



MANUAL
OF
DOMINION LAND SURVEYS.

Department of the Interior,
CANADA

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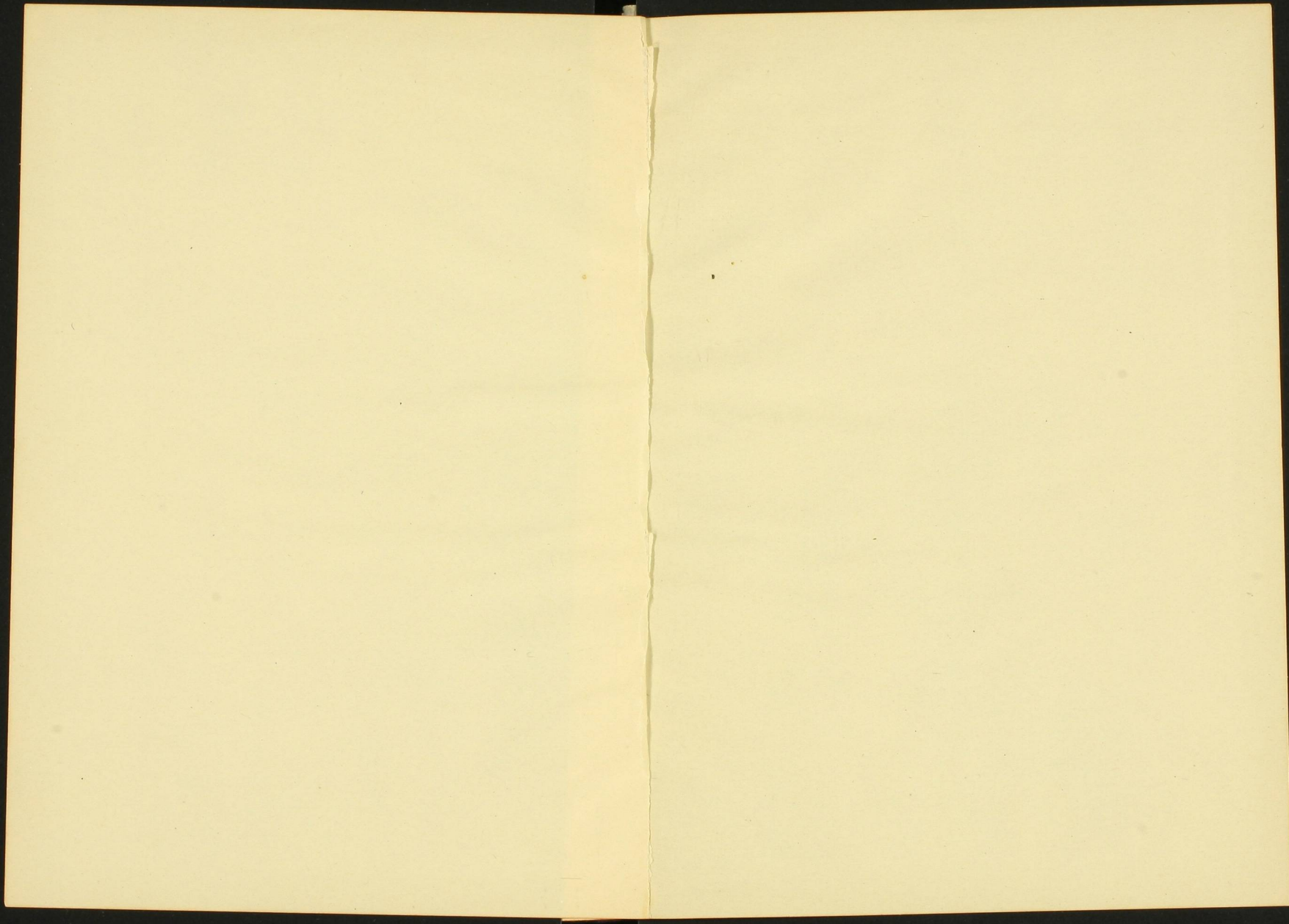
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MANUAL
SHOWING THE
SYSTEM OF SURVEY
OF THE
DOMINION LANDS
WITH
INSTRUCTIONS TO SURVEYORS

FIRST PART

*Published by authority of the Honourable the Minister of the
Interior for Canada.*

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1902

NOTICE TO DOMINION LAND SURVEYORS.

This manual is prescribed for the official guidance of surveyors of Dominion lands, who are required, in making any survey of these lands to govern themselves by it, in so far as its provisions are applicable to the particular survey then being executed. Any Dominion land surveyor taking or subscribing the affidavit mentioned in clause 121 of the Dominion Lands Act, is to consider this manual and the instructions embodied in it as forming part of the instructions of the Surveyor-General referred to in the said affidavit.

E. DEVILLE,
Surveyor-General.

DEPARTMENT OF THE INTERIOR,
4th July, 1902.

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SYSTEM OF SURVEY

AND

TO

SURVEYORS.

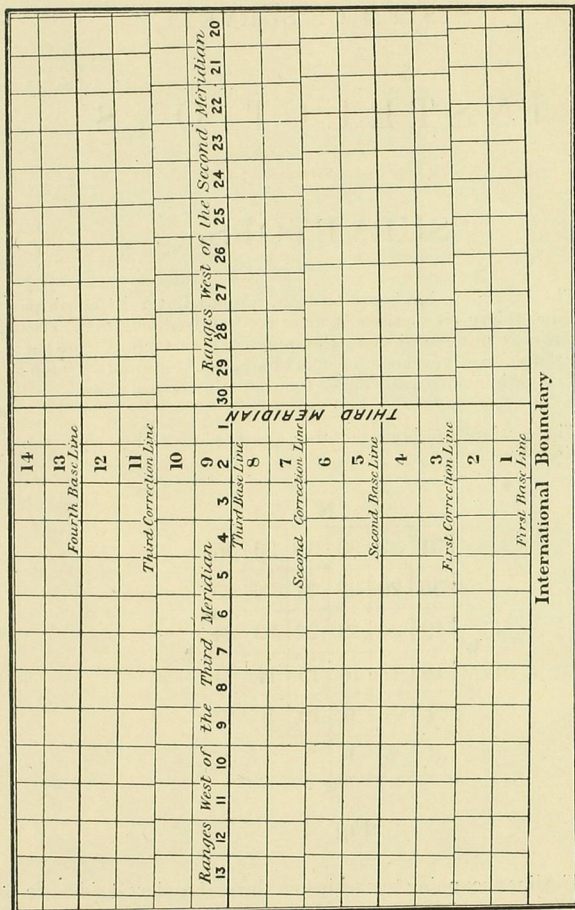
1. The Dominion lands are laid off in quadrilateral townships containing thirty-six sections, each of six hundred and forty acres or one square mile, subject to the deficiency or surplus from the convergence or divergence of meridians, as hereinafter mentioned, together with allowances for roads in certain cases.
2. The sections are bounded and numbered as shown by the following diagram :

	N.						
	31	32	33	34	35	36	
	30	29	28	27	26	25	
W.	19	20	21	22	23	24	
	18	17	16	15	14	13	E.
	7	8	9	10	11	12	
	6	5	4	3	2	1	
	S.						

Fig. 1

3. The lines bounding townships on the east and west sides are true meridians, and those on the north and south sides are chords of the parallels of latitude passing through the corners of the township.

DIAGRAM No 1
ILLUSTRATING THE SUBDIVISION OF THE COUNTRY
INTO BLOCKS AND TOWNSHIPS



4. The townships number in regular order, northerly from the international boundary or forty-ninth parallel of latitude, and lie in ranges which are numbered east and west from a meridian line styled the Principal Meridian, and west from other initial meridians styled the Second, Third, Meridians, according to their order westward from the Principal Meridian. How townships are numbered.

5. The Principal Meridian passes about twelve miles west of Initial the city of Winnipeg in approximate longitude $97^{\circ} 27' 9''$ west of Greenwich. ridians.

The Second Meridian is placed in longitude 102° (very nearly), the Third in 106° and so on, each initial meridian after the second being four degrees west of the preceding one.

There is also the Coast Meridian of British Columbia upon which are based the townships of the "Fifth System," hereinafter described.

6. The sections are laid out of the precise width of eighty chains on certain lines called "base lines," with a road allowance adjoining each section, and the meridians between the townships are drawn from such bases, north or south, to the depth of two townships, that is to say, to the correction lines hereinafter mentioned. The townships south of the base measure therefore in an east and west direction more than four hundred and eighty chains together with the roads, while those north of the base measure less than this. The interval between a base line and the next one is equal to the depth of four townships. Sections are 80 chains on base lines.

7. The "correction lines" are those upon which the "jog" resulting from the want of parallelism of meridians, is allowed, or, in other words, they are those township lines running east and west which are equidistant from the bases at the depth of two townships. The interval between the correction lines is equal to the depth of four townships. "Jog" allowed on correction lines.

8. The first base line is the forty-ninth parallel of latitude or international boundary; the second base is between townships four and five; the third between townships eight and nine; the fourth between townships twelve and thirteen; the fifth between townships sixteen and seventeen, and so on, northerly, in regular succession. Base lines in the system.

9. The first correction line is between townships two and three; the second between townships six and seven; the third Correction lines in the system.

between townships ten and eleven, and so on, northerly, in regular succession.

Division of sections. 10. Each section is divided into quarter sections of one hundred and sixty acres, or one-half mile square, more or less.

Country laid out into townships and how. 11. Preliminary to the subdivision into sections of any given portion of country, the same is laid out into townships by projecting the base lines and the meridian outlines from the base lines to the correction lines and connecting by straight lines the township corners on the meridians.

Exception. 12. In the case of the townships between the first and second bases, the meridians are to be surveyed south from the second base to the first correction line, and thence south to the first base line, giving the "jogs" their theoretical lengths.

Allowance for deficiency or surplus on meridian lines. 13. In the survey of any township outlines or the subdivision of any township, the surplus or deficiency found on meridians when closing on the correction line is left in the last quarter section adjoining said line; except on meridians across townships one and two, on which meridians the quarter sections adjoining the correction line shall be given the theoretical depth of forty chains, and the deficiency or surplus, as the case may be, shall be left in the quarter sections adjoining the first base line or international boundary.

In the case of the fractional range adjoining an initial meridian, when the initial meridian intersects the "jog" (that is when there is one more range south of the correction line than north of it), the last quarter section on the meridian township outline surveyed from the south shall be made of the same depth as that on the next meridian township outline on the east. See Fig. 17.

Corners. 14. On the township outlines, at the time of the survey, all township, section and quarter section corners are marked, which corners govern respectively in the subsequent subdivision of the block or township.

Posts and monuments. 15. Only a single row of posts or monuments to indicate the corners of the townships or sections (except as hereinafter provided) is placed on any survey line. These posts and monuments are placed in the west limit of the road allowances on north and south lines, and in the south limit of road allowances on east and west lines, or on the line between the sections

where there are no road allowances; and in all cases fix and govern the positions of the boundary corners of the adjoining townships, sections or quarter sections on both sides of the road allowance or line.

16. The township, section or quarter section corners on correction lines, or on lines between different systems of surveys, are in all cases indicated by posts or monuments planted and marked independently for the townships on each side; those for the townships north or east of the line, in the north or east limit of the road allowance, and those for the townships south or west, in the south or west limit. Indian reserve boundaries are also posted on both sides of the road allowance; on one side for the reserve and on the other side for the township.

17. To facilitate the descriptions for letters patent of less than a quarter section, the quarter sections composing every section in accordance with the boundaries of the same as planted or placed in the original survey, are supposed to be divided into quarter quarter sections of forty acres, and such quarter quarter sections are styled legal subdivisions and are bounded and numbered as shown in the following diagram of a section:

		N.				
	13	14	15	16		
W.	12	11	10	9		E.
	5	6	7	8		
	4	3	2	1		

S.
Fig. 2

SYSTEMS OF SURVEY IN DIFFERENT DISTRICTS.

18. All Dominion lands in Manitoba, the Northwest Territories and British Columbia, are laid out in the manner above described, but the number and widths of road allowances between sections are not the same in all parts of the country, and there are also some differences in the methods of subdividing

townships. Hence arise different "systems of survey," five in all, styled the "first," "second," &c., system of survey.

19. The instructions hereinafter are drawn up for the third system, but, unless otherwise expressly provided, apply also to the other systems.

20. Since in all the systems of survey the townships and ranges are based upon the forty-ninth parallel and the initial meridians, and are not, on account of the varying widths of the road allowances, of the same dimensions, there occur fractional townships and ranges at the junction of different systems.

21. The fractional township or range between two townships or ranges surveyed according to different systems, when its number is the same as the number of the adjoining one surveyed under the former system, is designated by that number, followed by the letter A, as for instance :

 Tp. 19, A,

for the fractional township between townships 18 and 19 west of the second meridian, and

 Range 21, A,

for the fractional range between ranges 20 and 21 west of the second meridian.

22. The line between two parts of the country surveyed according to different systems is established as a correction line, that is to say, posts are planted on both sides of the road allowance on such line, each row governing the position of the boundary lines on its own side. Such road allowance is one chain and fifty links wide, except in the case of the dividing line between the third system of survey in the Northwest Territories, and the fourth system in force in the "Railway Belt" in British Columbia hereinafter described : here the road allowance between the systems is one chain wide. Also between the fourth system and the fifth system, no road allowance is to be left, but a double row of posts is to be planted on the line dividing the systems, to govern the townships and sections on each side respectively.

FIRST SYSTEM OF SURVEY.

23. In the first system of survey there is a road allowance of one chain and fifty links on every section line.

24. The township, therefore, measures on each side four hundred and eighty-nine chains, subject to the deficiency or surplus resulting from the converging or diverging meridians.

25. In the survey of a township the deficiency or surplus resulting from the want of parallelism of the meridians is set out and allowed in the range of quarter sections adjoining the western boundary of the township. It follows that generally the lines bounding sections on the east or west sides are not meridians, but lines parallel to the eastern boundary of the township. All quarter section sides are theoretically forty chains, except in the western range of quarter sections of a township and in the sections adjoining a correction line which are subject to the discrepancies of the survey.

