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Mr. Chairman, Gentlemen:

As I am not a professional snowman it is indeed an honour for me to be asked to make a few "unscheduled" remarks at this conference. However, *because* I am not a professional snowman, this would seem to be an excellent opportunity to put forward some thoughts and questions to those who are.

Let us try to approach the subject from the viewpoint of a complete outsider: imagine a creature from some other part of our universe, armed with only a little rudimentary knowledge of life on earth, coming in to investigate reports that the snow regions are inhabited in the winter time. His mission is to observe and to report back with preliminary interpretations. What conclusions might he come to? Starting with cities he would note that the inhabitants collect snow; they cart it off their streets and collect it in great heaps in open spaces here and there about the city. Sometimes they put fences around the heaps and keep them until well into the spring. If they choose their spot carefully and build the heaps large enough they can sometimes keep them right into the following winter -- possibly as an appeasement to the weather god.

He could report that large numbers of the inhabitants go into hilly areas, pull themselves up to summits with strings, and, placing slats on their feet, go zooming down the slopes only to go back up again and repeat the performance; the purpose seeming to be to compact the snow so that it will stay longer. In these same areas he could report the presence of equipment blowing fresh coverings of snow on the slopes -- a conception of the snow god at work perhaps, or maybe a recycling device. He might report on other inhabitants wandering about the snowscape on little bug-like machines, drawing out tracks in the snow -- symbolic supplications to the deities apparently.

Thus, superficial observation of our behaviour might well perplex our space creature. However, if he asked a random sample of the snow region's inhabitants to give an account of the impact of snow on their society and its lifestyles, what sort of response would he get?

If the average person who had never thought much about the matter tried to answer the question with the aid of standard reference works he would not make much headway. The Canada Year Book treats prolonged snow cover in Canada virtually as if it did not exist. The Encyclopedia Canadiana does little better -- check, for instance, under the headings of "Snow", "Climate", and "Snowmobile". Geography texts, where one would expect to find reasonably detailed accounts of the snow environment, are, with few exceptions, similarly inadequate.

Let me relate a couple of examples concerning the snow exhibit next door. In gathering material for the exhibit we wished to place snowfall in Canada in a global perspective, and initially we assumed that we could fairly readily obtain a wall map of global snow cover. After a careful search among likely sources we were advised that if we wanted such a map we would have to produce it ourselves! We did, and at the moment, so

* A large exhibit on the theme "Living with Snow" was on display at the Conference site. The exhibit, which was first shown at the International Geographical Congress (Montreal, 1972), comprised about 40 panels of photographs, maps, charts, and commentary on many socio-economic aspects of life in the snow region. As Mr. Brack had conceived the idea for the exhibit and directed its production, the Local Arrangements Committee invited him to make this presentation during the opening session of the Conference.



Photographs Courtesy Environment Canada

far as we know, that coloured map of global snow cover in the exhibit is the only one of its kind. It was drafted by Inland Waters Directorate draftsmen using a 6" x 9" reproduction in black and white in an American translation of a Russian publication by Richter. Maybe one exists elsewhere but we did not find it. As a result of this experience, the Glaciology Division is now producing an improved version of the one in the exhibit for general distribution. Granted that there are serious difficulties to compiling and interpreting information for a global snow map, one would think that a sufficiently useful generalization would have been available long before now.

On a similar vein, we wanted to include a simple diagram illustrating the formation of snow in the atmosphere. After careful scrutiny of many text book diagrams illustrating precipitation, we concluded that we would have to draw our own. We did, again with the sterling help of Directorate draftsmen.

Marshalling the material for the exhibit was an enlightening experience in itself -- an education on the average individual's general knowledge and perception of snow. We encountered interesting misconceptions. It was suggested many times that the Department of Indian and Northern Affairs could supply all the information we needed. The *north*, in other words, was the snow country!

