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**"DEATH  
OF THE  
RED PLANET"**

# "DEATH OF THE RED PLANET"

## FILMED IN LASER IMAGES

Unbridled imagination, ingenious technology and a lot of hard work combine spectacularly to capture the "creatures of light" on film

By DALE PELTON

Two-and-one-half years ago, I was shooting a documentary on the contemporary city. During the course of my explorations of various technologies, I met Dr. Elsa Garmire, a member of the research faculty at the California Institute of Technology. I visited her at the Caltech physics laboratory, witnessed a laser demonstration and was amazed by the laser-generated random flashes of delicate, sometimes spidery, sometimes globular, fiery light patterns. The laser images never had the appearance of mechanical or computer-generated images. They did not look like products of our humanoid technology. While they were abstract, they were also organic, at once microcosmic and macrocosmic. The constantly evolving forms sometimes appeared as living tissue and, at other times, like creatures found in some distant unknown part of the universe. I was so enraptured that I decided to make a film solely of these creatures of light.

The film came into being over a long time. It was a case of a post-stylized

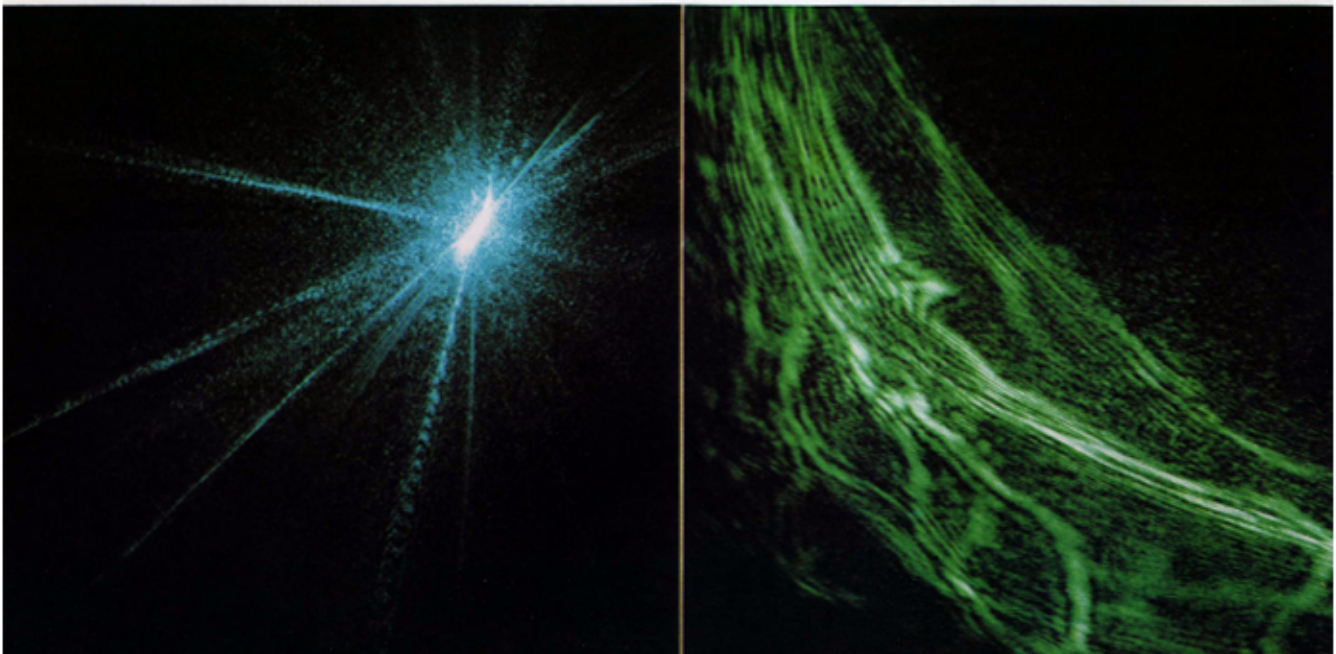
film. It was shot much like a documentary; that is, letting things happen in extemporaneous shooting sessions and then shaping and forming the material afterwards. After a couple of sessions, I screened the workprint and found that the raw images suggested the release of energy. My initial editing was without a script. I cut without pre-conceived reasoning, by allowing the images to come and go as they seemed to dictate. Yet, at this point, the film was not a film and had no direction or structure. Gradually, I became more aware of the strife implicit in these kinetic forms. Much like the process of life where opposing forces are operative in creating new life forms, I decided that the film would be about this conflict, a cosmic struggle between the forces of blue and the forces of red. In the manner of absurd 1950 science fiction flicks, I entitled the film, "DEATH OF THE RED PLANET".

