Tertiary Formation.—The coals of the Tertiary are all lignites in Saskatchewan. The Souris area, of eight townships, is estimated to contain 2,304,000,000 tons; while the remaining portion lying to the west—consisting of 5,900 square miles—has possibilities up to about 23,600,000,000 tons; a total for the area of 25,904,000,000 tons.

The Turtle Mountain area in the southern portion of Manitoba has an available area of 48 square miles, probably coal-bearing, which with 4 feet of coal, represents a possible total of 160,000,000 tons.

The total estimate for the three provinces of Manitoba, Saskatchewan and Alberta, and for the eastern part of British Columbia, approximates 95,598 square miles of coal lands with 1,176,825,000,000 tons of coal in reserve. In this total the various classes of coal occur in the following proportions:—

Anthracite and semi-anthracite ...	769,000,000 tons
Bituminous	242,313,000,000 "
Sub-bituminous	847,321,000,000 "
Lignite	86,422,000,000 "
	1,176,825,000,000 tons

TRANSMISSION LINES AND RAILWAY CROSSINGS.

A copy has just been received of a communication from the Board of Railway Commissioners for Canada to electric power transmission line owners relative to the insulators on high-tension electric power transmission lines at railway crossings. The Board directs that reasons, if any, should be filed with it before August 7th, 1915, why the following order should not go into effect on that date:—

All the insulators at wire crossings which are operated at a potential of 10,000 volts, or over, are to be renewed, or tested, and reported upon on or before November 1st, 1915, and until further notice at least once annually thereafter.

The following information will be required in the form of a report upon each crossing:—

1. State the location of the crossing.
2. State the operating voltages between:—
   (a) (1) Conductors.......volts. (2) Conductors and ground volts.
   (b) (1) Conductors.......volts. (2) Conductors and ground volts.
   (c) (1) Conductors.......volts. (2) Conductors and ground volts.
3. State the number of insulators (complete units).
   (a) Type ....No.
   (b) " . ... "
   (c) " . ... "
4. When and where were the insulators last tested?
   (a) Date ....place..............
   (b) " . ... " ....
   (c) " . ... " ....
   (d) " . ... " ....
   (e) " . ... " ....
5. To what tests were they subjected?
   (a)
   (b)
   (c)
   (d)
   (e)

APPORTIONMENT OF COST OF HIGHWAY BRIDGES BETWEEN STREET RAILWAYS AND CITIES.*

By Charles M. Spofford.

THE careful scrutiny of public service corporations exercised by legislative bodies in recent years, with the resulting demand for valuation of the property of many of these corporations for purposes of taxation or rate making, has brought many engineers into active touch with problems of valuation, as is evidenced by the numerous papers dealing with work of this character which have recently appeared in publications of engineering societies.

The transformation of street cars within the last twenty-five years from light-weight horse cars weighing no more than heavy trucks and drays, to large power-driven vehicles, frequently weighing forty or fifty tons and sometimes as much as seventy-five tons, has compelled the strengthening of many existing highway bridges otherwise adequate for all traffic, and has made it necessary to build new bridges of sufficient strength to carry these loads. The necessity of strengthening at their own expense existing bridges to provide for heavy cars was long ago forced upon the street railway corporations of Massachusetts by their inability to operate on some of their important lines, cars of a type which tests upon other lines had proven to be economical. This necessity is well illustrated by the strengthening of various bridges by the Boston Elevated Railway Company, a corporation controlling practically all the street car traffic in the city of Boston.

Perhaps the most important example of this is the repairs to the Boylston Street bridge across the Boston and Albany Railroad made by the railroad company at a cost of $60,000, following the recommendation of the writer. As the conditions at this structure were somewhat unusual and the solution a novel one, the brief description which follows may prove of interest even if not strictly pertinent to the subject-matter of this paper.

Boylston Street crosses the four-track main line of the Boston and Albany Railroad at an angle of 19° between centre lines of highway and railroad location, thereby necessitating a span of 216 feet centre to centre of end pins with such a sharp skew that the easterly end of one truss is only 67 ft. 6 in. from the westerly end of the other truss.

A through bridge with this skew would be impracticable without a central truss owing to the great length of the end portal, and even with a central truss would be unsightly. This difficulty was overcome by building two pairs of trusses—one pair on each side of the roadway. The trusses of each pair were 6 ft. 0 in. centre to centre, and were well braced together, thus giving lateral stability which an ordinary pony truss bridge would not possess, and at the same time avoiding unsightly overhead bracing. The bridge thus constructed was eminently stable, so far as lateral vibration was concerned, but the trusses were a little too shallow to insure freedom from vertical vibration.

To strengthen the bridge for street railway purposes, an additional truss was built on each side between the original trusses, and new floor beams were inserted carrying the entire load of the street cars for the greater portion of the length of the bridge. The new trusses were so designed as to receive their load from the new floor

* From a paper read May 10th, 1915, before the Western Society of Engineers.