

# PULLING MUSIC

# OUT OF

BY OLIVIA MATTIS & ROBERT MOOG



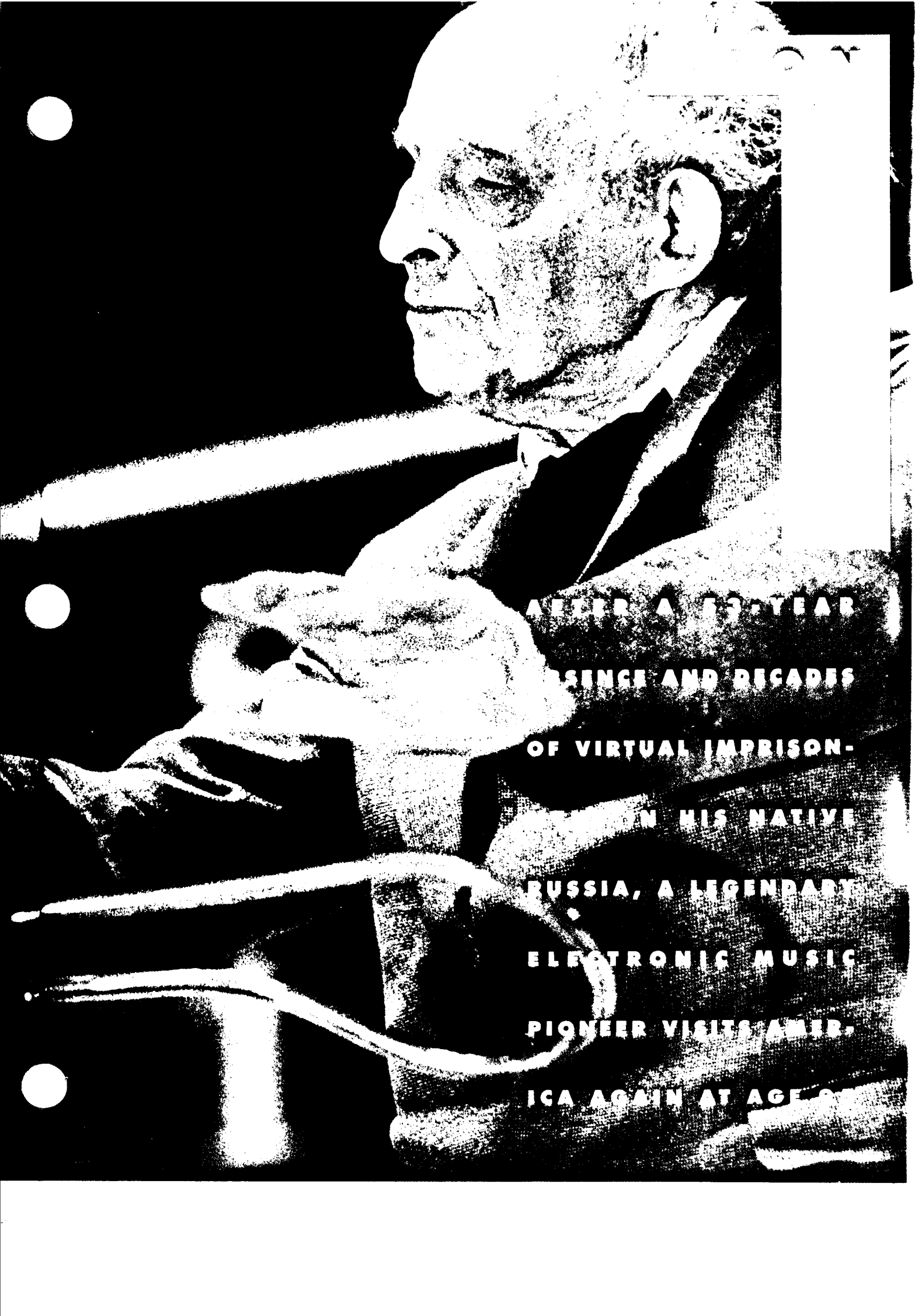
Leon Theremin chats with synthesizer designer Robert Moog (R) at Stanford, September 1991. Opposite: Theremin plays the instrument that bears his name.

