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Expedition, Labrador, 1950 :  
preliminary report

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By  
Pierre Gadbois  
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DEPARTMENT OF MINES AND TECHNICAL SURVEYS  
GEOGRAPHICAL BRANCH

PROGRAMME OF RESEARCH ON CANADIAN GEOGRAPHY

THE MEALY MOUNTAINS EXPEDITION

Labrador, 1950

PRELIMINARY REPORT

by

Pierre Gadbois

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1951

## CHAPTER 1

### ORGANIZATION

Origin of Project -- Object and  
Scope -- Area -- Personnel --  
Report -- Transportation -- Food  
and Equipment.

#### Origin of Project

Early in 1950, I mentioned to Dr. J. W. Watson that I would be very interested in going to the heart of Labrador in order to make a geographical study of the iron mining district. The Director of the Geographical Branch was very interested in this project and assured me that he would do his utmost to send me there. However, it turned out that, for lack of adequate transportation and because of the high cost of such an enterprise, the project could not be approved for the current fiscal year and it had to be dropped for the time being.

It was then that I was informed of an alternate project that we shall, from now on, refer to as "The Mealy Mountains Expedition". The Defence Research Board had requested that a party of geographers be sent in the southwestern Lake Melville area in order to study certain problems, physical and ecological, which would become part of a key to the interpretation of aerial photographs. I accepted the responsibility of this field trip with a certain apprehension. Such a late change in plans meant not only that we had to abandon all the preparations already made for the first project, but also that we would barely have time to prepare the second one.

#### Object and Scope

The primary object of the Mealy Mountains Expedition was to under-

take the preparation in the field of ground keys for air photo interpretation. It was in fact the undertaking of the same kind of study as that which had been carried out during the previous summer by Harry Lash and Norman Drummond in the Romaine River area. The secondary object of this party was to conduct a geographical reconnaissance of the Mealy Mountains area.

The scope of the work was defined as being limited to those aspects of physical geography and of ecology which could be determined on vertical photographs; in other words, we were to establish the relationship existing between ground features and their appearance on aerial photographs. However, due to difficulties we had in obtaining a complete photographic coverage of the area, the scope of our work had to be altered. Accordingly, Dr. Watson instructed me, in his letter of the 12th of July, that he expected from our expedition "a general physical ecological account of the region, supplemented by detailed studies of particular areas ...".

#### Area

The area in which our party was to work consisted of the land south of Lake Melville, to the crest of the Mealy Mountains. However, it was mentioned that the limitations of the summer's field season would not permit intensive study of the entire area. It was suggested, therefore, that detailed studies should be conducted around the streams and rivers providing water transport south from Lake Melville and that overland traverses between parallel streams should be undertaken wherever feasible.

#### Personnel

The party was conducted by myself with the assistance of I.A. McKay. We were both graduate students at McGill University at that time. The physical aspect of the study was to be covered by myself and the ecological

angle was Mr. McKay's responsibility. He had acquired experience in this field by assisting Harry Lash and Norman Drummond in the preparation of their report on the Romaine River project already mentioned.

We had the help of two Indian guides -- one from Sept-Iles, P.Q., and the other hired at Northwest River.

### Report

The party chief was to be responsible for submitting periodical reports from the field and the final project report to the Geographical Branch.

### Transportation

Air transportation to and from Goose Bay, Labrador, was provided through the facilities of the Royal Canadian Air Force. From there on, we were to travel by means of two eighteen foot "Prospector" type canoes propelled by one ten-horsepower outboard motor.

### Food and Equipment

The question of equipment is discussed at length in the Appendix "A", so I shall not discuss it here. However, there are a few items which I would like to mention because they could be of assistance in the preparation of future field trips.

The first item concerns the use of pressure cookers in the field. It is my opinion that parties going into the wilderness should carry a minimum of weight and that each article should be absolutely necessary. However, it appears at first that a pressure cooker is neither light nor is it a necessity since all cooking could be done in the more conservative and lighter pots and pans. Despite these arguments, I brought one in the field, this summer and it enabled me to draw the following conclusions: A pressure cooker is a heavy piece of equipment but it is a necessity to all

field parties. To qualify this statement, it should be mentioned that a pressure cooker saves more than half the time usually employed at the preparation of meals when such time can be used to better advantage elsewhere. Furthermore, this kind of cooking saves much fuel which, over a period of a few months, might amount to a far greater weight than that of the cooker itself.

Another point on equipment is that field personnel should be provided with waterproof covers for all valuable equipment, such as sextants or transits, cameras and film, etc. It must be remembered that only one rainfall over a leaky tent is sufficient to damage such equipment and thus possibly impair the results of a whole summer in the field.

The following is a ration scale that I prepared for this party. It was calculated in ounces per day per man:

Bacon (slab)	1.9 oz.	Meat (or Fish)	4.0 oz.
Beans (baked)	1.0	Milk (dehydrated)	1.8
Butter	1.6	Rice	1.0
Candy (hard)	0.5	Rum	1.0
Cheese	0.7	Salt	0.5
Chocolate bars	0.5	Shortening	0.3
Cocoa	0.2	Spices	0.1
Coffee	1.0	Sugar	3.5
Eggs (powdered)	0.5	Tea	1.1
Flour	2.4	Tea biscuits	1.0
Fruit (dehydrated)	1.8	Vegetables (deh.)	0.5
Hardtack	0.5	Macaroni	0.3

To this list should be added soups and desserts and other items to suit the particular needs of the party. The ration scale is but a rough basis from which can be planned the actual food list, after taking into consideration the particular needs of the party concerned. In our case, this scale was altered to suit our needs and it was found very satisfactory.

## CHAPTER 2

### FIELD WORK

Area actually covered -- Field  
methods -- Chronological Report --  
Scientific Report.

#### Area Actually Covered

The area covered by our party this summer, was much smaller than we had planned; the reader will find the reasons in the Appendix "A" attached to this report. It was calculated that the distance covered was in the order of two hundred canoe miles.

The visited areas were:

1. Goose Bay proper
2. Terrington Basin
3. The west shore of Lake Melville, from Goose Bay to Northwest River.
4. The Northwest River, Little Lake and about 2 miles on Grand Lake.
5. The Hamilton River to Muskrat Falls
6. Approximately 24 miles up the Kenamu River.
7. Carter Basin and approximately 30 miles up the Kenemich River.

We made six traverses altogether; two of them were overnight ones and the others were short, averaging 3 to 4 miles on both sides of the Kenamu and the Kenemich rivers. No straight line traverses were made because the forest was usually so dense that such a method was not possible.

The distance travelled on foot cannot be calculated because there are no aerial photographs available on the area of the Mealy Mountains where we were. I would give the figure of twenty miles as a very rough approximation. It was estimated that we went as far as Latitude 53 22'N., Longitude 59 32'W., on the mountains.

To sum up, our work consisted for the most part, of a study of the land on either side of the Kenamu and Kenenich rivers inland to approximately one mile, though in some regions this was extended to enable a study of some region which looked more interesting on the aerial photographs. However, the last few miles were traversed on foot from approximately 53 19'N., 59 41'W., to 53 22'N., 59 32'W., which was the position of our last campsite.

The main part of the trip, as mentioned above, was given first importance. However, a trip was made to Muskrat Falls, about 16 miles up the Hamilton river, to try out equipment. During this trip photos were taken of the river bank vegetation and physiography. The falls were also photographed and notice was taken of the bedrock outcrops on the south shore of the river, at this point.

Another trip was made to Northwest River for supplies before the main trip was undertaken. During this overnight stay certain things were noticed which we decided should be studied more closely if we had the chance later on. This was accomplished on our return from the mountains and it entailed an afternoon trip into Little Lake, and through the Narrows into Grand Lake for a mile or so.

#### Field Methods

(a) Physiography. As we have already seen, the object of the expedition was to undertake the preparation of ground keys for air-photo interpretation. The work was to be divided in two separate studies, one on the physiography and the other on the ecology of the region. The first of these topics was entrusted to me and the method to be used was left to my discretion.

My plans were to spend considerable time at the stereoscopic study

of the aerial photographs of the area in order to find, before leaving for the field, most of the physiographic problems to be investigated. The use of a map showing the exact locations of these problems would have helped greatly the actual planning of our itinerary, allowing us to divide our time according to the relative importance of each region to the final study. In the field, the work would have consisted chiefly in the identification of such areas that could not be defined positively from the aerial photographs. However, it was not possible for us to use this system because of the inavailability of aerial photographs before our departure for the field. Our itinerary was necessarily planned at random for lack of adequate information and our system had to be reversed; instead of correlating from photograph to ground, we had to note the ground formations as they came and wait until we got the photographs to find out whether or not they offered any difficulty of interpretation. This method provided no means of knowing in advance where the problems were to be found and it proved to be most time consuming.

A means had to be devised in order to enable us to refer to any given point of an aerial photograph with speed and accuracy so that notes taken in the field could be easily located without having to identify them by writing directly on the prints. A grid system that I had devised was used and was found to be very effective; a square grid of  $\frac{1}{4}$  inch or  $\frac{1}{2}$  inch is drawn upon a piece of celluloid or any other transparent material (during the summer we used a  $\frac{1}{2}$  inch grid because it allows a clearer vision of the underlying photograph). The squares are then identified by consecutive numbers drawn along any ordinate, from top to bottom, and along any abscissa, from left to right. It is advisable to write the numbers along the left and bottom edges of the sheet as it allows better vision of the photograph.

The grid numbers then appear as follows:

01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
	02	03	04	05	06	07	08	09	10

The next step is to cover the grid with another sheet of celluloid, so as to prevent the lines and numbers to wear off, and to bind the two together (Scotch tape was found suitable for that purpose). The grid sheet is used by placing it over the photograph and by reading the ordinate number first and the abscissa number second; thus, point o in the given example should be read as coordinate 0507. When a reading is taken, one must make sure that the outer line of the grid is in perfect register with the border of the picture itself, and not that of the white margin often seen on aerial photographs. When field notes refer to a particular aerial photograph, care must be taken to identify the said photograph properly: the air-strip or serial number is mentioned first and is followed by the picture's number itself (usually separated from the first by a hyphen) and finally, the coordinate referred to. For example, the point 11-08 of the 54th picture taken on flight-line 5317 would be indicated as A.P. 5317-54, 11-08.

