

engineering standpoint, Mr. Merle Meyer from that of the school of forestry, and Professor Frederick Doyle from a specialized photogrammetric institute standpoint.

Dr. Rosenberg will try to point up and bring together some of the ideas that have been advanced and show how our future photogrammetric work will depend upon the use of the basic sciences.

PHOTOGRAMMETRY: ITS SIGNIFICANCE, SCOPE AND CONTENT*

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MY TASK, as I understand it, is to identify photogrammetry as a subject—perhaps a little more fully than by quoting the definition in the famous MANUAL—to indicate its scope and content and to raise the question as to its place, if any, in one or another educational program.

In doing this, I intend to use a superzooper lens—seeing the woods before looking for the trees; recognizing a leaf before examining its parasites.

An event is something that happens at a particular place and time. The units of its four dimensions must be chosen to suit the event. Of space, they may be microns or light years. Of time, micro-seconds or mega-centuries. The photographer's flash and the pre-cambrian shield are "events" at suitable scales.

We humans can perceive such *current* events as come within the range and sensitivity of our senses. But we can resolve a sequence of events only when the change is slow enough or fast enough to be perceptible. We cannot see the movement of the hummingbird's wing or the growth of the flower over which it hovers—the speed of one is too fast; the other is too slow.

And when our observation is complete we are left with only remembered details modified by our conditioned interpretations of them. We may reduce our recollections to a sequence of words, numbers or even drawings with the intention of recording the meaning we have abstracted. And later, we or others, synthesizing our hieroglyphics, may acquire something of our original meaning, or may not. Such is the fate of much communication.

Current events become history far too rapidly for our slow faculties of analysis. We must have interpretable records of the present which we may study in the future in order to understand the past.

I wonder if even we really appreciate what a potent recorder of current events we have in the camera. The topography of our country is just one current event—though perhaps the one with which most of us are most concerned—but every observation we make, or would like to make, and every experiment we perform is a vulnerable current event which, without a current record, is in danger of passing into history either *un*-interpreted or perhaps worse *mis*-interpreted.

Of course, our problems are not solved simply by obtaining a record; they are merely preserved for solution.

Much time and energy is being spent here today on how to interpret such records. Perhaps more energy should be devoted to improving the records themselves, and the means of examining them to make them more definitely interpretable.

But the record is a permanent starting point and someday we may learn to

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glean its full meaning and to better understand the event that has passed.

Such is the scope and significance of photogrammetry, which, of course, includes its sometimes headstrong offspring, photo interpretation.

What are its parts?

I. Photography. II. Interpretation. These can be broadly subdivided as follows:

Photography: Image formation

Image recording

Image formation: *Geometrical and Physical Optics*

Light sources and Photometry

Image recording: *Light sensitive materials*

Photographic sensitometry

Resolution and control of contrast

Interpretation: Quantitative "This point has these coords . . .
plus or minus . . ."

Qualitative "This is muskeg
or a shock wave
or a chromosome"

Quantitative: Perspective—scale—displacements and distortions

Stereoscopy

Restitution

graphical

2D or 3D by optical-mechanical

analytical

Qualitative: The systematic accumulation of knowledge regarding the appearance of reality in varying circumstances.

In which connection I am reminded—being a Scot—of those lines by Burns:

"Oh wad some power the Giftie gie us
To see oursel as others see us
It wad frae many a blunder free us
An' foolish notion."

How often this, in a slightly different form, must have been the prayer of the photo interpreter.

To see as others see
It wad frae many a blunder free us
An' foolish notion.

This is the subject—its significance, its scope and its content—as I see it. Others are going to discuss its place in education.

PHOTOGRAMMETRY IN THE CIVIL • ENGINEERING CURRICULUM*

Professor Francis H. Moffitt, University of California, Berkeley, Calif.

TO LAY down the needs of the civil engineer in the way of photogrammetry is to observe current practice in the profession, to recognize the lack of understanding of photogrammetry, and to note the gross omission of this science in areas where it specifically applies. Any person who reads PHOTOGRAMMETRIC

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