

CANADIAN CITY ENGINEERS.

II.

MR. CHAS. BAILLAIRGE, C.P.E., M.A. & F.R.S.C., City Engineer, Quebec, since October, 1866, was born at Quebec, Sept. 27, 1826, and is therefore now 65 years of age. His father, P. F. Baillairgé, who died in 1865 at the age of 68, and who had been "Road Surveyor," Quebec, for 36 years and up to the time of his death, was a son of P. Florent Baillairgé and of Melle. Careux de St. Germain, both of French origin. His mother, Charlotte Lefebvre, daughter of the Honorable Her Majesty's Navy, was born in the Isle of Wight, England, of Helen Welling of Jamaica, Long Island, N. Y., whom he met and married there after the War of Independence of the U. S. Our subject's grand uncle, Frs. Baillairgé, de l'Académie Royale de Peinture et de Sculpture," France, and who carved several of the statues of the Basilica, Quebec, had his studio in the quaint old building in St. Louis street, opposite Parrot street, now occupied by Campbell's livery stables, and was almost daily visited during the latter's stay in Quebec by the late Prince Edward, Duke of Kent, father of our reigning sovereign, Queen Victoria.

Mr. Baillairgé, whose portrait we reproduce, was educated at the Quebec Seminary, where, finding the ten years curriculum too long and slow, he, after seven years' tenure, entered upon the study of mathematics, philosophy, logic, etc., and commenced his apprenticeship in architecture, engineering and surveying, receiving his diploma as sworn surveyor of lands in 1847. At the age of 17, he, with another schoolmate, designed and built a double cyhndered carriage for common roads, often at that time driving to the country with it, with his friends. In 1848 he married Delle. E. Duval, daughter of John, and step-daughter of H. J. Duval, for many years Chief Justice of the Court of Appeals of Lower Canada, by whom he has had eleven children, four of whom survive.

During the nineteen years previous to his entering on his present occupation of city engineer in 1866, he designed and superintended the construction of the Laval University buildings, the asylums and churches of the Sisters of Charity and Good Shepherd, the Music Hall, the new jail, and of very many private residences. He designed and built the Church of Sts. Marie, Beauce, a view of the elegant interior of which, of Gothic architecture, appeared in Vol. II, No. 7 of this journal for 1860. Many other parish churches, presbyteries, school houses, colleges, villas and other structures were erected after his designs. In 1860 he erected on the St. Foy Road, the cast iron bronzed monument to the braves who fell there under General Levis in 1800, and to which Prince Gerome Napoleon contributed, at a cost of over \$5,000, the crowning statue of Bellona.

Mr. Baillairgé was for many years hydrographical surveyor and engineer to the Quebec Harbor Commission, member and chairman of the Board of Examiners of Land Surveyors, and a representative of St. Louis Ward in the Quebec City Council from 1858 to 1861. His services have often been required by the Local and Federal governments, by the courts and clergy, and by private concerns, as arbitrator on disputed claims and boundaries, and on questions of technology, and during this busy period of 19 years, laboring as he always has done, and sitting down for 18 hours out of every 24, he found time to write and deliver in the old House of Assembly, Quebec, and elsewhere, numerous lectures and conferences on "Steam and the Steam Engine," "Astronomy," "Mechanics," "Optics," "Assurances," and the like. In 1863-5 he was called to Ottawa as joint Architect and Engineer with Messrs. Fuller and Page on the Parliamentary and Departmental Buildings, then under construction, and during those two years he completed in French language, his 900 pages treatise (including mathematical tables) on "Plane and Spherical Geometry and Trigonometry," published in 1866, where he shows at page 330, the fallacy of Thorpe's pretended solution of the trisection of an angle, for which the Government Patent Bureau granted him letters patent of invention, poor man, after his laboring at the solution, so he says himself, during 34 years of his existence. Mr. Baillairgé's work, at pages 232 to 331, contains the solution of some 200 pertinent problems, among which he introduces at page 251 Mr. Steckel's fallacious solution of the hydrographical problem of the four points, not heretofore solved by a simple solution. We would like to invite attention to Mr. Baillairgé's easy solution, founded on his new theorem Prop. LX, page 189, of the heretofore difficult problem of dividing up land by a straight line running through a given point (page 197) and at page 280 to his novel solution of the important and difficult problem of laying out city blocks between two parallel streets where every inch of frontage is precious, in a way to contain the largest or proportional areas, with proportional frontages on each of the streets.

Since our subject has entered on his civic duties in Quebec, he has planned and built Dufferin Terrace, which is 1500 feet in length and flanks the crest of the cliff overlooking Champlain street at a height of 180 feet above mean tide level of the St. Lawrence. The foundation stone of this structure was laid by Lord Dufferin in 1878, and the terrace when completed, inaugurated and thrown open to the public by Their Excellencies the Marquis of Lorne and the Princess Louise in 1879. In 1881 he reported on, and in 1883-5 put in the new line of 30 inch water pipe from Lorette to Quebec, a distance of nearly nine miles. During his 25 years as City Engineer he has had occasion to plan and build wharves, ferry landing piers, the slips, pontoons, and ferry boats. The new dredge and water works, in the adjoining parish of St. Foy were planned and carried out under his superintendence, as well as those in the recently annexed municipality of St. Saviour, under the more immediate direction of Mr. Gallagher, Asst. City and Water Works Engineer.

