enough, until special relativity said: “There is no ether wind because there is no ether.”

Miller, Arthur (1915-2005). Playwright (*Death of a Salesman*) and Marilyn’s third husband.

Millikan, Robert (1868-1953). American physicist. He designed an experiment proving Einstein’s hypothesis that light was made of quanta.

Minkowski, Hermann (1864-1909). Lithuanian mathematician. Einstein’s teacher in the Polytechnikum. He simplified special relativity by introducing a four-dimension “space-time continuum.”

Miracle, Berniece. This daughter of Gladys and her first husband was Marilyn’s half-sister. She lived with her father in Florida and only met Marilyn towards the end of her life.

Mitchell, Jimmy. Set photographer for *Something’s Got to Give*. He took nude pictures of Marilyn, but Fox agreed to destroy them.

Mitchum, Robert (1917-1997). Born on the East Coast, he hobboed across the States as a teenager, spending time at 14 in a Georgia chain gang. He was Jim Dougherty’s pal at Lockheed Aircraft during the war, then became a theater actor and a great movie star (for example, *The Night of the Hunter*, in 1955). Marilyn’s partner in *The River of No Return* (1954).

Miyake, Hayashi. Japanese medical doctor. Einstein was his patient on board the steamer *Kitano Maru*, then his guest in Japan.

Monroe, Della. Marilyn's grandmother. Born Della May Hogan in 1876 in Missouri, she died of a heart attack in 1929. As she had probably suffered small cerebral attacks and been depressed before her death, Marilyn seemed to believe she had died crazy. Marilyn also believed (or at least, said) that she had tried to kill her when she was one year old.

Monroe, Gladys. Marilyn's mother. Born in 1902. She died in 1984, long after her daughter. Deep depression kept her in psychiatric institutions most of her life, but she was probably not as crazy as Marilyn thought.

Monroe, Marion. Marilyn's uncle, son of Otis and Della. In 1929, he leaved his wife Olive (Ida Martin's daughter) and his three children and vanished.

Monroe, Otis Elmer. Marilyn's grandfather. Became crazy at age 41. This wasn't due to some hereditary ailment, as Marilyn believed, but probably to a nervous illness provoked by syphilis.

Montand, Yves (1921-1991). French actor. Marilyn's partner in *Let's Make Love* (1960), he became her lover for a short while, then went back to his wife, French actress Simone Signoret.

Mortensen, Martin. Gladys's second husband. Early biographers thought he was Marilyn's father, but he left more than one year before her birth.

Murray, Eunice. Marilyn's home keeper at the end of her life. Sent by Dr. Greenson, she spied for him.

Negulesco, Jean (1900-1993). Directed one of Marilyn's movies, *How to Marry a Millionaire*. He would have replaced Georges Cukor and resumed the shooting of *Something's Got to Give* if Marilyn hadn't died.

Nernst, Walther (1864-1941). German chemist. Founded the Kaiser Wilhelm Institute.

Newcomb, Patricia. Marilyn's press agent and friend at the end of her life.

Newman, Paul. (1925-2008). Actors Studio student. Starred in many movies (*The Left-Handed Gun*, *Bonnie and Clyde*, etc.).

Newton, Isaac (1642-1727). English mathematician and physicist. He discovered that the same force moves a falling apple and the moon. As the proof needed calculus, he had to invent it.

Nicolai, Georg (1874-1964). Professor of cardiology in Berlin, nephew of the composer Otto Nicolai. He wrote an *Appeal to Europeans* with Einstein during World War I.

Noguchi, Thomas. “Coroner to the stars”, he autopsied Marilyn and called her death a suicide in his report.

Nordmann, Charles (1881-1940). French astronomer. Welcomed Einstein at the border when he visited France in 1922. Later, he drove him to World War I’s battlefields.

Novak, Kim. Born in 1933. Star of Hitchcock’s *Vertigo* (1958). She refused to replace Marilyn in *Something’s Got to Give*.

O’Doul, “Lefty”. Baseball player, DiMaggio’s friend, witness at his wedding to Marilyn.

