if they do not result in actual defeat and disappointment, if he have not the rudiments of education. Many noble men, whose younger days were contemporary with those when there were no schools, and who, consequently, never had adequate instruction, have struggled against apparently overwhelming odds, and by indomitable perseverance have risen above their fellows, who had had better opportunities than they ; do not they afford splendid examples for the growing generation ? Self-made and self-taught as they are, they grieve over nothing so much as the lack of advantages in their youth. We have them by scores in Canada, and illustrious they are when regarded in the light of their intrinsic qualities. The youth of to-day can make no excuses when they reach manhood ; it may be that circumstances were adverse to their attending school, but they must know that not only are they protected by law, but are by law required to go to school so many days in the year. There is no lad but can go to school, if he from his heart wishes it ; if others strive to prevent him, he has a friend in the law if not in flesh and blood. Canada needs thousands of intelligent farmers, tradesmen, mechanics, sailors, soldiers and even labourers, as much as learned lawyers, doctors, clergymen, and statesmen, and to every Canadian boy she holds the door of entrance wide open. Where there is no mental training, mere manual skill goes for little, but where both are combined then prospects for promotion are good, and once started what is to stop a man from ascending to the top of the ladder ? These sentences are written with a desire to stimulate the lads who may read them to lose no time in selecting some honourable business, trade or profession, and then set themselves resolutely to work to achieve success in it. The youth who has no idea of what his future is to be is indeed a pitiable object, though his parents' or some one else's wealth at present seem to shield him from future need or want. Let every boy lay aside such or any other hopes, which are often of the most delusive character, and resolve to rely on his own merits for his success in life, recollecting that it will be all the more creditable, and not forgetting that he must lay his foundation now.—*Hamilton Times.*

VI. Biographical Sketches.

1. Rev. Canon Beaven, D.D.—The deceased, who was, like many of his class, as remarkable for the simplicity of his character as for the variety and extent of his attainments, came to this country as Professor of Divinity in King's College. When the institution was merged in the University of Toronto, he became Professor of Ethics and Moral Philosophy in the new College, and held that position for many years. Few men in the Church of England were held in greater respect among all parties than the Rev. Dr. Beaven.

2. Rev. John Sunday.—The death of this well-known and aged Indian missionary recently took place at his residence, Village of Alderville. Mr. Sunday had been a missionary of the Methodist Church for forty years, twenty-five of which time he passed with his tribe, the Ojibways, of which he was Chief, on the Indian Reserve in the Township of Alnwick. As a missionary, he was exceedingly zealous, always trying to promote the welfare of his tribe, and doing good service, till superannuated fifteen years ago, as a practical and original preacher. He once paid a visit to Great Britain on a missionary deputation, and, by his originality and ability, created quite a favourable impression, receiving many valuable presents, and being presented to the Queen. He was loyal to the British Crown ; was one of the veterans of 1812, being present at Chrysler's Farm and other battles, and being invested with three medals for his valour. He was present at the late payment of veterans in Cobourg, and received his bonus of $20.—*Cobourg World.*

3. Capt. Walter Eberts, the second son of the late Joseph Eberts, was associated with the old firms of W. & W. Eberts, and Eberts, Waddell & Co. for about a quarter of a century, and we need scarcely say that to their enterprise and large connections a great deal of the early prosperity of our town is due. During the Rebellion of 1837-8 he was appointed Chief Commissary of this district, performing the arduous duties in connection therewith to the utmost satisfaction of the Government. During the exodus of Canadians to Michigan, his efforts to induce them to remain in Canada were put forth to the utmost, and not a few happy families in our midst were prevailed upon to settle in this country. For a time, at their own expense, the firm of W. & W. Eberts employed an agent in New York City, who, by the inducements held out, caused many emigrants to make this part of Canada their home instead of remaining in the States. It is noteworthy that during his long career, from 1834 to 1857, as master of various steamers plying on most dangerous routes, no accident ever befel either boat or passenger.—*Chatham Planet.*

4. John Duggan, Esq., Q.C.—The deceased was called to the bar of Upper Canada in 1840, having completed his studies in the office of his brother, the present County Judge of York. Nearly twenty years ago he was appointed a Queen's Counsel. Mr. Duggan was a generous and warm-hearted man, ever ready to lend a helping hand to a friend in distress. He was long a member of the Synod of his Church, and took a deep interest in all that concerned its welfare. For several years he was alderman for St. George's Ward, and though not a prominent politician, was a thorough-going supporter of the Conservative party. Countless friends, to whom the name of " John Duggan " has for years been a synonym for kindly good temper and unpretending hospitality, will deplore his death with unaffected sorrow.—*Mail.*

Mr. Benjamin Clark, of Hamilton, came from the good old stock of U. E. L., and was born in Napanee in the year 1804, where he grew up to manhood, and removed to Cobourg, where he carried on a mercantile business for several years. In 1855, he, with his family, removed to Hamilton, where he was held in high esteem by all the commercial and private citizens who had the pleasure of knowing him.—*Times.*

VII. Mathematical Department.

SOLUTIONS OF PROBLEMS IN THE JOURNAL FOR OCTOBER, 1875.

