

The Professional Training of Meteorologists
in Canada
1933 - 1976

The Early Years

The first attempt to provide formal scientific training for meteorologists in Canada for the Meteorological Service began in 1933. In conjunction with the Meteorological Service, a one year post-graduate program leading to the degree of M.A. in meteorology was established at the University of Toronto. Courses in Mathematics and Physics were designed to complement the study of meteorology, while members of the Meteorological Service technical staff participated by providing instruction and practical work in meteorological topics and forecasting. Honours graduate students from Toronto and other universities were selected for training, received an M.A. degree in meteorology, and entered the Service with a high level of professional knowledge.

Prior to this, academic training in meteorology was achieved outside of Canada, before or after entering the Meteorological Service, and through the visits of eminent foreign meteorologists. In 1933 both Bjerknes of Norway and Haurwitz of Leipzig presented a series of lectures in Toronto. Such visits, the growing interest in the science, and the demands foreseen in the birth of the air age no doubt contributed to the desire to establish the M.A. course at the University of Toronto.

By 1937 the service, reorganized as the Meteorological Division of the Department of Transport, was undergoing rapid expansion. Greater numbers of forecasters were needed to provide service for the growing network of new air routes. At this time practical training for M. A.

graduates was initiated in the Physics Section of the Division. Also, recruits for the M.A. program were being hired for summer employment as student assistants prior to commencement of their academic year at the University of Toronto. Approximately 10 students per year were trained in this manner until war interrupted university training in 1941.

The War Years

With the onset of the Second World War the military effort, especially the British Commonwealth Air Training Plan, generated an enormous and sudden need for meteorologists in both forecasting and instructional roles. This need grew as the war effort grew. In response, a new type of short, intensive professional training was introduced in November 1940. A variety of university graduates with a background in mathematics and physics were recruited for a four month course in meteorology and forecasting, and sent to air training and other stations as "assistant forecasters" and meteorological instructors.

As staffing permitted, some of the more academically qualified short course graduates were returned for "advanced training", which allowed them to perform wider duties as independent forecasters. Special arrangements with the University of Toronto permitted those forecasters who had taken the advanced course to qualify for an M.A. degree by passing certain qualifying exams in essential subjects. Under these conditions, a number of forecasters were able to achieve an M.A. degree in meteorology before the end of the war and in the two years immediately following. In all, twelve short courses graduated a total of 350 assistant forecasters during the war years, of whom 92 received further advanced training.

The Post War Years

The end of the war brought with it the closure of most of the military bases , and an end to the intense pressure of massive professional training. The Research and Training Section introduced the first refresher courses, two being given during the 1945-46 fiscal year. The courses were six weeks long and total enrollment numbered 25 . The wartime short course was discontinued , and the last advanced course was given in Jan - Aug 1946.

Although military commitments were drastically reduced and professional training of new personnel had virtually ceased at the end of the war, a need for a new training program soon reappeared. Many of the wartime short course personnel returned to civilian careers, and others lacked sufficient qualifications to pursue advanced training in meteorology. At the same time, civilian aviation and public weather services resumed a vigorous growth that had been interrupted by the war. As a consequence , two new courses of training were developed. A totally revised and expanded "Assistant Meteorologist" course for general Bachelor degree graduates was introduced in 1947 . The one year University of Toronto M.A. program , dormant since early in the war, was redesigned and instituted again in 1948.

The Master Degree Program

The post-war M.A. program , which began in 1948, continued until 1963 when the last seven graduates received their degree . However, a new M.Sc. program in meteorology had been started at McGill University in 1961 , in conjunction with the development of a Department of Meteorology.

The Meteorological Service sponsored eight honours graduates in a two year course of studies, which led to an M.Sc. degree in 1963 . The program consisted of one academic year, followed by a year occupied in research and in preparing a thesis. This new two year program was also introduced at the University of Toronto , and later in 1968 at the University of Alberta. Throughout the 1960's until the present time, approximately 20 to 30 post-graduate students were at any one time undergoing studies towards the Masters degree at these three universities.

