The development of aerial photography dates back a good many years, in fact, it is possibly coincident with the development of photography itself when some one conceived the idea of sending up a camera attached to a kite or a balloon, but it only reached a practical use with the invention and development of the airplane. It is conceded that during the World War it first came to actual use in mapping operations, but such use was elementary in nature compared to the amount and accuracy of the work that is done today. The agronomist, the soil scientist, the geologist, the engineer, and all concerned with the shape and configuration of the ground are becoming increasingly dependent upon the science of photogrammetry.

Aerial photographs taken vertically downward from various elevations, dependent upon the desired scale of the photographs, furnish the scientists with a "working sheet" which is unsurpassed. There is nothing lacking in such a sheet, no bias of opinion, no guesswork. It is the unvarnished truth. The shape of the land, its extent, the sinuosities of its roads and streams, its forest cover, its crops, and its subdivision of ownership is clearly outlined for those trained in its interpretation.

Some of you are no doubt thoroughly familiar with the procedure of securing aerial photographs, but for those who may not be so well advised, it might be worth while to describe the entire operation of flying, photographing, and preparing the photographs for various uses.

Flying. Several of the larger airplane companies manufacture planes especially designed for vertical aerial photography. The main prerequisite is good visibility so the pilot can easily see the course he is attempting to follow; such planes usually have clear celluloid windows under the pilot's feet and often in front of the photographer in the back part of the ship. These ships are usually the monoplane type and are equipped with very powerful motors supercharged for high altitude work.

Obviously the higher the ship flies above the ground, the greater becomes the area that can be included in one picture, and the smaller becomes the scale of the picture. When one knows the altitude of the ship and the focal length of the lens of the camera, it is easy to compute the scale of the resulting photograph. The proper flying height can be ascertained by remembering this: "If the focal length of the camera is 10 inches, the scale of the photograph in feet per inch will be one tenth of the flying height in feet; i.e., plane is flying at 10,000 feet, the resulting photographs are on the scale of 1,000 feet per inch."

The average flying height of the work being done for the Federal Government is about 20,000 feet above sea level. For elevation in excess of 18,000 feet, it is desirable to use oxygen, not absolutely essential for the maintenance of life.

There are now three standard aerial mapping cameras on the market which render satisfactory service. One popular type takes a 7 x 9 picture, and film is provided in 100-exposure lengths. The shutters are of the between-the-lens type which is recognized as possessing many superior qualities.