ENTRANCE EXAMINATIONS.

A resolution lately passed by the Durham Teachers' Association affirms their solemn conviction that the High School Inspectors are not precisely the proper persons to set papers for Admission to High Schools. The light of Durham discovers to us that this work would be better done *by persons actively engaged in preparing pupils for these examinations;* for example, a couple of Public School Inspectors assisted by Public School Teachers. In other words, this new light shows us the model of an additional wheel to be added to our educational machinery, the hub of said wheel being of a distinct pattern.

The Durham illumination bears the tinge of its source, and is not likely to mislead. If the High School Inspectors are competent to examine pupils after spending several years' hard study in the high school, surely they are qualified to examine these pupils for admission. If the inspectors are incompetent, let us get men who understand their business. In the meantime, we respectfully submit to the assembled wisdom of Durham that their resolution bears on the face of it just the least trace of absurdity. On the same ground of reasoning, Public School Inspectors had better hand the promotion examinations over to wiser men, and the universities their matriculations to a committee of High School Masters. The resolution flies in the face of our educational history. We commend Prof. G. P. Young's Report for 1866 to the perusal of our friends, and the various discussions that have taken place regarding teachers and professors becoming examiners of their own candidates. With this additional light the present Jack o' the lantern will disappear.

INSPECTOR DEWAR.

e regret very much the resignation of Inspector Dewar of East Huron. His health has been somewhat impaired for two years past, but his numerous friends looked forward to many years' service from the genial and popular Inspector. He has been a faithful officer, and well deserved the handsome gold watch, chain, and illuminated address presented to him some years since by the teachers of his extensive district. His determined energy has secured him success as student, teacher, and inspector in the face of more than ordinary difficulties. We sincerely hope that he may shortly recover his wonted health, and resume educational work, to which more than thirty of the best years of his life have been devoted.

Mr. D. M. Malloch, for many years principal of the Clinton public schools, has been appointed successor to his old classmate. A better appointment could not have been made, as Inspector Malloch has been a diligent student as well as a successful teacher. He comes to his office with matured judgment, ripe experience, and an extensive acquaintance with the philosophy of things educational.

In this wide world the fondest and the best
Are the most tried, most troubled and distressed.
—*Crabbe.*

Mathematical Department.

ARITHMETIC SOLUTIONS.

ADMISSION TO HIGH SCHOOLS, JUNE 1883.

By C. McKay, Seaforth.

1. (a) Book-work.
   (b) {Dividend − Remainder} ÷ Divisor = Quotient.
   (c) $108419716001 ÷ 18748005 = 5783 \frac{7988}{18748005}$.

2. (a) Multiplicand is 349751. "Casting out nines," rem'r is 2.
      Multiplier is 28037. " " " 8.
      $2 × 8 = 16$. "Casting out nines," remainder = 7.
      Product is 10015819397; ∴ "casting out nines," rem'r = 8.
      It should be 7. ∴ The product is incorrect.
   (b) Weight = 4lbs. 2oz. × 500000 = 2062500lbs.
   (c) $\frac{27s.\ 6d.}{4s.\ 2d.} × 500000 = \$3800000$.

3. 375 tons @ £ 8. 15. 6. = £3290. 12. 6.
   $107\frac{1}{2}$ " @ 11. 14. 0. = 1257. 15. 0.
   10 " @ 10. 10. 0. = 105. 0. 0.
   17 " @ 15. 10. 0. = 263. 10. 0.
   48 " @ 18. 7. 6. = 882. 0. 0.
   15 " @ 11. 1. 0 = 165. 15. 0.

   Amount of invoice £5964. 12. 6. = $24\frac{1}{2}$c. × $119292\frac{1}{2}$
   = 29027.84.

4. Distance round the field = $(63.5 + 27.75) × 2 = 182.5$ rods.
   ∴ Cost = $\$1.75 × 182.5 = \$319.375$.

5. (a) $\frac{362880 − 00486 + 15120 − 4392 + 1385}{362880} = \frac{314513}{362880}$

   (b) $\frac{4\frac{7}{10} + 5\frac{9}{11} − 2\frac{1}{2}}{7\frac{52}{11}} = \frac{8\frac{55}{11}}{7\frac{52}{11}} = \frac{441}{8760}$.

6. Gunpowder { Nitre 15 parts in 20 = $\frac{15}{20}$ or $\frac{3}{4}$ of powder.
   Charcoal 3 " 20 = $\frac{3}{20}$ " "
   Sulphur 2 " 20 = $\frac{2}{20}$ or $\frac{1}{10}$ "
   When 20cwt. = charcoal, 20cwt. × $\frac{20}{3}$ = $133\frac{1}{3}$cwt. is wt. of pdr.
   Nitre = $\frac{3}{4}$ of $133\frac{1}{3}$ = 100cwt.
   Sulphur = $\frac{1}{10}$ of $133\frac{1}{3}$ = $13\frac{1}{3}$cwt.

7. Cost of wine $\$2.60 × 360 = \$936.00$.
   carriage = 17.20.
   duties = 86.50.
   Total cost = $1039.70.
   gain = 50.00.
   S. price = $1089.70.
   He must sell rem'dr which is $\frac{17}{20}$ of 360 = 306 gals. for $1089.70.
   ∴ He sells 1 gal. for $1089.70 ÷ 306 = \$3.56\frac{1}{2}$.

8. From January 3rd to April 6th = 93 days.
   Interest = $257.81 × \frac{93}{365} × \frac{8}{100} = \$5.25\frac{4487}{9125}$.

9. Seconds' pendulum = 39.37079 inches.
   1 metre = $\frac{10}{9}$ yds. = $\frac{10}{9} × 36$ inches = 39.375 "

   Difference = .00421 inches

10. (1) Min. hand in going 12 min. gains 11 min. on hour hand.
    ∴ As it has to gain 20 it must go $1\frac{9}{11} × 20 = 21\frac{9}{11}$ min.
    ∴ They are coincident at $21\frac{9}{11}$ min. after 4 o'clock.
    (2) To be at right angles there must be 15 min. spaces between min. and hr. hands. As there are 20 min. spaces between them at 3 o'clock the min. hand must gain 5 min.
    It gains 5 min. in $\frac{12}{11} × 5 = 5\frac{5}{11}$ min.
    ∴ $5\frac{5}{11}$ min. after 4 they are at right angles.

FIRST CLASS TEACHERS—GRADE C—JULY, 1883.

ALGEBRA.

TIME—THREE HOURS.

1. If $x^n + ax^{n-1} + \ldots + sx + t = 0$, explain the principle upon which we proceed to find, if possible, a rational binomial divisor. Find three such divisors in the equation,

$$x^6 − 4x^5 − 6x^4 + 18x^3 + 17x^2 + 22x + 24 = 0.$$