Winter Cities

VOLUME 16 • NUMBER 1 • WINTER 1997

The Harbin Institute of Technology, Harbin, China

Pat McMahon. President. Winter Cities Association.

Dear Friends of Liveable Winter Cities!

Winter has arrived in the northern latitudes of the world and that means it's time for meeting friends at conferences!

Your Board held a telephone conference in September and heard from Pat Coleman about the Winter City Planning and Design workshops that Pat, Harold Hanen and Norm Pressman have been giving in small to medium cities. We talked about the W.C.A. presentation in Harbin that will address future co-operation between the two organizations (the Winter Cities Association and the Northern Intercity Conference of Mayors). We were updated on the conferences being held in Harbin, China (1998) and Prince George, B.C. Canada (1999). The tentative dates for Prince George are February 17th to the 20th 1999, so mark your calendar now. The draft program includes sessions on Winter City design, economic sustainability, environmental sustainability and social issues. If you have any ideas, touch base with Anne Martin. Her fax number is 250-561-0183.

The Eighth Northern Intercity Conference of Mayors takes place in Harbin, China from the 15th to the 18th of January in 1998. The theme for this conference is "Let us unite to create a Winter World Kaleidoscope". Contact Harbin, China at telephone 0086-451-4610512 or fax them at 0086-451-4632130 for more information on the programs being offered for the Mayors conference and the Harbin Showcase.

Have a busy, productive, and happy Winter. See you in Harbin!

Winter Cities

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The Winter Cities Association is dedicated to realizing the unique potential of all northern communities. Through publishing, networking, organizing conferences, facilitating research and other means, the Association seeks to make available solutions and to promote awareness of opportunities associated with the winter season.

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The Snow Castle of Kemi

A tourism success story from Finland

The chapel in the Snow Castle of Kemi has been the site of many weddings and christenings.

Kemi is the maritime gateway to the southern regions of Finnish Lapland. For years, it has been known for its forestry exports of paper, cardboard, pulp and sawn goods.

But Kemi has earned a new reputation in the last two years. This town is home to the Snow Castle of Kemi. More than 600,000 people from 74 countries have visited the Snow Castle to date and the project has received worldwide media attention.

The area of the seasonal castle has varied from 13,000 square metres to 20,000 square metres. It has been enclosed by hundreds of metres of snow wall, with snow towers reaching as high as 20 metres into the sky. Inside, the snow covered rooms include a restaurant, an adventure land, an art gallery, and a chapel, which has been used for marriages and christenings.

Nearby, an igloo village invites intrepid explorers to spend the night, try their hand at ice fishing or take a dip in the sea through a hole in the ice. Reindeer, husky and snowmobile safaris are available as well.

The City of Kemi can also offer a trip on the Arctic Icebreaker Sampo, the only passenger icebreaker in the world, or take visitors to the Kemi Gemstone Gallery, which boasts one of the most extensive gemstone collections in Europe.

Thanks to the Snow Castle project, the University of Oulu has begun basic research into snow construction in Finland. The universities of Oulu and Rovaniemi are also planning to found a snow construction research institute in Kemi.

But the Snow Castle is more than a feat of engineering. It has become a cultural centre that has featured performances by opera singers, operetta stars, dancers and top names from the world of Finnish entertainment. The Castle's amphitheatre can hold 2,000 spectators.

This winter's castle will be open in 1998 from February 7 to April 13. It will be a little smaller than last winter's, but it will be full of new ideas, maybe even a two-storey building. Another full program of top entertainment has been planned, as well as a host of new events for children.

THE HEAT GOES ROUND

An innovative partnership launches a heat-recycling system

Workers from Aadrii Ltd. inspect a section of their above-ground heat-recycling pipe network.

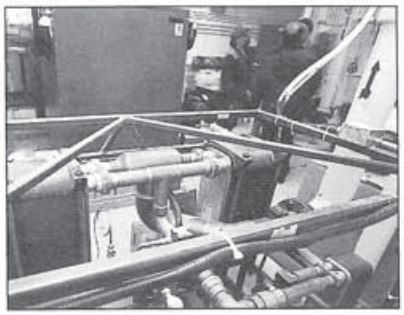
Fort McPherson, a remote Gwich'in community of 1,200, has broken ground in the Mackenzie Delta of Canada's Northwest Territories. It is the site of the NWT's first commercial heat-recycling system, a piece of engineering that combines environmentally sound, energy-saving technology with a measure of local business development.

On September 5, 1997, a ceremonial valve was turned on to launch the Aadrii District Heating System. The $985,000 above-ground network of pipes – named after a Gwich'in word for "The Light" – connects to the cooling station of the NWT Power Corporation's local plant and distributes the excess heat created when fuel is burned to generate electricity.

Since February of 1997, it has been circulating an 85° C water/glycol mixture to large buildings in the hamlet's core such as the school, the swimming pool and a manufacturing facility, the Fort McPherson Tent and Canvas Shop.

The Aadrii system has also created a small economic opportunity. It is managed by a company called Aadrii Limited, an innovative partnership between the Gwich'in Development Corporation and the NWT Power Corporation. Aadrii Limited built the pipe system and buys the excess heat from the corporation for resale.

"Having a local company involved means some of the revenues will stay right here in Fort McPherson," says Robert Alexie Jr., the president of the Gwich'in Development Corporation.



The heat transfer units on the Aadrii system are compact, freeing up building space for other uses.

The buildings on the system are guaranteed an overall 10 percent savings from the equivalent cost of fuel heating. They will also save on maintenance costs. The buildings, however, must maintain their existing heating systems as a back-up and for supplying extra heat when cold weather puts maximum demand on Aadrii.

It's not a big price to pay. During the anticipated 30-year life span of the system, customers will see savings rise to 25 percent of their avoided fuel cost. "We saw our own heating fuel consumption drop from 4,060 litres in January to 3,150 for the next three months combined," says Greg Toner, manager of the tent and canvas shop.

On the environmental front, the Aadrii District Heating System will reduce the local production of greenhouse gases. In the first year of operation, it will cut carbon dioxide emissions by almost 132,000 kilograms. Sulphur dioxide, the key component of acid rain, will fall by 14,850 kilograms.

About 30 communities in the NWT have the combination of centrally located power plants and large nearby buildings to make more systems like Aadrii's feasible.

"We're promoting this partnership approach to district heating in other NWT communities," says Leon Courneya, president of the NWT Power Corporation. "It's an all-round benefit to the customers and the power corporation, as revenues from the sale of heat go back into stabilizing overall system costs."

The Aadrii System supplies heat to large buildings in the core of Fort McPherson.