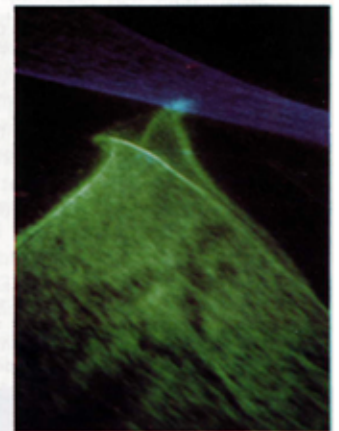
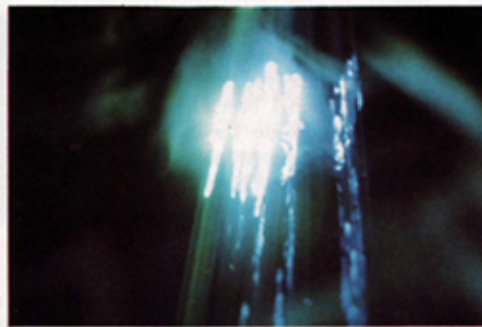
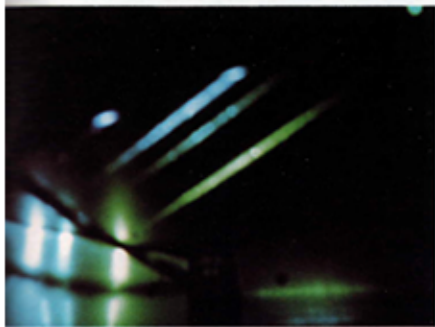
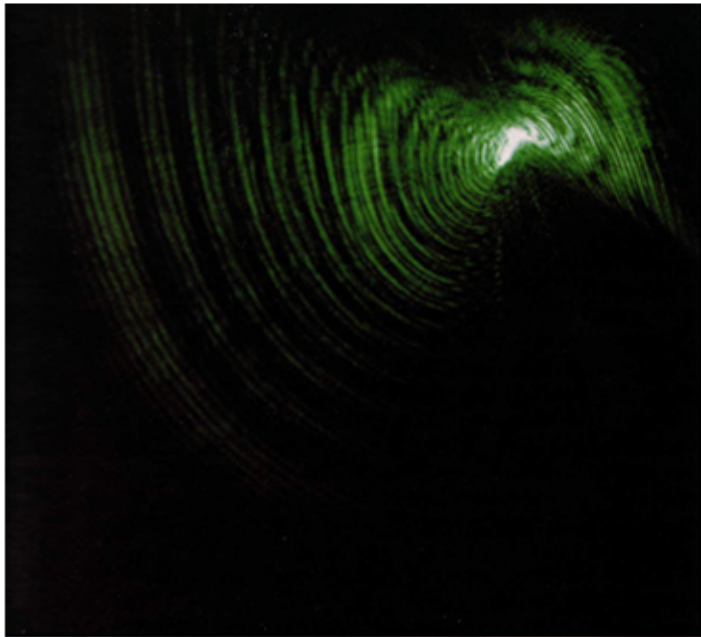
At this point, I began developing a script, choreographing the interactions between the opposing energy forces.

Most often the blue energy force and the red energy force were shot separately to be later combined in complex ways to achieve the appearance of action-reaction. After several thousand feet of film had been shot and the film had begun to take shape with various movements, as in a music composition, another inspiration arose. Why end the film with the death of the red energy-matter? What is death but another transition, another event in the continuum? Simple in structure as the Hegelian thesis, antithesis, synthesis, the film would bring a re-creation of life out of the destruction of life, harmony out of disharmony. The end would not be an end, but only a new beginning.