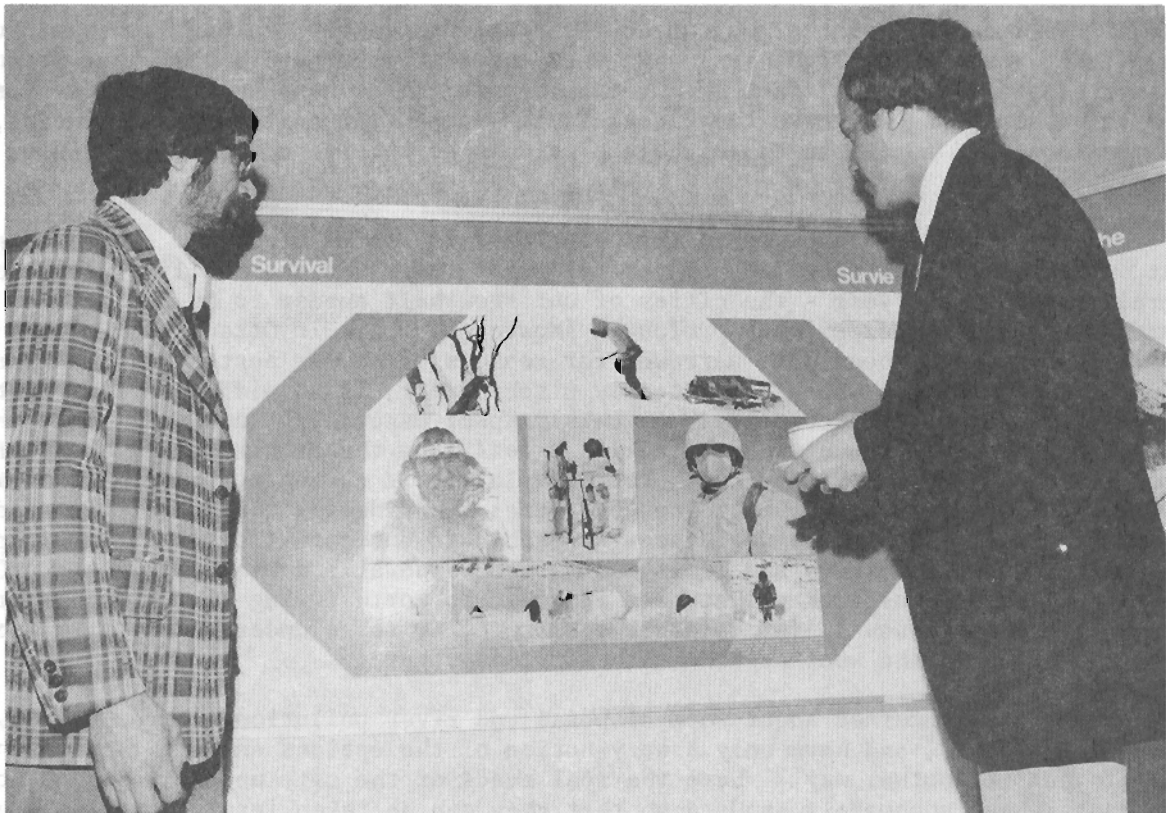
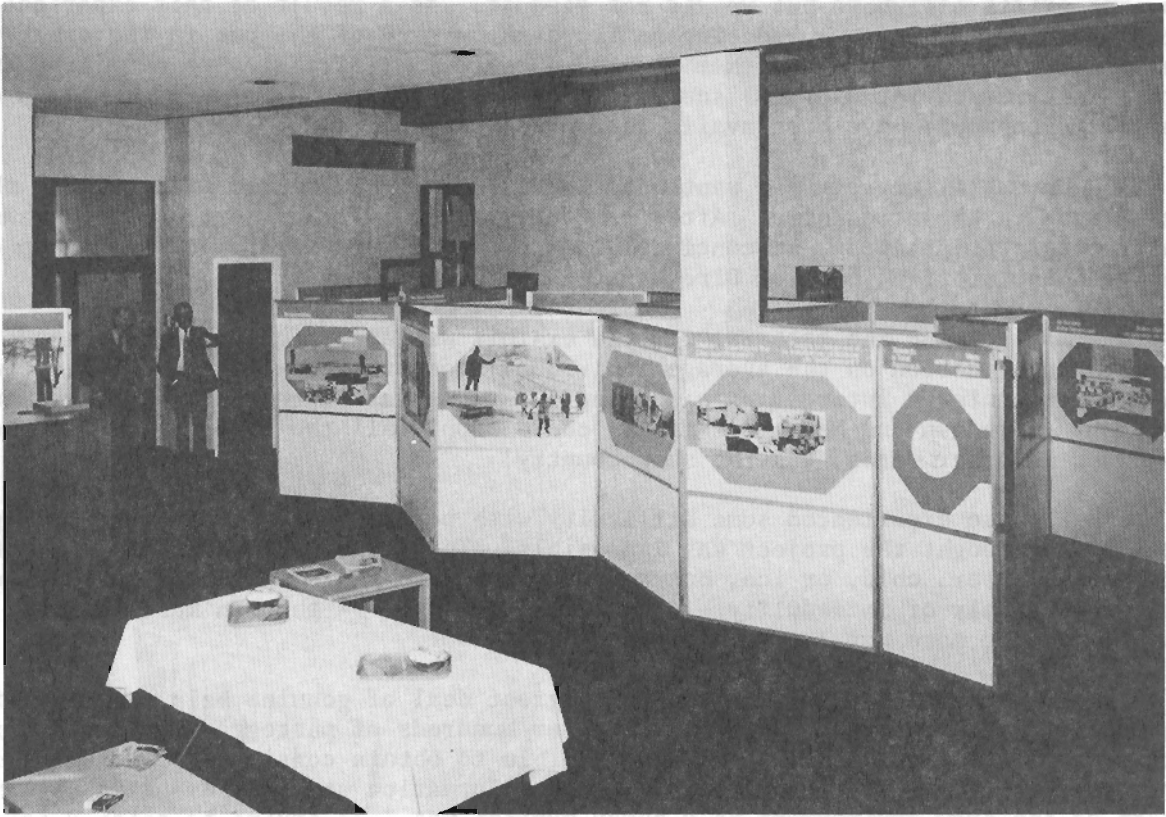
We also experienced some difficulty with perceptions. There were outright skeptics who thought the project was impossible. There were those who could think only in terms of winter, cold, or ice, but not of *snow*. And there were those who seemed to be overcome by an air of incredulity -- "an exhibit on snow -- the man must be mad!" To many, snow was nothing more nor less than a four-letter word.