Tourism PROMOTION

To promote and educate

DR. SAM LANKFORD
AND DR. LARRY L. NEAL

Northerners know both the beauty and the challenge of their distant land, a sparsely inhabited place where people find themselves (and what they are made of) in the way they control, cope, celebrate and cherish its uniqueness.

This article focuses on three things to think about: (1) tourism; (2) promotion; and (3) education. We'll explain these briefly before we get into making some key points relative to tourism in the North.

Tourism

Tourism is the fastest growing international business. It accounts for more than two trillion dollars (US) and it is, arguably, a clean industry with many economic benefits. It brings many people to places where they can meet new friends, discover new places, and learn to appreciate others and their values.

In the last 20 years or so, winter recreation and tourism has increased in terms of users, activities, trends and governmental responses to these demands. Tourism is a special industry that calls for special attention by promoters.

Promotion

Promotion relates to the process of identifying and telling/selling stories, especially those about the unique qualities of an area, its people, culture and facilities. Marketing tourism is a continuous process of planning, creating, controlling and assessing opportunities in which both tourists and their hosts benefit. There must be a continual effort on the part of Northern communities to assess what is special about their area. Likewise, continual evaluation of visitor characteristics, experiences and needs will provide an opportunity to determine the potential clientele for existing and future services.

Education

Education relates to both the opportunity and challenge of exploring what is unique and important in the North; to understand the flora/fauna and the culture of native peoples, and then to educate the rest of the world to the sum total of this immense geographical region.

Special events help the visitor understand the region. Likewise, the production of these special events and celebrations allows generations of local people to

learn about their heritage, appreciate and value their customs and ancestors, and look to the future with pride.

There are many challenges ahead as travel and tourism expands and voyagers seek to be a part of the North. They call for enlightened leaders, especially the native people of the North and conscientious outside experts, to "...plan, create, control and assess opportunities for tourists to gain notable experiences."

This enterprise is huge and complex. We do not propose to have a complete answer to tourism promotion in the North, but we do want to make key points with regard to tourism:

• Tourism is an international phenomenon and the North is an enchanting place, one of beauty and mystery as well as a source for adventure. Its poten-

tial is great. However, actual world awareness, tourism import and resulting social and economic benefits are a fraction of what they could be. This potential can be realized in both winter and summer, thereby allowing for extensive development of programs and services.

• Unplanned tourism is worse than no tourism at all. Many countries and geographical regions have created ill will by not planning and spending money on complimentary infrastructure to accommodate tourists (e.g. roads, airports, lodgings and restaurants). These areas do not benefit economically or socially from the enterprise.

• Planning must address local values. Integrating these values and concerns into planning and implementation will help ensure the local quality of life is maintained and improved. Residents can provide a sense of direction in "changing" their community.

• Though tourism is complex, success has been realized throughout the world. Northerners who wish to benefit from tourism would be well-served to seek the expertise of specialists in the "grand design" of what type of tourism and what type of accommodation should be provided and promoted. A complete understanding of the visitors, their needs, motivations and expected benefits must be researched and disseminated to local businesses. Local tourism and recreation businesses can then develop custom services for visitors. The physical design of the community, and its improvements, should address how visitors will use these services to enhance their experiences.

• Successful tourism programs are the result of proper planning, which leads to proper promotion (e.g. the education of the target population to be attracted and served.) Herein lies a great opportunity for the North. It can combine the education about the wonders of the region with specific information that channels interested and prospective tourists towards quality leisure experiences. Providing outdoor and cultural education and experiences for the visitor and resident will truly enlighten those involved. This effort will also convey a message to all about what is special and valued in the North.

• There seems to be a triple economic thrust for the peoples of the North: tourism, aboriginal art and commercial fishing/timber. These features can be inextricably linked. The product, place and experience is there. The successful management of this mix is the ultimate challenge.

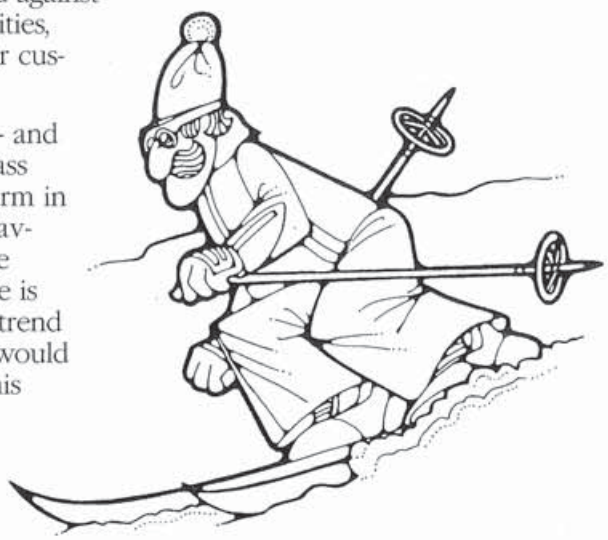
• The voice of the people may be for economic stimulation and preservation of place. Therefore, it is appropriate to develop a tourism management strategy that makes improvements that are measured against the resource-based activities, and the people and their customs and arts.

• History has recorded - and highly promoted the mass exodus from cold to warm in winter. This group of travellers has been given the name "Snowbirds." There is potential to reverse the trend and promote what we would label Winter Seekers. This enterprise would seek an audience that plans to travel from warm to cold for the adventure and everything the North has to offer.

• Tourism promotion in the mid and late 1990s is characterized by real and contrived programs touting social responsibility, ecotourism and sustainability. Many of these efforts are suspect in that the motive is short-term profit under the guise of socially acceptable concepts.

Now is the time to develop a vision and mission for Northern tourism, one which preserves the values and customs of the people of the North. Throughout the world, the needs and wants of the affluent tourist drive the market. This is not what is needed or wanted for the North. The association of the land and people of the North is parallel to the growing contemporary trend toward "the ethic of social responsibility," which concentrates on the ultimate and long-range value of using and enjoying renewable resources.

We must protect, manage and use our amenities. The tourism product offered in the North is the experience of place and the activities available.



Canadian Diamond Mine on Schedule

BHP to go into production at Lac de Gras in the third quarter of 1998, company says

At the end of the summer season, BHP's Ekati mine in the Northwest Territories - the first diamond mine in Canada - was 50 percent complete.

"Everything is on schedule for production to start in the third quarter of next year," says Tom Penny, BHP Diamonds Inc. project commercial manager and one of seven staff who work directly with H.A. Simons, BHP's engineers and construction managers.

