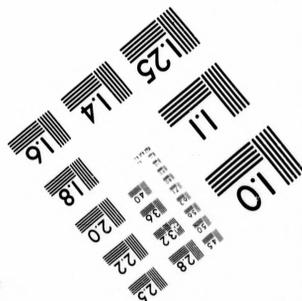
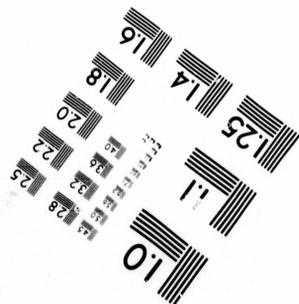
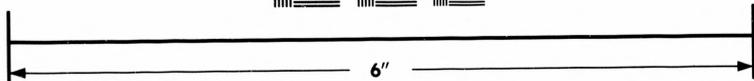
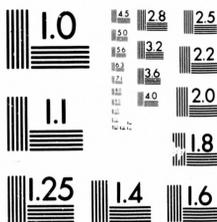


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1981

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distortion le long de la marge intérieure
- Blank leaves added during restoration may
appear within the text. Whenever possible, these
have been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Includes supplementary material/
Comprend du matériel supplémentaire
- Only edition available/
Seule édition disponible
- Pages wholly or partially obscured by errata
slips, tissues, etc., have been refilmed to
ensure the best possible image/
Les pages totalement ou partiellement
obscurcies par un feuillet d'errata, une pelure,
etc., ont été filmées à nouveau de façon à
obtenir la meilleure image possible.

TYPESCRIPT COPY OF A REPORT OR SPEECH WITH MANUSCRIPT CORRECTIONS

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

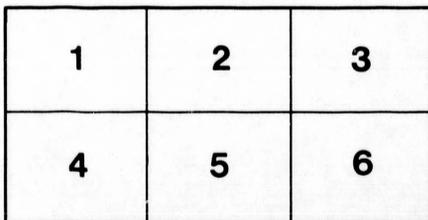
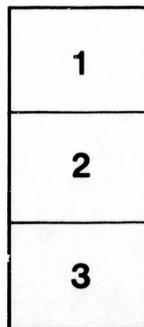
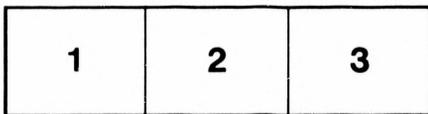
Thomas Fisher Rare Book Library,
University of Toronto Library

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Thomas Fisher Rare Book Library,
University of Toronto Library

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

errata
to
t
e pelure,
on à

THE CANADIAN METEOROLOGICAL SERVICE.

Meteorological observations were commenced at the Toronto Magnetic Observatory in 1841 and have been carried on ever since without a break.

Prior to the autumn of 1869 however there were but few Meteorological Observers in the Dominion of Canada and there was an absence of that unity of action by which the scanty materials ^{supplied} ~~that~~ ~~did exist~~ could be combined as to yield satisfactory results. Being dissatisfied with a state of affairs so discreditable to the Meteorology of Canada and resolving that it should continue no longer Professor G.T. Kingston the Director of the Toronto Magnetic Observatory addressed himself by letter and in person to those actually engaged in Meteorological observations and also to others in various parts of the country requesting their co-operation and offering to make arrangements whereby all observations might be carried on in accordance with instructions issued by himself and might be reported to him at Toronto regularly from month to month. The result was a steady increase in the number of observers and in the exactness and regularity of the observations.

From October 1869 to the Spring of 1871 the Meteorological work of Canada was carried on by an organization that was strictly voluntary. No emoluments whatever were attached to the services of the observers and the instruments were either private property or were provided on loan from the Toronto Observatory from which establishment forms ~~and~~ registration were also furnished. The work of organizing new stations and of compiling returns were performed gratuitously by Professor Kingston and his assistants.

In the Spring of 1871, the Dominion Government recognized the value of these labours by a grant of \$5,000 for the promotion of Meteorological research and with a special view of preparing the

way for establishing a system of storm signals. Early in 1872 arrangements were made for the telegraphing tri-daily reports from several stations in the Region of the Great Lakes to Toronto and these were forwarded to the Chief Signal Officer at Washington, D.C. who in return supplied Professor Kingston with reports from 15 stations in the United States. In July 1872 the annual grant was increased to \$10,000 and a steady increase was made during the next four years in the number of reporting stations and the equipment of storm signal masts.

Up to the autumn of 1876 the Canadian Service relied on the courtesy of the United States Service for storm warnings which were forwarded with regularity from Washington, whenever any serious disturbance was indicated by the Weather Chart. In September of that year, however, warnings were issued to Canadian ports without waiting for notification from the United States and in October regular daily forecasts were issued at 10, a.m. for the next 24 hours.

