A

TORNADO PROJECT SUMMARY SHEET

F = 2 plotted ONT

1. DATE AND TIME 8·8·1878. 1420 LOCAL

2. LOCATION OR PATH (attach map) Vicinity of Norwood.
mean direction from WNW and average speed 36 miles per hour.

3. PATH LENGTH ☐ NOT KNOWN ☐ <1 mi; ☐ 1-4 mi; ☐ 5-10 mi; ☒ 12 11-50 mi; ☐ LENGTH IF >50 mi

4. PATH WIDTH 50 YDS VARYING TO 1/8 MILE 5. TORNADO PART OF SQUALL LINE? ☐ YES; ☐ NO; ☑ UNKNOWN:

6. ANY UNUSUAL COLORATION? ☑ YES; ☐ NO; ☐ UNKNOWN

7. ANY UNUSUAL SOUND? ☐ YES; ☐ NO; ☐ UNKNOWN

8. IF ANSWER TO 6 OR 7 YES, ELABORATE; 6. cloud grew "bluish-black"!

9. LIST ANY ASSOCIATED PHENOMENA (Such as hail, vivid lightning heavy rain, no rain, etc.) Hail larger than 2" in diameter and weighing upwards of ·48 lb.

10. TOTAL DAMAGE ESTIMATE $75,000 11. TOTAL DEATHS NONE

12. TOTAL INJURED 2 13. TOTAL HOMELESS UNKNOWN

14. LIST ALL REFERENCES

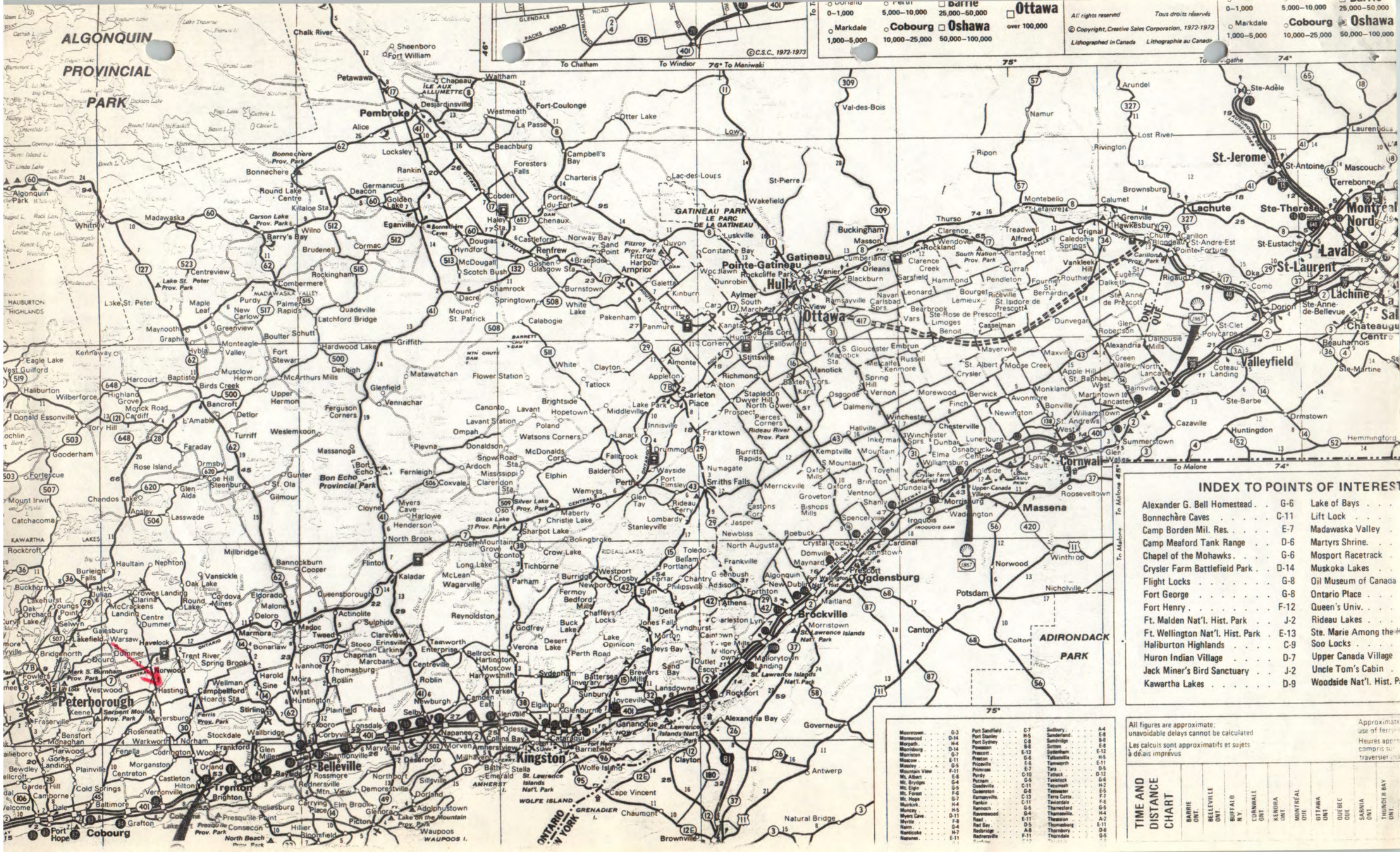
Monthly Weather Review, August 1878. Meteorological Service, Dominion of Canada.