It should be mentioned at this point that the celluloid sheets used in the field were not wide enough to cover a full photograph and therefore, we had to devise a way which a narrower grid sheet could be used. For any point not covered by the grid sheet, we had to turn the photograph up-side down and thus bring the original right hand side under the checkered sheet. This necessitated a change in the record numbers and we simply added u/u

or u/d, for up-side up, and up-side down, to the original identification code. Therefore, A.P. 5317-54 u/d 11-08 means that, in order to find the coordinate 11-08, the photograph has to be turned up-side down before placing the grid sheet over it.

(b) Ecology. The same procedure had to be adhered to for the study of the vegetation made by I.A. McKay. He was able to collect enough information on the ground to differentiate between the following vegetation patterns as seen on aerial photographs:

1. Shore vegetation
2. Muskeg
3. Coniferous forest
4. Coniferous and deciduous mixed forest.
5. Bare rock (vegetation)
6. Mountain top vegetation
7. Close lichen woodland
8. Open lichen woodland
9. River bank vegetation

In order to make our study more comprehensive, both Ian McKay and myself took numerous photographs of everything which seemed significant or typical. This was found often difficult if not impossible because of the great density and height of many parts of the forests investigated. My own photographs are listed and identified in Appendix "B", attached to this report; McKay's photographs were recorded in the last thirty-one pages of his own preliminary report.

### Chronological Report

Because of the various circumstances that are fully explained in the Appendix "A" of this report, our field work was delayed during a period of one month while we were in Goose Bay, Labrador. We were not equipped to leave the R.C.A.F. station during that time, except for a short trip to the Muskrat Falls on the Hamilton River, and consequently this report will include only the time actually spent in the field.

After being subjected to forced idleness during nearly a month, we had finally received most of our equipment by July 7th and were ready to leave. The previous night, I had badly sprained my left ankle and even though the doctor had recommended two or three days of complete inactivity, I decided to leave while the weather was nice, and to rest at our first camp.

We had purchased all our field provisions in Northwest River, the previous week, and we also had taken an Indian guide back with us. His name was Jules Senebest Bastien, the son of Douglas Best, one of H.G. Watkins' guides on his trip up the Kenamu River in August 1928. The fact that I had selected an Indian gave rise to quite a controversy between my assistant Ian McKay and myself. His contentions being that a white Labrador native would be much more suitable for this kind of work, as he could be of greater assistance in the field, and because of his knowledge of English. However, I had already hired another Indian from Seven Islands to whom I had promised a congenial companion for the summer, but I am now thoroughly convinced that the choice of two white Labrador natives would have been much better since they know these parts of the country thoroughly and they are much more intelligent than the Indians. Andrew Brown of the National Geographic Society mentioned to me on his return from Grand Falls on the Hamilton River, that he was very satisfied with his native guide John Montague. At any rate, our party of four included two Indians and we were to find out only later how useful they would be to us.

Most of the station's trucks were occupied at unloading a ship on this Friday morning, and we were consequently not able to get transportation to the dock until eleven o'clock. As soon as our gear and supplies were aboard the trim 82-h.p. R.C.A.F. crashboat that we had hired for the

occasion, we were carried speedily to our starting point at the mouth of the Kenamu River. It was two o'clock when we started to unload our equipment on a sand-bar used as a summer camp by the local fishermen. We went five or six miles up the river and pitched camp on a small sandy island near the left bank, at approximate latitude  $53^{\circ} 24' 30'' \text{N}$ . The rest of the day was spent travelling back and forth between the camp and the sand-bar, until all our equipment and provisions were transferred. The channel downstream from our little island was very shallow and the motor could not be used at all times; for that reason our load had to be very small on each trip. However, the days were still long and it was possible for us to work until midnight and complete the job.

The party was at a standstill during Saturday and Sunday, because of my injured foot. The first day was clear and warm, with a height of  $80^{\circ} \text{F}$  at noon. In the afternoon I went downstream for a short reconnaissance from which resulted the following observations: the Kenamu is a slow flowing river with a rather straight course from south to north; it is slow relatively to other streams having their source in the Mealy Mountains. This relative tranquillity and the fact that the river deposits its alluvium five or six miles upstream suggest that it has attained a certain degree of grade equilibrium in its lower course at least. Another argument in favour of this hypothesis is that the corrasive power of the river seemed to be much more effective laterally than vertically.

On Sunday morning, McKay and the two Indians reported that at midnight they had seen a rather dim light, something like a greenish glow, moving along the edge of the forest above the trees. It appeared to be some kind of phosphorescent gases floating in the air.

Many tracks of bears were found around camp in the morning and we

thought it advisable not to cache anything but gasoline at this particular place. The first rapids were only one mile upstream where it was not possible to portage our heavy canoes through the thick forest and cutting a path would have taken too much time and energy, so we contemplated the possibility of crossing the small stretch of land separating us from the Kenemich River and reach the Mealy Mountains that way. We were assured by the Indians that the mountains could be reached in less than a week.

In accordance with these plans, on Monday, McKay and a guide made a cache at the portage track located at the eastern tip of the great bend of the river which is easily recognized on any map of the area. During that time, I went downstream with the other guide and we made a cache of gasoline and oil at McLean's Point, at the northeastern extremity of Carter Basin. It was raining all morning and we were not able to start until noon when the sky cleared.

When we reached camp after making our cache, Ian McKay reported that a traverse across the portage route would not be practicable with our big canoes because the track was too narrow. We decided then that we should travel upstream on the Kenamu, as far as we could go and make lateral traverses on the way down. After that, we were to go up the Kenemich River by way of Carter Basin and follow its course to the mountains.

These new plans compelled us to travel light, in order to be able to pole our way through the rapids. So, after deciding that this part of the trip would not take more than ten days, we sorted enough supplies and made enough bannocks for that period of time. By noon on Tuesday, we were on our way and in five hours we travelled a distance of sixteen or seventeen miles to the first important rapids beyond which it was impossible for us to go unless we had abandoned the canoes and walked. Our time was too limited to do so, therefore we were to begin our lateral traverses at this

point.

It was five o'clock when we reached the rapids under a threatening sky. Our camp was pitched on a small alluvial island (A.P. 551-51), just before a thunderstorm. It was found, to our great concern that our Mount Logan tents were not waterproof.

The rain fell all through the night and stopped around ten o'clock on Wednesday morning. One hour later we were starting on a traverse along a small stream located nearly one mile below the rapids (A.P. 5310-51 u/u 11-03). We walked all afternoon without finding much information that could not have been identified from the aerial photographs. Along the streams and the riverbanks, willows were growing in abundance on a marshy soil. Away from the stream, the flat areas were covered with a thick forest of black spruce, birch, poplar and alder. On more elevated ground some balsam trees could be observed with the ever dominant black spruce and there were some stretches of lichen woodland; their extent was however very limited and they could not be identified on the aerial photographs. The most common ground cover consisted mainly of peat moss. Thursday's traverse was on the opposite side of the river, along another small stream (A.P. 5310-50 u/d 12-07 to 10-09). The same conditions as were noted before prevailed everywhere. The vegetation was rooted in a thin top-soil, mostly humus, over hard sand. The stream was deeply entrenched as can be expected in such unconsolidated material but at no time was it possible to see the underlying rock.

Friday morning was rainy and the weather cleared around eleven o'clock. We prepared for an overnight traverse that would allow us to investigate certain whitish spots seen on the aerial photographs and which suggested Cladonia-type vegetation. The journey began at the site of an old Indian camp (5310-49 u/d 04-01) on the left bank of the river. The

first spot to investigate (05-05) was reached in one hour and it turned out to be a muskeg at a height of 210 feet above our campsite. The soil cover consisted mostly of various herbaceous plants and peat moss. There were no trees but some scattered shrubs of spruce one to two feet in height.

Coming up the Kenamu River on Tuesday, we had seen huge columns of smoke rising from this approximate area, so we decided to investigate the extent of the fire presently. We walked right through the burned forest which was not very extensive (A.P. 5310-49 u/d 04-05, -06,07,-08, -09,-10,05-05,-11,06-05,06-07, -08,-09,-10). The extent was limited by the marshes and muskegs from which the fire shied away. Apparently, the conflagration was caused by lightning setting fire to dried lichen vegetation. All ground cover was burned to the roots but most of the trees stood up. Where the fire was most violent, the tree branches were completely burned, but everywhere else the spruce needles, although burned, remained on the branches and gave to the woods a light brown colour like that of autumn in a deciduous forest.

At seven o'clock it started to rain heavily and we sought shelter in our waterproof sleeping bags. The Indians had only a blanket to share between them, so they used birch bark both as ground protection and cover against the rain. None of us had much sleep because of the black flies. We got up at five o'clock, on Saturday morning and dried our clothes and sleeping bags over a campfire. McKay and myself went about taking photographs and vegetation spot-readings before starting back to base-camp where we arrived in the early afternoon. We took the rest of the afternoon to pick up on our much needed sleep. It rained heavily through the night, but the morning was clear. At noon July 16th, Ian McKay went for a short traverse on the right bank of the river (A.P. 5310-50 u/u 15-10 to 05-12) while I went downstream to see a cut-bank slope, that we had noticed on

the way up (A.P. 5310-50 u/u 05-12). This slope was particularly striking due to the gleaming white appearance of its structure. The river had uncovered an almost vertical wall of very fine clay to a height varying from 73 to 95 feet. We came back to Camp II at six o'clock when it started to rain again.

On Monday we decided that we had stayed long enough in this area and we started downstream. A short stop was made to pick up our cache at the great bend and then we continued all the way down to the mouth of the river. Our Camp III was established on the left bank, opposite the fisherman's sand-bar (A.P. 5321-47 u/d 10 -12). We found out during the night that this location was rather unsafe, as the sea rose to a few feet from the tents and forced us to keep constant watch until the tide started to recede. It rained all day Tuesday and it was not possible for us to leave. However, we took advantage of a short respite to move camp to a safer spot on the lake shore.

In the early hours of the following morning started the worst storm we had seen in a long time ..... and our tents offered no protection against the rain. I woke up at four o'clock cold and shivering; my feet were soaking in three or four inches of water. I had to get up and pierce holes in the tent floor to drain it. The tide threatened us again as it rose to this season's high, covering the fisherman's island completely, forcing them to move with their gear and their husky dogs to the mainland. The storm continued for two more days and we became quite restless and were hoping for good weather as the time was getting shorter and we still had lots of ground to cover before the end of the season.

