



Livable Winter NEWSLETTER

VOL. 5 NO. 1

February 1987

NEW NORTH-SIGNIFICANT CONSTRUCTION TECHNOLOGY A Serialized Overview

Plastic structures, fabric-domed sports fields, covered shopping malls, glass-enclosed residential streets, glass-skinned buildings of all sizes and shapes, and other structural innovations with "space age" flavor make it extremely plain that a "technological revolution" is well under way in construction as in so many other areas of our lives.

And since structures are the principal adaptation that permits humans to survive and flourish where climate is "unlivable", these changes have special importance for the folk who inhabit winter cities and communities.

Understandably, the construction industry has sometimes been said to prefer the known scenario to the new and untried. But this brewing revolution in construction technology could very well -- and soon -- become so powerful and compelling it will be futile to attempt to resist it.

The situation is reminiscent of the years during and after World War II, when engineers and "think tanks" in California and Seattle sweated out the concepts that gave us jet liners. Jet planes were transformed from futurists' fantasies into a universal transportation system, used daily by many millions, within a few decades. How impossible, or improbable it is that our habitats -- our homes, communities and cities -- can be equally transformed and as quickly when the very same new techniques and technologies are applied to them. After all, our dwellings form the very fabric and substance of our daily activities and are surely as impor-

tant as any transportation mode and deserving of our best ideas and input.

This article begins a series of four to eight (or more) reports that will attempt to bring to readers of Livable Winter Newsletter newest available information about these important developments. The first two articles will deal with plastics and glass as used separately or in combination in new construction. Other reports will deal with metallic-tinted, glass-skinned structures, various types of fabric structures and generally "new ways of looking at the roof."

The "technological revolution" in the design, planning and construction of our habitats is shown in these articles to be gaining momentum and Livable Winter Newsletter suggests we had better prepare for it.

Livable Winter Newsletter editors will plan and direct the series and prepare parts or all of some of the reports. Recognized experts will be asked to contribute other portions or reports. The editors give assurance they will present the material as fully and accurately as possible acknowledging the limitations that arise in dealing with technical matters in the lay language which we, serving a broad spectrum of disciplines, must use. We ask our readers to be ready to come forward with criticisms or suggestions since, once the series has been completed, it is hoped to assemble it in a published booklet of some type. To our knowledge, no similar assembly of data on construction innovative technology has been attempted. ☐

FIBERGLASS POLYESTER BREAKTHROUGH

NEW CANADIAN DEVELOPED
PULTRUSION TECHNOLOGY
FABRICATES 5' PANELS

By Jack Royle

Buildings made of FRP (Fiberglass-Reinforced Polyester) composite panels have demonstrated they offer definite advantages when constructed in the harsh conditions of the Canadian Arctic and the technology is now clearly showing signs of "taking off" in the more temperate regions. (GRP -- Glass-Reinforced Polyester Composite -- is sometimes used to describe the material but the initials FRP are commonly used.) A recent breakthrough by a Canadian company promises to reduce, and in some cases eliminate, a major problem with this type of construction -- the manual labor and consequent high cost involved in the familiar hand-lay-up and spray-up method of creating large modular units.

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We Breathe New Life Into Old Towns

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Engineered Pultrusions Corporation, 6175 Kestrel Rd., Mississauga, has developed the world's largest "pultruded" FRP building panel, (the opposite of "extrusion", pultrusion is when resin and glass composite to be shaped is pulled rather than pushed through forming dies.) This new technique was designed to meet the need for construction panels of consistently good quality that could be turned out quickly to meet critical Arctic construction and project schedules.

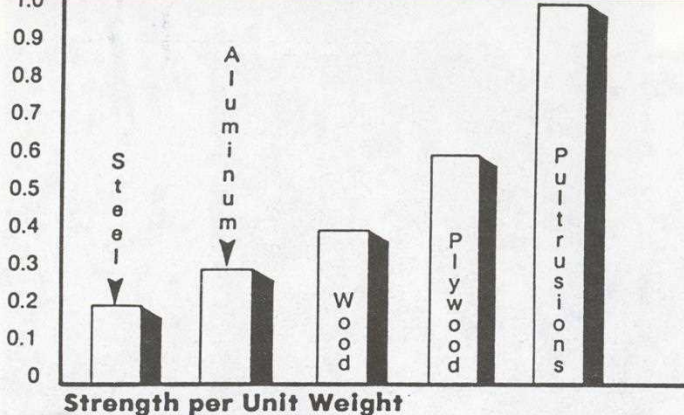
Industry insiders say that Engineered Pultrusions is the first Canadian company to concentrate on manufacturing composite fiberglass-polyester panels for the construction industry. Construction Canada Magazine said in a recent article that this company and its sister company, Engineered Plastics Corporation, together form the foremost builder of composite panel structures in North America.

Specially designed equipment at Engineered Pultrusions' new plant turn out panels that are up to five feet in width and virtually any length. The panels form part of an interlocking building system called "Contour Wall Building Envelope System." Pultruded forms are rectilinear, but free-formed and curved forms and elements can be added or separately formed by spray-up, lay-up, resin transfer molding or press molding processes.

The complete building enclosure from roof to walls to soffit panels can thus be made of the same fiberglass and polyester composite. The panels are very strong, light weight, and virtually maintenance-free. They can be attached together to form, or enclose, a building easily and quickly and are therefore ideally suited to construction where the season is short.

Each FRP panel is a sandwich with a five-inch core of polyurethane foam insulation, completely enclosed in section by a fiberglass-polyester skin. Additionally each panel has two integral I-beams made of the same composite which run the complete length and divide the core into three separate cells.

Canadians can claim to have pioneered FRP technology in Arctic construction. All of the major FRP structures in Northwest Territories



have been designed and built by Canadian architects and manufacturers. Guy Gerin-Lajoie, prominent Montreal architect and a director of LWCA, has become world famous as a pioneer in FRP construction.

He designed the two buildings of Gordon Robertson Education Centre at Forbisher Bay, the first

major public buildings in Canada to have an all-FRP exterior, and these have performed well as structures for more than a decade. Using the same material he also designed a laboratory at Igloolik, an airport building at Fort Chimo, and most recently the striking looking new airport building at Frobisher Bay (illustration page 5).

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LIVABLE WINTER NEWSLETTER

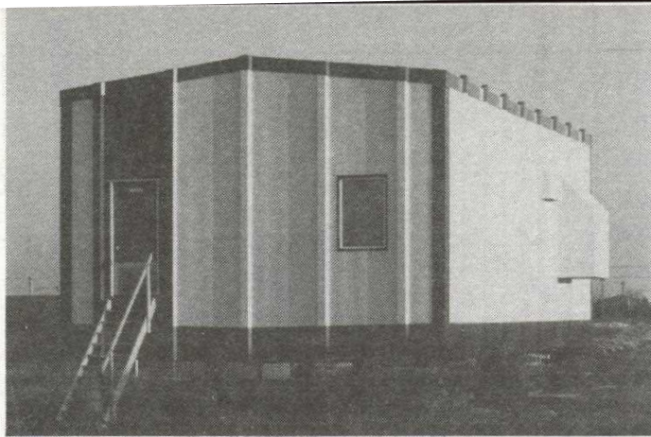
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Building designed and fabricated as demonstration unit for North Warning site consists of 5 ft. panels fabricated by pultrusion method. Roof, walls, soffit and floor are all made of fiberglass-polyester composite.

cont'd. from page 3

For the latter building, Engineered Pultrusions' sister company, Engineered Plastics Corp., fabricated and installed the envelope system using the lay-up, spray-up method before the refinement of the pultrusion technology. Entrance to the building is through an attractive and unusual cupola constructed of circular contoured panels and with acrylic skylights -- a refinement difficult and costly with conventional materials, but little problem with FRP.

NWT building authorities had some early misgivings as to smoke problems with plastic buildings. It was feared the urethane foam, used as insulator "meat" in the sandwich panels, might give off dense smoke in case of a very hot fire. More heat resistant types of polyurethane foam have now been perfected and, as additional reassurance, an accidental fire is reported to have burned against the outer wall of Gordon Robertson school last year without penetrating the wall panels. In any event, Gerin-Lajoie, explains, the jointing system is so designed that it greatly

retards or prevents the spread of fire from one panel to another.

Gerin-Lajoie also designed a large complex of FRP structures proposed for Povungnituk, Northern Quebec which would have provided a model for Arctic communities, but has not yet been built. He included FRP elements in his designs of Mirabel airport and has been involved in construction of composite structures in Iran, Saudi Arabia and elsewhere where climate is extreme and conventional building materials are expensive or difficult to obtain.

Temperate region contractors are finding more and more uses for FRP structures and material. Made into brightly colored and artistically shaped furniture, it is being found to be sturdy enough to take the severe abuse meted out in prisons and correctional institutions. Shopping malls have been enclosed in the material in Vancouver and elsewhere. Portions of Scarborough LRT stations designed by Jim Strasman, Toronto architect, use FRP cladding. The material was also used for a Famous Players' office building in

Brampton. A Montreal manufacturer has developed an FRP composite that appears not unlike marble and is water resistant, ideal for use on molding of prefab bathroom components.

In European Common Market countries, FRP structures are increasingly common. Lumber, there, grows more expensive and difficult to obtain. And many European fabricators have begun to use phenolics to replace the urethane as insulator and also as laminating resin. The phenolics are totally inert and therefore non-combustible, but are said to be more difficult to work with.

Later articles in this series will describe in more detail the status of FRB technology worldwide.