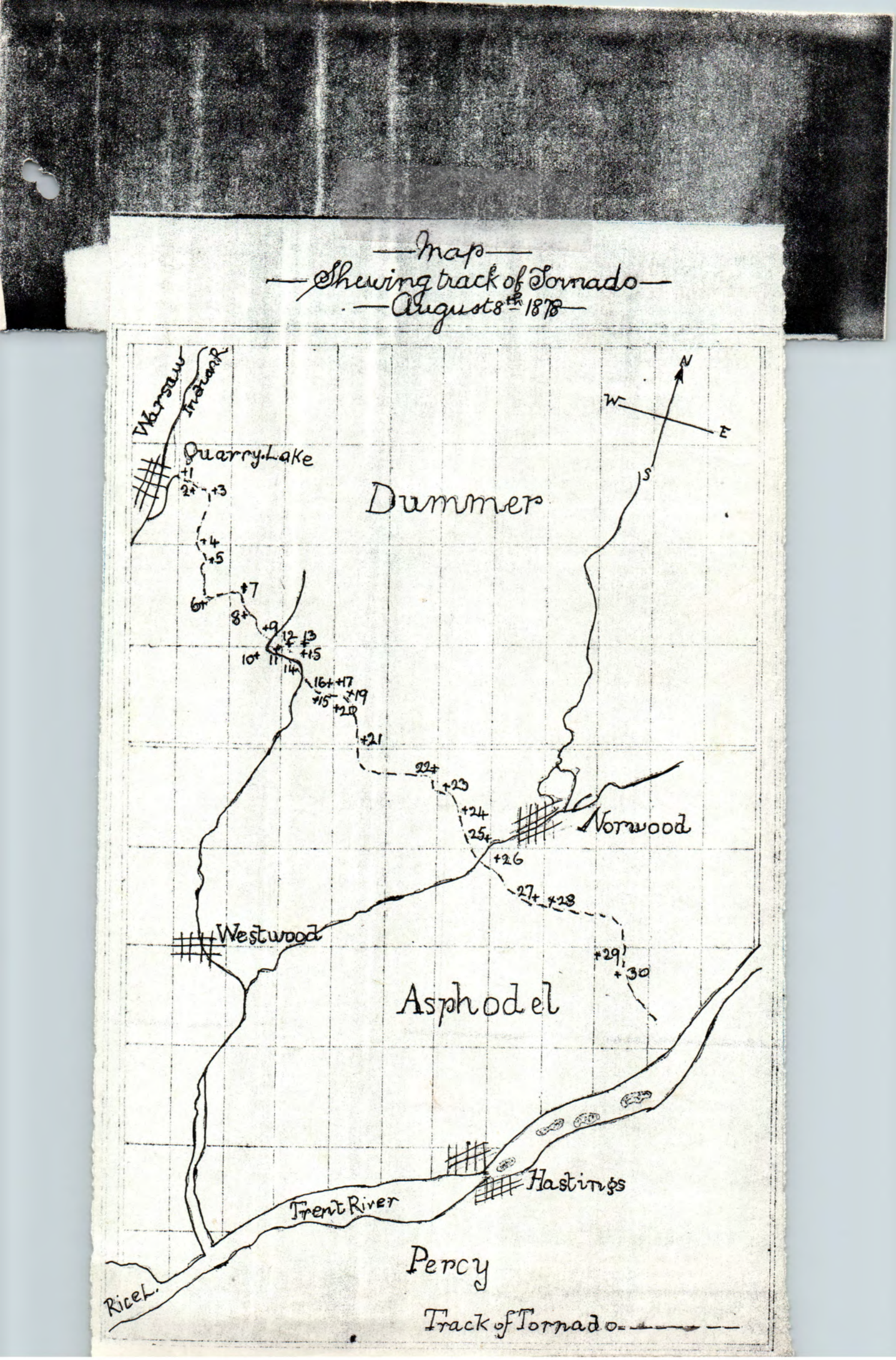
The Mail, Toronto Aug 9, 1878
Kingston Whig. Aug 9, 1878
Fergus News Record, Aug 15 1878

15. SUMMARIZE REMARKS PERTAINING TO (a) FUNNEL; (b) INTERESTING OR CAPRICIOUS EVENTS.

(a) and "immediately the inverted cone was formed and dropped its snakelike apex towards the ground. Once formed the column moved very rapidly.... Sometimes contracting itself into a dense black tube, and at others expanding into a wide column, while it passed the village it seemed to be lifted from the ground altogether.

(b) Scores of barns, stables and other outbuildings unroofed or damaged. One building which was utterly demolished was described by an eyewitness to have gone "just as if blown up by gunpowder." A brick school house and a cheese factory were completely wrecked. Many of the cheese were carried half a mile and the timbers of the factory were carried away completely.