Olivier, Laurence (1907-1989). English actor. He adapted for the movies, directed and played several Shakespeare plays: *Hamlet*, *Richard III*, etc. He was a scary nazi dentist in *Marathon Man*. He directed Marilyn in *The Prince and the Showgirl* (1957).

Oppenheimer, Robert (1904-1967). American physicist. From 1942 to 1945, he was the leader of the greatest team of scientists the world has ever known, in Los Alamos, New Mexico. Later, he directed Princeton’s *Institute for Advanced Study*. He was put on trial for opposing Teller’s hydrogen bomb. He was neither condemned nor fully cleared.

Pauli, Wolfgang (1900-1958). Austrian physicist. His “Pauli exclusion principle” explains why molecules combine—the object of chemistry—and also why, although atoms are mostly empty, we don’t go through the floor.

Peck, Gregory (1916-2003). Starred in *Moby Dick* (1956) and many other films. He was supposed to be Marilyn’s partner in *Let’s Make Love*, but he refused the part after Arthur Miller changed the script.

Perrin, Jean (1870-1942). French physicist. His experimental work proved that Einstein’s hypothesis about the Brownian movement was correct.

Peter Bergmann and Valentin Bargmann. Einstein’s assistants in Princeton.

Pick, Georg (1859-1942, in the Theresienstadt concentration camp). Professor of mathematics in Prague’s German university. He told Einstein he should study Ricci and Levi-Civita’s “absolute differential calculus.”

Pierson, Arthur. Directed Marilyn’s second film, *Dangerous Years*.

Planck, Max (1858-1947). German physicist. He discovered that energy was created or absorbed in a discontinuous way. He called the elementary grains of energy “quanta.”

Plecher, Marge. Marilyn’s dresser and friend. She married Whitey Snyder.

Plesch, Janos (1878-1957). One of Berlin’s most famous doctors and hosts. Einstein became his patient—and guest.

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Podolsky, Boris (1896-1966). One of the three authors, with Einstein and Rosen, of the 1935 “EPR paradox.”

Poincaré, Henri (1854-1912). French mathematician and physicist. He invented the word “relativity” (to describe Galileo’s theory). He came very close to special relativity, but stopped short. He never admitted that Einstein had succeeded where he had failed.

Powell, William (1892-1984). Marilyn’s partner in *How to Marry a Millionaire*. Jean Harlow’s “fiancé”, he had flowers deposited on her grave every week. Marilyn asked Joe DiMaggio to do the same thing for her.

Power, Tyrone (1913-1958). Male star in the thirties and forties, he played Comte de Fersen, the lover of Norma Shearer/Marie Antoinette, in a 1938 film that young Marilyn loved.

Preminger, Otto (1906-1986). Born in Vienna, assistant of the great theater director Max Reinhardt, he followed him to the States in 1933. During the war, his strong German accent helped him play nazi villains. He directed *Laura* (1944) and many other films, including *The River of No Return* with Marilyn.

Pythagoras (VIth century B.C.—if he really existed). Greek mathematician. The theorem that bears his name is demonstrated in Euclid’s *Elements*. Einstein found his own proof, his sister said.

Rasmussen, Gladys. Marilyn’s hairdresser.

Rathenau, Walther (1867-1922). German Jewish businessman and politician. Murdered by two young nationalist and antisemitic thugs. Einstein knew him well and liked him.

Reagan, Ronald (1911-2004). Radio announcer, then movie actor from 1938 on, he published Marilyn’s picture on the cover of an army magazine he was editing during the war. Much later, after a last role in *The Killers* (1964), he became President of the United States.

Reinhardt, Max (1873-1943). Austrian theater director, one of the pillars of German culture after World War I. He defended Einstein when the antisemites attacked him. As he was Jewish himself, he moved to Broadway in 1933.

Reis, May. Marilyn’s secretary in New York.

Remick, Lee (1935-1991). Theater actress, played in several movies (for example, Elia Kazan’s *A Face in the Crowd*, in 1957). Fox wanted her to replace Marilyn in *Something’s Got to Give*, but Dean Martin refused.

Ricci (1853-1925) and **Levi-Civita** (1873-1941). Italian mathematicians. Einstein used their “absolute differential calculus” and “tensors” in general relativity.

