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1862.

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T A S M A N I A.

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T A S M A N I A N   S C H O L A R S H I P S.

EXAMINERS' REPORT 1862.

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Laid on the Table by Mr. Henty, and ordered by the Council to be printed,  
14 October, 1862.



*Tasmanian Council of Education,  
Hobart Town, 24th September, 1862.*

### TASMANIAN SCHOLARSHIPS.

**T**HE Council of Education have directed the publication of the names of the Candidates who have passed the Examination for the Tasmanian Scholarships to the satisfaction of the Examiners, and to whom such Scholarships have been awarded accordingly, under the terms of *The Tasmanian Council of Education and Scholarship Act*, 22 Victoria, No. 21 :—

CHARLES ALEXANDER HOPE, aged 19, Hobart Town. High School : Rev. R. D. Harris, M.A., Rector.

ALFRED W. GARRETT, aged 18, Hobart Town. Private Pupil of Rev. A. Davenport, B.A., Hobart Town, formerly of the Hutchins School, Hobart Town.

The Report of the Examiners is annexed.

By Order of the Council,

MURRAY BURGESS, *Secretary.*

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## R E P O R T

OF THE

### EXAMINERS FOR THE TASMANIAN SCHOLARSHIPS.

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MR. PRESIDENT AND MEMBERS OF THE TASMANIAN COUNCIL OF EDUCATION.

THE Examination of the three Candidates who presented themselves for the Tasmanian Scholarships has, after five days, closed ; and the Examiners have the pleasure of reporting that C. A. Hope and W. A. Garrett have come up to the standard of proficiency fixed by the Council,—the first named in both Classics and Mathematics, the latter in Classics only.

Six Papers were set in Classics, four in Mathematics, one in French, one in English, and one in Modern History.

The subjoined Table of Marks will convey a fair idea of the answering in each subject.

	HOPE.	GARRETT.	KNIGHT.	Full Value.
I. CLASSICS.				
(a.) Greek Composition .....	70	90	30	200
(b.) Latin Composition .....	65	120	80	200
(c.) Translations from Greek .....	201	236	124	250
(d.) Translations from Latin .....	176	198	160	250
(e.) General Paper .....	219	198	117	300
(f.) Ancient History and Geography .....	231	187	83	300
	962	1029	594	1500
II. MATHEMATICS.				
(a.) Arithmetic and Algebra .....	202	39	126	350
(b.) Euclid and Trigonometry .....	138	54	102	350
(c.) Conics and Differentiations .....	275	75	100	400
(d.) Natural Philosophy .....	250	3	29	400
	865	171	357	1500
III. The English Language .....	174	190	81	250
The French Language .....	191	227	215	250
Modern History .....	145	80	56	250
	510	497	352	750
Total Marks attained .....	2337	1697	1303	3750

The experience of this Examination leads the Examiners to believe that the standard of proficiency recommended by the Examiners last year, and adopted by the Council, is by no means fixed too high for the attainments of good scholars.

M. H. IRVING, *M.A.*

RICHARD OSCAR T. THORPE, *M.A.*

FR. HARTWELL HENSLOWE.

Hobart Town, 24th September, 1862.

## DIRECTIONS TO CANDIDATES.

I. Look carefully at the annexed Time Table, in which the hours are fixed for the subjects of Examination on each day, and always *be at your seat in the Examination Room five minutes before the time.*

II. When the Questions are given you, read them over carefully, and *mark those which you think you can answer best; and do them first.* If, after that, you still have time to spare, try some of the others.

III. Before you begin to write your answers, insert in the blank spaces at the top of your paper,—

1. The *motto* by which you are known in the Examination.
2. The *subject* in which the questions are set which you are about to answer.
3. The number of the question. Not more than one question is to be answered on each sheet.

IV. In writing your answers—Write only on the ruled side of the paper.

V. As soon as notice is given, (which will be five minutes before the end of the time), finish your papers, and see that they are numbered rightly, and in their proper order.