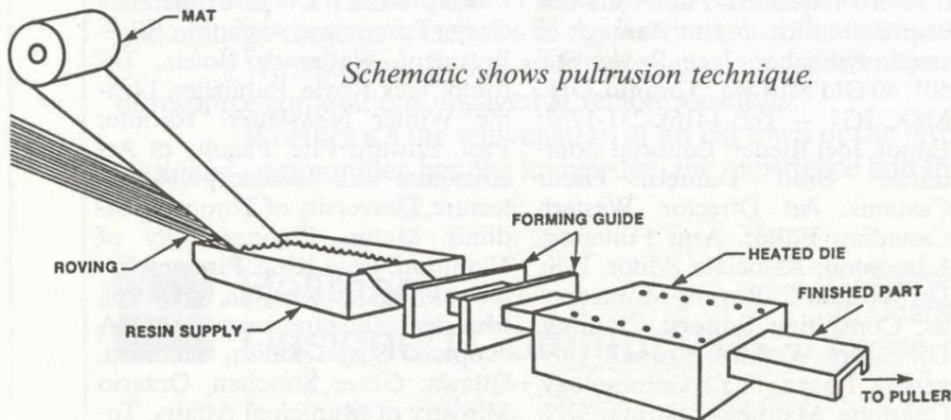
The pultrusion process has been known for several years but panels five feet in width could not previously be fabricated. In the process, fiberglass roving is drawn through a bath of liquid polyester or other resin, and then passed through a die to be shaped (see sketch page 4.) Final curing occurs when the form exits the heated solid steel die. The form pultruded is the shell of the panel. This is then cut off at required lengths, and, after the ends have been sealed, the insulating foam is injected.

Engineered Pultrusions' proprietary interlocking joint deserves mention. The configuration, similar to tongue-and-groove, has seals at key points in the gap between panels and a wide overlapping lip on the exterior wall. The bolting system allows the panels to be drawn tightly together yet no metal passes through the thickness of the panel to convey cold or heat. The whole effect is to create a virtually impermeable joint that is yet easy to install.

The firm's technological achievements were rewarded this year with receipt of a major contract to provide a complete structural envelope package for three long range radar bases for a new North American Air Defence Modernization (NAADM) North Warning system to be built in the Eastern Canadian Arctic.

The buildings range in size from a 20 x 40 foot one-story structure (shown on page 4) to two-story structures with 25,000 sq. ft. Total construction for the project involves some 310,000 sq. ft.

The advantages of FRP panels



Schematic shows pultrusion technique.

have been known for some years but building code revisions to encourage their use have come slowly, waiting for additional testing and developmental work. To review some of the advantages as described in "Contour Wall" literature:

The panels are made of the strongest components known. "No other material can so completely satisfy thermal, weather, fire, impact, color and aesthetic requirements."

Moldability: Being form molded, the system can create a monolithic feeling in design unsurpassed by any other material. Apparent joints are minimized.

Interlocking Joint: Engineered Pultrusions Corp. has patented and obtained a design registration on its proprietary interlocking joint system. This joint has stood up to extreme punishment and tests of gale-force winds and driving rains in tests conducted by Trow Ltd., testing laboratories of Brampton and Underwriters' Laboratories of Canada. As noted above, the fastening bolts are used only on one face (normally inside) and do not become conductors of heat or cold through the wall.

Fire Resistance: Underwriters' Laboratories of Canada certify the panels meet most stringent requirements for fire resistance and low smoke emission.

Light Weight: "The strength to weight ratio cannot be equalled by any other conventional building material," (see chart page 3). "Consequently supporting frame work and attachment fixtures can be minimized so that installation is very cost effective." Light weight is particularly important in remote areas such as the Arctic where all construction elements or the materials to build them must be shipped in by sea or air. When building elements are sufficiently light weight to be shipped economically by air, it provides a great advantage in an extremely short construction season.

Acid Resistance and Weatherability: The fiberglass component in the outer skin of the panels makes them resistant or impervious to corrosion, bleaching, weathering, or deterioration. Many colors, some quite vivid, can be applied by a proprietary coating system so that they retain their color for years.

"CONTOUR-WALL" - Fibre Reinforced Plastic Composite Building System



Handsome new FRP - panelled Frobisher Bay airport terminal.

Vandalism: The hard exterior and interior surfaces are resistant to abrasion, vandalism by means of pocket knives or other pointed objects, stones or marks by pencils or markers.

Surface texture: Through combinations of a wide range of plastics and varying types of fiberglass, a variety of surface textures may be obtained. Yet, all walls and panels with fiberglass skins retain "their self-cleaning properties and water repellancy". The list of resins that can be used in the composites is long: polyesters, epoxies, and vinylesters are preferred for continuous pultrusion; phenolics, polystyrene, acrylics, vinyls and polypropylene for continuous lamination; all, of course, in conjunction with fiberglass. The fiberglass can also take several forms, including chopped or milled strands or woven roving or fabrics.

Competitive Cost: The panels have significant cost-saving features. Supporting structures can be lighter and smaller because of the reduction in dead load transmission. Large panels (5' by 35') require a small boom truck but the convenient 5' by 15' panels can be erected by hand without need of a power lifting device. Panels for the

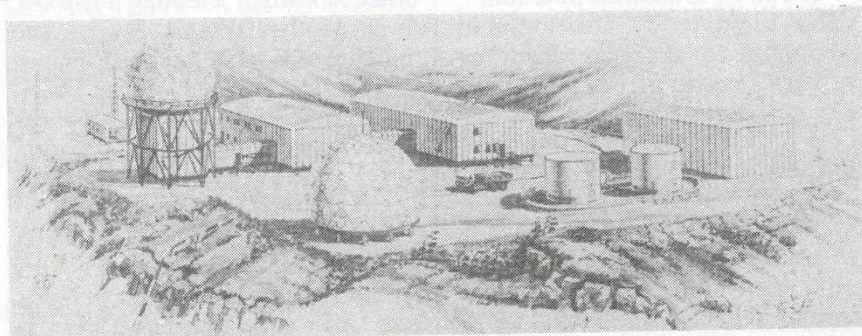
Frobisher Bay schools were hoisted into position with block and tackle strung from an aluminum ladder.

How soon can we expect to see FRP more generally used in the southern parts of Canada?

Declares Ken Szekely, president, Engineered Pultrusions Corp.: "This innovative product concept is currently competing head to head with today's conventional building materials; however, as awareness grows, it is expected the "Contour Wall" will become a basic tool, allowing architects and engineers just about unlimited design flexibility".

"A real boom in FRP construction must come soon -- the material has just too many advantages."

Guy Gerin-Lajoie sees FRP as similar to reinforced concrete. Both are composites with one element giving strength and another providing moldability and appearance. In the case of FRP it is the glass fiber that gives strength and polyester that contributes design and appearance features. "It took us awhile, but we made concrete into one of our most popular structural materials. Engineers tell me FRP is following the same course," says Guy Gerin-Lajoie. ☐



Concept of NAADM North Warning System

"WE NEED THE RUSSIANS" - A SOVIET REPLY

H. V. Sukanov, Moscow, First Deputy Chairman, Gostroi RSFSR, and Co-Chairman Theme III of Soviet-Canadian Cooperation Replies to Dr. William Roger's Editorial "We Need the Russians", Published in Newsletter April Issue.

I read with great interest your article "We need the Russians", published in Livable Winter Newsletter (Volume 4, No. 2 April 1986).

In the article, the wish is expressed to know as much as possible about the experience in the development of, and life in, winter cities in the Soviet Union.

We believe that the valuable experience learned from the construction and operation of cities and villages in the Soviet North will be useful to Canadians, as would the experience of Canadian winter cities be useful for us.

As a result, in 1984 the Canada-USSR Arctic Sciences Exchange Programme was elaborated and ratified. This programme includes among its several themes, the "Construction and Operation of Northern Cities and Towns".

(The section concerning the "Construction and Operation of Northern Cities and Towns" is included in Theme III of the Canada-USSR Arctic Sciences Exchange Programme, which was signed in April of 1984.)

The great Russian Scholar and encyclopedist Mikhail Vasil'evich Lomonosov anticipated as far back as the 18th Century, that "Russian power would accrue from Siberia and the Arctic Ocean". Lomonosov, himself, a northern native, was born and lived in Arkhangel'sk, on the coast of the White Sea.

These prophetic words of our great forefather have been completely borne out. The entire history of the socialist economy has been characterized by a shift of productive forces to the East and North, and by an intensive increase in these regions' share of the country's industrial potential.

The long-term development programme for the economy of the northern regions of the USSR has been determined by the Decisions of the XXVII Congress of the Communist Party of the Soviet Union.

A new stage of Northern development is characterized by the transition from the building and settlement of individual resource deposits and cities, to an integrated social and economic

development of national economic "territorial complexes", equal in territory to many European states. For example, the length of the Baikal-Amur railway line (BAM) extends 3500 km from west to east. About 100 new cities and villages have been built along its track. The northern regions of West Siberia are being very intensively developed, where, on account of the oil and gas industry's growth, tens of new settlements appear annually, some of which grow into fairly large cities with populations of more than 100,000 - for example, Surgut, Nizhnevartovsk, Nadym, Novyj Urengoj, Kogalymskij and others.

Examples of rapid urbanization may also be cited in most other northern regions of the USSR. Overall in the Soviet North, 74 percent of the population lives in cities.

I would particularly like to note that our notion of the northern zone, or northern construction-climatic zone, is more strict than the concept of winter cities. By your definition, winter cities are located north of 45 deg. N with a January isotherm of zero degrees Celsius. In fact, the majority of Soviet cities have winter conditions, even if only for a short period. On this basis they may be called winter *localities*, although there is no such classification in Soviet climatology. *Winter cities are fascinating in seasonal change. Only in these cities do you have spring, summer, fall and winter, unknown to southern cities. The bright, colourful changes in nature and the contrasts in weather, without question have an invigorating influence on the way of life.*

I am pleased that you remembered the lines of the Russian poet, Vyazemskogo, a friend of Pushkin, about Mother Winter. For us, the children of Russia, as severe as it is, *winter is nonetheless a mother*. Possibly, from it and from the vastness of our land, there is much breadth, purity, strength and kindness in the Russian character.

The zone of the USSR North is defined by the border of permafrost ground, which extends from Arkhangel'sk in the west to Chukotka, Kamchatka and

Sakhalin in the East, along the 60 deg. north latitude, descending in Siberia toward Lake Baikal. These are the regions with an average annual isotherm of zero deg. C. - an immense cold store with huge reserves of oil, gas, coal, polymetallic ores, gold, diamonds, forests, fish, berries and furs. There, winter lasts for more than half the year, roughly from October to May. In January and February the temperature reaches -40 deg. C. Cities and villages may easily be covered with snow up to a metre high.