Riemann, Bernhard (1826-1866). German mathematician. Invented a non-Euclidian geometry which, according to general relativity, describes our universe pretty well.

Roberts, Ralph, or “Big Ralph”. Marilyn’s masseur and close friend at the end of her life.

Rogers, Roy (1912-1998). The “Singing Cowboy” made many films with Trigger (1932-1965), “the smartest horse in the movies.” Marilyn met him in Las Vegas in 1946 (and rode Trigger.)

Rolland, Romain (1866-1944). French writer and pacifist. His most famous novel is “*Jean-Christophe*.” Einstein met him in Switzerland in 1915.

Romanoff, Mike and Gloria. Managers of a fashionable Hollywood café.

Romm, Harry. Producer at Columbia, gave Marilyn a part in *Ladies of the Chorus*.

Röntgen, Wilhelm (1845-1923). German physicist. He discovered X-rays and received the very first Nobel Prize for physics, in 1901.

Roosevelt, Franklin Delano (1882-1945). President of the United States from 1932 until his death. Invited Einstein to the White House in 1933.

Rosen, Nathan (1909-1995). American-born Israeli physicist. Another member of the “EPR paradox” trio.

Rosten, Norman and Hedda. Marilyn’s close friends in New York. Hedda was enrolled as her secretary on the shooting of *The Prince and the Showgirl*.

Russell Bertrand (1872-1970). English philosopher and mathematician. Jailed as a pacifist during World War I. He spent part of World War II in Princeton, where he became Einstein’s friend.

Russell, Jane. Born in 1921. Starred in several movies in the forties and fifties (for example, *The Outlaw* in 1943). Marilyn’s partner in *Gentlemen Prefer Blondes* (1953).

Rutherford, Ernest (1871-1937). English physicist (born in New Zealand). He discovered the alpha and beta rays of radioactivity, as well as the nucleus of the atom.

Ryman, Lucille. Wife of John Carroll, Marilyn’s manager in 1948 and 1949. She got Marilyn her first important part—in *Asphalt Jungle* (1950).

Sachs, Alexander (1893-1973). Banker who acted as go-between when Szilard wanted to show Einstein’s letter to President Roosevelt in 1939.

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Samuel, Herbert (1872-1963). High Commissioner in Palestine under English mandate, he welcomed Einstein there in 1923.

Sanders, George (1906-1972). English actor. Played in many Hollywood movies, including Mankiewicz's *All About Eve*, with Marilyn.

Schaefer, Hal. Marilyn's singing teacher after Fred Karger. He "consoled" her when her marriage to Joe DiMaggio failed.

Schenck, Joe (1878-1961). One of Hollywood's great elders, he produced Buster Keaton's films and founded Twentieth Century Fox with Darryl Zanuck. Married to Norma Talmadge. Young Marilyn's "protector."

Schiller, Larry. This photographer, on assignment for a French magazine on the set of *Something's Got to Give*, made several shots of a naked Marilyn that were published all over the world.

Schnabel, Arthur (1882-1951). Austrian pianist. Einstein met him in Berlin.

Schrödinger, Erwin (1887-1961). Austrian physicist. Although quantum mechanics relies to a great extent on Schrödinger's equation, he followed Einstein's example and refused to accept that God plays dice .

Shearer, Norma (1902-1983). Wife of the MGM producer Irving Thalberg, starred in many movies in the twenties and thirties—including *Marie Antoinette* (1938), which drove a young Marilyn (and many other people) to tears.

Signoret, Simone (1921-1985). French actress (for example: *Casque d'or*), married to Yves Montand.

Sinatra, Frank (1915-1998). Singer and actor (for example: *On the Town* in 1949). Friend of the Kennedy brothers, Joe DiMaggio, Marilyn—and some Mafia bosses, maybe.

Snively, Emmeline. Accepted a young Marilyn in her modelling school and agency, Blue Book, thus launching her career .

Snyder, Whitey. Marilyn's make-up man and confidant (from 1946 on).

Solovine, Maurice (1875-1958). Einstein's student in Berne in 1902. Later, he moved to Paris and translated his books and articles into French.

Solvay, Ernest (1838-1922). Belgian industrialist and science buff. He organized regular meetings of the best physicists from 1911 on.