ALGONQUIN PROVINCIAL PARK
Pembroke
Petawawa
Chalk River
Deep River
Renfrew
Eganville
Barry's Bay
Bonnechere Prov. Park
Carson Lake Prov. Park
Lake St. Peter Prov. Park
Algonquin Park
Whitney
Madawaska
Centreview
Combermere
Rockingham
Lake St. Peter
Maple Leaf
Purdy
New Carlow
Palmer Rapids
Quadeville
Latchford Bridge
Maynooth
Greenview
Boulter
Schutt
Graphite
Monteagle Valley
Hybla
Kennaway
Eagle Lake
West Guilford
Haliburton
Wilberforce
Donald
Essonville
Tory Hill
Gooderham
Fortescue
Mount Irwin
Chandos Lake
Apsley
Lasswade
Catchacoma
Rockcroft
Buckhorn
Lakehurst
Oak Orchard
Young's Point
Selwyn
Lakefield
Warsaw
Douro
Dummer
Bridgenorth
Havelock
Norwood
Trent River
Spring Brook
Ivanhoe
Thomasburg
Roslin
Moira
Harold
Sine
West Huntingdon
Campbellford
Hoards Sta
Stirling
Ferris Prov. Park
Plainfield
Read
Selby
Newburgh
Camden East
Glenvale
Elginburg
Glenburnie
Napanee
Odessa
Collins Bay
Kingston
Wolfe Island
Cape Vincent
Chaumont
Brownsville
Natural Bridge
Antwerp
Clayton
Alexandria Bay
Governeur
Belleville
Trenton
Brighton
Baltimore
Cobourg
Port Hope
Grafton
Colborne
Presqu'ile Prov. Park
North Beach Prov. Park
Consecon
Hilton
Castleton
Centreton
Morganston
Plainville
Harwood
Wooler
Codrington
Frankford
Glen Miller
Shannonville
Marysville
Deseronto
Rossmore
Rednersville
Mountain View
Demorestville
Northport
Dorland
Sillsville
Emerald
Stella
Bath
Adolphustown
Lake on the Mountain Prov. Park
Waupoos
Picton
Bloomfield
Carrying Place
Elm Brook
Glenora
Hillier
Milford
Millhaven
Amherstview
Bayside
Tamworth
Enterprise
Centreville
Bellrock
Hartington
Moscow
Harrowsmith
Sydenham
Battersea
Inverary
Sunbury
Joyceville
Lansdowne
Rockport
Glenburnie
Genanoque
Lansdowne
Mallorytown
Mallorytown Landing
Morristown
Lyndhurst
Delta
Jones Falls
Seeleys Bay
Lake Opinicon
Perth Road
Verona
Desert Lake
Buck Lake
Godfrey
Chaffeys Locks
Westport
Crosby
Newboro
Forfar
Chantry
Philipsville
Addison
Elgin
Fermoy
Bedford Mills
Burritt's Rapids
Merrickville
Oxford Mills
Kemptville
Spencerville
Oxford Station
Groveton
Bishops Mills
Easton's Corners
Jasper
Newbliss
Roebuck
Crystal Rock
Domville
Maynard
Johnstown
Cardinal
Prescott
Ogdensburg
Frankville
Algonquin
New Dublin
Fortrton
Athens
Maitland
Brockville
Charleston Lyn
Caintown
Yonge Mills
Lyndhurst
Morristown
St. Lawrence Islands Nat'l. Park
Rockport
Alexandria Bay
Governeur
Antwerp
Clayton
Wolfe Island
Cape Vincent
Chaumont
Brownsville
Natural Bridge
Potsdam
Norwood
Winthrop
Nicholville
Canton
Colton
ADIRONDACK PARK
Massena
Cornwall
Summerstown
Lancaster
Williamsburg
Morrisburg
Iroquois
Dundela
Upper Canada Village
Crysler Farm Battlefield Park
Inkerman
Mountain
Hallville
Winchester Sprs
Dunbar
Osnabruck Centre
Elma
Lunenburg
Long Sault
Moose Creek
Maxville
Apple Hill
St. Raphael West
Martintown
Bainsville
Glen Walter
Valleyfield
Ste-Barbe
Ormstown
Huntingdon
Cazaville
Hemmingford
Ste-Martine
Beauharnois
Chateauguay Centre
Ste-Anne-de-Bellevue
Lachine
Dorion
Vaudreuil
Dalhousie Mills
Alexandria
Green Valley
Coteau Landing
Polycarpe
St-Clet
Dorion
Vaudreuil
Rigaud
Oka
Como
St-Laurent
Dollard-des-Ormeaux
Pierrefonds
Ste-Anne de Prescott
Glen Robertson
Dunvegan
Casselman
Embrun
Russell
Kenmore
Mayerville
St. Albert
Crysler
Apple Hill
Monkland
Bonville
Avonmore
Newington
Finch
Morewood
Berwick
Chesterville
Winchester
Dunbar
Osnabruck Centre
Elma
Lunenburg
Long Sault



—Map—
—Shewing track of Tornado—
—August 8th 1878—

APPENDIX.

The following is the report on the tornado which visited the vicinity of Norwood, Ont., on the 8th of August, which has been kindly furnished to us by our volunteer observer, the Revd. T. F. Fotheringham :

"Shortly before one o'clock on the afternoon of Thursday, August 8th, I observed a thunder cloud rising in the W. N. W. By half-past one it had spread itself over the whole north sky, and the roll of thunder was incessant, and continued so with but slight cessation throughout the whole storm until near three o'clock. The weather had not been unusually sultry, and the wind blew very gently from the west-north-west. In the upper regions of the atmosphere, however, a strong gale was blowing and the clouds moved rapidly. At 2 p.m. I took the usual observations ; whilst taking them the first few drops of rain fell, and they were accompanied by a few small hailstones. Larger hail followed, but at no time was the fall heavy. The hail was falling at intervals for an hour and a half. At first the stones were about the size of peas ; then oval discs fell composed of a nucleus surrounded by a thin plate of clear ice, and that in turn bordered by a thick rim of frozen snow. Other stones were about the size of marbles, and were soft, without any perceptible nucleus of ice. Larger balls fell, exhibiting the most perfect radiated structure, and consisting of two or even three pairs of concentric spheres of ice and frozen snow. Several exceedingly large hailstones fell during the passage of the storm. I picked up the largest I could see, an operation savouring not a little of adventure when the size of the stones and the force with which they fell is considered,. Many of them rebounded more than threefeet from the lawn, and those that fell in the garden buried themselves almost out of sight. The holes they made are still quite conspicuous, although a week has elapsed since they fell. I would estimate that, of stones two inches and more in diameter, there fell about one to every square yard, and of smaller ones, about one to every square inch. Many of the stones were perfect spheres, others had a slice wanting on one side, and others were irregular masses of half-melted prisms. I had placed the stones I gathered in glasses, and measured the water resulting from them. The water when measured was at the temperature of melting ice. The last two were double—the others single.