We used a two-watt Argon laser primarily. Its intense white beam was split by a prism into a band of three color beams: yellow, green and blue. A 250 milliwatt helium-neon laser (which produces only a red beam) was independently employed for forming the red planet. A 16mm Arriflex M camera with a 400' magazine was equipped with a

Laser-generated light patterns of the type which inspired the author to utilize the technique for creating "DEATH OF THE RED PLANET". The laser images never have the look of mechanical or computer-generated patterns, but are "organic" as well as abstract in character. The images which can be produced with this technique are infinitely variable—so much so that repeating a specific effect exactly at a later date is quite difficult.





The constantly evolving laser-generated forms sometimes appear as living tissue and, at other times, like creatures found in some distant unknown part of the Universe. They do not look like the products of our humanoid technology. Aware of the strife implicit in these kinetic forms, the author decided to depict the cosmic struggle between the forces of blue and the forces of red.

variable-speed motorized Angenieux 12-120mm zoom lens and mounted on an extremely smooth O'Conner fluid head tripod. The laser beams were directed by first-surface mirrors onto a ten-foot-square rear-projection screen. The camera was positioned on the opposite side. We found this superior to our original front projection screen which induced a graininess to the light patterns and afforded much lower light levels. Since the light was spread over a large area and we were shooting with a slow F/2.2 lens, the light level became critical.

Patterns made by the laser beam covered a wide scale of brightness, from faint delicate traces to extreme magnitudes when focused. We achieved entirely different results by both overexposing and underexposing. The eye has a

greater dynamic range than film and what we saw was vastly different from what was recorded on film. Again, the spectral sensitivity of the film stock (7241 and 7242) was quite different from our own perceptions. I required a light meter that could reliably deal with these variables. The color sensitivity of the light meter was important because the monochromatic color of the laser beam could easily result in a false reading. This was particularly true when reading the red light produced by the helium neon laser. After experimenting with various light meters, I found that the Honeywell spot meter was best suited for our situation. Rather than reading for general illumination, we took precise measurements of that part of the composition which was the brightest.

Dr. Garmire had previously experimented with hundreds of samples of patterned glass and plastic and different thicknesses of aluminized mylar. The uniqueness of laser light, its stabilized frequency, was dramatically exploited by directing it through or bouncing it off of these various substances, thus making images by reflection, refraction (the bending of a ray or wave of light as it passes obliquely from one medium to another of different density) and diffraction (the breaking up of a ray of light into dark and light bands caused by the interference of one part of a beam with another when the ray is deflected at the edge of an opaque object). No filters were used because laser light cannot be filtered. The single frequency must remain the single fre-

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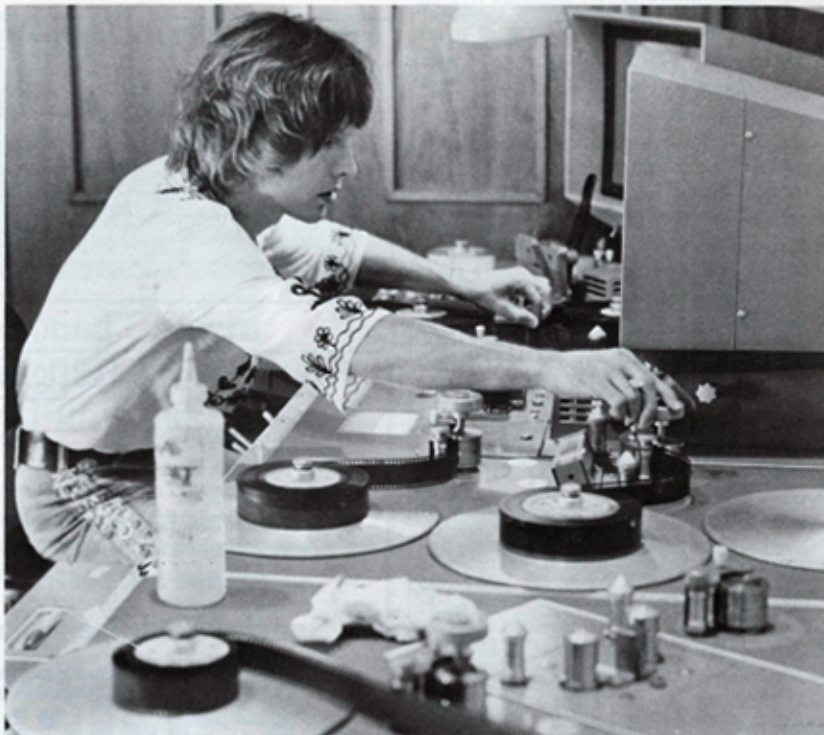
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quency. Colored filters merely act as neutral-density filters and do nothing to change the color of the beam.