He has planned and built fire and police stations, market halls, etc., and many of his yearly reports, as those of 1868, '70, '72 and '78, are voluminous, interesting and instructive, and have been sought after by City Engineers and others of many portions of Canada and the United States. Steep hills have been replaced by grades of easy access; the fortification walls have been cut through and streets prolonged to meet those in the suburban districts; and many an unimproved area erected as designed by him, to afford communication between the upper and lower wards of the fortress city,

In 1874 Mr. Baillairgé published in both languages his "Key to the Stereometrical Tableau," "Clé du Tableau Stéréométrique," giving applications thereof to numerous solid forms. This system (see De Broeker's letter from the Ministry of Public Instruction, St. Petersburg, 14-20 February, 1877) was to be taught in all the elementary schools of Russia, and by a subsequent letter of a year and a half later, from the same source, Mr. Baillairgé was informed that "the system having been found to work well, will moreover be applied to all the polytechnic schools of the Russian Empire."

In February, 1874, Mr. Baillairgé was called to France, when in the "Grand Conservatoire des Arts et Métiers" he received the gold medal of the "Société de Vulgarisation de l'Enseignement en France," also the medal called "Philippe de Girard" given by M. de la Boronne de Pages for the most useful invention or discovery of the year, and he has since received 13 medals of honor and 17 diplomas from France, Italy, Russia, England, Brazil, Japan, Belgium, Canada and the United States of America. After the death of his first wife in 1878, Mr. Baillairgé in 1879 married Anna, daughter of Capt. Benj. Wilson, of the English navy, by whom he had six children, four of whom survive.

In 1854 Mr. Baillairgé published in both languages "The Stereometrical," ("Le Stéréométrique") thus perfecting his system, by applying the prismoidal formula to some 200 elementary geometrical forms, giving in each case the nomenclature of the solid and of the class to which it belongs, the nature and mode of arriving at the areas of the opposite bases and middle or other sections, the form or shape and area of the developed lateral and other surfaces thereof, of the object of which the model is representative or suggestive, and of the many other uses to which the figures may be applied. In 1860 our subject was chosen by Lord Lorne, then Governor General of Canada, as one of the members of the so-called "Royal Academy of Arts," and in 1882 he was made one of the foundation members of Section III of the Royal Society of Canada, before which he has read many papers, several of which have been published in the yearly transactions.

Being, as he is, of a humorous and versatile turn of mind, Mr. Baillairgé in 1873 wrote a play, which he called "Le Diable devenu Cuisinier," which was played by the Mangard Compey (then in Quebec at the Music Hall, and then at Jacques Carrier Hall, to the great delight of the audience on each occasion; and in 1875, as member of the "Club des 21" of the literati, artists and savants of Quebec, he read a paper in which in his happy style, he hit off the peculiarities and portrayed the qualities of every member of the club, and of the chairman himself, the Count de Frenio Real, then Spanish consul at Quebec. His later works are, in 1888, a French dictionary (some 700 pages) of homonymous words and of the corresponding elements thereof; his last work of 1890 being a vocabulary of nearly 500 pages of "English Homonymes" and one of over 200 pages of "Homonymes Français," both for the use of schools and educational purposes in general, and at different times he has edited articles on the art of building, the defects in our system of construction, and many other subjects too numerous to enumerate.

We may say in conclusion, that Mr. Baillairgé is of opinion that a good City Engineer should know enough of land surveying to plan and lay out streets and squares and take the levels absolute and relative thereof, widen and prolong them as required, and prepare designs and "crosses verbal" of all lands and parcels of land of whatever form or size, to be explicated for the purpose; to lay out parks and burial grounds; that he should be enough of an engineer to grade and pave hills and roadways, lay down sidewalks, crossings, water channels, and put in drains; to compute the size of plan and lay out and superintend the construction of city drains and sewers and water and gas distribution pipes, man holes, hydrants, drinking fountains, water troughs, etc.; fire alarm and light circuits, and attend to the position of each post (if for overhead systems), or put in underground channels therefor (if to be laid beneath the surface); to plan, specify and superintend the construction of retaining walls and crib work for roadways on side hills, wharves, ferry piers, landings, pontoons and slips and ferry boats, terraces, high class straight or tortuous or zig-zag, to overcome differences of level, public stairways of wood or iron and the like; to lay out city tramways, etc., and—enough of an architect to plan and build fire and police stations, market halls, nests of shambles, weight houses, public conveniences, elevators, crematories and the like.

PUBLICATIONS.

The Canadian Shoe and Leather Journal has issued an exceedingly attractive special number in the interests of spring trade, 1892.

The publishers of the Dominion Illustrated have issued a Christmas number which for beauty and interest is not surpassed by any European publication of similar character. The number reflects credit on the country as well as on the publishers. The announcement is made that the Dominion Illustrated will in future be published monthly as a magazine, the subscription price being reduced to \$1.50.

SOCIETIES.

The third annual dinner in connection with the School of Practical Science, Toronto, took place (at the Arlington hotel recently). The faculty, graduates, guests and students numbered one hundred. The occasion was greatly enjoyed.

The General Water Pipe Co., of Liege, Belgium, is seeking information regarding the extent of the Canadian market, with a view to establishing a branch of its business here.

The importations of cement into Canada during the last few months is said to have been in excess of the requirements, and (judging by the market) is looked for in consequence,



R. CHAS. BAILLAIRGE, C. E. ENGINEER, QUEBEC.