

built our ski slope.

The social life, by the way, was just fine for married couples. There were a lot of young marrieds. We saw each other all the time. And a lot of children were born out there. Our first child was born there.

Emerald: What kind of work did each of you do?

Olum: A lot of our work was devoted to taking a look at the materials and what could be used. I was really looking at the neutron production in the bomb and the neutron flux.

Later on, our group had the job of calculating the predicted total energy release of the bomb. It involved producing an enormous wave type equation that would describe the explosion of the bomb as it moved out.

Novick: I was only involved in one part of it, the energy release experiments. Under Fermi, we measured the amount of plutonium and the fission products left in the crater after the explosion.

Two of us had the job of measuring the plutonium, but the other guy got scared out so I was left to do it myself. Fermi had said the chances were 1 in 10 that we might ignite the atmosphere, and that frightened him, so he went back to Los Alamos.

Olum: Oh yeah? Really?

Novick: Yeah, he went back and left me to do it myself.

Olum: What did he think was going to happen if the atmosphere was ignited; he'd be safe there?

Olum mumbles something about "idiocy." Novick snickers.

Emerald: Was there a rush to hurry up and get the research done, to build the bomb before anyone else did?

Olum: Sure, before the German's did it. We all thought the Germans were two years ahead of us.

Emerald: How much of a rush was there? Were you working 18 - 20 hours a day?

Olum: I think for experimentors at Los Alamos the pressure was enormous. Eighteen hours a day? The answer is yes, in the cyclotron unit. The pressure on the people developing the experiment and the design was immense.

Emerald: What about the test explosion at Almagordo? Were both of you there?

(Almagordo was the test site for the first atomic bomb.)

Olum: I saw it. I wasn't there at the site, I saw it at a considerable distance. I saw it sitting on a mountain top near Albuquerque.

Novick: I was there.

Olum: How far away were you? Ten, 20 miles?

Novick: No, nine miles away. Or maybe 9,000 feet. I don't remember which, but I was in the first group not in bunkers.

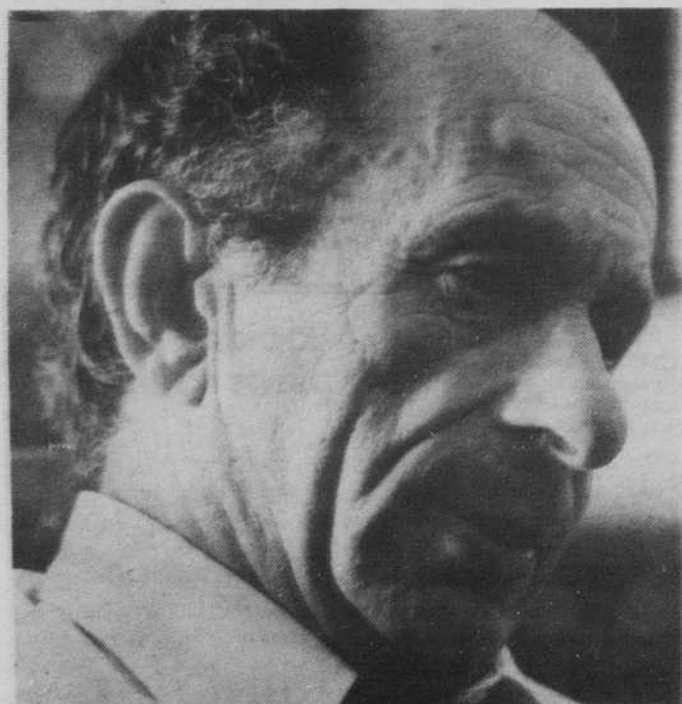
Olum: Those really saw a fantastic explosion...

Novick: I was next to Groves, Oppenheimer and Fermi. Fermi was throwing strips of paper into the air to calculate for the energy release.

(Groves is General Leslie Groves, the head of Los Alamos for the United States military. Oppenheimer is Robert Oppenheimer, the head scientist at the project.)

Emerald: What was your reaction?

Olum: Unbelievable... We saw, from what was an enormous distance, this fantastic explosion with the entire sky lighting up. I must admit that we were scared for the people there because it looked as though it consumed everything... it was so huge.



Aaron Novick

Olum: We knew we were going to build a bomb.

Novick: The whole evening was kind of interesting because there were thunderstorms, and it was so goddamned dry. After it rained the frogs appeared, and I couldn't believe there were frogs — zillions of them.

There was some question whether they could (drop the bomb) because the airplanes couldn't fly. You'd hear over the intercom somebody saying, "It's contrary to Air Force regulations for a B-29 to fly into a thunderhead. We will not go in." And then some general on the ground is ordering the B-29 to go in.

Finally they said let's go. There was a countdown. You could here 10-9-8... then there was an enormous blast of light, and that with the dramatic thunderheads and the dawn sky — it was sobering.

I was one of the first people in afterward to collect samples, we had a tank and Herbert Anderson was going in with that goddamn tank. He would fire rockets in between samples but that didn't work at all, these guys were getting pretty heavy radium.

