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SPECIAL ARTICLE

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USES OF AIRPHOTO INTERPRETATION FOR SURVEYORS AND ENGINEERS

by Glenn Bird *

The interpretation of aerial photographs for engineering and surveying purposes is a relatively new science. Firstly, a differentiation must be made between photogrammetry and photo interpretation. Photogrammetry is a science by which measurements are made from the airphotos for the purpose of showing the elevations and horizontal positions of points on the earth's surface. On the other hand, photo interpretation involves the careful examination of the characteristics of the terrain, and subsequent elevation of the location, type and characteristics of the soils, rocks, water conditions, and engineering surveying problems of the area examined. Therefore, photogrammetry is essentially a quantitative examination using aerial photographs, while photo interpretation is a qualitative evaluation, using the same media of the aerial photograph.

Many of the exponents of airphoto interpretation will state, without qualification, that they are able to completely predict the terrain qualities of an area directly from the aerial photographs. The author does not concur with this opinion, but rather feels that the photo interpretation techniques are an extremely useful tool for the surveyors or engineers. When these techniques are combined with other available information, and a simple but selective field sampling program, a much more thorough knowledge of the area is obtained than a purely ground investigation.

The great advantage of the aerial photographs is the large coverage provided from the vertical viewpoint. An engineer or surveyor performing a strictly ground investigation is able to see only as far as the nearest hill, whereas on the photographs, the whole terrain pattern is easily seen. By using a pocket stereoscope, and a pair of overlapping photographs, the overall drainage pattern becomes immediately apparent, thus permitting a fast and efficient evaluation of optimum culvert locations, and drainage area sizes and characteristics. The topography, together with the factors of erosion, gully shapes, and present land uses identifies the type of landform, which allows the interpreter to locate construction materials and also problem areas, such as landslides. The surveyor is able to estimate more accurately the difficulties involved in the work, and also to select the location of trial lines. Also, as the original field notes of the township surveys indicate various features such as topography, creek crossings and type of timber stands, a careful examination of the airphotos often reveals the approximate location of the town-

ship lot corner in question. Muskeg areas can be analysed from the point of view of surface vegetation and the type and depth of muskeg predicted using the Radforth Classification System.

As aerial photographs of all of Ontario, and most of Canada are readily available, the author feels that great savings in time, and large increases in efficiency of surveying and engineering projects would be gained by their more common usage. For this reason, two courses are being offered in photo interpretation at night school for 1965-66 Session. One course will be given at the Ryerson Polytechnical Institute comprising both photogrammetry and photo interpretation, and the other course will be given as part of the Extension Classes at the University of Toronto. This latter course will constitute only the basic principles of photogrammetry necessary for interpretation, and will concentrate mainly on rock and soil identification and the aspects of the engineering problems.

For further information contact University of Toronto Extension Classes - Professor M. P. Hecht at 928-2401 or the Ryerson Polytechnical Institute - Mr. Parsons at 368-2631.

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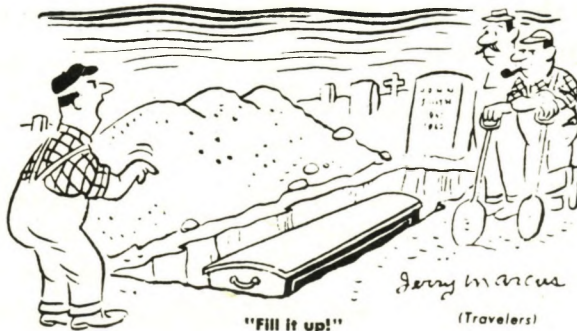
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"Fill it up!"



"Fill it up!"



"Fill it up!"