26. The operation of the first system of survey is restricted to the area bounded as follows, viz :

To the south, by the international boundary line, to the west by the second meridian, as far as the eighth correction line ; by said correction line as far as the meridian between ranges twenty-eight and twenty-nine west of the principal meridian ; by said meridian between ranges twenty-eight and twenty-nine, as far as the seventh correction line ; by said correction line as far as the meridian between ranges seven and eight east of the principal meridian ; by said meridian between ranges seven and eight east as far as the north boundary of township nineteen ; by the north boundary of township nineteen in ranges eight, nine and ten east of the principal meridian as far as the meridian between ranges ten and eleven east of the principal meridian ; by said meridian, between ranges ten and eleven east, as far as the third correction line ; by the said correction line, as far as the eastern boundary of the province of Manitoba ; by said eastern boundary as far as the international boundary line.

Also township 44, R. 21 ; Tp. 45, R. 21, 22, 26, 27, 28 ; Tps. 46 and 47, R. 24, 25, 26, 27 and 28 ; Tp. 48, R. 24, 25, 26 and 27, west of the second meridian.

Townships 42 to 47 inclusive, R. 1 ; and Tps. 43 and 44, R. 2 and 3, west of the third meridian.

SECOND SYSTEM OF SURVEY.

27. The second system of survey is similar in all respects to the first system, except in regard to the deficiency or surplus from converging or diverging

meridians from the converging or diverging meridians which is distributed divided equally between all quarter sections as in the third system.

28. The operation of the second system of survey is restricted to Tps. 1 and 2, R. 1 to 8 inclusive; Tps. 19 to 30, R. 1 to 12 inclusive; and Tps. 27 to 30, R. 13 to 16 inclusive; the above ranges being all west of the second meridian.

THIRD SYSTEM OF SURVEY.

Territory of third system. 29. The third system of survey covers all the territory not expressly reserved for the other systems.

Road allowances. 30. Road allowances of one chain in width are allowed on every section line running north and south and on every alternate section line running east and west, that is, along the north and south boundaries of the township and along the second and fourth section lines north of the south boundary of the township.

Townships measure 483 chains on east and west sides, and 486 on north and south sides. 31. The township, therefore, measures along its east and west boundaries, four hundred and eighty-three chains, and along its north and south boundaries four hundred and eighty-six chains, subject to the deficiency or surplus from the converging or diverging meridians, as the case may be.

Equal distribution of deficiency or surplus. 32. The deficiency or surplus from the converging or diverging meridians is distributed equally among all quarter sections involved, so that the lines bounding sections on the east and west sides are true meridians, and those on the north and south sides are parallel to the north and south boundaries of the township.

Closing errors on correction lines. 33. In the survey of township outlines, the surplus or deficiency found on meridians when closing on the correction line is divided equally between the quarter sections adjoining that line, except in the case of the closing on the first correction line where the deficiency or surplus, as above stated, is carried to the first base line, or forty-ninth parallel of latitude.

FOURTH SYSTEM OF SURVEY, OR SYSTEM OF SURVEY IN RAILWAY BELT, BRITISH COLUMBIA.

34. The system adopted for the survey of the lands within the belt of twenty miles on each side of the Canadian Pacific Railway in British Columbia, is the third system of the Northwest Territories, modified by adding to each quarter section of 160

acres, an allowance of three acres for roads, instead of locating this allowance on the section lines.

35. This allowance is provided for by making each quarter section on the base lines 40 chains and 50 links, and on the meridians 40 chains and 25 links.

36. The dimensions of the townships are therefore the same as those in the third system of survey, namely, four hundred and eighty-three chains north and south, and four hundred and eighty-six east and west. Since the townships of the third and fourth systems are based upon the forty-ninth parallel and the same initial meridians, there is no fractional township or range between them where the systems adjoin one another, but the northern boundary of the fourth system township coincides with the line of posts marking the southern limit of the road allowance on the southern boundary of the third system township adjoining it to the north, and the eastern boundary of the fourth system township coincides with the western limit of the road on the western boundary of the third system township next east of it.

37. In the fourth system of survey correction lines are marked by a double row of posts to govern the positions of the boundary corners of the townships, sections and quarter sections on each side of the line.

38. The correction line is to be established by projecting the township lines from the base lines on each side of the correction line, and dividing the surplus or deficiency equally between the quarter sections on each side of the correction line. The corners thus established for the townships south of and adjoining the correction line are to be joined by straight lines, upon which are to be placed the posts marking the township, section and quarter section corners for townships on both sides of the correction line.

39. In the case of these correction lines the rule prescribed for re-establishing lost corners on a township outline in Manitoba and the Northwest Territories (see sub-clause *b* of clause 126 of the Dominion Lands Act) is modified, in that the straight line joining the corners of the township south of the correction line must govern the alignment of the posts.

40. The western limit of the third system follows the summit of the Rocky Mountains, which is the boundary between the Northwest Territories and the province of British Columbia,

except between the northern boundary of township 25, range 15, and the eastern boundary of township 31, range 19, west of the 5th meridian, where the following lines separate it from the fourth system, namely :

That part of the northern boundary of township 25, range 15, which lies west of the summit of the Rocky Mountains ; then, in succession, the eastern boundary of township 26, range 16, to 7th correction line ; the 7th correction line as far as the southeast corner of township 27, range 17 ; the eastern boundaries of townships 27 and 28, range 17 ; the northern boundary of township 28, range 17 ; the eastern boundaries of townships 29 and 30, range 18 ; the 8th correction line as far as the southeast corner of township 31, range 19 ; the eastern boundary of township 31, range 19, as far as the summit of the Rocky Mountains ; thence northerly along the said summit ; all these ranges being west of the fifth meridian.

All Dominion lands to the west of the above described boundary are surveyed under the fourth system, excepting the territory in which the fifth system, hereinafter described, is in force.

FIFTH SYSTEM OF SURVEY.

Fifth
system
described.

41. Certain townships in the railway belt in the lower valley of Fraser river, previous to the transfer of the lands to the Dominion, were surveyed by the provincial government according to the local system of survey. The townships are six miles square and are divided into 36 sections, as in the other systems. There are no allowances for roads. The basis of the system is the forty-ninth parallel and a meridian which passes near the junction of Fraser and Pitt rivers. This meridian is called the Coast Meridian. The townships are individually numbered, and not according to the general system of townships and ranges. The common designation of a township is "Township No., E.C.M." or "W.C.M." (east or west of coast meridian.)

Boundary
of fifth
system.

42. The boundary of the fifth system is as follows :—Beginning at the point where the eastern boundary of township 25, E.C.M., intersects the international boundary between Canada and the United States ; thence northerly upon the eastern boundaries of townships 25 and 26, E.C.M., to the northeast corner of said township 26 ; thence easterly upon the southern boundary of township 27, E.C.M., to the southeast corner of said township 27 ; thence northerly upon the eastern boundary of said township 27 to the first correction line of the Dominion lands

system of survey ; thence westerly upon the said correction line to the seventh meridian of the Dominion lands system of survey ; thence northerly upon the said seventh meridian to the northern boundary of township 24, E.C.M. ; thence westerly upon the northern boundaries of townships 24, 21, 18, 15 and 12 to the southeast corner of section 6, in township 42, E.C.M. ; thence northerly upon the eastern boundaries of sections 6, 7, 18, 19, 30 and 31, in said township 42 to the northern boundary of said township ; thence westerly upon the northern boundary of said township 42 to the southeast corner of township 41, E.C.M. ; thence northerly upon the eastern boundary of said township 41, to the northeast corner of section 12, in said township ; thence westerly upon the northern boundaries of sections 12 and 11, in said township 41, to the northwest corner of section 11, in said township ; thence southerly upon the western boundaries of sections 11 and 2, in said township 41, to the northern boundary of township 40, E.C.M. ; thence westerly upon the northern boundaries of township 40, E.C.M. and township 39, W.C.M., to the western limit of the forty-mile railway belt ; thence southerly following upon the said western limit to the international boundary between Canada and the United States ; thence easterly upon the said international boundary to the point of beginning.

INSTRUCTIONS TO SURVEYORS.

FIELD WORK.

Surveys to be astronomical. 43. The surveys of the Dominion lands are to be astronomical; that is to say, the directions of the lines must be referred to the astronomical meridian. The use of the magnetic needle on Dominion land surveys is forbidden.

Chain to be used. 44. All measurements on the survey of townships, sections or legal subdivisions shall be made with the ordinary sixty-six feet chain or steel band. It is to be tested and corrected, during use, by the subsidiary standard of the surveyor.

Chainmen to be sworn. 45. Previous to entering on their duties the chainmen shall be sworn according to the form below and such oath shall be filed with the returns of the survey.

(Form of Oath.)

I, A. B., do solemnly swear that I will discharge the duty of chaining and measuring with exactness according to the best of my judgment and ability and that I will render a true account of my chaining and measuring to
Dominion Land Surveyor by whom I have been appointed to such duty. So help me God.

(Signed) A. B.

Sworn before me at
 this day of 19 } ... C.D. D.L.S.

Precautions in chaining over broken ground. 46. In chaining over uneven ground, should the same be so broken as not to permit of the full chain being levelled, the measurement should be made with such portion thereof as may be easily levelled, and particular care should be taken at such times, in plumbing and dropping the pins, in order to obtain the accurate horizontal measurement.

Obstacles on the line. 47. In case the survey line be obstructed by a lake, pond, deep marsh or other obstacle, the surveyor will pass it by right-angled offsets, or, if more convenient, by a trigonometrical operation. The angle opposite to the base should be, whenever practicable, at least thirty degrees. It must never be less than fifteen degrees.

FIELD WORK.

19

48. All lines established as boundaries in woods are to be well Blazing. opened out and to be further marked by blazed trees. The tree is to be blazed on three sides, namely, on the side on which the line passes, and on the two adjacent sides.

When the closing error of a trial line, which has been opened out, is less than the maximum error allowed in this manual for such lines, the posts may be established by offsets from the trial line, and then it is not necessary to open out the true line, but the posts may be connected with the trial line by oblique lines, which must not make angles greater than 5° with the trial line. The broken lines thus established connecting the posts are to be marked by blazes as above, for a blazed line, not being a legal boundary under the Dominion Lands Act, need not be straight.

No blazes or permanent marks of any description are to be made on traverse lines.

49. When a township, whether fractional or otherwise, adjoins lands surveyed under a different system, all lines within such township must be stopped at the inner side of the road allowance dividing the two systems and a corner post or monument erected at the point of intersection. In no case must a line be extended across the aforesaid road allowance.

50. A road allowance of the same width as in the adjoining township is to be left on the boundaries of all Indian reserves, and the intersections of the section lines with that side of such road allowance which adjoins the township are to be indicated by proper posts or monuments. When a reserve not yet surveyed is to be formed of a certain number of full sections, the surveyor, in establishing the same, shall plant the posts as usual on the west and south boundaries; but on the north and east sides they are to be planted in the north or east limit of the road allowance. The side of the road allowance adjoining the township is the only one to be posted by the surveyors employed by the Department of the Interior.

51. As a general rule, no lines are to be run in Indian reserves. If, however, it is necessary, in surveying a base line or other important governing line to cross an Indian reserve, no posts are to be planted, nor permanent marks of any kind to be left within the boundaries of the reserve.

DIAGRAM N^o 2

EARTH MOUND AND PITS

SECTION

2½' high for Section corners. 3' high for Township corners.

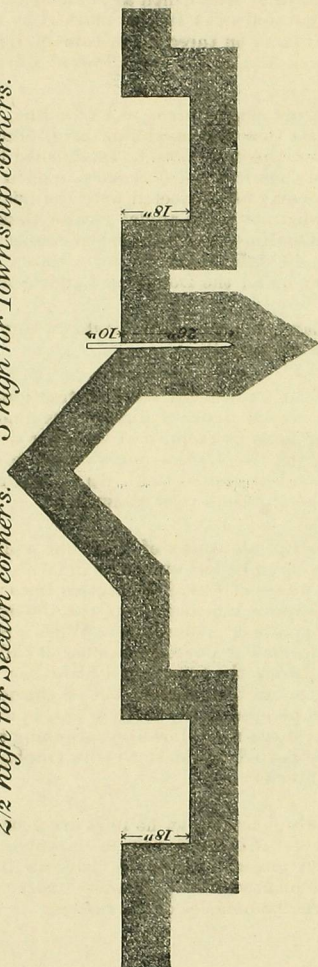


DIAGRAM N^o 3

POST AND PITS
FOR PRAIRIE SPOTS.

