

The Hudson's Bay Company and AINA

North America's oldest corporation is celebrating its three hundredth anniversary throughout 1970. The Governor and Company of Adventurers of England trading into Hudson's Bay, which nowadays prefers to be referred to simply as "The Bay" has, as the map on the opposite page shows, emerged into their three hundredth year of operations with all of its original northern trading ports intact, save one.

The Bay has organized a wide variety of activities to mark its tercentennial, including the building of a full size replica of the 75-ton ketch *Nonsuch* which made, in 1668, the historic voyage to the "new world" to open western Canada to commerce, and the production of a film on the relationship of the Company and the fur trade to the development of Canada.

The Arctic Institute is especially pleased to note the occasion of the tercentennial celebrations because, as many members know, The Bay was one of a small group of private companies that provided much needed financial support to the fledgling Institute when it began operations in 1944. This support has continued annually up to the present day. The General Manager of the Hudson's Bay Company (1944-45), Mr. Philip A. Chester, was a Founder of the Institute and a member of its first Board of Governors.

Community and Regional Development in the North*

Geographers more than most, are conscious of the difficulty of defining "The North". It is an ambiguous term, depending for the layman more upon his particular viewpoint than upon scientific facts. Thus for many citizens of Winnipeg, the North may be anything beyond Selkirk! In Alberta, government officials have often regarded it as that part of the province lying north of 55°N. In Manitoba a government-sponsored survey has noted that "the boundary between northern and southern Manitoba . . . is usually considered to be the southern boundary of Census Division 16"¹ but specifically excluded the southwestern (Lake Winnipegosis) part of that division south of the 53rd parallel. "Defined in this or indeed in any other way, Northern Manitoba is not an

area of economic unity, but merely that part of the Province which is not treated by business or Government agencies as a part of Southern Manitoba"¹. So delineated, northern Manitoba takes in over three-quarters of the province.

CHARACTERISTICS SHARED WITH OTHER SECTORS OF NORTHERN CANADA

Northern Manitoba shares many characteristics with other sectors of northern Canada. It is an area of vast distances and of climatic severity. Permafrost underlies the northern half of the province, and though it is predominantly a forested landscape half of those forests are of limited commercial value. Northern Manitoba, like northern Canada generally, is an area of sparse population — in 1966 the total population of Census Division 16 was only 54,389. Indian and métis population make up a much larger relative percentage of that population than in southern Canada. Resource development within the area is notably spotty in pattern, and functions despite the combined handicaps of high relative cost of operations and of limited transportation facilities.

The problems of northern development are essentially the same regardless of the region involved, or indeed in many cases regardless of the country involved. Of these problems it is generally agreed that transportation ranks first. Transportation is the single most important key to northern development — in northern Manitoba, northern Canada, or northern U.S.S.R.

ARTIFICIALITY OF NORTHERN POLITICAL SUBDIVISIONS

The dominant four-fold division of Canada structurally and physiographically, which results in such a marked north-south natural alignment, is one of the most basic geographic facts underlying our national existence. Within the Precambrian Shield, that ancient division with which northern Manitoba is primarily concerned (though not ignoring the sedimentary deposits of the Hudson Bay Lowland), the north-south trend is of negligible significance. Essentially the glaciated, rocky, lake-strewn surface is similar over all, constituting a single landscape region.

Historically, boundaries have been extended into northern Canada, often as mere continuations of southern political units. Even where a general north-south natural alignment exists such boundaries often have complicated efficient regional development, while elsewhere, as in the Shield, their artificiality is even more evident. Consider

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the case of the Alaskan Panhandle relative to development of the northern interior of British Columbia and of the Yukon. Tungsten, the post-war mining centre, is located in the Northwest Territories but its access and service are entirely by way of the Yukon Territory. Old Crow, in the northern Yukon, is more efficiently served in the airplane era from Inuvik than from Dawson. A highway to serve the needs of the Uranium City area and the north shore of Lake Athabasca, has been long discussed and universally supported, to be often delayed by complications arising from the artificial division of a regional unity by three different provincial and territorial governments. At Flin Flon the provincial boundary even divides the ore body.

Too often northern development has been handicapped by a rigidity in concept and regulations. Too often the North is regarded as a featureless area to be partitioned amongst the conflicting interests of southern provinces and urban centres. Too often the development of the North is approached only through further extension of the artificial political boundaries of the past.

