

FRIDAY AFTERNOON SESSION

JANUARY 24, 1947

The meeting reconvened at one-thirty o'clock, President Sanders presiding.

PRESIDENT SANDERS: A letter has just been received from the Sacramento Section of the American Society of Photogrammetry containing their report. This report should have been read as part of last year's business under Mr. FitzGerald last evening, but it was received just this morning.

"The Sacramento Section was reactivated this last year under the leadership of Mr. C. E. Bridges, President; Mr. C. P. Van Camp, Vice-President; and Mr. Ray H. Hill, Secretary. Several important meetings were held during the year with attendance averaging about forty engineers.

"Both Mr. Russell K. Bean and Mr. George D. Whitmore addressed the group during their visits to the West Coast. The color film 'Cartographic Activities in the United States' was also seen. This group is made up of engineers from the Pacific Telephone and Telegraph Company, the Bureau of Reclamation, the U. S. Engineers, the State of California Engineer's Office, and the U. S. Geological Survey.

[Signed] "Ray H. Hill, Secretary"

I hope that next year we will have other local sections to report.

It is somewhat difficult for a person whose job it is to sell cameras to repeat this, but it is said that a camera consists of nothing more than a lens, a piece of film, and just something to hold them together. This morning we heard about one half of the camera, that is, the lens. This afternoon we are going to be permitted to learn something about the other half of the camera, the film. There are not too many of us that know too much about the all-important relationship between the characteristics of the film base and the accuracy of the resulting maps which are made by photogrammetric processes. This afternoon we are going to have the opportunity to learn something about the characteristics of the new films which are now becoming available, and we are going to learn how they compare with some of the older film bases with which we are somewhat more familiar.

We are fortunate in having with us to present this paper a representative of the Eastman Kodak Company, one of our sustaining members, a company which has contributed tremendously to the advancement of our science through their work on lenses and films. I would like to introduce Dr. John M. Calhoun, who will present a paper on the Physical Properties and Dimensional Stability of Aero Film. Dr. Calhoun.*

PRESIDENT SANDERS: Thank you very much, Dr. Calhoun. It is only with a full knowledge of the characteristics of the materials with which we work that we can achieve the maximum accuracy in the end products. Dr. Calhoun has done us a great service in bringing this information to us today, and I hope we will make maximum use of it.

During the Annual Meeting last year I was first introduced to the Bikini experiment. Captain John H. McElroy, USN, very secretively spoke to George Tschume, to Dr. Clark of Eastman Kodak, and to me, and invited us all up to a room to discuss a very highly secret matter. We went up and learned about the Bikini experiment and about the part which those companies were invited to play in the experiment. Subsequently some of my engineers and I attended some very high and secret meetings in Washington which thoroughly impressed us. The thing that was stressed always was the extreme secrecy of the affair.

* The paper presented by Dr. Calhoun was illustrated by colored slides. As soon as these slides are available for black and white reproduction, the complete paper will be published in PHOTOGRAMMETRIC ENGINEERING. In the interim, an abstract can be found in *Resolving Power*, page 110.

Our chore was a pretty big one, and I went back to New York and told the management of the company that I knew exactly what we had to do, but it was so secret I could not let them know. They should merely give me the authority, and I would go ahead and do it. They were quite impressed, and they did it. That was about eleven o'clock in the morning. At three o'clock in the afternoon when the papers came out, there was far more there than I had ever known, and so goes the security.

Much has been published since then on the Bikini experiment, but few people have been fortunate enough to hear the interesting details firsthand. We are to be so favored today by a paper to be delivered by Colonel Paul T. Cullen. Colonel Cullen has been in Army Air Forces photography in various capacities since about 1930. During the war he set up a shuttle photographic service between the American and the British forces on one side and those of the Russians on the other side of the enemy. The idea was to take off, fly across enemy lines, take pictures, drop down in Russian territory, gas up, and come back for another photographic sweep, and so back and forth. Colonel Cullen made the first flight to prove the system and took photographs of the Ploesti oil fields on the way. You have all heard of that. However, like all military men—and this goes for the Navy, too—they get trigger happy at one time or another, so Colonel Cullen takes great pride in the fact that he finished the war as the commanding officer of the Second Bomber Group in Europe.

Last year Colonel Cullen was appointed Chief of the Army Air Forces photographic efforts in connection with the operation of the Joint Army-Navy Task Force 1, which conducted the Bikini experiment. I present to you this afternoon Colonel Paul T. Cullen.

COL. PAUL T. CULLEN: Ladies and Gentlemen: It is a privilege to appear before you again and to present a report that touches on *the* great event of our age—the burst of an atomic bomb. All of you were electrified on August 5 and 6 of 1945 by the news that the Air Force had dropped one atomic bomb at Hiroshima, Japan. The awesomeness of this new weapon of warfare still bewilders and confuses much of the world. We have accepted the explosive power of TNT and petroleum as a commonplace feature of modern life. But what about the fission of an atom?

The development of the atomic bomb was one of the best kept secrets of the past war. For this reason, and also because of scientific uncertainty regarding the lethal range of the bomb, very little photographic coverage attended the first public unveiling of this weapon. This situation was unchanged when the third *A* bomb was dropped over Nagasaki three days later. Then our scientific and military minds awoke to the realization that despite the detonation of three bombs, our knowledge of the effects of atomic fission was still largely theoretical because accurate data on many of the fission phenomena had not been obtained.

It was just after Nagasaki had been bombed that I overheard Mr. Higgins, the naval shipbuilder who was visiting the Marianas base of one of the B-29 wings, remark "The atomic bomb has put me out of business as I can't see much use of a fleet against such a weapon." The same thought appeared editorially in our press during the following months.

Influenced then by the lack of accurate information on the behavior of the bomb and curious as to the value of a fleet in atomic warfare, the Joint Chiefs of Staff approved the Navy Department's proposal to stake out an eighty-ship "guinea pig" fleet against which atomic combs would be detonated.

The site selected was Bikini Lagoon in the Marshall Islands, Central Pacific, and the target date was 15 May 1946, which was later postponed until