Laboratory stands and clamps were used to insure precise alignment of the glass. Synchronous clock motors of 4 rpm, 1/2 rpm, 1/4 rpm, etc. were used to insure fluid movement. A few effects were shot at 24 or less frames per second, but most usually the camera speed was set at 48 fps to insure smoothness. When we wanted to induce hesitation or irregularity we pulsed the electrical power for the motors. Elsa and I encountered our primary difficulty when we attempted to re-create a scene or specific movement of the week before. There were so many variables: laser power levels, alignment, electric motor speed, angles of glass interference, mylar thicknesses, etc. At first, it was often four a.m. and we were still attempting to duplicate the shot. Eventually, we succeeded in the duplication of effects by painstakingly cataloging and documenting our setups.

The film was essentially an "optical" film in order to gain control of its development. An Acme wet-gate optical printer was used to re-photograph, reposition the images, to add color, change speeds, to fade and dissolve, to go from



Writer-producer-director-cameraman-editor Dale Pelton works at the KEM editing console, which was used to cut the sync picture/sound track. This was necessary, since the Moviola could not read the quadrasonic track. Transfer from 1/2-inch tape to 35mm mag stock was done by Jack Woolse of Todd-AO.

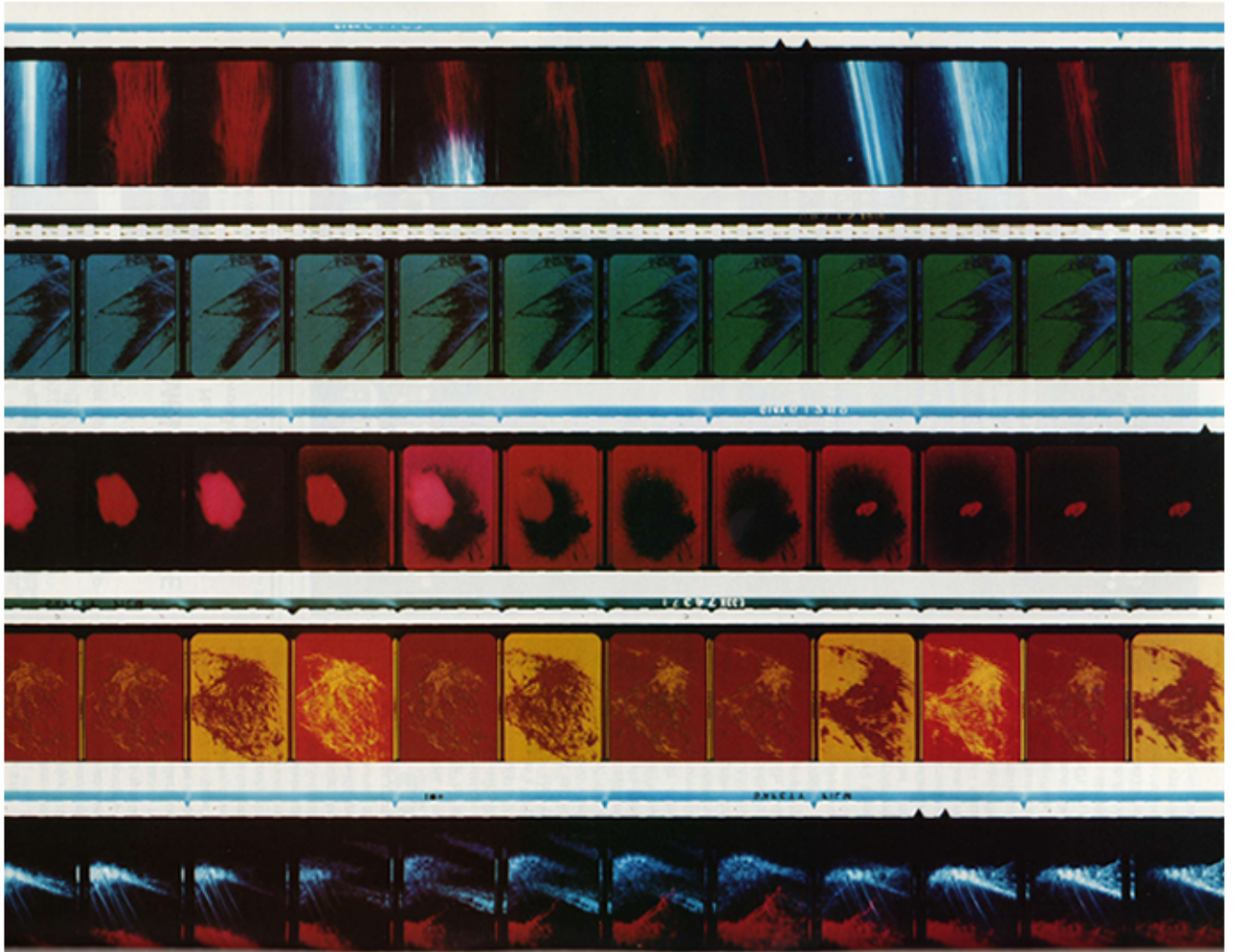
Dr. Elsa Garmire, a member of the research faculty at the California Institute of Technology, shown working with one of the laser set-ups which she used for creating the effects in the film. (OPPOSITE PAGE) Randomly selected film clips from "DEATH OF THE RED PLANET", indicative of the vast variety of colorful images that lend the picture a "cosmic" scope.

