

Official Snow Bulletins of the Province of Quebec
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WHY AN INFORMATION SERVICE IN THE PROVINCE OF QUEBEC

A snowfall is always a delight to the skiers. However, these sportsmen are not satisfied with the lone presence of snow. They want information concerning the depth of the snow blanket, its age, its thickness above the earth and the condition of the surface. Skiers are also interested in the condition of the slopes, the temperature as well as the conditions of the highways and roads leading to their winter sports centres.

The whys of this particular interest for the above mentioned conditions are easy to understand.

If at the start of the winter season and in the spring, the skiers show interest in the overall depth of the snow blanket, it is because the knowledge of these factors, during that period of time, permits them to appreciate to their real value the difficulties and the obstacles they are liable to meet in the mountains, down the more or less wooded slopes and at other strategical points. In fact, not all slopes or trails offer an even surface. To the contrary, rocks, stumps, dead wood, may cause obstacles more or less serious depending on the depth of the snow blanket above the ground. With the knowledge of the terrain as well as that of the depth of the snow blanket, the skiers may know what to expect as eventual obstacles to the practice of their favorite sport.

The last precipitation usually characterizes the surface conditions over which the skiers will slide. A snowfall usually carpets the surface with a fluffy, powdery or granulated coating depending on the temperature at the time of the snowfall or the age of that fall. On the other hand, a rainfall will help the formation of a sticky surface, a brittle or hard crust depending on the amount of water downpoured and the length of exposure to the sun or wind. Experienced skiers, therefore, may put on the type of skis suitable for the terrain or wax their hickories accordingly. The knowledge of the thickness and of the date of the last snowfall or rainfall is very important to the skiers, particularly to the experienced adepts of the sport.

It is very important that the skiers be advised when the slopes are dangerous at the start of the season due to either stumps or rocks or in the spring when these obstacles appear when the depth of the snow blanket melts down or when glaze hardens the slopes and the trails. It is also possible that the ski-tows may not be used as under normal conditions and that other conveniences be not available. In any circumstances the users of these facilities are always those most interested in being kept up to the last minute information.

Temperature influences snow conditions in many ways. The degree of temperature gives the skier an advance knowledge of what will be the snow blanket. Thus, after a thaw, a fluffy snow may become sticky and a powdery snow may form a granulated surface. Contrarily, following a low temperature, a fluffy snow or a powdery snow will turn into a solid and compact surface while a sticky snow will form a more or less thick crust. The knowledge of the temperature permits the skiers to forecast the conditions of the snow surface, the conditions of the slopes and thus how to prepare their skis to use them to the best advantage.

In the days when trains were the only easily available means of transportation to ski resorts, the responsibility and worry of the trip as well as that of de-

lays was left to the railroad companies. But, now that the automobile travels along most highways and roads, even during the most severe days of the winter, sportsmen must take upon themselves to travel the distances in security. For this reason, the good condition of our highways and roads shortens distances, gives the people more weekends and facilitates moving around from one centre to another encouraging even the visiting of far away resorts. But, on the other hand, delay in the clearing of roads, a fog, rain or a snowfall, glaze, will make dangerous travelling. Informed travellers will take every precaution necessary before venturing on the road.

The speed and direction of the wind are also information wanted by skiers as well as are visibility, cloudiness, insolation, etc. In fact, during the course of a ski jump competition, experienced skiers always make themselves familiar with the speed and direction of the wind. During a ski race, the contestants are also much influenced by the sunny condition and finally, visibility may cause obstacles to the skiers taking part in slalom or slope competitions in certain localities.

Those are various factors which interest, with reason, skiing amateurs, during the winter season. It is then easy to understand the reason for an information service which keeps those interested up to the minute informed on atmospheric variations be they local or from the outside, promoters of sports resorts, or the public in general.

In short, the main objective of an Information Service is to assure to winter sports, the maintenance of their prestige with the highest protection possible.

THE METEOROLOGICAL NETWORK

To meet the needs of skiing amateurs and those of the public in general, the Meteorological Bureau relies during the Winter season upon the collaboration of some fifty observers of meteorological stations. These observers come directly under the Meteorological Bureau of the Department of Lands and Forests at Quebec, although they may be attached to regional bureaus.

