

Little is being done to measure the soil losses that occur under various uses. However, study is being devoted to stream and river pollution by soil particles and nutrients from farm fields. Various departments of federal and provincial governments are committed to a program of environmental protection and this includes among other things, soil conservation and therefore erosion control. However, government attempts at erosion control are not always successful. Erosion still occurs because people are not prepared to make the extra effort required to prevent it.

Waste Disposal

At the moment, soil depletion due to the accumulation of wastes is a local problem being most serious around the urbanized sections in Canada. There is no doubt that the soil is a ready-made treatment plant for the disposal of some wastes particularly those of an organic nature. When properly carried out animal and human wastes as well as municipal and some industrial wastes can be disposed of in the soil with no problems. However, certain other wastes may so build-up in soils that they become harmful to living things.

In the parts of Canada where salt is used to keep the roads clear of snow in winter the concentration of salt becomes so great that it affects the adjacent vegetation. Heavy minerals may attain such high levels in soil, and therefore in plants, that they become part of the food chain and affect human health. Potentially harmful minerals have been added to the soil in many ways. Industrial operations can release a number of mineral elements which fall to the ground to become part of the soil composition, and the particulate "fall-out" from automobile exhausts is an important source of lead contamination. Even some fertilizers and pesticides can contain elements such as cadmium, arsenic, mercury and lead. Some soils contain large amounts of minerals naturally. In northern Ontario some soils have a high selenium content and in the eastern section of the province molybdenum occurs in comparatively high concentrations.

With what occurs naturally and what is added to the soil we may create pollution problems that are difficult to overcome. Many political bodies are taking

measures to ensure that the potential of soil for decomposing organic materials is used to the fullest while making sure that contaminants are handled in such a way that human health is not endangered. However, in reaching solutions to waste disposal problems an awakened public is a necessity and we have yet to attain such a goal.

The Future

The future of soil conservation or of any conservation for that matter, depends largely on how we regard its relationship to economic development. Until recently the concerns of orthodox economics have been far removed from environmental costs and the discipline of ecology has maintained a position of lofty disdain for such matters as the price of ecological purity.

Conservation and economic development should ideally be directed towards a common goal - the rational use of the earth's resources to achieve the highest quality of living for mankind. In practice economic development tends to place stronger emphasis on increases of production to enhance the material well-being of people whereas conservation, while concerned with yield, emphasizes the more qualitative aspects of the human environment which add depth and meaning to human life.

Conflict between conservation and development can be minimized if there is an understanding and partnership among those whose main interests lie on either side. For example, developers, on the one hand, must have a due regard for environmental values. On the other hand those concerned with conservation must be equally ready to recognize the political, social and economic forces behind the development drive. There is a growing desire on the part of governments to recognize a conservation ethic but profitability and rapid growth are still of greater concern than the intense environmental impact of many of our actions. The depletion of our land resource represents a long-unpaid debt to nature. What strains will develop in the economy when that debt is called? We will be able to pay that debt and still survive? It seems that society must do something now about conservation. It may be too late if we wait until to-morrow.

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Pyroclasts

The XXVth. International Congress

By Ward Neale

The XXVth IGC was a mixture of bright spots and dark spots. Herewith a capsule summary so that you can be happy or sad that you didn't invest at least $\$2.5 \times 10^3$ in it as did some 2500 other geoscientists. As is commonly the case, no two people could completely agree on which were the bright and which the dark aspects.

The Congress was staged at the University of Sydney and it was austere compared to the opulence of Montreal's glittering convention center. This is probably a harbinger of things to come in a less prosperous World. Some like the return to an academic atmosphere. Others regretted the primitive lecture benches that prevented escape during a dull lecture and made it difficult between lectures.

I sympathized with the latter group, never have I heard so many dull lectures, or suffered so much re-heated porridge. Fortunately escape was facilitated by the enormous number of "no shows" on the programme. In contrast Bill Fyfe felt that he had never before made so many informative contacts at a large meeting, his symposium on the Archean was one of the liveliest he had ever participated in, and the information he gleaned on Australian (ANU) ion probe studies of zircon, destined to become a most important advance in geochronology, was the most exciting news he has heard in a long time.

The Governor General when welcoming the Congress expressed his dismay at the lack of mention in the programme of resources and their sociological and political implications.

