LETTERS FROM EINSTEIN

A Musical for Young Audiences

Book
by
Allen Cohen
(additional material by
Stephen McNaughton)

Songs
by
Allen Cohen

CHARACTERS

UNCLE JAKOB
ALBERT EINSTEIN
MAX BIEDENHEIMER
MARTA BLUMENBLATT
HANS DUNKELDINGER
MISTER KRAFT
PROFESSOR WEBER
ELSA
WAITER
SIR ARTHUR EDDINGTON
PROFESSOR ADAMS
PROFESSOR DUVAL

STUDENTS, SCIENTISTS, OFFSTAGE VOICES, ETC.

This script is in a format which would allow it to be performed by a theater company with as few as six adult actors: five men and one woman. The woman would play Marta and Elsa, one man would play Albert at all ages, one would play Uncle Jakob, and the other three men would double on the remaining male parts. (The show could even be played with four men if the actor playing Uncle Jakob doubled also, though this would be difficult.) Naturally, if a larger cast is available, the doubling can be reduced or eliminated.

The intended instrumental ensemble is a five-piece rock-type band. The set required is minimal; however the lighting elements should be maximal. The indications in the script for lighting and projection effects are only suggestions; if more is available, it should be used.

SONGS

OPENING

(As slow, mysterious music begins, out of the darkness appears the evening sky...with glittering stars, a bright moon, possibly a shooting star or comet crossing the sky. UNCLE JAKOB—a jolly gentleman in his forties or fifties—enters, examines the sky, and turns to the audience.)

UNCLE

(singing)
DID YOU EVER WONDER
WHY THE SKY IS BLUE, AND NOT BROWN?
DID YOU EVER WONDER
WHY YOU NEVER FALL UP, ONLY DOWN?
DID YOU EVER WONDER
HOW A TELEPHONE SIGNAL LETS MEMPHIS TALK TO MADRID?
WELL, THIS IS THE STORY OF A KID
WHO DID.
(The rest of the company enters one by one.)

MAN 1

DID YOU EVER WONDER
JUST HOW FAR AWAY ARE THE STARS?

WOMAN

DID YOU EVER WONDER
IF THERE'S EVER BEEN MARTIANS ON MARS?

MAN 2

DID YOU EVER WONDER
HOW A MAN IN HIS ROOM CAN TELL WHEN THE COSMOS BEGAN?

ALL

WELL, THIS IS THE STORY OF A MAN
WHO CAN.

MAN 3

YOU'LL SEE HE DOESN'T LOOK VERY SPECIAL,
AND HE'S NO DIFFERENT FROM YOU OR ME—
EXCEPT FOR A FUNNY HABIT OF LETTING HIS MIND RUN FREE.

MAN 4

YOU'LL FIND THERE'S NO BIG SECRET TO GENIUS;
YOU KEEP ON THINKING AND ASKING WHY...

ALL

TILL YOU LEARN HOW TO LET YOUR IMAGINATION FLY!

ALL *(cont.)*
DID YOU EVER WONDER
HOW WAS ALBERT EINSTEIN IN SCHOOL?
WAS HE ALWAYS BRILLIANT,
OR AT TIMES DID HE LOOK LIKE A FOOL?

UNCLE
AND AS HE GREW OLDER,
WERE HIS THEORIES ACCEPTED, OR
CONTRADICTED AND FOUGHT?

COMPANY
AHHH...

ALL
AND HOW DID HE DREAM UP ALL THE THINGS HE TAUGHT?
AND HOW DID HE CHANGE THE WAY THE WHOLE WORLD THOUGHT?
WELL, THIS IS THE STORY OF HOW...
AND IT ALL STARTS NOW!
(Blackout.)

SCENE ONE

(A schoolroom in a small German city. A few benches, a blackboard. In the upper left corner of the blackboard is printed "28 Oktober, 1888". A small boy about eight or nine years old—whom we don't yet know to be ALBERT—is seated on a bench, reading a book. As he looks up thoughtfully from the book, MAX BIEDENHEIMER, a bigger boy of Albert's age, enters.)

MAX

(taking his seat)
Hi, dummy.
(MARTA BLUMENBLATT, a precocious girl of the same age, enters.)

MARTA

(adoringly)
Good morning, Max.

MAX

(grudgingly)
Hi.

MARTA

(as she sits, to Albert)
Good morning...
(then, with a glance at Max)
stupid.
(She and Max giggle. Albert blushes and buries his head in his book. HANS DUNKELDINGER, Max's sidekick of the same age, enters.)

HANS

Hi Max, Marta.

MAX

Hi.

MARTA

Good morning, Hans.

HANS

(as he sits, to Albert)
Hello, moron, how are you?

MAX

Hey, dumdum! Trying to read, huh? Hey Marta, did you hear what he did in History yesterday?

MARTA

What?

MAX

He handed in his math homework.

(They all laugh.)

What are you gonna do today, brains? This is math class—are you gonna talk about the Crusades? "Gee, is this muh-muh-math class? I thought it was thuh-thuh-thuh-thpeech!"

(The class, except Albert, is in stitches as MR. KRAFT, the teacher, enters. They are instantly silent.)

MARTA

(brightly)

Good morning, Mr. Kraft.

KRAFT

(without looking up)

Good morning, Marta. Please remain silent while I call the roll. Max Biedenheimer.

MAX

Here.

KRAFT

Marta Blumenblatt.

MARTA

(popping up out of her seat)

Here and present, Mr. Kraft.

(She sits.)

KRAFT

Thank you, Marta. Hans Dunkeldinger.

HANS

Here.

KRAFT

Albert Einstein.

(Silence.)

Albert Einstein.

(One by one the students turn to Albert who has become distracted and is writing feverishly in a notebook. They start to whisper and laugh softly as Kraft looks up from his list.)

Albert Einstein!

ALBERT

(jumping up as Hans pokes him)

Here!

(The class bursts into laughter.)

KRAFT

Please try to stay with us, Mr. Einstein.

ALBERT

(stammering nervously)

Y-y-yes, sir.

MAX

(to Hans)

"Yuh-yuh-yeth, thir."

(They laugh.)

KRAFT

That's enough. Please sit down, Mr. Einstein.

(Albert sits.)

Now last night's assignment was an exercise in the addition of fractions. As you remember, a fraction is a part of something that is whole.

MARTA

Yes, Mr. Kraft.

KRAFT

Thank you, Marta. And as we have discovered—at least *most* of us have discovered—fractions can be added and subtracted.

(He turns to the blackboard and picks up a piece of chalk. Immediately Max pushes Albert's books off his desk. Kraft turns back to the class.)

Pick up your books, Mr. Einstein.

(Albert does.)

Now suppose I wanted to add two-thirds and five-eighths...

(writing the problem on the board)

...what would be my first step?

(Marta's hand shoots skyward. Without turning to see her)

Marta?

MARTA

(popping up)

The first step in the addition or subtraction of fractions is to find the least common denominator.

(She smiles proudly and sits.)

KRA FT

Thank you, Marta. Now in—

MARTA

You're welcome, Mr, Kraft.

KRAFT

—in our case the denominators are three and eight. To find the least common denominator we must multiply... Why is that?

(Marta's hand shoots up again.)

Ah...Mr. Dunkeldinger?

HANS

(taken unawares)

Uh, because...because...

MAX

(whispering)

Not divisible.

HANS

Because they're not visible.

KRAFT

*Div*isible, Mr. Dunkeldinger. So our least common denominator would be what?

(Marta's hand shoots up again. She wriggles fervently as Kraft looks over the class.)

Mr. Einstein?

ALBERT

The—the l-least—

KRAFT

Please work the problem on the board.

(Albert crosses to the board and takes a piece of chalk)

Do you know how to work it?

ALBERT

Sure I know how to w-w-w... I know three different ways to w-w-w—

KRAFT

(puzzled)

Three different ways?

ALBERT

D-decimal, l-l-logarithmic, and—

KRAFT

(patiently)

Marta, please tell Mr. Einstein the first step in solving the problem.

MARTA

(popping up)

The first step in the addition or subtraction of fractions is to find the least common denominator.

MARTA *(cont.)*

(She sits.)

KRAFT

Now Mr. Einstein, do you know what the least common denominator is?

ALBERT

Yes, the deast lommon kenominator—

(The class laughs.)

I mean the keast dommon lenominator—

(The class laughs harder.)

KRAFT

That's enough.

(The class is silent. He looks at his watch.)

I have to go to the principal's office for a few minutes. If you wish to try working the problem on the board while I'm gone, Mr. Einstein, go ahead. If you can't, when I return Mr. Biedenheimer will do it for us. I hope you know how to work the problem, Mr. Biedenheimer.

MAX

Oh yes, Mr. Kraft.

(as Kraft exits, to the other children)

I mean, I may not be too smart—but I'm no Einstein!

(As Albert picks up the chalk and rapidly writes on the board, Max sings.)

WHEN THE TEACHER SAYS, "WHAT DOES TWO PLUS TWO MAKE?"
WHO ANSWERS, "GREEN"?
ONLY EINSTEIN
COULD BE SUCH A FOOL.

HANS

WHEN OUR HOMEWORK IS READING FOUR NEW CHAPTERS,
WHO READS FOURTEEN?

MAX, HANS & MARTA

ONLY EINSTEIN—
DUMBEST KID IN SCHOOL!

HANS

HE'S CUCKOO—HE'S NUTS!

MARTA

HE'S A MESS!