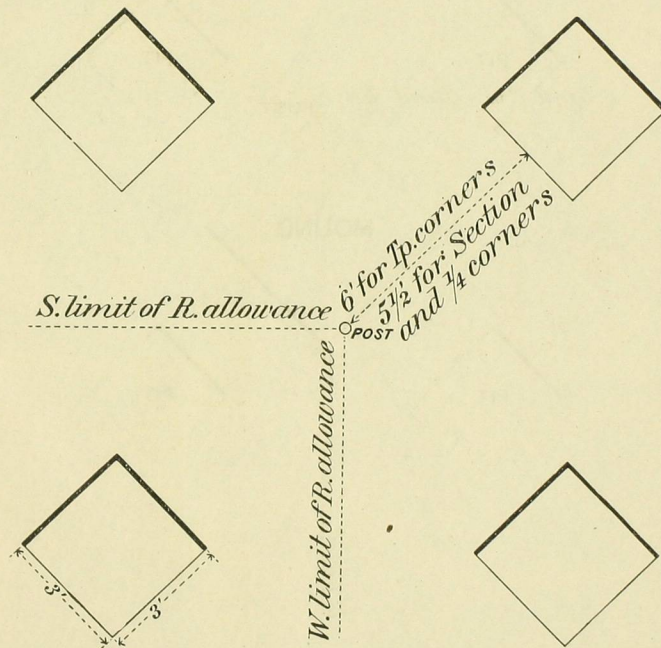


DIAGRAM N^o 4

ORDINARY MOUND FOR WOODED SPOTS

6 FEET SQUARE FOR TOWNSHIP CORNERS.

5 FEET SQUARE FOR ALL OTHER CORNERS.

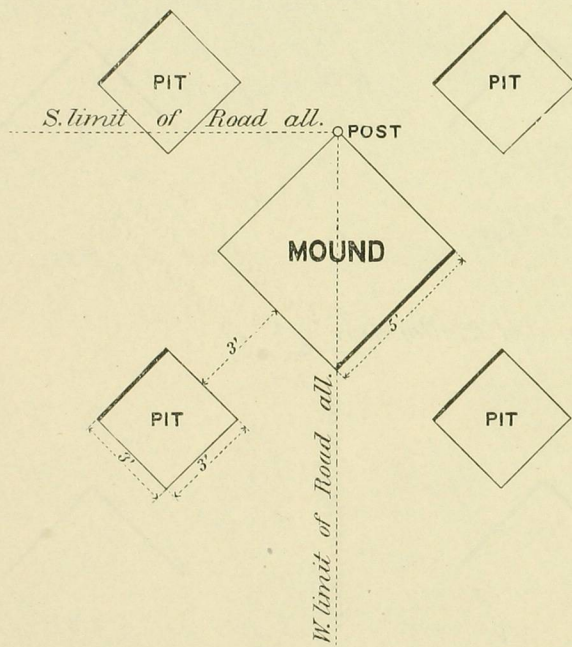


DIAGRAM N^o 5

MOUND ON CORRECTION LINE

6 FEET SQUARE FOR TOWNSHIP CORNERS.

5 FEET SQUARE FOR ALL OTHER CORNERS.

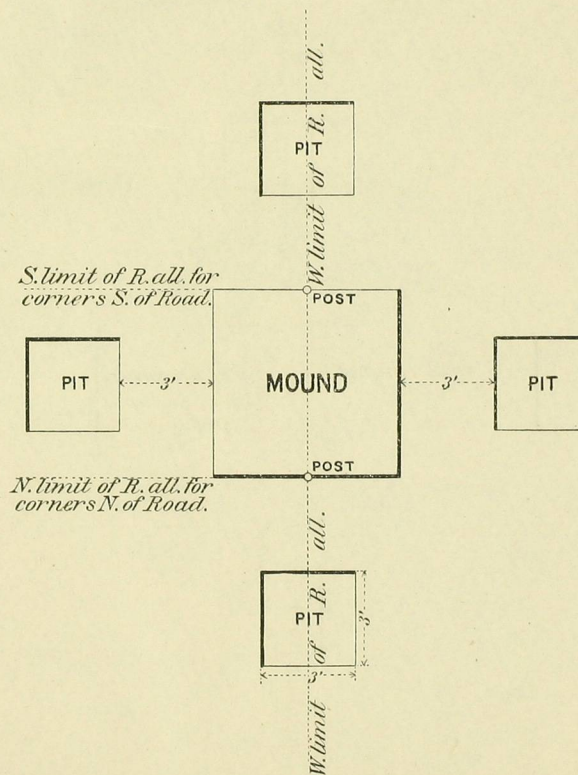
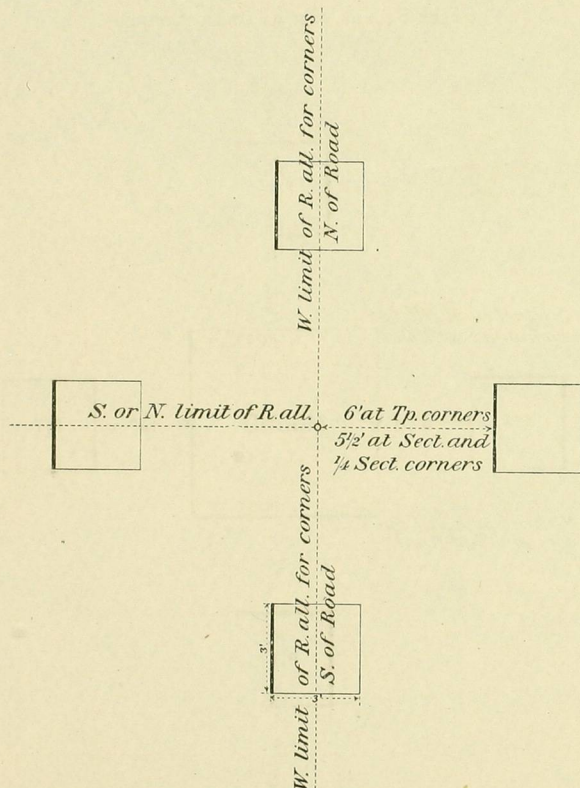


DIAGRAM N^o6

PITS ON CORRECTION LINE



BOUNDARY CORNERS.

52. The instructions contained in this manual are to be strictly followed, even when there appears to be evident advantage in departing therefrom. Neither errors in the lines previously surveyed, nor any other reason, justify such departure.

BOUNDARY CORNERS.

53. Having ascertained by exact running and measurement the proper point for establishing the township, section or quarter section corner, as the case may be, the surveyor, in marking the same, is to be governed by the following directions:—

54. Township and section corners are marked by pointed iron tubes, marked as hereinafter described, and driven perpendicularly to within ten inches of the top. The iron tube is five feet long and one and three-eighths of an inch in diameter for township corners, and three feet long and three-quarters of an inch in diameter for section corners.

55. A quarter section corner is marked by a wooden post flattened on two sides and marked with the fraction $\frac{1}{4}$ (fraction-wise) to identify it as a quarter section post. The post is two feet six inches long and three inches wide on the flat face. It is driven eighteen inches into the ground, the flat sides facing in the direction of the line. The post is to be bevelled on top to turn rain. When wood for the post is not to be found within three miles from the site of a quarter section corner, no post need be planted, but the corner will be indicated simply by the four pits, as hereinafter provided.

56. The post or tube is in all cases to be placed exactly at the corner it is meant to indicate. A mound, or pits, or both, must also be made, except at quarter section corners in woods or scrub.

57. Mounds are to be of the form of square-based pyramids, six feet square at the base and three feet high for township corners, and five feet square by two and one-half feet high for section corners. No mounds are erected at quarter section corners.

58. In the formation of mounds, the earth will be taken from four several "pits" three feet square and eighteen inches deep, the centres of the pits to be four feet six inches outside and opposite the centres of the respective bases. These mounds are to be formed of solid earth, roots and all foreign substances being excluded, and the earth well pressed down with the spade.

during the process. In order to facilitate the speedy erection of a mound, a rope skeleton may be used. By taking hold of each corner and making a knot of the three lines running to it, the line is carried without becoming tangled; or the spade used may have marked on it the distance from the centre to the corners of the mound and to the sides of the pits, and small pickets may be planted at those distances and in the proper directions.

Stone
mounds.

59. Whenever stones can be readily procured, mounds must be built of stones properly piled so as to conform as nearly as possible in size and shape to the earth mounds. A mound must not be made partly of stone and partly of earth. When a stone mound is built no pits are required.

60. When a mound is not built, the pits are to be placed at the same distances from one another as they would be if the mound were built, and at the same distance from the post as they would be from the centre of the mound. In prairie, at township, section and quarter section corners, pits are dug, but no mound is built. The earth from the pits is to be scattered about.

In woods, willows or other scrub a mound and pits are to be made at township and section corners, but neither mound nor pits at quarter section corners.

Pits in
wooded
spots.

61. In wooded spots, the positions of the pits relative to the directions of the lines may, when necessary, be altered to suit circumstances, provided the distances between themselves and from the centre of the mound are preserved, and one of the pits may be omitted, when, on account of large trees or other obstacles, it is found impracticable to dig the four pits.

In prairie the rule as to size, depth and position of pits will be rigidly enforced.

Mounds at
township
and section
corners.

62. The mound thrown up at township and section corners in the woods will be so placed that the post will stand at the northerly angle or point thereof, and that the mound will stand diagonally to the cardinal points.

Exception.

63. Except that on correction lines, the lines between different systems of survey, the outer limits of the roads around Indian reserves, and generally all lines the posts on which mark the boundaries of lands on one side only of the line, the township and section corner mounds will be so placed that the post will

stand precisely in the centre of the north, east, south or west side of the base of the mound, according as the corner is intended for lands south, west, north or east of the line, the mound being placed square to the cardinal points.

64. In prairie, where there is no mound, the square formed by the four pits stands square with the cardinal points at corners which govern lands on both sides of the line, and diagonally to the cardinal points at corners governing one side only. The post stands at the intersection of the diagonals of the square.

Square
formed by
pits with-
out mound
to face the
same way
as it would
were a
mound
built.

65. The pits for a quarter section corner in prairie are the same in size and position as those for a section corner.

Pits for
quarter
section
corner,

66. If a township or section corner fall in a lake, or bed of a stream, on an inaccessible mountain or in any other locality unfavourable to the planting of a post, the digging of pits or the erection of a mound, the surveyor shall perpetuate such corner by a witness iron post with trench or mound and trench, at the nearest suitable point of the surveyed line, that is either north, south, east, or west of the true corner. The distance in chains and the bearing of the site of the true corner from such witness post are to be cut on the post, the bearing being indicated by one of the letters N., S., E., or W. By placing the post at an even number of chains from the corner the marking of the posts will be simplified. Care must be taken to indicate the bearing from the witness post to the true corner; thus a witness post south of the true corner is to be marked with letter "N" for north.

Witness
post.

67. No witness post, mound or trench is required to mark the position of a quarter section corner.

No witness
post re-
quired for
quarter
section
corners.

68. A witness trench is circular, of six feet inside diameter. The trench proper is twenty-four inches wide and twelve inches deep.

Witness
mound or
trench.

In prairie, the earth taken from the trench is scattered about, but in the woods it is employed to build a conical mound, six feet in diameter and two and a half feet high. The post stands at the point of the base of the mound nearest to the corner while in prairie the post is at the centre of the trench.

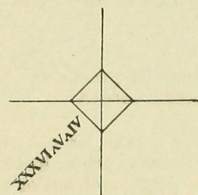
69. Care must be taken that all corner and witness posts be planted *exactly on line*, as well as at the correct chained distance.

Posts must
be planted
on line.

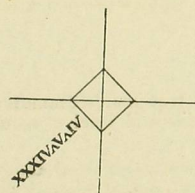
Posts at township and section corners generally.

70. The post planted at a township or section corner not on a correction line or on a line between different systems of survey or on an Indian reserve line is to be marked on its southwest side with the number of the section the northeast corner of which the post is to indicate, followed by the numbers of the township and the range in which that section lies.

MARKS ON POSTS.



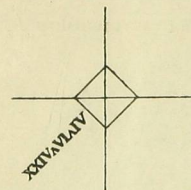
Iron post.
Fig. 3



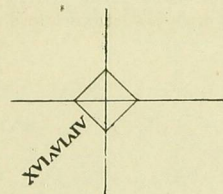
Iron post.
Fig. 4

For the corner between townships 5 and 6, and the 3rd and 4th ranges.

For the northerly corner between sections 34 and 35, township 5, range 4.



Iron post.
Fig. 5



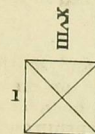
Iron post.
Fig. 6

For the easterly corner between sections 24 and 25, township 6, range 4.

For the corner between sections 15, 16, 21, 22, township 6, range 4.

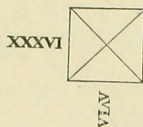
71. Posts at township and section corners on correction lines are to be marked exclusively for the townships and sections on the respective sides of the road allowance. They will have the number of section on the west side and the number of township and range on the north or south side for posts north or south of the road allowance respectively.

For instance :—



Iron post.
Fig. 7

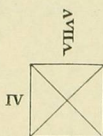
For the southeast corner of township 3, range 10.



For the northeast corner of township 6, range 5.

Iron post.

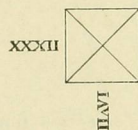
Fig. 8



For the southerly corner between sections 3 and 4, township 7, range 5.

Iron post.

Fig. 9



For the northerly corner between sections 32 and 33, township 2, range 6.

Iron post.

Fig. 10

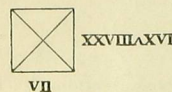
Posts on east and west lines between different systems of survey.

72. Posts at township and section corners on east and west lines dividing two systems of survey are to be marked in the same manner as posts on correction lines.

Posts on north and south lines between different systems of survey.

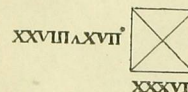
73. Posts at township and section corners on north and south lines dividing two systems of survey are to be marked on their south side with the number of the section the north boundary of which they indicate, and with the number of the township and range on their east or west side, according as the posts are on the east or west side of the road allowance respectively :—

For instance :—



For the post marking the northwesterly corner of section 7, township 28, range 16, west of second meridian, on the east side of the road allowance dividing the second from the third system of survey.

Fig. 11



For the northeasterly corner of township 28, range 17, west of the second meridian.

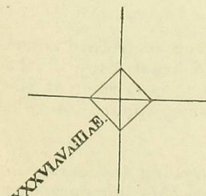
Fig. 12

Similarly with posts planted on the limits of road allowances adjoining Indian reserves and on the lines of other reserves, settlements, &c., the general rule being that mounds, pits, &c., which govern townships and sections on both sides of the road allowance are to be set diagonally, and the posts are to be marked accordingly ; but those which govern only townships and sections on one side of the road are set square to the cardinal points.

Quarter section posts are always set so that the flat sides face the direction of the line, and they are marked with the fraction $\frac{1}{4}$.

74. In ranges numbered from the principal meridian, the letter W. or E. will be marked on the post after the number of the range, to denote that it is west or east of the meridian, as for instance :

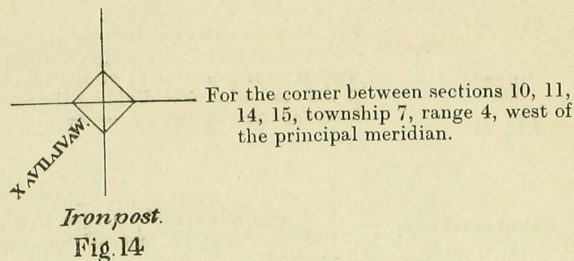
Mark of boundaries in ranges numbered from the principal meridian.



Iron post.

Fig. 13

For the township corner between townships 5 and 6, and the 3rd and 4th ranges east of the principal meridian.



Letters W. and E. to be marked only for principal meridian. Witness post.

The letters W. and E. are not to be marked for any meridian other than the principal meridian. The number of meridian is never to be marked.

Witness posts are marked on the side facing the corner with the distance in chains and the bearing thereto, thus:



Fig 15

For witness post standing four chains north of the corner of the section.

Marks to be neat and distinct.

75. All marks on posts are to be cut neatly and distinctly.

THE FIELD BOOK.