Leon Theremin, the 95-year-old Russian titan of electroacoustic music technology, spent three weeks in the United States early last fall. The visit was an extraordinary event; Theremin has long been the subject of myths and musical lore, yet he has been a virtual prisoner in the Soviet Union until glasnost and perestroika made possible his travel abroad. Theremin



had lived in New York from 1927 to 1938, at which time Soviet authorities summoned him back to Russia. He was then immediately arrested and imprisoned, for reasons that even today are not clear. There were rumors that he was shot as a German spy during World War II, and his name disappeared from the Soviet musical press for decades. Leon Theremin's very existence was top secret because, as he admitted at a press conference at Stanford University, he was on the development team

PHOTOGRAPHY: RENE MOOG



AFTER A 53-YEAR  
ABSENCE AND DECADES  
OF VIRTUAL IMPRISON-  
MENT IN HIS NATIVE  
RUSSIA, A LEGENDARY  
ELECTRONIC MUSIC  
PIONEER VISITS AMER-  
ICA AGAIN AT AGE 87

his return to the United States was almost like a homecoming. During his stay he was reunited with portions of his erstwhile American life, including places where he had lived and worked, and people that he had known. At Stanford he was reacquainted with 97-year-old music encyclopedia author Nicolas Slonimsky, whom he'd known as a young conductor. Then, at a New York reception given in his honor, where his arrival was greeted with tumultuous applause, he saw former students and colleagues, all in their 80s and 90s, including Henry Solomonoff, Suki Bader, Beryl Campbell, and composer Otto Luening. But the most important reunion was with Clara Rockmore, the pre-eminent Thereminist whose virtuosity on the instrument legitimized it in musical circles (in the same way that the inspired playing of Jeanne Loriod promoted Maurice Martenot's Ondes Martenot). Theremin has always thought of Clara as his greatest student, and their meeting last fall was like closing a circle.

On September 28, 1991, we talked with Theremin for several hours, asking him questions about his enigmatic life and career, and following up on the interview that one of us (Mattis) had conducted in Bourges on June 16, 1989. The following are edited excerpts of both interviews. For the careful translation of Theremin's detailed Russian prose, we would like to thank Patrick Lemoine, Nina Boguslawsky, and most especially Alejandro Tkaczewski.

• • • •

*Please tell us about your early life, and about your scientific and musical training.*

I was born in Leningrad, which was then called St. Petersburg, in 1896. My father was a lawyer, and my mother was interested in the arts, especially music and drawing. Even before high school I was



**"AS FOR HIM PERSONALLY, EINSTEIN WAS A PHYSICIST AND THEORIST, BUT I WAS NOT A THEORIST — I WAS AN INVENTOR — SO WE DID NOT HAVE THAT MUCH IN COMMON. I HAD MUCH MORE KINSHIP WITH SOMEONE LIKE VLADIMIR ILYICH [LENIN], WHO WAS INTERESTED IN HOW THE WHOLE WORLD IS CREATED."**

interested in physics, in electricity, and in oscillatory motions like those of a pendulum. In high school I was interested in physics, and after playing the piano I started studying cello. While in high school, I entered the conservatory on the cello, and I graduated with the title of "free artist on the violoncello." Then I entered the university, and majored in physics and astronomy.

*When did you first conceive of your instrument?*

The idea first came to me right after our Revolution, at the beginning of the Bolshevik state. I wanted to invent some kind of an instrument that would not operate mechanically, as does the piano, or the cello and the violin, whose bow movements can be compared to those of a saw. I conceived of an instrument that would create sound without using any mechanical energy, like the conductor of an orchestra.

*Why did you make this instrument?*

I became interested in bringing about progress in music, so that there would be more musical resources. I was not satisfied with the mechanical instruments in existence, of which there were many. They were all built using elementary principles and were not physically well done. I was interested in making a different kind of instrument. And I wanted, of course, to make an apparatus that would be controlled in space, exploiting electrical fields, and that would use little energy. Therefore I used electronic technology to create a musical instrument that would provide greater resources.

