

Geological Education: The Future of Geoscience Education in Ontario's High Schools

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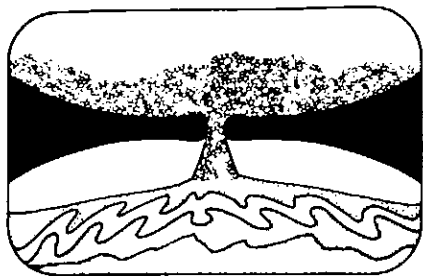
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The Future of Geoscience Education in Ontario's High Schools

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It has been over a decade since geology has been introduced into the senior division high school curriculum in Ontario. A recent survey reveals that the geoscience courses are but a small fraction of the high school program. In general, many boards of education have only one or two schools which may have one or two sections of geology. The odds are high that the teachers of these sections are the only ones with adequate background and training to teach the subject. The program's survival has been dependant to a great extent on the enthusiasm and efforts of those involved.

When the Ministry of Education introduced the geology guidelines through R.P. 47, it provided a viable alternative to the existing science courses in the high schools. Although the program is considered as a science credit, it was introduced into a school's program by either the Geography or Science Department depending on which department employed the innovating teacher. In contrast to the curriculum development efforts such as the Earth Science Curriculum Project (ESCP) which developed "new" teaching methodology and teaching materials for secondary schools in the United States, the geoscience teachers in Ontario were left to develop their programs to a large extent on their own. At the College of Education, the teaching of geology teachers became the step-child of the Geography Department because their experience in training teachers in Physical Geography could

be applied to certain sections of the geology course. The paucity of geology courses in the high schools reflects the fragmental approach in which the subject received its inception into the high school curriculum.

This situation in itself should be cause for alarm among geoscience educators. However, there are now additional factors, the consequences of which could further affect the present situation.

After seeing about a decade of innovations in programs, school structures and educational philosophies, the public fears that today's students are more poorly equipped in basic skills than their predecessors and a majority of people were convinced that the quality of education is on the decline.

Conservative "Back to Basics" forces demanded a tightening up of curriculum with more requirements to ensure that those granted diplomas would be able to read, write and master mathematical skills at a rudimentary level and at the same time obtain an understanding of their province and country.

The 1977-78 edition of circular H.S.1 issued by the Ministry of Education appears to reflect the concern of the public about the quality of education by demanding requirements that suggest a trend to a traditional program. Circular H.S.1 presents the basic requirements for a Secondary School Graduation Diploma (SSGD) that must be fulfilled by students and followed by educators in presenting their programs for that year. Previously, a student granted a SSGD must have successfully completed a minimum of 27 credits, based on subjects available in years one to four. These 27 credits must include at least three credits from each of four areas of study. The new guidelines have restricted the student's freedom of choice of subjects by announcing that students entering year one in September, 1977 or after must gain credits during the first two years of their program, in the following subject areas, two credits in English, two credits in Mathematics, one credit in Science and two credits in Canadian Studies (History or Geography). In addition, they must gain standing in two additional credits in English Studies beyond year two. The guidelines form a core program which absorbs 13 or the 27 credits that are required for a diploma. Moreover, students in years three and four still

continue to choose the traditional mathematics and science courses which result in reducing the student's electives to 11 which must be obtained during years one to four. The impact of the core program on the geosciences is the reduction of the number of electives required by students to complete their complement of credits for a diploma. Given a more demanding core curriculum many students will take the least demanding options in order to keep their averages up. While educators applaud the "Back to Basics" movement, some are concerned about valuable electives such as music, art and geology being scrapped along the way.

Another factor that will influence the future of geoscience education is the trend to declining enrolments. It is projected that the trend will reach a bottom by 1985. Projections after 1985 indicate a steady increase in enrolment to 1996. So we face eight years of attrition, of secondary schools closing down and of little hiring. Declining enrolment in schools is naturally accompanied by a decline in course selections and suspension of courses due to budgetary pressures. These omens suggest that there could be a further reduction in geoscience classes.

The predicted drop in enrolment and the scarcity of geoscience teaching opportunities has resulted in a small number of student teachers selecting the geology option at the Faculty of Education at the University of Toronto this year. It is not surprising that those who have the education, the training and the experience are not being motivated to select geology as one of their two areas of specialization, since they do not wish to jeopardize their employment opportunities by specializing in an area which is not in demand.