Field notes. 76. The field notes sent in to be placed on record in the Dominion Lands Office are to be a fair and exact copy of the original notes taken in the field, and are to be written in the books furnished for that purpose; the forms supplied for field use are not accepted as office copies.

Of the field book. 77. The first page will give the title, showing the nature of the survey, by whom surveyed, and the dates of commencement and completion of the work. The second page will contain the names and duties of all assistants, and whenever a new assistant is employed or any one changed, an appropriate entry thereof

with the reasons therefor will be made in the field book previous to entering any notes under the changed arrangements. The third page will contain a skeleton diagram, with each section line numbered to correspond with the page of the notes.

78. The field notes must be a faithful, distinct and minute record of everything officially done and observed by the surveyor and his assistants pursuant to instructions in relation to running, measuring and marking lines, establishing boundary corners, laying off road allowances, &c., and present, as far as possible, a full and complete topographical description of the country surveyed.

79. The field notes of every section line surveyed must be complete in themselves, and be placed on a separate page. Where a corner is marked by a witness post with a mound or trench, the position and character of the witness mark must be shown on each page of the field notes on which the corner appears. Section lines are to be entered in the field book in the order in which they are run. The chaining must, in all cases, commence on the inside of the road allowance, so as to show for the quarter section and section corners the distances from the true corner of the section, and the measurements are to be given in all cases exclusive of road allowances.

80. Section lines are to be described as north and east boundaries of sections, not as south or west boundaries, except on the north side of a correction line, where they are properly described as south boundaries of sections 1, 2, 3, &c. On Indian reserve boundaries and on lines between different systems of survey, cases will also occur in which the lines surveyed are to be designated as the south or west boundaries of sections.

81. The following abbreviations of words, but no others, will be allowed in the notes, that is to say:—

“Sec.” for “section,” “Tp.” for “township,” “R.” for “range,” “N.” for “north,” “S.” for “south,” “E.” for “east,” “W.” for “west,” “diam.” for “diameter,” “chs.” for “chains,” “lks.” for “links,” “dist.” for “distance” or “distant,” “I.P.” for “iron post,” “M.” for “mound,” “T.” for “trench,” “W.P.” for “wooden post,” and “Wit.” for “witness.”

Information to be given in notes.

82. The field notes must be always written down on the spot, leaving nothing to be supplied from memory, and are to give the following information in relation to the survey :—

(a.) The length and exact bearing of every line run, noting all necessary offsets therefrom, with the reasons for the same.

(b.) The course and distance for all witness mounds.

(c.) The character of boundary corners; if wooden post, mark "W.P." and give kind of wood; if iron post and mound, "I.P. and M."; if iron post and pits, "I.P. and pits;" stone mound, "Stone M."; witness post and trench, "Wit. I.P. & T." The above information is to be given on each page for every corner shown thereon, whether it was established by a previous survey or not, and if established by previous survey this should be noted.

(d.) The distances at which the line first intersects, and, also, where it leaves settlers' claims or improvements, lakes, ponds, rivers, bottom lands, swamps, marshes, brush and woods; also the beginning of ascent, the top and the foot of descent, of all remarkable hills or ridges, with their estimated height in feet above the bottom lands near which they may be situated; also where a stream, lake or pond is crossed, the data used for ascertaining the distance across it.

(e.) The course, average width and depth, and rate of current of all streams, and whether the water is fresh or salt in the lakes which may fall within the survey.

(f.) Whether the surface of the country is level, rolling, broken or hilly.

(g.) The nature of the soil, classifying it, according to its fitness for agriculture, as first, second, third, or fourth rate,—entering the class, at the time of survey, on each quarter section where indicated in the notes.

(h.) Depth of loam and kind of sub-soil, where pits are dug.

(i.) If there is timber, the kinds, quality and average dimensions thereof.

(j.) Rapids or falls of water affording mill sites, with estimated fall and supply of water in general terms.

(k.) Coal deposits, minerals (transmitting specimens of the same), and salt springs, &c., &c.

83. The field notes must be distinctly and neatly made out in language precise and clear, and their figures, letters, words and meaning, are always to be unmistakable. Field notes to be distinct and neat.

84. The road allowances in the field book are to be ruled in the proper position; the width need not be marked if one chain, but if any other width it must be marked. Corner boundaries are to be properly described and marked in true position. Road allowances to be ruled in

85. Following the field notes the surveyor will make the following affidavit:— Affidavit to be made.

I..... of the..... of
..... in the Province of..... Dominion
Land Surveyor, make oath and say that I have, in my own proper person, according to law and the instructions of the Surveyor-General, faithfully and correctly executed the survey shown by the foregoing field notes and accompanying plan, and that the said field notes and plan are correct and true to the best of my knowledge and belief. So help me God.

Sworn before me at.....
this..... day of..... 19..) D.L.S.

SUBDIVISION OF TOWNSHIPS INTO SECTIONS.

INSTRUMENT AND METHOD OF SURVEY.

Instrument. 86. The instrument used in subdivision surveys is to be a transit, transit theodolite or solar compass, reading at least to minutes; before use it shall be submitted for the inspection and approval of the Surveyor General.

As explained in the exposition of the system of survey, all surveys are to be astronomical; they shall, therefore, be performed independently of the magnetic needle.

Outline diagrams. 87. The subdivider will receive from the head office, or from the surveyor of outlines, diagrams showing the outlines surveyed.

Chaining to be compared with previous lines. 88. Before the subdivider enters on his survey he will measure carefully one or two miles of the township outline; this will enable him to compare his chaining with that of the lines previously run, and to modify it so as to obtain the best agreement with the township outlines.

Subdivider to establish the north and south boundaries of the township before commencing the subdivision. 89. The meridian exteriors of a township are established by the surveyor of township outlines. The subdivider will, therefore, commence his operations by running the north and south boundaries of the township, if they have not been previously surveyed.

In order to do so he will join, by a trial line, the opposite township corners on the meridians, and then plant the posts permanently on the true line, making all quarter sections equal. Table No. XIX. gives the number of minutes by which the course of the trial line is to be altered in order to strike the post. The true course is to be given in the field notes.

The surveyor will note that in townships of the first system of survey quarter sections are to be made exactly forty chains in width, except the western tier of quarter sections in the township.

Only one side of a correction line is to be surveyed at one time. The process will be the same as described above.

90. When a correction line has to be deflected across the last fractional range in order to close on an initial meridian, the south or the north side, as the case may be, of the road allowance is to be broken in such a way as to leave the full width of one chain for the road. (One chain and a half in the first and second systems of survey.)

The general case is represented in fig. 16.

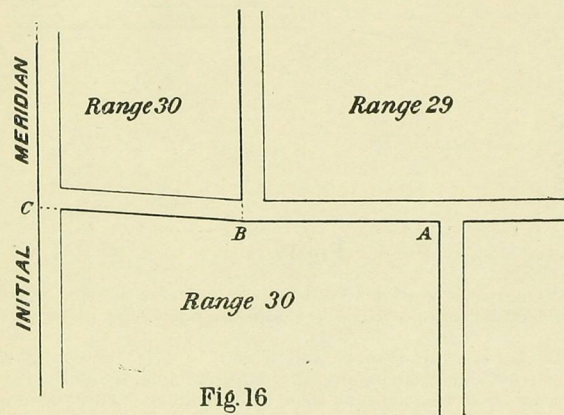


Fig 16

The northeast corner, A, of the last range is joined by a straight line to a point, B, one chain south of the post at the west end of the "jog," and this last point is again joined by a straight line to the corresponding post, C, of the initial meridian. The northern boundary of the township is thus a line, ABC, broken at B.

91. Another position of the lines is shown in fig. 17, the initial meridian intersecting the "jog." The southeast corner, A, of the last range on the north side of the correction line, is joined by a straight line to a point, B, one chain north of the post at the eastern end of the jog, and this last point is again joined by a straight line to the corresponding post, C, of the initial meridian. The southern boundary of the township is thus a line, ABC, broken at B.

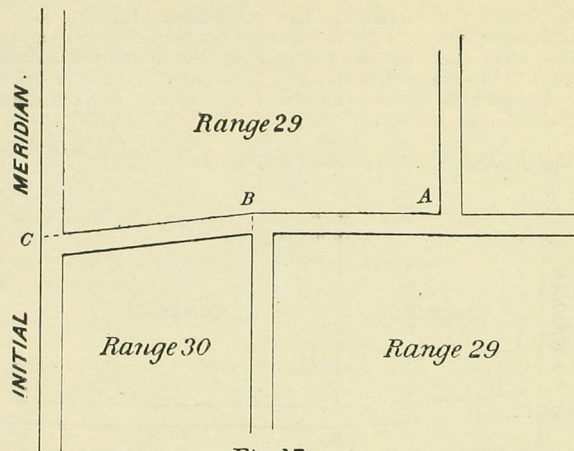


Fig. 17

The bearings of all deflected lines or portions thereof and the points of deflection must be given in the notes.

How townships are to be subdivided.

92. A township is to be subdivided by first projecting the meridians, and then joining the corresponding section corners on them first by trial and then by true lines. The appended table, No. XIX, may be used in this case for correcting the trial lines.

The true course of each line referred to the meridian of its initial point must be shown in the field notes. It is wrong, for instance, to enter a course as west, when the direction although westerly, is not exactly west.

In subdividing a township, the quarter section posts on east and west lines are placed midway between the section corners on the respective meridians, that is to say, both quarter section sides are made equal, with the exception noted above for the first system of survey. In all the systems of survey also the quarter section on the east side of an initial meridian contains all the deficiency.

In closing with a meridian on the north or south boundary of a township, the last section post on such meridian is at once

planted permanently and connected by a straight line with the section corner on the outline of the township. The surplus or deficiency is to be left in the quarter section adjoining the outline. The true course of the deflected line and also the distance east or west from the corner, of the intersection of the township outline by the trial line, are to be entered in the notes.

The directions given above (§ 48) in regard to blazed lines apply in this case.

Should a meridian strike more than fifty links from the corner on the outline, the whole of such meridian must be resurveyed across the township. Offsetting the posts is not sufficient, a new line must be run and, if in the woods, opened throughout.

93. The only section lines to be surveyed, established and permanently marked as boundaries are those along which the road allowances are. Their total length for a township of the third system is forty-two miles and twenty-seven chains, more or less, exclusive of township lines, and for a township of the first or second system sixty-one miles and ten chains, more or less. Lines to be surveyed.

In the fourth system the lines to be surveyed are those corresponding to those surveyed in the third system; that is, all the north and south, and the alternate east and west section lines.

Indian reserve boundaries and other lines must also be retraced, when the areas of the quarter sections adjoining cannot be found without such a survey.

94. In starting from a correction line, the surveyor will give Quarter to the adjoining quarter section, a depth proportional to those sections of the quarter sections at each end of the tier, as shown on the adjoining diagram of the township outlines. adjoining correction lines.

He will be careful to connect with the posts in the inner limit of the road allowance and not with those in the outer limit.

95. It has been explained, in the exposition of the system of survey, that sections in all the systems except the first, are of unequal width, on account of the convergence or divergence of meridians. To better illustrate this fact the convergence has been exaggerated in fig. 18. Convergence of meridians boundaries.

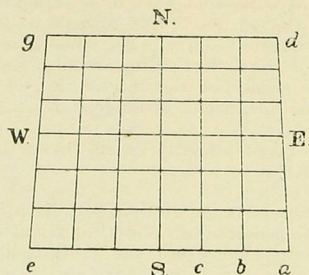


Fig. 18

The angle formed by the meridians with the east and west lines is different for each meridian and varies uniformly from one corner of the township to the other. The surveyor shall not, therefore, start his meridians at right angles to the township lines, but he must, in each case, calculate the angle formed by these two lines from the data supplied to him with the diagram of township outlines.

Supposing, for instance, the angle dae to be $90^\circ 03'$, and gea $89^\circ 51'$, he will use as angles at b, c, S , &c., $90^\circ 04'$, $90^\circ 05'$, $90^\circ 06'$, $90^\circ 07'$, $90^\circ 08'$.

The angles between the meridians ad or eg , and the east and west lines, would be deduced in a similar manner.

Exception
in first
system of
survey.

96. In the first system of survey, as already stated, the lines between sections are not true meridians, but are parallel to the eastern boundary of the township, and make with the south boundary of the township angles equal to the southeastern angle of the township.

Limits of
error
allowed.

97. It follows, from the foregoing, that all quarter sections on meridians are to be forty chains except in the tiers of quarter sections adjoining the correction lines, where they should be proportional to the quarter sections at each end of the tier. Should all the survey lines be perfectly correct, all other sections should have the theoretic width. The maximum error in distance that will be allowed in the closing of any section corner will be fifty links. When the closing error exceeds this quan-

tity, the lines involving the error must be resurveyed. The opposite boundaries of sections are to be within fifty links of equal length.

All distances are to be entered in the field book such as measured on the ground.

98. In subdividing townships, such rivers as are specially mentioned in the instructions and all lakes over twenty acres in extent, together with any islands containing not less than twenty acres, are to be accurately surveyed. The plans must show the actual water line at the time of the survey, and the deductions from areas are to be calculated accordingly.

Whenever a marsh or other body of water is so deep that it cannot be forded by men or horses, it is to be considered as a lake, coming under the operation of this clause: but when it is possible to ford it and carry the survey line across, no traverse of the same or deduction from the area of the section is to be made.

Lakes occurring entirely within a section and islands in lakes and rivers must have their traverse properly connected with the rest of the survey. When a river which is to be traversed exceeds three chains in width, the surveyor will traverse both banks of the same, referring to such traverse in his field notes as on the "right" or the "left" bank, as the same would be on his right or left, respectively, looking down the stream.

Points of the feature traversed shall be so determined that the distance of any point from the next one does not exceed ten chains; they may be fixed either by offsets or by auxiliary bearings and distances. Traverse lines are to be connected with the nearest post on all section lines which they intersect, and the angle between the traverse line and the section line is to be determined and given in the returns.

The use of the micrometer for such work will be allowed, provided that the closing error does not exceed one chain in one hundred chains. The micrometer must be of an approved pattern, and must be submitted to the Surveyor General before being used on the survey.

99. Traverse lines shall be run to settlers' claims or improvements, and the extent and position thereof shown on the plans of the survey. Settlers' claims or improvements.

Statutory declarations to be obtained from settlers.