The next day I went into the center and collected samples. While I was there I found a dead rabbit that was obviously killed in the blast. The generals wanted to know what it looked like... it didn't look like much.

Olum is quiet, looking down at the table and playing with his pen. Novick waits for the next question, sinking back into the leather chair.

Emerald: What was it like when you went into the crater?

Novick: It was a shallow crater, but it was all coated with green glass. There wasn't anything left of the tower or anything like that. The glass came from the melted soil.

Emerald: What was your reaction to the bombing at Hiroshima?

Olum: I think we all — at least I believed — that since we were in the middle of a war and since hundreds of thousands of people might die in an attempt to invade Japan, that it was probably an appropriate or believable military position.

Olum's answer is choppy as he picks his words carefully. He shifts in his chair several times. He aligns his pen to a perfect parallel with the horizontal lines on the legal pad as he speaks.

A lot of us wondered why it wouldn't work to let the Japanese scientists know that we were going to drop the bomb, as a test on Fujiama or something like that... They ought to have had some equipment around to measure it and see what would happen.

But, I think that most people accepted it as inevitable, in the middle of the war with all the dangers that were coming.

Novick: People have to understand how you feel in the course of a war like that — it's kind of a war psychosis. Only much later did I really feel the consequences. My stomach got upset and I got ill.

Emerald: From the scientific standpoint though, wasn't there elation that it actually had worked?

Novick: We already knew it worked from Almagordo. All of the big headlines and what else, there was some pleasure in seeing all that — The Surprise the World Felt...

Olum: You can't help being involved in that, but I think most of us were upset at the attack on Nagasaki. They'd already made their point, they'd already shown what they could do. To drop the bomb seemed irresponsible.

Novick: I had the experience of being in Japan in the '60s. A scientist I know, we were riding the same train, told me he was from Nagasaki or Hiroshima, I forget which, but his aunt had been killed there.

I told him how awful I felt. "Don't feel bad," he said, "I would have done the same thing."

Novick sighs, looking down.

Emerald: How do you view the bombings now?
Novick: It was a terrible mistake... the fact that we used the bombs puts us morally in a very weak position. I think it just made nuclear war all the more likely.

Olum: The big question is, if we hadn't dropped the bomb on Hiroshima — Nagasaki never should have been bombed, that is almost sickening that it happened — would the Japanese have sued for peace without it?

Novick: Scientists in Chicago anticipated it... they had petitions to stop it. We were so involved with the preparation of the bomb and its testing that we lost our good sense.

Olum: What we really should have done is stop when Germany surrendered... Once the war was over and you knew that there was no longer the threat of a bomb from the other side, it would have been reason-



Paul Olum

ble to stop and hope that it would never exist.

But the knowledge that such a bomb could be made would prevent that. The Russians would have built it. We would have built it.

Emerald: What about the arms race now? How do you view that?

Olum: It's a disaster.

Novick: It's my feeling that the weapons themselves have become the enemy. When it's a hair trigger situation, it doesn't make sense.

Olum: When you have an arsenal of weaponry that can destroy the whole world several times over, and therefore you are dependent every time, on someone not doing it... that's a terribly dangerous way to live.

Emerald: What about your views on nuclear energy?

Olum: Despite, what everyone might think, we haven't learned to do it right. I think most of us believe that if fusion energy could be developed, there's a reasonably good chance that it could provide a reasonable source of energy. In order to make it so, we've got to solve some problems.

Novick: I don't object in principle. But, for example, the disposal of nuclear waste is not sound.

In so many ways we humans are reaching the physical limit of our planet and we're running out of primary materials. If we were to suddenly have unlimited supplies of energy, we'd quickly get ourselves into trouble.

Emerald: Do either of you regret having worked on the Manhattan Project or at Los Alamos?

Olum and Novick grimace. They both hesitate, waiting for the other to speak first.

Olum: That's a hard question because it cuts both ways... I think the answer in part has to be yes... Oppenheimer said once, "Physicists know sin..." It's true it probably would have existed without us. Anybody who has worked on something that could end

up destroying all human-kind must have some feelings of remorse, regret.

On the other hand, it would be dishonest not to say that they were very exciting times in the scientific community at Los Alamos.

Novick: Any personal

regret for my participation is really trivial compared to my regret that there are bombs and they're used. True, like Paul, I found those exciting times and enjoyed those people very much, but if my not having participated would have stopped them, then by all means...

But personal regret is small in comparison to the deeper regret.

Olum leans forward, using his pen to emphasize his answer.

Olum: Do you realize a very small change in nature could have prevented it? When an atom splits apart, neutrons come out instantaneously. If they'd have waited 1/1000th of a second, it never could have happened. If they'd have come out a little slower, the bomb would have blown itself up before it could generate much.

Olum sits back, his pen askew on the yellow legal pad.

There is some shame. Some regret. But that's easy retroactively. At the time, there was a war on against the greatest enemy we'd ever known. If Hitler had the bomb and we didn't... We had to do it. We had no choice.

Novick: The weapons themselves have become the enemy.

Story by Debbie Howlett
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