MAX

HE'S A KLUTZ!

HANS

HE'S WEIRD!

MAX

NO, HE'S JUST DUMB.

HANS

HE DOESN'T KNOW HOW TO TUH-TUH-TUH-TALK...

MARTA

I BET HE SUCKS HIS THUMB!

MAX & HANS

YUCK!

MARTA

WHEN WE MAKE A COLLAGE, WHO GLUES HIS LUNCH ON,
AND EATS THE GLUE?

ALL

WELL, THE ANSWER IS ALMOST GUARANTEED:
ONLY EINSTEIN,
ALBERT EINSTEIN—
THE BOY LEAST LIKELY TO SUCCEED!

(Possible dance section. Meanwhile Albert is indeed working the problem in three ways on the board.)

HANS

LET'S FACE IT, HE'S GOT A FUNNY NAME!

MAX

You said it, Dunkeldinger!

ALL

HE'S DIFFERENT, WHILE WE'RE EXACTLY THE SAME!

(Max and Marta are in the same pose, but Hans is in a different one. They glare at him and he hastily imitates them. During the following they take erasers and, as Albert tries to stop them, erase all his work.)

AND WHEN FINALLY ONE DAY WE'RE ALL GROWNUPS
AND SCHOOL IS THROUGH,
WE'LL GET BIGGER AND SMARTER YEAR BY YEAR.
BUT THERE'S ONE VERY SLOW KID WHO'LL
STILL BE SPENDING HIS LIFE IN SCHOOL—
ONLY EINSTEIN
WILL STILL BE HERE!

(Mr. Kraft returns to find Albert standing in front of a blank blackboard. Blackout.)

SCENE TWO

(Uncle Jacob enters. His manner is warm, wise, and candid. During the following speech the schoolroom vanishes, and we see a bare stage under the night sky.)

UNCLE

(to the audience)
My nephew Albert. Looking at him now, you'd never think that he'd amount to anything, would you? Naturally his parents were very concerned that he was having trouble in school...and when his father asked Albert's teacher which profession he thought Albert should go into, the teacher said "It really doesn't matter—he'll never be a success at anything." Well, as you can imagine, Albert's parents weren't exactly overjoyed to hear this. So they asked me to pay him a visit. You see, I am Albert's favorite uncle. His parents think it's because I bring him little presents now and then. But Albert and I know better—he can talk to me. And I know that he's a bright boy. After all, he's *my* nephew!
(A violin is heard playing scales.)
That's him playing now.
(A particularly sour note is played.)
Well, he'll learn. Albert! Albert! Come out here.
(The music stops.)
Yoo-hoo...Albert...
(Albert enters.)

ALBERT

Uncle Jakob!
(He runs to meet his uncle. They shake hands gravely, then smile and hug each other.)
What are you doing here? We weren't expecting you for at least a month.

UNCLE

I'm on a special mission this time, Albert. I've come especially to visit you. That was you practicing the violin just now?

ALBERT

Yes sir.

UNCLE

Well, keep practicing. Oh, I almost forgot—I have something for you.

ALBERT

Really? Great! What is it?

UNCLE

Oh ho! Not so fast, my friend. We need to have a little talk—

UNCLE & ALBERT

About school.

UNCLE

(Chuckles. After a beat)
A beautiful clear night. isn't it?

ALBERT

Yes sir.

UNCLE

Now let me see.
(pointing)
Which one is that one, Albert?

ALBERT

That one? That's the constellation Orion.

UNCLE

And that one?

ALBERT

Andromeda.

UNCLE

How about...that one?

ALBERT

That's Ursa Minor—the Little Dipper.

UNCLE

(proudly, to the audience)
You see? My nephew!
(to Albert)
Now, what about the bright star at the end of the handle?

ALBERT

That's Polaris—the North Star.
(He looks at Uncle Jakob, who says nothing, so he continues.)
Polaris is different from all the other stars...

UNCLE

Albert, what's the trouble at school?
(Silence.)
Can't even tell me, eh? Your favorite uncle?
(Silence.)
The one who always makes you laugh?
(He makes funny faces at Albert but gets no reaction.)
The one who gave you that beautiful telescope?
(Silence.)
The one who will never show you what's in this box unless you tell him?

UNCLE *(cont.)*

(He produces a small square box from a pocket. As Albert reaches for it, he quickly hides it behind his back.)

Ah ah ah! First we talk.

ALBERT

(after a pause)

Well...I-I don't know w-w-what's wrong, Uncle Jakob. I mean I know the answers, but... See, there's all these things I keep thinking about...I have all these, these *pictures* in my head...all these weird ideas...

UNCLE

For instance?

ALBERT

Well...if a train is running fast—and you're on a second train running right next to it at the same speed—then the first train looks like it's standing still, doesn't it?

UNCLE

Yes, that's true.

ALBERT

So—if you're looking at a ray of light going through space, and you're flying right next to it at the same speed—then does the ray of light look like it's standing still?

UNCLE

Well of course it... Hmmm.

ALBERT

And what does a ray of light look like when it's standing still?

UNCLE

That's a good question, Albert...

(looking intently at Albert)

a very good question. You didn't seem to have a problem talking about it just now.

ALBERT

But that's not what we study in school. And here it's just you. In school, the teacher asks me a question, and everyone's watching me, and I get nervous...and the answer and all the things I'm thinking about get mixed up inside my head, and I c-can't g-g-get any of it out...and...and the other kids...

UNCLE

Yes, what about them?

ALBERT

(on the verge of tears)
They...they laugh at me...
(A beat.)
And the more I try to explain it, the more things go wrong...and the more they laugh... I'm not stupid, Uncle Jakob—so what is it?

UNCLE

You're just different, that's all. And you haven't yet learned the words to express all the things inside you. But someday you will.
(He sees that Albert is confused by this. Looking up at the sky again)
So Polaris is different from all the other stars. Why is that?

ALBERT

Well, it's one of the brightest...

UNCLE

Mm-hm...and why else?

ALBERT

(still puzzled at his uncle's drift)
Because it doesn't move.

UNCLE

Right. In fact, it's so steady and reliable that sailors used to navigate by it. It's not only different, Albert...it's *special*. Which reminds me...
(holding out the box)
For you.

ALBERT

What is it? —I mean, thank you, Uncle Jakob! What is it?

UNCLE

See for yourself.

ALBERT

(He tears open the box and takes out a compass—a large, shiny, beautiful old model. He holds it so that it gleams in the light.)
Oh my gosh... A compass!

UNCLE

(to audience)
I think he likes it.

ALBERT

A magnetic compass!

UNCLE

So what do you think?

ALBERT

Oh, it's great! Thank you!
(He hugs Uncle Jakob.)

UNCLE

Now Albert, this is not a toy.

ALBERT

I know, Uncle Jakob—it's a real precision instrument.

UNCLE

I thought you might find it interesting.

ALBERT

Oh I do, Uncle Jakob!

UNCLE

Albert, now that we've had our little talk, I want you to keep me informed of your progress in school.

ALBERT

(oblivious to everything but the compass)
Yes, Uncle Jakob.

UNCLE

Write to me and tell me how you're doing.

ALBERT

Yes, Uncle Jakob.

UNCLE

Often.

ALBERT

Yes, Uncle Jakob.

UNCLE

Well, I can see that you're dying to talk some more, but I think I should leave you with your new compass.

ALBERT

Yes, Uncle Jakob.

UNCLE

(after a beat)
The moon is covered with purple polka-dots tonight.

ALBERT

Yes, Uncle Jakob.

UNCLE

(He looks at the audience, smiles and shrugs.)

Good night, Albert.

(He starts off.)

ALBERT

Uncle Jakob?

UNCLE

Yes, Albert?

ALBERT

Why does the needle always point north?

UNCLE

Well...it's magnetic.

ALBERT

I know—but why does that make it point north? There's nothing pulling it, making it point that way.

UNCLE

Curious, isn't it?

ALBERT

There must be something you can't see. I wonder if a scientist would know...

UNCLE

Maybe. The world is full of amazing things, Albert...amazing things. Good night, my boy.

(He exits.)

ALBERT

Amazing, yes...things in front of you every day, and you never stop to think about them...but when you do, they're...amazing...

YOU CAN TURN A COMPASS ROUND AND ROUND,
YOU CAN MOVE IT BACK AND FORTH,
YOU CAN TAKE IT ANY PLACE ON EARTH—
BUT THE NEEDLE ALWAYS POINTS NORTH.
THERE'S NOTHING YOU CAN SEE,
BUT SOMETHING MAKES IT TURN,
AND QUICKLY YOU LEARN...

(An elaborate light show begins, if possible, as offstage voices enter.)

THERE ARE POWERS IN THE SKY,
INVISIBLE FORCES ALL AROUND.
YOU'D THINK THAT NOTHING TURNS THE NEEDLE—
BUT THERE'S MORE THAN MEETS THE EYE...
POWERS IN THE SKY.

(He puts the compass in his pocket. The light show picks up in tempo and intensity.)
YOU CAN WHIRL A BALL AROUND YOUR HEAD
IF YOU TIE A STRING TO THE BALL,
BUT THE PLANETS TURN AROUND THE SUN—
AND THEY'RE NOT CONNECTED AT ALL!
THERE'S NOTHING YOU CAN SEE,
BUT SOMETHING MAKES THEM MOVE,
AND SOON YOU CAN PROVE...