100. The surveyor will obtain from every settler a statutory declaration on the form supplied; and will see that all the questions on the form are answered, and the answers entered in the form.

All declarations from squatters are to be accepted, no matter how many there may be on a quarter section. The only case in which a declaration should be refused is when it is clearly untrue, or in opposition to the facts.

A statutory declaration does not give any right or legal status to the declarant; it is simply for the information of the department.

Surveyors are strictly forbidden to make any charge to squatters for receiving their declarations, and it is no part of their duty to explain the law or to give directions to intending or actual settlers for securing land. Surveyors in the employment of the department are recommended to abstain from giving such advice.

PROGRESS REPORTS.

Sketches of survey to accompany the progress reports.

101. Each progress report shall be accompanied by sketches prepared on the forms supplied showing work done up to date. Such sketches shall show the main topographical features of the country, that is to say, the rivers, lakes, trails, hills, &c., and the section and traverse lines surveyed must be indicated in red.

It is not necessary to use a scale for plotting, a rough estimate of distances is all that is required.

The sketches may be drawn with pencils of different colours.

It should be understood that only the main topographical features are to be shown, and that it is not necessary to indicate every little swamp, pond or rise that may be found.

RETURNS OF SURVEY.

Accounts to be placed at the end of the field notes.

102. In addition to what is prescribed for field notes in general, there will be in the case of contract surveys an account at the end of the field book, signed by the surveyor, showing in miles and decimals of a mile, the distances run on section and traverse lines in the township, with the rates in each case, according to contract, and the total amount for the township.

Final returns.

103. The final returns of survey consist of:—

- (a.) Field notes.
- (b.) A plan of each township.
- (c.) A timber report for each township.
- (d.) Oaths of chainmen.
- (e.) Statutory declarations of settlers.
- (f.) Accounts in duplicate on the forms supplied.

104. The surveyor will also subjoin in a concise report such Report. further description or other information connected with the township surveyed as he may be able to afford, which may be useful or necessary to be known, giving a general description of the character of the country, its soil and geological features, timber, minerals, waters, &c.

He will also furnish a general report upon his operations and the resources of the district in which his work lies, for publication in the annual report of the department of the Interior.

105. The plans shall be on a scale of forty chains to the inch, Plans. on the forms supplied by the department. Every fractional township, however small, is to be shown on a separate plan.

Township outlines, when surveyed by the subdivider, are to be shown on the same plan as the subdivision.

106. The plans shall exhibit the astronomical bearings and Bearings lengths, as ascertained and measured on the ground, of all surveyed lines, except that the lengths of quarter sections which of lines. are exactly forty chains need not be marked.

107. The plans shall show the topographical features of the Topography country referred to in the field books wherever they can properly be shown on the scale. The topography is to be represented in the following manner:—

Bush,—a wash of light green without any imitation of trees.

Brulé,—a wash of light brown without any imitation of trees.

Swamps,—a wash of light yellow, with small strokes of green representing reeds, &c.

Water,—a wash of blue.

Areas.

108. The plans shall also show the areas in acres and hundredths of all surveyed quarter sections. Regular quarter sections are reckoned at 160 acres, unless differing materially therefrom. Quarter sections are not regular when they adjoin correction lines, the western boundaries of townships of the first system of survey, the boundaries of reserves and the lines separating different systems of survey, when they are in the closing range of quarter sections along an initial meridian, or when they are broken by lakes or streams that have been traversed.

As a general rule, a quarter section is treated as surveyed when two of its corners have been established on the ground, either by corner or witness marks, and when lakes or streams therein have been traversed.

In a quarter section divided into two or more parts by a lake or stream large enough to require traversing, each part is to have its separate area shown. The distance from the nearest section or quarter section corner to the water is to be marked on every surveyed quarter section line broken by such water. Every traversed lake or stream is to be given some name, number, or other distinctive designation.

Traverse lines.

109. Traverse lines are not to be shown on the plan, but to be plotted on one of the blank pages at the end of the field book, on which are also to be shown the shore lines of the lake or stream. In case the lake, pond, &c., is of too great an area to admit of its being plotted on a page, then the plot should be made on tracing linen and pasted in the end of the field book.

Traverse lines are to be plotted on a scale of 20 chains to an inch. Astronomical bearings (not angles), distances and offsets must be given; none of these need be marked on the plot; it is preferable to give them separately in table form, numbering the stations to correspond to numbers on the plot.

Settlers' improvements.

110. The extent and position of settlers' improvements are to be shown in the notes and on the plan; also the names of the settlers who have made statutory declarations on the quarter sections which they claim. The names of settlers who have made no declaration are not to be shown on the plan or in the field notes.

111. In the timber report the surveyor will state whether, in Timber his judgment, from the knowledge gained on the ground, it report. would be desirable to reserve the timber for the needs of the settlers, or whether it would be advisable to set apart the same as a timber berth; if the latter, he will give a general statement of the quality and extent of timber over 10 inches in diameter, suitable for lumbering purposes. If reporting on several timbered townships he shall make a statement as to their relative value, taking into account the extent, quality and facilities afforded by streams, &c., for getting out the timber.

A timber report shall be furnished for every township. Should there be no wood in the township, the fact is stated. One page of the report is given for each township.

112. The field notes shall be neatly written, in a clear manner Plans and and fair hand. The plans shall be drawn with care and should field notes be fair specimens of draughtsmanship. returned to surveyor in certain cases.

Any plans or field notes not complying with the above conditions will either be returned to the surveyor, to be written or drawn again, or prepared by the department, and the cost charged to the surveyor.

113. Immediate preparation of returns after the surveyor has completed his field work will be insisted upon. Returns to be prepared without delay.

114. Attention is particularly drawn to the necessity for General reports. devoting care and attention to the preparation of general reports. The object should be not merely to give an account of the surveyor's operations and the quality of the land, but to describe comprehensively the resources of the country visited and its industries, whether farming, stock raising, lumbering, mining, &c., furnishing such details as may enable the prospective emigrant to choose judiciously the locality in which to settle according to his calling, and to form an idea of the expectations which he may reasonably entertain.

TABLE XIX.

DEFLECTION of a Trial Line for Deviations from 1 to 149 Links at the end of eighty-one chains.

Links.	Decimal Divi- sion.	Sexagesimal Di- vision.	Links.	Decimal Divi- sion.	Sexagesimal Di- vision.	Links.	Decimal Divi- sion.	Sexagesimal Di- vision.	Links.	Decimal Divi- sion.	Sexagesimal Di- vision.
0	0° 000	0 00	30	0° 212	12 44	60	0° 424	25 28	90	0° 637	38 12
1	0° 007	0 25	31	0° 219	13 09	61	0° 432	25 53	91	0° 644	38 37
2	0° 014	1 51	32	0° 226	13 35	62	0° 439	26 19	92	0° 651	39 03
3	0° 021	1 16	33	0° 233	14 00	63	0° 446	26 44	93	0° 658	39 28
4	0° 028	1 42	34	0° 241	14 26	64	0° 453	27 10	94	0° 665	39 54
5	0° 035	2 07	35	0° 248	15 51	65	0° 460	27 35	95	0° 672	40 19
6	0° 042	2 33	36	0° 255	16 17	66	0° 467	28 01	96	0° 679	40 44
7	0° 050	2 58	37	0° 262	16 42	67	0° 474	28 26	97	0° 686	41 10
8	0° 057	3 24	38	0° 269	17 08	68	0° 481	28 52	98	0° 693	41 35
9	0° 064	3 49	39	0° 276	17 33	69	0° 488	29 17	99	0° 700	42 01
10	0° 071	4 15	40	0° 283	17 59	70	0° 495	29 43	100	0° 707	42 26
11	0° 078	4 40	41	0° 290	18 24	71	0° 502	30 08	101	0° 714	42 52
12	0° 085	5 06	42	0° 297	18 50	72	0° 509	30 33	102	0° 721	43 17
13	0° 092	5 31	43	0° 304	19 15	73	0° 516	30 59	103	0° 729	43 43
14	0° 099	5 57	44	0° 311	19 41	74	0° 523	31 24	104	0° 736	44 08
15	0° 106	6 22	45	0° 318	20 06	75	0° 531	31 50	105	0° 743	44 34
16	0° 113	6 47	46	0° 325	20 31	76	0° 538	32 15	106	0° 750	45 00
17	0° 120	7 13	47	0° 332	20 57	77	0° 545	32 41	107	0° 757	45 26
18	0° 127	7 38	48	0° 340	21 22	78	0° 552	33 06	108	0° 764	45 52
19	0° 134	8 03	49	0° 347	21 48	79	0° 559	33 32	109	0° 771	46 18
20	0° 141	8 29	50	0° 354	22 13	80	0° 566	33 57	110	0° 778	46 44
21	0° 149	8 55	51	0° 361	22 39	81	0° 573	34 23	111	0° 785	47 10
22	0° 156	9 20	52	0° 368	23 04	82	0° 580	34 48	112	0° 792	47 36
23	0° 163	9 46	53	0° 375	23 30	83	0° 587	35 13	113	0° 799	48 02
24	0° 170	10 11	54	0° 382	23 55	84	0° 594	35 39	114	0° 806	48 28
25	0° 177	10 37	55	0° 389	24 21	85	0° 601	36 04	115	0° 813	48 54
26	0° 184	11 02	56	0° 396	24 46	86	0° 608	36 30	116	0° 820	49 20
27	0° 191	11 28	57	0° 403	25 12	87	0° 615	36 55	117	0° 828	49 46
28	0° 198	11 53	58	0° 410	25 37	88	0° 622	37 21	118	0° 835	50 12
29	0° 205	12 19	59	0° 417	26 02	89	0° 630	37 46	119	0° 842	50 38

TABLE XIX.—DEFLECTION of a Trial Line for Deviations from 1 to 149 Links at the end of eighty-one chains.—*Concluded.*

Links.	Decimal Divi- sion.	Sexagesimal Divi- sion.	Links.	Decimal Divi- sion.	Sexagesimal Divi- sion.	Links.	Decimal Divi- sion.	Sexagesimal Divi- sion.
120	0° 849	50 55	130	0° 919	55 10	140	0° 990	59 25
121	0° 856	51 21	131	0° 927	55 35	141	0° 997	59 50
122	0° 863	51 46	132	0° 934	56 01	142	1° 004	60 16
123	0° 870	52 12	133	0° 941	56 26	143	0° 011	60 41
124	0° 877	52 37	134	0° 948	56 52	144	0° 018	61 06
125	0° 884	53 03	135	0° 955	57 17	145	0° 026	61 32
126	0° 891	53 28	136	0° 962	57 43	146	0° 033	61 57
127	0° 898	54 54	137	0° 969	58 08	147	0° 040	62 23
128	0° 905	54 19	138	0° 976	58 34	148	0° 047	62 48
129	0° 912	54 45	139	0° 983	59 59	149	0° 054	63 14

EXTRACTS

FROM THE

DOMINION LANDS ACT

49 VIC, CHAP. 54.

As amended to date.

SURVEYORS AND SURVEYS.

Qualifica-
tions re-
quired of
Dominion
surveyors.

§99. No person shall act as surveyor of Dominion lands unless he was, before the fourteenth day of April, one thousand eight hundred and seventy-two, duly qualified by certificate, diploma or commission, to survey the Crown lands in some one of the Provinces of Canada, or has become qualified under the provisions hereinafter set forth. 46 V., c. 17, s. 87, *part*.

Official
style of
surveyors.

§100. Persons qualified under the provisions of this Act shall be styled "*Dominion Land Surveyors*," or "*Dominion Topographical Surveyors*," as the case may be. 46 V., c. 17, s. 87, *part*.

Board to
consist of
Surveyor
General
and two
other per-
sons.
Meetings.

§101. There shall be a Board of Examiners for the examination of candidates for commissions as Dominion land surveyors, or as articulated pupils, which shall consist of the Surveyor-General and two Dominion topographical surveyors appointed from time to time by Order in Council; and the meetings of the Board shall commence on the second Monday in the month of February in each year, or at such other times as the Minister directs,—due notice thereof being given in the *Canada Gazette*; and the place of meeting shall be at the city of Ottawa, or at such other place as is from time to time fixed by the Minister. 62-63 V., c. 16, s. 5.

Members to
be sworn.

2. Every member of the board shall take an oath of office, according to the form M, in the schedule to this Act, which shall be administered by a judge of any one of the superior courts in any Province of Canada, or a judge of the Supreme Court of Canada, and such judge is hereby authorized and required to administer such oath:

3. Three members of the board shall form a quorum:

Quorum.

4. The board shall, from time to time, appoint a fit and proper person to be secretary thereof, who shall keep a record of its proceedings:

5. The Minister may cause examinations of candidates for commissions as Dominion land surveyors, or as articulated pupils, to be held at such times and places as he directs, by one of the members of the board, or by a special examiner who shall be a Dominion land surveyor or Dominion topographical surveyor, and shall be appointed by Order in Council; but such examinations shall be subject to the rules and regulations made by the board in that behalf, and shall have no effect unless they are conducted in accordance with such rules and regulations, and are subsequently approved by the board. 49 V., c. 27, s. 12, *part*. 62-63 V., c. 16, s. 6.

Examina-
tion by a
member of
the Board.

6. In the event of any member of the board being unable, through illness or other cause, to attend any meeting of the board, his place may be temporarily filled by another Dominion topographical surveyor appointed by Order in Council as occasion requires. 62-63 V., c. 16, s. 7.

Temporary
vacancies.

§102. No person shall be admitted as an articulated pupil with any Dominion land surveyor, unless he has previously passed an examination before the board of examiners, or before one of the members thereof, as to his penmanship and orthography, and also as to his knowledge of arithmetic, algebra, including quadratic equations, plane geometry, plane trigonometry, spherical trigonometry as far as the solution of triangles, the mensuration of superficies, and the use of logarithms, and has obtained a certificate of such examination, and of his proficiency, from such board. 49 V., c. 27, s. 12, *part*.

Examina-
tion for
articles as
pupils.

§103. Applicants for such examination, previously to being articulated, shall give notice to the secretary of the board of their desire to present themselves for examination; whereupon that officer shall instruct them as to the manner in which they must proceed. 46 V., c. 17, s. 90.

Notice by
applicants
to secre-
tary.