*How did Lenin find out about your instrument?*

In the Soviet Union at that time everyone was interested in new things, in particular all the new uses of electricity: for agriculture, for mechanical uses, for transport, and for communication. I decided to create a musical use for electricity. I made the first few devices

Robert Moog (left) is the principal developer of the Moog synthesizer. He built his first Theremin in 1949, and his most recent one in September 1991. Olivia Mattis (center) is a musicologist who specializes in the works of Edgard Varèse. She's currently in Paris, conducting research on Varèse.



# LEVIN

based on the principles of the human interference of radio waves in space, first for electronic security systems, then applied to musical purposes.

There was a big electronics conference in Moscow, and I showed my instruments there. The conference was a

great success; it was written up in the literature and the newspapers, of which we had many at the time, and many doors were opened for me in the Soviet Union. And so Vladimir Ilyich Lenin, the leader of our state, learned that I had shown an interesting thing at this conference, and he wanted to get acquainted with it himself. They asked me to come with my apparatus, with my musical instrument, to his office, to show him. And I did so.

*What did Lenin think of it?*

He was very gracious, and I was very pleased to meet him. I showed him and his colleagues the control system of my instrument, which I played by moving my hands in the air, and which at that time was called the Thereminvox. I played a piece of music, after which they applauded, including Vladimir Ilyich, who had been watching very attentively. I played Glinka's *The Lark*, which he loved very much. After all this applause, Vladimir Ilyich said that I should show him, and he would try to play it himself.

He stood up, moved to the instrument, stretched his hands out, right hand to the pitch antenna and left to the volume antenna. I took his hands from behind and helped him. He

started to play *The Lark*. He had a very good ear, and he felt where to move his hands to get the sound — to lower or raise the pitch. In the middle of this piece I thought that he could, independently, move his hands. So I took my hands off his and he completed the



**While at Stanford, Theremin was reintroduced to renowned musician/music-encyclopedia author Nicolas Slonimsky, who also hails from St. Petersburg. He also took time to read Slonimsky's suspenders, which say "perestroika" in the Cyrillic alphabet.**

whole thing independently, by himself, with great success and with great applause following. He was very happy that he could play on this instrument all by himself.

*Incredible! In what year did you arrive in New York?*

At the end of 1929, approximately. [In fact, the exact date was December 22, 1927.]

*What brought you to New York?*

When I was working in Leningrad in the Ioffe Institute for Physics and Technology, I

had a lab. I was the inventor of this instrument, the first instrument. I was also the first in the world to invent a television device; this was in 1926.

Then I was sent abroad. I was sent to an international conference in Frankfurt. My wife Katia joined me in Paris, where I went next, and we stayed with my relatives. After that we went to America.

Katia was interested in medicine, and she wanted to enter a medical institute that was about 35 kilometers from New York. So she entered this medical school, and she slept there in the dormitory, but she visited me once or twice a week in New York.

I'll tell you what happened afterwards. One fine day a young man came to me and said, "You know," (he gave me his calling card), "I have a request to make of you and of your wife too. We love each other. Let us marry each other." It was not quite pleasant for me, but I said, "Of course I cannot forbid — well, in the Soviet Union we have freedom. Divorce is legal." But I told him that things could not happen in this way. He left, and I felt terrible.

I tried to reach my wife, but the phones weren't working well. After a while, maybe three days later, I received from my embassy — because at the time I was working under the leadership of our consulate — a magazine that was published by German representatives of a fascist organization in America. In this article it was written that, "The wife of Theremin is sympathetic to our work, and we accepted her into our society, but Theremin doesn't want to pay money, because he's probably a Jew, and he is afraid to give money. That's why he won't become a member of our society." Well, there was such a magazine.

At the embassy, the people said, "We cannot allow this." Then in a few days, they said something more definite. The embassy called me and demanded that I get a divorce from her. They gave us a divorce without her presence or consent. I talked to her on the telephone about it. She said, "It's my friends, but I was never a member of any such society," and that was it. This was my first divorce. She continued to live there and to study at that institute.

*Are you Jewish?*

No.

*Do you remember meeting Edgard Varèse in New York?*

No, I couldn't tell you. I met so many people. It was long ago, decades ago. I met a lot of people. I remember well a lot of my good students. I had a wonderful student Clara Rockmore, and also Lucie Rosen. These were the better ones whom I remember who worked in my studio.

