

While a start has been made in outlining the distribution of obsidian groups on archaeological sites in northwestern Alaska, considerable work needs to be done. One major direction to be taken is an intensive field examination and collection of obsidian samples for analysis. Secondly, we will continue to analyse specimens in our Michigan laboratory, with the express purpose of defining obsidian groups more exactly on the basis of the 12 elements currently being examined. The Na Mn groups have been corroborated by the study of these other elements both in the Near East and North America. In a sense, then, this is a plea for cooperation from both archaeologists and geologists whose research interests lie in this area. Both may benefit from these types of analyses.

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Rocher River, Northwest Territories

INTRODUCTION

Small towns in the United States and Southern Canada have witnessed a significant decline in recent years. People have been attracted to larger centres for a variety of reasons, e.g. employment, increased number of services. In technical terms, the small settlements are undergoing a negative balance in the accrual of economic and human resources; to wit: they are not viable.

Small settlements in northern Canada are also meeting difficulty in surviving. An example of the problems facing one small northern settlement, Rocher River, Northwest Territories, will be described here.

THE REGION

During the past year, I investigated the economic potentialities of the settlements of the Great Slave Lake region, particularly the "South Mackenzie" area, which includes the settlements of Hay River, Fort Smith, Pine Point, Fort Resolution, Fort Providence, and Rocher River.

The settlements are highly varied economically. Hay River (1966 population: 2002) has a diversified economic base: transportation-communication hub, centre for the lake's fishing industry, and an active centre for the construction industry. Fort Smith (population: 2120) is a government dominated town; it is the north's centre for the Department of Indian Affairs and Northern Development (D.I.A.N.D.), and a regional centre for the Government of The Northwest Territories. Pine Point (population: 459) is the centre for a recently developed lead-zinc mine; it is at present the prime producer of mineral wealth in N.W.T. Fort Resolution (population: 677) and Fort Providence (population: 378) are Indian settlements whose primary sources of income derive from trapping, government employment, and social assistance. Rocher River (population c. 38) is a small trapping

centre, about 10 miles south of Great Slave Lake at 61°24'N., 112°45'W.

THE SETTLEMENT

After the local school burned down in 1958, the population of Rocher River began to decline (the 1956 population was 130). The children then had to attend school at the nearest settlement, Fort Resolution, which is 60 miles away. The parents, wishing to be with their children, also moved to Fort Resolution. Other factors, too, induced people to leave the settlement. In 1963, the Hudson's Bay Company store closed down, leaving only one trading store open. Furthermore, new houses were being built for Treaty Indians in Fort Resolution; these houses were far superior in quality to those in Rocher River. Social assistance as well was more readily available in Fort Resolution. The total amount of social assistance given to Treaty Indians in the entire South Mackenzie region in the fiscal year 1961-62 was \$40,309. In 1967-68, the amount had increased to \$146,292, with Fort Resolution Treaty Indians receiving \$33,744 of that sum. The increased social assistance was in part due to the changing attitude of the federal government. (Indian Affairs was responsible for Treaty Indians until 1966 when the new D.I.A.N.D. Northern Administration Branch took over control.)

The upshot of these events was that by early 1968 Rocher River appeared to be an all but dead trapping centre, and today only a few families (none with school-age children) live there.

FUTURE ALTERNATIVES

By mid-1968, the settlement appeared to have a possible chance to develop. The only remaining store in Rocher River was purchased by a Hay River businessman, who has long-term development plans for the settlement. In particular, he would like to develop the basic natural resource industries in the area with commercial fishing and an expanded hunting and trapping centre. The Great Slave Lake has been a good lake for commercial fishing since the industry was introduced in 1949. The Rocher River area is excellent for hunting and trapping. As well, soil conditions and climate are conducive to the development of garden agriculture. Finally, since it is estimated that about 30 to 40 families could move into the settlement, this would considerably reduce the economic pressures on Fort Resolution, which suffers from chronic underemployment and unemployment.

In order to develop the resource base at Rocher River, a number of factors will have

to be taken into account. People will have to be induced to leave Fort Resolution and move to Rocher River. To enable families with school-age children to move, a school will first have to be provided. Also, the houses in Rocher River (many of which are abandoned) are seriously dilapidated; new housing will have to be developed. Concomitantly, some consideration will have to be given to sanitation facilities if the population increases. At present, only a winter road (built in April 1968) connects Rocher River with the other Great Slave Lake settlements. (There is, of course, lake transportation in the summer.) Thus road improvement plus a landing strip may well have to be considered. Since only one radio-telephone at present exists in the settlement, communications would also have to be improved. Other costs might be involved at a later date, e.g. construction of a power plant.