In contrast I found the prominent place given to the AGID Symposium on Mineral Resources Policy one of the most exciting items on the programme. The event, in a packed hall, was no let down as a widely split panel produced vigorous discussion among an informed audience. It was probably no surprise that the most articulate case for state control came from the Director General of the Indian Survey; it surprised many however that the other extreme in the debate was taken by another government person, Lyn Noakes, Director of Australian Bureau of Mineral Resources. His support of virtually untrammelled free enterprise evoked the cheers of several Canadian and American petroleum and mineral industries people in the audience! American, African and European panelists took a middle line between the Indian and Australian positions.

Near the end of the Congress I was told by David Straw, now Mount Isa Operation's Manager but formerly well known on the Canadian scene, that the Governor General was probably right and many industrial geoscientists were disappointed with the relatively small content of economic geology. In contrast, my colleague David F. Strong was very pleased with what he obtained from the economic and petrological sessions. "Much more new fresh material than in Montreal." Large queues that formed outside the halls where R. L. Stanton and Takeo Sato lectured showed that many agreed with this view.

Probably most everyone agreed that the greatest weakness of the Sydney Congress were the opening and closing social events. The opening ceremony was marred by a technicians' strike and by the I.U.G.S. President delivering the longest, dullest speech humanly possible on a subject as exciting as 'Recent Advances in Geology'. The opening dinner, attended by thousands, suffered from a shortage of food. The closing Olde Lang Syne Party attended only by a few hundred of the faithful was short of both food and drink. It wound up by 9:30! The continuous coffee and biscuit hospitality put on by the Ladies Committee was the most successful social event of the Congress.

Everyone agreed that their field trips had been superb, well organized and very enlightening. Certainly I can vouch

for those I took in New Zealand and in the the Canberra region. These are the events when all your readings on an area or a problem suddenly crystallize. They are also the times when you make lasting professional friendships.

Australia has wisely decided against publishing all of the Congress papers - they might publish a select few. The Bureau produced excellent, up to date geological, tectonic and gravity maps for the occasion. Also, the Earth Science Reviews has produced some first rate articles on Australian geoscience in a special issue (v. 12, no. 2/3).

Other recollections: the next IGC will be in Paris where it all started 100 years ago. Norm Fisher, president of the Sydney Congress and retired director of the Australian Bureau was awarded the Spendiarov Prize. Traditionally this USSR prize goes to the most promising young scientist of the IGC host country. The Russians said Norm was young at heart. True, and a nice gesture, but I'm afraid it meant that the Russians are old in thought.

An observation: Bob Folinsbee calculated that if everyone in the world was allowed to fly from San Francisco to Sydney return in order to attend a Congress we could use up a tenth of the world's petroleum reserves. It makes one ponder a little on jet travel and on Congresses.

Another observation: my Sydney briefcase now has a hole in it and I'm back to using the durable brown bag presented at the Montreal Congress. Symbolic? Maybe.

The Sayings of J. Tuzo

Professor J. Tuzo Wilson has for many years been Canada's most quoted geoscientist. In the early years chiefly on matters scientific, in the past few for sage comments on energy resources and the management of science. His recent series of Massey lectures on Science and Technology presented on C.B.C. Radio will apparently not be published by that Corporation. Someone somewhere must publish this most important work. The manuscript copy that I have is a collection of delightful reminiscences, clear concise assessments of the problems of our time and bold, if rather pessimistic predictions. They deserve reading by every student and concerned citizen in our country. Here are some sample quotes:

"The reason more wives do not abandon their scientist husbands is that the same dedication to work which leads to neglect of families leaves equally little time to enjoy other liaisons."

"Governments and companies are heirarchies in which the chiefs feel responsible for and endeavour to control what underlings do and say. University presidents and deans, whatever their other failings, do not act as censors."

"A few geniuses bloom alone but most scientists thrive on competition. This has been lacking in Canada."

"... I suspect that the random support of basic science in the hope that something useful will turn up is nearing its end. It isn't operating fast enough and it isn't producing the kind of answers we need."

"Economists are in the same frustrating state that we geologists were when we believed in fixed continents."

"It seems to me that human beings are like white elephants. They don't eat as much but by their other wants consume as much or more."

"Life is so good that it is not reasonable to expect it to be free. We should not object to making some sacrifices in return for our continued existence."

Heads May Win

Heads of Canadian Geoscience Departments are following through strongly on the Canadian Geoscience Council recommendation that more funds must be provided for university research. The 'chairman of the heads', David Strangway, recently convened a meeting in Toronto with the top brass of Energy Mines and Resources to argue the case for this Department funding applied research in the geosciences under the surveillance of a peer review system. A small sub-committee is studying the proposals that came from a full day workshop and it looks as if a strong case will eventually be made to Treasury Board. High time.

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