Truckers will make more than 2,000 trips over a winter road this year to supply materials to the Lac de Gras project.

"The contractors have been very aggressive in working to schedule since they have respect for the extreme climate here."

Internal work on the infrastructure started this fall. Mechanical, piping, electrical and instrumentation work will be carried out over the winter. The schedule also calls for all civil, structural and architectural work to be virtually completed before the winter sets in.

Penny says expenditures are on target, considering they include front-end engineering and procurement. He adds that northern and aboriginal employment, as well as purchases, are ahead of targets outlined in a socio-economic agreement the company signed last year with the territorial government.

This winter, truckers will make more than 2,000 trips over a winter road to deliver heavy equipment, fuel, ammonium nitrate, mine production equipment and various supplies to the site. Freight for the winter road will be staged in Yellowknife, about 300 kms southwest of the mine, then taken in when the road opens. The 1998 Ice Road Program is planned to be as successful as 1997 with no safety or environmental accidents.

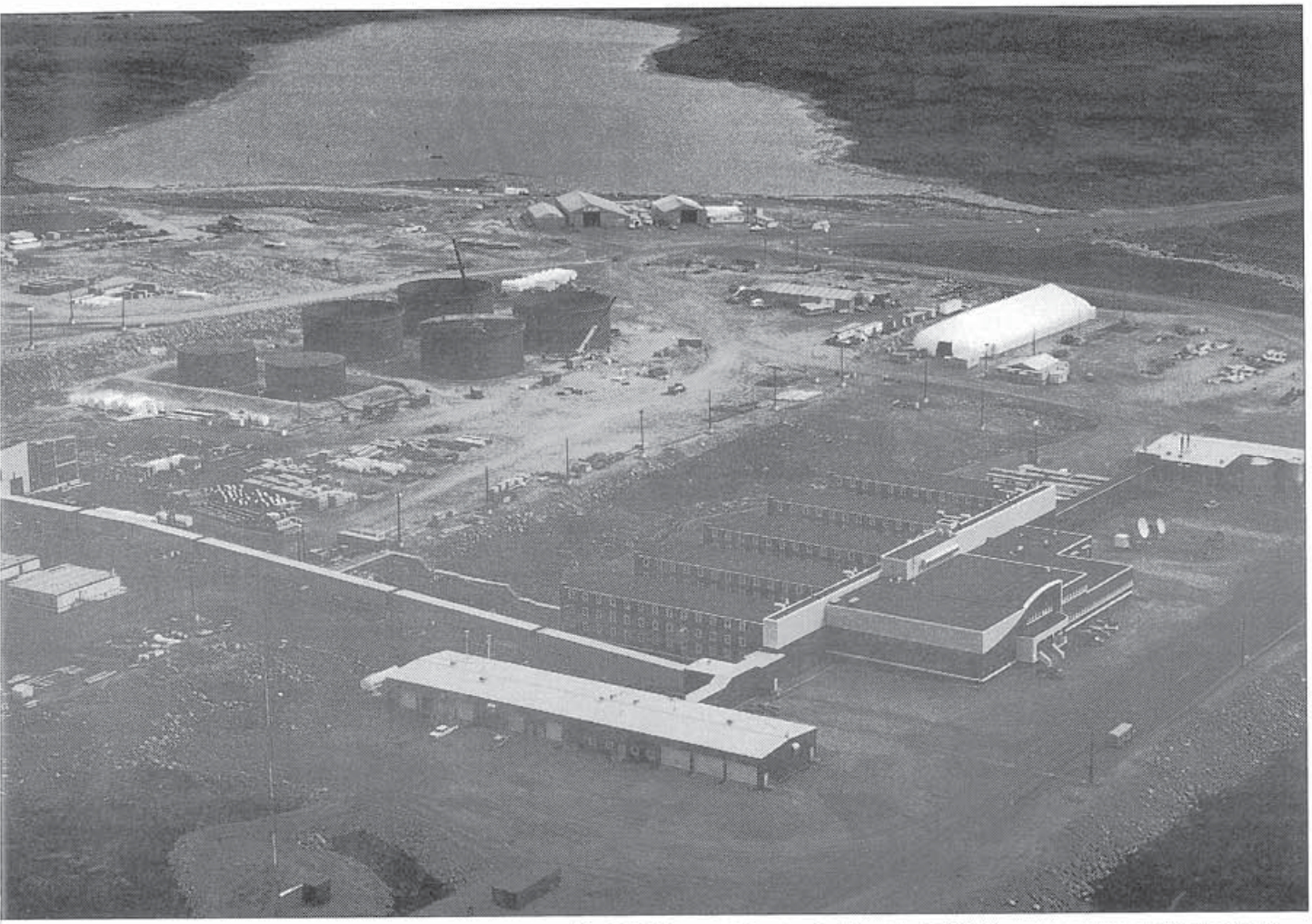
The bulk of the materials for the summer 1997 construction season was trucked to the site on the 1997 ice road. More than 90 million pounds of materials arrived via winter road.

"From June of 1996 to June of 1997, we also moved some 15 million pounds of freight by air, using Hercules and DC-4 aircraft," Penny says. "We also flew 17,000 passengers into camp during the same one-year period.

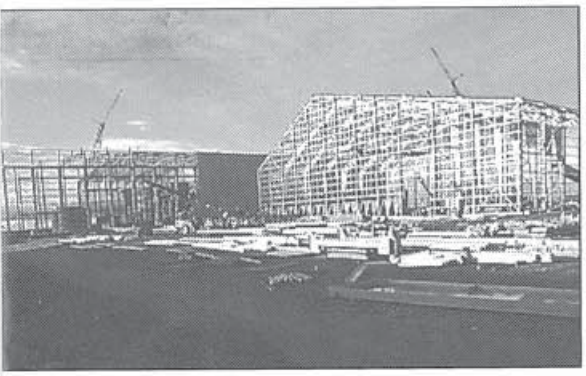
"From the end of June this year until the start of operations in late 1998, we will need another 500 passenger flights to the site, 300 Herc flights and around 60 other flights."

Penny acknowledges the mine's isolated location can cause problems, but "nothing that can't be managed." He described one kink with a steel order as an example.

"We need low-temperature steel for outdoor applications that is tested to handle -40° C



The BHP Diamonds Inc. project lies about 300 kilometres northeast of Yellowknife, the capital of Canada's Northwest Territories. The mining camp is supplied by air and a winter road.



Contractors at the BHP Diamonds Inc. project have been working to a tight schedule to accommodate the extreme northern climate.

temperatures. Some of the steel received at the site didn't measure up. So, we ordered another 100 tons out of Scotland, had it tested in Liverpool, landed in Halifax, fabricated in Winnipeg and flown to the site... all in three weeks. Location and temperature make this an interesting project."