## INFORMATION

### FOR MORE

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Mattis, Olivia, "Entretiens inédit avec Lev Termen." *La Revue Musicale*, February, 1991.

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Rockmore, Clara, *The Art of the Theremin*. Compact Disc, distributed by Delos International.

There was one who was interested in the color of music—the connection between light and music—and that was Albert Einstein. His wife played piano very well; he could play the violin, and he tried to play the Thereminvox. He asked me if he could use my studio. I had a big, big house that I rented in New York.

Einstein was interested in the connection between music and geometrical figures: not only color, but mostly triangles, hexagons, heptagons, different kinds of geometrical figures. He wanted to combine these into drawings. He asked whether he could have a laboratory in a small room in my house, where he could draw. So I gave him a study, not very big. I found him an assistant, one of my co-workers who was a painter, to help him draw these sketches, and he would come and do his work. However, it was not the field that I was interested in, these geometrical figures. I can't say that from my point of view the figures had a psychological effect on the colors of the music.

As for him personally, Einstein was a physicist and theorist, but I was not a theorist—I was an inventor—so we did not have that much in common. I had much more kinship with someone like Vladimir Ilyich [Lenin], who was interested in how the whole world is created.

*Varèse came to you to ask you to build him an instrument for his piece Ecuatorial, an electronic cello. Do you remember that?*

I made my electronic cello, not only for Varèse, but for all those who were interested. It was not just the instrument played with hands in the air. It was a different instrument, like a cello, that had a fingerboard. But instead of pressing down on strings, it was necessary just to place one's fingers in different places, thereby creating different pitches. I have photographs of the instrument. It was also called the Thereminvox. There was one man who was very much interested in this instrument. He was the conductor Leopold Stokowski, who had ordered instruments especially for the Philadelphia orchestra. I made ten instruments especially for Stokowski. They used it in concerts, and it created a great impression.

*Please tell us about Stokowski.*

About Stokowski I can say yes, I remember him. He was of course a great conductor. He was very interested in technical resources, of course: not in the electronics specifically, but in what new sounds, what new timbres,

what new characters of sound could be obtained.

*Do you remember Joseph Schillinger?*

Schillinger, yes. I knew him. I had many conversations with him, but I cannot say anything about his work. I recognize his name; he was famous, after all.

*You worked together, and you performed the solo part in one of his compositions, First Auphonic Suite for Theremin and orchestra, 1929.*

Yeah, he was a composer, but from my point of view, he was one of many interesting good people who were interested in old-fashioned ideas and viewpoints that were not suitable for the development of musical art.

*Tell us about your dance instrument, the Terpsitone.*

This is a platform that a person dances on. When the dancer's body is low, you hear the lowest pitch. When the dancer raises her body, the pitch also goes up. It's also possible to dance without changing the sound. For instance, if the dancer raises one arm and lowers the other, there will be no change in pitch. But if the dancer raises both arms, then the pitch will go up.

*How about the loudness, the volume?*

If the dancer goes more forward, it gets louder. When she steps back, the sound gets quieter. I had a Terpsitone dance studio in New York. I had many pupils dancing there.

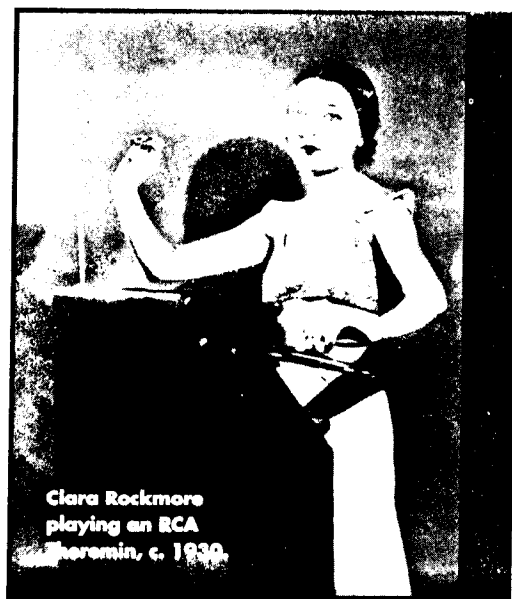
*There was another instrument, the Rhythmicon?*

This was an instrument that produced one pitch, plus all of its harmonics. Each of the harmonics was heard as a series of repeating notes separated by silences. For each

harmonic, the repetition speed was related to the number of the harmonic. For instance, when you have the pitch three times higher [the third harmonic], it will repeat three times as fast as the fundamental pitch. You could select which harmonics you wanted to hear.