Saturday was nice despite a heavy overcast in the morning. We did not miss the chance to go up the Kenamu a few miles and investigate the

mire lands that are so prominent on the aerial photographs. They were similar to the marshes we had seen previously but they showed a greater degree of encroachment. Tanner says that .... "these mires have been partly decomposed by mechanical agents, principally by the frost, and are a mosaic of bog and fen where irregularly curved lines of somewhat drier bog vegetation run in festoons across the narrow fen belts with pools of water or turf mud."<sup>1</sup>

On our return we were offered by fisherman Sidney Blake to go and spend Sunday with his family in Northwest River. We accepted of course with great pleasure, anticipating that we would be provided with fresh food and comfortable beds. We were not deceived in our expectations and were most cordially and generously received by our hosts. The day was spent mostly at visiting the Indian settlement of Northwest River and at taking photographs. Our pleasant stay was really too short and we had to start back at half past six on Monday morning. When we reached our camp, the wind was blowing hard and the lake was too rough to allow us to travel by canoe. We were compelled to wait again, and to render matters worse it started to rain at noon and the rain continued all day.

After supper, Ian McKay took the motor-canoe and headed for a tanker anchored at large, I had warned him that it would not be safe because of the threatening weather. He did not come back that night, but returned the following morning at ten o'clock. He had to sleep aboard because it was too stormy to come back.

The afternoon of the 25th was clear, so we prepared the necessary

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V. Tanner, Newfoundland-Labrador, Cambridge University Press, 1947, Vol. 1, page 399.

provisions for our trip up the Kenemich River. Our purpose was now to reach the Mealy Mountains in the shortest possible time, and on the way back to take notes on any change or transition in the vegetation. The Kenemich is a very swift river on which our ten-horsepower motor had some difficulty propelling two canoes and such a heavy load as we had; for that reason, it was to be easier for us to go straight up and on the way make whatever stops would be required.

After crossing Carter Basin, we travelled during three hours on the meandering Kenemich where the distances were found to be very deceptive; the meanders being very long and in the same general orientation as the river - instead of being at right angles as would be the case with younger meanders - one finds himself travelling long distances in a direction opposite to the one he intends to follow. Consequently, instead of having travelled twenty miles in a straight southeasterly direction today, we found ourselves only six or seven air-miles closer to our goal. Our fourth camp was established on the left bank at approximately latitude 53° 26' N.

Wednesday was another rainy day, I could not help thinking how accurate F.K. Hare was when in his doctoral thesis on the "Climate of the Canadian Eastern Arctic", he mentioned that in Labrador one is always under the constant dripping of the rain.

In the evening, one of the guides complained of being "sore all over". His cough was bad and he ran a fever, so I gave him some Bromo-Quinine as a laxative and some frost 222. In the morning he did not feel any better, and he complained of chest oppression. We were afraid that he might have pneumonia or pleurisy but we decided to wait for more definite symptoms before taking him back to Northwest River. He felt worse on Friday so we decided that it would be safer to take him back. We started out at four

o'clock after the rain had stopped. The current was swift and we reached McLean's point in less than two hours. The fisherman's boat we had intended to hire to take us across the lake was in dry dock for repairs; we went on to the mouth of the Kenamu River to find out that all the boats had gone out for the week-end. I decided that we should pitch our camp on the shore and wait for them until Monday. However McKay had other ideas and he insisted that I should cross in our motor-canoe. I did not accept until he came with two local people to assure me that in such a calm sea it could be done. It was my mistake, as party leader I should have stuck to my guns and refused.

We had not started out more than half an hour when the weather changed; from dead calm, it became windy and stormy and the waves took gigantic proportions. The sea was now very threatening, so I steered towards a tanker anchored in the middle of the lake. When we finally arrived there, it took us a long time to get aboard because the lake was so rough that the canoe was hooting up and down beside the rope ladder of the ship without giving us time to grasp its rungs. All this trouble was futile: we found out that we were not welcome aboard the gasoline tanker and that we had to go on across the lake.

All of us showed genuine fright when we left that big ship for our small and unstable craft. The lake looked now like the high seas in the middle of a storm. I was informed later that it was so rough that all the boats trying to leave Northwest River at that time had to return to their sheltered anchorage. All we could hear over the infernal noise of the angry sea was the siren-like shriek of the propellar as the stern was emerging above the crest of the waves. We were all in a state of great tension and it was showing in the expression of our faces. The sick Indian

was grinding his teeth in fear, the other guide was numbling his prayers as Ian McKay was trying to steer our small boat to safety. We finally touched bottom and waded for a few hundred yards to shore. At that moment, rain started to fall heavily as if it had waited for our safety before adding to our miseries. A tarpaulin was rapidly raised against the storm and lost in deep thought, we ate in silence.

In the morning we saw a small boat heading for Northwest River and we signalled him to wait for us. He took us aboard and towed our canoe. At the settlement we found that Dr. Paddon had left for Hopedale and would not be back before Monday. We decided to leave the sick Indian and pick another man for the rest of our trip. I went to Goose Bay on Sunday to get his salary from the bank. The Hudson's Bay Company brought me back to Northwest River on Monday afternoon. We intended to leave on Tuesday, but the other Indian declared an abscessed tooth which had to be pulled out, along with a second one, by the nurse of the Grenfell Mission (Miss Smith) who recommended that he should rest for the day. Wednesday was stormy and we were forced to delay our return to the Kenemich River.

On August 3rd, Jules Best was left in the care of the Grenfell Hospital and his brother Michel was selected to replace him. We left the settlement at nine o'clock and reached Camp IV (A.P. 5320-60 u/u 16-08), on the Kenemich River in the middle of the afternoon. A cache was made there and the trip on the river was resumed until eleven o'clock, at which time we pitched our tents on the left shore of the river (A.P. 5317-54 u/u 11-08).

In the morning we crossed to the opposite shore where a landslide had occurred four years before - so the Indians told us - and we noticed that a very strong vegetation grew on the uncovered clayey soil. There were small

willows, bunchberries, current, wild raspberries, epilobium, etc.

After this short stop, we kept on going on the Kenemich, still widely meandering and very shallow. We had to pole our way up many rapids and at times we had to walk while the Indians poled or towed the canoes around boulders widely scattered in the river. This was time-consuming and after the day's work we noticed that we had travelled only a few miles. We had no photographic coverage of this area and the lack of large scale maps makes it impossible to identify the exact emplacement of our sixth campsite.

It rained early on Saturday morning, but the rest of the day was fine and by noon, we had portaged to the head of long rapids and were paddling up-stream for another mile. We reached the second tributary and settled there for the night (Camp VII).

Before starting out on the following day, we cached one of the canoes, the motor and all the supplies and equipment that were not to be required for our trip on the Mealy Mountains. Then Ian McKay and myself portaged across land to the third tributary which was less than a mile distant. This tributary is a very small river, about 75 feet wide, with very clear and shallow water above which big boulders emerge at every five or six feet. The vegetation showed no change except on top of the hills where lichens covered the ground and near the shore where the alder thickets were now very scarce. The soil was composed of a brown sandy clay.

We travelled one mile up the tributary to the Indian portage route which was to lead us to the Mealy Mountains and we spent the night at the site of an Indian camp. Our guides expected to meet some Indian families there, but they were disappointed as they found the camp deserted.

We were due back in Goose Bay around the 15th of August, which

meant that we could not spend more than one week in the mountains.

Accordingly, we made enough bannocks and brought supplies for one week and we started out on the 7th of August on a long walk to the mountains, across fens and marshes. Fortunately it was a cool day but still this walk across marshes in which one's feet sink ankle deep was quite strenuous. By the end of the day we had climbed some 650 feet above our previous camp and we pitched our tents in the forest, at the foot of the hills. The Indians took part of our supplies to the top of the hills early on Tuesday morning, and came back for us at seven o'clock. It took us five hours to reach the top, at a height of 1,400 feet above the foot of the hills. Ian McKay and myself were very tired and it was a wonder to us how the Indians could climb twice in the same morning without showing any sign of fatigue.

Our first survey of this part of the Mealy Mountains brought us nothing but deception. The so-called mountains are really not mountains but they rather appear to be an elevated plateau, a former peneplain in which the change in base level produced by its up-lift has started a new cycle of erosion. We were discouraged mostly because we could spend only one week in an area where it would have taken ten times as much to make a comprehensive study. We would have had to walk perhaps thirty miles over the hills before meeting with any structural or ecological changes and that was out of the question for us. So we decided to make the best use of our stay there and then go back before the level of the Kenemich River dropped.

Fog set in early Wednesday morning and we could not see the length of our nose during the whole day and evening. Although it was still foggy all through Thursday we walked for many hours on the hills but it was not possible to see beyond a few hundred feet. We were relieved from fog and

rain for only a few minutes on Friday, but a southwesterly wind brought more rain.

Saturday morning was clear but the afternoon was overcast, we hurriedly collected most of the information we wanted because we had only three days left before the 15th., and the Indians feared that the level of the Kenemich might have dropped considerably during the last week and thus, we might not have been able to return as speedily as we had anticipated. So, we prepared for our return, and it was on Sunday, August 13th, that we started downhill. We were travelling light and for that reason the trip was much easier than it had been on the way up. Although the level of the river had dropped considerably, forcing us to pole through many more rapids, it was possible for us to reach Camp V before sundown.

On the following day, we travelled on the lower Kenemich to Carter Basin's outlet into Lake Melville.

The party was dismembered on Tuesday, August the 15th, when we left Michel Senebest Bastien at the Indian settlement of Northwest River and we returned to Goose Bay to wait for our air transportation back to Montreal.

Scientific Report

(a) Physiography. It may be said that the general physiographical traits that we were able to observe in the lower Kenamu and Kenemich area did not present much variety. The whole area lying at the foot of the Mealy Mountains and extending to Lake Melville is covered with fluvio-glacial and marine materials into which the streams are now cutting their meandering paths. The fluvio-glacial deposits are found in the more elevated parts of this plain, near the foot of the mountains, while the marine sediments fully cover the more depressed areas that were once invaded by the sea. It seems that at one time a great fiord extended from the Atlantic and covered Lake Melville, the Backway, Double Mer, Little Lake and Grand Lake as well as part of the lower course of the Hamilton River. At that time the actual interfluves between the Kenemich, Kenamu and Hamilton Rivers were being built by the deposition of this great fiord and were to submerge later. When the land finally rose gradually, marine sediments were deposited everywhere, creating well defined terraces which are the actual sand<sup>2</sup> plains.

The southern shores of this fiord were apparently bare and rugged and they became with their newly acquired height, the Mealy Mountains. These present a more diversified relief but hardly deserve to be called mountains, even though they are usually considered as such because of their height above the sedimentary plain. This land, before the epeirogenic movement occurred, was most likely representative of an advanced stage of pen-plantation. After the uplift it kept most of its characteristics but it underwent a certain amount of erosion resulting from the change in base-level.