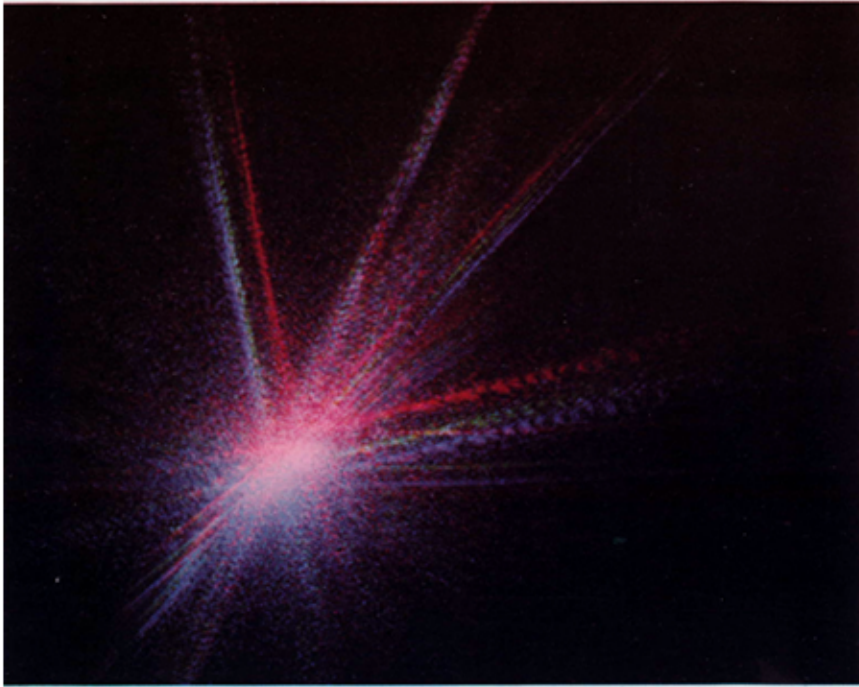


positive to negative, to strobe the light, to solarize, and to basically animate the film. At this point script writing began in earnest. Storyboard drawings aided in calculating the printing sheets. Various shots were combined so that double and triple impositions resulted in new, more complex, compositions. Some of the effects were the result of stumbling in the dark and chance experiments. There were over 27,000 individual frames in the finished film and many thousands more in the original footage, all of which had to be individually accounted for when lining up the optical cue sheets. Several printer passes were required and each frame was shot two or more times at widely-spaced time intervals. Errors were made and, on rare occasions, the errors were fascinating in themselves (like the scene where positive and negative mattes were six frames out of phase) and were not thrown out, but were integrated into the film. After spending night after night preparing intricate effects sheets while bending over a synchronizer, I felt more like an accountant than a filmmaker.