By the end of 1968, the Territorial Council had recommended the erection of a school at Rocher River. However, the Federal Government has not yet given its approval for the school.

The Federal Government must consider at least four factors before it can approve the school, and thus encourage the possible development of Rocher River. First, how many natives would want to move from Fort Resolution to Rocher River? This could be a difficult question, for in another Great Slave Lake settlement, Fort Rae, the Federal Government spent over \$150,000 in 1967 towards the development of a new town site a few miles away; but since then it has had to postpone the project, because the Fort Rae Indians have had second thoughts about moving. A Territorial Government survey conducted in August 1968 in Fort Resolution indicated that 59 people (13 families with 27 children — 14 of school age) would be willing to move to Rocher River. It is interesting to note that only 2 of these families are Treaty Indian (Treaty Indians in Fort Resolution generally have good houses) and the other 11 families are Non-Treaty or Métis (these people in general have poor housing in Fort Resolution). Also, some of the family heads indicated that they might not move if jobs were available in Fort Resolution. (When the survey was taken, the local sawmill was not operating, but was expected to start again fairly soon.) Thus, the actual number of people desiring to move remains in doubt.

A second consideration for the Federal Government is whether or not it is wise to establish a small school. One teacher for six or eight grades may not provide the quality of education desired by the Education De-

partment, especially when a good school exists nearby (i.e., Fort Resolution).

A third consideration is that the settlement may not survive economically. Fish and especially fur prices may not be sufficient to induce the native people to continue in these occupations. The trapping industry has already witnessed a decline in the area in recent years. My own survey in Fort Resolution indicated that only 5 men spent a significant amount of their time trapping.

The fourth consideration is that the money spent on developing Rocher River could be better spent elsewhere. For instance, two trappers now use skidoos to go from Fort Resolution to their trap lines in the Rocher River area. In this way they and their families are able to spend most of their time in Fort Resolution. Technological advances, therefore, may make the settlement of Rocher River unnecessary for trappers. Also, expanded development of small industries in Fort Resolution (e.g. the sawmill mentioned previously) as well as increased opportunities elsewhere in the region (e.g. the expansion of the vocational training program recently started in Fort Smith), may prove to be better investments in the long run.

In sum, the decision whether or not to establish a school at Rocher River will do much to determine the future of the settlement, and also the pattern of resource development in the area.

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Devon Island Programs, 1968

INTRODUCTION

Four field parties, studying glaciology, botany and ornithology, used the Arctic Institute's facilities on Devon Island during the summer of 1968. The botanical and ornithological studies were carried out from the Base Camp near Cape Sparbo, while the glaciological work was pursued from field camps on the ice cap and the Sverdrup Glacier.

The first party arrived at the Base Camp on 7 June. The glaciology parties reached the ice cap by three Otter aircraft trips on 15 June after a delay caused by poor flying conditions. The last personnel were evacuated from the Base Camp and the ice cap on 2 September to C.C.G.S. *John A. Macdonald*.

Local transportation on the Base Camp lowland area was provided by a Ranger V vehicle and on the ice cap by a Polaris motor toboggan.

The 1968 Devon Island program was assisted by valuable support from the Polar Continental Shelf Project and the Inland Waters Branch, Department of Energy, Mines and Resources; the Department of Indian Affairs and Northern Development; the Canadian Wildlife Service; the Canadian Department of Transport; the Institute of Polar Studies, the Ohio State University; McGill University; and the University of British Columbia. Financial assistance was also provided by Nordair Limited and J. Pascal Hardware, Limited.

GLACIOLOGY

An ice cap will change its areal form and thickness in response to a variety of influences. The causes of the changes and the manner in which the changes take place were the subjects of study during the summer of 1968 on the Devon Island ice cap. A group from McGill University studied glacial climatology and a team from the Ohio State University began ice-movement studies.

The weather was generally excellent. Nearly every day was clear and cool; only two severe blizzards and a few foggy days interrupted work. Travel on the ice cap was by one motor toboggan supplemented by man-hauling. Soft snow conditions were encountered for only one week at lower elevations. The "Ice Cap Station" huts, last used in 1963, are now floored with 30 cm. of ice. They were used for storage, and the parties lived in tents.

The ice movement study, started this year, seeks to relate changes in the form of the ice cap to the theories of ice movement and to mass balance considerations. The ice flow changes are most simply determined by two or more elevation and horizontal position surveys of markers situated in the ice surface. Whereas lateral position is comparatively easy to determine, precise elevation by standard surveying techniques is difficult to obtain on ice caps because of extreme vertical light refraction. Outlined below is the precise and much less arduous method of determining elevation change used in this program.

In general, the acceleration due to gravity