2

E.M. Kindle. "The terraces of the Lake Melville District, Labrador". Geog. Rev. XIV, 1924, pp. 597-602.

One of the main characteristics of peneplanation that it still offers is the relative tangeance of its summits. However, we have seen such a small part of the mountains that this genesis must be verified with other parts before it can be fully accepted. One certain fact is that the whole area visited has been much eroded by the last glaciation.

A more extensive physiographical study of this area will be included in my final report on this summer's field work.

(b) Climate and Weather. This section has been prepared by I.A. McKay for the most part, and it appears in his own preliminary report. Mr. McKay remained in Goose Bay for a few days after my departure and he was thus able to examine the Meteorological Section's records there.

As Goose Bay and Lake Melville Plain are more or less surrounded by a horseshoe like arrangement of mountains, with the open end at Hamilton Inlet, the general Labrador climate does not always exist here.

The mountains, especially the Mealy, tend to set up enough ascending air to csuse condensation fairly early in the morning regardless of wind direction. It matters very little from where the wind comes as this area has Hudson Bay to the west, Davis Strait to the north, and the Gulf of St. Lawrence and the Atlantic Ocean to the east, all sources of humid air.

As this area is an outline of the main Boreal Forest, as designated  
3  
by F.K. Hare, one would expect the climate to be more or less similar to that of the main Boreal Forest. This is, in fact, quite true, according to this article where it is placed within C.W. Thornthwaite's classification of a warm microthermal climate.

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F.K. Hare, "Climate and Zonal Divisions of the Boreal Forest Formation in Eastern Canada," Geog. Rev. XL, 4, 1950, pp. 615-635.

Prevailing winds are of major interest because of their influence on the vegetation. The statistics show a prevailing wind from the west and north to be strongest during both July and August, although in this last month the south wind is equal to that from the north. A detailed breakdown of average wind velocities and their proportion of time, in hours, follows below.

July

Number of hours the wind blew from:

<u>W.</u>	<u>N.W.</u>	<u>N.</u>	<u>N.E.</u>	<u>E.</u>	<u>S.E.</u>	<u>S.</u>	<u>S.W.</u>
105	58	95	175	68	64	86	93

Average speed in miles per hour:

9.8	7.5	6.6	4.5
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August

Number of hours the wind blew from:

<u>W.</u>	<u>N.W.</u>	<u>N.</u>	<u>N.E.</u>	<u>E.</u>	<u>S.E.</u>	<u>S.</u>	<u>S.W.</u>
205	89	74	110	25	32	72	137

Average speed in miles per hour:

9.6	7.5	6.3	7.5
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The number of hours of rainfall, overcast, haze, and clear weather is also given below in percentages of the total hours spent in the field; that is from July 1st to August 25th. One can see from this and from the photo index, that most photographs were taken during a few clear days, most of them in August.

Weather in percentage of total hours for the month:

July

<u>Clear</u>	<u>Rain</u>	<u>Haze</u>	<u>Complete Overcast</u>	<u>Over 5/10 cloud</u>
1.22	30.16	2.83	77.82	10.16

August

<u>Clear</u>	<u>Rain</u>	<u>Haze</u>	<u>Complete Overcast</u>	<u>Over 5/10 cloud</u>
14.82	15.66		41.50	27.22

These figures apply to Goose Bay and most likely to all the sand plain, but they are not representative of the weather found on the mountains.

Finally, the following is a list of the maxima and minima in the daily temperatures registered at our campsites whenever possible.

<u>DATE</u>	<u>Max.</u>	<u>Min.</u>	<u>DATE</u>	<u>Max.</u>	<u>Min</u>
July 7	82	48	Aug. 1	-	-
" 8	80	47	" 2	-	-
" 9	68	43	" 3	-	-
10	68	43	" 4	-	42
11	81	41	" 5	-	-
12	86	50	" 6	65	26
13	74	52	" 7	-	42
14	88	52	" 8	-	62
15	76	43	" 9	-	-
16	76	44	" 10	-	40
17	70	42	" 11	52	48
18	68	41	" 12	58	46
19	68	42	" 13	-	-
20	63	43	" 14	-	-
21	61	45			
22	50	44			
23	-	-			
24	75	45			
25	65	45			
26	54	45			
27	58	45			
28	61	45			
29	-	-			
30	-	-			
31	-	-			

(6) Ecology. Mr. McKay's work was the study of vegetation and its correlation with the physiography through the medium of ground work and aerial photographs. He was also to test Key Cards on vegetation developed by Messr. Harry Lash and Norman Drummond. The question was whether or not the Key Cards established for the Romaine River area could be used with equally good results in the Lake Melville and Mealy Mountains region

of Labrador. The results were positive and this part of the field work can be considered as a success.

The different kinds of vegetation that were studied by McKay are given in the section of this report pertaining to Field Methods (page 9). In regard to vegetation, it was evident that along shore lines and river banks a very definite gradation of vegetation was present. Definite species nearly always occurred in a fairly uniform layering or pattern. The trend of zonation from the shore bank back and up to higher land is as follows: willows, alders, asper, white spruce, black spruce, and finally birch on the higher, less saturated land.

The vegetation in the lower-lying muskegs is also more or less the same. This is shown clearly in photographs taken in muskeg country during different traverses.

The muskegs consisted of two types, namely black spruce muskeg and open muskeg. The former is a regular black spruce forest with a soggy, muskeg-like floor. This may exist as fairly high elevations in depressed areas between inter fluves. The latter has few, or only dwarf, trees, such as black spruce or tamarack, the rest of the cover being mosses, Kalmia, Labrador tea, cotton, grass, bakeapple, sedges, etc., usually within an open pond in the centre, and surrounded by the black spruce muskeg already mentioned. This type is dominant on the Lake Melville Plain and stretches for great distances between the foot of the Mealy Mountains and Lake Melville. It is very conspicuous on aerial photographs of this area.

In the Mealy area the vegetation took on a different appearance. As one ascends from the Muskeg with its diseased lichen-covered spruce, one sees a mature forest in good condition with conifers and deciduous trees from 30-70 feet high, the conifers being dominant. The floor here is covered

with mosses, huge ferns, bunch-berry, and other small plants.

Climbing higher, the height and diameter of the trees decreases and on the mountain tops there remain only bare rock, lichen encrusted, some small marshes here and there, and dwarf spruce and birch growing in small, rock-sheltered depressions.

The physiography here is a series of more or less parallel ridges of rounded and smoothed rock, with fairly wide flat valleys between. Conifers and birch trees grow up the valley sides, once again decreasing in size with an increase in elevation and exposure.

The flat valleys between are poorly drained basins which would be muskeg if the soil were deep enough. Instead, they are more like marshes, harder under-foot, but with the usual muskeg vegetation. Wild asters grew here, though, as well as much goldenrod. They were not present in the muskeg at the foot of the Mealy Mountains.

In conclusion to this report I would like to say that, considering all the handicaps we had, it was still possible for us to collect much valuable information on this region of Labrador. However, the results were not what could be expected from a three month season in the field and it is my suggestion that in the future far more time should be given to actual scientific preparation of field trips.

APPENDIX "A"

REMARKS AND SUGGESTIONS

When writing this part of my report I am aware that it might reflect on certain individuals or agencies who might be partly at fault for our difficulties; however, such is not my intention and these are mentioned merely in order to prevent their possible occurrence in the preparation of other field trips. My remarks should not be taken as criticisms reflecting on any part of our organization but they should be considered for what they are, that is a constructive advice for the benefit of those who were fortunate enough not to experience such delays and other difficulties as we had.

Unavailability of aerial photographs

Our field party was going to undertake an alternate project which had been decided upon only after the original plans (Kaniapiskan Project) had been cancelled for lack of transportation.<sup>4</sup> Consequently it was too late to order aerial photographs in time for delivery before we left for the field. Further, there was considerable delay in obtaining those prints that were ordered from the Newfoundland Government and from a number of private agencies. More than three hundred arrived at Goose Bay after the 1st of August, when they were no longer required and over two hundred were never delivered at all.

The result of this delay was that we were not able to make sufficient preparation for our trip, nor to plan our itinerary intelligently and according to problems that should have been located and studied stereo-

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It was later found that the R.C.A.F. maintains a regular flight, twice a month, between Goose Bay and Fort Chimo and that it would have been possible for us to secure transportation on one of these flights.

scopically on those photographs. The final return of our field program was greatly hampered by this delay.

It would be advisable to order aerial photographs three to four months before they are actually required. Further, the expense of aerial photographs being high, the parties requiring them should make sure that their orders are not unnecessarily large. It was estimated that for our field trip alone, an amount of more than \$200.00 was spent on photographs that were of no use whatsoever to us.

#### Insufficiency of Equipment

The following is a list of 51 items that could not be provided in time. The resulting delay in the field was of exactly one month at a purchase expense estimated at over \$600.00.

Adapter ring for Retina II	Howing stone
Ammunition	Hunting Knives
Axes and Hatchets	Lenshood for camera
Boot Wax	Manilla rope
Canoe Covers	Mosquito netting
Canoes	Mosquito repellent
Chamois cloth	Oil Can
Climograph pencils	Oil compass
Coffee strainer	Paddles
Coleman funnel	Pail, canvas folding
Copper wire for measuring traverses	Paraffined sacks
Cups, drinking	Pen handles
D.D.T. gun and bombs	Pliers
Double boiler	Repair kit for motor
Douglas protractors	Rifle and shotgun
Drafting set	Rulers
Dunnage bags	Screw drivers
File	Shear pins
Filters (red, yellow, and green)	Spare propellers
Film pack adapter	Spare starter ropes
Floor cloths	Spark plugs
Funnel	Steel tape
Gasoline cans	Swede saw and blades
Gun cleaning set	Thermos bottles
Hand level	Tree measuring instrument
Haze Filter	

Some of these items had been sent to Dorval for air transportation to Goose Bay, but the R.C.A.F. had such a back log that they were not able to handle them at the time they were received. The following is my suggestion to prevent such eventualities:

1. All equipment should be allotted to each party and kept separately, in time to provide for possible shortages (at least 6 weeks before departure). Our own requisitions should be sent to the depot as soon as the year's field program has been approved.
2. The bulk of the equipment, such as canoes, motors, tents, sleeping bags, etc. should be sent whenever possible, a few weeks before the party is ready to leave. Arrangements should be made at the receiving end for proper handling and storage of goods.
3. Small items, personal and scientific equipment could be carried or sent at the same time as the party.