Penny adds that new high-tech developments, such as e-mail, have made his job easier. "The BHP/Simons team can communicate between Vancouver, Yellowknife and the site on an interactive basis."

When infrastructure construction is complete, every feature will be tested to make sure it works. Then it will be handed over to the operating staff. The accommodation unit has already been transferred. Next on the list are the truck shop and the warming shed. All the facilities should be handed over by late 1998.

Welcome to HARBIN

The Eighth Northern Inter-City Conference of Mayors will take place January 15-18, 1998, in Harbin, a famous city in northern China with a unique cultural heritage.

Under the theme "Let Us Unite to Create a Winter World Kaleidoscope", conference delegates will discuss topics such as developing winter tourism, promoting the culture and art of ice and snow, and the meaning of winter to children and senior citizens.

Almost 200 mayors and other delegates, representing 50 cities from 29 countries and regions, will participate in the four-day event. The venue will be the Harbin Friendship Palace Hotel, situated on the banks of the Songhua River overlooking the famous Sun Island.

Located in northeast China, Harbin is the most northern of the country's provincial capitals. It has a long and rich history: people first came to the region 20,000 years ago, and built a culture on the efforts of more than 40 ethnic groups. The city now has a population of 9.4 million, and is famous for its grand Harbin Summer Concert as well as its beautiful scenery and unique regional culture, which has been attracting an increasingly large flow of tourists.

A renowned city in northern China is set to host the 1998 Northern Inter-City Conference of Mayors.

The annual Snow Sculpture Show on Sun Island draws tourists to Harbin each year. It is one of the highlights of the city's winter schedule of events.

Visitors to Harbin are usually impressed with the city's hospitality, exotic architectural styles and commercial culture. The scenery is beautiful throughout the year. Lilacs, the city flower, bloom in spring, filling the air with a refreshing fragrance. Cool summers, meanwhile, have made the city a favored resort, especially around the time of the annual summer concert, which was founded in 1961. The fall is golden.

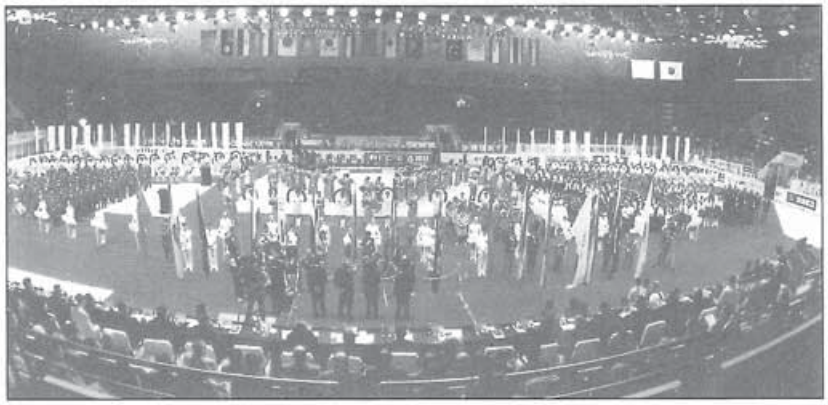
Harbin is best known for its winter, which is never short of imaginative activities. Perhaps most famous are the Ice Lantern Show in Zhaolin Park and the Snow Sculpture Show on Sun Island. These two events are now considered among the top three ice and snow art shows in the world. The annual Ice and Snow Festival draws visitors from around the globe.

Harbin's commercial and financial community is growing quickly and the market is making strides towards moderniza tion and internationalization.

The Harbin Institute of Technology. The City of Harbin is known for its architecture.

Some agencies, such as Chiyu Banking Corporation Ltd., have agencies here. The city is also a hub for rail, highway, water and air transportation.

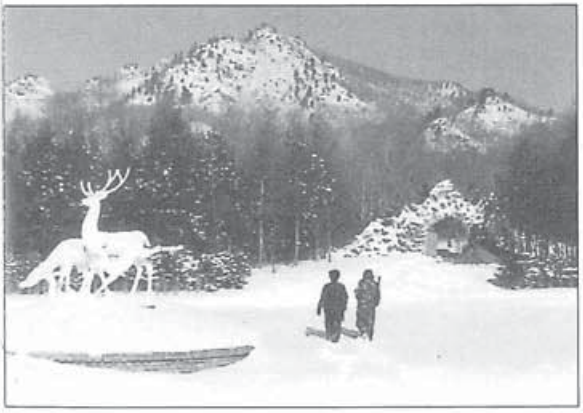
Harbin is an agricultural centre as well. The surrounding countryside is a rich and serene environment of crop fields and boundless forests. Of the 35 key cities in China, Harbin has been ranked among the best for the size of its population and surrounding crop production, which earned it the title "home of soybean, corn and rice." Mountain products are abundant here as well, focusing on ginseng, mink fur and pilose antler. The largest wild ginseng crops have been discovered at Tonghe, a county under Harbin's jurisdiction. Yanshou, another county, has been recognized as an important herb-growing region.



The opening ceremony of the 3rd Asian Winter Games.

When the delegates to the Eighth Northern Inter-City Conference of Mayors arrive in Harbin in January, they will be visiting a remarkable city. But they will be doing more than enjoying the sights; they will also be participating in an international event that will promote understanding between winter cities, strengthen friendship and accelerate common development.

See you there.



Harbin is the most northern provincial capital in China. It has become a popular year-round destination for travellers.

MAKING IT HAPPEN

Two Michigan communities prepare for Winter City planning

ADAPTED FROM A REPORT BY NORMAN PRESSMAN AND PATRICK COLEMAN

Houghton and Hancock are twin cities straddling Portage Lake in northern Michigan. Under the climatic influence of nearby Lake Superior, these cities enjoy warm autumns, cool springs - and an average annual snowfall of over 200 inches.

Houghton and Hancock are Winter Cities.

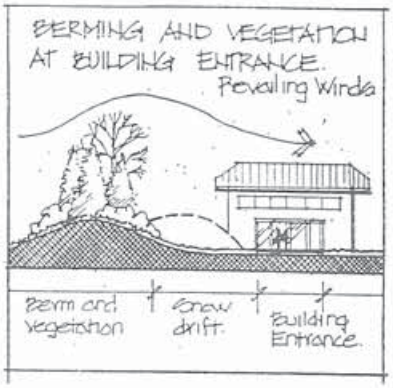
In May of 1997, the communities invited winter city experts Norman Pressman, Harold Hanen and Patrick Coleman to host a planning workshop. The meetings were to educate, inspire and build awareness to take full advantage of winter in the planning of public and private actions.