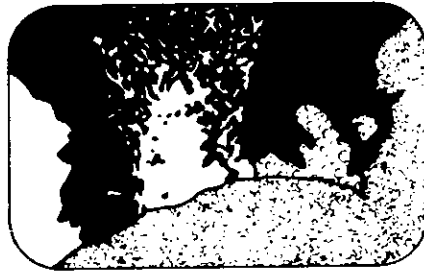
New items such as, "School enrolment projections indicate that by 1982 there could be only 236 job openings for secondary school teachers in Ontario" and "Between 6,500 and 7,000 secondary school teaching positions will probably disappear by 1986-87", will also discourage a large number of students presently taking geology majors in university with ambitions of teaching after graduation.

As schools cease to take on new staff members, there will be a decrease in innovation. Individuals become unwilling to take risks and are unwilling to reach

out in new directions. With no new blood entering the system, it is the responsibility of those with classes in geology to prevent further deterioration of the geology program.

With our present concern with the environment and energy, geology teachers and professors should attempt to influence school administrations, school boards and the public to be supportive to geoscience education in the secondary schools and the secondary school teachers should cooperate closely with elementary science teachers in their area. High school geology teachers should encourage the use of earth science as enrichment for Physics, Biology and Chemistry. In this way, may we be able to continue the geoscience program in the high schools during the difficult times ahead. Although there may not be a great need for geology teachers, there will still be a need for well-trained earth scientists to help solve the ever-increasing problems of our world.

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Pyroclasts

Ward Neale

October 1st— Our Own Geoscience Day

Geri Eisbacher has come up with the brightest idea since plate tectonics. He suggests a national day devoted to our science, a day when we foregather in various parts of the country in order to hike, to look at a few outcrops, or to picnic in a natural setting. This could be followed by informal toasts to founders of our national geoscience or just relaxed chats about new developments in local or national geology.

Geri brought back the idea from Peru where he holidays every fall in order to satiate his passion for avalanches, archeology and those misleading green rocks above pseudo-subduction zones. Here are some excerpts from his letter: "Peruvian geologists get together every year on September 19 to celebrate the birthday of Eduardo Lizon, their Father of Geology. This *dia de la geologia* is observed all the way from the oil rigs of the selva to the parks of Lima. Usually it takes the form of a very relaxed field trip followed by a pachamanca (Inca-style picnic) . . . I think we should declare William Logan's birthday either Logan Day or the Canadian Day of Geology, and celebrate it across the country in a dignified way, e.g., with field trips culminating in picnics upon a nearby favourite outcrop".

Logan's birthday unfortunately comes at the wrong time of the year for most of us except the Vancouverites - it is April 20. However, the first Sunday in October would be a good choice as most of us are then back from the field and have comfortably renewed acquaintanceship with families and friends. Many local groups have field trips sometime in the fall and at least one of these already

comes close to the type of event Geri has in mind - namely the Winnipeg GAC Section's annual "family picnic on an outcrop". With slight readjustments of dates, many of us could impart national significance to our *ad hoc* fall junkets. Other groups and individuals could fill a great gap in their calendar.

Naturally there will be many variations to national geoscience Founder Day celebrations across this great nation: a parade around the Signal Hill nature trail in St. John's followed by an Alexander Murray Passion Play in Cabot Tower; a lobster boil at Peggy's Cove with a solemn dissertation on Reverend Honeyman's sex life by the Hon. Bill Gillis; a sermon on the Mount (Royal?) by the Jeans; Lajoie and Drap au, a white tablecloth and champagne in Gatineau Park as Logan's successor Digby McLaren entertains his USA and USSR counterparts; and God only knows what will happen in Alberta, the land of "blowouts", but if it really has to be dignified the blue-eyed Arabs will probably settle for blank cartridges in their six guns!

There could be much beneficial fallout from Logan Day celebrations, e.g., involvement of our families and interaction with people throughout the community who have interests in geoscience. Most important, however, would be the opportunity to reflect a little on the contributions geoscientists have made to this country over the past century and a half and to gain some proud sense of the deep and widespread roots from which we are growing.

The Eisbacher proposal should stir us all into action by October 1st, 1978. It would be a good idea for the Canadian Geoscience Council through its member societies to establish a firm date and for all local groups to keep each other informed of plans through the pages of *Geolog* until we can wish each other "many happy returns of Founders Day".

Where do all our Graduates go?

The next annual report of the Geoscience Council is chiefly devoted to Soil Science in Canada which should be very informative to most readers who are as ill-informed as I am on the topic. The report, available in mid-summer (as GSC Paper 78-6), also contains many other gems. One of them is statistical