

## Photogrammetric Brief

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# Hologrammetric Mensuration and Mapping System

SINCE SEPTEMBER 1969, research on the potential applications of holography to mapping has been in progress at Purdue University under contract to the U. S. Army Engineer Topographic Laboratories, Research Institute, Dr. Desmond C. O'Connor, Director. In the March 1971 issue of this journal Dr. G. H. Glaser and I reported the results of the first mensuration systems as applied to special test objects. Last January, in an extensive paper presented to the Symposium on Close-Range Photogrammetry, Urbana, Illinois, we described how we extended the activity from mensuration to mapping and from test blocks to realistic objects of interest. Figure 1 is a contour map and a cross section of a dental casting obtained from a hologram using a modified Autograph A 7. Recent practical application of the developed techniques involved the use of a hologram to digitize three-dimensional bone surfaces to support a biometric study of the



FIG. 2. A pair of overlapping aerial photos.



FIG. 3. A photograph of the resulting holographic stereomodel.

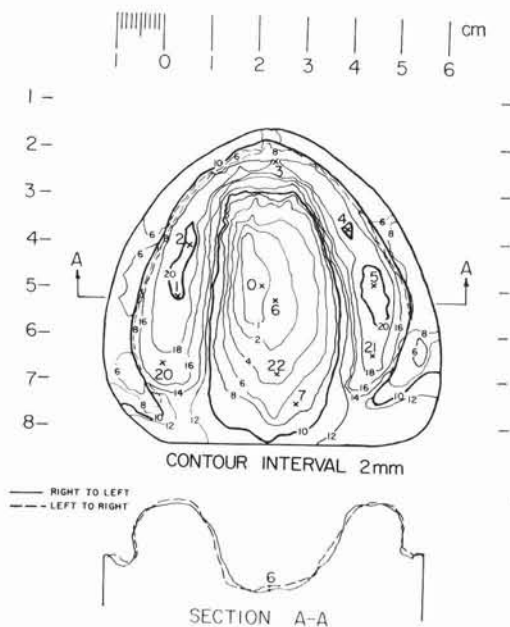


FIG. 1. Toothless dental casting.

design of prosthetic devices.

Although the development of mensuration and mapping techniques for laboratory holograms of close-range objects is useful, the extension of the capability to outdoor objects and terrain views would be of greater significance. It is with pleasure that we report here that a breakthrough has been made. In February, 1971, an interdisciplinary team at Purdue, Dr. E. M. Mikhail and Col. M. K. Kurtz, Jr. (from the photogrammetry area), and Dr. W. H. Stevenson and Mr. N. Balasubramanian (from the engineering optics area), successfully produce *holographic photo-*

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