The process included the identification of winter-related problems, issues and opportunities in four broad thematic areas: visual environment, access and mobility, public space, and land use and built form. The workshop program included four activities: a tour and visual survey of the communities, a public education and awareness workshop that was attended by more than 50 people, planning workshops in each city and preparation of a report outlining recommended action for each city.

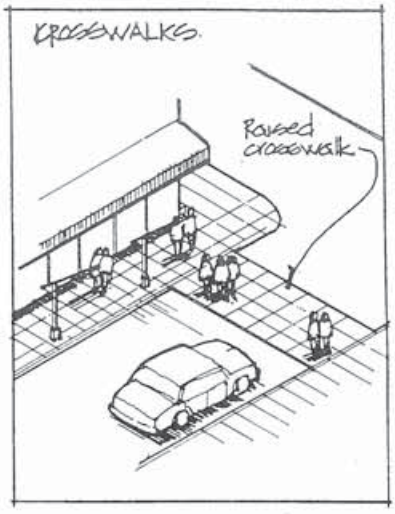
Identifying issues related to winter was an important part of the planning process. Houghton and Hancock are individual communities. Each possesses its own identity, as well as different problems, issues and opportunities. They do, however, share challenges. The biggest is dealing with perceptions about winter - inside and outside the area - that affect the attitudes of residents and the business climate.

Other common concerns include the environmental issues and costs associated with snow management, the impacts of growth and development on traffic and congestion, and the need to provide better access to each city's waterfront.

The planning workshops identified winter issues and opportunities specific to each city. These included a desire to calm traffic within the central business districts, the appearance of the cities in winter, spring clean-up, non-motorized trail development, land use, winter use of public spaces and recreation areas, pedestrian problems, and a need for development guidelines.



Developing winter planning concepts were key components in the Houghton and Hancock workshops.



WINTER CITIES

THE DOWNSIDE

- increased costs for snow management
- health expenses related to auto accidents, slips and falls
- psychological depression related to lack of sunlight
- decreased mobility, especially for seniors (on foot and by car)
- limited outdoor activities for many groups
- increased heating expenditures and energy consumption
- reduced effectiveness of public transport (where existing)
- a generally drab environment lacking in colour and warmth

THE UPSIDE:

- opportunities for innovation in fields such as energy, construction, clothing design, transportation and snow removal
- outdoor sports such as ice hockey, skiing, figure skating and dog mushing
- a generally more fit and robust population
- the strong will to confront challenging situations
- use of ice and snow for civic art
- unique urban planning concepts for weather protection such as skywalks
- intense cultural involvement
- winter tourism and recreation events such as snow festivals, ski trails throughout town, winter safari programs and nature interpretation
- enjoyment of seasonal variation and its associated activities

The planning team provided the cities with specific recommendations within each of the four focus areas of the program. Highlights included:

- creating open space/trail networks in an east-west, north-south framework with in the hillside setting of each city
- establishing "winter city" development guidelines
- preserving the small-town scale of the cities
- expressing the ethnic diversity of the cities in public furnishings
- incorporating art in building projects
- establishing a way-finding system for residents and tourists
- using the abundant snow fall and resulting snow piles to create "gateways"
- using building colour palettes that compliment the seasonal variations
- closing steep streets in winter and using textured pavement surfaces
- finding ideas to improve pedestrian access and safety
- encouraging mixed-use development
- creating a new central multi-seasonal public gathering place in each city.

The Winter City planning workshop sought to provide Houghton and Hancock with background information, technical assistance and inspiration to begin a different approach to managing growth, development and community improvement. This approach recognizes that it is critical for northern cities to employ creative measures and to apply climate sensitivity in the development and design process.

The workshops brought Houghton and Hancock together to develop new thinking about how to resolve old, common problems. Cooperating on these issues can create strength, resources and resolutions.

It is expected both cities will build upon the inspiration, creativity and momentum established in the workshops.

Adopting a winter cities policy is critical to the implementation of the recommendations, as is creating an official committee to focus on winter issues and opportunities.

Other winter cities may be interested in hosting similar programs to inspire residents and community leaders to take full advantage of winter, improve their response to winter and create planning and urban design strategies for positive change.

For more information contact:

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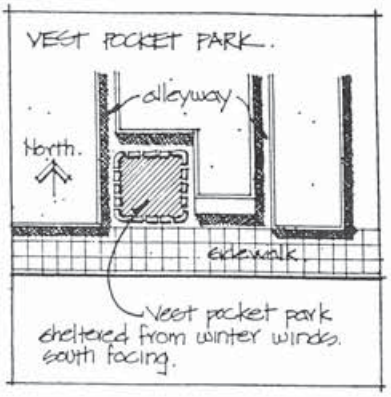
Patrick is an urban planner with U.P. Engineering and Architects Inc. and is also vice-president of the WCA. He lives in Marquette, Michigan, USA.



Planning for a Winter City:

- reject the denial of potential and opportunities
- curtail the import of "California-type" styles
- applaud existing innovations in design
- conceive future plans and designs with winter in mind
- create multi-seasonal projects and plans
- design in harmony with nature and its diverse expressions
- acknowledge winter explicitly in urban development policy
- adopt a winter-oriented organization perspective
- develop energy efficient, sustainable urban frameworks
- generate local and regional pride
- secure globally competitive position for northern towns
- ensure success in socio-economic and physical well-being

Brick by Brick

Marquette saves on winter repair programs

PATRICK COLEMAN

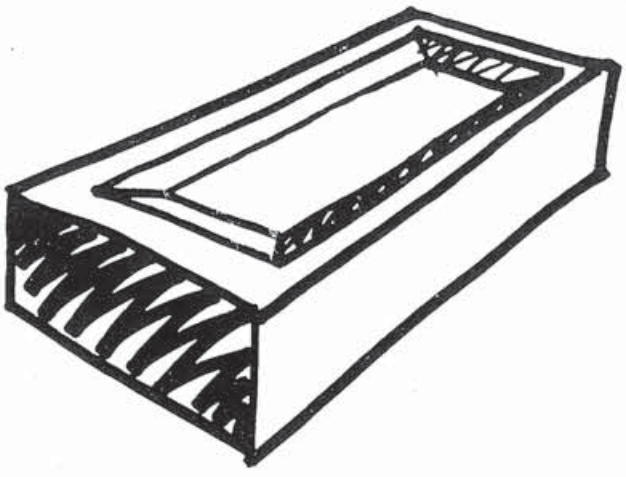
Repairing water and sewer lines during winter creates major headaches for public works personnel. Not only must they contend with cold temperatures, snowfall and inclement weather, they also have to deal with frozen ground. Compounding these problems is the inability to permanently repair the roadway pavement after the work is done.