VI. You are not to leave the Room until the Examination is closed, except by special permission of the Examiners.

*N.B.—Candidates are strictly forbidden to communicate with one another during the Examination. Any Candidate taking an unfair advantage will be dismissed from the Examination.*

# *EXAMINATION for the Tasmanian Scholarships,—September, 1862.*

## TIME TABLE.

<i>Thursday, 18th September.</i>	<i>Friday, 19th September.</i>	<i>Saturday, 20th September.</i>	<i>Monday, 22nd September.</i>	<i>Tuesday, 23rd September.</i>
<p><b>8'30 to 11.</b></p> <p>TRANSLATIONS FROM ENGLISH INTO LATIN.</p>	<p><b>9 to 12.</b></p> <p>ARITHMETIC AND ALGEBRA.</p>	<p><b>8'30 to 11.</b></p> <p>TRANSLATIONS FROM GREEK INTO ENGLISH.</p>	<p><b>9 to 12.</b></p> <p>NATURAL PHILOSOPHY.</p>	<p><b>8'30 to 11.</b></p> <p>ENGLISH LANGUAGE.</p>
<p><b>11'30 to 2.</b></p> <p>TRANSLATIONS FROM ENGLISH INTO GREEK.</p>	<p><b>2 to 5.</b></p> <p>EUCLED AND TRIGONOMETRY.</p>	<p><b>11'30 to 2.</b></p> <p>TRANSLATIONS FROM LATIN INTO ENGLISH.</p>	<p><b>2 to 5.</b></p> <p>CONIC SECTIONS AND DIFFERENTIAL CALCULUS.</p>	<p><b>11'30 to 2.</b></p> <p>GENERAL CLASSICAL PAPER.</p>
<p><b>3 to 5'30.</b></p> <p>MODERN HISTORY.</p>		<p><b>3 to 5'30.</b></p> <p>FRENCH.</p>		<p><b>3 to 5'30.</b></p> <p>ANCIENT HISTORY AND GEOGRAPHY.</p>

# TASMANIAN COUNCIL OF EDUCATION.

EXAMINATION FOR THE TASMANIAN SCHOLARSHIPS.—SEPTEMBER, 1862,

## Latin Composition.

THURSDAY, 18<sup>TH</sup> SEPTEMBER, 1862. 8.30 A.M. to 11 A.M.

Translate into Hexameters,—

They stood prepared to die ; a people doomed  
To death : old men and youths and simple maids.  
With them each day was holy ; but that morn  
On which the Angel said, " See where the Lord  
Was laid," joyous arose : to die that day  
Was bliss. Long ere the dawn, by devious ways  
O'er hills, through woods, o'er dreary wastes, they sought  
The upland moors, whence rivers, there but brooks,  
Dispart to different seas.

Into Elegiacs,—

Sweet to the morning traveller  
The song amid the sky,  
Where twinkling in the dewy light  
The skylark soars on high.

And when beneath the unclouded sun  
Full wearily toils he,  
The flowing water makes to him  
A cheerful melody.

And when the shades of evening close,  
And all is calm around,  
There is sweet music to his ear  
In the distant sheep-bell's sound.

But oh ! of all delightful sounds  
At evening or at morn,  
The sweetest is the voice of love  
That welcomes his return.

Into Prose—

Various other stories of Augustus' moderation are recorded. His manners were affable and courteous to all ; he forbade, and probably in sincerity, that any one should address him by the title of Dominus ; and when the people wished to force upon him the ominous title of Dictator he threw himself on his knees, and casting off his robe and baring his breast, intreated them rather to kill him than to oblige him to accept it. In these points the example of his uncle always served as a useful warning to him, and he also learned from it to avoid every display of state in the appearance and manner of his family, in the size of his house, and in the regulation of his establishment. Yet it would be unjust to ascribe to a politic premeditation all the popular actions of his reign. Good is in itself so much more delightful than evil that he was doubtless not insensible to the pleasure of kind and beneficent actions, and perhaps sincerely rejoiced that they were no longer incompatible with his interest. When Valerius Messala was sent to him by the Senate to confer on him the title of " Father of his Country," he was affected even to tears, and replied, " I have now gained all that I desired, Conscript Fathers, and what have I left to pray for from the Gods but that I may preserve to the latest day of my life this same unanimous love of my countrymen?"