THERE ARE POWERS IN THE SKY,
INVISIBLE FORCES ALL AROUND.
YOU'D THINK THAT NOTHING GUIDES THE PLANETS—
BUT THERE'S MORE THAN MEETS THE EYE...
POWERS IN THE SKY!

(Another change of lighting: the focus is now on Albert.)
THE ENERGIES THAT BIND TOGETHER THE UNIVERSE
CAN'T BE SEEN OR HEARD OR HELD IN THE HAND...
(He stops abruptly as a new thought strikes him.)
BUT THERE'S NOT A SINGLE THING IN ALL OF THE UNIVERSE
THAT THE HUMAN BRAIN CAN'T UNDERSTAND!

(And now, all stops out on the light show: every effect possible, rioting over the stage and the house as well.)
THERE ARE POWERS IN THE SKY,
INCREDIBLE FORCES ALL AROUND.
BUT I CAN STUDY THEM AND LEARN THEIR RULES,
AND HARNESS THEM TO USE AS TOOLS,
'CAUSE NOW I KNOW A GREATER POWER
THAN ALL OF THEM COMBINED...
THE POWER OF THE MIND!
(Albert holds the compass over his head. Lights, voices, band, everything builds to a climax. Blackout.)

SCENE THREE

(At extreme left, on the apron or lip of the stage, is a featureless writing desk. Uncle Jakob enters from right, carrying a folder or a box.)

UNCLE

I don't know whether the compass did it or not, but soon I began to get letters from Albert, reporting more success in school. Now when Albert was involved in something, he tended to get absent-minded about everything else...and he would write on whatever was handy. So I would get letters on every type of paper possible...

(pulling out examples)

Newspapers...napkins...lunch bags...and even...

(He shows a missive written on toilet paper.)

Here's an early example.

(He takes out a letter written on newspaper, turning it as he reads. Meanwhile Albert, now twelve years old, has entered and sits at the desk, writing, holding a sandwich in his other hand.)

UNCLE & ALBERT

"Dear Uncle Jakob..."

ALBERT

(continuing as Uncle Jakob reads)

"There is a force we can't see that makes the compass point north. Still working on the problem."

UNCLE

(looking up triumphantly at the audience)

Hmmm!

(He reads again.)

ALBERT

"Thank you for the chemistry set."

(He jumps in alarm at a loud explosion offstage. He looks off for a moment, then resumes writing.)

"Please send another one soon. I got an A in algebra. Love, Albert."

(He stops writing, starts to rise, stops, then sits and writes again.)

"P.S. I wrote this during my lunch hour. Sorry about the mustard."

(Albert exits, biting into his sandwich, as Uncle Jakob wipes his fingers.)

UNCLE

(replacing the letter)

As Albert progressed in school his grades kept getting better, especially in science and mathematics. He found in these subjects the language he needed to express the ideas bubbling inside him. Here's his last letter from high school...

UNCLE *(cont.)*

(As he takes out another letter, Albert, now seventeen, enters and sits at the desk, writing.)

ALBERT

"Dear Uncle Jakob: Calculus has certainly made my studies easier—"

UNCLE

Easier! Ha!

ALBERT

"—because it gives me the tools I need to understand modern physics—and maybe someday to go beyond it. I'm enclosing my final report card. Notice the A's."

UNCLE

(pulling out the report card, proudly)

As if you could miss them!

ALBERT

"See you at graduation. Love, Albert."

(He exits, folding the letter, as Uncle Jakob puts his copy away.)

UNCLE

Albert wanted to go to the highly regarded Swiss Polytechnic Institute and study physics. His father was against the idea, which he thought was a foolish dream—he wanted Albert to take up a "useful" occupation. But a certain uncle of Albert's convinced him to give Albert a chance. And last week this came in my mail...

(He takes a letter from his pocket as Albert, now twenty-one, enters, sits, and writes.)

ALBERT

"Dear Uncle Jakob: My senior year here at the Polytechnic has been challenging. But to pursue my research I need to be a teacher, and my only chance is to become the assistant to my physics instructor, Professor Weber. My friend Elsa says I'm sure to get the job because my grades are so high. I like her."

ALBERT & UNCLE

"There's something...special about her."

(Uncle Jakob looks significantly at the audience, then returns to the letter.)

ALBERT

"Anyway, Professor Weber is a difficult man, and not very open to my ideas, so getting the job may be hard. Also, he insists on being called *Professor* Weber, and I keep forgetting and calling him *Mister* Weber. I really don't mean to annoy him...but it does make Elsa laugh."

(He exits with the letter, thoughtfully.)

UNCLE

Albert kept waiting for Professor Weber to mention the job. He was afraid to bring it up himself. But time passed, and by the last day of classes he still didn't know whether he had a job or not.

(He exits. Behind him has formed a classroom in the Swiss Polytechnic Institute in Zurich. Students sit at desks, among them Albert and, sitting next to him, ELSA, a bright and pretty girl of his age. PROFESSOR WEBER, a grim martinet of middle age, stands before the class, winding up his lecture.)

WEBER

So this can only lead us to one conclusion—a fitting end to this final semester: that the science of physics has remained fundamentally the same since the days of Isaac Newton. His great work revealed the true nature of the universe; all that anyone since then has done is to fill in the details. Any questions?

(Albert raises his hand.)

Mr. Einstein.

ALBERT

Well, Mr. Weber—

WEBER

That's *Professor* Weber!

(Elsa hides a chuckle as she and Albert exchange a glance.)

ALBERT

I'm sorry, *Professor* Weber—but I don't understand how the course can be over when we haven't even touched on the recent discoveries in electromagnetism, or the theories of Maxwell and—

WEBER

Mr. Einstein, these theories you speak of are simply that—theories. What I teach are facts—laws of nature.

(Elsa raises her hand.)

Yes?

ELSA

Professor, didn't those facts start out as theories?

WEBER

Yes, but they were tested and proved, until over the years they took on the certainty of facts. Perhaps when Mr. Einstein's theories have been around for a hundred years, we may take them seriously.

ALBERT

But Mr. Weber—

WEBER

Professor Weber!!!

ALBERT
Professor Weber—in a hundred years we'll all be dead! Newton's view of the universe was fine in its time, but it's too limited to explain all we've learned since. There are new views of the universe, new ideas in the air—

WEBER
New ideas, eh? Very well, we have a few minutes left. Tell us one of your new ideas.

ALBERT
Well, it's kind of hard to explain, it—

WEBER
Come, come, Mr. Einstein. We are scientists here, we demand proof. You say that Newton is out of date?

ALBERT
In some ways, yes...

WEBER
Then show us why and how.

ALBERT
All right.
(quickly becoming absorbed by the problem as he states it)
You see, sir, if you're riding along through space on a ray of light, and you hold up a mirror in front of you, the law of—

WEBER
What? "Hold up a mirror"? "Ride on a ray of light"? You can't ride on a ray of light.

ALBERT
I know that, they're just pictures I use, to help—

WEBER
Pictures? This is physics, not art appreciation. Where are your equations, your proofs?

ALBERT
I haven't worked them out yet. It's just an idea I have, it needs an entirely new—

WEBER
Really, Mr. Einstein, you can't expect scientists to take these vague fantasies of yours seriously.
(He turns to dismiss the class.)

ALBERT

(bursting out)
Isn't there any room for new ideas in this physics of yours? Aren't you at all curious about—

WEBER

Mr. Einstein, I applaud your childlike curiosity. But if you don't mind, I will stick with what is proven. And you might remember that the man who always makes waves...just may drown. Class dismissed.

(During the following the students file out, and Weber gathers his books and papers.)

ELSA

(as she and Albert stand up)
Albert, the study group is meeting early today. Try not to forget this time, all right?

ALBERT

What? Oh, right. Listen, Elsa, I have something important to ask him. Wait one second and I'll walk you over.

ELSA

Now? You think this is a good time?

ALBERT

Elsa, my whole future depends on becoming his assistant. We graduate in two days—I can't put it off any longer.

ELSA

I guess not. Wait!

(She straightens his tie and tucks in his shirt.)

ALBERT

(embarrassed)
Oh, Elsa...

ELSA

A tidy appearance never hurts. Good luck.

ALBERT

(starting toward Weber)
Thanks, I'll need it.

ELSA

(in a loud whisper)
And don't call him "Mister"!

WEBER

(as Albert approaches him)

Yes, Einstein?

ALBERT

Mist—uh, Professor Weber...I've heard that Marcel Grossmann has been given a teaching assistantship under Professor Fiedler...and Kollros will be working for Professor Hurwitz...and Ehrat for Professor Rudio...and I was wondering if...if you've decided about...I mean, despite our differences, I—

WEBER

Yes, Einstein, I've chosen my assistants. You are not one of them.

ALBERT

No? B-but sir, why not?

WEBER

I'm surprised that you need to ask, Einstein. You have no future in physics.

ALBERT

No future? B-but my g-grades are all—

WEBER

Oh yes, your grades are excellent, but grades are not enough. For one thing, you lack respect. Respect for the teachings of the great men of the past...and respect for the authority of your superiors. One can't tell you anything—you know it all.

ALBERT

But sir, I can—

WEBER

More importantly, you lack the proper character for physics. It is a rigid, exact science. It has no place for a dreamer.

ALBERT

No place? Didn't all the great ideas in physics begin as someone's dream?

WEBER

Perhaps. But they only became part of physics when they were expressed exactly and scientifically. Without that, your vague pictures are only useless daydreams...and they have no place in a physics classroom.