The Director of the Meteorological Bureau is responsible to appoint these observers, install the meteorological stations, issue the technical instructions, visit the stations, inspect them and coordinate the observation reports with a view to arrange a fast and smooth working distribution of the information concerning snow conditions and the weather.

During the actual winter season, meteorological stations are distributed in six regions of the province: QUEBEC, ST. MAURICE, NORTH OF MONTREAL, EASTERN TOWNSHIPS, GATINEAU, AND SAGUENAY.

Some fifty observers send daily snow reports to the Meteorological Bureau through six collaborators assigned each to one of the regions above mentioned.

Naturally, when the reports give similar observations, the regional chief groups them together adding only the names of the stations where they were taken. This procedure simplifies the tabulation work and furthermore reduces the telephonic or telegraphic costs although still giving an accurate account of the situation to all concerned.

WEATHER OBSERVATIONS

Every day, during the winter season, the observer assigned to collect information concerning snow conditions and the weather must read precision instruments collect visual information relative to certain atmospheric phenomena as well as write his notes and findings in the "OBSERVATION BOOK" placed at his dis-

posal. He must also relay within the shortest delay possible that information to his regional chief. This message is usually relayed by telephone.

The following is a summary of the daily meteorological observations collected by the observer and a brief description of the instruments used by him in his work:

The depth of snow on the ground

To measure the depth of the snow blanket on the ground, we use a "snow stake" made of a two by two inch wooden rod having a length of eight feet, installed on a metal support to stand vertically above the earth. Zero on the rod marks the general level of the land. To obtain more accurate results, several of these snow stakes are used at various spots where the snow blanket does not seem to have been piled up or swept away by the wind. From these observations an average is taken to establish the depth of snow covering the land. This depth is measured in feet and in inches.

This method of observation has been selected to establish a distinction between the overall thickness of the snow blanket and the total of the various heights of snowfalls registered. Between these two values there is evidently a difference in that the total thickness of the snow blanket on the earth is always lower than the addition of the individual snowfalls. The natural compression of the snow as well as thawing and evaporation are as many causes which account for the reduction in volume and depth of the snow blanket over the earth.

When at a meteorological station, an observer wishes to find out the water equivalent to the snow he must weigh it or melt it and then measure it as if it were rain. The quantity of water in a volume of snow varies according to the texture of the snow and to its state of packing. The texture of snow evidently changes with the temperature. The density or packing of snow depends not only on its texture at the time of its falling but also on the depth of the layer, the duration of its permanency on the ground and the temperatures to which it is submitted. Six inches of wet snow recently fallen may give one inch of water, while it will take 30 inches of very dry fluffy snow to obtain the same results. Generally speaking, 10 inches of snow are accepted as the equivalent of one inch of water.

The height and date of the last precipitation

To measure the height of the precipitation a snow table or a rain gauge is used depending on whether the precipitation is in the form of snow or rain.

The snow table supplied by the Meteorological Bureau of the Province of Quebec is a 12 square inch piece of wood, one inch thick to the center of which a 12 inch steel rod with an eye is fixed. To this eye is attached a dark coloured piece of cloth which permits the table to be found following a snowfall. Following each snowfall, the depth of the snow is measured with a regular snow scale marked in inches and tenths of an inch. The table is cleaned after each observation and placed back horizontally on top of the last layer of fallen snow so that its top level comes even with the surrounding snow blanket.

It is quite difficult to measure with precision all snowfalls. The wind blows the snow at certain points and accumulates it at others. Therefore, to obtain excellent results, observations must be made at various points, always trying to install the snow tables where the snow has not been moved by the wind. Then from all these observations is established the average thickness of the snowfall.

The rain gauge is the instrument usually used to measure a rainfall. I believe

that it is not necessary to give here the description of an instrument that we all know.

Since the observer registers all snow or rainfalls in his daily observation book and since he also marks down the time of the start and of the end of the fall, it goes without saying that he can give in his Communique to the Meteorological Bureau, the date, the time and the duration of any snow or rainfall.

Conditions of the snow surface

Conditions of snow surfaces vary from day to day and from hour to hour. The depth and the date of the last fall, the condition of the surface before that last fall, the temperature, the wind, drifts, the intensity of radiations from the sun are as many factors which continually change the condition of the snow surface.

