

# Features

---

## Geological Education

---

### Vitai Lampada

Canadian earth scientists must give more thought and put more effort toward improving the teaching and enlarging the scope of earth science in our secondary schools. The object is not the production of future recruits to the profession, but rather to broaden the awareness in secondary school students of the total grand design of the earth, of the geological and geophysical processes that mold it, of how and why geoscience relates to the physical, biological and social sciences, and of the vital role that geoscientific phenomena play in the life of man and his environment.

How best to increase this awareness and improve earth science in our secondary schools, rests ultimately upon the shoulders of the teachers and their respective Provincial Education Ministries, but it cannot be fulfilled unless the *teachers first* achieve that awareness. Improvement in earth science education at the secondary level thus becomes a matter of teacher training, accomplished through formal courses in their training programs, or achieved by self-teaching through personal inquisitiveness and determination. Many teachers across Canada, slowly and hesitatingly, have increased and improved their knowledge of earth sciences, and through time and experiment, imparted this hard gained knowledge to their classes. Local centres of excellence in earth science teaching at the secondary level already exist in the country, but many, many more are needed. Herein lies the target for participation by professional earth scientists in industry, government and university.

Although the major earth science learned societies that represent the professional scientists in Canada—Geological Association of Canada, Canadian Institute of Mining and Metallurgy, Canadian Society of Petroleum Geologists, etc.,—have education committees whose object is to foster earth science education at all levels in our society, only local progress has been achieved through the efforts of a few genuinely

interested and motivated persons; lack of communication or direction within and between these committees has fostered neither co-operative effort nor vigorous approach to their responsibilities. A major step forward was made by the Canadian Geoscience Council in 1972, when they commissioned an across-Canada inquiry into the present status of earth science teaching in our schools, and what the provincial school educationalists considered to be most needed for improving and expanding the subject at the secondary level. The results of this inquiry were startling in one respect; contrary to the anticipated answer that an all-Canadian Earth Science textbook could solve all the problems, the teachers asked for monograph and pamphlet information on specific earth science topics, illustrated with local or accessible examples and with guides or suggestions on "*activities*" that they and their students could do to illuminate the topics. Such "*activities*" should include both classroom and field projects. To build such activity classes the teachers need qualified professional assistance from geologists and geophysicists. Teachers want to know where or to whom they can turn for illustrative material, such as photographic slides and films. Although there are numerous texts on earth science, written for both primary and secondary level consumption, essentially none is illustrated with Canadian examples. It was agreed that a Canadian text would be helpful as background source material from which the teacher could draw pertinently nationalistic examples but that, by and large, it would not necessarily be adopted across the land as a definitive student aid.

For those of us who have lost touch with teaching methods in our schools, it is often unnerving to discover that the "*text*" *per se* is no longer the essential item in a student's source material. Today the emphasis in science teaching is on activities which focus the youngsters' attention on *processes and concepts* rather than on facts. The school library may be well stocked with reference texts but the student is not necessarily

equipped with his own copies of subject texts.

It became apparent from the C.G.C. study that improvement of earth science teaching in our secondary schools must begin with the teachers, through teacher training. The concentration for this, in turn, must be provided by Faculties of Education within each province, but the guidance for the development of such concentration must come from earth science professionals in universities, in Mines Ministries, and in industry. To this end, the Education Committee of the Geological Association of Canada is presently working to instrument recommendations that resulted from the G.A.C. Workshops on earth science teaching held in Sudbury, in 1971, and in Saskatoon, in 1973. Those recommendations are that the G.A.C. Education Committee: (1) serve as a clearing house for plans or programs of earth science, in either primary or secondary schools, that have already been tested and proven successful; (2) assemble a list of earth science materials and references for distribution to teachers; (3) enlist the aid of qualified people from Mines Ministries, from university Earth Science Departments, and from industry, to assist schools in setting up local field trips and to help teachers develop and improve their earth science programs.

The G.A.C. Education Committee welcomes interest and aid in its efforts to achieve these purposes. Should you wish to contribute ideas or to participate actively in these efforts, please communicate with the writer through any member of the G.A.C. Executive Committee. Copies of the C.G.C. enquiry into the present status of earth science teaching in Canadian secondary schools may be obtained in the same manner.

John L. Usher  
*Chairman,*  
*Education Committee, G.A.C.*

MS received, December 11, 1973.