**Greek Composition.**

THURSDAY, 18TH SEPTEMBER, 1862. 11.30 A.M. to 2 P.M.

Translate into Iambics,—

Awful Sufferer !

To thee unwilling, most unwillingly  
 I come, by the Great Father's will driven down  
 To execute a doom of new revenge.  
 Ah me ! I pity thee and hate myself  
 That I can do more : aye from thy sight  
 Returning for a season heaven seems hell ;  
 So thy worn form pursues me night and day  
 Smiling reproach. Wise art thou, firm, and good,  
 But vainly wouldst stand forth alone in strife  
 Against the Omnipotent, as yon clear lamps,  
 That measure and divide the weary years  
 From which there is no refuge, long have taught,  
 And long must teach thee.

Into Prose,—

The Gauls, when first attacked by Cæsar, were by no means a nation of savages. They had regular governments, were perfectly familiar with agriculture, and were accustomed to pay the greatest reverence to their Druids, who professed, with whatever success, the study of moral and natural philosophy. Such a state of society, combined with the natural features of the country, which then, as now, was by no means favourable to the maintenance of a desultory and harassing warfare, ensured the permanence of the conquest of Gaul as soon as it was effected. The people were able to appreciate the value of the arts and the commercial advantages which they derived from their conquerors. Even before the invasion of Cæsar traders were in the habit of visiting almost every part of the country, and had familiarized the people with many even of the luxuries of civilized life. But the Roman Conquest must have greatly increased this traffic by enabling merchants to transport their goods from one end of Gaul to the other with perfect security, and by bringing the whole country into direct communication with the wealth and commercial enterprise of the Roman Empire.

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**Modern History.**

THURSDAY, 18TH SEPTEMBER, 1862. 3 P.M. to 5.30 P.M.

1. Give a brief sketch of the Peninsular Campaigns of the Duke of Wellington.
2. Name the principal reigning Sovereigns of Europe in 1700, 1750, 1800.
3. Give some account of the Jansenists.
4. Sketch the growth of the British Empire in India.
5. Give an account of the two Risings in Great Britain against the House of Hanover.
6. When, by whom, and under what circumstances, were fought the battles of Narva, Austerlitz, Rosbach, Malplaquet, La Hogue, the Boyne, Valmy, the Nile, Eylau, the Baltic.
7. Give the date, and mention the principal provisions, of the Act of Settlement.
8. Give some account, with dates, of Chatham, Byng, Ripperda, Chesterfield, Steele, Howard, Maria Theresa, Dumouriez, Atterbury, Nelson.
9. Give some account of the leading British Statesmen from 1789 to 1815.

## Pure Mathematics.—I.

FRIDAY, 19TH SEPTEMBER, 1862. 9 A.M. to 12.