To describe the conditions of the snow surfaces, the Provincial Meteorological Bureau has adopted a variety of terms or expressions. The following is a list of these:

SURFACE CONDITIONS

- I. NEW SNOW: Snow fallen within 24 hours preceding observation.
- II. OLD SNOW: Snow fallen previous to the 24 hours preceding the last observation.
 - A. FLUFFY SNOW: Snow in very light large flakes as easily carried away by the wind as a feather.
 - B. POWDER SNOW: Dry snow having the consistency of powder.
 - C. GRANULAR SNOW: Wet snow which has acquired a crystal consistency under the repeated action of thawing and freezing.
 - D. STICKY SNOW: Soft, wet and easy to mold snow.
 - E. WIND CRUST: Crust formed under the action of wind or dry cold on powdery snow. The surface of that crust is ordinarily rippled.
 - F. ICE CRUST: Crust formed by the freezing of snow crystals following a thaw.
 1. STABLE SNOW: Snow not being swept by the winds.
 2. DRIFT SNOW: Snow carried from one spot to another by the wind.
 3. PACKED SNOW: Snow hardened by cold, wind, or general atmospheric conditions
 4. BREAKABLE CRUST: Crust which cannot support the weight of a man standing on one ski.
 5. UNBREAKABLE CRUST: Crust which can support the weight of a man standing on one ski.

Other current expressions of interest to skiers are also included in the description of snow conditions. Among them are such as: drizzle, fog, sleet, soft hail, snowdrift, and glaze.

Temperature

As far as temperatures are concerned the observer uses a maximum thermometer to obtain the highest daily temperature and a minimum thermometer to get the lowest daily temperature.

Conditions of slopes

The observer takes into account in his surveys the conditions of the slopes in his locality and mentions their more or less accessible entries according to the prevailing atmospherical conditions.

Road conditions

The meteorological report also mentions those provincial highways or roads leading to the various winter sports resorts or centres. The roads are good, passable, slippery or closed to traffic. Prudence notices -- never too numerous -- are added at each occasion where there is danger.

Additional observations

Besides the already mentioned observations, information may be had from any of the meteorological stations properly equipped relative to: nebulosity, atmospheric pressure, wind, visibility, insolation, etc.

METEOROLOGICAL RELEASES

When an observer has gathered the information relating to the atmospheric and snow conditions in particular in his region, he must, in all evidence, transmit his report to the Meteorological Bureau. But this report is not sent directly to the Meteorological Bureau. The regional chief is responsible for filing each morning by telephone the information he receives from his station observers to the Meteorological Bureau at Quebec.

The Quebec Bureau receives each day a report for every region of the province. These reports arrive early enough each day to be transmitted to the Quebec and Montreal offices of the Provincial Tourist Bureau and be published the same day in daily newspapers. Briefly, the regional chiefs for Quebec, St. Maurice, Montreal, the Eastern Townships, Gatineau, and Saguenay collect at approximately the same time the meteorological data from their respective stations and transmit them to the Quebec office. The Meteorological Bureau, after reception of all the reports transmits the tabulated information to the Tourist Service of the Provincial Publicity Bureau.

The report given the regional chief and then transmitted to the Meteorological Bureau at Quebec includes:

1. the total depth of the snow blanket above the ground;
2. the thickness and the date of the last snowfall;
3. the surface conditions of the snow;
4. the temperature;
5. the condition of the slopes;
6. the condition of the highways and roads.

DISTRIBUTION OF INFORMATION

There are at present three methods of distribution of meteorological reports. The regional chief within his locality distributes to the press and radio a detailed report of the conditions as surveyed within his territory. The Meteorological Bureau, because it is located in Quebec City, also supplies regional information to the press and radio besides releasing full information to the Tourist Service at Quebec and at Montreal, to the transport companies, radio stations, etc. The Montreal Office of the Tourist Bureau further looks after the distribution of all the information across Canada and the United States. It should be noted that the Montreal Office of the Tourist Service answers daily requests from more than 250 publicity agents or organizations in Canada and in the United States.

Requests for information concerning snow conditions are both numerous and varied. This means that reports are telephoned or telegraphed when requests concern only a few localities or regions. However, most of the time, those interested wish to have a written copy of the reports for all regions. The Tourist Service in Montreal is therefore equipped to produce the necessary number of copies of the various reports on snow conditions.