§104. No pupil shall be entitled to be examined before the board, or before one of the members thereof, for admission as a Dominion land surveyor, unless he has previously served regularly and faithfully for and during the period of three successive years, under articles in writing, in the form N, in the schedule to this Act, duly executed before two witnesses, as pupil of a Dominion land surveyor, and unless he produces an affidavit from such

Conditions
precedent
to exam-
ination for
admission.

surveyor in the form O, in the schedule to this Act, together with his own affidavit in the form P in the schedule to this Act, that he has so served; or if for some good and valid reason such affidavits cannot be produced, unless he produces such evidence of the service as the board requires; and such three years' service shall include at least twelve months' actual practice in the field. 49 V., c. 27, s. 13.

Alteration
of form N
when the
pupil is an
adult.

§105. Whenever the pupil of a Dominion land surveyor is, at the time of his entering into articles in writing, in compliance with the provisions of the next preceding clause, a person of twenty-one years of age, the said form N may be altered to suit the case, by leaving out so much as relates to the father or other person, by whose consent and approbation the pupil enters into articles, by making the pupil take upon himself the obligation in the said form imposed on such father or other person, by stating that the consideration money has been paid by the pupil, and by otherwise so varying the form as to suit the circumstances of the case. 46 V., c. 17, s. 91, *part*.

Transfer of
a pupil.

§106. Any Dominion land surveyor may, by an instrument in writing, transfer a pupil, with his own consent, to any other Dominion land surveyor, with whom such pupil may serve the remainder of his term; but such pupil shall not be entitled to examination unless he produces the affidavits of both surveyors in the form O in the schedule to this Act or, in default thereof, such evidence as is required by clause one hundred and four of this Act. 49 V., c. 27, s. 14.

Completion
of term
with an-
other sur-
veyor.

§107. If any Dominion land surveyor dies, or leaves Canada, or is suspended or dismissed, his pupil may complete his term under articles, as aforesaid, with any other Dominion land surveyor. 46 V., c. 17, s. 93.

Duplicate
of articles
to be trans-
mitted to
secretary.

§108. Articled pupils shall transmit to the secretary of the board, within three months of the date of their articles, a duplicate thereof, together with a fee of two dollars for receiving and filing the same; and the secretary shall acknowledge the receipt of such papers and shall carefully file and keep the same with the records of the board. 46 V., c. 17, s. 94.

As to ad-
mission of
provincial
land sur-
veyors.

§109. Every person who, subsequently to the fourteenth day of April, one thousand eight hundred and seventy-two, was or becomes duly qualified by certificate, diploma or commission, to survey lands in any province of Canada, and who, in order to become so qualified, has served a term under articles to a sur-

veyor, similar to the term prescribed by this Act, and has passed an examination in the subjects prescribed by clauses 102 and 113 of this Act, before the board of examiners of such province, shall be entitled to obtain a commission as Dominion land surveyor without further service and without being subjected to any examination other than with respect to the system of survey of Dominion lands; but it shall rest with the board of examiners to decide whether the service of such person is equivalent to that prescribed in this Act for the pupils of Dominion land surveyors, and whether the subjects of examination for the certificate, diploma or commission of a surveyor of Crown lands in such province are sufficiently similar to those set forth in the said clauses to entitle him, under the foregoing provisions, to such commission; and if such service or subjects of examination are, in the opinion of the board, not sufficiently similar to those required by this Act, the board may, in its discretion, require any candidate for admission as a Dominion land surveyor under the provisions of this clause to complete such further term of service or practice in surveying, and may examine him in such of the subjects set forth in clauses 102 and 113 of this Act, as may appear necessary. 61 V., c. 31, s. 8.

§110. Every person who shows, to the satisfaction of the board of examiners, that he has been duly admitted as a surveyor of lands in any part of His Majesty's dominions other than the provinces of Canada to which the provisions of the next preceding clause relate, and that he has had at least two years' practice either as a surveyor or as a pupil to a surveyor, (of which practice at least six months has been in the field), shall be entitled to a commission on passing an examination in the subjects set forth in clauses one hundred and two and one hundred and thirteen of this Act, and on his producing an affidavit from a Dominion land surveyor in the form O, in the schedule to this Act, that such person has, in addition to the service aforesaid, served for one year with him, including at least six months' actual practice with him in the field. 49 V., c. 27, s. 15, *part*.

§111. Every graduate in surveying of the Royal Military College of Canada, and every person who has followed a regular course of study in all the branches of education required by this Act for admission as a Dominion land surveyor, through the regular sessions, for at least two years in any college or university where a complete course of theoretical and practical instruction in surveying is organized, and who has thereupon received from such college or university a diploma as civil engineer, shall be exempt from serving three years as aforesaid, *tions*.

and shall be entitled to examination after one year's service under articles with a Dominion land surveyor, (at least six months of which service has been in the field), on producing the affidavit required by the next preceding clause as to such service; but it shall rest with the board to decide whether the course of instruction in such college or university is that required by this clause. 49 V., c. 27, s. 15, *part*.

Notice to secretary. §112. Every person who desires to be examined before the board shall give due notice thereof in writing to the secretary at least one month previous to the meeting of the board, and shall, with such notice, transmit the fee hereinafter prescribed. 46 V., c. 17, s. 98.

Examination for admission as surveyor. §113. No person shall, unless he is thereto entitled under any other clause of this Act, receive a commission from the board authorizing him to practise as a Dominion land surveyor, unless he has complied with the foregoing provisions of this Act, nor until he has attained the full age of twenty-one years and has passed a satisfactory examination before the board or before a member thereof as hereinbefore provided on the following subjects, that is to say: plane and solid geometry; spherical trigonometry, so far as it includes solution of triangles; the use of logarithms; measurement of areas, including their calculation by latitude and departure, and the dividing or laying off land; a knowledge of the elements of practical astronomy and the solution of the following elementary problems:—

In mathematics. (a) To ascertain the latitude of a place from an observation of a meridian altitude of the sun or of a star;

(b) To obtain the local time and the azimuth from an observed altitude of the sun or a star;

(c) From an observed azimuth of a circumpolar star, when at its greatest elongation from the meridian, to ascertain the direction of the latter;

Surveying operations and use of instruments. He shall be practically familiar with surveying operations and capable of intelligently reporting thereon, and be conversant with the keeping of field notes, their plotting and representation on plans of survey, in a style of draughtsmanship satisfactory to the board, the describing of land by metes and bounds for title, and with the adjustments and methods of use of ordinary surveying instruments; and shall also be perfectly conversant with the system of survey as embodied in this Act, and with the manual of standing instructions and regulations

System of Dominion surveys.

published by the authority of the Minister, from time to time, for the guidance of Dominion land surveyors. 49 V., c. 37, s. 16.

§114. The board may examine any candidate on oath,—which oath may be administered by any one of the examiners,—as to his actual practice in the field, and with regard to his instruments. 46 V., c. 17, s. 100.

§115. Every person who passes the examination prescribed by this Act, and every person who is entitled to receive a commission under clause one hundred and nine of this Act, shall receive a commission from the board in accordance with the form Q in the schedule to this Act, constituting him a Dominion land surveyor, and shall, jointly and severally with two sufficient sureties to the satisfaction of the board, enter into a bond in the sum of one thousand dollars to His Majesty, His heirs and successors, conditioned for the due and faithful performance of the duties of his office, and shall take and subscribe before a judge of any one of the superior courts in any province of Canada—who is hereby authorized and required to administer such oath—before the board—any member of which may administer the same—the oath of allegiance, and an oath in the form following:—

"I, _____, do solemnly swear (or affirm as the case may be) that I will faithfully discharge the duties of a Dominion land surveyor according to law, without favour, affection or partiality. So help me God."

2. Until the above formalities have been complied with the said commission of Dominion land surveyor shall have no effect:—

3. The said oaths of allegiance and of office shall be deposited in the Dominion lands office:

4. The said bond shall be deposited and kept in the manner prescribed by law with regard to the bonds given for the like purposes by other public officers of Canada, and shall be subject to the same provisions, and shall inure to the benefit of any person who sustains damage by breach of any condition thereof:

5. The commission shall be registered in the office of the Registrar General of Canada. 46 V., c. 17, s. 101;—49 V., c. 27, s. 17.

Voluntary examination in higher branches of study. §116. Every Dominion land surveyor who has previously given the notice prescribed in clause one hundred and twelve of this Act, may be examined as to his knowledge of the following subjects relating to the higher branches of surveying, qualifying him, (in addition to the performance of the duties declared by this Act to be within the competence of Dominion land surveyors), for the prosecution of extensive governing or topographic surveys or those of geographic exploration, that is to say :—

Mathematics.

(a.) Algebra ;

(b.) Plane and spherical trigonometry ;

(c.) The plane co-ordinate geometry of the point, straight line, circle and ellipse, and the transformation of co-ordinates ;

(d.) The geometrical theory of limits, and the determination of the form, magnitude and radius of curvature of any plane section of a spheroid of revolution ;

(e.) Differential calculus as far as Taylor's and McLaurin's theorems, with its practical application ;

(f.) Methods of trigonometrical surveying, of observing the angles and calculating the sides of large triangles on the earth's surface, and of obtaining the differences of latitude and longitude of points in a series of such triangles, regard being had to the effect of the figure of the earth ;

(g.) The theory of the projections and developments used in the delineation of spherical surfaces ;

Practical astronomy.

(h.) The portion of the theory of practical astronomy which relates to the determination of the geographic position of points on the earth's surface and the directions of lines on the same ;

Determination of errors.

(i.) The use of the method of least squares in combining direct and indirect observations, the solution of simple equations of condition and the determination of the probable and the mean error ;

Dominion lands survey system.

(j.) The theory of the Dominion lands system of survey, the methods of surveying blocks and township outlines and of making tract, micrometer and exploratory surveys ;

Theory and use of instruments.

(k.) The theory and use of the instruments used in connection with the foregoing, and also of the ordinary meteorological instruments ;

(l.) Elementary mineralogy and geology, so far as respects a knowledge of the more common characters by which the mineral bodies that enter largely into the composition of rocks are distinguished, with their general properties and conditions of occurrence ; the ores of the common metals and the classification of rocks ; and the geology of North America, so far as to be able to give an intelligent outline of the leading geological features of Canada ;

Mineralogy and geology.

Geology of North America.

(m.) Methods of trigonometrical levelling, of measurement of heights by barometer or by the temperature of boiling water, and the use of the pendulum in determining the compression of the earth ;

Levelling.

(n.) The instruments and methods used in determining the magnetic declination, inclination and intensity. 49 V., c. 27, s. 18. Magnetic declination, &c.

§117. Persons who pass the above mentioned examination in the higher branches of surveying, shall receive a certificate to that effect from the board, and shall be designated Dominion topographical surveyors. 46 V., c. 17, s. 103. Designation of those passing such examination.

§118. The following fees shall be paid under the provisions of this Act :—

Tariff of fees.

(a.) To the secretary of the board, by each pupil, on giving notice of his desire for examination preliminary to being articulated, one dollar ;

On giving notice, preliminary examination.

(b.) To the secretary of the board, as the fee due on such examination, ten dollars, and a further sum of two dollars for the certificate ;

On examination,

(c.) To the secretary of the board, by each pupil, at the time of transmitting to such secretary the indentures or articles of such pupil, two dollars ;

On transmitting articles.

(d.) To the secretary of the board, by each candidate for either the ordinary or the higher examination for a commission, with his notice thereof, two dollars ;

On giving notice, final examination.

(e.) To the secretary of the board, by each applicant obtaining a commission, as his fee thereon, two dollars ;

On obtaining commission.

(f.) To the secretary of the board as an admission fee by any candidate receiving a commission, twenty dollars,—but such amount, as also the ten dollars required to be paid under sub-

On admission.

Application of certain fees clause (b) of this clause, shall be paid to the Minister of Finance and Receiver General to the credit of Dominion lands ;

On commission as Dominion topographical surveyor. (g.) To the secretary of the board by each applicant who obtains a commission as Dominion topographical surveyor, as his fee thereon, two dollars ;

For testing standards of length. (h.) To the secretary of the board for testing a surveyor's standard of length, two dollars. 46 V., c. 17, s. 104 ;—49 V., c. 27, s. 19.

Allowances to members of Board. §119. Every member of the board who attends at the meetings thereof, and the secretary and every member who holds an examination as provided by clause 101, shall receive five dollars for each day's sitting, and the actual travelling and living expenses incurred by such member and consequent upon such attendance,—and the Minister shall pay such sums ; but no member or temporary member of the board shall be entitled to any payment under the provisions of this clause, unless he was previously notified by the secretary to attend the meeting of the board because of which he claims payment for his services or for travelling and living expenses, and unless the secretary reports to the Minister that he was in regular attendance at such meeting, as a member or temporary member of the board, and was duly notified to attend such meeting. 62-63 V., c. 16, s. 8.

Proviso. §120. The board may, in its discretion, suspend or dismiss from the practice of his profession, any Dominion land or topographical surveyor whom it finds guilty of gross negligence or corruption in the execution of the duties of his office ; but the board shall not suspend or dismiss such surveyor without having previously summoned him to appear in order to be heard in his defence, nor without having heard the evidence offered both in support of the complaint and on behalf of such surveyor ; and, if, after being summoned as aforesaid, the surveyor does not appear, the board may appoint a fit and proper person to present the evidence on behalf of the surveyor. 49 V., c. 27, s. 20, *part*.

Board may suspend or dismiss negligent or corrupt surveyor.

Surveyor or some one on his behalf to be heard.

Surveyors to add to their returns of survey an affidavit of the faithful and correct §121. The Surveyor General shall require every Dominion land or topographical surveyor, in addition to the oath by this Act required to be administered to him on receiving his commission as such, to take and subscribe an oath, or make and subscribe an affirmation, on the return of his surveys of Dominion lands, that the same have been faithfully and correctly executed according

to law and the instructions of the Surveyor General ; and if it is proved, on satisfactory evidence, before any court of competent jurisdiction, that such surveys, or any part thereof, have not been so executed, the Attorney General of Canada shall, upon the application of the Surveyor General, immediately institute a suit upon the bond of such surveyor ; and the institution of such suit shall operate as a lien on any property owned or held by such surveyor, or his sureties, at the time the suit is instituted. 46 V., c. 17, s. 107, *part*.