Clearing snow and ice in winter is an important matter in the organization of life in northern cities. Today, as a rule, powerful snow removal equipment is used. After a fierce snowstorm of several days, this equipment enables the complete removal of snow in 10-12 hours from highways and byways on all city streets and sidewalks in such a large northern city as Norilsk (population 300,000).

There are of course in residential developments so-called awkward sections, where clearing may only be done manually. In such circumstances, the entire population of the city is called out. Incidentally, I have just returned from Noril'sk, where I inspected a new residential-district multi-storied project for 70,000 inhabitants. The density is over 11,000 m² common block floorspace per 1 hectare of residential area land. The building density of Soviet northern cities, as you correctly point out in your article, is 3-4 times greater than in northern cities in Canada. Increasing the "compactness" and density of buildings in northern populated centres is one of our main principles in the construction of northern cities. This permits a reduction in the length of high-priced communication lines, and increased economies of fuels and energy.

In the region of the Soviet Far North, members of 100 peoples and nationalities, including 26 northern native nationalities, live and work together in friendship. More than 20 million people live in 500 cities and villages in the northern region.

To this harsh and beautiful area, treks a bold and romantic Soviet youth to actively participate in large construction projects. Young people go there not only for the adventure and higher wages. The majority of them are searching for their place in our rough and dynamic life. The North helps them "to discover themselves". Today, the average age of Soviet northerners is around 30 years. They have a bright future.

It was with interest that we familiarized ourselves with the material on the forum "Winter Cities - 86", taking place in Edmonton. Unfortunately, the invitation arrived late and it was not possible for us to participate.

We share the position of the Association that northern countries should play a greater role in the world, in scientific, cultural and business contacts.

During the meeting between the Chairman of the Council of Ministers of the USSR, Mr. V.I. Vorotnikov, and the Minister of Indian Affairs and Northern Development, Mr. Crombie, in June 1986, it was especially emphasized that although the North and the Arctic separate our countries like a border, they also join them from the standpoint of solving vital problems in the development of industrial strength and of the economy of our countries.

It is said that the North should become a round-table of the world. The progressive world expects this from the great northern powers, the USSR, USA and Canada.

Soviet specialists are prepared to actively participate in the forum on Northern cities in 1988. We would very much like this matter to be taken up in the programme on Soviet-Canadian scientific-technical cooperation for "Northern Construction".

ROGERS' CHIPS, FLAKES and GUSTS

I asked my barber why my hair was always standing on end. Said he, "It's a winter problem - static electricity. Use your wife's hair spray." I told him we used hair oil fifty years ago, but he was not impressed.

TORONTO CHAPTER BRINGS TOGETHER "URBAN TRANSIT IN WINTER" EXPERTS

LWCA Toronto Chapter hosted a fascinating discussion/workshop on urban transit in the winter city in Toronto City Hall on January 15. On hand to offer their insight and answer any questions were Alfred Savage, Chief General Manager of the Toronto Transit Authority, Edward Levy, President of Barton Ashman Assoc., and Douglas Floyd, Deputy Commissioner of Metro Toronto Roads and Traffic.

The lively discussion was of widely-ranging interest, and included:

- * downtown Toronto's 2-tiered pedestrian system, its advantages and disadvantages.

- * the deteriorating condition of Metro Toronto's road and bridge system, and costs of rehabilitation.

- * overall traffic patterns and transit service and use.

- * proposed re-introduction of

streetcars along Spadina Avenue.

- * proposed transit service to Harbourfront and the new domed stadium.

- * proposed Shepherd subway line.

- * particular problems generated by ice, snow and cold on streetcars, buses and subway systems.

- * general service, or lack of, regarding mitigating the effects of snow and wind on pedestrians using transit systems.

The meeting proved to be very helpful in identifying both general and specific problems and solutions pertinent to winter urban transit. A wine and cheese followed the discussion.

We at LWCA would like to offer our sincerest thanks to Messrs. Savage, Levy and Floyd for their kind participation.

CALGARIANS FIND WEATHER PROTECTION BEST FEATURE OF +15 SYSTEM

Calgarians like their +15 system primarily because it provides protection from the elements, according to a user study recently released. Of 225 users interviewed, 129 listed weather protection as the thing they like best about the system. Other reasons given were convenience and separation from vehicles. (The system is a network of walkways, most enclosed, that extends through the downtown area at the second story level, called "+15's" because they are approximately 15 feet above grade.)

ROGERS' CHIPS, FLAKES and GUSTS

U.S. ARCHITECTS SHUN COLOR

"When U.S. architects design a building, the blueprint is often its most colorful aspect" according to Uwe Koos of the German building materials company STO. He pointed out that European architects became aware of color in the last 20 years as they began restoring historic buildings. STO Industries Inc. North American office is at Quality Lane, Box 219, Rutland, VT 05701.

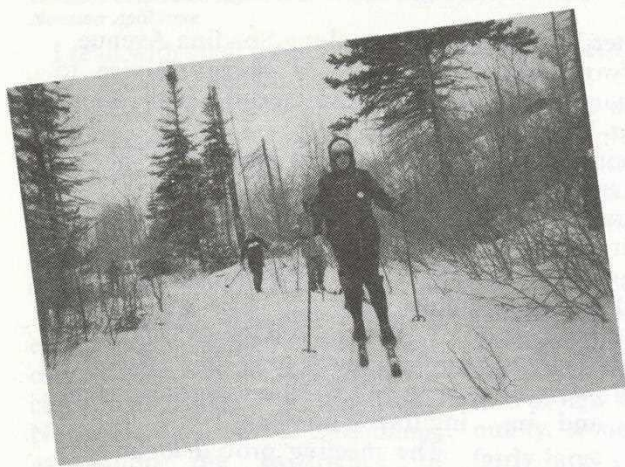
At eight out of nine bridges surveyed, pedestrian count was highest from 11 a.m. to 1:30 p.m. when office workers take lunch and do some shopping. Use of the bridges dropped sharply after 5 p.m. when many downtown buildings closed.

Sophia Lum of Calgary Planning and Building department advises: "We hope to continue with our data collection in order to better understand the +15 system for investment decisions, site planning purposes and system-wide planning."

The system now has 38 elevated bridges linking 8.5 kilometers of walkway. Asked what improvements they would like to see, 89 users answered: "more bridges". Almost as many had no recommendation for improvement.

Because visitors may find the system confusing a pictograph signage system was installed during the past two years. At the entrance to all bridges, large blue maps show the full extent of the system along with a sign showing where the bridge leads. Each sign tells the direction in which the user is moving along with the identity of the building at the other end of the bridge.

WINTER JUST NOT LONG ENOUGH FOR CHARLESWOOD SKI CLUB



Cross-country skiing for the people of Winnipeg, Manitoba would normally be perceived by outsiders as flat-land prairie skiing. The truth, however, is that skiers willing to do some travel are rewarded with some of the best Nordic skiing in Canada.

Grand Beach Provincial Park, which is located only an hour's drive north of city, has seen the development of excellent trails among the hills created by the ancient beaches of Lake Agassiz. Spruce Woods Provincial Park, found approximately two hours west of Winnipeg, provides trails among the sand dunes left by the ancient Assiniboine River that drained glacial melt to Lake Agassiz. Both of these trail systems provide warmup facilities along the trails.

The Charleswood Ski Club, a Winnipeg based recreational cross-country ski club, has been organizing day and weekend trips to such excellent trails for the last ten years. The philosophy of the club is "to encourage people of all ages and abilities to cross-country ski and appreciate the outdoors during the winter months." Towards this end the club hosts an open house at the beginning of the season to attract new members. Six weekend trips and a week-long trip to the Banff area in the Rocky Mountains are organized by the club's executive. Club members (numbering 179 this season) also get together to ski local trails on a day trip basis. A monthly newsletter keeps the club membership informed about club activities. The

ski season includes two general meetings and a number of social events.

The shortness of winter is more of a problem to the club's executive when organizing a very busy ski season than the length of winter perceived by others.

(Ed. Note: Program for this year's activities include weekend ski trips to six resorts: New Year's to Luther Village; Jan. 16 to 18 to McTavish's Riding Mountain Resort; Jan. 30 weekend to Westhawk Lake; Feb. 13 to Carberry Spruce Woods; Feb. 27 weekend to Otter Falls Resort, Whiteshell; and March 13 weekend to Gull Harbor Resort, Hecla Island. Each location has excellent groomed trails ranging up to 13 km. and graded from novice to expert. Comfortable motels are available and costs range from \$20 per person for one night at the Whiteshell resort to \$125 for four days at Luther Village, including meals. Whole families make up a large part of the group. Transportation is by car pool. The plan is to travel to the ski area on Friday evening in order to have as much time as possible in daylight for skiing on Saturday and Sunday.

The season's trips are announced during November and members are required to give two weeks to a month's notice of cancellation for each outing.

The season winds up with a "Spring Break" skiing trip to the Rocky Mountains typically using motels in the Canmore area at costs running up to \$150 per room for 4 days' accommodation.

Annual fees for the club are \$30 per family, \$22 per couple or \$15 single, which cover organizational and membership activities including two general meetings which are also social events.

The club will organize lessons for those interested and distributes a number of pieces of literature containing information as to how to ski safely and detailing information on trails and conditions.

Those interested in learning more about the excellent organization and procedures developed by Charleswood Ski Club can get more information by writing: Don Fidelak, 23 Honeybourne Cres., Winnipeg, MB. R3R 1S2, or to Livable Winter Newsletter.)

"St. John's Group Update"

LWCA St. John's chapter is gathering interest and members. December 11 meeting had 13 in attendance, including geographers, climatologists, planners, architects and an engineer. Climatologist Colin Banfield spoke.

The City Engineer spoke on snow clearing at a meeting in the third week of January. Media interest in the LWCA in St. John's has been high. Involved persons have expressed desire to proceed slowly and steadily, working to establish a core of dedicated winter enthusiasts sharing the common dreams of LWCA.

Interested people should contact: Arvo McMillan, 74 Ennis Avenue, St. John's, NF, A1A 1Z1.