#### Delay due to Weather

I would like to point out that out of a season of 75 days, the party spent 43 days in the field of which  $12\frac{1}{2}$  days were lost due to continuous rain or heavy fog. This computation does not include numerous days when work was hampered by occasional rain.

#### Sickness among the Party

On the 6th of June, I sprained my ankle and tore a ligament in my foot; the party left for the field on the following day but we were forced to spend two days of idleness due to that injury. On the 27th of the same month, an Indian guide got sick with congestion of the lungs and fever; pneumonia was feared and he had to be taken back to Northwest River with a resulting delay of 6 days. A seventh day was lost when the other guide declared an absessed tooth that had to be removed.

The total time lost for sickness was 9 days and to sum up the whole season: 32 days spent waiting for equipment,  $12\frac{1}{2}$  days of bad weather, 9 days

lost on account of sickness and 21½ days of actual work. In other words, out of 10 weeks in the field, the party was not able to work for more than 3 weeks.

Although it did not prove to be necessary in our case, it might be wise to require all potential party leaders and assistants to submit to a complete medical check-up before they can be accepted for field work. Guides and labourers should also be examined whenever possible.

#### Type of Equipment

Our canoes and tents were the two items that were found the most unsatisfactory. The canoes might have been convenient, although perhaps too heavy, on a traverse along a big river of the barren lands but they were not suitable for a thickly wooded area such as the southwest of Lake Melville. Their first limitation was their weight and secondly their size. They were not built for portage and consequently the party was forced to abandon the Kenamu trip at the first one and select an alternate way of reaching the Mealy Mountains with an ensuing delay of ten days.

As to the tents, they were leaking badly although they were guaranteed to be waterproof. Rain was sifted to a mist through their walls and it fell continuously upon the occupants who found themselves soaking wet in a very short time. On July 19th, after one stormy night, a leather case kept in a tent had to be drained of four inches of water covering all the photographic film exposed by the party during the previous weeks. The tent floor had to be perforated with a knife to drain it. Fortunately, the films were saved.

Finally I would like to suggest that for last summer's work, the use of other means of field transportation might have been more efficient than canoes.

The recollection of the circumstances surrounding the Mealy Mountains expedition will allow an affirmative answer on three points in favour of air transportation; availability, cost and convenience. The first point was solved when the commanding officer of the U.S. Airforce unit at Goose Bay mentioned that if he had known in advance, he would have gladly provided us with an aircraft for that purpose without any charge. Furthermore, the Royal Canadian Air Force had a Norseman aircraft at Goose Bay which was unemployed most of the time and could have been provided if the arrangements had been previously made with the R.C.A.F. authorities. A precedent had been created when J.M. Gillett, a young botanist, was flown to the Mealy Mountains and was picked up three days later after completion of his work there. As to the cost, it would have been amply provided for by our actual saving on time, equipment and food, it was calculated that the work done in seven weeks by canoe could have been done in one week by aircraft, thus saving over one thousand dollars in salaries alone. This kind of transportation would have been very convenient. The aircraft (preferably a helicopter) would have flown the party to fifteen or twenty pre-selected areas for making spot observations. These could have been selected in the timberland where it was not possible to go by canoe and where walking would have been extremely difficult. Instead, the party had to follow the main streams and at no time was it possible to survey beyond the sand plain, except for a few days spent on the mountains.

APPENDIX "B"

LIST AND IDENTIFICATION OF PHOTOGRAPHS

It was agreed between Ian McKay and myself that we should not duplicate any of our photographs, therefore, the following list is a complement to the one appearing in the last part of his own preliminary report:

<u>No. of Exposure</u>	<u>Direction</u>	<u>Description</u>
I-1	N.E.	Lake Melville, Salmon net at the mouth of the Kenamu River.
I-2,3	N.E.	Unloading of gear and equipment from a R.C.A.F. boat to a sandbar at the mouth of the Kenamu River.
I-4,5	South	Kenamu River, six or seven miles from its mouth.
I-6,8	-	Trees of the Southwestern Lake Melville area grow in a sandy clay and are easily unrooted by the erosional processes.
I-7,9	S.W.	Kenamu River, a few miles from its mouth.
I-10,11	-	Kenamu River, Small amounts of very fine clay separate from the main clayey bed, during the process of drying, and take very unusual shapes. These figures, as seen in the photographs, are usually quite flat and become very hard.
III-1,2,3	-	IDEM.
III-4,5,7,8	N.W.	Cut bank slope at the mouth of the Kenamu River - Unconsolidated elements of stratified sand and clay - height: 20 feet.
III - 9		Salmon nets; Lake Melville at the mouth of the Kenamu River. Fish is sold to the R.C.A.F. station, Goose Bay, and at Northwest River.
III -10	S.W.	Kenamu River - Smoke rising from a forest fire that burned during seven days, southwest of the big bend on the River. A down pour of one hour put it out completely.

<u>No. of Exposure</u>	<u>Direction</u>	<u>Description</u>
III-11	East	Cut bank slope on right shore of Kenamu River; latitude $53^{\circ}17'30''N$ - Elements consist of fine sand and clay. Height is 73 feet. Note the thick alder brush in stream beds.
III-12	S.W.	Camp on the Kenamu River. Alluvial island located below the rapids at latitude $53^{\circ}15''N$ .
IV -1	S.W.	IDEM.
IV - 2,3	East	Muskeg a few miles inland, on the left shore of the Kenamu River, latitude $53^{\circ}15''N$ . Note the gradual increase in the height of the trees as they get farther from the periphery of the Muskeg.
IV -4	-	Sarracenia or Pitcher Plant found in most Muskegs of the Kenamu and Kenewich Rivers.
IV - 5,6	S.E.	<sup>o</sup> Kenamu River, latitude $53^{\circ}15''N$ . Forest cover on the right shore. Note the thick alder brush near the shoreline and the cominant black spruce, in the background with birch and poplar.
IV - 10	-	<sup>o</sup> Kenamu River, latitude $53^{\circ}15''N$ . Forest cover in the hinterland. Note partridge on fallen tree.
IV - 11	-	The bark of the trees between which stand I.A. McKay was completely removed by porcupines ( <i>Erethizon dorsatum</i> ) - Kenamu River.
IV - 12	N.W.	Muskeg, approximately half-way between the Kenamu River and Mud Lake, Labrador.
V - 1,2	N.W. and S.E.	IDEM.
V - 3	South	Small sand covered clearing, approximately half-way between the Kenamu River and Mud Lake. The height is 240 feet above the rivers bed. In the background can be seen the Mealy Mountains.

<u>No. of Exposure</u>	<u>Direction</u>	<u>Description</u>
V - 4,5	-	This fish (unidentified) and a few small trout were the only ones caught in the Kenamu River during the party's stay there.
V - 6	East	The Kenamu River at the first rapids (lat. 53°15'N). The picture was taken from an alluvial island in the centre of the river.
V - 7	N.W.	Stream erosion in clay. Left shore of the Kenamu River, Labrador, two miles below the first rapids.
V - 8,9	N.W.	Stream erosion in sand. Left shore of the Kenamu River, Labrador, one mile below the first rapids. Note the luxuriant alder brush.
V - 10,11,12	South	Desiccating clay in a cut bank slope of the Kenamu River, three or four miles south of the first rapids.
VII - 3,4	-	Clay found on the banks of the Kenamu River is so fine that one can make such sculptures by modeling or carving it. The dark coloured figure was sculptured by P. Gadbois and the light one carved by an Indian guide.
VII - 6,7,8, 9,10,11	NE/E/SE	Composite photograph showing the right bank of the Kenamu River at its mouth. Note the long sandbars which shift continuously. The channel is narrow, shallow and meandering. Only small craft drawing less than three feet of water, can go up the river from this point.
VII - 12	West	Soil profile taken on the left bank of the Kenamu River at its mouth. It is composed of unconsolidated and stratified elements. The sand deposits alternate with the clayey ones. The wide and dark strata above the paddle is one of oxidized-magnetite bearing-sand and it is topped with newer sandy elements.
IX - 1,2,3, 4,5,	North	Composite photograph of Northwest River, Labrador.

<u>No. of Exposure</u>	<u>Direction</u>	<u>Description</u>
IX - 6,7,8	-	Northwest River Indians.
IX - 10,11,12	-	Native Sid Blake's twin daughters. Northwest River, Blaks is a white trapper and fisherman.
X - 1,2	-	Tent posts left by Indians two or three years ago were now covered with leaves and new roots, Kenemich River.
X - 4		Kenemich River at approximately latitude $53^{\circ}26'N$ . The clay is the foreground fell across the river following a landslide caused by solifluxion.
X - 5	W	The lower Kenemich River. In the background can be seen the Mealy Mountains.
X - 7,8	South	The first rapids on the Kenemich River.
X - 9	South	Kenemich River, Labrador, near the Mealy Mountains.
X - 11	S.E.	The 7th rapids on the Kenemich. Site of a long portage.
X - 12	South	Black spruce forest, a few miles away from the Mealy Mountains.
XII - 1	East	Kenemich River, Labrador.
XII - 2,3	-	Indian guide Michel Bastien of Northwest River. His father, Douglas Best, had travelled on the Kenamu River with H.G. Watkins, in 1928.
XII - 4	East	The second tributary of the Kenemich River. It is the shortest route to the Mealy Mountains.
XII - 5	West	The Kenemich River at the junction with its second tributary.
XII - 6,7,8		The higher Kenemich River (2nd tributary)
XII - 10	S.E.	Muskeg near the foot of the Mealy Mountains.
XII - 12	N.E.	Looking down the plain from the top of the Mealy Mountains.

<u>No. of Exposure</u>	<u>Direction</u>	<u>Description</u>
XIII - 1,2,3,4, 6,7,8,9 10,11,12		General topography on top of the Mealy Mountains, Labrador.
XV - 5		"Tundra ostioles", as described by Jacques Rousseau (Revue Canadienne de Geographie, III, 1949) were found on top of the Mealy Mountains.
XV - 6		A birch tree on top of the Mealy Mountains retrieved its vertical position, after being thrown down with a landslide.
XV - 10,11	South	Dykes of doleritic rock oriented 197°N. on top of the Mealy Mountains.
XV - 12	North	Looking down to Lake Melville from the Mealy Mountains, Labrador.
XVII - 1	North	Pierre Gadbois on the Mealy Mountains, Labrador, at the source of the Kenemich River.
XVII - 2 -12		General topography of the Mealy Mountains.
XVIII - 1	North	View over the sand plain from the elevated old land. In the left background can be seen the mouth of the Kenamu River and slightly to the right is Carter Basin into which flows the Kenemich River.
XVIII - 2,3		Weathering on the rocks of the Mealy Mountains.
XVIII - 4,5	East	Bare rock and scarce vegetation on the Mealy Mountains, Labrador.
XVIII - 6	South	The Kenemich River near its source.
XVIII - 7	N.W.	Shooting rapids on the Kenemich River. Ian McKay and Indian Michel Bastien.
XVIII - 8,9,10	East	Landslide on the Main Kenemich River, Labrador, Note the marks left in the clay by the highwaters. This landslide blocked about $\frac{3}{4}$ of the river.