There are now in the Dominion 323 Meteorological Stations using instruments which have been supplied by the Government. The Observers at 245 of these stations take the observations voluntarily sending regular monthly returns to the Central Office and to these persons is due the hearty thanks of the Service. At 41 stations lying chiefly in the far northern Territories of Canada and at light houses in the Gulf of St. Lawrence, small gratuities are allowed observers. At 38 stations distributed at nearly equal intervals throughout the Dominion three or more observations are taken daily and as the observers are paid salaries, promptness and careful attention to duty is insisted upon. From 36 of these stations, two reports are daily telegraphed to Toronto to be used in the preparation of the daily weather chart.

The telegraphic reports comprise the barometer readings reduced to sea level, the readings of the wet and dry thermometers, the direction and velocity of the wind and state of the weather, the precipitation (if any), and with the morning report the minimum temperature of the pre-

5

-ceeding 12 hours, and with the evening report the maximum ^{temperature} of the day
~~12 hours~~. Almost invariably all reports from the stations
between Lake Superior and Cape Breton are received in the Central Of-
-fice by 8,30 a.m. and p.m., and are then forwarded without delay to
the United States Weather Bureau at Washington
from which place some 60 United States stations are in return sent to
Toronto together with the Canadian reports from Manitoba westward to
British Columbia which are turned over to the United States Bureau
at St. Paul, Minnesota. All reports are usually received shortly after
9,30 and the working chart is ready for the forecasting official by
9,45 and by 10 o'clock the isobars have been drawn and some of the
forecasts telegraphed to their destination. The bulletin issued at
night comprises a short synopsis of the weather during the past day
and a general description of the existing meteorological conditions;
then a list of the highest and lowest temperatures reported from about
a dozen stations, followed by the forecasts for the various districts
lying between Manitoba and the Maritime Provinces. These forecasts
are for the 24 hours beginning the following 8 a.m. unless it be expres-
-ly stated that they cover a longer period. The same evening the
Telegraph Company sends the bulletin to all points ~~where~~ are published
a morning newspaper, in which it is printed, generally at the head of
the column of local news, and then in the morning on the opening of the
various telegraph offices throughout the Dominion the first message
which goes over the wires is the daily forecast which is posted up
in a conspicuous place in every telegraph office. Up to the summer
of 1894 the forecast based on the 8 a.m. chart was practically the
only one issued, but since that time a second forecast covering the
current and following day has been issued at 10 a.m.; this is sent to
nearly all ports both on the Great Lakes and on the Seaboard and it
also appears in most of the afternoon papers published in the Dominion.

There are in the Dominion 73 stations at which cautionary and
storm signals are displayed, on the Lakes, in the Maritime Pro-
vinces, and 2 in British Columbia. The signals used are drums and cones
the cone alone being hoisted when but a moderate gale is expected,

and both drum and cone together when it is thought that the storm will be heavy; the apex of the cone downwards indicates southerly and easterly directions, and upwards northerly and westerly.

Each morning some 85 copies of the weather chart are made by means of a duplicating machine, the Mimeograph, and supplied to the Toronto newspapers, to the Board of Trade, and to such business people who will engage to post them where they will be seen by the Public.

Arrangements have also been made with the G.N.W. Telegraph Company whereby a more comprehensive weather bulletin than is issued to the majority of places should be published each forenoon simultaneously at Quebec, Montreal, Ottawa, Hamilton and London, containing the same information as had for some time previously been published in Toronto, St. John and Halifax. This bulletin in my opinion fills all actual requirements as regards supplying such meteorological information as is possible in the present state of the science of Meteorology.

As regards the usefulness of the Service, first in importance are the warnings issued to Lake and Ocean Shipping of the approach of gales. This work is considered of great value at all fishing points, so much so that few fishermen will now take the risk of going to sea when the signals are displayed, although when the Service was first started the mariner thought himself the best weather prophet until he learnt otherwise from experience.

The long period forecasts covering two or three days and given gratis to all who ask for them, are perhaps the most useful branch of the Service. Shippers of perishable goods, wines, ales &c., are constant enquirers as are also large slaughter and packing houses.

The bi-daily forecasts issued at 10 a.m. and 10 p.m. and published in all the newspapers as well as at all Telegraph Offices from Manitoba to the Maritime Provinces are a very important branch

of the work of the Service. The prominent place in the newspapers allotted to the forecasts speaks of the esteem in which they are held.

All railways in Canada, also several City Street-lines are warned of approaching snowstorms and high winds, these warnings also seem to be much esteemed. During the winter months the Toronto Street Railway Co., telephone nightly as to the chances of snow.

During the construction of wharves and breakwaters and the towing of barges &c., from port to port the Service is frequently asked for special forecasts.

W. H. ...