**ROBERT DAY, NEW
PRESIDENT AND G.M.
WINTER CITIES CORP.**

With just more than one year until Showcase '88 the staff at Winter Cities Corporation is busy with the preparations for the Third Winter Cities Conference of Northern Mayors, Forum '88 and Exposition '88. Ten individuals are now working on the project and the team is headed by Robert Day, the president and general manager.

Day joined the Winter Cities Corporation in November '86 after nine years of marketing with A.C.T., a computer software service bureau. Although A.C.T. is Edmonton based, the company operates internationally and has installed software in more than 100 cities on five continents. In his capacity as president and general manager Day's international marketing expertise will be used to promote Showcase '88 around the winter world. He will also undertake fund raising and is responsible for the overall management of the Corporation.

Day's extensive community involvement has given him the opportunity to experience working on projects and he looks forward to the challenge of the upcoming year. Day was attracted by the potential of the winter cities event. "I think Showcase '88 is a tremendous opportunity for the City of Edmonton. By hosting an event of this nature we will have a chance to meet some of the world's prominent winter citizens, to discuss the challenges of winter, and to learn from one another's experiences. We have an experienced, professional team in place at the Winter Cities Corporation and we have a clear objective - to organize an international event which will examine the economics of winter."

For more information please contact:

The Winter Cities Corporation
P.O. Box 1988
Edmonton, Alberta
T5J 4A9
(403) 428-1988

The Corporation would like to invite you to visit our new offices on the 19th floor of the Sun Life Building on 99 Street at 100 Avenue in downtown Edmonton. ☐

PLASTIC CLOTHING RATES HIGH FOR WICKING AND WARMTH

**"Consumer Watch" Column by Nancy Durnford
From Jan. 10 Issue, Montreal Gazette
(With Permission)**

High-tech underwear knitted from polypropylene and polyvinyl chloride (PVC) fibres - plastics commonly associated with carpets and drain pipes - can help keep active bodies warm by wicking perspiration away from the skin.

But some good old-fashioned wool nest to a layer of polypropylene could be the best choice for beating winter cold, according to a University of Guelph test, commissioned recently by *The Gazette*.

After testing eight pairs of long-john underwear of varying thickness and ranging in price from \$16 to \$37.60 per pair, the Guelph textile researchers concluded that Lifa Pro-Wool long underpant moderately priced at \$27, may offer the best protection against dampness and cold.

The pants have an inner layer of 100 per cent polypropylene and an outer layer of 70 per cent acrylic and 30 per cent wool.

"The inner layer wicks or transfers moisture away from the skin while the woolly outer layer traps air for insulation," researcher Ranjana Ghosh said.

Since keeping dry is key to keeping warm, tests to determine the wicking ability of the garments were included in the half-dozen fabric tests supervised by Guelph's textile expert, professor Anne Wilcock.

Dozens of samples cut from the undergarments were measured before and after tumbling, stretching, wetting and drying in order to compare the relative comforts.

The tests were conducted on two pairs of Thermolactyl (85 per cent PVC, 15 per cent acrylic) long johns - one pair of medium thickness (\$24.85) and a heavy napped pair labelled Double Force, (\$37.60); two pairs of medium weight polypropylene underpants - Helly Hansen (\$26.95) and Kombi



Damart Thermolactyl Garments Use "Tribo-Electricity" To Help Warm One's Skin.

(\$17.95); two pairs of Lifa long pants - the lacy lady Lifa pants (\$19.99) and Lifa Pro-Wool (\$26.99); a pair of Thermax (polyester) long johns (\$28) and a pair of North Country polypropylene pants (\$16). All underwear was bought in Montreal stores.

Here's how the underwear compared:

Warmth: If your ski suit is on the thin side, choose the Thermolactyl Double Force pants for added warmth, especially when Alpine skiing.

With a cosy napped surface, these thick pants trap a great deal of air for insulation from the cold. Although they are more than twice as thick as the regular Damart pants, the double force pants will not necessarily feel twice as warm, said Wilcock.

She explained that warmth is influenced by the wearer's body temperature, the construction - loose knits trap more air than tight ones - and the type of outer clothing worn. Without a windproof layer, much of the heat generated by the body can be lost.

cont'd. on page 10

The thinnest pants tested were Thermax. But because the special hollow fibre traps more heat than solid fibres, they are not necessarily the least warm. Lifa Pro-Wool, which placed in the middle of the thickness scale, is also considered a good bet for warmth.

Lifa Pro-Wool was judged satisfactory for wicking ability.

Shape Retention: To live up to its claim as a second skin, high-tech underwear must move with the wearer. It must not only stretch but it must return to original size with each movement. Fabrics that stretch excessively annoy wearers when they bag and clump. Cold spots occur when stretch fabrics stick to outer clothing.

While all test garments stretched somewhat, Lifa Pro-Wool showed practically no potential for bagginess. Other very good performers were Lifa regular and Thermax.

Thermolactyl Double Force samples stretched significantly during test, but they returned close to the original dimensions when laundered. None of the knitted garments shrank when laundered according to instructions - gently washed with mild soap in cold water and allowed to drip dry. However, most of them stretched a small amount.

The five-inch Lady Lifa samples stretched about 7 per cent indicating that the pants could stretch more than one inch in length.

Wicking moisture: Medium-weight polypropylene Kombi and North Country pants were the most effective for giving up moisture.

Thermolactyl regular and Thermax placed third and fourth.

The least effective garment for wicking away moisture was Thermolactyl Double Force underwear. Since test samples held moisture more than 20 times longer than Kombi samples, the double force pants are probably a poor choice for cross-country skiers.

Pilling: Garments prone to pilling - to forming little hard balls on the surface as they wear - can give the wearer the appearance of a musk ox. Worse still, if those little balls rub against the skin, they can be very irritating.

After 10 hours of tumbling in a cork-lined rotating box, the Lifa

products showed the least amount (moderate) of pilling, followed by the Thermolactyl samples. The Thermax and three remaining polypropylene products were heavily pilled.

Construction: Not only the fabric but the way it is put together influences comfort. Bulky seams chafe the skin, sloppy cuffs cause lumps and narrow elastic waistbands can interfere with circulation.

Made with well-finished flat seams, long, tightly-ribbed cuffs and 1 1/2 - inch shirred elastic, the British-made Thermolactyl undergarments take top marks for smooth finishing.

Two Canadian products, North Country and Kombi, are also made with flat seams and snug cuffs.

Consumers who choose Lifa, Thermax or Helly Hansen products may want to wear them inside out to prevent the bulky seams from rubbing against the skin. Cuffs on the Lifa Pro-Wool test garment were not ribbed for a trim fit.

Care: Most care labels indicate that the garment can be machine washed (cold water, gentle setting). Only two, Kombi and Thermax, suggest that the products can be machine dried - Kombi on air setting and Thermax on low setting. All others require six to eight hours of line drying.

(Ed. Note: Damart Thermolactyl garments contain a large percentage of "chlorofibre" manufactured in France and claimed to exercise "tribo-electric effect" discharging negative ions when in close proximity to one's skin. This has the effect of warming the skin, according to the manufacturer's claim. In addition the garments are designed to wick away moisture from skin surface and to warm through insulative effect.

Damart has recently opened retail boutiques at 1260 Crescent St., Montreal and at 25 Bloor West (entrance on Balmuto St.) in Toronto. A mail order business has been carried on from 6410 Lady Hammond Rd., P.O. Box 8478, Halifax, NS, B3K 5M2 for several years.)

Send plans

Please send info on your programs and plans:

John R. Ellis,
62 Belknap St.,
Concord, Mass. U.S.A.

LETTERS

Anchorage Seeks Information:

Many of us in Anchorage have been following the progress of the Livable Winter City Association with delight. Several members of our community, in addition, attended last year's conference in Edmonton and brought back excellent reviews.

It is clear that Anchorage would clearly benefit from the lessons and opportunities presented by the Association. In this light, I would like to provide our municipal policy makers, local design and planning professionals, and citizen groups, with the following information:

1. LWCA goals, history and membership
2. Membership application process
3. 1988 Conference details (if possible at this time)
 - a) how to participate as a city or individual;
 - b) display possibilities;
 - c) other means.

4. List of references on winter city topics;

Jay I. Rood, Senior Planner, Urban Design

City of Anchorage, Alaska.

* * *

From Landscape Architect:

Please forward to your convenience, information concerning the Livable Winter City Association and the Livable Winter Newsletter. John Gauld, Landscape Architect, City of Peterborough, ON.

* * *

Most Interesting Panel

One of the most interesting panel presentations to feature the Innovative Housing Conference '86 in Toronto last month was "Innovative Design for Cold Climates." On behalf of the Canadian Housing Design Council Board of Directors, I would like to thank Xenia Zepic (LWCA Past President) and through her the Livable Winter City Association for serving as the panel's highly efficient moderator.

Burf Ploughman, Chairman
C.H.D.C.
Ottawa, ON.



A Tribute To The Snowflake

Canada's Neglected Winter Flower

By Harold Hanen

Canadians have always paid homage to summers' expressions; the maple leaves, and the wild roses, but they appear blind to the beauty of our natural winter reality. It is time we recognized the more prevalent, beautiful, soft, white, backdrop to our winter activities, and encouraged expressions of its rich forms in our everyday lives.

Snow crystals are the basic element of winter white. Collectively, they blanket the varied forms of the winter city's landscape.