1. Subtract 1345·271 from 3123·135, explaining the operation in full.
2. Find the edge of a cube containing 87765·160384 cubic inches.
3. A florin being the tenth part of a pound, a cent the hundredth, and a mille the thousandth, find the value of 24·375 times £24 3f. 1c. 2m. and reduce the result to £ s. d.
4. The Mint price of a kilogramme of *fine* gold in France is 3434·44 francs; a kilogramme contains 32·154 English ounces; the Mint price of standard gold in England is £3 17s. 10½d. per ounce, and 12 ounces of standard are equal in value to 11 ounces of fine gold: what is the *par of exchange* between London and Paris?
5. What length of board 7½ inches wide will give a plank the area of which will be 6 square feet?
6. Simplify  $\frac{x-a}{b} - \frac{x-b}{a}$  when  $x = \frac{b^2}{b-a}$ .  
And show that  $(x^2 + xy - y^2)^2 - (x^2 - xy - y^2)^2 = 4xy(x^2 - y^2)$ .
7. Divide 1 by  $x^2 - 2x + 1$ , so as to have no negative powers of  $x$  in the quotient, writing down the  $n$ th term of the quotient and the  $n$ th remainder. Apply the result to find the value of  $1 \cdot 10 + 2 \cdot 10^2 + 3 \cdot 10^3 + \dots + n \cdot 10^n$ .
8. When  $m$  and  $n$  are positive integers, prove that,  $a$  being any algebraical quantity,  
$$a^m \times a^n = a^{m+n}, \quad a^m \div a^n = a^{m-n}.$$
And assuming these rules to hold universally, determine the meaning of the symbol  $a^n$  when  $n$  is fractional or negative.
9. Define 'Involution' and 'Evolution.' Explain what is meant by the 'Method of Induction'; and by that method prove that the square of any polynomial = the sum of the squares of its terms + twice the products of those terms taken two and two together.
10. When are three quantities,  $a, b, c$ , said to be in Harmonical Progression? Explain the term 'Harmonical' as thus applied; and shew that if  $a, b, c, d$  are four positive quantities in H. P., then  $a + d > b + c$ .
11. Distinguish between the 'Permutations' and 'Combinations' of any number of things.  
Twenty-eight young men form themselves into reading parties of seven each; in how many ways may they do this, assuming that one of four selected young men shall preside in each party?
12. Revert the series  
(1.)  $y = ax + bx^3 + cx^5 + \dots$   
(2.)  $x = y + \frac{1}{2}y^2 + \frac{1}{3}y^3 + \dots$   
explaining any assumptions you may make.
13. Explain what is meant by 'Mathematical chance or probability.'  
If two events are independent of each other, and the chance of the first happening is  $p_1$ , and of the second  $p_2$ , then the chance of both happening will be  $p_1 p_2$ .
14. The failure of a Candidate in the Examination of 1861 may be supposed attributable to one of three causes, existing separately, or to any combination of the same three existing together; e.g., *carelessness* or *want of ability on the part of the Candidate*, or *inefficient direction on that of his Tutor*. The chance of any one of them existing being equal, and that of any one, in case it exists, causing the failure being also equal, shew that, in our uncertainty as to which, or whether more than one, cause existed, the real probability that any one by itself, or any two combined, or all three, produced the result, is  $\frac{3}{16}$ ,  $\frac{1}{8}$ , and  $\frac{1}{16}$ , respectively.
15. Solve the Equations—  
$$\begin{aligned} a_1x + b_1y + c_1z &= d_1 \\ a_2x + b_2y + c_2z &= d_2 \\ a_3x + b_3y + c_3z &= d_3 \end{aligned}$$
by the method of Indeterminate Multipliers.
16. The number of Candidates for the A.A. Degree this year was greater than that of those who stood the preliminary test by 2. This latter number was greater than that of those who passed by 4; and the sum of the three numbers equalled the square of the last. Find the three.

## Pure Mathematics.—II.

FRIDAY, 19TH SEPTEMBER, 1862. 2 P.M. to 5 P.M.

1. Draw a straight line through a given point, parallel to a given straight line.

Of all triangles having the *same* vertical angle, and having their bases passing through a given point, the least is that the base of which is bisected in that point.

2. If two circles touch one another internally or externally, any line drawn through the point of contact will cut off similar segments.
3. If a straight line be drawn parallel to one of the sides of a triangle it will cut the other sides, or these produced proportionally.

By help of this proposition, trisect a given straight line.