*Do you have anything more to add about your life in New York?*

There are many interesting things connect-



Clara Rockmore playing an RCA Theremin, c. 1930.

ed with my work, with the composers I had to see. But anyway, I felt lonely. I sometimes called my wife on the telephone, but I couldn't get her attention—well, we really didn't argue—but I felt lonely that I had no wife.

I had my studio, where I was conducting many studies on the Terpsitone. I had a very beautiful student, a black woman. She danced well. And it happened that we liked each other very much. When I said in my consulate that I liked a black woman, they said, "Okay, marry her." Then we went to the consulate, where we were married, and that was my marriage number two. Her name was Lavinia Williams. When I left America—I had to leave America—she was to be sent in a few weeks.

*Why did you leave New York?*

I left New York because at that time the war was coming. The military troops of the fascists were approaching Leningrad, and so on. I asked to be sent to the Soviet Union so as to make myself useful. I asked many times. For a whole year I asked to be sent back. The war had already started, and they didn't send me, they didn't send me. Then at last they permitted me. They assigned me to be an assistant to the captain of a large motor ship. So I went home, but they did not take my wife.

*So what happened then?*

I was arrested, and I was taken prisoner. Not quite a prisoner, but they put me in a special lab in the Ministry of Internal Affairs. There I worked in this lab just as others worked. [Airplane designer] Andrei Tupolev was imprisoned in such a way too, if you know about that. He was considered to be a prisoner, and I was considered a prisoner too.

*So what did you do in that lab?*

Electronics and other things that were



As part of the Stanford concert given in Theremin's honor, instrument designer/composer Don Buchla performs using his Thunder controller.

# LEON THEREMIN

LEON

mostly associated with military matters: television and other types of communication.

*Weren't you in a camp?*

At one time, on the way to the laboratory, I was sent to a camp, where they did road construction. I was assigned to be supervisor over the prisoners. From there, after eight months on road construction, I was sent with Tupolev to the Aviation Institute. Many important people worked there: [Missile designer] Sergei Korolyov worked there for me.

*Why were you arrested?*

We were all under suspicion, all the people, and I as a suspicious person was assigned to be under investigation. The investigator was occupied with my case for a month or more. He and the magistrate asked me all kinds of questions. This was all very formal, and they congratulated me and said that everything was okay, but they said that unfor-

tunately there would be a second investigation. There was a second investigator, who also asked questions. And they wrote down that everything would be fine. But after that, together with the other prisoners, I went with Tupolev. Officially I was considered a prisoner, but as soon as I arrived they made me the supervisor of a group of prisoners.

*Why was your name not mentioned in the West? We have one book that says that you died around 1945.* [Andy Mackay, *Electronic Music: The Instruments, the Music & the Musicians*, Control Data Publishing, 1981.]

Because at that time my arrival was kind of secret. At the end of the long situation, a long time passed, about half a year, and then there was a procedure that was standard with many people who were under suspicion. At that time it was quite acceptable for people to be detained in such a way. I was appointed to be in charge of the laboratory, but it was written that they could detain me as a prisoner. They used a word