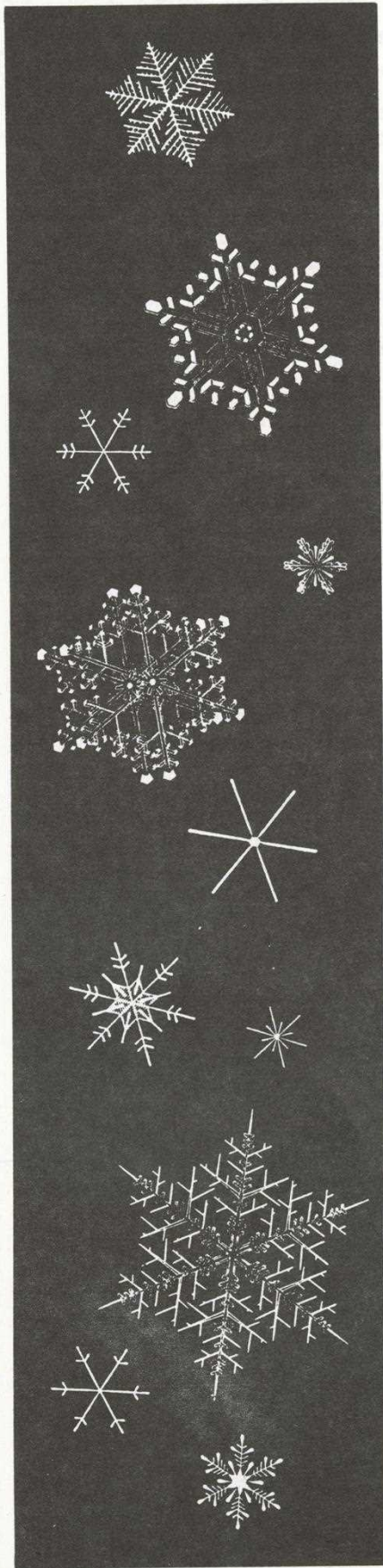
Snow commonly conjures up images of soft flocculent flakes of considerable opacity. However, it does not always fall in flakes. It has many forms, occasionally descending in groups of slender, irregular and jagged crystal particles. These generally form at temperatures near the freezing point.

At other times, snow has a light feathering quality composed almost entirely of stars of six speculae joined in the centre by a white molecule, usually larger than half an inch in diameter. These generally collect in tufts of half a dozen or more and, in calm weather, waft uninjured to the ground.

Secondary speculae often develop from the principle stems, sometimes even continuing down the main stems until they meet, forming a transparent centre.

Heavy, ordinary snow may at times be accompanied by minute glistening specks, like mica sparkling in granite. These are caused by the lamination of delicate, symmetrical, hexagonal crystals, and are united on axis at right angles. These more complex and elaborately detailed crystalline constructions are often enhanced by sharp-edged, glistening prisms.

Snow's unique geometrics are the product of a natural law; water freezes at angles of 60° . This results in stars and hexagons being the basic forms of all the elaborate snow figures. Each snow flake, though a beautiful and elaborately individual creation, is also remarkably suggestive of extension into varied and rich patterns.



There are many potential applications of the principals of collective snow crystals' arrangements to our winter environments, from complex northern city organization systems to discrete pieces of architecture. Several notable architects have been inspired by snow's intrinsic geometry. For example, Ray Moriyama in his Science North Building in Sudbury, and Frank Lloyd Wright in "Snow Flake", a country home in Michigan.

However, it seems to me it is in the realm of the public livable winter city's "decoration" that the inspiration of the snow crystals has its most obvious application. I think we want, and need, more visual enrichments in our everyday travels. Unlike the uninhibited medieval masons, we appear too frightened to express ourselves in ornament and don't seem to know how to handle it, as though we fear we may expose the nakedness of our mean little souls.

Cities do invest in art, but it suits the administrative mind to keep "art" in boxes called museums. Such forms of "fine art" impacts the ordinary person's life only occasionally and are no substitute for an environment which is satisfying in itself.

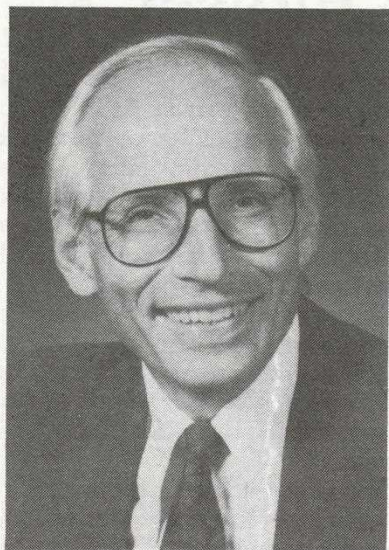
Traditionally, engineers have not only regarded the aesthetic consequences of their work as of minor importance, but concern about it as basically frivolous. It has been practically an article of religion with them to believe in the binding connection between functional efficiency and appearance.

This attitude has had especially devastating consequences in this last century since the most dominant elements in our new urban landscapes are the public infrastructures such as bridges and interchanges. It may be fair to say that, on the whole, as modern technology gets more and more functional, we can less and less bear to look at it.

Decorative embellishments on and along the public ways cannot remove the cold, but they can en-

cont'd. on page 12

WALTER KEHM RECEIVES TWO SIGNAL HONORS



President and Co-Founder of E.D.A. Collaborative Inc., a leading Canadian landscape architectural firm with branches in Toronto and Edmonton, Walter H. Kehm has in recent months received two major pieces of recognition to add to a long list of honors and awards previously received. Last year he was appointed dean of the Faculty of Landscape Architecture of Guelph University and in December was named fellow of the American Society of Landscape Architects at its annual convention in San Francisco, one of very few Canadians to be so honored.

Kehm, a member of LWCA, declares it is his intention to introduce much more "winter cities" content into the Landscape Architecture curriculum at Guelph and has already brought experts in "winter cities design and planning" to Guelph to participate in panels before student audiences.

With a Masters degree in Landscape Architecture at Harvard University and post graduate studies in Rome, Kehm holds numerous scholarships and academic awards. He has directed projects around the world, one being the landscaping of the new Canadian embassy in Beijing, China, described in an article in *Livable Winter Newsletter*. In Canada he has worked on major projects in Ottawa, Winnipeg, Regina, London, ON, and design integration of the new Toronto domed stadium into the surrounding railway lands.

cont'd from page 11

hance the sensuousness of our daily living in a sometimes stark winter world and inspire us with an enriched sense of our special place and personality on this earth.

It would be well for students of Northern civic design to consider

the potentials of using this natural backdrop to our activities so much of the year, as inspiration to create in our built forms, reflections of our own realities.

Reference: Art Studies from Nature as Applied to Design Virtue & Co., London, England 1872. 

EDMONTON CHAPTER PLANS EXCITING YEAR

As we move into 1987, the Edmonton chapter of the LWCA begins its second year, with a new executive. The chapter held its annual meeting in December and as well as reviewing the past 12 months, elected officers for the upcoming year. The slate includes a couple of additional positions and the enthusiasm of the new officers will be an excellent complement to the experience of those who worked with the chapter in 1986.

President Pam Freeman
Past President Eric Jokinen
Vice President
Research & Development
..... Arni Fullerton
Secretary/Treasurer
..... David Sanford
Promotions
..... Debbie Kronewitt-Martin
Membership Ian Bazely
Communications Jocelyn Fraser

As the new president Pam Freeman says "I think 1987 will be an exciting year for our chapter. I am very pleased with the calibre of our new executive and am anxious to begin working with the group. I look forward to liaising with the national body and to enhancing the communication flow between the chapters of the LWCA."

One of the chapter's main goals in the upcoming year is to increase membership in the Edmonton chapter of the LWCA and to broaden the association's base of support. The chapter will also continue the projects initiated in 1986 and will place an emphasis on the Healthy Winter Cities (HWC) research.

The first step in the HWC project, a literature survey was completed in December. The survey showed there is currently little research to link social issues such as stress, mental health and physical well-being to winter. Although it appears that mental health is affected by cold weather additional research is necessary to prove the premise. The project committee is considering several different approaches to the problem and will select a direction shortly. If you are aware of any articles, books, or literature which might help to identify the influences of winter on mental health and well-being please write to:

Jean Anderson
c/o Edmonton Chapter
LWCA
411 The Boardwalk
10310 - 102 Ave.,
Edmonton, Alberta
T5J 2X6 

Request from Germany:

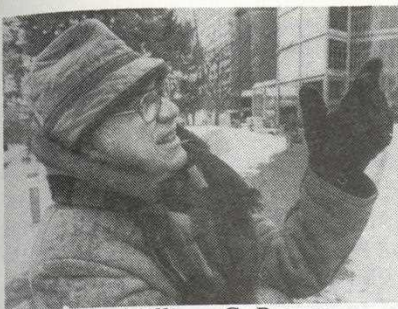
I am very interested in the planning aspects of winter cities and I am planning to go to Canada in March to learn about the development of winter cities. I will probably stay in Toronto and Ottawa.

For this reason I would like to ask you to give me the names of people or departments that I may contact for assistance. I also hope to meet LWCA executive members. Please enter my name as a

subscriber to *Livable Winter Newsletter* and forward a copy of "Reshaping Winter Cities" Money order sent today.
Dr. Barbara Hahn
Geographisches Institut der
Universitat Mannheim,
6800 Mannheim 1, Schloss,
West Germany.

(Ed. Note: We have written directly to Dr. Hahn, but readers with leads or suggestions are encouraged to write directly to her also).





Dr. William C. Rogers

CHIPS, FLAKES and GUSTS

(Which Fall on his Minneapolis Desk From All The World's Other Cold Places)

*A new winter column by William C. Rogers
Associate Editor, U.S.*

Ideas and Suggestions from Readers will be welcomed.

Projects for LWCA Chapters - "What should a winter city really look like?" This is one of the most troublesome questions I hear. It's difficult to imagine a whole city exactly right for winter. But what about a single neighborhood or block? Could a task force from a winter city chapter choose a sample area or block and set down its ideas for landscaping it for winter? This project would require home owners' permission for a bit of snooping. It would also require some landscape architects, horticulturalists, tree farmers, etc. to help out if the membership does not include them. A case study of how one city block or neighborhood might be designed for proper winter landscaping might be a start at defining "what should an ideal livable winter city look like." Another variation on this theme would be to color code the buildings in the same area to give an idea of what some ideal choices might be for the built environment.

* * *

What a relief to have Pressman and Zepic's new book on the winter city available when people ask "what should I read on the subject?" Now we can say, write to the University of Winnipeg's School of Urban Studies, and get the complete and definitive work on the subject. As one who has watched the literature develop in this new field it would seem that these two early presidents of the Livable Winter City Association have put together in a concise way, every single idea and reference concerning the winter city in readable prose in a reasonably slim volume.