In fairness though, we received a great deal of genuine help from individuals with specific snow interests and we pored over hundreds of photographs and other illustration material. In the event, it was possible to obtain considerable detail about discrete aspects of *snow*; but to marshall the information and to present it within the context of the *snow environment* as a human habitat was like trying to catch a fox in its den. There is a vast literature on snow but little on the snow region and how society operates within it.

Why? Why is it that we can go right through school, through cubs and scouts (or CGIT if you are the right sex) with only the rare informative half-hour or so spent on discussing a fundamental fact of our environment? Study and comprehension of snow seems to be something we leave to academics, to weather forecasters, to engineers, ski area managers, and so on, to those who are paid to be interested or are possessed of a gauche curiosity.

There are consequences to this take-it-for-granted attitude. There is nothing about our style of city planning, in general, that indicates that we live with snow for several months of the year - the cities of our snow belt appear to be the same as those in areas which do not experience prolonged snowcover. Here in Ottawa some of our main streets have actually been made narrower for reasons of *summer* aesthetics. Our architecture, except for the use of the steeply pitched roof, is no different from that found in the average North American city. In this respect especially, one feels that there is room for improvement, conceivably by taking a leaf from the architectural books of some hotter climates! In the Middle East, for example, it is common to find that, on main streets, the second storey of buildings overhangs the sidewalk thus permitting pedestrians to walk in shade. This style would seem adaptable to our conditions as it would provide shade during our hot summers and limit the snow on sidewalks during the winter. Granted that it could not be used on all streets it would be worth trying on the main thoroughfares. The tendency now is for complete enclosure, or to go underground, like rabbits, out of contact with the weather and fresh air altogether.

We are concerned about snow disposal and river pollution, but most of us are unsure of the facts, and have only a hazy notion of the options and their costs and benefits. To put it another way -- have the real needs of the city under snow, and its inhabitants, been adequately studied so that they can be taken into account in planning? Going underground is one solution, but only a partial one.