(He starts to leave, turns back.)

I wish you luck in whatever field you may find yourself suited for.

(He exits. Albert sits, stunned. Elsa slowly approaches him.)

ELSA

Albert...

ALBERT

(slowly)

Did you hear? No job...no prospects...no future... All I've ever wanted to do was study physics. My life is over.

ELSA

Oh, yes, it's time to die. So prove the law of gravity—go up to the clock tower and jump off. Or show that man can't breathe water—drown yourself in your bathtub.

(Albert chuckles weakly despite himself.)

You say your life is over? Well, I never thought I'd say this...but Albert Einstein, you're *wrong*. I may not understand all your ideas—but I know something that you don't.

SURE AS THE SUN WILL RISE
IN THE MORNING,
ONE DAY YOU'LL SHOW US THE WORLD IN A BRAND NEW WAY.

SURE AS THE RIVERS RUN
TO THE OCEAN,
ONE DAY THE WHOLE WORLD WILL TREASURE EVERY WORD YOU SAY.

AND THOUGH YOU THINK THAT NOTHING
IS ONE HUNDRED PERCENT SECURE,
DEEP DOWN I KNOW BETTER,
AND I'M ABSOLUTELY SURE.

YES, SURE AS THE SPRING WILL TURN
INTO SUMMER,
ONE DAY THE WORLD WILL BELIEVE IN YOU AS I DO TODAY.
YOUR FUTURE HAS ONLY BEGUN,
SURE AS THE SUN.

ALBERT

(slowly, as if following the logic of her argument)

MY LIFE IS ALL AHEAD OF ME...

ELSA

AND THIS IS JUST THE START.

ALBERT

(with mounting confidence)

I'LL MAKE MY WAY,
AND COME WHAT MAY,
I'LL FIGHT FOR MY DREAM...

ELSA

FIGHT FOR YOUR DREAM...

ALBERT
UNTIL I'VE WON...

BOTH
THEN, SURE AS THE STARS WILL SHINE
IN THE EVENING,
ONE DAY WE'LL REACH UP AND TOUCH THOSE FAR-OFF STARS.
AND SURE AS THE TIMELESS HILLS,
SURE AS THE CHANGING TIDE,
I'LL ALWAYS BE AT YOUR SIDE...
SURE AS THE SUN!
(They clasp hands. Blackout.)

SCENE FOUR

(Uncle Jakob enters.)

UNCLE

Despite his new confidence, Albert couldn't find a position in any university in Europe. Finally he managed to get a job as an examiner in the Swiss Patent Office. It didn't pay much, but it was a job.

(taking a letter from his pocket, as Albert enters, sits at the desk, and writes)

He writes to me...

ALBERT

"Dear Uncle Jakob: Every day I go to the Patent Office, and examine inventions, to see if they are new enough to deserve their own patent. Then I go home to my little apartment and think about physics. In some ways the job is good for me—it trains me to observe and analyze, and it forces me to express myself clearly. But I do get tired of other people's ideas taking up the time I should be devoting to my own."

(Albert exits as Uncle Jakob puts away the letter.)

UNCLE

Meanwhile Albert worked toward his Ph.D., spent time with his friend Elsa, and played the violin, which he found relaxing...

(We hear an offstage violin playing a simple tune. It is no better than it was before.)

even if no one else did.

(Uncle exits. Lights up on a park bench, down right. Up and left of it, occupying most of the stage, is Albert's living room: a few shabby pieces of furniture, a cloth-covered table, a blackboard, general disorder. Elsa is sitting on the park bench. She looks at her watch. Albert walks on slowly, oblivious to everything around him, eyes on the ground. She watches him until he walks right past her.)

ELSA

Albert!

(He looks up, startled.)

I'm over here, Albert.

ALBERT

Elsa! How nice to see you!

(He sits next to her and takes her hand.)

This is so strange. I was just thinking of you today—and now seeing you reminds me of something—I can't quite remember what...

ELSA

Was it that you were going to meet me here?

ALBERT
That's it! I was going to... Oh. Well, here I am. I was thinking about relativity, you see. How are you?

ELSA
I'm fine. And you?

ALBERT
Oh, fine...

ELSA
I see you still can't tie your tie properly. Here, let me.

ALBERT
Oh, Elsa...

ELSA
Now Albert, a tidy appearance—

BOTH
Never hurts...

ALBERT
I know.

ELSA
And how is your work on relativity going?

ALBERT
Oh, it's...it's...you know...

ELSA
Last month you said it would be finished by now.

ALBERT
I did?

ELSA
And last year you said it would be finished six months ago.

ALBERT
Well, I—

ELSA
Whatever happened to your dream of being a great physicist? Do you want to stay in the Patent Office your whole life?

ALBERT

Of course not. But Elsa, it's so hard. I'm trying to create a whole new theory of light and motion, to express ideas that have never been expressed before. And I keep running into a wall. My theory explains so much that science doesn't yet understand...but I can only take it so far and then it breaks down. I'm stuck.

ELSA

Isn't there some other approach you can try?

ALBERT

I've tried every one I can think of.

ELSA

But Albert...time is passing. For you and...for both of us. And lately it seems to be passing so fast...

ALBERT

I know what you mean. Sometimes it goes so slowly, and other times— Wait a minute! That's it!

ELSA

What's it?

ALBERT

Time!

(rising hastily)

Elsa, I have to go now. Come see me tomorrow, I should be finished by then. Bye!

ELSA

But Albert, what in the—

ALBERT

(running off)

Time! Elsa, you're a genius!

ELSA

What did I say?

(Blackout on park bench area as lights come up on Albert's living room. He enters, walks quickly to the blackboard, and picks up a piece of chalk.)

ALBERT

Time...time... Now let's see...

(He begins to write on the board as the lights fade to black. After a beat they bump up to show the blackboard covered with writing. In the center are the four equations of the Lorentz transformation. Around them are many chaotic scrawls such as "addition of velocities", "$E=mc^3$?", and "I must not forget to..." Elsa enters hesitantly.)

ELSA

Albert? Hello? Anyone home?

(Albert enters, wrapped in a shabby dressing gown, rubbing sleep from his eyes, yawning.)

ALBERT

Elsa? What's the matter?

ELSA

Nothing's the matter. You told me to come over today.

ALBERT

Today? What time is it?

ELSA

It's three in the afternoon.

ALBERT

Oh my gosh. I was up all night. I must have gone to bed around four in the morning.

ELSA

I can come back later...

ALBERT

No, no. Listen, Elsa, I did it! I found the language I needed, and solved the problem that's been holding me up. I finished the theory of relativity!

ELSA

That's wonderful!

(starting to sit down)

You must tell me all about it...

(She notices the mess on the chair and around the room.)

as soon as I've cleaned up this room.

(She starts to gather books, clothing, etc.)

ALBERT

Never mind that now. I've just finished one of the most revolutionary theories in the history of science, and you want to tidy up my living room?

ELSA

There's no reason why a great scientist shouldn't have a clean apartment.

ALBERT

I agree. But can't it wait till I've told you about the theory?

ELSA

All right.

(She sits.)

ALBERT

(turning toward the blackboard)

Good. Now you see my theory—

(He turns back and sees that Elsa is quietly folding his clothes.)

Elsa...

ELSA

Sorry.

(She puts the clothes down.)

Go ahead.

(NOTE: The staging indicated below is only one of several possible ways to illustrate Albert's explanation. Budget permitting, different means could be used: for instance, rear projection, with the walls of Albert's room suddenly turning into screens.)

ALBERT

(pointing to the Lorentz equations on the board)

Now these are the mathematics of the theory, and they're pretty complicated. But the basic idea...well, it's...

SIMPLE,
VERY SIMPLE—
IT'S SO SIMPLE THAT IT'S A BORE;
SO SIMPLE,
IT'S AMAZING
THAT IT'S NEVER BEEN SEEN BEFORE.
LIKE ANY OTHER KIND OF PUZZLE,
IT'S HARD UNTIL YOU FIND THE KEY—
AND THEN IT'S SIMPLE,
REALLY SIMPLE...
IT'S AS SIMPLE AS A-B-C.

(Music continues under. Standing behind the table)

Now everyone knows that time is time—that no matter where you are, or where you're going, a minute is always a minute, and an hour is always an hour, right?

ELSA

Right.

ALBERT

Wrong.

ELSA

What?

ALBERT

Let's take an example. Imagine a train going one hundred miles an hour...

(From under or behind the table he produces a toy train car and puts it on the table.)

and a man riding inside.

ALBERT *(cont.)*

(He produces a tiny doll or toy man and puts it inside the train.)

If the blinds are drawn, and the train ride is perfectly smooth, the man on the train can't tell if it's moving or not. Now say he starts walking forward through the train at five miles an hour.

(He "walks" the doll jauntily along the train.)

That's five miles an hour—if you're watching him while you're sitting on the train.

(He produces a second, differently colored doll, and puts it inside the train.)

But if you're standing by the tracks...

(He puts the second doll on the table, beside the train.)

he's walking at a *hundred* and five miles an hour...the five miles an hour he's walking...

(He "walks" the first doll.)

plus the hundred that the train is going.

(Still "walking" the doll, with his other hand he moves the train forward.)

So the speed of the man on the train depends on *your* speed when you measure him. Is it five—or a hundred and five?

ELSA

Well, it depends...

ALBERT

Exactly. Speed is relative. But that's not all—*time* is relative too. For people moving a different speeds, time is different.