* * *

A recent article in the Christian Science Monitor is on the marvels of the Russian stove. This heating unit, which was a part of almost

every Russian structure, from time immemorial, is indeed a scientific wonder. It heats a whole house, burning an arm load of twigs and sticks to powdery dust. Other than taking up a lot of space and being difficult to cool off when summer at last comes, it is a nearly flawless artifact. A U.S. company now sends plans on how to build your own. Write to Dave Holland, P.O. Box 669, Englewood, CO 81051.

* * *

Last October, Minneapolis was busy celebrating the 30th anniversary of the first great U.S. suburban shopping mall. "Southdale" was designed by Victor Gruen from Austria and the concept was revolutionary. Strangely enough, in the interviews and discussions about the building, there emerged some doubt as to just how much cold climate was a factor in its invention. One city planner said that weather was not considered at all. The main idea he said was "access". Parking the car was far more important than avoiding frost bite, according to him.

* * *

A spokesman for the American Academy of Dermatology says "winter itch is a problem for everyone. The winter wind dries out skin and the body sheds tiny flakes of skin, which after a hot shower may give a merciless itch." The answer is to avoid showering before going out for exercise because water removes protective natural oils. The water shouldn't be too hot and soap should be used sparingly. Also "avoid licking your lips because saliva has a lot of salt and will cause the skin to dry out faster." We know how our ancestors solved such problems. They either didn't bathe at all or did it Saturday night and then went to bed.

* * *

No matter what kind of a tread

pattern you have on your tires, you're going to slip if the rubber gets thin. Paul Brand in his Car Care column in the Minneapolis Star and Tribune, says that he is not comfortable with tires showing less than 5/32 or 6/32 of an inch of tread remaining, which is about half of the original tread. Other than buying new tires, he suggests "tire siping" which means "cutting a series of razor like slits in a tire's tread surface, giving the tire "new, sharp edges to bite with."

* * *

A fascinating periodical we have received over the years deals with Scandinavian planning and building is "Synopsis" of Swedish Building Research. Topics include urban and regional planning, housing research, building technology, energy conservation and solar heating, heat pumps, energy storage and district heating. Free subscriptions can be obtained by writing to Svensk Byggtjänst, Box 7853, S-103 99 Stockholm, Sweden. A recent article deals with wind breaks on tower blocks, a study of the wind related energy consumption of buildings. This three paragraph synopsis ends with a note that the article is in Swedish but if we were building tall, high rise building I think we'd have enough money to order this publication and hire a Swedish translator.

* * *

Work continues on all ceramic car motors and plastic bodies are corrosion resistant according to the Frankfurter Rundschau. This could be good news for winter car drivers.

* * *

A major study on "the effects of light on mood and behaviour" is being undertaken by Dr. Richard Depue in the Department of Psychology at the University of Minnesota. 

THE WORKING NETWORK

LWCA is people with the common interest of awakening all northerners to the advantages and opportunities of winter. Our members/subscribers include a variety of disciplines, professions and trades and surely we can, at times, help one another if only we know what each has to offer.

For two years we have occasionally carried in Livable Winter Newsletter a "networking" form to be used as a basis for future exchanges. A few of us have filled in the form. Once a large enough proportion have completed and returned the form it is intended to produce a "membership networking directory". In the meantime to speed up the flow of returns and let us all see what each has to offer, and to begin the "networking" process, we propose to publish one page per issue of information given in randomly-chosen forms that have been returned.

John Barnard, Director, Grande Prairie Economic Development Commission, 214 Place, 9909 112 ST., Grande Prairie, AB, T8V 2V4, (413) 539-3410. **Training and Background** -- Architecture, Economics, Energy Conservation, Engineering, Interior Design, Landscape Architecture, Urban Affairs, Urban and Regional Planning. **Areas of Interest** -- Futurism, urbanism, industries. **Current Projects, Research** -- "To develop a process to bring about a pre-development program for the re-development of the City of Grande Prairie. Our goal is the development of Canada's first real winter city. Grande Prairie was featured in Winter Cities Forum 86 in Edmonton."

Jan H. Johnsson, Box 144, Hay River, NWT, X0E 0R0. Business firm, Northern Transportation Company Limited, same address, (403) 874-2442 (bus.) (403) 874-3702 (home). **Training and Background** -- Engineering. **Areas of Interest** -- Climate/Weather Information, Engineering, Transportation.

Donald E. Ruggles, 40 Brouillette Bay, Regina, SK, S4R 6G1, Employer, Parks and Recreation Dept., City of Regina, (306) 569-7406 (bus.) (306) 543-7095 (home). **Training and Background** -- Landscape Architecture. **Areas of Interest** -- Aesthetics, Planning, Urbanism. **Current Projects or Research** -- "The City of Regina Parks and Recreation Dept., is presently finishing its 'Open Space Management Strategy' after two years of research and analysis. The OSMS defines guidelines for the development and management of the City's public recreation/open space system. The study process was adapted from that developed by Dr. J. R. Wright, (1981) and includes a unique evaluation technique to measure the qualitative characteristics of each site. The Design and Development Guidelines in OSMS are based on three fundamental areas: 1, Shaping Urban Form; 2, Conserving Biophysical Resources; 3, Meeting Human Needs. The year-round usefulness of public recreational open space is stressed and direct reference is made to measures to provide protection from harsh winter winds and intense summer sun."

Terry L. Novak, City Manager's Office, 808 W. Spokane Falls Blvd., Spokane, WA, U.S.A., 99402 (509) 456-2612. **Training and Background** -- Economics, Public Administration, Urban Affairs, Urban and Regional Planning. **Areas of Interest** -- Environmental Process, Planning, Transportation.

Renee Rouleau, Student, 2610 Kent #12, Montreal, PQ, H3S 1M7 (514) 735-5398 (University) (514) 655-3798 (home). **Areas of Interest** -- Planning, Transportation, Intergovernmental Relations. **Current Research** -- "Studying urban design patterns in search of ways to make winter cities more interesting and enjoyable."

Joel W. Rieder, Architect, Planner, 171 St. Clair Ave. E., Toronto, ON, M4T 1N9; (416) 485-9292 (home) (416) 964-2680 (bus.) Editor, Livable Employer, Jim Strasman, Architects, Inc., 167 Avenue Rd., Toronto, ON. **Training and Background** -- Architecture, Urban Design. **Areas of Interest** -- Aesthetics, Communication, Environmental Process, Urbanism. **Current Projects or Research** -- "Studies on modifying the urban fabric, in particular search for better ways to use space and resources. Travel in China taught lessons on use of texture, improving density without loss of privacy, and a practical approach, the technique of 'doing what needs to be done in a given situation rather than going by the book.' All of these approaches are primary in seeking to improve our adaptations to our four-season climate."

John C. Royle, (Publisher, Livable Winter Newsletter) Ste. 501, 40 Old Mill Rd., Toronto, ON. M8X 1G7, (416) 231-1767. **Training and Background** - Journalism, Construction, Agriculture, Communications, Energy, Urban Affairs. **Current Projects or Research** -- "Expansion and development by all means possible of LWCA, the "Winter Cities" movement and the Livable Winter Newsletter."

Christopher G. Walker, Manager, Planning Services, Yellowhead Regional Planning Commission, Box 249, Onoway, AB, T0E 1V0, (403) 967-2249. **Training and Background** -- Energy Conservation, Urban and Regional Planning. **Areas of Interest** -- Planning, Subdivision Design, Downtown Revitalization. **Current Projects or Research** -- Development of General Municipal Plans, land use bylaws and area structure plans.

Xenia Zepic, Planner/Urban Designer, Past President, LWCA, 521 Briar Hill Ave., Toronto, ON, M5N 1N1 (416) 487-9169. Employer: Metropolitan Toronto Planning Dept., 11th Floor, East Tower, City Hall, Toronto, ON, M5H 2N1. **Training and Background** -- Energy Conservation, Interior Design, Architecture, Landscape Architecture, Urban Affairs, Urban Design, Urban and Regional Planning. **Areas of Interest** - Environmental Stress, Housing, Planning, Recreation, Transportation, Urbanism. **Current Projects or Research** -- "1, To develop proposals for policies and winter city policies for Metropolitan Toronto; 2, To work towards creation of a bibliography to cover the field of innovations in cold climate planning; 3, To do all possible to advance the winter cities movement and in particular LWCA."

LWCA NETWORKING — SURVEY FOR MEMBERSHIP DIRECTORY

(For publication in future directories appearing in LIVABLE WINTER NEWSLETTER).

NAME:
(FIRST) (MIDDLE) (FAMILY)

MAILING ADDRESS:
(NO.) (STREET) (CITY)
.....
(COUNTRY) (POSTAL/ZIP CODE)

BUSINESS FIRM:

TELEPHONE:
(BUS) (RES)

● **CIRCLE TO INDICATE YOUR MAJOR FIELD OF TRAINING AND EXPERIENCE:**

- | | |
|--|--|
| ☐ ANTHROPOLOGY | ☐ INTERIOR DESIGN |
| ☐ ARCHITECTURE | ☐ LANDSCAPE ARCHITECTURE |
| ☐ ARTIST | ☐ MEDICINE |
| ☐ CLIMATOLOGY/METEOROLOGY | ☐ PSYCHOLOGY |
| ☐ ECONOMICS | ☐ PSYCHIATRY |
| ☐ EDUCATION | ☐ PUBLIC ADMINISTRATION |
| ☐ ENERGY CONSERVATION | ☐ SOCIOLOGY |
| ☐ ENGINEERING | ☐ URBAN AFFAIRS |
| ☐ ENERGY CONSERVATION | ☐ URBAN DESIGN |
| ☐ GEOGRAPHY | ☐ URBAN & REGIONAL PLANNING |
| ☐ HUMAN FACTORS | ☐ OTHER |

● **CIRCLE UP TO THREE TO INDICATE YOUR AREA(S) OF INTEREST:**

- | | |
|--|--|
| ☐ ARTIST | ☐ HOUSING |
| ☐ AESTHETICS | ☐ HUMAN FACTORS |
| ☐ AGING | ☐ OFFICE PLANNING |
| ☐ CHILDREN | ☐ PARTICIPATION |
| ☐ CLIMATE/WEATHER INFORMATION | ☐ PRECEPTION/COGNITION |
| ☐ COMMUNICATION | ☐ PLANNING |
| ☐ DESIGN METHODS | ☐ POST OCCUPANCY EVALUATION |
| ☐ ENERGY | ☐ PRISONS |
| ☐ ENGINEERING | ☐ PROGRAMMING |
| ☐ ENVIRONMENTAL PROCESS | ☐ RECREATION |
| ☐ ENVIRONMENTAL STRESS | ☐ SCHOOLS |
| ☐ FIRE SAFETY | ☐ SOCIAL IMPACT ASSESSMENT |
| ☐ FUTURISM | ☐ SOCIAL BEHAVIOUR/PERSONAL SPACE |
| ☐ GRAPHICS | ☐ TRANSPORTATION |
| ☐ HANDICAPS | ☐ URBANISM |
| ☐ HOSPITALS | ☐ INDUSTRIES |
| | ☐ OTHER |

● **PLEASE WRITE A 100 WORD STATEMENT ON YOUR CURRENT PROJECTS OR RESEARCH.**

DANISH FIRM COMPUTERIZES PLANT CARE IN ATRIA

"If plants flourish, so will people." This is the philosophy of Dansk Gartneri Teknik, a Danish company originally producing climate control equipment for plants. Today it is one of Europe's leading producers of total systems for advanced climate regulation.