Cubic contents.		Weight.	
13·30	cub. in	·480	lb.
12·00	"	·433	"
11·00	"	·397	"
10·70	"	·386	"
10·00	"	·361	"
9·75	"	·352	"
9·35	"	·337	"
7·35	"	·265	"
16·85	"	·608	"
14·65	"	·528	"

I have received reports, from reliable persons, of stones weighed by themselves or under their inspection, as follows :

(1) A single stone, sphere with one nucleus, weighing 12 oz.

(2) A parallelogram of ice, almost perfect in shape, measuring 4½ x 4 x 3 inches, and weighing on platform scales 1½ lbs.

(3) A stone weighing 30 oz. I did not see this stone nor the person who weighed it. My informant was the operator in the Dominion Telegraph Office, and he obtained his information from the finder of the hailstone. I cannot say whether the stone was accurately weighed or whether the weight was only estimated.

The hail fell in a belt, on the north side of the tornado, about 3 or 4 miles wide ; but at no place were the stones so large as in Norwood village.

At about 2.20 p.m., while watching the progress of the storm to the northward, the wind was noticed to blow suddenly from the north-east, and although only a moderate breeze was experienced at the surface of the earth, I noticed that a portion of the clouds in the north-north-west were detached and carried at a terrific rate towards the west. Other nimbus clouds were in the west and south-west. The speed of the detatched cloud gradually slackened, and when it was exactly in the west it stopped, grew bluish-black, and immediately the inverted cone was formed and dropped its snakelike apex towards the ground. Once formed, the column moved very rapidly by on the south-west of the village, sometimes contracting itself into a dense black tube, and at others expanding into a wide column, while as it passed the village it seemed to be lifted from the ground altogether. At the south-east corner of the township an observer compared it to a huge balloon sailing near the ground. The nearest point of the track to the village was half a mile distant.

From personal observation I have constructed a diagram map, which you will find enclosed. The scale is two miles to the inch, and the dotted line represents the course of the tornado. The concession lines are ruled with double lines, and their lie is N 15°W. The width of the track varies from 50 yds. to one-eighth of a mile, and its course is very devious.

The tornado first struck the ground near Quarry Lake on the Indian River, at a point called Douglas Hill (2). Mr. Douglas' house (1) is uninjured, but his orchard is uprooted. At (4) the trees are thrown in an inextricable mass, the heads pointing inwards—here the width does not exceed 200 yds., and the force of the wind was more violent than afterwards. At (5,) (6,) (7) and (8) barns are unroofed. Here, as in every case, where only one half of the roof was removed, it is the half on the south side, and seeing that the whole side is lifted

Monthly Weather Review July, 1878. Meteorological S
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off bodily it is evident that the force removing came from the inside of the building. The theory noticed in Loomis section 298 and Brocklesby section 147 is abundantly illustrated in this storm.

At (9) a barn and dwelling house are unroofed, at (10) a dwelling house and stables are utterly demolished. An eyewitness said to me, "they went just as if blown up by gunpowder." At (11) a brick school house is so thrown down that the cottage-shaped roof lies, almost entire, resting on the foundations and burying the debris of the walls beneath it. At (12) St. Andrew's Church, and at (13,) the manse, are uninjured, although the fence around the churchyard and around grave-plots between the church and manse are thrown down. Other buildings around here are demolished. Being on the top of a hill the tempest seems to have raged with peculiar violence at this point. At (14) the kitchen at the east end of a house is unroofed, one side being thrown to the north and the other to the south. There seems to have been several vortices travelling together, for the destruction of objects was in some cases simultaneous, although these objects were many yards apart. One sufferer stated that it seemed to "reach out arms like a spider and draw everything in." Those who observed the cloud from the western side describe its appearance as surpassingly beautiful. It seemed like a huge caldron of snowy vapor, and forked lightning passed incessantly downwards through the seething mass. The sun was shining brightly on the western side all the time. At (15) a barn is uninjured. At (16) a house and barn are consequently unroofed. The roof of the house hangs over the front side, being still attached to the west gable. The windows of the east gable are not broken in. At (17) an Orange Hall is uninjured. At (18) a barn and stable are completely unroofed, and part of the roof torn off a dwelling house. At (19) a cheese factory is utterly destroyed. One of the workmen who escaped described the whirlwind as li ting the building entire and letting it fall to pieces, and then scattering the pieces every way. Many of the cheeses were carried half a mile, and the timbers of the building are carried away altogether. At this point a saw-mill is unroofed and a dwelling house thrown down, the inmates escaping to the cellar. The storm seems to have stayed near this point for several minutes, and the fields over an area half a mile in diameter are swept clean of fences.

At (22) a barn and stable are destroyed, the siding torn off the barn, and contents of the barn scattered about the fields. The house is also unroofed, while the boards that are nailed on the outside of the barn are torn off, those nailed on the inside remain in their places. At (23) a barn and stable are unroofed. At (24) a barn is partly unroofed and a small house destroyed. The house that was inhabited was uninjured, although it lay directly in the track of the whirlwind and not 50 yards from the barn. At (25) buildings are uninjured. Here the track is not over 50 yards wide.