ELSA

But that doesn't make sense, Albert. Time is time.

ALBERT

Not all the time.

(Elsa groans.)

Sorry. But I can prove it. Let's say that when half the train has passed the man standing by the tracks, bolts of lightning strike the front and rear of the train.

(He sketches on the blackboard a long rectangle for a train, a stick man standing below its center, and two bolts of lightning at front and rear.)

Now he sees both bolts strike at the same time—which really means that the light of their striking reaches his eyes at the same time.

(He draws dotted lines from both bolts to the stick man. Returning to the table)

And if the train were standing still, the man on the train would *also* see them strike at the same time. But since the train is moving forward, he sees lightning strike the front *first*.

ELSA

What? But—how can that be?

ALBERT

SIMPLE—
(picking up the first doll and singing for it, in a comic falsetto)
VERY SIMPLE—
(picking up the second doll in his other hand and singing in a different falsetto)
IT'S SO SIMPLE THAT IT'S ABSURD.
(in his own voice)
THE ANSWER IS SO SIMPLE—

ELSA

I'M BEGINNING TO HATE THAT WORD.

ALBERT

NOW STAY WITH ME UNTIL I FINISH,
AND AFTER THAT YOU WILL AGREE
THAT IT'S SO SIMPLE...
(While he holds his note, the two DOLLS suddenly join in. They can be sung falsetto by two other men hidden behind or under the table.)

DOLLS

TRULY SIMPLE...

ALBERT & DOLLS

IT'S AS SIMPLE AS ONE-TWO-THREE.
(Music continues under. Albert puts the first doll back in the train and the second by the side of the train.)

ALBERT

Now we've said that the light from both lightning bolts reaches the man by the tracks at the same time.
(He produces a gas or old-style electric lamp and puts it in front of the train, so that it shines on the train.)
But the man on the train is moving forward—
(He moves the train forward slightly.)
so the light from the bolt in front will reach his eyes a tiny bit *sooner* than it reaches the man standing still...
(He puts the lamp behind the train.)
...while the light from behind will have farther to go to reach him, so it'll reach him a tiny bit *later*.

ELSA

So things that happen at the same time for one person *don't* always happen at the same time for someone else!

ALBERT

Exactly!

ELSA
But which one is right—the man on the train or the man standing still?

ALBERT
They *both* are.

ELSA
I was afraid you were going to say that.

ALBERT
It just depends on where you measure from. Don't forget, the man by the tracks isn't really standing still either...
(producing a globe and holding the second doll on it as he turns it)
the earth is turning under him at a thousand miles an hour...
(walking in a circle, still spinning the globe)
and circling around the sun at sixty-three thousand miles an hour...
(walking faster and in a more erratic path)
and the solar system is turning around the center of the galaxy...
(moving even faster and more crazily)
and so on, and so on, and so on! So not only is he not standing still...
(He lifts the doll off the globe and makes it flutter down as though dizzy and "crash" on the table.)
but there's no such thing as standing still, anywhere in the universe. There's no "right place" to measure from. *It's all relative*—which is why I call this the theory of relativity.
(indicating the equations on the board)
There's a lot more to it, of course—but that's the idea. Now all I have left to do is type it up and send it out to be published.

ELSA
Albert, I may be crazy for saying this...but I think I understand!

ALBERT
Of course! It's...
SIMPLE...

ELSA
(picking up the two dolls)
VERY SIMPLE...

ALBERT
IT'S SO SIMPLE BECAUSE IT'S TRUE.

ALBERT & ELSA
(dancing around the room in orbital motion, he with the globe, she with the dolls)
YOUR MOTION, TIME, AND DISTANCE
ALL DEPEND ON YOUR POINT OF VIEW.

ELSA
IT ISN'T HARD TO SEE THE LOGIC...

ALBERT
IT DOESN'T TAKE A PH. D. ...
BECAUSE IT'S SIMPLE... ELSA & DOLLS
SIMPLE AS A-B-C...

ALL SO SIMPLE...
SIMPLE AS ONE-TWO-THREE...

IT'S AS SIMPLE... SIMPLE...
AS C-A-T!

(He produces a cat and puts it on the table. Blackout.)

SCENE FIVE

(Uncle Jakob enters, holding a small package and a letter. Albert, now twenty-five, enters and sits at desk, writing.)

UNCLE

Today I got this package from Albert. Here's the letter that came with it.

ALBERT

"Dear Uncle Jakob: Enclosed is a copy of the current issue of *Annals of Physics*. I hope you like the article about relativity on page fifty-five—it's one of three articles currently in print by a certain nephew of yours."

UNCLE

(looking up, impressed)

Three articles published! That's exciting.

(He reads again.)

ALBERT

"Love, Albert Einstein...Ph.D."

UNCLE

(more impressed)

Ph.D.! My Albert is a doctor! Now *that's* exciting!

(He reads again.)

ALBERT

"P.S. Spending lots of time with Elsa. Hope to have some big news about the two of us in my next letter."

(He exits.)

UNCLE

(rereading slowly)

"Some big news about the two of us"...

(looking up, radiant)

Now that's *really* exciting!

(He rushes off. Behind him has appeared a sidewalk café. The tables are covered with white tablecloths. Albert is sitting at a table. By him are a candle in a holder, a thick book, and a violin case. He is nervous, continually looking at his watch, looking around him, etc., and sipping from a teacup in front of him. A WAITER comes up to him, a pompous man with a perpetual sneer.)

WAITER

Would you like to order anything else, sir?

ALBERT

No thank you.

WAITER

Another cup of tea, perhaps?

ALBERT

No, this one is fine, thanks.

WAITER

As you wish.

(He leaves. Albert glances at his watch, drums his fingers on the book, glances at the book, opens it to a particular page, starts to read. Without looking up, he takes out a fountain pen and starts to scribble formulae on the tablecloth, muttering under his breath. Elsa enters, looking around anxiously.)

ELSA

Albert, *there* you are!

(She crosses to the table as he hastily closes the book. They clasp hands and she sits.)

ALBERT

(hastily adjusting his tie)

Elsa, where have you been? It's four-thirty!

ELSA

Where have *you* been? You do this all the time. I waited for more than an hour.

ALBERT

No, this time I didn't forget. We were supposed to meet at the Café Centrale at three o'clock, and I was here.

ELSA

But Albert, *this* is the Café Vienna!

ALBERT

It is?

ELSA

(picking up a menu saying "Café Vienna" in huge letters and handing it to him)

Here...look!

ALBERT

(looking in confusion at the back cover)

"Wienerschnitzel—three ninety-five"?

ELSA

Albert!

(She turns the menu over and shows him the name.)

ALBERT
Café Vienna...oops. I'm sorry, Elsa, I'm really sorry.

ELSA
(good-humored)
Never mind, Albert, I'm used to it. Well, why did you ask me to meet you?

ALBERT
Well...I...

ELSA
Why is your violin here?

ALBERT
(confused)
What violin?

ELSA
That one right next to you.

ALBERT
Oh, that one! Well...it's... Elsa, I asked you to meet me here...there...wherever... because I have something...something very important to talk to you about. I—

WAITER
(suddenly appearing over his shoulder)
Order, sir?

ALBERT
(startled)
Oh! I—I don't want anything. Do you?
(Elsa shakes her head.)
Nothing for us.

WAITER
(with a wealth of expression)
Nothing?

ALBERT
Well...a glass of water.
(Elsa nods.)

WAITER
(slowly and distinctly as he writes)
A...glass...of...wa...ter. *Thank* you, sir.
(He starts off.)

ALBERT
Elsa, I—

WAITER

(loud and clear)
Big spender.
(He exits.)

ELSA

Go ahead, Albert.

ALBERT

All right. But first...
(He stands, opens the violin case, takes out his violin and bow, tightens the bow, and dramatically draws the bow across the strings. The E string is a half-tone flat. He stops, embarrassed, tunes it quickly, tries it again, plucks a chord, and puts it carefully on the table.)
FIRST...THE LIST.
(He reaches into his jacket pocket and finds nothing.)
THE LIST...
(He searches another pocket.)
THE LIST...
(He searches all his pockets frantically.)
I LOST THE LIST!
(He takes out his handkerchief and mops his brow. He holds out the handkerchief; it is covered with writing.)
AH...THE LIST.

(reading, to himself)
NUMBER ONE: "LIGHT THE CANDLE."
(He lights it.)

ELSA

BUT WHY?

ALBERT

I THINK IT MAKES A PRETTY LIGHT.

ELSA

YES IT DOES, IT'S REALLY LOVELY.
BUT ISN'T IT MORE APPROPRIATE AT NIGHT?

ALBERT

Yes...well...
NUMBER TWO: "GIVE THE FLOWER."
(He opens the book and takes out a rose.)

ELSA

FOR ME?
A ROSE...HOW SWEET. BUT WHY TODAY?

ALBERT
(handing it to her)
I DON'T KNOW...NO SPECIAL REASON.

ELSA
(taking it, and seeing that it has been pressed flat by the book)
I'D BETTER PUT IT IN WATER RIGHT AWAY.

ALBERT
NUMBER THREE: "BEAUTIFUL MUSIC."
(He picks up the violin and plays, execrably.)

ELSA
OH ALBERT, MUST YOU?

ALBERT
YES, IT'S VITAL.
(He plays another bar.)

ELSA
BUT DID YOU BRING ME HERE FOR A RECITAL?

