

SECTION L—Discussion: Survey Papers

Note: A participant's full name and address are given with the first contribution to the Discussion. Authors' full names and addresses are given with the title of each paper. For subsequent entries the addresses are omitted.

Paper L-3: High-Speed Camera Facilities at the Lawrence Radiation Laboratory, David C. Oakley, University of California, Lawrence Radiation Laboratory, Livermore, California.

Berlyn Brixner (Los Alamos Scientific Laboratory, Los Alamos, New Mexico): When you synchronize three cameras, what are your statistics regarding the obtaining of useful camera records, with one, two or three cameras?

Dr. D. C. Oakley: I'm glad you brought that up. One can guarantee a coincidence with two cameras in a very short time. If I wish to bring in a third camera, I look to see how often I have coincidences between two cameras, and then I use this time between coincidences on the two to determine the delay to synchronism with the third; and I can usually guarantee synchronism of three cameras with a delay no more than a half second.

B. Brixner: Well, what I really meant was, how much of the electronic apparatus works on each shot?

Dr. D. C. Oakley: Your point is well taken because we have a lot of electronic apparatus. If one of those delay units "goes out," we'll lose the record from the corresponding camera. But it's no worse when all the system is connected than when only one part of it is. So, the use of three cameras and associated electronics doesn't prejudice your chances of recording; rather, the reverse.

Paper L-5: A Review of Photographic Instrumentation for Ballistic Data Acquisition, L. E. Davidson, Engineering Laboratories, Development and Proof Services, Aberdeen Proving Ground, Maryland.

Lincoln L. Endelman (The Martin Company, Cocoa Beach, Florida): How far from the line of fire are the CZR cameras placed, both in azimuth and elevation?

L. E. Davidson: Usually the distance from the line of fire is around 75 to 150 ft.

L. L. Endelman: What order of accuracy are you obtaining? Are you looking primarily for dispersion at the target, or are you also trying to determine position and velocity of the projectile during the projectile flight?

L. E. Davidson: We are not trying to determine the velocity; we're trying to determine the dispersion about the point of aim.

L. L. Endelman: What type of data reduction procedures are used?

L. E. Davidson: The nice part of this system is that it lends itself to a radical reduction process where several frames from each round are measured directly on a comparator, or similar film-measuring device.