Your Introduction to Photogrammetry

The following introduction to photogrammetry is the first article to be presented from the Committee on Photogrammetry, Technical Zone of the AOLS, and was reproduced with the kind permission of the American Society of Photogrammetry from a paper entitled, Your Introduction to Photogrammetry and the American Society of Photogrammetry. *It is hoped that this will be only the first in a continuing series which is intended to inform the casual observer rather than re-gurgitate papers from other highly technical journals.*

What is photogrammetry?

The early Greeks found that objects could be measured by bending or deflecting rays of light. The word photogrammetry is derived from three Greek words; photos meaning light, gramma meaning something seen or written, and metron meaning to measure, or "light-writing-measurement".

For centuries, man's knowledge of the earth was based on what he could see and learn from the ground. With the advent of the balloon and the airplane he could rise above his surroundings and observe vast areas in a completely different perspective.

Leonardo Da Vinci, Albrecht Dürer, and others described the principles of perspective geometry. Highly accurate instruments based on those principles are used to obtain reliable information from photographs.

Thus photogrammetry means interpreting and measuring photographic images to obtain sizes, shapes, positions, and other useful characteristics of physical features or objects.

How does photogrammetry work?

Photographs and other kinds of records are taken from space, aerial, ground and underwater platforms. Special instruments and procedures are used to measure and analyze data.

Some types of information are obtained directly by visual interpretation of the photographs. Additional information is obtained by use of stereophotogrammetry.

For example, in topographic mapping, the largest single application, aerial photographs are taken in an overlapping sequence along planned flight lines. Sequential pairs of photographs are then projected by highly precise instruments in such a way that their original projective geometry is preserved. The result is a three-dimensional view or stereo image of the scene below. From that scene, specialists can extract the information about natural and manmade features needed for a topographic map.

Conventional camera systems depend on the presence of reflected light. Special sensing devices detect invisible energy in the form of infrared heat, radar, radio, and sound waves. The sensors record specific properties of objects, not visible from the ground or on ordinary photographs and they have the ability to penetrate fog, haze or water. The technology known as remote sensing supplements the capabilities of conventional photography.