ALBERT
(putting the violin down)
I'M SORRY, I HAD TO INSIST:
IT'S WRITTEN RIGHT HERE ON THE LIST.

ELSA
Why are you using that list?

ALBERT
To remind me about things. Which reminds me—you know how my paper on relativity has raised such a big fuss all over Europe? Well, I got a call today from Berlin—they're starting a new institute of physics, and guess who they want to be the head of it all?

ELSA
You? Albert, that's wonderful!

ALBERT
Yes, but...I'm not sure I'm going.

ELSA
Why not?

ALBERT
There's something I have to know first. Which reminds me...
NUMBER FOUR: "MAKING SMALL TALK."
BUT HOW?

ALBERT *(cont.)*

(aloud to Elsa)
YOU KNOW, TODAY WAS RATHER HOT.

ELSA

Yes?

ALBERT

YES IT WAS. AND VERY SUNNY.
TOMORROW SHOULD BE THE SAME—UNLESS IT'S NOT...

ELSA

Albert, what are you talking about?

ALBERT

NUMBER FIVE: "TAKE POSITION."
(He kneels.)

ELSA

WHAT'S WRONG?

ALBERT

WITH WHAT? OH, THIS? I CAN EXPLAIN.

ELSA

GO AHEAD, IT SHOULD BE EASY.
DID SOMETHING DROP, OR HAVE YOU JUST GONE INSANE?

ALBERT

NUMBER SIX: "TAKE HER HAND BOLDLY."
(He reaches for her hand, which she pulls away. He grabs it and they struggle.)

ELSA

WHAT ARE YOU DOING?!

ALBERT

ASK ME LATER.

ELSA

But Albert—

ALBERT

JUST LET ME TALK, THEN YOU CAN CALL THE WAITER.

ELSA

BUT ALBERT, YOU'RE HURTING MY WRIST!

ALBERT

(releasing her hand)
I'M SORRY! THAT'S NOT ON THE LIST.

ELSA

(beginning to suspect the reason behind it all)
Albert, what is the point of all this?

ALBERT

Uh, that comes farther down.
NUMBER SEVEN-A: "SPEAK OF THE LENGTH OF OUR ACQUAINTANCE."
"LENGTH OF OUR ACQUAINTANCE..."
NOW ELSA, YOU'VE KNOWN ME A LONG TIME...
A LONG, LONG TIME...AND I,
I'VE ALSO KNOWN YOU FOR A LONG TIME...
A LONG, LONG, LONG TI—

ELSA

(with a smile)
ALBERT, ARE YOU SAYING GOODBYE?

ALBERT

Oh, no, no! I'm saying...well...
(hastily turning to the list)
NUMBER SEVEN-B: "SPEAK OF OUR MUTUAL ATTRACTION."
"MUTUAL ATTRACTION..."
(Struck by a thought, he takes out a pen and starts to scribble on the tablecloth as he continues.)
NOW ELSA, MUTUAL ATTRACTION
IS A SIMPLE TERM FOR SPATIAL INTERACTION,
AND THOUGH I HAVE NO DESIRE TO DISPUTE AN-
OTHER THEORY HANDED DOWN FROM ISAAC NEWTON,
THERE'S PROOF THAT WHAT WE KNOW AS GRAVITATION
CANNOT BE DISTINGUISHED FROM ACCELERATION.
AFTER ALL THE THEORETICAL INERTIAL
SYSTEMS DON'T EXIST, AND THOUGH IT'S CONTROVERSIAL,
AND MAY TAKE TIME FOR PHYSICS TO ABSORB, IT
HELPS IN UNDERSTANDING MERCURY, WHOSE ORBIT
UNDERGOES A CHANGE IN ANGLE, OR PRECESSION,
THAT WE CAN DESCRIBE BY USING THIS EXPRESSION...
THEN OF COURSE WE MAKE A COMMON SUBSTITUTION
AND BEFORE YOU KNOW IT, COME TO A SOLUTION,
ALL OF IT REDUCING TO A SIMPLE FRACTION
NEATLY SUMMING UP OUR MUTUAL ATTRACTION...
(stopping in confusion)
WHERE WAS I? THERE'S SOMETHING I'VE MISSED.

ELSA

(gently)
THEN WHY NOT GET BACK TO THE LIST.

ALBERT

YES...THE LIST...
NUMBER EIGHT: "ASK THE QUESTION."
OH, GOD!
WELL, ELSA, NOW—THAT IS, YOU SEE...
WELL I MEAN, I HAVE A QUESTION—
A QUESTION MAINLY CONCERNING YOU AND ME...

ELSA

Yes, Albert...go ahead.

ALBERT

WHAT I MEAN—WELL, THE QUESTION—
YOU KNOW—
IT'S ALL... THAT IS—WHAT IT'S ABOUT...
WELL YOU SEE—I MEAN THE FACT IS—
THE FACT IS I—

ELSA

ALBERT, LET ME HELP YOU OUT...
ARE YOU TRYING TO TELL ME YOU LOVE ME?

ALBERT

Uh-huh...

ELSA

WELL, I LOVE YOU TOO, I CONFESS.

ALBERT

You do?

ELSA

AND YOU'RE ASKING IF WE CAN BE MARRIED?

ALBERT

I am...

ELSA

YES.

ALBERT

YES?

BOTH

YES!!!

ALBERT

WAIT!
(checking the list)
I'VE LIT THE CANDLE,
PLAYED THE MUSIC,
MADE THE SMALL TALK,
ASKED THE QUESTION,
BEEN ACCEPTED...
(Elsa covers the handkerchief with her hand and kisses him soundly.)
AND BEEN KISSED...
(He tosses the handkerchief away.)

BOTH

YES, THAT'S THE LIST!
(They pick up candle, book, rose, and violin, and Albert leaves some coins on the table. They kiss again and hurry out as the Waiter enters with a glass of water. He picks up the coins and, in dismay, holds up the tablecloth, now covered with equations and symbols. Blackout.)

SCENE SIX

(Uncle Jakob enters with a letter.)

UNCLE

It was a lovely wedding. Albert rented an elegant suit of formal clothes. Of course, he forgot to put on the pants before he left his apartment...and then he locked himself out of the apartment...but we managed to find him some pants in time. I gave the newlyweds a very special present, a priceless family heirloom—a genuine handmade Swiss grandfather clock, with the most beautiful cuckoo. And here is Albert's thank-you note.

(He opens the letter as Albert enters, sits at the desk, and writes.)

ALBERT

"Dear Uncle Jakob: Thank you so much for the wonderful clock. It's truly beautiful. And practical."

(as Uncle Jakob reads on with mounting dismay)

"I found the gears inside very helpful for an experiment on rotation. I'm afraid Elsa got mad at the mess and threw it all in the garbage—but I rescued all of it—all but the cuckoo."

UNCLE

That beautiful cuckoo!

ALBERT

"As you know, I will soon be starting as director of the new Institute of Physics in Berlin. But despite my growing reputation, there is still a lot of controversy over relativity. Some scientists don't understand the mathematics. Others understand but don't believe it. Like old Professor Weber, they refuse to accept that space and time can turn into each other. The problem is, I have no way to prove relativity—there's nothing yet made that can go fast enough to show the effect. Maybe someday soon we can measure atoms and electrons—but not yet. Love, Albert."

(He exits.)

UNCLE

(indicating the letter in his hand)

"Maybe someday soon"... But meanwhile, the reaction to relativity was...mixed.

(Uncle exits. Three scientists enter. Down right is ADAMS, down left DUVAL, center and slightly upstage, SIR ARTHUR EDDINGTON. Each holds a copy of the same journal. American Adams is old and myopic, French Duval fat and loud, and British Eddington tall and elegant. They sing to the audience and each other.)

EDDINGTON

THIS THEORY THEY CALL RELATIVITY
IS, TO PUT IT POLITELY, BIZARRE.
IT CLAIMS THAT OUR NOTIONS OF SPACE AND OF TIME ARE SUBJECTIVE.

EDDINGTON *(cont.)*
IT SAYS THAT YOU'LL MEASURE THEM DIFFERENTLY,
ALL DEPENDING UPON WHERE YOU ARE...

ALL THREE
SO CLEARLY YOUNG EINSTEIN IS SOME KIND OF MENTAL DEFECTIVE!

ADAMS
(pointing to a page in the journal)
HE SAYS: AT DIFFERENT SPEEDS A LENGTH WILL SHRINK
OR STRETCH—A NICE CONCEIT;
A FOOT COULD MEASURE THIRTEEN INCHES—

DUVAL
TRUE, YOU HAVE BIG FEET.
(pointing to another page, as Adams reacts)
AND NOTHING MEASURES JUST THE SAME
FROM EVERY PLACE YOU FIND,
EXCEPT THE SPEED OF LIGHT—

ADAMS
AND THE MINUTENESS OF YOUR MIND!
(to audience)
NOW WE DON'T AGREE ABOUT MANY THINGS...

DUVAL
BUT ON THIS OUR OPINION'S THE SAME.

EDDINGTON
ALTHOUGH IT'S AMBITIOUS AND FULL OF NOISE AND FLASH...

ALL THREE
RELATIVITY
IS ABSOLUTELY TRASH!
(Music continues under as Eddington exits. Lights down on the scientists as they study their journals, and up on Albert's laboratory up center. Albert, now over thirty, sits at a lab bench, covered chaotically with scientific equipment, including a Bunsen burner. Many crumpled papers on the floor. Albert, dressed shabbily, is writing. He stops, crumples up what he's written, and throws it on the floor. He sees the mess on the floor and makes a sound of dismay. He quickly exits and returns with a pushbroom, as Eddington enters from the other side and looks around, confused. As Albert starts to sweep the floor, Eddington turns to him.)