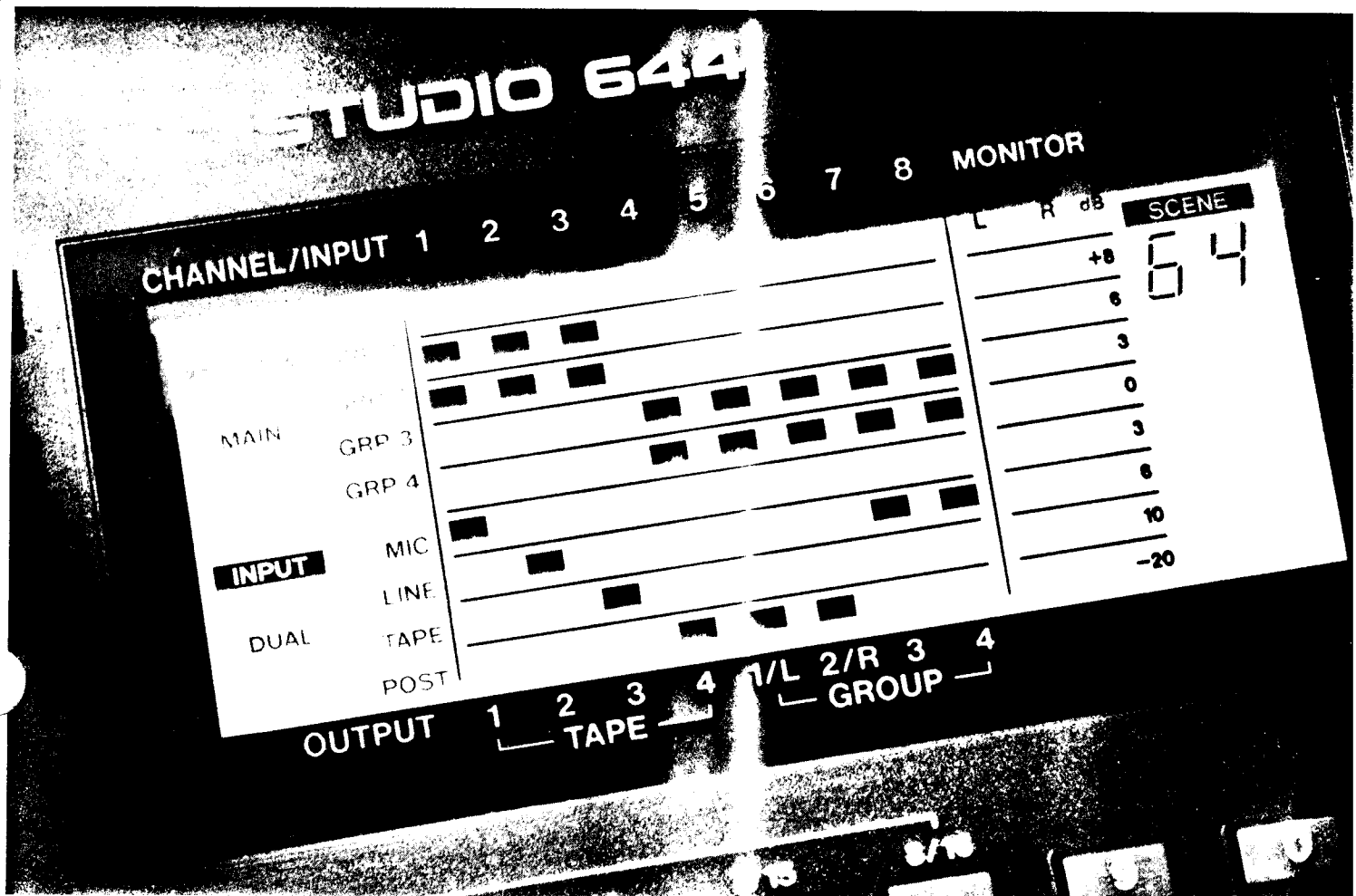
not as terrible as "prison," but I was imprisoned there for eight years.

*What did you do after you became free?*

I stayed in my lab. First I was under some supervision, and then I became the director of the lab. I remained in the same place. I had some new things that I invented. I received a big bonus; I received an apartment. It was at that time that I got remarried, to Maria. Eight years elapsed while I was there.

Even when I was interned I was treated very well. I was not considered to be in prison, but I worked as a normal person. I was the head of the lab, and when they liberated me I was still working in the same lab. It turned out that when I was free it was much more difficult to work in the lab. When I was considered to be imprisoned I had a supervisor, and they would say to me that I had to do this and that. Then, when I was freed I had to do it myself. Then I had to fuss, do much more paperwork, keep an office in order. The work became much worse.