This new M.Sc. program underwent an important change in its composition of students as time went on . Initially , most were direct entry honours graduates in mathematics and physics. The balance was made up of former general degree meteorologists , who had returned to university under government sponsorship and improved their academic standing to an acceptable level . This placement of worthy Bachelor degree meteorologists into the Master degree program had begun in 1950. With the new M.Sc. program , it was a natural consequence that a considerable number of the graduates , on receiving their Master 's degree, desired to continue their studies toward a Ph.D. In order to assure a sufficient number of operationally motivated candidates, greater numbers of B.Sc meteorologists were encouraged to return to university for a qualifying year of studies and then to enter the M.Sc. program. Thus, by 1970^{the recruiting} direct entry honours graduates had all but ceased, and the post-graduate M.Sc. program was composed of former Bachelor degree meteorologists. This policy of loading the M.Sc. courses has continued through to the present time.

In conjunction with the two year M.Sc. program , the Meteorological Division developed short refresher - update courses for the students. These were given at the end of both the first and second year of M.Sc studies.

The Bachelor Degree Program

The second line of professional training that began with the revised and expanded "Assistant Meteorologist" course in 1947 (Course No. 1) went through an evolution which brought it to the most recent version , "B.Sc. Meteorologist Course No. 32 " . Consecutive numbering was maintained , although civil service classification changes altered the name of the course along the way. In the early 1950's, entrants were classified as Technical Officers and graduated as Meteorologists Grade I . Later they were enrolled as, and graduated as Meteorological Officers. Finally, they were enrolled as Meteorologists, Grade 1 , and the course became known by its present name.

The initial course was designed for **graduates with a general** Bachelor's degree, with mathematics and physics. Following four months of academic training and laboratory work at the Meteorological Division, successful graduates proceeded to a final two to three month phase of operational training at RCAF Station Trenton. Graduates filled an expanding weather system in support of Department of National Defence operations during the 1950's , brought about by the reactivation of training bases in response to new NATO commitments. The program initially graduated from

10 to 20 B.Sc. meteorologists per year . This increased to between 20 and 40 a year in the 1960's , and dropped to 10 in the most recently graduated course. The largest single course occurred in 1962 , when 57 were enrolled and 42 successfully completed their training.

As more and more graduates from these courses returned to the university to participate in the M.A. program and ^{the} later two year M.Sc. program , the qualifications of applicants rose to higher levels, and the course itself was expanded. By 1974, the majority of successful applicants for the B.Sc. course had honours degrees in mathematics and physics, and anywhere from 10 to 20 full undergraduate courses in these subjects. In fact, many of these students had more undergraduate credits than the original honours graduates enrolled in the early M.A. course at the University of Toronto. With these changes in composition of the students, came changes in the syllabus and format. By 1974 the length of the the course in all phases of training had grown to almost nine months.

Other changes occurred in the location at which various phases of training were given. For a period during the 1960's , an introductory phase of training was given at the new Air Services Training School in Ottawa, and discontinued in 1968. The final phase of operational training at RCAF Station Trenton was discontinued after 1974. With smaller courses graduating in 1975 and 1976, this phase was replaced with simulated weather office training at A.E.S. Headquarters, followed by a five week familiarization and check-out period at Canadian Forces Base Winnipeg.

Francophone Training

Training of francophone B.Sc. meteorologists was realized when a contract with the University of Quebec at Montreal was signed in 1973. The first course began in 1974 , with academic and practical training similar to that being given to English speaking students at A.E.S. Headquarters. The final phase of operational training in a simulated weather office, was given by French speaking instructors at A.E.S. Headquarters. As with their English counterparts, the francophone graduates received familiarization training at Canadian Forces Base Winnipeg upon completion of their course.

By Clarence Penner (1976)