Typically, gravel is placed in the excavation and is allowed to compact over the course of the winter, to be permanently resurfaced when the weather allows. Traffic passing over the excavation disrupts the gravel, requiring city crews to return to the site frequently to refill and grade the excavation.

The City of Marquette, Michigan experimented with a possible solution to this problem during the winter of 1997. Paving bricks were installed by city crews on several utility repair excavations. The brick pavers eliminated the need to return to the site as often as three times a day to fill and grade the surface. The brick pavers also provided a smoother driving surface for automobiles.

According to Steve Lawry, the superintendent of the Marquette Department of Public Works, the cost of the materials and labor for a 144-square-foot brick patch is $800 US, compared to $150 for the gravel. Gravel, however, requires maintenance costing the city as much as $75 per day. The brick patch was virtually maintenance free. Over several months, the brick pavers were very cost-efficient. As an added benefit, the pavers can be salvaged and reused for future excavations.

Lawry received positive feedback from city residents and intends to continue using brick pavers for winter street repairs.



Cold Power

Alaskan invention turns cold air and warm water into electricity

BY NED ROZELL

GEOPHYSICAL INSTITUTE SCIENCE WRITER

Someday soon, your microwave popcorn might be cooked by a river. Your CD player might shuffle songs using the power of -40°C air. These electrical eccentricities may become possible because of an invention that generates power from the temperature difference of water and winter air.

Perhaps the best thing about the device – dubbed the Freon Gravitational Engine – is the identity of its builders: a 17-year-old student and a machinist from the Geophysical Institute at the University of Alaska Fairbanks.

John Dick is a senior at North Pole High School who needed a mentor for a science project. He wanted to do something on alternative energy sources in the bush. One of Dick's teachers, Jerry Gustafson, introduced Dick to Ned Manning, an inventive machinist at the institute.

Dick and Manning's initial meeting led to hundreds of hours of brainstorming, design and construction of a non-motorized machine with the ability to convert temperature differences into electricity. Dick's finished project for John Schauer's science seminar class – a rotating copper, brass and steel wheel – would not look out of place in an engineering journal.

Despite its flashiness, the Freon Gravitational Engine works on a simple principle of physics. It takes advantage of the large energy difference between cold and hot objects. During the Alaskan winter, the air temperature is usually much colder than the temperature of water in streams, rivers and lakes. This difference is the fuel that powers a wheel on Dick and Manning's invention, which looks like a three-foot-tall Ferris wheel.

Where a Ferris wheel has seats, the Freon Gravitational Engine has canisters of freon liquid. Coils of copper tubing extend from the tops of the canisters like curly hair. The wheel's support frame is adjusted so that the copper coils, also called flash tubes, bob into the water as the wheel turns.

When the flash tubes touch the water, the freon within them reacts to the relative warmth by changing from liquid to gas. The resulting pressure forces freon to the top of the wheel, so the wheel becomes top heavy. It then turns, and continues to turn, as each flash tube contacts the warm water.

When Manning and Dick attached the wheel to power-generating windings, the Freon Gravitational Engine cranked out about seven watts.

Though seven watts won't pop a kernel of your microwave popcorn, Dick and Manning envision much larger versions of the wheel, possibly whole farms of them. And they know a perfect place to get things rolling.

Coal-burning power plants, such as those used in Fairbanks, use water to cool equipment. Much of this hot water is then dumped into rivers or sloughs, often keeping them free of ice all winter. The temperature difference between the cooling water and the outside air temperature can be more than 100 degrees.

As an added bonus, the wheels will, in theory, generate more power as the temperature drops.

Dick and Manning don't have dreams of becoming electricity barons. They know unexpected engineering problems could arise in the construction of giant wheels. But their idea is good – so good that they applied for a patent on the Freon Gravitational Engine. Their application was turned down when a patent investigator found an Arizona man had drawn plans for a similar device, although he had never created one.

Dick admits he's ready for a break after a semester of late nights, but he and Manning might try to re-invent the wheel next year when Dick starts school at the University of Alaska Fairbanks.

(This article is provided as a public service by the Geophysical Institute, University of Alaska Fairbanks in cooperation with the UAF research community. Ned Rozell is a science writer at the institute.)

Smile FOR THE CAMERA

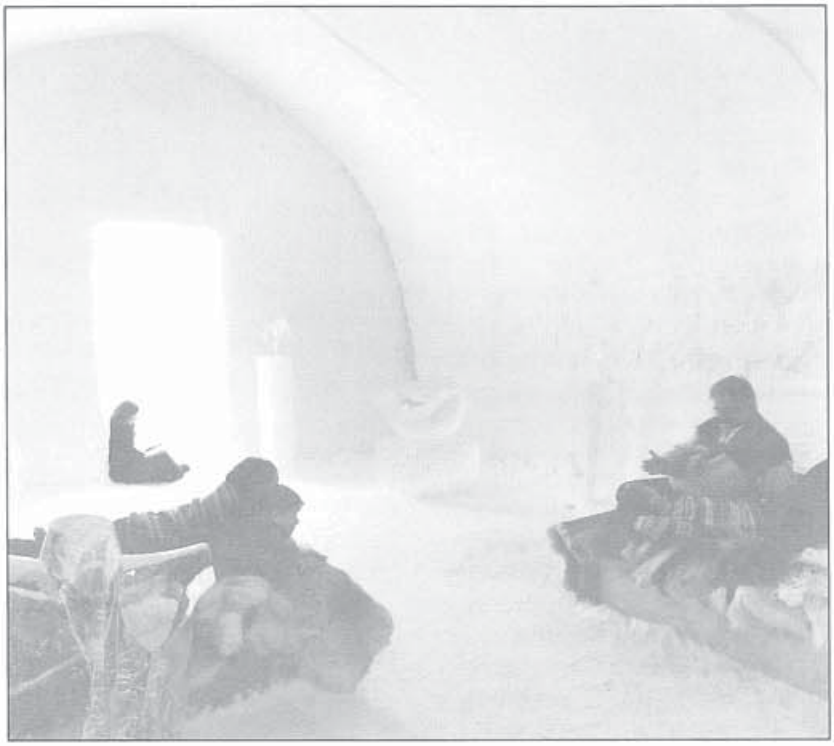
A new book documents the Ice Hotel at Jukkasjarvi

The world-famous Ice Hotel in Jukkasjarvi, in Swedish Lapland, is being documented in a book of photographs by Ulf B. Jonsson that should be ready for release by Christmas.

