

July 16, 1945.

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CONTROL SYMBOL  
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Thoughts by E. O. Lawrence

Our group assembled at a point 27 miles from the bomb site about two in the morning. We were on a plain extending all the way to the bomb and although I did not notice carefully the mountains seemed to be some miles away. We could see in the distance lights defining the position of the bomb and at about four a.m. our radio picked up conversations between the B-29s and the ground organization.

We soon learned that zero hour was 5:30 a.m. which was just break of dawn. Naturally our tenseness grew as zero hour approached. We were warned of the probable brilliance of the explosion -- so bright it would blind one looking directly at it for sometime and there was even danger of sunburn!

I decided the best place to view the flame would be through the window of the car I was sitting in, which would take out ultra-violet, but at the last minute decided to get out of the car (evidence indeed I was excited!) and just as I put my foot on the ground I was enveloped with a warm brilliant yellow white light -- from darkness to brilliant sunshine in an instant and as I remember I momentarily was stunned by the surprise. It took me a second thought to tell myself, "this is indeed it!" and then through my dark sun glasses there was a gigantic ball of fire rising rapidly from the earth -- at first as brilliant as the sun, growing less brilliant as it grew boiling and swirling into the heavens. Ten or fifteen thousand feet above the ground it was orange in color and I judge a mile in diameter. At higher levels it became purple and this purple afterglow persisted for what seemed a long time (possibly it was only for a minute or two) at an elevation of 20-25,000 feet. This purple glow was due to the enormous radioactivity of the gases. (The light is in large part due to nitrogen of the air and in the laboratory we occasionally produce it in miniature with the cyclotron.)

In the earlier stages of rise of the flame the clouds above were illuminated and as the flame rose it was a grand spectacle also to see the great clouds immediately above melt away before our eyes.

The final phases was the column of hot gases smoke and dust funneling from the earth into the heavens to 40,000 feet. The column was to me surprisingly narrow until high elevations were reached when it foamed out considerably. The great funnel was visible a long time. We could still make it out as we drove away a half hour later.

But to retrace, a little over two minutes after the beginning of the flash the shock wave hit us. It was a sharp loud crack and then for about a minute thereafter there were resounding echos from the surrounding mountains. The pressure of the shock wave was not great enough to be disturbing but the noise was very loud and sharp, indeed. The noise of the shock wave was a sharp crack like that of

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a giant firecracker set off a few yards away - or perhaps like the report of 37 mm artillery at a distance of about one hundred yards.

A number of observers near me were looking right at the explosion through welders goggles (or the same dark glass) and they told me the light through these glasses was so bright as to blind them for an instant.

As I was not actively concerned with the problems of Y, I had on occasions asked my colleagues there what the event would be like and their predicted picture of the event was borne out completely. I am amazed that the whole business went off so exactly as their calculations had predicted.

The grand, indeed almost cataclysmic proportion of the explosion produced a kind of solemnity in everyone's behavior immediately afterwards. There was restrained applause, but more a hushed murmuring bordering on reverence in manner as the event was commented upon. Dr. Charles Thomas (Monsanto) spoke to me of this being the greatest single event in the history of mankind, etc. etc.

As far as all of us are concerned although we knew the fundamentals were sound and that the explosion could be produced, we share a feeling that we have this day crossed a great milestone in human progress.

ERNEST O. LAWRENCE.

This was written in an airplane and not corrected by the author.

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