EDDINGTON
Ahem...excuse me...
(Albert looks up.)

EDDINGTON *(cont.)*
I don't mean to interrupt your janitorial work, but I was told that Dr. Einstein works here.

ALBERT
He does.

EDDINGTON
Can you tell me where he is?

ALBERT
Right here.

EDDINGTON
Where?
(He looks around. Albert, having swept the papers into a corner, extends a dirty hand.)
You?! —I, I mean, pleased to meet you, sir.
(as they shake hands)
I thought you were the... I am Sir Arthur Eddington, from the Royal Astronomical Society in England.

ALBERT
Welcome, Sir Arthur. And did you come all the way to Berlin just to meet that crazy Einstein?

EDDINGTON
Well, when I first read your paper I did think it was...crazy. After all, it flies in the face of everything I'd been taught. But I studied it more carefully, and I began to see the logic of it...

ALBERT
But you still have questions.

EDDINGTON
Yes.

ALBERT
So do I! Why don't we discuss this over some tea?
(He indicates the way.)

EDDINGTON
Thank you.
(He starts out. Albert grabs a teapot off the Bunsen burner and follows him off. Lights up on the other two scientists. During this verse, Albert reenters and sits at the lab bench.)

DUVAL

(pulling a page out of the journal and displaying it)

HE SAYS THAT EVEN TIME WILL SHRINK OR STRETCH,
DEPENDING HOW FAST YOU GO;
SO AS I MOVE, MY CLOCK SLOWS DOWN—

ADAMS

YOU *ARE* A LITTLE SLOW.

(pulling out a page while Duval reacts)

AND AS YOU NEAR THE SPEED OF LIGHT
THE TIME WILL SCARCELY PASS;
IT SEEMS TO STOP—

DUVAL

OH YES, LIKE WHEN YOU LECTURE TO YOUR CLASS!

BOTH

(to the audience)

HE MAY LEAD ASTRAY OTHER SCIENTISTS,
AND IT'S REALLY A BIT OF A SHAME,
BUT WE SAY AGAIN WITH NO IFS OR ANDS OR BUTS:
RELATIVITY
IS ABSOLUTELY NUTS!

(Music continues under as the scientists exit. Lights up on Albert's lab. Eddington enters, extremely excited, carrying a very thick manuscript in a folder.)

EDDINGTON

Doctor Einstein! I've read all your notes...I understand them...and I am convinced. I believe in the Special Theory of Relativity!

(He drops the manuscript on the desk dramatically.)

ALBERT

Good!

(producing a manuscript twice as huge)

Then you're ready to read my new paper on *General* Relativity!

(He drops it in Eddington's arms. Lights out on the lab as the scientists reenter, holding new journals.)

ADAMS

(with heavy sarcasm)

SO NOW RELATIVITY'S GENERAL—
WELL MY GOODNESS, THAT'S WONDERFUL NEWS.
I SEE THAT IT'S FULL OF EXCITING NEW CRACKPOT IDEAS.

DUVAL

HOW NEWTON'S ALL WRONG ABOUT GRAVITY,
AND THE THEORY THAT'S RIGHT IS GUESS WHO'S...

BOTH
ALL SHOWING THAT EINSTEIN IS MORE OF A MORON THAN *HE* IS!
(Each points to the other.)

ADAMS
(pulling a page out and flinging it away, then another)
HE SAYS THAT SPACE IS CURVED AND LIGHT CAN BEND
AND PARALLEL LINES CAN MEET—

DUVAL
THEY WILL IF SOMEONE SEES LIKE YOU—
TOO BLIND TO CROSS THE STREET!
(By now they are both giddily tearing pages out of their copies.)
AND SPACE IS NEVER EMPTY;
MATTER NEVER DISAPPEARS—

ADAMS
OF COURSE HE'S NEVER SEEN THE EMPTY
SPACE BETWEEN YOUR EARS!
(As they stand glaring at each other, Eddington appears at center. Holding the manuscript on general relativity, he looks up from it, starry-eyed.)

EDDINGTON
BUT OH,
WHAT A WONDROUS PICTURE HE DRAWS US,
AND OH,
WHAT A VAST NEW WORLD WE CAN SEE,
WITH OH,
SO MUCH NEW TO LEARN THAT IT AWES US—
HOW MAGICAL THIS UNIVERSE CAN BE!

ADAMS & DUVAL
NOT TO ME!
(A little less confidently now, they continue as Albert and Elsa, and perhaps other scientists as well, appear and stand with Eddington.)

ADAMS & DUVAL
WE KNOW THAT IT'S GROWING MORE POPULAR,
AND IT'S WINNING A LOT OF ACCLAIM,
BUT WE'LL NEVER BUDGE AND WE'LL SING THE SAME OLD SONG:
RELATIVITY
IS ABSOLUTELY WRONG, WRONG, WRONG!
(Blackout.)

EDDINGTON, ALBERT & ELSA
SURE AS THE SUN,

ONE DAY,

ALL OVER THE WORLD THEY'LL SAY:
RELATIVITY
HAS BEEN RIGHT ALL ALONG!

SCENE SEVEN

(Uncle Jakob enters with a letter.)

UNCLE

It seems there was still some disagreement about relativity. And Albert's new general theory, which included an entirely new concept of gravity, started an even bigger controversy. For one thing, it was much more complicated. I've heard it said that only a dozen men in the whole world could understand it. That could be...all I know is, I wasn't one of them. But because it threw out Newton's laws of gravity, which were considered rock-solid fact for three hundred years, the attacks on Albert became fiercer than ever. His opponents demanded that he be fired—they attacked his theories, his politics, even his religion. But Albert seemed optimistic, and this letter from him explains why.

(He opens the letter as Albert, now approaching forty, enters, sits at the desk, and writes.)

ALBERT

"Dear Uncle Jakob: Yes, I do feel optimistic. It's true that my position here at the Institute is shaky these days, with all the debate about relativity. But I've figured out a way to test it, to prove it either right or wrong, once and for all. According to my theory, gravity is part of the basic structure of the universe. And everything in the universe, even light, is subject to the force of gravity."

(Projections illustrate the following with slides or animation.)

"So light rays coming toward us from stars beyond the sun should bend as they pass the sun. Which means that we'll see those stars at a slightly different place in the sky than we would if the sun weren't in between."

UNCLE

Yes, I can see that...

ALBERT

"Now ordinarily there's no way to tell—the sun is much too bright for us to see the stars during the day. But there is one time when we can: during a solar eclipse. When the moon comes between the sun and the earth, it blocks the sun from us."

(Projections now show a photograph of a landscape with a solar eclipse in the sky. Continuing)

"Then the sky is dark enough for us to see the stars, and we can measure whether they appear in their usual places or not. Now the good news is that a solar eclipse is due to occur soon, and the British Astronomical Society is sending an expedition to Africa, where the eclipse will be clearest. The bad news is that if the expedition finds I'm wrong, I'll lose my job, I'll be a laughing-stock all over the world, and I'll be finished as a scientist forever."

UNCLE

I'm glad he's feeling optimistic! But I wonder why he's not going on the expedition?

ALBERT

"You may wonder why I'm not going on the expedition. It's because no one would believe it was objective if I were involved—after all, I have a personal stake in the results. But my thoughts will be following it every step of the way. Uncle Jakob, I know I'm right...but just in case...keep your fingers crossed. Love, Albert."

(During the next speech Albert remains at the desk, addressing an envelope, sealing the letter inside, and stamping it.)

UNCLE

(folding up the letter and crossing his fingers)

A month before the eclipse, the expedition arrived at the chosen site—a small island off the coast of Africa—and spent the time setting up equipment, making measurements, and taking photographs of the night sky. Finally the great day arrived, and—knowing that the whole world was watching—the scientists waited, alert and ready.

(He exits as lights come up on a clearing in the jungle. Folding chairs, tents, and in the center, three large telescopes with camera attachments. Faint jungle noises. Albert watches intently from his desk. Eddington, Adams and Duval, all dressed in safari-type clothes, recline miserably in the folding chairs, fanning themselves and scratching insect bites. Duval is writing in a large notebook.)

DUVAL

"May Twenty-ninth. For an entire month we have been waiting and preparing—all the while fending off the sweltering heat, the tropical humidity, the suspicious natives, and the attacks of the most horrible, fiendish creatures that ever lived..."

(suddenly slapping his arm)

these damned *mosquitoes!*

ADAMS

(wearily)

Oh, stop complaining, Duval. We're all perspiring just as much as you are, and we're all—

(slapping his neck)

being bitten just as much, too.

DUVAL

Complaining? Who's complaining? I am simply making notes in my journal. Ahem!

(writing again)

"And after a month of all this, the big day finally arrives—and it's all been for nothing. Wasted! The sky is completely covered with clouds."

ALBERT

(exlaiming in dismay, unheard by the others)

Clouds? Then it doesn't matter what happens up there—they won't see it!

DUVAL

(continuing)
"Of course, this was a waste of time to begin with..."

EDDINGTON

Really, not this again!

DUVAL

Eddington, your talking only reminds me that you're responsible for this tropical vacation. The biggest wild goose chase in the history of science—and I'm here with the two biggest geese!