No further damage of any account is done. The buildings marked on the map and lying directly in the track of the storm are safe. At (21) the telegraph wires were torn down, while at (27) they are uninjured, and wrapped round fence rails, &c.

I should have mentioned that, at the destruction of the barn at (22,) the roof appeared to be raised entire about 40 feet, and then to be caught at a corner by the whirl and intantly torn into a thousand pieces.

The distance traversed by the tornado was about 12 miles in a straight line, and in passing this distance it occupied 20 minutes, or its rate was 36 miles per hour. The mean direction was east-south-east.

The amount of damage done is estimated at $75,000.

During the succeeding night violent thunder showers passed both to the north and west, but little rain fell at Norwood. From 9 p.m. till morning the thunder and lightning were incessant, just as in the afternoon. About 4 a.m. hail fell; I went out and got some, it was soft and about the size of large peas; a heavy gale accompanied it and several panes of glass were broken. The hail during the previous afternoon fell almost perpendicularly. The wind that came from the east-south-east at 2·20 p.m. was somewhat colder, and a fog of condensed vapour rose from the face of the woods. I distinctly heard the rattle of the hailstones before they fell, and their fall at a distance sounded like a cataract.

The above are nearly all the facts that I could glean. I shall be glad to ascertain any further points that you may wish elucidated. I remain yours sincerely,

T. F. FOTHERINGHAM.

Norwood, Ont., Aug. 15th, 1878.

P.S.—There were no hills in the course of the tornado that would be likely to have any effect on its course. There are none around here which may not be cultivated to the top. At the foot of Douglas Hill (300 ft.) flows the Indian river here expanded into Quarry Lake, about 200 yards wide and 1½ miles long. On the opposite side is a quarry from which the stone for the locks on the Otonabee, at Little Lake, near Peterboro' was taken. The banks of the river below the hill are steep and rocky (Trenton limestone) and covered with trees and underwood, but the top of the hill constitutes a fine farm with dwelling-house, barns, &c., and orchard. The house, orchard, &c., are on the north-western slope of the summit, and from the back of the orchard the hill slopes away and is lost in the general rolling character of the country. It was the orchard that was first struck.

The tornado passed over several hills of as great elevation as that at Douglas' farm, the most prominent, perhaps, being that at which so much damage was done, locally known as "Cahoun's Corners," where St. Andrew's Church and Manse stand in the diagram I sent you. But it is not by any means the highest hill in the neighborhood, nor is its elevation so abrupt or so great as to entitle it to the appelation in local nomenclature. The destruction in the neighborhood of the cheese factory was accomplished in a valley through which a good sized brook flows. By a valley I only mean a depression of surface. The country around here much resembles the northern part of the County of York, perhaps somewhat hillier.

I do not think that the hills affected either the direction or the force of the tornado, but you will be able to judge this point, nor can I discover that it followed any depression in the general surface. The hills are, in a general way, parallel to the water courses, and it crossed all these nearly at right angles.

I made a slight error in giving the direction of the concession lines. My informant is a good authority having assisted in ihe original survey of the townships, but that survey was exceedingly inaccurate. Mr. Wilkins a surveyor, resident here, and now engaged in field work, informs me that the actual direction of concession lines are from N. 12.5 W. to N. 18.5 W.

T. F. F.

Aug. 26th, 1878.

METEOROLOGICAL SERVICE, DOMINION OF CANADA. (1)

MONTHLY WEATHER REVIEW. AUGUST 1878.

The following is the report on the tornado which visited the vicinity of NORWOOD, ONTARIO, on the 8th. August 1878, which has been kindly furnished to us by our volunteer observer, the REVEREND T. F. FOTHERINGHAM:

"Shortly before one o 'clock on the after noon of Thursday, August 8th, I observed a thunder cloud rising in the W.N.W. By half past one it had spread itself over the whole north sky, and the roll of thunder was incessant, and continued so with but slight cessation throughout the whole storm until near three [redacted] o'clock. The weather had not been unusually sultry, and the wind blew very gently from the west_north—west. In the upper regions of the atmosphere, however, a strong gale was blowing and the clouds moved rapidly. At 2pm. I took the usual observation; whilst taking them the first few drops of rain fell, and they were accompanied by a few small hailstones. Larger hail followed, but at no time was the fall heavy. The hail was fall_—ing at intervals for an hour and a half. At first the stones were about the size of peas; then oval discs fell composed of a nucleus surrounded by a thin plate of clear ice, and that in turn bordered by a thick rim of frozen snow. Other stones were about the size of marbles, and were soft, without any perceptible nucleus of ice. Larger balls [redacted] fell, exhibiting the most perfect radiated structure, and consisting of two or even three pairs of concentric spheres of ice and frozen snow. Several exceedingly large hail—stones fell during the passage of the storm. I picked up the largest I could see, an operation savouring not a little of adventure when the size of the stones and the force with which they fell is considered. Many of them rebound—ded more than three feet from the lawn, and those that fell in the garden buried themselves almost out of sight. Tha holes they made are still quite conspicuous, although a week has elapsed since they fell. I would estimate that, of stones two inches or more in diameter, there fell about one to every square yard, and of smaller ones, about one to every square inch. Many of the stones were perfect spheres, others had a slice wanting on one side, and others were irregular masses of half melted prisms. I had placed the stones I gathered in glasses, and measured the water resulting from them. The water when measured was at the temperature of melting ice. The last two were double_the others single.