"The Ice Hotel keeps changing all the time. It just gets better and better," says Par Granlund, who supplied the text for the new book. "It was an easy task to produce a book about this peculiar construction... If interest is big in the book, it will be published in foreign markets."

With a floor area of 2,000 square metres, the Ice Hotel is the world's largest igloo. This year, some 4,000 international visitors are expected to spend the night in one of its bedroom suites. More than 40,000 visitors will make day trips.

But the Ice Hotel holds more than suites. It has an ice bar that is known all over the world as the "Absolut Ice Bar." Guests have the opportunity to drink from glasses made of ice. The hotel also features exhibitions by professional artists, such as Ake Larrson, Arne Berg, Barbro Behm and Albert Falck.



Guests at the Ice Hotel sleep in rooms where the temperature hovers between -3° C and -8°. They are provided with sturdy sleeping bags, while reindeer bedding protects them from cold surfaces.

The igloo holds a chapel, which is a popular spot for young couples who want to get married. A large number of children have also been christened in it, but there's a catch. To be eligible for the ceremony in the ice chapel, they must have the letter combination "is" – Swedish for ice – in their names. (Think of *Is*ak, Dor*is* or Chr*is*topher.)

The hotel's indoor temperature hovers between -3°C and -8°C. Guests are supplied with sturdy sleeping bags good to -35°C. Reindeer skin bedding insulates them from the cold surfaces. In the morning, guests are woken with a glass of warm juice, breakfast and a sauna at a nearby inn.

Day visitors can wander through the hotel's collection of ice sculpture masterpieces, take in a slide show about the North at the cinema or stop in at the ice bar.

1999: PRINCE GEORGE

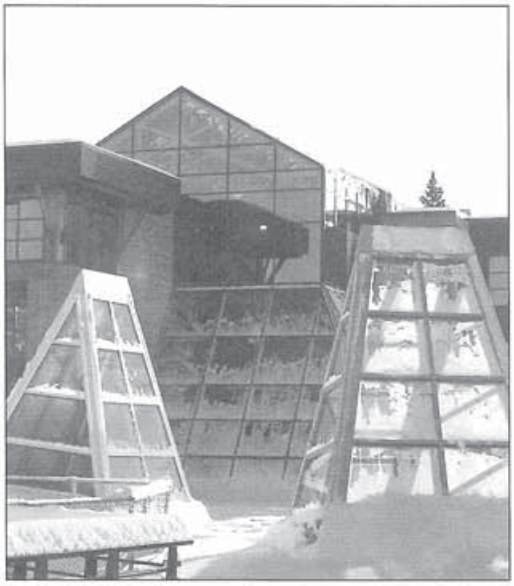
Mark your calendars for the Winter Cities Conference

Set your sights on the Northern Lights above Prince George during the World Winter Cities 1999 Conference, slated for February 17-20, 1999. The City of Prince George will welcome you to a world of winter innovation, collaboration and understanding. We look forward to entertaining, delighting and intriguing delegates from around the globe. We will challenge concepts, invoke discussion, and benefit from the interaction with others with similar winter-related challenges, solutions, and opportunities for Northern Living.

The City of Prince George is a growing, dynamic northern community (population 75,150) in beautiful British Columbia, Canada. Located near the geographic centre of the province (latitude 53.54° North, longitude 122.49° West), Prince George is B.C.'s "Northern Capital".

It is a regional centre for forestry, manufacturing, government, education and retail services. The city is home to the primary campus of Canada's newest university, the University of Northern British Columbia, and a newly expanded College of New Caledonia. Prince George is a community that prides itself on the opportunities for its residents, from a plenitude of recreational opportunities for all enthusiasts to efficient infrastructure and planning, in consideration of the challenges of the winter climate.

The concept of sustainability has been explored extensively in recent times as we face the needs and dependencies of our modern lives, competing with the physical and social constraints that continue to challenge us. How can we enjoy the self-sufficiency of the north while recognizing the need to enjoy amenities typically related to our southern neighbours? How can we be competitive in a global economy, given the challenges of geography? How do we plan for sustainable economic development while still protecting the environment? How can we design communities, construct buildings, and build the infrastructure to minimize the negative aspects of winter? Can we use winter as a resource and an asset? What can we learn from other countries in the circumpolar regions of the world?



UNBC, Canada's newest university, was designed and constructed with our northern climate in mind. Designers traveled to Scandinavian and North American universities to gather input about how to harmonize the physical development of our university with our climate and environment.

The forum will focus on the substance of daily living in winter communities and will provide opportunities to discuss ways in which a sustainable quality of life can be pursued in the next millennium.

A variety of themes will be explored, including environmental issues; energy, technology and conservation; planning and architecture in cold climates; natural resource development; recreation and tourism. Including plenary sessions, workshops, demonstration projects and tours, the program will appeal to a wide audience of delegates. Participants will be invited to follow any one of three program topic streams exploring economic, environmental or social issues, or can attend a sampling of each.

The Prince George Civic Centre and Plaza contains 60,000 square feet of meeting and exhibition space. The outdoor plaza features an artificial ice surface and fountain that serves as a community meeting place all year long

Keynote Address:

One of the many highlights of the World Winter Cities 1999 Conference is expected to be the keynote address by David Foot, author of "Boom, Bust, and Echo". Dr. Foot will help us discover more about ourselves by exploring demographic trends: Where are we going in the north? Are more people moving from the sunbelt to the snowbelt? What changes should we anticipate? What opportunities exist for winter communities? Other major speakers from North America and circumpolar countries will round out the ambitious program by sharing their experiences and insight on life in the northern communities of the world.

Exhibition:

The Winter Cities '99 Trade Show will feature a number of business ideas and opportunities for communities. The trade show will focus on winter-related themes such as infrastructure and planning, environment, social development, technology and communications.

Our Community:

Prince George truly is a Winter City, with an average annual snowfall of 233.8 cm (slightly more than eight feet) and a mean maximum and minimum winter temperature ranging from -5° to -15° Centigrade. We have one downhill ski facility within city limits and two more within a one-hour drive. The cross country skiing opportunities are boundless; Prince George is home to the B.C. Cross Country Ski Training Centre, a major facility within city limits. Of course, our city also has the amenities that you would expect in a community that serves as the trading centre for the northern half of our province.