Photographs Courtesy Environment Canada

On a different vein: at the trade fair in Peking a couple of years ago Chinese officials were reportedly interested in seeing a railroad snow plough, but there was not one on show (not, it should be noted, through lack of trying by the Department of Industry Trade and Commerce). Which reminds us that there are other snow regions in the world besides the one we live in. Our snow technology and expertise may well be marketable commodities that deserve more promotion. The boost given to the Canadian clothing and fashion industry by skiing and snowmobiling is a case in point.

In small ways too, we suffer from somebody's failure to appreciate the snow factor: if you wanted to invent the perfect snow trap for the front of your car, between the windshield and the hood, you would almost certainly come up with something very like the disappearing windshield wiper!

We could go on citing cases where a little more awareness of the circumstances of the snow environment might help us to live with it more easily or to take advantage of it, but what we are building up to is a question: so what? What would be value in the average citizen knowing more about the snow environment that surrounds him for several months of the year?

To have an appreciation and knowledge of how the snow environment affects us and how we respond to it would seem to be value enough, but one can probably find more practical reasons. Here is a comment on snow disposal from Eco-Log Week (14 December 1973) that appeared in a column discussing the banning of snow dumping in rivers: "One solution boils down to lower removal standards." Lower removal standards - at first sight not an unreasonable suggestion, but a little reflection shows that it is not all that reasonable either. What would lower removal standards (i.e. permitting the accumulation of more snow and ice on the streets and sidewalks than we experience at present) mean to the elderly and the infirm, to the handicapped, and to the blind? Many of these people do not go out much in the winter as it is; not because of the cold, but because movement is much too difficult, not to say hazardous and even dangerous. What would lower removal standards mean to fire, ambulance, police, and normal community maintenance and protection service? Intuitively one supposes that lower removal standards could only make these more difficult and costly. But where is the documentation that would enable us to argue for or against this kind of proposal? Where are the readily available studies on the behaviour and needs of the elderly and the blind, and of municipal services during the snow season? Very little definitive and comprehensive work has been done on these matters.

Consider also economic development. Planning is now underway for major transportation extensions in northern B.C. to encourage further mineral, forestry and recreation development. This is a region of heavy snowfall, and deep snow cover. This is an area where, presumably, a group of professional snowmen could assist planners and administrators to apply all we know about the snow environment to take advantage of the benefits, guard against the hazards, and generally to achieve the social and economic goals with minimum disruption from snow. But do planners and administrators, in all fields of work, sufficiently recognize the significance of the snow environment that they will *invite* the counsel of professional snowmen to ensure that their planning and design achieve a *modus vivendi* with snow rather than a confrontation with it? Do they and the public have sufficiently comprehensive basic knowledge that they can understand the nature of your inputs, and use them effectively?

It has been said that snow is becoming an issue, for reasons for rising costs of disposal, pollution, increasing demands for snow recreation facilities, and so on. If this is so, is the public sufficiently aware of the nature of the issues to help in resolving them? Where is the documentation that they can use to guide them?

Let us suppose that the state of the arts of weather prediction and weather modification were such that, knowing that "x" inches of snow were on the way, we could activate a weather modification system and cause most of the snow to fall outside the city. This would solve much of the snow disposal problem. But do we know enough about the implications of doing this - not just the dollars and cents benefits and costs, but all the pros and cons - is it something we *should* do? These are difficult questions to answer without a very comprehensive understanding of the significance of snow to the region's environment and its inhabitants.

Also, these are questions that the professional snowman can examine better than the layman, or better still - *in conjunction* with the layman. If there is a perceived need for a better informed public then how is this to be achieved? Should the professional snowmen try to involve administrators, planners and educators more closely in snow conferences such as this one, changing the content of the conference somewhat to permit more wide ranging discussion of our life in the snow environment? Certainly, if there is such a need then educators have a key part of play -- but where is the documentation they can work from? Where is the up-to-date film on the subject? What role could government perform beyond what it does at present? Should it provide a clearing house for information on our experience with the snow environment for example? Thinking along these lines the professional snowmen can no doubt pose more profound questions -- and hopefully come up with some answers.

When all is said and done, maybe we do what we have always done -- enjoy it, struggle against it, take it for granted, and with the turn of the season, forget it. Possibly most of us think we know all we *need* to know, which is always a comforting thought.

Thank you, Mr. Chairman.