THE REGIONAL APPROACH TO NORTHERN DEVELOPMENT

The regional approach to northern development provides the best alternative to the political and administrative rigidity of the past. "Region" also can be a vague term, since there are numerous criteria on which it can be based. In regional planning today however the one essential element is space. Regional development, as distinct from natural resources development, consists of a complex of multiple resources and human characteristics viewed in its spatial content. Though regional planning in Canada to date may have been focused on development of the physical resources,² the human element is being recognized increasingly as an essential ingredient.

Very appreciable development has occurred in northern Canada over the years, as the business community is quick to point out. Many critics reply that "development" in the past frequently has been synonymous with "exploitation," for the benefit of southern urban centres and southern political units. The North, from an economic point of view, represents a colonial area. On the other hand it must be acknowledged that past development represents a heavy financial investment by southern shareholders and taxpayers and that a profitable dollar return is expected by them.

We hope we are reaching a point where

larger perspectives are coming to prevail in our policies, particularly in the North. We need to foster variety in our Canadian regionalism to enrich the total fabric, rather than silently acquiesce in the increasing standardization which marks our age. The North is often cited as a most distinctive element in the Canadian character. We should strive to preserve the desirable aspects of its nature in the process of development rather than to impose on it blindly the same stamp that we have used in southern Canada. The North will always have more disadvantages than the South generally, insofar as development is concerned. For these very reasons it needs the greatest flexibility and imagination in tackling its development. Such concepts as the Mid-Canada Development Corridor, focusing essentially upon an east-west orientation within the Subarctic, run contrary to the "natural grain" of the nation, to its traditional political boundaries and to traditional northern transportation lines. Yet they serve a valuable purpose if they force us to re-evaluate the northern situation and contribute to improved conditions in the North.

COMMUNITY DEVELOPMENT IN THE NORTH

Community development in the North is inextricably linked with northern regional development policies. In its simplest form two phases of community development can be distinguished, the "camp" phase and the "planned community" phase. The camp phase saw the establishment of an ephemeral community, dominantly male and European in composition. The mine camp has been the classic example, though other resource-based centres have been similar. Together with the "trading posts", these have until recently formed the traditional northern settlements.

Planned communities are essentially a development in the North since World War II. They are a reflection of two things — the wish to attract a larger percentage of married workers to northern communities in order to encourage a more stable labour force, and the longer life expectancy of these newer communities. This latter condition in turn reflects a change in resource development. Very large deposits of industrial minerals, such as iron in Labrador-Ungava, nickel in northern Manitoba, and lead-zinc in the Territories, have displaced the traditional precious minerals in northern search and development. Similarly there is increasing recognition of responsibility to crop renewable northern resources such as forests, rather than mine them, with associated

greater stability for the communities on them.

The new planned communities which have developed in the North are modern, comfortable, and essentially little different from suburban districts of southern cities. Do we gain or lose in this very similarity? There has been surprisingly little debate over the relative merits of reproducing in a northern setting the familiar features of modern southern suburbia versus the innovatory introduction of a northern architecture combining the functional and the attractive. It has been assumed that the first-mentioned pattern is the kind desired by the northern resident. Does not this assumption also aggravate the common attitude of "banishment" held by many short-term residents in the North, perpetuating the "colonial" mentality? To make believe that the northern community is the same as the southern community does nothing to foster pride in the permanent northern resident, and really does not fool the displaced southerner. There have been a few imaginative architects calling for some more suitable northern community developments but they have been both literally and figuratively, "voices in the wilderness".

FUNDAMENTAL COMMUNITY DEVELOPMENT PROBLEMS

It seems to me that there are three fundamental problems confronting community development in the North: development of a northern flavour and design; the place of the native peoples in the communities; and the overall pattern of distribution of major northern centres.

Up to this point we really have not developed any distinctive northern architecture in Canada, save perhaps the presence of piling construction and utilidors. Even the most enthusiastic engineer would scarcely label these as things of beauty, though they are functional. The Swedish architect, Ralph Erskine,³ has pointed out that our past building concepts have been derived from our imitation of winter rain-dwellers as contrasted with our needs as snow-dwellers. We are really fire huddlers rather than snow enjoyers, which latter is even more desirable now that labour is increasingly inside, in contrast to the original outdoor human activity in the North. While the summer sun may be avoided in the hot south, it is generally welcomed by the northerner all the more for the shortness of the season. Why then do we not reflect distinctive northern character in our community development? How few of our architects and planners have appreciated that "the grammar of successful

building in the North will be composed from close observation of all these elements: ground forms and their influence on local wind and temperature patterns, critical angles of sunlight, typical behaviour of drifting snow. Not only do they offer clues to the best shapes and spacing of buildings on the site, they also point to the fittest design of many building and site details"³.