§122. Every Dominion land surveyor shall keep exact and regular journals and field notes of all his surveys of Dominion lands, and shall file them in the order of time in which the surveys have been performed, and he shall give copies thereof to all persons concerned, when required so to do ; and for so doing he shall be paid the sum of one dollar for each copy, if the number of words therein does not exceed four hundred—but if the number of words therein exceeds four hundred, he shall be paid ten cents additional for every hundred words over and above four hundred words. 46 V., c. 17, s. 123.

§123. Every Dominion land surveyor summoned to attend any court, civil or criminal, for the purpose of giving evidence in his professional capacity as a surveyor, shall be allowed five dollars for each day he so attends, in addition to his reasonable travelling and living expenses, to be taxed and paid in the manner by law provided, with regard to the payment of witnesses attending such court. 46 V., c. 17, s. 124.

CHAIN BEARERS.

§124. Every chain bearer employed in the survey of Dominion lands shall, before he commences his chaining or measuring, take an oath or affirmation that he will discharge such duty with exactness, according to the best of his judgment and ability, and render a true account of his chaining or measuring to the surveyor by whom he has been appointed to such duty ; and any Dominion land surveyor may administer such oath or affirmation. 46 V., c. 17, s. 108.

STANDARD OF MEASURE.

§125. The measure of length used in the surveys of Dominion lands shall be the English measure of length ; and every Dominion land surveyor shall be in possession of a subsidiary standard thereof—which subsidiary standard, tested and stamped

Measuring as correct by the Department of Inland Revenue, shall be furnished to him by the secretary of the board on payment of a fee of eight dollars therefor; and all Dominion land surveyors shall, from time to time, regulate and verify, by such standard, the length of their chains and other instruments for measuring; and the said standard measure shall be returned to the secretary of the board as often as it requires to be tested again:

Penalty for 2. Every surveyor who is found performing his duties without surveyor being in possession of the standard measure which, by this clause, without standard. he is required to have, shall be liable to be suspended for a period not exceeding twelve months. 49 V., c. 27, s. 21.

RENEWAL OF LOST CORNERS AND OBLITERATED LINES.

Provision where the original mound or post is lost. §126. Whenever a Dominion land surveyor is employed to run any dividing line or limit between sections or other legal subdivisions, and the mound, post or monument erected, marked or planted in the original survey, to define the corner of such section or other legal subdivision, cannot be found, he shall obtain the best evidence that the nature of the case admits of, respecting such corner mound, post or monument; but if the position of the same cannot be satisfactorily so ascertained, he shall proceed as follows:—

If a township corner. (a.) If the lost corner mound, post or monument is that of a township corner, he shall report the circumstances of the case to the Surveyor-General, who shall instruct him how to proceed;

If on one of the outlines of a township. (b.) If the lost corner mound, post or monument is on one of the outlines of a township, he shall join, by a straight line, the nearest undisputed section or quarter section corners on such outline, and divide such straight line into such number of sections or quarter sections or other legal subdivisions as the same contained in the original survey—giving to each an equal breadth;

As to correction lines. (c.) If, in re-establishing the east or west boundary of a township, one of the nearest undisputed corners is on a correction line, every quarter section shall be made exactly forty chains, and the deficiency or surplus, as the case may be, shall be left in the quarter section adjoining the correction line;

Where a deficiency shall be left. (d.) If, in re-establishing the north or south boundary of a township surveyed under the first system of survey, one of the nearest undisputed corners is the western corner of the township,

every quarter section shall be made exactly forty chains, and the deficiency or surplus, as the case may be, shall be left in the western quarter section;

(e.) When the position of the township corner is also lost, it shall be re-established as aforesaid, previously to re-establishing the outline of the township;

(f.) When the lost corner is in the interior of a township, on the limit of a meridian road allowance, the surveyor shall connect the two nearest undisputed corners on such limit by a straight line, and divide the distance into such number of sections or other legal subdivisions as the same contained in the original survey, giving to each an equal breadth;

(g.) If one of the nearest undisputed corners is on a correction line, he shall make each quarter section exactly forty chains and leave the deficiency or surplus, as the case may be, in the quarter section adjoining the correction line;

(h.) When the nearest undisputed corners on the said limit of a meridian road allowance are in different townships, the outline between such townships shall be re-established previous to re-establishing the meridian;

(i.) When the lost corner is that of a quarter section on a line running east and west, the surveyor shall join, by a straight line, the opposite section corners on the meridians on each side, and give to each quarter section an equal breadth;

(j.) If, in townships surveyed under the first system of survey, the lost corner is in the western row of sections of a township, the first quarter section shall be made exactly forty chains, and the deficiency or surplus, as the case may be, shall be left in the western quarter section;

(k.) When the position of one of the corners on the meridians is also lost, such meridians shall be re-established previously to re-establishing the east and west line;

(l.) Whenever a surveyor erects, plants or places a mound, post or monument as aforesaid, to renew a lost or obliterated corner, he shall duly take into account any allowance for road or roads; and the corner, or division or limit so established, shall be the true corner, or division or limit of such section or other legal subdivision. 46 V., c. 17, s. 110.

SURVEY OF LEGAL SUBDIVISIONS.

Method of proceeding in laying out a half or quarter section or other legal subdivision. §127. When, in the survey of legal subdivisions, it is necessary for a Dominion land surveyor to establish the division line between two sections, he shall effect this by connecting, by a straight line, the opposite original section corners, if they exist, and if not, by similarly connecting the points established in renewal thereof, in accordance with the next preceding clause, giving, in either case, the quarter sections involved an equal breadth;

Half or quarter section. 2. In laying out a half section or a quarter section he shall connect the opposite quarter section posts by straight lines;

Other subdivisions. 3. In laying out other and minor legal subdivisions he shall give to every such subdivision its proportionate share of frontage and interior breadth, and connect the resulting terminal points by a straight line;

Lines drawn to be true limits. 4. The lines or limits so drawn on the ground in the manner above prescribed shall, in the respective cases, be the true lines or limits of such section, half section or other legal subdivision, whether the same correspond or do not correspond with the area expressed in the respective patents for such lands. 46 V., c. 17, s. 111.

DIVISION LINES IN FRACTIONAL SECTIONS.

Dividing lines to be drawn from original corners. §128. The dividing lines or limits between legal subdivisions, in fractional sections, shall be drawn from the original corners (or the points representing such corners, as defined on the ground, in accordance with the provisions of this Act), in the section line intended as the front of the lot;

Northerly and south-erly lines. 2. Northerly or southerly lines shall be drawn due north or due south;

Easterly and west-erly lines. 3. Easterly or westerly lines shall be drawn at an angle with the meridian equal to the mean of the angles formed with the same meridian by the lines which are the northern and the southern boundaries respectively of the section. 46 V., c. 17, s. 112.

Boundaries under this Act are to be deemed the true ones. §129. All boundary lines of townships, sections or legal subdivisions, towns or villages, and all boundary lines of blocks, gores and commons, all section lines and governing points, all limits of lots surveyed, as defined by mounds, posts or monu-

ments, erected, placed or planted at the angles of any townships, towns, villages, sections or other legal subdivisions, blocks, gores, commons and lots or parcels of land under the authority of this Act or of the Governor in Council, shall, subject to the provisions hereinafter in this clause contained, be the true and unalterable boundaries of such townships, towns and villages, sections or other legal subdivisions, blocks, gores, commons and lots or parcels of land respectively, whether the same, upon admeasurement, are or are not found to contain the exact area or dimensions mentioned or expressed in any patent, grant or other instrument in respect of any such township, town, village, section or other legal subdivision, block, gore, common, lot or parcel of land;

2. Whenever the Minister of the Interior has reason to believe that any gross irregularity or error has been made in the survey of any township surveyed under the authority of this Act, the Governor in Council, upon the recommendation of the Minister of the Interior, may direct that such survey shall be cancelled and a new survey made, and the said new survey shall be made accordingly;

3. In effecting any new survey as provided by the preceding Boundary sub-clause, all posts, mounds or other marks placed to mark the original survey which is to be corrected, may be removed, and the new posts, mounds or other marks placed to mark and define the new survey, shall become the original marks of such survey;

4. The plan of any survey performed under the provisions of this Act, and of record in the Department of the Interior, or any tracing or lithographed copy of the same, may be altered and amended so as to show any and all alterations made by a new survey effected as provided by this Act. 52 V., c. 27, s. 7.

§130. Every township, section or other legal subdivision, town, village, block, gore, common, lot or parcel of land, shall consist of the whole width included between the several mounds, posts, monuments or boundaries respectively, so erected, marked, placed or planted as aforesaid, at the several angles thereof, and all the space within the original grant or patent thereof notwithstanding. 46 V., c. 17, s. 114.

§131. Every patent, grant or instrument purporting to be for any aliquot part of any section, or other legal subdivision, block, gore, common, lot or parcel of land, shall be construed to be a Township survey may be cancelled. As to aliquot parts of townships, &c.

grant of such aliquot part of the quantity the same contains on the ground, whether such quantity is more or less than that expressed in such patent, grant or instrument. 46 V., c. 17, s. 115.

Road allowances in towns, &c., to be public highways.

§132. In every town and village in Manitoba or the Northwest Territories, surveyed and laid out under the provisions of this Act, all allowances for any road, street, lane, lot or common, laid out in the original survey of such town or village, shall be public highways and commons; and all mounds, posts or monuments, placed or planted in the original survey of such town or village, to designate or define any allowance for a road, street, lane, lot or common, shall be the true and unalterable boundaries of such road, street, lane, lot or common; and all Dominion land surveyors employed to make surveys in such town, or village, shall follow and pursue the same rules and regulations in respect of such surveys as are, by law, required of them when employed to make surveys in townships. 46 V., c. 17, s. 116.

EVIDENCE BEFORE SURVEYORS.

Surveyors may examine witnesses on oath.

§133. Every Dominion land surveyor acting in that capacity, may examine witnesses on oath, with respect to all matters relating to the settlement, occupation or possession of Dominion lands, and to the survey of lands, and for better ascertaining the original corner or limits of any township, section or other legal subdivision, lot or tract of land, and may administer such oath or oaths to every person whom he examines in relation to such matters. 46 V., c. 17, s. 117.

How surveyors shall proceed to ascertain boundaries when doubtful.

§134. Whenever any Dominion land surveyor is in doubt as to the true corner, boundary or limit of any township, section, lot or tract of land which he is employed to survey, and has reason to believe that any person is possessed of any important information touching such corner, boundary or limit, or of any writing, plan or document tending to establish the true position of such corner, boundary or limit, and if such person does not willingly appear before, and be examined by such surveyor, or does not willingly produce to him such writing, plan or document, such surveyor may apply to any justice of the peace for an ordinary subpoena *ad testificandum*, or a subpoena *duces tecum*, as the case requires, accompanying such application by an affidavit or solemn declaration made before such justice of the peace, of the facts on which the application is founded; and such justice may issue a subpoena accordingly, commanding such person to appear before the surveyor at a time and place mentioned in the

Subpoena may be issued.

subpoena, and, if the case requires it, to bring with him any writing, plan or document mentioned or referred to therein:

2. Such subpoena shall be served on the person named therein ^{How} by delivering a copy thereof to him, or by leaving the same for ^{served} him with some adult person of his family at his residence, exhibiting to him or such adult person the original;

3. If the person required in such subpoena to appear, after ^{Penalty for} being paid his reasonable expenses, or having the same tendered ^{disobeying} to him, refuses or neglects to appear before the surveyor at the place and time appointed in the subpoena, or to produce the writing, plan or document, if any, therein mentioned or referred to, or to give such evidence and information as he possesses touching the boundary or limit in question, a warrant by the justice for the arrest of such person may be issued, and he shall be liable to a penalty not exceeding one hundred dollars, or to imprisonment for a term not exceeding ninety days, or to both, in the discretion of such justice. 46 V., c. 17, s. 118.

§135. All evidence taken by a Dominion land surveyor, as ^{Evidence} aforesaid, shall be reduced to writing and shall be read over to ^{taken by} the person giving the same, and shall be signed by such person; ^{surveyor to} or if he cannot write, he shall acknowledge the same as correct ^{be reduced} before two witnesses, who shall sign the same, as shall also the ^{and signed} Dominion land surveyor; and such evidence shall, and any document or plan prepared and sworn to as correct before a justice of the peace, by any Dominion land surveyor, with reference to any survey by him performed, may be filed and kept at the registry office of the place in which the lands to which the same relate are situate, subject to be produced thereafter in evidence in court. 46 V., c. 17, s. 119.

§136. Any Dominion land surveyor, when engaged in the performance of his duties as such, may pass over, measure along ^{Power to} and ascertain the bearings of any township or section line, or ^{enter upon} other governing line, and for such purposes may pass over the ^{private} lands of any person whomsoever, doing no actual damage to the property of such person. 46 V., c. 17, s. 120.

OFFENCES.

§137. Every person who, in any part of the Dominion lands, ^{Penalty for} interrupts, molests or hinders any Dominion land surveyor while ^{molesting} in the discharge of his duty as a surveyor, is guilty of a misde- ^{surveyor in} meanor, and liable to a penalty not exceeding twenty dollars or of his ^{discharge} duty.

to imprisonment for a term not exceeding two months, or to both, in the discretion of the court. 46 V., c. 17, s. 121.

Penalty for pulling down or destroying land marks placed by surveyor on original survey. §138. Every person who, knowingly and wilfully, pulls down, defaces, alters or removes any mound, post or monument erected, planted or placed in any original survey under the provisions of this Act, or under the authority of the Governor in Council, is guilty of felony, and shall be liable to imprisonment for any term not exceeding seven years;

A pulling down or destroying other land marks so placed. 2. Every person who, knowingly and wilfully, defaces, alters or removes any other mound or land-mark, post or monument placed by any Dominion land surveyor to mark any limit, boundary or angle of any township, section or other legal subdivision, lot or parcel of land in Manitoba or the Northwest Territories, is guilty of a misdemeanor, and liable to a penalty not exceeding one hundred dollars or to imprisonment for a term not exceeding three months, or to both, in the discretion of the court. 46 V., c. 17, s. 122, *part*.