CUBIC CONTENTS	WEIGHT
13·30 cubic inches	·480lb
12·00 " "	·433lb
11·00 " "	·397 [redacted]
10·70 " "	·386 [redacted]

CUBIC CONTENTS	WEIGHT
10·00 cubic inches	·361lb
9·75 " "	·352lb
9·35 " "	·337lb
7·35 " "	·265lb
16·85 " "	·608lb
14·65 " "	·528lb

I have received reports from reliable persons, of stones weighed by themselves or under their inspection, as follows:

(1) A single stone, sphere withone nucleus, weighing 12 oz

(2) A parallelogram of ice, almost perfect in shape, measuring 41/2 x 4 x 3 inches, and weighing on platform scales 11/21bs

(3) A stone weighing 30oz. I did not see this stone nor the person who weighed it. My informant was the operator in the Dominion Telegraph Office, and he obtained his information from the finder of the hailstone. I cannot say whether the stone was accurately weighed or whether thec weight was only estimated.

The hail fell in a belt, on the north side of the tornado, about 3 or 4 miles wide; but at no place were the stones so large as in NORWOOD village.

At about 2 20pm., while watching the progress of the storm to the northward, the wind was noticed c to blow suddenly from the north—east, and although only a moderate breeze was experienced at the surface of the earth, I noticed that a portion of the clouds in the north—north—west were detached and carried at a terrific rate towards the west. Other nimbus clouds were in the west and south—west. The speed of the detached cloud gradually slackened, and when it was exactly in the west it stopped, grew bluish—black, and immediately the inverted cone was formed and dropped its snakelike apex towards the ground. Once formed, the column moved very rapidly by on the south—west of the village, sometimes contracting itself into a dense black tube, and at others expanding into a wide column, while as it passed the village it seemed to be lifted from the ground altogether. At the south—east corner of the township an observer compared it to a huge balloon sailing near the ground. The nearest point of the track to the village was half a mile distant.

From personal observation I have constructed a diagram map, which you will find enclosed. The scale is two miles to the inch, and the dotted line represents the course of the tornado. The concession lines are ruled with double lines, and their lie is N 15 W. The width of the track varies

from 50 yards to one eighth of a mile, and its course is very devious.

The tornado first struck the ground near QUARRY LAKE on the INDIAN RIVER, at a point called DOUGLAS HILL(2). Mr. DOUGLAS' house (1) is uninjured, but the orchard is uprooted. At (4) the trees are thrown in an inextricable mass, the heads pointing inwards here the width does not exceed 200 yards, and the force of the wind was more violent than afterwards. At (5,) (6,) (7) and (8) barns are unroofed. Here, as in every case, where only one half of the roof was removed, it is the half on the south side, and seeing that the whole side is lifted off bodily it is evident that the force removing came from the inside of the building. The theory noticed in LOOMIS SECTION 298 and BROCKLESBY SECTION 147 is abundantly illustrated in this storm.

At (9) a barn and dwelling house are unroofed, at (10) a [redacted] dwelling house and stables are utterly demolished. An eyewitness said to me, "they went just as if blown up by gunpowder." At (11) a brick school house is so thrown down that the cottage-shaped roof lies, almost entire, resting on the foundations and burying the debris of the walls beneath it. At (12) ST. ANDREW'S CHURCH, and at (13,) the MANSE, are uninjured, although the fence around the churchyard and around grave-plots between the church and manse are thrown down. Other buildings around here are demolished. Being on top of the hill the tempest seems to have raged with peculiar violence at this point. At (14) the kitchen at the east end of a house is unroofed, one side being thrown to the north and the other to the south. There seems to have been several vortices travelling together, for the destruction of objects was in some cases simultaneous, although these objects were many yards apart. One sufferer stated that it seemed to "reach out arms like a spider and draw everything in." Those who observed the cloud from the western side describe its appearance as surpassingly beautiful. It seemed like a huge caldron of snowy vapor, and forked lightning passed incessantly downwards through the seething mass. The sun was shining brightly on the western side all the time. At (15) a barn uninjured. At (16) a house and barn are unroofed. The roof of the house hangs over the front side, being still attached to the west gable. The windows of the east gable are not broken in. At (17) an ORANGE HALL is uninjured. At (18) a barn and stable are completely unroofed, and part of a roof torn off a dwelling house. At (19) a CHEESE FACTORY is utterly destroyed. One of the workmen who escaped described the whirlwind as lifting the building entire and letting it fall to pieces, and then scattering the pieces every way. Many of the cheeses were carried half a mile, and the timbers of the building are carried away altogether. At this point a saw-mill is unroofed and a dwelling house thrown

down, the inmates escaping to the cellar. The storm seems to have stayed near this point for several minutes, and the fields over an area half a mile in diameter are swept clean of fences.

At (22) a barn and stable are destroyed, and the contents of the barn scattered about the fields. The house is also unroofed, while the boards that are nailed on the outside of the barn are torn off, those nailed on the inside remain in their places. At (23) a barn and stable are unroofed. At (24) a barn is partly unroofed and a small house destroyed. The house that was inhabited was uninjured, although it lay directly in the track of the whirlwind and not 50 yards from the barn. At (25) buildings are uninjured. Here the track is not over 50 yards.wide.

No further damage of any account is done. The buildings marked on the map and lying directly in the track of the storm are safe. At (21) the telegraph wires are torn down (while at (27) they are uninjured) and wrapped round fence rails etc.

I should have mentioned that, at the destruction of the barn at (22) the roof appeared to be raised entire about 40 feet, and then to be caught at the corner by the whirl and instantly torn into a thousand pieces.

The distance traversed by the tornado was about 12 miles in a straight line, and in passing this distance it occupied 20 minutes, or its rate was 36mph. The mean direction was east-south-east.