Sommerfeld, Arnold (1868-1951). German physicist. He adjusted several tidbits in the atom. He was known as a good teacher and a moral authority. Although he stayed in Germany, he didn't work for the Nazis.

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Spinoza, Baruch (1632-1677). Dutch Jewish philosopher. He thought God didn't look like a bearded old man, but encompassed the whole of nature's mystery. His community considered him heretical and expelled him. When asked about his religion, Einstein often said: "I am a Spinozist."

Stanislavsky (1863-1938). Russian actor and theater director. His work on the actors' psychology influenced modern theater—for example, Lee Strasberg's Actors Studio.

Stern, Bert. This photographer shot beautiful pictures of Marilyn at the end of her life.

Stern, Otto (1888-1965). German physicist. Einstein's assistant in Prague, then in Zurich.

Stewart, James (1908-1997). Wonderful actor (*It's a Wonderful Life*, 1946, and 91 other great films). Marilyn met him at the party celebrating the release of *The Seven Year Itch*.

Strasberg, Lee (1901-1982). Directed the Actors Studio from 1948 on. Many famous actors studied there: Marlon Brando, James Dean, Paul Newman, Sidney Poitier, Shelley Winters, Dustin Hoffman, Al Pacino, Robert De Niro.

Strasberg, Paula. Lee's wife. Marilyn's coach from 1955 to her death.

Szilard, Leo (1898-1964). Hungarian physicist. In Berlin, he patented a liquid-sodium refrigerator with Einstein (used in some experimental nuclear plants). In 1939, he convinced Einstein to sign a letter to President Roosevelt about the splitting of uranium by the Germans. This letter was considered a symbolic beginning of the long process that ended in the Hiroshima explosion.

Tagore, Rabindranath (1861-1941). Indian poet and philosopher. He visited Einstein in his Caputh lakeside house.

Talmadge, Norma (1897-1957). Star of the silent era. Joe Schenck's wife. Marilyn was named Norma after her.

Talmud, Max (1867-1941). Student who came for lunch every Thursday at the Einsteins. He gave Albert scientific books and encyclopedias. He moved to America and changed his name to Talmey.

Taylor, Liz. Born in 1932. Began her Hollywood career as a child star, became an adult star with *Giant* (1956, with James Dean), then *Suddenly Last Summer* (1959, with Montgomery Clift), etc. She behaved in such an extravagant manner on the set of *Cleopatra* that she nearly bankrupted Fox.

Teller, Edward (1908-2003). Hungarian-born American physicist. He was his friend Szilard's second driver when he went to see Einstein on Long Island in 1939. As the so-called "father" of the hydrogen bomb, he is considered the main model for Kubrick's Doctor Strangelove. He was spurned by his colleagues not so much for fathering that terrible bomb as for being a witness for the accusation at Oppenheimer's trial.

Thompson, Joseph John (1856-1940). English physicist. Who discovered the electron? He did.

Tolman, Richard (1881-1948). American physicist. Worked with Hubble in Pasadena.

Truman, Harry (1884-1972). American President in 1945, he ordered the bombing of Hiroshima and Nagasaki.

Turner, Lana (1920-1995). Star in the forties and fifties (*The Postman Always Rings Twice*, 1946, etc.)

Tuschmid, August. Taught physics to Einstein in Aarau.

Van't Hoff, Jacobus (1852-1911). Dutch chemist. He received the first Nobel Prize for chemistry, in 1901. Einstein succeeded him as a member of the Prussian Science Academy in Berlin.

von Laue, Max (1879-1960). German physicist. He received the Nobel Prize for photographing molecules with X rays. Einstein was very fond of him and considered him the only 100% honest German scientist after 1933.

von Neumann, Johannes or John (1903-1957). Hungarian-born American mathematician. One of the greatest mathematicians of the 20th century. Einstein's colleague in the *Institute for Advanced Study*. He wrote neat equations for quantum mechanics, contributed to the A bomb and the H bomb, but is mainly remembered today for his "game theory."

von Soldner, Johann Georg (1776-1833). Einstein's archenemy, Lenard, remarked that there was nothing new about the sun bending light rays, since von Soldner had suggested it already in 1801. Actually, this was the "Newtonian deviation," which was half the relativistic one. Lenard forgot to add that Cavendish had made the same suggestion before von Soldner.

von Weizsäcker, Carl-Friedrich (born in 1912). German astrophysicist. Studied how matter is created within the stars. Worked on atomic energy during World War II with Heisenberg, Hahn and others. Unclassified documents have shown that he was the one who convinced his colleagues, especially Heisenberg, to twist the truth after the war and pretend

the scientists had sabotaged the Nazi effort toward a nuclear bomb. They didn't fail on purpose, actually, but because they insisted stubbornly on exploring a dead-end path.