ADAMS

If we're geese, Duval, what does that make *you* for coming with us?

EDDINGTON

(while Duval searches for a reply)
Yes, why did you, if that's how you feel?

DUVAL

Because I wanted the pleasure of proving you and Einstein wrong myself! And now I can't even do that. All of this for nothing!

ADAMS

That's what I like about you, Duval—always looking on the bright side. Cheer up, perhaps it will rain.

ALBERT

(looking up, agonized)
Rain?

DUVAL

Very funny, Adams. You make jokes while we sit here surrounded by hostile savages, who think that when we leave we're planning to take the sun away with us.

EDDINGTON

(slapping his leg)
Nonsense. I think they rather like us.

DUVAL

Oh, they like us, all right...medium rare. And if they don't eat us—
(slapping himself on the cheek)
Ow! —the mosquitoes will.

ADAMS

Ah, perhaps we—

EDDINGTON
Don't you have any scientific curiosity? It's just possible that Einstein is right.

ADAMS
Perhaps we should all—

DUVAL
It's just possible that you can fly. So why don't you jump off a cliff and find out.

ADAMS
I really think we—

EDDINGTON
(rising)
You hidebound fossil—

DUVAL
(rising)
You hotheaded lunatic—

EDDINGTON
(nose to nose with Duval)
Dinosaur—

DUVAL
Madman—

ALBERT
(almost beside himself with impatience)
Never mind all this! What about the clouds? What about the sun?

ADAMS
Quiet!!!
(The others, including Albert, stop and look at him, shocked; he looks shocked himself. Then, quiet and dignified)
As I was saying...perhaps we should check our equipment. In case the clouds break.

DUVAL
Don't be silly, they'll never break in time, it— What time is it, anyway?

EDDINGTON
(looking up)
Gentlemen...look!

ADAMS
The clouds—they're gone!

DUVAL
And the eclipse is already starting!

ALBERT
The eclipse! Elsa! Elsa!

(He runs off. Frenzied activity by the three scientists: running in and out of the tents, moving chairs and fans out of the way, placing extra photographic plates by their cameras, etc. Only as each sings does he stand comparatively still, aiming and checking his telescope. Meanwhile, a projection shows the sun's disk in the first stage of an eclipse: a small black spot at one edge. During the following, the black area gradually spreads over the face of the sun.)

EDDINGTON
IN JUST A FEW MINUTES MORE NOW,
WE'LL SEE A TOTAL ECLIPSE OF THE SUN.
IT'S GOOD WE ALL HAD OUR EQUIPMENT SET,
BECAUSE THE SHOW'S ALREADY BEGUN!
BUT IF WE FAIL, IT WILL BE MANY YEARS
UNTIL A CHANCE AS GOOD AS THIS ONE APPEARS,
SO OPEN YOUR EYES AND KEEP AN OPEN MIND...

THEN YOU'LL SEE THE LIGHT,
THEN YOU'LL SEE THE LIGHT,
THEN YOU'LL SEE THE LIGHT...
THE LIGHT OF A NEW TRUTH FOR ALL MANKIND.

DUVAL
WE CAME OUT HERE TO THE JUNGLE
AND SPENT A MONTH GETTING FILTHY AND WET.
BUT THAT'S ALL RIGHT WHEN THERE'S SO MUCH TO LEARN—
WHY LOOK, I'VE LEARNED TO ITCH AND TO SWEAT!
STILL, ALL THIS NONSENSE WILL BE OVER SOON,
WHEN ALL AT ONCE THERE WILL BE DARKNESS AT NOON,
SO OPEN YOUR EYES AND WATCH THE GRAND DISPLAY...

THEN YOU'LL SEE THE LIGHT,
THEN YOU'LL SEE THE LIGHT,
THEN YOU'LL SEE THE LIGHT...
AND ALL YOUR ILLUSIONS WILL MELT AWAY.

ADAMS
FIRST A SHADOW FALLS ON THE SKY AND THE LAND
AND YOU SUDDENLY FEEL A CHILL,
WHILE THE BIRDS AND BEASTS START TO CHATTER LIKE MAD—
THEN IN SECONDS THEY ALL GROW STILL.
SOON THE SKY GROWS DIM AND THE STARS ALL APPEAR,
SO YOU'D THINK IT WAS LATE AT NIGHT,
BUT AROUND THE SUN, NOW ENTIRELY DARK,
IS A RING OF FIRE BURNING BRIGHT!

ALL THREE
MUCH MORE THAN JUST REPUTATIONS
DEPEND ON WHAT WE OBSERVE HERE, MY FRIEND;
IS SCIENCE TRULY AT A TURNING POINT,
OR IS IT JUST ANOTHER DEAD END?
THE NEXT FEW MINUTES OUGHT TO TELL THE TALE,
AND WE WON'T GET A SECOND TRY IF WE FAIL,
SO OPEN YOUR EYES AND TAKE THINGS SURE AND SLOW...

THEN WE'LL SEE THE LIGHT,
THEN WE'LL SEE THE LIGHT,
THEN WE'LL SEE THE LIGHT...
AND THEN IN AN INSTANT WE'LL KNOW!

EDDINGTON
Quickly, let's recheck the equipment—we have only moments left until total eclipse. Telescopes aimed and focussed?

DUVAL
Check.

ADAMS
Check. Cameras focussed?

EDDINGTON
Check.

DUVAL
Check. Photographic plates set?

ADAMS
Check.

EDDINGTON
Check. Well. we do seem to be ready—

(The stage lights suddenly drop to half. The sun has become a mere crescent. The scientists look up slowly, as though entranced. Their words are now mirrored by the set, lights, and sound.)

ALL THREE
FIRST A SHADOW FALLS ON THE SKY AND THE LAND
AND YOU SUDDENLY FEEL A CHILL...
WHILE THE BIRDS AND BEASTS START TO CHATTER LIKE MAD—
THEN IN SECONDS THEY ALL GROW STILL...
SOON THE SKY GROWS DIM AND THE STARS ALL APPEAR,
SO YOU'D THINK IT WAS LATE AT NIGHT...
BUT AROUND THE SUN, NOW ENTIRELY DARK,
IS A RING OF FIRE BURNING BRIGHT...

ALL THREE

(The eclipse is now at totality. As the projection grows brighter, all other lights fade, and offstage voices join in.)

NOW WE SEE THE LIGHT,
NOW WE SEE THE LIGHT,
NOW WE SEE THE LIGHT...
AND NOW AT LAST WE'LL KNOW!

(All lights except the projection of the sun go to black.)

EDDINGTON

There it is!

(We hear the clicking of their cameras as the song ends.)

SCENE EIGHT

(Lights come up, not too bright, on a long table, covered with a white tablecloth, at center. At the middle of the table, under a bright spotlight, is a lectern. Chairs on either side of the lectern, all but one occupied. Triumphant music. A slow, impressive VOICE is heard over the P.A. system.)

VOICE

And for his contributions to our knowledge of space, time, and the world around us, the 1921 Nobel Prize for Physics is awarded to...Albert Einstein.

(The cast applauds and the music swells to a climax. Then, silence. No one appears. As the music starts again)

Albert...Einstein.

(The cast applauds and the music swells again. Silence. The cast looks around in consternation.)

Albert Einstein!!!

(Albert, now forty-two, and now looking as we know him from photographs for the first time, comes quickly down an aisle through the audience. He wears an ill-fitting formal outfit with tailcoat.)

ALBERT

I'm coming, I'm coming...

(He comes onstage. The music plays very briefly and the cast applauds as he crosses to the lectern. He takes out a pair of glasses and puts them on.)

Members of the Academy...

ELSA

(sitting to one side, in a loud stage whisper)

Albert...

(He turns to look at her. She mimes a tie-straightening gesture. He imitates her, puzzled. She repeats the gesture more vehemently. He imitates her again, still not understanding. Irritated, she starts to rise, as though to come over to him.)

ALBERT

Oh!

(He quickly straightens his tie. Elsa sits.)

Members of the Academy. Ladies and gentlemen.

(He reaches into a jacket pocket.)

I would like to say...

(He stops abruptly, searches another pocket.)

Excuse me...

(He goes through his pants pockets.)

I have my notes here...somewhere...

(He continues to search as Uncle Jakob, at one end of the table, stands up and comes down toward the audience.)

UNCLE

That's my Albert!

(He chuckles.)

Still...the Nobel Prize...for a "dummy", that's not doing too badly, wouldn't you agree? I guess it's a good thing he didn't believe all those people who told him he'd never be a success at anything. After all, who is anyone else to say what you can or can't make of yourself, if you really want to?

(He looks back at Albert, who by now has removed his jacket and is looking up the sleeves, as the music of "Did You Ever Wonder?" begins in the background.)

I think what Albert wants to say...if he can ever find his notes...is that, whatever talents helped bring him here today, the most important one was the gift of fantasy...the ability to dream...to let his imagination run free. That every creation of man, in art or in science, starts from one person's dream. That the dream alone isn't enough—you have to translate it into reality, and communicate it to other people—but that the dream is where it begins. And that only by believing in our dreams can we someday make them come true.

(The cast rises and sings to the audience.)

ALL

RIGHT NOW, AS UNLIKELY AS THE NOTION SEEMS,
THE NEXT ALBERT EINSTEIN COULD BE DREAMING DREAMS
THAT SOMEDAY COULD ALL BECOME TRUE...
AND IT COULD BE YOU!

THE END