The amount of damage done is estimated at $75,000.

During the succeeding night violent thunder showers passed both to the north and west, but little rain fell at NORWOOD. From 9pm. till morning the thunder and lightning were incessant, just as in the afternoon. About 4am. hail fell; I went out and got some, it was soft and about the size of large peas; a heavy gale accompanied it and several panes of glass were broken. The hail during the previous afternoon fell almost perpendicully. The wind that came from the east-south-east at 2 20pm. was somewhat colder, and a fog of condensed vapor rose from the face of the woods. I distinctly heard the rattle of the hailstones before they fell, and their fall at a distance sounded like a cataract.

The above are nearly all the facts I could glean. I shall be glad to ascertain any further points that you may wish elucidated. I remain yours sincerely, T.F.FOTHERINGHAM. NORWOOD,ONT., AUGUST 15TH. 1878.

P.S.—There were no hills in the course of the tornado that would be likely to have any effect on its course. There are none around here which may not be cultivated to the top. At the foot of DOUGLAS HILL (300ft) flows the INDIAN RIVER here expanded into QUARRY LAKE, about 200 yards wide

CONTINUATION. NORWOOD TORNADO. 8TH. AUGUST 1878.

and one and a half miles long. On the opposite side is a quarry from which the stone for the locks on the OTONABEE, at LITTLE LAKE, near PETERBOROUGH was taken. The banks of the river below the hill are steep and rocky(TRENTON LIMESTONE) and covered with trees and underwood, but the top of the hill constitutes a fine farm with dwelling-house, barns, etc., and orchard. The house, orchard, etc., are on the north-western slope of the summit, and from the back of the orchard the hill slopes away and is lost in the general rolling character of the country. It was the orchard that was first struck.

The tornado passed over several hills as of graet elevation as that at DOUGLAS' farm, the most prominent, perhaps, being that at which so much damage was done, locally known as "CAHOUN'S CORNERS",where ST. ANDREW'S CHURCH and MANSE stand in the diagram I sent you. But it is not by any means the highest hill in the neighborhood, nor is its elevation so abrupt or so great as to entitle it to the appellation in local nomenclature. The destruction in the neighborhood of the cheese factory was accomplished in a valley through which a good sized brook flows. By a valley I only mean a depression of surface. The country around here much resembles the northern part of the COUNTY OF YORK, perhaps somewhat hillier.

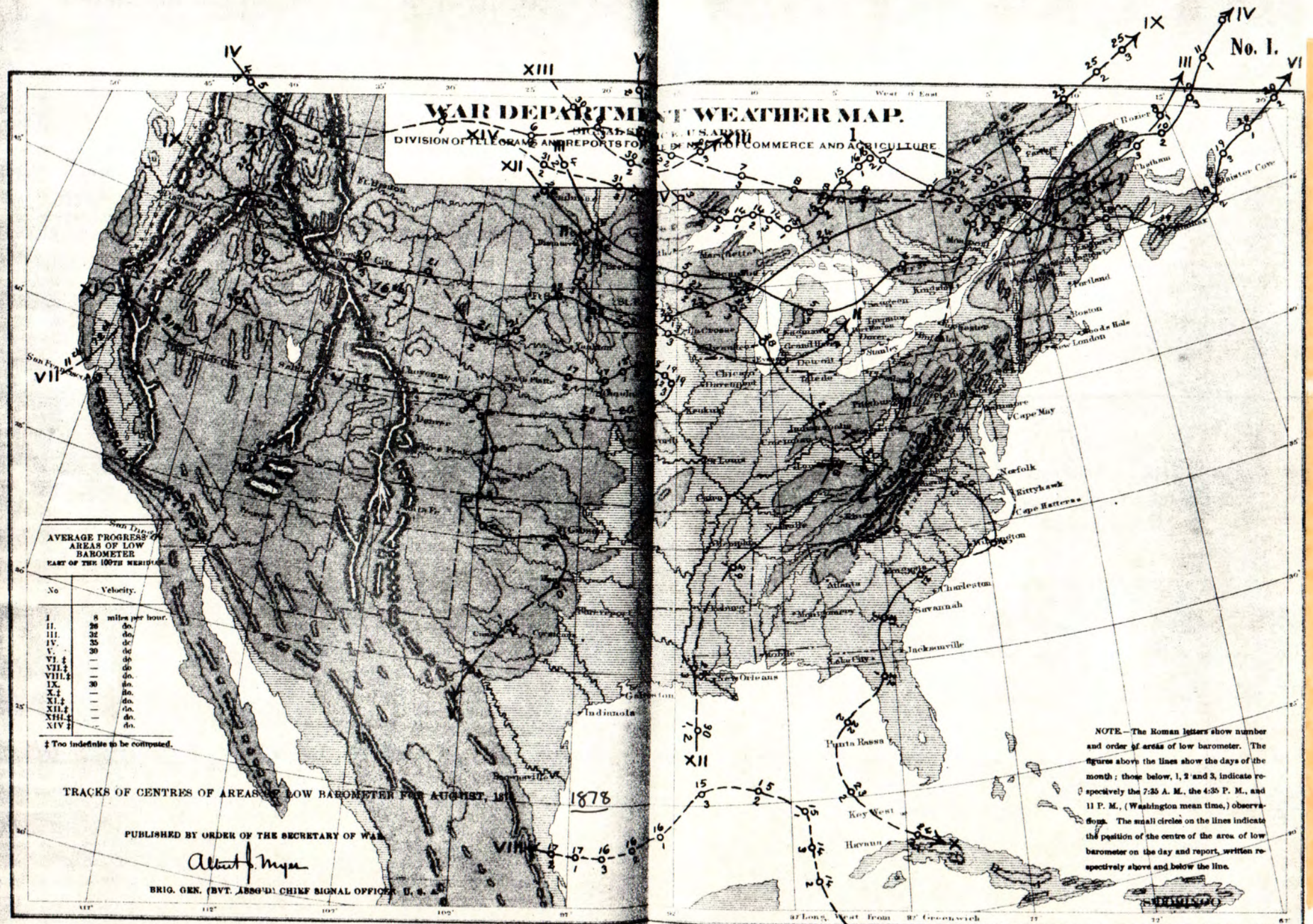
I do not think that the hills affected either the direction or the force of the tornado, but you will be able to judge this point, nor can I discover that it followed any depression inthe general surface. THe hills are, in a general way, parallel to the cwater courses, and it crossed all these nearly at right angles.