Warner, Jack (1892-1978). Boss of Warner Bros.

Watters, Leon (1887-1967). American chemist and businessman. Einstein liked to have rich friends like him: he stayed in his New York apartment or his summer house, used his car and chauffeur, and so on. Einstein's biography by Denis Bryan relies a lot—maybe too much—on Watters's notes and diary.

Weber, Heinrich Friedrich (1843-1912). German physicist. Einstein's teacher at the Polytechnikum.

Weber, Lois. Marilyn's press agent in New York in 1955 and 1956.

Weinstein, Henry. Producer of *Something's Got to Give*.

Weizmann, Chaïm (1874-1952). Leader of the World Zionist Organization. First President of Israel. Einstein refused to succeed him in that position.

Widmark, Richard. (1914-2008). Played nasty gangsters and tough cowboys, beginning with *Kiss of Death* (1947). Marilyn was his partner in *Don't Bother to Knock* (1952).

Wigner, Eugene (1902-1994). Hungarian-born American physicist. Szilard's first driver when he visited Einstein on Long Island in 1939. Worked on the "strong force" (known for a while as "Wigner's force"), which binds protons and neutrons in the nucleus of atoms—and explains the energy of the nuclear bomb. During the war, he was in charge of the production of plutonium in Washington state. The plutonium was used in the Nagasaki bomb.

Wilder, Billy (1906-2002). Austrian journalist and scriptwriter. Worked in Berlin until 1933. Guessing that his homeland would eventually welcome the nazis, he emigrated to the States. He learned English fast enough to write the script of *Ninotchka* (1938, directed by Ernst Lubitsch, with Greta Garbo). He wrote and directed *Double Indemnity* (1944), *The Lost Weekend* (1945), *Sunset Blvd* (1950), etc. He made two of Marilyn's best movies: *The Seven Year Itch* (1955) and *Some Like It Hot* (1959).

Winteler. Swiss family. Einstein lived in their home while a student in Aarau. The father taught Greek in the Aarau school. Einstein fell in love with one of the daughters—then seemed to forget about her when he met Mileva. Another daughter married Michelangelo Besso. The son married Einstein's sister, Maja.

Albert & Marilyn

Winters, Shelley. (1920-2006). This great actress has 130 movies to her credit (for example, *The Night of the Hunter* in 1955, *Lolita* in 1962, etc.). Young Marilyn's roommate, she introduced her to her teacher Lee Strasberg.

Woodfield, Bill. This photographer took some pictures of a naked Marilyn on the set of *Something's Got to Give*.

Wyman, Jane. Born in 1914. Played in many movies from the thirties to the sixties (for example : *The Lost Weekend*, in 1945). She was Ronald Reagan's first wife. After divorcing, she married Fred Karger, Marilyn's music teacher.

Young, Thomas (1773-1829). English doctor and scientist. In 1801, the "Young experiment" proved that light behaves like a wave.

Zanuck, Darryl (1902-1979). Soldier in World War I at age 15, then steelworker, then professional boxer, he wrote stories for pulp magazines. When the studios bought some of them, he became a full-time scriptwriter. He wrote several hundred scripts (up to twenty a year). At age 23, he was already head of production for Warner. He founded Twentieth Century Fox in 1933 with Joe Schenck. He left Fox in 1956, produced *The Longest Day* (1962) as an independent, then came back to Fox in 1962 to save the company after the disaster of *Cleopatra* and Marilyn's death. He fired everybody and started a smaller studio, which he controlled until 1971. Today, Fox belongs to the Australian press mogul Rupert Murdoch.