

By embracing a new programme of education properly phased to take care of the time lag before University graduates become available in sufficient numbers, I see the members of this Association retaining their position in the survey community, even adding lustre to an honourable profession.

Control of Control Surveys.

W. J. MacLEAN.

This paper does not bristle with statistics. You asked for an opinion so that is what it is and perhaps there is little that is really new in it. So I frankly state my stand on the matter of education in one sentence. I belong to the group that sees a future for a small group of broadly educated surveyors who can use every skill and instrument available to them to provide a wider service to the public. The group will have to work at this and develop an awareness of its full role among other professions and the general public but this is the challenge - what is life without a challenge. I hope to leave you with a few of the opportunities highlighted, but to especially look at Control of Control Surveys.

It is significant that a few years ago some of us were stumping the country to prove the 'case for Control Surveys' and now we are being asked to explain how the system can be made to work. Certainly, the concept has been accepted in Canada. A considerable portion of the capability of the Federal Department of Energy, Mines and Resources is devoted to providing high quality survey data each year to communities having the resources and foresight to embark on a local co-ordinate programme. If Energy, Mines and Resources management has any reservations about whether any of the municipalities have the necessary staff and budget to develop and maintain the network through constant use, it has not yet, to my knowledge, expressed it in terms of an 'either-or' agreement prior to undertaking the work. It would appear that the policy has been to get on with the massive task of establishing horizontal and vertical control where the need was apparent, or expressed, and to trust to the user to recognize that he had acquired a valuable new tool and that he would learn by experience to use and administer it properly. There are signs that the Department questions the users' technical knowledge and rather than see its work wasted or misused, some effort is likely to be made in the development of specific standards for use. For example, as recently as last Tuesday, a short Seminar was held in Ottawa, chaired by L. A. Gale, Dominion Geodesist, to discuss specifications and techniques for 3rd and 4th order.

Horizontal Control. This is not a cut-and-dried technical matter. Members of the National Advisory Committee on Control Surveys and Mapping, plus interested

observers, made it clear that the time is now to analyze the factors governing the use and appraisal of control data on the national as well as the local scene. The Department of Energy, Mines and Resources may take on this task but we hope that we will be asked to help them.

Control Surveys are here to stay. We know that much work has been done by responsible organizations in Ontario. It would have been very efficient to have developed an administrative procedure which could have been made operative as soon as the first Control area was born. The 1962 O.L.S. Brief Recommending Change in the Administration of Land Surveying set the stage, but the actors had previous and long term bookings elsewhere. The very purpose of survey integration is jeopardized by lack of standardization, but I am confident that because the basic principles are sound, we have not as yet misused the system. For example the 3rd Transverse Mercator Projection has been accepted, the federal government has been able to maintain its tradition of providing the First and Second Order Horizontal Control and the First Order Vertical Control to the major control areas. Those agencies doing high order work have kept in touch with the Department of Energy, Mines and Resources to maintain its high standards. Examples of this are the levelling projects carried out by the City of Toronto and the second order Horizontal Control programme of Department of Highways, Ontario. But, time is running out and there are some danger signals. For example, there is a lack of standardization in monumentation of Second Order Control and considerable uncertainty exists in Third Order Design. Some cross-pollination of ideas on data recording, field techniques, computations and computer applications has occurred, but we are missing strong leadership and direction on these technical points by the interested user in Ontario. Each user is developing his own peculiar methods and until he proves them by use, is naturally reluctant to risk his reputation by suggesting that all others should follow his example. Nevertheless, a competent user with drive and conviction could guide Control Surveys development. I ask you to examine the ranks of the Association of Ontario Land Surveyors for that leadership and consider the likelihood of generating a continuing output of this sort of creativity without a broad base of education to provide the knowledge and foresight this requires.

I suggest that with the arrival of a system of coordinate control in areas of major survey activity, the time is overdue for some real pressure on a Provincial Government Department to use this new tool as the basis of a service to the profession and the public. I have a letter here which I would like to read. It's from our Surveyor-General and written to our esteemed President, Bob Smith.

He says: "The Department will undertake the establishment in Ontario of a coordinate control system to be known as the Ontario Coordinate System. Amendments to the Surveys Act this year provide for the making of regulations establishing a coordinate system of surveys". Now that's the kind of thing we wanted to see when we created that Brief in 1962, and I'm not going to criticize the Surveyor-General or the Department of Lands and Forests for the fact that it is five years since 1962. The fact is that it has arrived. He continues with: "The programme will be proceeded with as soon as budget and staff are available". "The Ontario Coordinate System will be based on the UTM projection modified to the three degree zone and so on". Now back to my paper..... Our Surveyor-General needs public support to back his case. Our Association could commission a research group to update our 1962 Brief and augment Professor Marshall's report and put enough punch into it that Treasury Board will rank the proposal where it belongs. Where would our Association find the group within its ranks to do

this vital task? Where, in 10 or 15 years, will it find the competence to show leadership and foresight for new concepts we haven't even heard of yet? Educational experience and judgement, plus the urge to find something better, are the life blood of a profession. I say that to fail to insist on greater educational requirements dooms our profession.

After that burst of philosophy, let me try to be more specific and down to earth. I had written something on this, but on receipt of the latest issue of the Ontario Land Surveyor, I find that Ted Rippon of Alberta says it much better. I would like his views to go into the record of this Conference as further evidence that others are convinced that the surveying profession is at the doorway of a new era. I am going to quote Ted in conclusion:

"But times are changing, and there is arising a new challenge in the surveying field. Today profound advances are being made in electronic and electro-optical measuring devices, electronic computers and there are endless possibilities of automation in photogrammetry. Geodetic control nets are now a reality in many of our cities. With the increasing use of photogrammetry and the increasing scale of engineering projects, a high standard of control survey is essential. If the surveyor is to take charge of these complex and specialized operations, he will require a thorough basic training in science and a broad education in surveying subjects in order to cope with the problems of the future. At all times and particularly at the present, our profession is being evaluated against others, and educational requirements form an obvious and easy means of evaluation!"

"There are thirteen professional bodies in Alberta whose academic qualifications fall within the jurisdiction of the co-ordinating Council of the University of Alberta. These include doctors, dentists, engineers, chartered accountants, architects, surveyors and others, and I think it is quite safe to say that, with the exception of surveyors, the requirements to qualify in any of these professions is at least one university degree or the equivalent!"

"It is not reasonable to assume that we can continue in a form of satisfied repose, while around us other professions are widening and increasing their knowledge and qualifications. At present we do not enjoy equal status with most professions, and we cannot expect to enjoy equal status unless our qualifications are of a standard equal to theirs."

"The future depends on us as members of the profession whether we are relegated to the ever narrowing field of legal surveys or whether we grasp the potentials of the future".