I made a slight error in giving the direction of the concession lines. My informant is a good authority having assisted in the original survey of the townships, but that survey was exceedingly inaccurate. Mr. WILKINS a surveyor,,resident here, and now engaged in field work, informs me that the actual direction of concession lines are from N.12 5 W. to N. 18 5 W.

AUGUST 26TH. 1878.

1879

No. I.


WAR DEPARTMENT WEATHER MAP.
DIVISION OF TELEGRAMS AND REPORTS FOR
DEPARTMENT OF COMMERCE AND AGRICULTURE
AVERAGE PROGRESS OF AREAS OF LOW BAROMETER EAST OF THE 100TH MERIDIAN.
No. Velocity.
I. 8 miles per hour.
II. 28 do.
III. 32 do.
IV. 35 do.
V. 30 do.
VI. ‡ — do.
VII. ‡ — do.
VIII. ‡ — do.
IX. 30 do.
X. ‡ — do.
XI. ‡ — do.
XII. ‡ — do.
XIII. ‡ — do.
XIV ‡ — do.
‡ Too indefinite to be computed.
TRACKS OF CENTRES OF AREAS OF LOW BAROMETER FOR AUGUST, 1878
1878
PUBLISHED BY ORDER OF THE SECRETARY OF WAR.
BRIG. GEN. (BVT. MAJ. GEN'L) CHIEF SIGNAL OFFICER U. S. A.
NOTE.—The Roman letters show number and order of areas of low barometer. The figures above the lines show the days of the month; those below, 1, 2 and 3, indicate respectively the 7:35 A. M., the 4:35 P. M., and 11 P. M., (Washington mean time,) observations. The small circles on the lines indicate the position of the centre of the area of low barometer on the day and report, written respectively above and below the line.
Portland
Boston
Cape May
Norfolk
Kittyhawk
Cape Hatteras
Charleston
Savannah
Jacksonville
Key West
Havana
Indianola
Galveston
New Orleans
Atlanta
Montgomery
Mobile
Lake City
Punta Rassa
Chicago
Detroit
Toledo
Cincinnati
Louis
Omaha
Denver
Salt Lake
Virginia City
Sacramento
San Francisco
Portland
Boston
Rhode Isle
New London
Cape May
Norfolk
Kittyhawk
Cape Hatteras
Charleston
Savannah
Jacksonville
Key West
Havana
Indianola
Galveston
New Orleans
Atlanta
Montgomery
Mobile
Lake City
Punta Rassa
Chicago
Detroit
Toledo
Cincinnati
Louis
Omaha
Denver
Salt Lake
Virginia City
Sacramento
San Francisco
Bismarck
Duluth
Marquette
Grand Haven
Milwaukee
Escanaba
Port Huron
Cleveland
Buffalo
Rochester
Albany
Burlington

FERGUS NEWS RECORD. THURSDAY AUGUST 15TH. 1878.

STORM DATE. AUGUST 8TH. 1878.

NORWOOD AUG. 8TH. About 2 30p.m. thunder, accompanied with a terrific hail and wind storm, passed over this place. The ground for a short time being white. Many of the stones measured 5 to 20 inches in circumference, and weighed from 4 to 30 ounces. Much alarm was caused during its continuance in the village. Considerable glass has been broken and gardens destroyed, and much damage to the crops throughout the district caused. The storm came from the Northeast passing to the Southwest. One man is said to have been struck by hailstones while in the harvest field and seriously if not fatally hurt. During the storm a whirlwind passed to the west of the village uprooting trees and sweeping everything before it, presenting a grand spectacle to those who witnessed it at a safe distance. Several barns on the outskirts and on the track of the whirlwind were unroofed. A brick schoolhouse was levelled to the ground, a cheese factory torn to pieces, SPENCER'S barn levelled to the ground, and his house unroofed and the end torn out; a log house occupied by MISS SPEARS was lifted from the ground, but two young girls standing on the floor were left unhurt. A reaping machine belonging to a man named CLYSDALE was picked up in the storm, carried across two fields and smashed into atoms. About a dozen dwellings and barns in this immediate locality were destroyed. Some persons were severely hurt, but no loss of life is reported. The total amount of damage at present cannot be estimated.

Reports still continue to come in from the country and giving details of the great damage done by the whirlwind at NORWOOD, on Friday of last week. The whirlwind was fully 200 feet wide, and traveled at great velocity. Houses and barns were unroofed and blown down, fences levelled to the ground, and grain that had been cut and left in the field swept away. Everything in its path had to go down before its irresistable power. Two young men named McCARTHY and MURPHY were carried along the ground for over a hundred feet and dashed against a fence and severely hurt.