1. A owes B $1,000, and agrees to pay in ten equal annual instalments, at a rate per cent., simple interest, equal to the *true* equated time for all the payments ; how much must B receive annually ?

The interest of the sums payable *before* the equated time, from the times when they are due till that time, should be equal to the discount of the sums payable *after* the equated time for the intervals between that time and the times at which they are due.

Assume $x=$ the true equated time and rate ; then the times for interest are, $x-1$, $x-2$, $x-3$, $x-4$, and $x-5$; the times for discount are, $6-x$, $7-x$, $8-x$, $9-x$, and $10-x$ years.

$$x(100+x^2)\times(x-1) = x^4 - x^3 + 100x^2 - 100x$$
$$x(100+x^2)\times(x-2) = x^4 - 2x^3 + 100x^2 - 200x$$
$$x(100+x^2)\times(x-3) = x^4 - 3x^3 + 100x^2 - 300x$$
$$x(100+x^2)\times(x-4) = x^4 - 4x^3 + 100x^2 - 400x$$
$$x(100+x^2)\times(x-5) = x^4 - 5x^3 + 100x^2 - 500x$$

$$\text{Interest} = \frac{5x^4 - 15x^3 + 500x_2 \times 1500x}{100}$$

$$100+6x-x^2 : 6x-x^2 :: 100+x^2 : \frac{6x^3+600x-x^4-100x^2}{100+6x-x^2}$$

$$100+7x-x^2 : 7x-x^2 :: 100+x^2 : \frac{7x^3+700x-x^4-100x_2}{100+7x-x^2}$$

$$100+8x-x^2 : 8x-x^2 :: 100+x^2 : \frac{8x^3+800x-x^4-100x_2}{100+8x-x^2}$$

$$100+9x-x^2 : 9x-x^2 :: 100+x^2 : \frac{9x^3+900x-x_4-100x^2}{100+9x-x^2}$$

$$100+10x-x_2 : 10x-x^2 :: 100+x^2 : \frac{10x^3+1000x-x^4+100x^2}{100+10x-x^2}$$

$$\therefore \frac{6x^2+600-x^3-100x}{100+6x-x^2} + \frac{7x^2+700-x^3-100x}{100+7x-x^2} + \frac{8x^2+800-x^3-100x}{100+8x-x^2}$$

$$+ \frac{9x^2+900-x^3-100x}{100+9x-x^2} + \frac{10x^2+1000-x^2-100x}{100+10x-x^2} =$$

$$\frac{5x^3+15^2+500x-1500}{100}$$

The solution of this equation gives $x = 5\cdot29484$, the rate and time ; $\therefore x^2 = 28\cdot03533+$; and the annual payment becomes $128\cdot03533$.

2. $x^{\frac{1}{5}}+y^{\frac{1}{5}} = a$, and $a+y = b$.

Assume $x^{\frac{1}{5}} = m+n$, and $y^{\frac{1}{5}} = m-n$; then is $x^{\frac{1}{5}}+y^{\frac{1}{5}} = 2m = a$ $(m+n)^5+(m-n)^5 = 2m^5+20m^5n_2+10mn_4 = b$.

By Substitution, &c., $\dfrac{a^5}{3} + \dfrac{10a^3n^2}{8} + \dfrac{5an^4}{2} = \dfrac{b}{2}$,

$\therefore n^4+\dfrac{a^2}{2}n^2 + \dfrac{16b-a^5}{80}$; from this quadratic, n becomes known, $\therefore m$ is known, and x and y are known.

3. $x^{\frac{1}{3}} + \sqrt{x^{\frac{1}{3}}y^{\frac{1}{3}}}+y^{\frac{1}{3}} = a$, and $x^{\frac{2}{3}}+x^{\frac{1}{3}}y^{\frac{1}{3}}+y^{\frac{2}{3}} = b$

Assume $x^{\frac{1}{3}}+y^{\frac{1}{3}} = S$; and $\sqrt{x^{\frac{1}{3}}y^{\frac{1}{3}}} = P$