Penalty for illegally having possession of land mark. 3. Every person who, not being a Dominion land surveyor, knowingly and wilfully has in his custody and possession, and not for any lawful purpose in connection with a survey of Dominion lands, any such post or monument, or any post or monument intended, or apparently intended to be used for the purposes of any such survey, or to mark any such limit, boundary or angle, is guilty of an offence and is liable on summary conviction to imprisonment for a term not exceeding six months, or to a penalty not exceeding one hundred dollars, or to both such fine and imprisonment. 61 V., c. 31, s. 9.

As to examining posts. §139. Nothing in this Act shall extend to prevent Dominion land surveyors, in their operations, from taking up posts or other boundary marks when necessary, after which they shall carefully replace them as they were before. 46 V., c. 17, s. 122, *part*.

FORM M.

OATH OF MEMBER OF BOARD OF EXAMINERS.

I, A. B., do solemnly swear (or affirm, as the case may be) that I will faithfully discharge the duty of an examiner of candidates for commissions as Dominion land or topographical surveyors according to law, without favor, affection or partiality. So help me God.

46 V., c. 17, sch. form N.

FORM N.

ARTICLES OF PUPIL TO DOMINION LAND SURVEYOR.

THESE ARTICLES OF AGREEMENT, made the _____ day of _____ one thousand nine hundred and _____, between A. B., of _____ of _____ Dominion land surveyor, of the one part, and C. D., of _____ and E. F., son of the said C. D., of the other part, witness:—

That the said E. F., of his own free will, and by and with the consent and approbation of the said C. D., doth, by these presents, place and bind himself pupil to the said A. B., to serve him as such from the day of the date hereof, for and during and until the full end and term of three years from hence next ensuing, and fully to be completed and ended:

And the said C. D. doth hereby, for himself, his heirs, executors and administrators, covenant with the said A. B., his executors, administrators and assigns, that the said E. F. shall well and faithfully, and diligently, according to the best and utmost of his power, serve the said A. B. as his pupil in the practice or profession of a Dominion land surveyor, which he, the said A. B., now followeth, and shall abide and continue with him from the day of the date hereof, for and during and unto the full end of the said term of three years.

And that he, the said E. F., shall not, at any time during such term, cancel, obliterate, injure, spoil, destroy, waste, embezzle, spend or make away with any of the books, papers, writings, documents, maps, plans, drawings, field notes, moneys, chattels or other property of the said A. B., his executors, administrators or assigns, or of any of his employers; and that in case the said E. F. shall act contrary to the last mentioned covenant, or if the said A. B., his executors, administrators or assigns, shall sustain or suffer any loss or damage by the misbehavior, neglect or improper conduct of the said E. F., the said C. D., his heirs, executors or administrators, will indemnify the said A. B., his executors, administrators or assigns, and make good and reimburse him or them the amount or value thereof:

And further, that the said E. F. shall, at all times, keep the secrets of the said A. B., in all matters relating to the said business and profession, and will, at all times during the said term, be just, true and faithful to the said A. B., in all matters and

things, and, from time to time, pay all moneys which he shall receive of or belonging to or by order of the said A. B. into his hands, and make and give true and fair accounts of all his acts, and doings whatsoever in the said business and profession, without fraud or delay, when and so often as he shall thereto be required; and will readily and cheerfully obey and execute his lawful and reasonable commands, and shall not depart or absent himself from the service or employ of the said A. B. at any time during the said term, without his consent first had and obtained, and shall, from time to time, and at all times during the said term, conduct himself with all due diligence and with honesty and sobriety:

And the said E. F. doth hereby, for himself, covenant with the said A. B., his executors, administrators and assigns, that he, the said E. F., will truly, honestly and diligently serve the said A. B. at all times, for and during the said term, as a faithful pupil ought to do, in all things whatsoever in the manner above specified:

In consideration whereof, and of _____ of lawful money by the said C. D. to the said A. B. paid at or before the sealing and delivery of these presents (the receipt whereof is hereby acknowledged), the said A. B., for himself, his heirs, executors and administrators, doth covenant with the said C. D., his heirs, executors and administrators, that the said A. B. will accept and take the said E. F. as his pupil, and that he, the said A. B., will, by the best ways and means he may or can, and to the utmost of his skill and knowledge, teach and instruct, or cause to be taught and instructed, the said E. F. in the course of study prescribed by clause one hundred and thirteen of "*The Dominion Lands Act*," in practical surveying operations, and in the use of instruments, and generally in the art, practice and profession of a Dominion land surveyor, which he, the said A. B., now doth, and shall, at all times during the said term, use and practice, and also will provide the said E. F. with all the necessary and reasonable expenses incurred in transacting or performing the business of the said A. B., and also will, at the expiration of the said term, make the affidavit of service required by section one hundred and four of "*The Dominion Lands Act*," and use his best means and endeavours, at the request, cost and charges of the said C. D. and E. F., or either of them, to cause and procure him, the said E. F., to be examined before the Board of Examiners of candidates for commissions as Dominion land surveyors: Provided the said E. F. shall have well, faithfully and diligently served his said intended pupilage:

And for the true performance of all and every the covenants and agreements aforesaid, according to the true intent and meaning thereof, each of them, the said A. B. and C. D., doth bind himself, his heirs, executors and administrators, unto the other, his heirs, executors, administrators and assigns, in the penal sum of five hundred dollars, firmly by these presents:

IN WITNESS WHEREOF, the parties aforesaid have hereunto set their hands and seals, the day and year first above written.

A. B. (Seal.)
C. D. (Seal.)
E. F. (Seal.)

Signed, sealed and delivered
in the presence of

G. H.,
J. K.

46 V., c. 17, sch. form O.

FORM O.

AFFIDAVIT BY THE SURVEYOR.

I, A. B., of _____, Dominion land surveyor, do solemnly swear that E. F. has served regularly and faithfully as my pupil from the _____ day of _____, 19____ to the _____ day of _____, 19____. That he has been engaged with me in the field on the following surveys, that is to say:

From the _____ day of _____ to the _____ day of _____, on the survey of _____ at _____;

From the _____ day of _____ to the _____ day of _____, on the survey of _____ at _____, and that the said E. F. has always conducted himself with all due diligence, honesty and sobriety on the said service.

Sworn before me

49 V., c. 27, s 22, part.

FORM P.

AFFIDAVIT BY THE PUPIL.

I. E. F., of _____, do solemnly swear that I have attained the full age of twenty-one years; that I have served regularly and faithfully with A. B., Dominion land surveyor, as his pupil, from the _____ day of _____ 19____, to the _____ day of _____ 19____; that I have been engaged with him in the field between the following dates on the following surveys, that is to say:

From the _____ day of _____ to the _____ day of _____,
on the survey of _____ at _____;

From the _____ day of _____ to the _____ day of _____,
on the survey of _____ at _____.

Sworn before me }

49 V., c. 27, s. 22, *part*.

FORM Q.

COMMISSION AS DOMINION LAND SURVEYOR.

This is to certify to all whom it may concern, that A. B., of _____ hath duly passed his examination before the Board of Examiners, and hath been found duly qualified to fill the office and perform the duties of Dominion land surveyor, he having complied with all the requirements of the law in that behalf: Wherefore he, the said A. B., is hereby duly admitted to the said office, and commissioned for the discharge of the duties thereof, and is by law authorized to practice as a surveyor of Dominion lands.

IN WITNESS WHEREOF, we, the President and Secretary of the said Board, have signed this commission, at _____ on this _____ day of _____ one thousand nine hundred and _____

C. D.,
Surveyor General.
E. F.,
Secretary.

46 V., c. 17, sch. form P.

REGULATIONS FOR THE EMPLOYMENT OF SURVEYORS.

ANNEX "B" to the Order in Council of the 26th October, 1894, as amended by Orders in Council of 5th July, 1899, 23rd January, 1900, 13th May, 1901 and 6th July, 1901.

1. For surveys other than township subdivision surveys, the Minister of the Interior may employ surveyors at a daily or monthly salary.

2. When the services of a surveyor are of a temporary character and not for more than one year, his salary shall be paid at the rate of six dollars and fifty cents per diem for ordinary surveys, but for surveys of block outlines and for services requiring special qualifications, the rate shall be seven dollars and fifty cents per diem.

3. A surveyor shall be paid for every day of service in the field, including Sundays, and the number of days shall be computed from the day on which he leaves his home until the day of his return, both days inclusive.

4. For office work, preparing his returns, a surveyor shall be allowed the actual time spent on their preparation but not in excess of the number of days declared sufficient by the Surveyor General.

5. When a surveyor has been continuously employed for one year and the employment is continued for a longer period, his salary after the first year shall not be at a greater rate than one hundred and twenty-five dollars per month for ordinary surveys and one hundred and fifty dollars per month for special surveys. A surveyor so employed shall attend the office in the Department at Ottawa when not engaged on work in the field and shall be subject to the rules and regulations concerning temporary employees. For the purposes of this clause, employment at the rate of ten months in any one year or at a like rate for shorter periods, shall be held to be continuous.

6. The Order in Council of the 20th October, 1892, concerning leave of absence to temporary employees shall apply to surveyors employed by the month under the next preceding clause.

7. If a surveyor employed at a daily or monthly salary or a member of his party meets with an accident while engaged on the work of the survey the Minister may pay to the injured surveyor or member such portion of his salary while incapacitated from work, and of his reasonable medical expenses as he may see fit.

21. When the survey of the township outlines is not sufficiently complete to calculate the rate before the contract for the subdivision is given, the surveyor shall be paid the first, second and third class rates according to the proportion of each returned in his field notes.

22. Traverse lines shall be paid at the uniform rates of ten dollars per mile east of the fourth meridian and eleven dollars per mile west of the same.

23. In addition to the above rates a survey contractor shall receive :

For each statutory declaration of occupation by a settler	one dollar.
For renewing a boundary mark at a corner on which the surveyor's contract requires him to close	fifty cents.
For renewing a boundary mark at any other corner	one dollar.
For building a mound at a boundary corner in the woods	fifty cents.

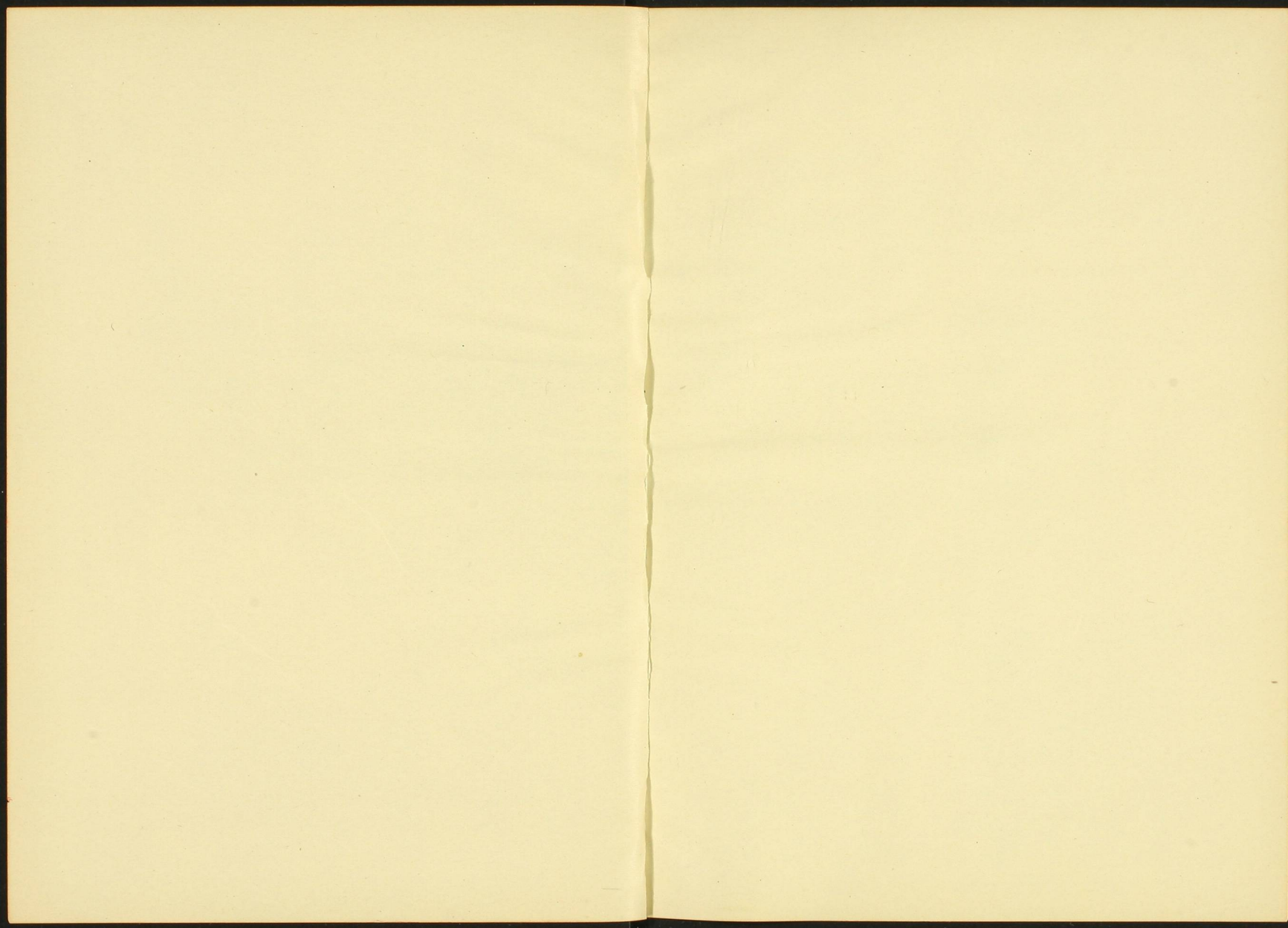
24. For re-tracing an obliterated line, when necessary, placing boundary marks thereon and furnishing plans and field notes, the contractor shall receive such rate as in the opinion of the Minister circumstances may require, provided that it shall rest with the Surveyor-General to decide whether the work was necessary or not.

25. On receipt of his subdivision survey contract duly executed, the contractor shall be given an advance not exceeding one thousand dollars.

26. Further payments up to seventy-five per cent of the value of the work executed may be made to the contractor on receipt of progress accounts on Form H, accompanied by sketches of the survey.

27. These regulations may be applied to surveys made during the year 1893.

28. No cancelling, repealing or modifying clause of subsequent Orders in Council shall operate to cancel, repeal or modify any part of these regulations unless they are specially mentioned.



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