I went on pension in 1966 or '67. Then I started to look for an organization where I could work. The first place I came to work was at the Moscow Conservatory. They gave me a space, and I started to work on the electronic musical instrument and the dancing instruments at the conservatory.



There was a very unpleasant situation at the conservatory that I'm going to tell you about. One of the journalists from *The New York Times* came to Svishnikov, the director, and said, "We thought Theremin was dead, but it turns out that he's working here. I would like to meet him, to see him, to find out what he's been doing." Svishnikov called me to his office, and I talked to the journalist. I showed the man the musical instrument, a good Thereminvox that I had made, and the dancing instrument. He liked them very much.

And then it happened that in a month, the newspaper arrived, containing an article that Theremin is doing this and that, electrical musical instruments in the conservatory, instruments for dancing. ["*Music: Leon Theremin*" by Harold C. Schonberg, *The New York Times*, April 26, 1967.] This very newspaper got into the hands of Svishnikov's assistant; his name was Nuzhin, and he did not know what I was doing there. This is how he learned that electrical musical instruments were being made in the conservatory. He announced that, "Electricity is not good for music. Electricity is to be used for electrocution." So he ordered that all these instruments be removed from the conservatory, and Theremin too, and to throw all these things out, and that there be no more projects at the conservatory.

*Then how did you live? How did you survive?*

Later on I had some other kinds of inventions. I was working in the university. Which university was that? Moscow University, department of acoustics.

*You spoke about a polyphonic instrument. Did it exist?*

Yes, I did make such an instrument. A person could regulate one voice, or at the same time could add two or three more voices which would be in some sort of correct intervals. I mean chordal relationship in some natural pitch system. You change the pitch with the right hand just as it was with my other instruments, and the amplitude with the left hand. But then if you move the left hand from left to right, you can select 12 or 13 different intervals in exact relation to the melody — 3:4, 5:7, and so on.

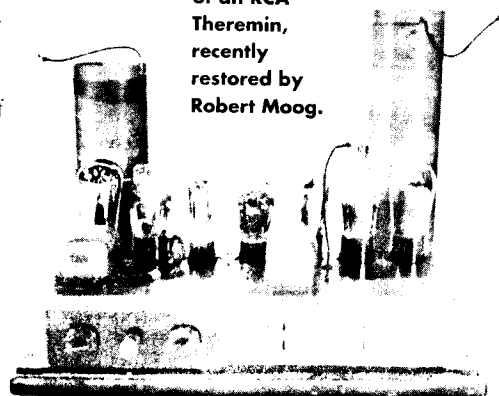
*So there were two antennas for the left hand, one for the volume and one to select the chords.*

That is correct.

*Does the instrument still exist?*

I had the instrument in the university in a special place where I demonstrated it for my lectures. But the university was reorganized

Main chassis of an RCA Theremin, recently restored by Robert Moog.



and rooms reassigned. The instrument was left in a room for four years, where people could come and gradually dismantle it. So now it is in a completely dismantled and ruined condition at the university somewhere.

After that I started working on a new instrument. The old instrument was made using "radio lamps," but the new instrument I started making was based on semiconductors. The project was going well. It was partially completed when I had to clear out the place where the instrument was located because there were other projects going on that were

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MIDI

# LEON THEREMIN

unrelated to music. The chairman of the physics department considered music not to be a science, that this should not be taking place at the university, and I had to vacate the room that I was occupying at the university.

*In what year was this?*  
Approximately — I am afraid to say — '78. It was about '78.

*Do you have a message now that you would like to convey to the Western World?*

What words! The only thing I wanted to ask, if it were allowed by the Soviet government, is that I be allowed to promote my in-

struments. You must make the impression that I was allowed to come here. It seems that there will be no punishment for me if you write in the newspaper about all I have told you. I hope nothing will happen. We'll see what happens. The same with my invention. I want to stress to you that all this needs to be done in a disciplined way, and that when people will be asking about me and writing about me, that all this be done in a responsible way. But if you write that I have said something against the Soviet government and that I have said that it is better to work elsewhere, then I shall have difficulties back home [ironic laughter].

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