<u>No. of Exposure</u>	<u>Direction</u>	<u>Description</u>
XVIII - 11,12	-	Owl shot on the Kenamich River, Labrador.
XX - 1	South	Carter Basin, Labrador, seen from McLean's Point.
XX-2,3,4,5,		Rigolet, H.B.C. Boat photographed in Carter Basin at sunrise.
XX - 9,10	N.W.	Grand Lake, Labrador.
XX - 11	S.	South shore of Grand Lake, Labrador.
XX - 12		Husky dog, Northwest River, Labrador.

*The missing portions of this copy were sent to Ian Mackay for his attention* 5/

Because of the various circumstances that are fully explained in

the Appendix "A" of this report, our field work was delayed during a period of one month while we were in Coase Bay, Labrador. We were not

CHAPTER 2

FIELD WORK

Area actually covered -- Field methods -- Chronological Report -- Scientific Report. actually spent in the field.

Origin of Project

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It was then that I was informed of an alternate project that we shall, from now on, refer to as "The Mealy Mountains Expedition". The Defence Research Board had requested that a party of geographers be sent in the southwestern Lake Melville area in order to study certain problems, physical and ecological, which would become part of a key to the interpretation of aerial photographs. I accepted the responsibility of this field trip with a certain apprehension. Such a late change in plans meant not only that we had to abandon all the preparations already made for the first project, but also that we would barely have time to prepare the second one.

Object and Scope

The primary object of the Mealy Mountains Expedition was to under-

## Chronological Report

Because of the various circumstances that are fully explained in the Appendix "A" of this report, our field work was delayed during a period of one month while we were in Goose Bay, Labrador. We were not equipped to leave the R.C.A.F. station during that time, except for a short trip to the Muskrat Falls on the Hamilton River, and consequently this report will include only the time actually spent in the field.

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## CHAPTER 1

### ORGANIZATION

Origin of Project -- Object and  
Scope -- Area -- Personnel --  
Report -- Transportation -- Food  
and Equipment.

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#### Object and Scope

The primary object of the Mealy Mountains Expedition was to under-

take the preparation in the field of ground keys for air photo interpretation. It was in fact the undertaking of the same kind of study as that which had been carried out during the previous summer by Harry Lash and Norman Drummond in the Romaine River area. The secondary object of this party was to conduct a geographical reconnaissance of the Mealy Mountains area.

The scope of the work was defined as being limited to those aspects of physical geography and of ecology which could be determined on vertical photographs; in other words, we were to establish the relationship existing between ground features and their appearance on aerial photographs. However, due to difficulties we had in obtaining a complete photographic coverage of the area, the scope of our work had to be altered. Accordingly, Dr. Watson instructed me, in his letter of the 13th of July, that he expected from our expedition "a general physical ecological account of the region, supplemented by detailed studies of particular areas ...".

#### Area

The area in which our party was to work consisted of the land south of Lake Melville, to the crest of the Mealy Mountains. However, it was mentioned that the limitations of the summer's field season would not permit intensive study of the entire area. It was suggested, therefore, that detailed studies should be conducted around the streams and rivers providing water transport south from Lake Melville and that overland traverses between parallel streams should be undertaken wherever feasible.

#### Personnel

The party was conducted by myself with the assistance of I.A. McKay. We were both graduate students at McGill University at that time. The physical aspect of the study was to be covered by myself and the ecological

angle was Mr. McKay's responsibility. He had acquired experience in this field by assisting Harry Lash and Norman Drummond in the preparation of their report on the Rossine River project already mentioned.

We had the help of two Indian guides -- one from Sept-Isles, P.Q., and the other hired at Northwest River.

#### Report

The party chief was to be responsible for submitting periodical reports from the field and the final project report to the Geographical Branch.

#### Transportation

Air transportation to and from Goose Bay, Labrador, was provided through the facilities of the Royal Canadian Air Force. From there on, we were to travel by means of two eighteen foot "Prospector" type canoes propelled by one ten-horsepower outboard motor.

#### Food and Equipment

The question of equipment is discussed at length in the Appendix "A", so I shall not discuss it here. However, there are a few items which I would like to mention because they could be of assistance in the preparation of future field trips.

The first item concerns the use of pressure cookers in the field. It is my opinion that parties going into the wilderness should carry a minimum of weight and that each article should be absolutely necessary. However, it appears at first that a pressure cooker is neither light nor is it a necessity since all cooking could be done in the more conservative and lighter pots and pans. Despite these arguments, I brought one in the field, this summer and it enabled me to draw the following conclusions: A pressure cooker is a heavy piece of equipment but it is a necessity to all

field parties. To qualify this statement, it should be mentioned that a pressure cooker saves more than half the time usually employed at the preparation of meals when such time can be used to better advantage elsewhere. Furthermore, this kind of cooking saves much fuel which, over a period of a few months, might amount to a far greater weight than that of the cooker itself.

Another point on equipment is that field personnel should be provided with waterproof covers for all valuable equipment, such as sextants or transits, cameras and film, etc. It must be remembered that only one rain-fall over a leaky tent is sufficient to damage such equipment and thus possibly impair the results of a whole summer in the field.

The following is a ration scale that I prepared for this party. It was calculated in ounces per day per man:

Bacon (slab)	1.9 oz.	Meat (or Fish)	4.0 oz.
Beans (baked)	1.0	Milk (dehydrated)	1.8
Butter	1.6	Rice	1.0
Candy (hard)	0.3	Rum	1.0
Cheese	0.7	Salt	0.5
Chocolate bars	0.5	Shortening	0.3
Cocoa	0.2	Spices	0.1
Coffee	1.0	Sugar	3.5
Eggs (powdered)	0.5	Tea	1.1
Flour	2.4	Tea biscuits	1.0
Fruit (dehydrated)	1.8	Vegetables (deh.)	0.5
Hardtack	0.5	Macaroni	0.3

To this list should be added soups and desserts and other items to suit the particular needs of the party. The ration scale is but a rough basis from which can be planned the actual food list, after taking into consideration the particular needs of the party concerned. In our case, this scale was altered to suit our needs and it was found very satisfactory.

After being subjected to forced idleness during nearly a month, we had finally received most of our equipment by July 7th and were ready to leave. The previous night, I had badly sprained my left ankle and even though the doctor had recommended two or three days of complete inactivity, I decided to leave while the weather was nice, and to rest at our first camp.

We had purchased all our field provisions in Northwest River, the previous week, and we also had taken an Indian guide back with us. His name was Jules Senebest Bastien, the son of Douglas Best, one of H.C. Watkins' guides on his trip up the Kenamu River in August 1928. The fact that I had selected an Indian gave rise to quite a controversy between my assistant Ian McKay and myself. His contentions being that a white Labrador native would be much more suitable for this kind of work, as he could be of greater assistance in the field, and because of his knowledge of English. However, I had already hired another Indian from Seven Islands to whom I had promised a congenial companion for the summer, but I am now thoroughly convinced that the choice of two white Labrador natives would have been much better since they know these parts of the country thoroughly and they are much more intelligent than the Indians. Andrew Brown of the National Geographic Society mentioned to me on his return from Grand Falls on the Hamilton River, that he was very satisfied with his native guide John Montague. At any rate, our party of four included two Indians and we were to find out only later how useful they would be to us.

Most of the station's trucks were occupied at unloading a ship on this Friday morning, and we were consequently not able to get transportation to the dock until eleven o'clock. As soon as our gear and supplies were aboard the trim 88-h.p. R.C.A.F. crashboat that we had hired for the

occasion, we were carried speedily to our starting point at the mouth of the Kenamu River. It was two o'clock when we started to unload our equipment on a sand-bar used as a summer camp by the local fishermen. We went five or six miles up the river and pitched camp on a small sandy island near the left bank, at approximate latitude  $53^{\circ}24'30''N$ . The rest of the day was spent travelling back and forth between the camp and the sand-bar, until all our equipment and provisions were transferred. The channel downstream from our little island was very shallow and the motor could not be used at all times; for that reason our load had to be very small on each trip. However, the days were still long and it was possible for us to work until midnight and complete the job.

The party was at a standstill during Saturday and Sunday, because of my injured foot. The first day was clear and warm, with a height of  $80^{\circ}F$  at noon. In the afternoon I went downstream for a short reconnaissance from which resulted the following observations: the Kenamu is a slow flowing river with a rather straight course from south to north; it is slow relatively to other streams having their source in the Mealy Mountains. This relative tranquillity and the fact that the river deposits its alluvium five or six miles upstream suggest that it has attained a certain degree of grade equilibrium in its lower course at least. Another argument in favour of this hypothesis is that the corrasive power of the river seemed to be much more effective laterally than vertically.

On Sunday morning, McKay and the two Indians reported that at midnight they had seen a rather dim light, something like a greenish glow, moving along the edge of the forest above the trees. It appeared to be some kind of phosphorescent gases floating in the air.

Many tracks of bears were found around camp in the morning and we

thought it advisable not to cache anything but gasoline at this particular place. The first rapids were only one mile upstream where it was not possible to portage our heavy canoes through the thick forest and cutting a path would have taken too much time and energy, so we contemplated the possibility of crossing the small stretch of land separating us from the Kenemich River and reach the Mealy Mountains that way. We were assured by the Indians that the mountains could be reached in less than a week.

In accordance with these plans, on Monday, McKay and a guide made a cache at the portage track located at the eastern tip of the great bend of the river which is easily recognized on any map of the area. During that time, I went downstream with the other guide and we made a cache of gasoline and oil at McLean's Point, at the northeastern extremity of Carter Basin. It was raining all morning and we were not able to start until noon when the sky cleared.

When we reached camp after making our cache, Ian McKay reported that a traverse across the portage route would not be practicable with our big canoes because the track was too narrow. We decided then that we should travel upstream on the Kenamu, as far as we could go and make lateral traverses on the way down. After that, we were to go up the Kenemich River by way of Carter Basin and follow its course to the mountains.