The Tourist Service officials further must meet the exigencies and often the whims of the tourist public. Some newspapers or news agencies request reports only so often each week, while others want daily reports and another group only when skiing conditions are ideal.

Requests for information at the Montreal Tourist Service Office are classified as follows: 1. according to days of the week; 2. according to the type of query -- that is -- by telephone, telegram, or by letter and in this last case both ordinary and air mail services are used.

In the case of mimeographed copies, a certain quantity of these reports are distributed by messenger service in Montreal. These copies go mostly to Railway Companies, Air Service Companies, Publicity agencies or organizations, Sporting Goods Stores, the press and radio.

Last year 222 receivers of our snow reports were located in two Canadian provinces and 21 states in the United States and more particularly in 55 different cities. Those are as many places where the official information bulletin of the Province of Quebec receives an excellent publicity.

HISTORY OF THE SERVICE

For many years now, country places and winter sports resorts in particular mention in their advertising publications the wonderful meteorological conditions being enjoyed, conditions favourable, it goes without saying, to the practice of sports, mainly winter sports.

Before the last war, railways companies and certain proprietors of hotels and lodges, used to send to their representatives in certain Canadian or American cities, reports on snow conditions in many localities of the province. These reports often twisted the facts and even if they sometimes reported the real conditions, they reached their destination too late to be accurate. In many cases, it seemed that there was a contest as to who would produce the best imaginary snow conditions, thus inducing the tourist public in error. The reports then published in the press failed to have the confidence of the reader and criticism ran wild.

It was then, in the fall of 1940, that the Provincial Tourist Bureau along with other persons interested in winter sports in the tourist regions of the

province asked the Forest Protection Service to organize a meteorological information service for winter sports adepts. Observers were appointed at some of the strategic points to give regularly during the winter season information concerning the total depth of the snow blanket, the thickness and the date of the last snowfall, snow conditions, the temperature and the condition of the roads.

The Forest Protection Service was selected for this work because it had organized as early as 1936 a Meteorological Bureau to apply meteorological data to the protection of the forests, that is, the prevention and fighting forest fires. The Meteorological Bureau rapidly expanded and as early as 1940 it expanded its activities to service several departments of the provincial government and to a number of public utility organizations. It was thus equipped to supply through the network of stations it operated, meteorological information of particular interest to adepts of winter sports.

In 1948, some 40 stations were operated by voluntary observers in all winter sports resorts of the various regions of Quebec, of the North of Montreal and in the Eastern Townships. The reports on snow conditions were given the radio and the press in all the large cities of Canada and the United States.

The expansion taken by the information service on snow conditions is due in part to the proprietors of hotels and lodges who have done their great share in the development of winter sports resorts, but more particularly to the confidence given the official reports of the government of the Province of Quebec by the tourist public.

The interest shown by the Minister of Lands and Forests in the touristic development of the province, the collaboration of Mr. Henri Kieffer, Chief of the Forest Protection Service under which comes the Meteorological Bureau and the coordination work of the Director of the Publicity Office who is in charge today of the excellent propaganda across the nation and outside must also not be overlooked.

The whiteness of the Quebec Winters, the thick snow blanket with which are wrapped our mountainous countryside, may have been accepted in the past as a necessary evil, but the gayety, the energy, the joy of living of the sports fans, have harnessed the powerfulness of this season of cold and made it serve the need for action, light, sunshine, open air. The skiers have awakened sleepy villages; they have shaken them out of their lethargy; they have populated them with overflowing vitality.

But again the winter must be white and the earth blanketed by heavy snowfalls. It is only under such conditions that is assured the security of the skier who feels isolated from the earth by a thick and marvelous carpet, the presence of which permits him to satisfy his thirst for speed and space.

Snow conditions, during the course of the Quebec Winter, are far from being constant. It may vary from day to day and from hour to hour and change the security of the skier into the most risky venture. The skier wants to know in advance the conditions of the snow on which in a large measure depends the success of his outing and the pleasure he expects to get from it.

The practice of skiing is one of the greatest sources of revenues for our mountain villages and the whole Quebec population at large.

The official information service on snow conditions in the winter sports centres of the province is therefore a measure of security which will assure among us the survival and the development of winter sports and consequently the interest of our fellow citizens and visitors from the outside in our Canadian countryside.