Perhaps a breakthrough may be achieved in the new town of Churchill Falls at present under construction. "A fresh approach was sought in designing the Churchill Falls facilities that would take into account the experience of earlier northern communities, offset as much as possible the inherent disadvantages of climate and geographic isolation, and make the new community attractive enough that people will want not only to come but to stay"⁴. To this end the community will be all-electric, will have garages close to the streets to minimize snow removal, and will seek to ensure privacy in smaller centres by building on one side of the street only, etc. At least it represents movement in the direction of more suitable communities for a northern setting.

A second fundamental problem for northern community development concerns the place of the Indian and métis peoples. In the past the slight attention it received was understandable, if not excusable, in that these people were usually away from the settlements most of the time, hunting, fishing and trapping. The old way of life has been destroyed however and the native peoples have concentrated increasingly in the settlements, all too often to find themselves relegated to the lowest social stratum⁵. Some postwar planned communities in the North have sought to provide for a native presence (e.g. Inuvik), others (e.g. Uranium City) have not, but none really has solved the problem.

Education is increasingly available to the young native people in the North as well as to European children. Only now are we reaching a point where increasing numbers of Indians and métis are available with varying amounts of educational and vocational skills. These next few years will be particularly critical ones for the northern communities as these young people seek employment and social acceptance amongst the Europeans. There is a responsibility and a challenge to include the native residents as full partners in the communities and in northern development. Properly handled it can help reduce northern labour costs of imported workers from "outside" and strengthen the regional character of the North mentioned previously. Improperly

handled it can saddle the northern communities with a permanent social and financial liability.

Finally, it must be understood that northern communities, no less than communities elsewhere in Canada, find themselves in a rapidly changing world. No longer can they mark the passing years by the arrival of the annual or semi-annual supply boat or mail run. Aircraft, radio telephone, and even taped television programs are symbolic of the degree to which change has come to the North as well, and are increasingly taken for granted by northerners. There is a comparable change in the need for northern communities. Some of these, while useful in fur trade days have become as redundant as the small elevator hamlets along the railways on the Prairies. Like them it may be better for the long-term opportunities of the residents, to encourage a migration to larger centres within the North—though this is conceded to be a delicate and difficult task.

There will always have to be communities in the North, but these probably will be fewer and larger centres, better situated to meet the transportation and development needs of the present and future. It is only in larger centres that the costly and permanent service facilities now expected by all Canadians can be justified. Quite possibly smaller "camps" of relatively short life expectancy may operate out from one major centre, with a variety of commuting developed between them, as was the case for example between Yellowknife and Discovery.

With the increasing capital outlay involved in establishing a modern community in the North, it clearly will be more and more difficult to abandon or relocate it in later years. To an unprecedented degree northern communities now represent long-term commitments in the area, involving very large capital investment. Only a thorough, balanced assessment of the regional potential can provide the necessary background for such vital decisions. Community and region always have been inseparably linked in northern development, but never more critically than at present.

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Frictional Resistance to a Ship's Passage through Converging Ice

It is well known that an icebreaker which can normally navigate through several feet of ice can be brought to a halt in much thinner ice if that ice is converging. From some recent measurements it is now possible to estimate the pressure developed in a converging ice field and to calculate the resulting frictional resistance which would be encountered by a ship attempting to navigate through such ice.

WIND STRESS

In many areas of drifting ice the principal driving force is provided by the wind. The wind stress may be represented by

$$\tau = \rho C_{10} V^2$$

where ρ is the density of the air ($\approx 1.2 \times 10^{-3}$ gm./cm.³) and V is the mean wind speed at 10 m. height. Until very recently we have not been in a position to calculate this force because the drag coefficient C_{10} of wind on ice was not known. In the spring of 1969, during the McGill University Ice Drift Study, a three-component sonic anemometer was used to measure a drag coefficient¹

$$C_{10} = 2.6 \times 10^{-3}$$

over very loose and relatively rough pack ice in the Gulf of St. Lawrence. A repetition of this measurement during the 1970 Ice Drift Study² gave a value of 1.3×10^{-3} over a much smoother continuous ice field.

Suppose a uniform ice pack is acted on by a uniform wind V and is restrained by a shoeteine from moving at the downwind end; then the wind stress must be balanced by an equal and opposing force or "internal ice stress" and any ice floe or other object in the ice field must be under pressure from the neighbouring floes. This pressure must increase linearly with the fetch F from the upwind edge of the ice field to the point of measurement. Suppose the wind is $V = 20$ m./s. and the fetch is 20 km., then for pack ice if $C_{10} = 2.6 \times 10^{-3}$ the pressure in the ice field is