4. Two straight lines which cut one another are in one plane, and three straight lines which meet one another are in one plane.
5. If two straight lines be cut by parallel planes, they shall be cut in the same ratio.

Two parallel planes cut a straight line  $ABCD$  in  $B$  and  $C$ , so that  $AB$  equals  $CD$ . Any other two straight lines  $AEF$  and  $DGH$  are cut by the same planes in  $E, F$ , and  $G, H$  respectively. Shew that the triangles  $EBH$  and  $FCG$  are equal.

6. If  $m', m''$ , and  $s', s''$  represent respectively the magnitude of a French and English minute and second, shew that  $\frac{m'}{s'} = \frac{3 \cdot 3^2}{2 \cdot 5^2}$ ;  $\frac{m''}{s''} = \frac{3 \cdot 3^3}{2 \cdot 5^3}$ .

7. Define the tangent of an angle, and shew that, for all magnitudes of  $A$ ,  $\tan. A = \tan. (180^\circ + A)$ . Trace the change in sign and magnitude of  $\tan. A$ , as  $A$  increases from  $0^\circ$  to  $360^\circ$ .

8. Obtain  $\sin. \frac{A}{2}$  in terms of  $\sin. A$ ; and shew, *a priori*, that the expression ought to have four values.

Draw a figure illustrating this fact.

9. Prove that in every triangle,  $\frac{\sin. A}{a} = \frac{\sin. B}{b} = \frac{\sin. C}{c} = \frac{2}{a b c} \sqrt{s(s-a)(s-b)(s-c)}$ ,

$A, B, C$ , and  $a, b, c$  being respectively the sides and angles, and  $2s = a + b + c$ .

10. Adapt the formula  $c = \sqrt{a^2 + b^2 - 2ab \cos. C}$  fully for logarithmic computation.

11. If  $r_a, r_b, r_c$  be the radii of the escribed circles of the circle the radius of which is  $r$ , prove that

$$\frac{1}{r_a} + \frac{1}{r_b} + \frac{1}{r_c} = \frac{1}{r}.$$

12. A pentagon, the sides of which are as  $1 : 2 : 3 : 4 : 5$ , is inscribed in a circle. Find its area in terms of the first side  $a$ .

13. Describe De Moivre's Theorem; and prove its truth for both integral and fractional, positive and negative, indices.

14. Sum the series  $\sin. a + \sin. (a + \beta) + \sin. (a + 2\beta) + \dots + \sin. (a + n - 1)\beta$ .

15.  $\cos. \theta = \cos. a \cos. \beta$ ;  $\cos. \theta' = \cos. a' \cos. \beta$ ; and  $\tan. \frac{\theta}{2} \tan. \frac{\theta'}{2} = \tan. \frac{\beta}{2}$ :

Prove that  $\sin. \beta = \left\{ (\sec. a - 1) (\sec. a' - 1) \right\}^{\frac{1}{2}}$



## Greek.

SATURDAY, 20TH SEPTEMBER, 1862. 8.30 A.M. to 11 A.M.