Harsh climatic conditions of the northern hemisphere inspired great skill in growing plants behind glass - providing shelter yet letting in light. Accordingly, one sees increasing interest in glass as building material for human habitation. Securing steady and pleasant conditions under glass, however, is no easy task. Glass is extremely sensitive to slight changes in the ambient temperature, causing either a drastic rise or fall in indoor temperature much more rapidly than where traditional materials are used. Glass as building material raises a lot of questions. How does one protect against unwanted heat rays without shutting out the light, or against excessive heat loss as soon as radiation stops?

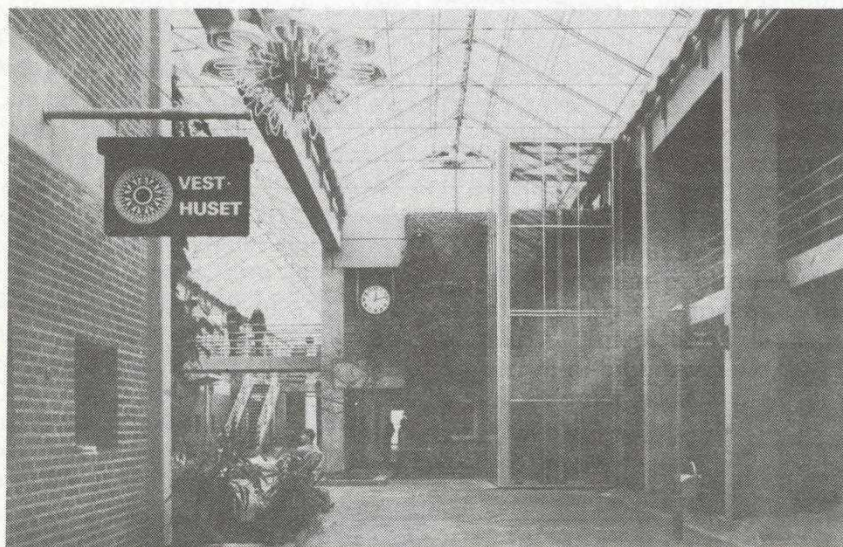
DGT has spent more than thirty years providing answers to these questions, the first one being an automatic shading and insulation system (curtains). This has been developed considerably since and supplemented with additional functions such as automatic temperature regulation, watering and humidity control, growth light and fresh air provision (natural ventilation). The latest answer is the

climate computer, which takes over total everyday care of indoor climate whether in public buildings, commercial greenhouses or domestic conservatories. Interrelation between different climatic factors is so complicated only a computer can ensure optimal conditions. Thus DGT climate computers control indoor climate according to time, ambient temperature, accumulation and intensity of light, humidity, and external weather conditions. Temperature is regulated with great accuracy, keeping a constant eye on energy consumption.

Having been pioneers within this field it is exciting and inspiring for us to follow the growing popular interest in expanding outdoor living areas (by putting them under glass) throughout the world wherever people are confined indoors for a great part of the year. Anybody interested in this technology is welcome to write or call for further information.

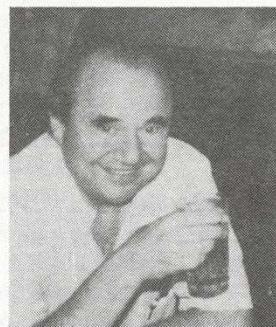
Unfortunately, it is our experience that builders and contractors often realize particular problems of temperature regulation in relation to glass architecture only when building plans are too far ahead to create a cheap and efficient solution.

Contact: DGT Egeskovvej 6, 2665 Vallensbaek Strand, Denmark. Phone international +45 2 73 11 00. ☐



School in Jutland show roof ventilators controlled by computer.

Public Innovation Abroad Helps Winter Cities' Cause *World Traveller Wynne In Singapore.*



George G. Wynne, editor of the monthly *Public Innovation Abroad* published by the Academy for State and Local Government has been of help in expanding the reach of our livable winter cities networking effort. PIA keeps its North American and overseas audience of civic leaders informed of pertinent winter cities developments. It has reported, for example, on the use of color in the cityscape, winter festivals and ice sculpture contest, "skywalks", covered sidewalks, underground shopping malls and other measures to deal with the cold season as a challenge to improve the quality of urban life. PIA has also been of help in publicizing LWCA activities and publications south of the border and in organizing study trips to Scandinavia and the Soviet Union.

The objective of P.I.A. is to better the quality of life for cities or urbanized regions and promote partnerships between public and private sectors in achieving this.

PIA would like to expand its Canadian readership and George has asked us to help him in introducing his periodical to LWCA members. He offers to send each LWCA member responding to this notice a sample complimentary copy and to add two more back issues to each annual Canadian subscription that refers to this article.

The periodical includes a reference and referral service and costs US \$48.00 a year or US \$116.00 for three years, which represents a 25% saving. Write *Public Innovation Abroad*, ASLG, Suite 340, 444 N. Capitol Street, Washington, DC 20001 or call 202: 638-1445 for your sample issue or subscription order.



HEATING DEGREE DAYS

Source: Environment Canada

Heating degree-day (HDD) is an index used to determine the duration and intensity of winter cold. The index, originally developed in 1927 by the American Gas Association, is widely used to estimate home heating requirements. The concept is quite simple. Once the outdoor temperature falls below 18°C, space heating is required in a building to maintain a comfortable indoor temperature. For every degree of temperature below 18°C, 1 HDD is accumulated. On a day where 30 HDD have accumulated, three times as much fuel is required to heat a building as on a day when only 10 HDD's have accumulated.

HDD's are also used comparatively to measure the relative severity of a winter. The total daily HDD values for a winter season may be compared to previous winter totals or a long term average. Figure 1 shows a map of accumulated HDD's for Canada for an average year.

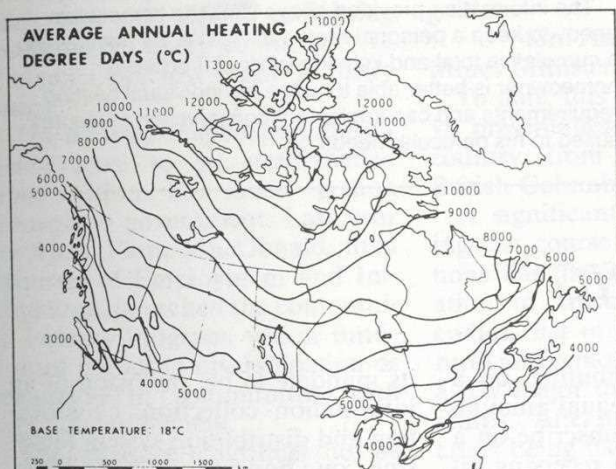


Figure 1.
Accumulated HDD's for Canada for an average year.

Canada's fuel industry uses HDD's to maintain adequate fuel supply levels and to anticipate consumer needs. By accumulating HDD's, home heating suppliers are able to estimate fuel consumption. This in turn allows for a more efficient scheduling of deliveries and eliminates shortages between deliveries.

HDD's are also used in building design to calculate insulation and heating requirements for new buildings and in retail sales of insulation to establish guidelines for the type and amount of insulation required for a particular location. Homeowners themselves may use HDD and energy consumption figures to determine the effectiveness of recent energy conservation measures to their homes such as increased insulation, caulking around windows and doors, lower thermostat settings, etc.

Calculating heating degree-days

HDD's are calculated simply by subtracting the mean daily temperature (C°) from 18°C. The daily mean temperature is arrived at by averaging the maximum and minimum temperatures for the day. Where the daily mean temperature is above 18°C no degree-days are counted.

These daily values are then added together to obtain a cumulative total for the period of record (i.e. week, month, year). Table 1 shows sample HDD calculations for one week.

Table 1.

Sample HDD calculations for one week

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Max. Temp. (C°)	18	22	23	15	8	3	-1
Min. Temp. (C°)	14	19	13	9	0	-7	-9
Mean Temp. (C°) (Max. + Min) ÷ 2	16	20.5	18	12	4	-2	-5
Difference from 18°C (HDD Value)	2	-	-	6	14	20	23
Accumulated HDD's	2	2	2	8	22	42	65
Total Heating Degree-Days for the Week							65

HDD's may be calculated on a day-to-day basis from weather information published in most Canadian daily newspapers. Monthly and annual summaries of accumulated HDD's are also available from Environment Canada (see address below).

Although HDD figures do provide a reasonably accurate estimation of heating requirements, the actual amount of fuel consumed may differ slightly from the expected due to variations in windspeed and direction, humidity, radiation and individual home heating efficiency.

Using heating degree-days to determine your home's heating efficiency

The relationship between HDD's and residential gas consumption becomes quite obvious when one examines the graph for a typical heating year for Toronto (Fig. 2). This relationship may also be used by individuals to determine the heating efficiency of their dwelling on an individual basis.