These new plans compelled us to travel light, in order to be able to pole our way through the rapids. So, after deciding that this part of the trip would not take more than ten days, we sorted enough supplies and made enough bannocks for that period of time. By noon on Tuesday, we were on our way and in five hours we travelled a distance of sixteen or seventeen miles to the first important rapids beyond which it was impossible for us to go unless we had abandoned the canoes and walked. Our time was too limited to do so, therefore we were to begin our lateral traverses at this

point.

It was five o'clock when we reached the rapids under a threatening sky. Our camp was pitched on a small alluvial island (A.P. 551-51), just before a thunderstorm. It was found, to our great concern that our Mount Logan tents were not waterproof.

The rain fell all through the night and stopped around ten o'clock on Wednesday morning. One hour later we were starting on a traverse along a small stream located nearly one mile below the rapids (A.P. 5310-51 u/u 11-03). We walked all afternoon without finding much information that could not have been identified from the aerial photographs. Along the streams and the riverbanks, willows were growing in abundance on a marshy soil. Away from the stream, the flat areas were covered with a thick forest of black spruce, birch, poplar and alder. On more elevated ground some balsam trees could be observed with the ever dominant black spruce and there were some stretches of lichen woodland; their extent was however very limited and they could not be identified on the aerial photographs. The most common ground cover consisted mainly of peat moss. Thursday's traverse was on the opposite side of the river, along another small stream (A.P. 5310-50 u/d 12-07 to 10-09). The same conditions as were noted before prevailed everywhere. The vegetation was rooted in a thin top-soil, mostly humus, over hard sand. The stream was deeply entrenched as can be expected in such unconsolidated material but at no time was it possible to see the underlying rock.

Friday morning was rainy and the weather cleared around eleven o'clock. We prepared for an overnight traverse that would allow us to investigate certain whitish spots seen on the aerial photographs and which suggested Cladonia-type vegetation. The journey began at the site of an old Indian camp (5310-49 u/d 04-01) on the left bank of the river. The

first spot to investigate (05-05) was reached in one hour and it turned out to be a muskeg at a height of 210 feet above our campsite. The soil cover consisted mostly of various herbaceous plants and peat moss. There were no trees but some scattered shrubs of spruce one to two feet in height.

Coming up the Kenamu River on Tuesday, we had seen huge columns of smoke rising from this approximate area, so we decided to investigate the extent of the fire presently. We walked right through the burned forest which was not very extensive (A.P. 5310-49 u/d 04-05, -06,07,-08, -09,-10,05-05,-11,06-05,06-07, -08,-09,-10). The extent was limited by the marshes and muskegs from which the fire shied away. Apparently, the conflagration was caused by lightning setting fire to dried lichen vegetation. All ground cover was burned to the roots but most of the trees stood up. Where the fire was most violent, the tree branches were completely burned, but everywhere else the spruce needles, although burned, remained on the branches and gave to the woods a light brown colour like that of autumn in a deciduous forest.

At seven o'clock it started to rain heavily and we sought shelter in our waterproof sleeping bags. The Indians had only a blanket to share between them, so they used birch bark both as ground protection and cover against the rain. None of us had much sleep because of the black flies. We got up at five o'clock, on Saturday morning and dried our clothes and sleeping bags over a campfire. McKay and myself went about taking photographs and vegetation spot-readings before starting back to base-camp where we arrived in the early afternoon. We took the rest of the afternoon to pick up on our much needed sleep. It rained heavily through the night, but the morning was clear. At noon July 16th, Ian McKay went for a short traverse on the right bank of the river (A.P. 5310-50 u/u 15-10 to 05-12) while I went downstream to see a cut-bank slope, that we had noticed on

the way up (A.P. 5310-50 u/u 05-12). This slope was particularly striking due to the gleaming white appearance of its structure. The river had uncovered an almost vertical wall of very fine clay to a height varying from 73 to 95 feet. We came back to Camp II at six o'clock when it started to rain again.

On Monday we decided that we had stayed long enough in this area and we started downstream. A short stop was made to pick up our cache at the great bend and then we continued all the way down to the mouth of the river. Our Camp III was established on the left bank, opposite the fisherman's sand-bar (A.P. 5321-47 u/d 10 -12). We found out during the night that this location was rather unsafe, as the sea rose to a few feet from the tents and forced us to keep constant watch until the tide started to recede. It rained all day Tuesday and it was not possible for us to leave. However, we took advantage of a short respite to move camp to a safer spot on the lake shore.

In the early hours of the following morning started the worst storm we had seen in a long time ..... and our tents offered no protection against the rain. I woke up at four o'clock cold and shivering; my feet were soaking in three or four inches of water. I had to get up and pierce holes in the tent floor to drain it. The tide threatened us again as it rose to this seasons<sup>1</sup> high, covering the fisherman's island completely, forcing them to move with their gear and their husky dogs to the mainland. The storm continued for two more days and we became quite restless and were hoping for good weather as the time was getting shorter and we still had lots of ground to cover before the end of the season.

Saturday was nice despite a heavy overcast in the morning. We did not miss the chance to go up the Kenamu a few miles and investigate the

mire lands that are so prominent on the aerial photographs. They were similar to the marshes we had seen previously but they showed a greater degree of encroachment. Tanner says that .... "these mires have been partly decomposed by mechanical agents, principally by the frost, and are a mosaic of bog and fen where irregularly curved lines of somewhat drier bog vegetation run in festoons across the narrow fen belts with pools of water or turf mud."<sup>1</sup>

On our return we were offered by fisherman Sidney Blake to go and spend Sunday with his family in Northwest River. We accepted of course with great pleasure, anticipating that we would be provided with fresh food and comfortable beds. We were not deceived in our expectations and were most cordially and generously received by our hosts. The day was spent mostly at visiting the Indian settlement of Northwest River and at taking photographs. Our pleasant stay was really too short and we had to start back at half past six on Monday morning. When we reached our camp, the wind was blowing hard and the lake was too rough to allow us to travel by canoe. We were compelled to wait again, and to render matters worse it started to rain at noon and the rain continued all day.

After supper, Ian McKay took the motor-canoe and headed for a tanker anchored at large, I had warned him that it would not be safe because of the threatening weather. He did not come back that night, but returned the following morning at ten o'clock. He had to sleep aboard because it was too stormy to come back.

The afternoon of the 25th was clear, so we prepared the necessary

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V. Tanner, Newfoundland-Labrador, Cambridge University Press, 1947, Vol. 1, page 399.

provisions for our trip up the Kenemich River. Our purpose was now to reach the Mealy Mountains in the shortest possible time, and on the way back to take notes on any change or transition in the vegetation. The Kenemich is a very swift river on which our ten-horsepower motor had some difficulty propelling two canoes and such a heavy load as we had; for that reason, it was to be easier for us to go straight up and on the way make whatever stops would be required.

After crossing Carter Basin, we travelled during three hours on the meandering Kenemich where the distances were found to be very deceptive; the meanders being very long and in the same general orientation as the river - instead of being at right angles as would be the case with younger meanders - one finds himself travelling long distances in a direction opposite to the one he intends to follow. Consequently, instead of having travelled twenty miles in a straight southeasterly direction today, we found ourselves only six or seven air-miles closer to our goal. Our fourth camp was established on the left bank at approximately latitude 53° 26' N.

Wednesday was another rainy day, I could not help thinking how accurate F.K. Hare was when in his doctoral thesis on the "Climate of the Canadian Eastern Arctic", he mentioned that in Labrador one is always under the constant dripping of the rain.

In the evening, one of the guides complained of being "sore all over". His cough was bad and he ran a fever, so I gave him some Bromo-Quinine as a laxative and some frost 222. In the morning he did not feel any better, and he complained of chest oppression. We were afraid that he might have pneumonia or pleurisy but we decided to wait for more definite symptoms before taking him back to Northwest River. He felt worse on Friday so we decided that it would be safer to take him back. We started out at four

o'clock after the rain had stopped. The current was swift and we reached McLean's point in less than two hours. The fisherman's boat we had intended to hire to take us across the lake was in dry dock for repairs; we went on to the mouth of the Kenamu River to find out that all the boats had gone out for the week-end. I decided that we should pitch our camp on the shore and wait for them until Monday. However McKay had other ideas and he insisted that I should cross in our motor-canoe. I did not accept until he came with two local people to assure me that in such a calm sea it could be done. It was my mistake, as party leader I should have stuck to my guns and refused.

We had not started out more than half an hour when the weather changed; from dead calm, it became windy and stormy and the waves took gigantic proportions. The sea was now very threatening, so I steered towards a tanker anchored in the middle of the lake. When we finally arrived there, it took us a long time to get aboard because the lake was so rough that the canoe was shooting up and down beside the rope ladder of the ship without giving us time to grasp its rungs. All this trouble was futile: we found out that we were not welcome aboard the gasoline tanker and that we had to go on across the lake.

All of us showed genuine fright when we left that big ship for our small and unstable craft. The lake looked now like the high seas in the middle of a storm. I was informed later that it was so rough that all the boats trying to leave Northwest River at that time had to return to their sheltered anchorage. All we could hear over the infernal noise of the angry sea was the siren-like shriek of the propellar as the stern was emerging above the crest of the waves. We were all in a state of great tension and it was showing in the expression of our faces. The sick Indian

was grinding his teeth in fear, the other guide was numbing his prayers as Ian McKay was trying to steer our small boat to safety. We finally touched bottom and waded for a few hundred yards to shore. At that moment, rain started to fall heavily as if it had waited for our safety before adding to our miseries. A tarpaulin was rapidly raised against the storm and lost in deep thought, we ate in silence.

In the morning we saw a small boat heading for Northwest River and we signalled him to wait for us. He took us aboard and towed our canoe. At the settlement we found that Dr. Paddon had left for Hopedale and would not be back before Monday. We decided to leave the sick Indian and pick another man for the rest of our trip. I went to Goose Bay on Sunday to get his salary from the bank. The Hudson's Bay Company brought me back to Northwest River on Monday<sup>/boat</sup> afternoon. We intended to leave on Tuesday, but the other Indian declared an abscessed tooth which had to be pulled out, along with a second one, by the nurse of the Grenfell Mission (Miss Smith) who recommended that he should rest for the day. Wednesday was stormy and we were forced to delay our return to the Kenemich River.

On August 3rd, Jules Best was left in the care of the Grenfell Hospital and his brother Michel was selected to replace him. We left the settlement at nine o'clock and reached Camp IV (A.P. 5320-30 u/u 16-08), on the Kenemich River in the middle of the afternoon. A cache was made there and the trip on the river was resumed until eleven o'clock, at which time we pitched our tents on the left shore of the river (A.P. 5317-54 u/u 11-08).