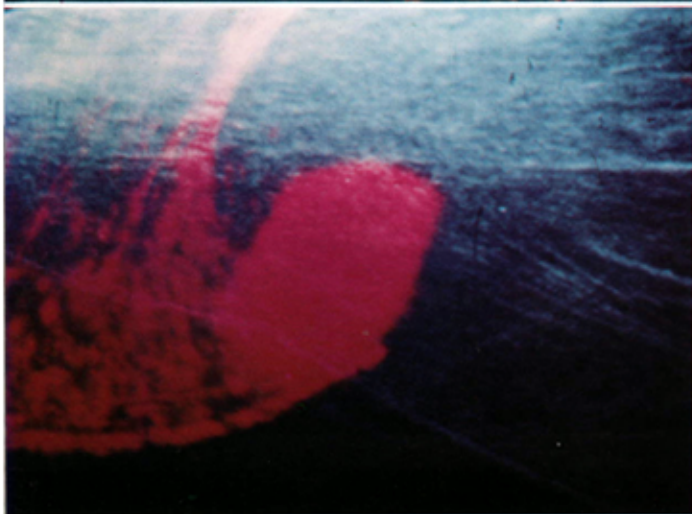
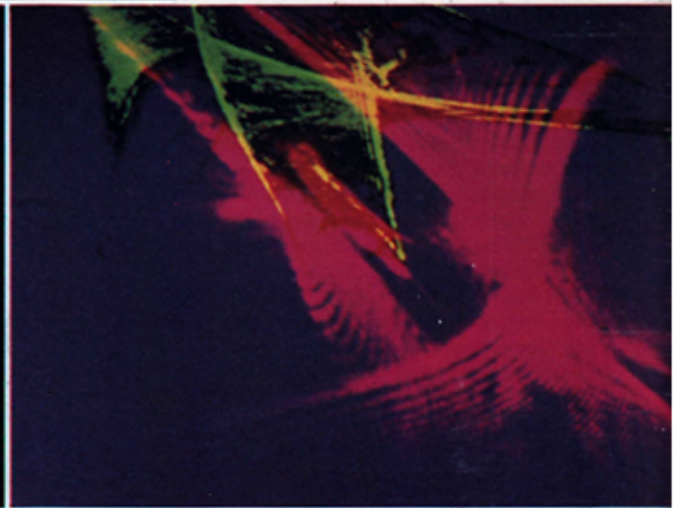
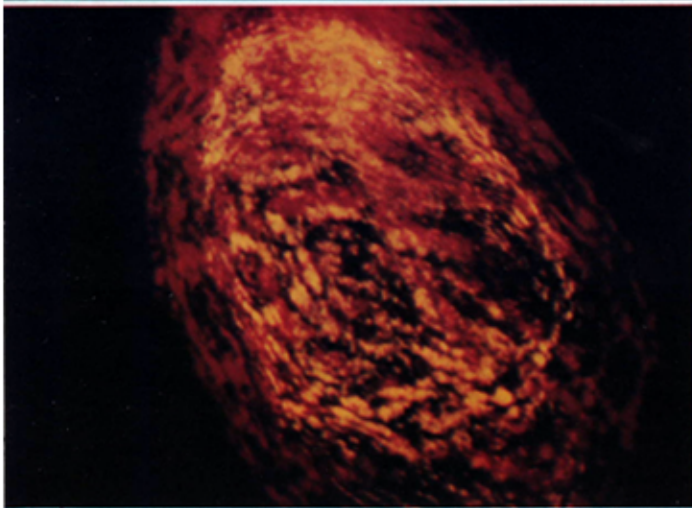
Jan Buehre and I did all of the optical printing work, including the blowup to 35mm. Since the film had been shot on 7241 and 7242 stock, we encountered like the makers of