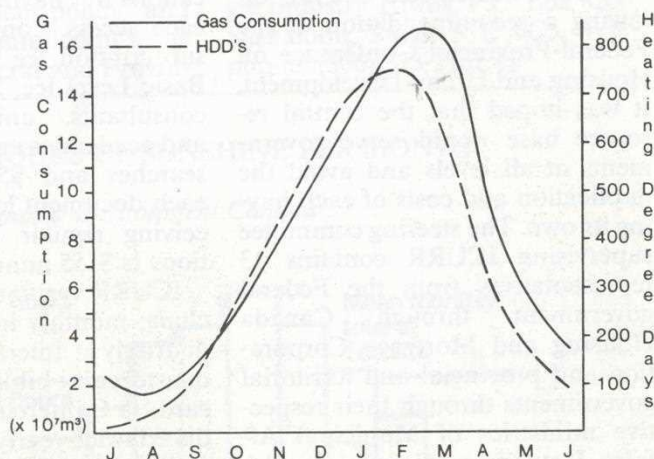


Figure 2.
Typical heating year for Toronto area

cont'd. on page 18

By dividing fuel consumption (from monthly heating bills) over a period of a week, month or year by the accumulated HDD's for the same period, the homeowner calculates how much fuel is consumed per single degree-day. This figure is referred to as the heating factor. It would be expected that this heating factor would remain constant from year to year unless conservation measures were adopted to increase heating efficiency within the home. With this in mind, we may look at Table 2 which shows examples of

Table 2.
Values for two heating seasons, before and after energy conservation measures.

Yearly Period	Total Fuel Used (from monthly heating bills)	Annual HDD	Heating Factor (Fuel Units/HDD)
(before conservation measures)			
July 1, 1979 to June 30, 1980	3510 fuel units*	÷ 4200	= .8357
(after conservation measures)			
July 1, 1980 to June 30, 1981	2925 fuel units	÷ 3800	= .7697
Difference	585	400	.0660

*Fuel units used here may be kilowatts, litres, gallons, cubic feet, etc. of fuel.

two consecutive heating seasons: one before conservation measures were adopted and one after.

The drop in HDD's from 4200 to 3800 indicates a milder winter during the 1980-81 season, while the reduction in

the heating factor between the two years reflects the conservation measures adopted in the second year.

To determine the effectiveness of these conservation measures, we can calculate how much fuel would have been consumed during the second season without these measures. (Table 3).

Table 3.
1980-81 Heating Season

	HDD		Heating Factor		Fuel Con- sumption
Assuming no conservation measures	3800	x	.8357	=	3176
With conservation measures	3800	x	.7697	=	2925
Difference = 251 units					

Therefore, 251 units of fuel were saved during the second season as a result of the increased heating efficiency within the home. If we subtract this 251 from 585 (the actual difference between fuel consumption for the two years as per Table 2), the remainder, 334, represents the number of fuel units saved due to the milder winter.

It should be mentioned here that although the number of fuel units consumed may be reduced after the implementation of conservation measures, the actual savings to the homeowner may be hidden by rising fuel costs.

The information provided above is all the homeowner needs to keep a personal record of HDD's. By maintaining a cumulative total and keeping track of fuel bills a homeowner is better able to judge his individual heating requirements and can implement conservation measures suited to his particular needs. 

ICURR USAGE INCREASING

Tanya A. Wanio, Information Co-ordinator of Intergovernmental Committee on Urban and Regional Research, (ICURR), reports that use of the data bank has been increasing since consultants have been allowed to access the services on a fee-for-services basis.

ICURR was created in 1967 following a recommendation of the Federal-Provincial Conference on Housing and Urban Development. It was hoped that the central resource base would serve governments at all levels and avoid the duplication and costs of each having its own. The steering committee supervising ICURR contains 13 representatives from the Federal government through Canada Housing and Mortgage Corporation and provincial and territorial governments through their respective ministries of Municipal Affairs, Housing or Community Affairs.

CMHC contributes almost half of operating funds with provinces

and territories contributing, on a per-capita basis, an equal amount. Municipalities can subscribe on a Comprehensive level receiving all ICURR releases and publications and having unlimited access or they may elect to subscribe on a Basic level receiving regular publications but having to pay a fee for each access. Comprehensive Level subscription fee is \$120 annually; Basic Level fee, \$65. User fees for consultants, university libraries and academics are \$25 per hour for searches and \$5 per month for each document loaned. Cost of receiving regular ICURR publications is \$155 annually.

ICURR regular publications include: monthly information cards, quarterly interaction bulletin, quarter mini-bibliographies, S.O.S. cards, a Conference Calendar produced twice yearly, annual index of summary cards, and an annual directory of Municipal Planning Directors of Canada. The secretariat is located in Toronto and declares

its mandate to be: provision of an information collection, classification and distribution system focusing on housing and building, municipal planning, municipal administration, economic and regional development, environment and transportation. Contact ICURR at 150 Eglinton Ave. E., Ste. 301, Toronto, ON M4P 1E8, Tel: (416) 973-5629. 

ROGERS' CHIPS, FLAKES and GUSTS

The "Conservatory" shopping complex being built on the Minneapolis Nicollet Mall is a victory for winter color. The builder is using a "rose pink shade." It will glow in the dark and on gray days "from gold translucent marble," according to winter city buff Barbara Flanagan, columnist for the Minneapolis Star and Tribune. 

SINGLE INDUSTRY TOWNS ASSOCIATES DROPS "THREATENED" FROM TITLE

By Joel Rieder

"Sixteen months ago desire to help provide a more secure future for Canada's 1500 one-industry resource towns culminated in a landmark event - the founding of the Canadian Association of Single Industry Towns (*until recently the Canadian Association of Threatened Single Industry Towns*). Since then, continuing threat of shut-downs, deserted streets and rusting padlocks has expanded into a wider issue: Canada's lack of a frontier development policy, and all the waste and lost opportunity that goes with it."

It's a message that is slowly beginning to seep in. People are realizing that what CASIT is fighting for will help every community in Canada - not just single industry towns.

The message that single industry towns have to be strengthened from within has been getting through to government. Last year the Hon. Flora MacDonald, then Minister of Employment and Immigration, launched the community Futures Program, which funds cost of planning diversification or relocation in communities with high unemployment.

The message continues to be spread through the newsletter "Groundswell" - an apt title considering the boom in Association memberships since May 1985. Extending from coast to coast and throughout the North, membership cuts a swath across all sectors of society.

For those members, and particularly for President Dennis Young, it has been an action-packed first year. Besides the Community Futures triumph, CASIT has made several other inroads in the field of public policy, involving the following:

- * Ontario Committee on Resource Dependent Communities
- * CEIC Advisory Council - Committee on Single Industry Towns
- * Federal-Provincial Task Force - New Financial Mechanisms
- * Standing Committee for Labour, Employment and Immigration
- * 43rd Annual Conference of Mines Ministers

To date, this comes to a total of 15 presentations right across the country, from Newfoundland to British Columbia.

A significant achievement during the course of these presentations was the ability of the Association to crystallize a seemingly endless list of problems faced by rural and remote communities into a few major ones. Mr. Young explains: "After a year of studying the crises being faced by single industry towns and resource dependent communities we have narrowed the list of major problems down to four."

1. Lack of a clearly stated "frontier development policy" and absence of any commitment to its success by the Federal and Provin-

cial Governments.

2. Lack of commitment, initiative and foresight by the people in single industry towns and resource dependent communities to save their own home towns.

3. Lots of business opportunities but few entrepreneurs to take advantage of them.

4. Communities facing a crisis have no source of independent, unbiased advice.

CASIT has also zeroed in on solutions to these four major problems. One such solution to problem four is a five-point information program developed by the Association over the past year. It includes:

- * First Stop/One Stop Clearing House Service.
- * Community Workshops: "Controlling Your Community's Future"
- * Comprehensive Data Base for Single Industry Towns.
- * Success Model for Development.
- * Resource Centre and Library for Single Industry Towns.

And this is just the beginning. Changing attitudes - convincing the rest of Canada that the frontier's single towns are worth strengthening and developing - it will take years of effort and persistence. Most of the work yet lies ahead.

Look for a full report in the next LWCA Newsletter on CASIT's First Annual Conference, held at the end of last September in Sudbury, Ontario.

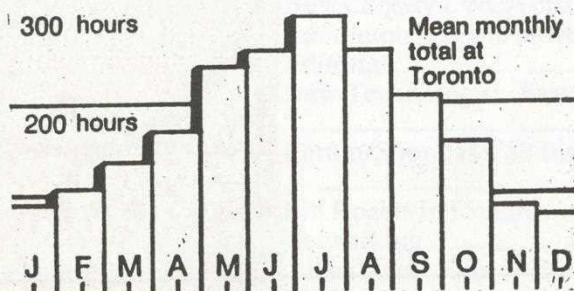
Interested persons should contact: Canadian Association of Single Industry Towns, P.O. Box 8206, Saskatoon, Sask., S7K 6C5, Telephone: (306) 373-2161. ☐

ROGERS' CHIPS, FLAKES and GUSTS HOUSES COST MORE

A recent survey of housing in the United States indicates that the nation's typical house is one story on a slab. The typical new house in our cold Twin Cities, however, has a basement and the typical house here seems to cost \$20,000 more than average. No reason is given for this, but we suspect the climate has something to do with it. ☐

HOURS OF SUNSHINE PER MONTH

Source: Environment Canada





NORWEIGIANS EXPLORING POSSIBILITIES IN GLASS

Trondheim Group for Glazed Spaces, Glassgardsruppen i Trondheim, is an association of research institutes at Norwegian Institute of Technology and architectural and engineering firms in Trondheim, involved with interdisciplinary research into all relevant fields concerning applications of glazed additions and atria. Benefits include providing usable and attractive bad-weather space, and reduced costs.

Trondheim has several such glazed buildings of various size including the large domed waterfront complex above. Some of these are experimental, constructed in conjunction with research projects.

Interested persons should contact: Prof. Oyvind Aschehoug, SINTEF Arkitektur og byggtknikk, N-7034, Trondheim - NTH. ☐

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