## 1. Translate,—

Ταῦτα μὲν πάντα οἱ κατύπερθε τῶν ἐλέων οἰκέοντες Αἰγύπτιοι νομίζουσι. οἱ δὲ δὴ ἐν τοῖσι ἔλεσι κατοικημένοι, τοῖσι μὲν αὐτοῖσι νόμοισι χρέωνται τοῖσι καὶ οἱ ἄλλοι Αἰγύπτιοι· καὶ τὰ ἄλλα, καὶ γυναικὶ μὴ ἕκαστος αὐτῶν συνοικεῖ, κατάπερ Ἕλληνες. Ἀτὰρ πρὸς εὐτελείην τῶν σιτίων τάδε σφι ἄλλα ἐξεύρηται. ἐπεὰν πλήρης γένηται ὁ ποταμὸς, καὶ τὰ πεδία πελαγίσῃ, φύεται ἐν τῷ ὕδατι κρίνεα πολλὰ, τὰ Αἰγύπτιοι καλέουσι λωτόν· ταῦτα ἐπεὰν δρέψωσι, ἀναίνουσι πρὸς ἥλιον· καὶ ἔπειτα τὸ ἐκ τοῦ μέσου τοῦ λωτοῦ τῇ μήκωνι ἐὼν ἐμφερὲς, πτίσαντες, ποιεῦνται ἐξ αὐτοῦ ἄρτους ὀπτοὺς πυρί. ἔστι δὲ καὶ ἡ ρίζα τοῦ λωτοῦ τούτου ἐδωδίμη, καὶ ἐγγλύσσει ἐπικέως, ἐὼν στρογγύλον, μέγαθος κατὰ μῆλον. Ἔστι δὲ καὶ ἄλλα κρίνεα ῥόδοισι ἐμφερέα, ἐν τῷ ποταμῷ γινόμενα καὶ ταῦτα· ἐξ ὧν ὁ καρπὸς ἐν ἄλλῃ κάλυκι παραφυομένη ἐκ τῆς ρίζης γίνεται, κηρίῳ σφηκῶν ἰδέην ὁμοιότατον. ἐν τούτῳ τρωκτὰ ὅσον τε πυρὴν ἐλαίης ἐγγίνεται συχνά. τρώγεται δὲ καὶ ἀπαλὰ ταῦτα καὶ αὔα. Τὴν δὲ βύβλον τὴν ἐπέτειον γινομένην, ἐπεὰν ἀνασπάσῃ ἐκ τῶν ἐλέων, τὰ μὲν ἄνω αὐτῆς ἀποτάμνοντες, ἐς ἄλλο τι τράπουσι· τὸ δὲ κάτω λελειμμένον ὅσον τε ἐπὶ πῆχυν, τρώγουσι καὶ πωλέουσι. οἱ δὲ ἂν καὶ κάρτα βούλωνται χρηστῇ τῇ βύβλῳ χρᾶσθαι, ἐν κλιβάνῳ διαφανεῖ πνίξαντες, οὕτω τρώγουσι. Οἱ δὲ τινες αὐτῶν ζῶσι ἀπὸ τῶν ἰχθύων μούνων· τοὺς ἐπεὰν λάβωσι, καὶ ἐξέλωσι τὴν κοιλίην, ἀναίνουσι πρὸς ἥλιον, καὶ ἔπειτα αὐοὺς ἐόντας σιτέονται.