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A two-watt Argon laser was the primary instrument used to create the effects for "RED PLANET". Its intense white beam was split by a prism into a band of three color beams: yellow, green and blue. A 250 milliwatt helium-neon laser (which produces only a red beam) was independently employed for forming the red planet. The laser beams were directed by first-surface mirrors onto a 10-foot-square rear-projection screen. The laser light was dramatically exploited by directing it through or bouncing it off of patterned glass and plastic and different thicknesses of aluminized mylar.



"WOODSTOCK", as reported in *American Cinematographer* magazine, the problem of the 35mm blowup shifting towards green. Even the blacks picked up a slight greenish cast. By using a Hazeltine Color Analyzer we balanced the color by adding gel corrections varying from 10CC magenta and 30CC blue to 25CC magenta and 60CC blue. Of course, the gel densities and increased exposure required slowed our printer speeds down to 5 feet per minute and 2½fpm. The film could be easily further enlarged to 70mm. I have held discussions with Linwood Dunn, ASC, of Film Effects about the possibilities of blowing the film up to 70mm or even to the 70mm IMAX format, because "THE RED PLANET" is a film spectacular which should only be seen on a truly large screen with maximum sound fidelity.

I spent four months cutting a sound track from pre-existing electronic sound effects. Although it worked quite effectively, I discarded the track because it was monaural. Industry technology has often dragged its feet in the area of sound. Even today, many films are released monaurally in theatres with woeful sound equipment, even as most younger audiences are buying quadraphonic systems for their homes. This is ludicrous, but the industry still resists change.

Due to the startling kinetic movement of my images, I felt that this necessitated an original composition using the three-dimensional space of a quadraphonic composition. Thus, the sound could move across and around the audience and increase their perceptual involvement. I searched for several months for the right electronic composer. At last I heard *Celebration*, a work by Barry Schrader, a young teacher of electronic music at Cal-Arts. I immediately knew he was the one to score the film. He had a unique ability to generate startling high-energy music. Barry's final quadraphonic mix was produced in the space of two months after many all-night sessions with the Buchla 200 electronic music synthesizer. Using complex timbres and as many as twenty layered tracks, Barry achieved incredible sound densities (sound events per unit time). The Buchla sound is quite different from that of the Moog synthesizer which we have become familiar with in pop music. The Buchla does not use a keyboard. The various sound events and dialogues amongst its modules are initiated internally, and externally controlled by touch sensitive tabs. The



Dale Pelton made the rough cut of the picture using a traditional Moviola. He spent night after night preparing intricate effects sheets and lining up the optical cue sheets. Several printer passes were required and each frame was shot two or more times at widely spaced time intervals.

sound track for "DEATH OF THE RED PLANET" will be released as a quadraphonic LP after the film is released.

Today, in Hollywood, the mass release of 35mm shorts ("THE RED PLANET" is 16 minutes long) is problematic, due to the exhibitor's and distributor's heretofore insistence upon the necessity of double feature engagements, even though the hallucinogenic visuals of "THE RED PLANET" make it commercially viable in today's youth-oriented market. I believe that the double feature bias will gradually change over the next few years and we will see more and more often (as in Europe) a feature film packaged with a short film for multiple engagements.

While exploring distribution possibilities of "THE DEATH OF THE RED PLANET", I am at work on story treatments for a large-budget science-fiction film entitled, "CELESTE AND THE CYBORG", a fantasy-monster film inspired by the classic fairy tale *Beauty and the Beast*, and for an extremely low-budget horror film about a young brother and sister with strange genetic traits who are trapped in a mansion filled with contemporary art objects—ranging from giant strobing electric eyes to throbbing, undulating walls. The inanimate objects have become animate . . . and malevolently so. ■

Barry Schrader, of the Cal-Arts music faculty, studies notes for his original electronic score. Sounds generated by the Buchla 200 electronic synthesizer were recorded onto as many as 20 tracks, which were mixed in layers into the final quadraphonic track. The Dolby system suppressed tape hiss.

