

SURVEYORS - AND SCIENCE - OUTRAGE TAPE MEASURES

The role of the land surveyor — the familiar figure hunched over a tripod, squinting through a sight and waving his arms — is rapidly changing through science.

No longer is he restricted by darkness, obstacles or the length of his tape measure.

He can now measure distances up to 20 miles, with an error of less than one and one-quarter inches.

He can measure through dense woods or survey in fog or in the darkest night.

Local land surveyors were given an opportunity to examine the new equipment and learn how it is operated at a two-day seminar at Mount Hope Airport Friday and Saturday.

THE LECTURES and demonstrations were attended each day by about 50 members of the Hamilton and district group of Ontario Land Surveyors, which ranges from Niagara Falls to Kitchener.

Some of the new equipment shown by the lecturers, arranged by the education committee of the Canadian Institute of Surveying, ranged up to \$15,000 in price.

It is certainly not used by the ordinary land surveyor, but future applications are exciting.

"Perhaps when this equipment gets a little more compact and a bit cheaper, every surveyor will be using it," said Douglas Harrington, chief Hamilton city surveyor and chairman of the local group.

"Who knows? Maybe in the future we'll all be carrying around little black boxes that will gauge distances for us at a glance," he added. "We have equipment now we wouldn't have dreamed of a few years ago, so who knows what will happen?"

TWO OF THE NEW instruments — the Tellurometer and the Geodimeter — each cost about \$15,000 complete. Both are mounted on the familiar tripods, but the precise equipment has a confusing array of knobs and gauges.

The Tellurometer measures distance from three to 20 miles, by using high-frequency radio waves. Its margin of error at the extreme is one and one-quarter inches.

This instrument can be used at night, in a snow-storm or in fog. It can measure distance through dense forest or other obstacles.

It has been of fantastic assistance to anyone planning to build through the dense woods of Canada's northland. Both hydro and department of high-

ways surveyors use it extensively there.

THE MAN USING this "master station" and the man with the "remote station" — perhaps 20 miles away through forest — can communicate through headphones attached directly to the instruments.

The Geodimeter, developed in Sweden about seven years ago, has a measuring range of from 800 feet to four miles. Its margin of error at four miles is only one-quarter inch.

In this case, the two points must be within sight, as the instrument emits a high-frequency light beam that is reflected in a prism at the other end and reflects back to the original. It is, however, perfect for surveying at night when other equipment is useless.

The surveyors were also shown the use of photogrammetry, which the layman might call aerial photography. It is the use of photographs taken from aircraft in determining distance and the lie of the land.

With this technique, the surveyor can chart shoals in a lake, swampy areas in a forest and distances between certain points.

IT WAS USED with the Tel-

lurometer, in the Hamilton area recently by the department of highways to determine the route for Highway 403 which cut mainly through ravine land.

Among the optical instruments shown to the surveyors by the lecturers, was a "sub-tense bar."

This two-meter bar is used to determine distances up to 300 feet, within a one-sixteenth inch margin of error.

"Suppose you want to measure a distance across a busy highway such as Highway 401," Hamilton surveyor Lawrence Woods commented. "You certainly couldn't stretch a tape measure across it."

BY USING an accurate Theodolite — the ordinary tripod-held instrument used by surveyors — to site on each end of this bar and then calculating the degree of angle between the readings, you can determine the distance.

"This is one of the more conventional instruments," Mr. Harrington said, adding that it is used by many surveyors, whereas the more expensive ones are not.

"You can't tell, though," he said. "Five years ago you had to carry an 85-pound power pack with the Geodimeter and now all you need is a little four-battery unit."

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REGIONAL GROUP NEWS

HAMILTON AND DISTRICT NEWS

The Group held its long-awaited seminar on Distance Measuring Equipment at Mount Hope Airport on November 19th and 20th using the facilities of 447 Wing R. C. A. F. Association. This was of course, held in conjunction with the Education Committee of the Canadian Institute of Surveying. The Chairman of the Education Committee, Mr. R. T. McCurdy was accompanied by Captain M. Young, Army Survey Establishment, Mr. L. E. Pelton, Topographic Surveys, Department of Mines and Technical Surveys and Mr. D. W. Farley, International Boundary Commission.

The programme included lectures on the theory of the Tellurometer and Geodimeter together with inside and outside demonstrations, theory and use of co-ordinates. Transverse Mercator projection 3 degree zones, optical measurements and photogrammetry and its application to land surveying.

In spite of a counter attraction, in the form of the final Hamilton - Ottawa football game, the seminar was well attended on both days with an average of 45 persons participating. It was particularly gratifying to see the interest taken in the seminar by survey technicians, who formed about 40 per cent of the total attendance.

The Group held a brief meeting on the evening of the 19th and this was followed by a stag party at which we were able to entertain our visitors from Ottawa.