In the morning we crossed to the opposite shore where a landslide had occurred four years before - so the Indians told us - and we noticed that a very strong vegetation grew on the uncovered clayey soil. There were small

willows, bunchberries, current, wild raspberries, epilobium, etc.

After this short stop, we kept on going on the Kenenich, still widely meandering and very shallow. We had to pole our way up many rapids and at times we had to walk while the Indians poled or towed the canoes around boulders widely scattered in the river. This was time-consuming and after the day's work we noticed that we had travelled only a few miles. We had no photographic coverage of this area and the lack of large scale maps makes it impossible to identify the exact emplacement of our sixth campsite.

It rained early on Saturday morning, but the rest of the day was fine and by noon, we had portaged to the head of long rapids and were paddling up-stream for another mile. We reached the second tributary and settled there for the night (Camp VII).

Before starting out on the following day, we cached one of the canoes, the motor and all the supplies and equipment that were not to be required for our trip on the Mealy Mountains. Then Ian McKay and myself portaged across land to the third tributary which was less than a mile distant. This tributary is a very small river, about 75 feet wide, with very clear and shallow water above which big boulders emerge at every five or six feet. The vegetation showed no change except on top of the hills where lichens covered the ground and near the shore where the alder thickets were now very scarce. The soil was composed of a brown sandy clay.

We travelled one mile up the tributary to the Indian portage route which was to lead us to the Mealy Mountains and we spent the night at the site of an Indian camp. Our guides expected to meet some Indian families there, but they were disappointed as they found the camp deserted.

We were due back in Goose Bay around the 15th of August, which

meant that we could not spend more than one week in the mountains. Accordingly, we made enough basic and brought supplies for one week and we started out on the 7th of August on a long walk to the mountains, across fens and marshes. Fortunately it was a cool day but still this walk across marshes in which one's feet sink ankle deep was quite strenuous. By the end of the day we had climbed some 650 feet above our previous camp and we pitched our tents in the forest, at the foot of the hills. The Indians took part of our supplies to the top of the hills early on Tuesday morning, and came back for us at seven o'clock. It took us five hours to reach the top, at a height of 1,400 feet above the foot of the hills. Ian McKay and myself were very tired and it was a wonder to us how the Indians could climb twice in the same morning without showing any sign of fatigue.

Our first survey of this part of the Healy Mountains brought us nothing but deception. The so-called mountains are really not mountains but they rather appear to be an elevated plateau, a former peneplain in which the change in base level produced by its up-lift has started a new cycle of erosion. We were discouraged mostly because we could spend only one week in an area where it would have taken ten times as much to make a comprehensive study. We would have had to walk perhaps thirty miles over the hills before meeting with any structural or ecological changes and that was out of the question for us. So we decided to make the best use of our stay there and then go back before the level of the Kenemich River dropped.

Fog set in early Wednesday morning and we could not see the length of our nose during the whole day and evening. Although it was still foggy all through Thursday we walked for many hours on the hills but it was not possible to see beyond a few hundred feet. We were relieved from fog and

rain for only a few minutes on Friday, but a southwesterly wind brought more rain.

Saturday morning was clear but the afternoon was overcast, we hurriedly collected most of the information we wanted because we had only three days left before the 15th., and the Indians feared that the level of the Keneach might have dropped considerably during the last week and thus, we might not have been able to return as speedily as we had anticipated. So, we prepared for our return, and it was on Sunday, August 13th, that we started downhill. We were travelling light and for that reason the trip was much easier than it had been on the way up. Although the level of the river had dropped considerably, forcing us to pole through many more rapids, it was possible for us to reach Camp V before sundown.

On the following day, we travelled on the lower Keneach to Carter Basin's outlet into Lake Melville.

The party was dismembered on Tuesday, August the 15th, when we left Michel Senebest Bastien at the Indian settlement of Northwest River and we returned to Goose Bay to wait for our air transportation back to Montreal.

APPENDIX "A"

REMARKS AND SUGGESTIONS

When writing this part of my report I am aware that it might reflect on certain individuals or agencies who might be partly at fault for our difficulties; however, such is not my intention and these are mentioned merely in order to prevent their possible occurrence in the preparation of other field trips. My remarks should not be taken as criticisms reflecting on any part of our organization but they should be considered for what they are, that is a constructive advice for the benefit of those who were fortunate enough not to experience such delays and other difficulties as we had.

Unavailability of aerial photographs

Our field party was going to undertake an alternate project which had been decided upon only after the original plans (Kaniapiskan Project) had been cancelled for lack of transportation.<sup>4</sup> Consequently it was too late to order aerial photographs in time for delivery before we left for the field. Further, there was considerable delay in obtaining those prints that were ordered from the Newfoundland Government and from a number of private agencies. More than three hundred arrived at Goose Bay after the 1st of August, when they were no longer required and over two hundred were never delivered at all.

The result of this delay was that we were not able to make sufficient preparation for our trip, nor to plan our itinerary intelligently and according to problems that should have been located and studied stere-

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It was later found that the R.C.A.F. maintains a regular flight, twice a month, between Goose Bay and Fort Chimo and that it would have been possible for us to secure transportation on one of these flights.

scopically on those photographs. The final return of our field program was greatly hampered by this delay.

It would be advisable to order aerial photographs three to four months before they are actually required. Further, the expense of aerial photographs being high, the parties requiring them should make sure that their orders are not unnecessarily large. It was estimated that for our field trip alone, an amount of more than \$290.00 was spent on photographs that were of no use whatsoever to us.

#### Insufficiency of Equipment

The following is a list of 51 items that could not be provided in time. The resulting delay in the field was of exactly one month at a public expense estimated at over \$600.00.

Adapter ring for Retina II	Howing stone
Ammunition	Hunting knives
Axes and Hatchets	Lenshood for camera
Boot Wax	Manilla rope
Canoe Covers	Mosquito netting
Canoes	Mosquito repellent
Chamois cloth	Oil Can
Climograph pencils	Oil compass
Coffee strainer	Paddles
Coleman funnel	Pail, canvas folding
Copper wire for measuring traverses	Paraffined sacks
Cups, drinking	Pen handles
D.D.T. gun and bombs	Pliers
Double boiler	Repair kit for motor
Douglas protractors	Rifle and shotgun
Drafting set	Rulers
Dunnage bags	Screw drivers
File	Shear pins
Filters (red, yellow, and green)	Spare propellers
Film pack adapter	Spare starter ropes
Floor cloths	Spark plugs
Funnel	Steel tape
Gasoline cans	Swede saw and blades
Gun cleaning set	Thermos bottles
Hand level	Tree measuring instruments
Haze Filter	

Some of these items had been sent to Dorval for air transportation to Goose Bay, but the R.C.A.F. had such a back log that they were not able to handle them at the time they were received. The following is my suggestion to prevent such eventualities:

1. All equipment should be allotted to each party and kept separately, in time to provide for possible shortages (at least 6 weeks before departure). Our own requisitions should be sent to the depot as soon as the year's field program has been approved.
2. The bulk of the equipment, such as canoes, motors, tents, sleeping bags, etc. should be sent whenever possible, a few weeks before the party is ready to leave. Arrangements should be made at the receiving end for proper handling and storage of goods.
3. Small items, personal and scientific equipment could be carried or sent at the same time as the party.

#### Delay due to Weather

I would like to point out that out of a season of 75 days, the party spent 45 days in the field of which 12½ days were lost due to continuous rain or heavy fog. This computation does not include numerous days when work was hampered by occasional rain.

#### Sickness among the Party

On the 6th of June, I sprained my ankle and tore a ligament in my foot; the party left for the field on the following day but we were forced to spend two days of idleness due to that injury. On the 27th of the same month, an Indian guide got sick with congestion of the lungs and fever; pneumonia was feared and he had to be taken back to Northwest River with a resulting delay of 6 days. A seventh day was lost when the other guide declared an abscessed tooth that had to be removed.

The total time lost for sickness was 9 days and to sum up the whole season: 32 days spent waiting for equipment, 12½ days of bad weather, 9 days

lost on account of sickness and 21½ days of actual work. In other words, out of 10 weeks in the field, the party was not able to work for more than 3 weeks.

Although it did not prove to be necessary in our case, it might be wise to require all potential party leaders and assistants to submit to a complete medical check-up before they can be accepted for field work. Guides and labourers should also be examined whenever possible.

#### Type of Equipment

Our canoes and tents were the two items that were found the most unsatisfactory. The canoes might have been convenient, although perhaps too heavy, on a traverse along a big river of the barren lands but they were not suitable for a thickly wooded area such as the southwest of Lake Melville. Their first limitation was their weight and secondly their size. They were not built for portage and consequently the party was forced to abandon the Kenamu trip at the first one and select an alternate way of reaching the Nealy Mountains with an ensuing delay of ten days.

As to the tents, they were leaking badly although they were guaranteed to be waterproof. Rain was sifted to a mist through their walls and it fell continuously upon the occupants who found themselves soaking wet in a very short time. On July 19th, after one stormy night, a leather case kept in a tent had to be drained of four inches of water covering all the photographic film exposed by the party during the previous weeks. The tent floor had to be perforated with a knife to drain it. Fortunately, the films were saved.

Finally I would like to suggest that for last summer's work, the use of other means of field transportation might have been more efficient than canoes.

The recollection of the circumstances surrounding the Mealy Mountains expedition will allow an affirmative answer on three points in favour of air transportation; availability, cost and convenience. The first point was solved when the commanding officer of the U.S. Airforce unit at Goose Bay mentioned that if he had known in advance, he would have gladly provided us with an aircraft for that purpose without any charge. Furthermore, the Royal Canadian Air Force had a Norseman aircraft at Goose Bay which was unemployed most of the time and could have been provided if the arrangements had been previously made with the R.C.A.F. authorities. A precedent had been created when J.M. Gillett, a young botanist, was flown to the Mealy Mountains and was picked up three days later after completion of his work there. As to the cost, it would have been amply provided for by our actual saving on time, equipment and food, it was calculated that the work done in seven weeks by canoe could have been done in one week by aircraft, thus saving over one thousand dollars in salaries alone. This kind of transportation would have been very convenient. The aircraft (preferably a helicopter) would have flown the party to fifteen or twenty pre-selected areas for making spot observations. These could have been selected in the timberland where it was not possible to go by canoe and where walking would have been extremely difficult. Instead, the party had to follow the main streams and at no time was it possible to survey beyond the sand plain, except for a few days spent on the mountains.