Communication:

We are interested in keeping you up to date on our planning for the 1999 Forum and Exhibition. As a member of the Winter Cities Association, you will be included in our list of contacts. However, if you wish some specific information, have had a change of address, or are not currently a member of the Association, please contact us at:

Winter Cities Forum

c/o City of Prince George
1100 Patricia Boulevard
Prince George, B.C. V2L 3V9
Canada

Phone: (250) 561-7799
Fax: (250) 561-7788
Email: winter@city.pg.bc.ca
Web site: www.wintercities99.com

We look forward to an exciting and valuable Forum and Exhibition in Prince George in 1999!

BITS OF WINTER

Taking off the heat at Ekati

You'd think in a place as cold as Canada's Northwest Territories, you wouldn't worry about the ground getting warm. But think again. At the Ekati project, the BHP Diamonds Inc. mine at Lac de Gras, too much warming under an ice dam that contains part of a lake could melt the dam and flood the mine pit.

So, engineers have installed thermosiphons to keep the ground temperature appropriately cool. The gizmos, which stick up out of the earth like a row of flagpoles, are charged with carbon dioxide. When it's warm, explains BHP's Graham Nicholls, the chemical becomes a gas and acts as a passive refrigerant. When the temperature drops, the carbon dioxide liquifies and draws cold air down from the outside.

It's a well-tested technology in the N.W.T., Nicholls says. It's used by city engineers in Yellowknife to keep soils stable.

(Courtesy Up Here: Exploring the True North)

A ton of gold floats again

A century ago, a famous ton of gold was hauled from the Canadian Klondike to Skagway, Alaska, then stacked on a ship bound for Seattle, Washington. The voyage triggered the Klondike Stampede.

Last summer, a special event called "Ton of Gold" re-enacted the July 17, 1897 arrival of the S.S. Portland in Seattle. Organizers hoped the historical re-creation would create a "second stampede to the north and re-educate the world" about the Klondike Rush.

They were certainly prepared for it last summer. Celebrations arranged jointly by the Klondike Centennial Society of Dawson City, the Yukon Territory and the Skagway Centennial Committee of Alaska were planned in communities along the route, starting with a July 5 banquet in Dawson. Whitehorse, the capital of the Yukon, staged a four-day blitz call the "Ton of Gold Fun Festival", which celebrated the city's gold rush past.

Other events featured storytellers, music, a film festival, a costume ball and a display of Klondike gold. "It really is a showcase of our culture and our history," said Marilyn Margeson of the Whitehorse Anniversaries Office.

(Courtesy Up Here: Exploring the True North)

Science and Tradition

A recent report for the West Kitikmeot Slave Study - an organization preparing baseline studies in the mineral development regions of Canada's central Northwest Territories - is demonstrating that modern science and traditional aboriginal knowledge can work together. The report, a radio-collar monitoring of caribou migration patterns, confirmed the validity of traditional knowledge on the subject.

John McCallum, a spokesman for the West Kitikmeot Slave Study, said he was not surprised by the close correlation of modern and traditional data. "When you've got people who have been passing on this information for generations, you have to expect they would know the routes caribou use."

The year-long radio-collar study showed the 35,000-member Bathurst caribou herd migrated along corridors identified by elders from the Dogrib region north of Great Slave Lake. The study also showed the caribou pass through areas currently under mineral exploration. Elders and scientists are now evaluating ways to keep the animals away from mineral developments.

It's about time

Cambridge Bay, an Arctic community in Canada's Northwest Territories, has a new monument near town - something that's sure to get people talking. It's a huge sundial made of concrete and rock measuring 4.5 metres by 7.5 metres. Since Cambridge Bay is so far north, this sundial had to be built to compensate for the community's relative angle to the sun. The gnomon (the piece of the dial that casts the shadow) points directly at the North Star. The system is accurate enough to set your watch by - provided the sun is shining. Cambridge Bay is no stranger to the Arctic night, which lasts for months. Cloudy days are a regular feature of summer as well.

(Courtesy Up Here: Exploring the True North)

Coming Events:

Festival du Voyageur

Held in February each year, Winnipeg's Festival du Voyageur is a winter adventure in the spirit of the fur trading era. Attractions include Voyageur Park with entertainment in heated tents, the Winter Gallery exhibiting ice sculptures, the Governor's Ball, Voyageur parade, the Rendez-Vous fiddling and jigging contests, historical and cultural exhibits, cabarets, theTrading Post night clubs, arts and crafts exhibitions, and International sleddog races.

Contact (204) 237-7692.
For more information visit the Festival du Voyageur Web Page at http://www.festivalvoyageur.mb.ca

Hirosaki Castle Snow Lantern Festival

This yearly event is popular fixture on the winter calendar in Hirosaki. Originating as an opportunity for community interaction and exercise during the long, cold winter, the present-day festival showcases exquisite snow sculptures and features attractions and events to interest and entertain in the whole family.

For more information, contact:
Aomori Prefectural Government Tourist Division, 1-1-1 Nagashima, Aomori 030 Tel: 0177-22-5080.
http://www.tia.ad.jp/miti-tohoku/aomori/The Heart of the_North_Aomori.

American Public Works Association 1998 North American Snow Conference

Edmonton, Canada

April 1998

The Alberta Chapter of the Canadian Public Works Association is pleased to be supporting the American Public Works Association in hosting the North American Snow Conference in Edmonton. This prestigious event attracts delegates and Trade Show exhibitors from across North America. Guy Boston, The Chapter planning committee Chairman, has assembled a group of dedicated individuals to assist in making this the best NASC ever!

Stockholm '98 – Cultural Capital of Europe 1998

Stockholm, Sweden

January-December 1998

Stockholm was named as the Cultural Capital of Europe in 1998 not only for its external charms but also for its rich, many-faceted cultural life. Among the many cultural projects planned for 1998, Stockholm has chosen as its overall goal to improve the long-term position and accessibility of culture in Stockholm and Sweden, and to stimulate cultural contacts with the rest of Europe.

Fort more information:
http://www.stockholm98.se

WinterNet: Online and Up to Date

WinterNet is a valuable online resource for people who live, work, manage or do business cold climate communities. This international network currently links 27 winter cities in nine countries throughout Europe, North America and Asia. WinterNet offers a forum where governments, businesses and people who provide products and services to winter cities:

- explore new ideas, initiatives and innovations
- share experiences about operational, management and economic factors affecting winter cities around the world
- expand future trade links between winter cities
- search for other businesses, organizations, departments and people who conduct cold weather operations and research
- obtain information on winter city operations and research such as surveys, maps, research papers and reference material
- exchange electronic data and documents

Check it out:
http://www.wnet.gov.edmonton.ab.ca