## 2. Translate,—

Τοῦ δὲ Μηδισμοῦ τοῦ Πανσανίου Λακεδαιμόνιοι, πρέσβεις πέμφαντες παρὰ τοὺς Ἀθηναίους, ξυνεπηγινῶντο καὶ τὸν Θεμιστοκλέα, ὡς εὑρισκον ἐκ τῶν περὶ Πανσανίαν ἐλέγχων, ἤξιον τε τοῖς αὐτοῖς κολάζεσθαι αὐτόν. οἱ δὲ πεισθέντες, ἔτυχε γὰρ ὠστρακισμένος καὶ ἔχων δίαίταν μὲν ἐν Ἀργεῖ, ἐπιφοιτῶν δὲ καὶ ἐς τὴν ἄλλην Πελοπόννησον, πέμπουσι μετὰ τῶν Λακεδαιμονίων ἐτοίμων ὄντων ξυνδιώκειν ἄνδρας οἷς εἴρητο ἄγειν ὅπου ἂν περιτύχωσιν. ὁ δὲ Θεμιστοκλῆς προαισθόμενος φεύγει ἐκ Πελοποννήσου ἐς Κέρκυραν, ὧν αὐτῶν εὐεργέτης· δεδιέναι δὲ φασκόντων Κερκυραίων ἔχειν αὐτὸν ὥστε Λακεδαιμονίοις καὶ Ἀθηναίοις ἀπέχθεσθαι, διακομίζεται ὑπ' αὐτῶν ἐς τὴν ἡπειρον τὴν καταντικρὺ. καὶ διωκόμενος ὑπὸ τῶν προστεταγμένων κατὰ πίστιν ἢ χωροίῃ, ἀναγκάζεται κατὰ τι ἄπορον παρὰ Ἀδμήτῳ τὸν Μολοσσῶν βασιλέα ὄντα αὐτῷ οὐ φίλον καταλύσαι. καὶ ὁ μὲν οὐκ ἔτυχεν ἐπιδημῶν, ὁ δὲ τῆς γυναικὸς ἱκέτης γενόμενος διδάσκεται ὑπ' αὐτῆς τὸν παῖδα σφῶν λαβὼν καθίζεσθαι ἐπὶ τὴν ἐστίαν. καὶ ἐλθόντος οὐ πολὺ ὕστερον τοῦ Ἀδμήτου δηλοῖ τε ὅς ἐστι, καὶ οὐκ ἀξιοῖ, εἰ τι ἄρα αὐτὸς ἀντείπεν αὐτῷ Ἀθηναίων δεομένῳ, φεύγοντα τιμωρεῖσθαι. καὶ γὰρ ἂν ὑπ' ἐκείνου πολλῷ ἀσθενέστερος ἐν τῷ παρόντι κακῶς πάσχειν, γενναῖον δὲ εἶναι τοὺς ὁμοίους ἀπὸ τοῦ ἴσου τιμωρεῖσθαι. καὶ ἅμα αὐτὸς μὲν ἐκείνῳ χρεῖας τινὸς καὶ οὐκ ἐς τὸ σῶμα σώζεσθαι ἐναντιωθῆναι, ἐκείνον δ' ἂν εἰ ἐκδοίῃ αὐτόν, εἰπὼν ὕψ' ὧν καὶ ἐφ' ᾧ διώκεται, σωτηρίας ἂν τῆς ψυχῆς ἀποστερηῇσαι. ὁ δὲ ἀκούσας ἀνίστησι τε αὐτὸν μετὰ τοῦ ἑαυτοῦ υἱόος, (ὥσπερ καὶ ἔχων αὐτὸν ἐκαθέζετο, καὶ μέγιστον ἦν ἱκέτευμα τοῦτο,) καὶ ὕστερον οὐ πολλῷ τοῖς Λακεδαιμονίοις καὶ Ἀθηναίοις ἐλθοῦσι καὶ πολλὰ εἰποῦσιν οὐκ ἐκδίδωσιν, ἀλλ' ἀποστέλλει βουλόμενον ὡς βασιλέα πορευθῆναι ἐπὶ τὴν ἐτέραν θάλασσαν περὶ τὴν Πύδναν τὴν Ἀλεξάνδρου.

What was Ostracism?

## 3. Translate,—

- ΧΟ. λεύσσω, Προμηθεῦ· φοβερὰ δ' ἐμοῖσιν ὅσοις ὁμίχλα  
προσῆξε πλήρης δακρύων, σὸν δέμας εισιδούσῃ  
πέτραις προσαναινόμενον  
ταῖσδ' ἀδαμαντοδέτοιςι λύμαις·  
νέοι γὰρ οἰακονόμοι  
κρατοῦσ' Ὀλύμπου· νεοχμοῖς δὲ δὴ νόμοις Ζεὺς ἀθέτως κρατύνει,  
τὰ πρὶν δὲ πελώρια νῦν αἰστοῖ.  
ΠΡ. εἰ γάρ μ' ὑπὸ γῆν νέρθεν θ' Αἰδου  
τοῦ νεκροδέγμονος εἰς ἀπέραντον  
Τάρταρον ἦκεν,  
δεσμοῖς ἀλύτοις ἀγρίοις πελάσας,  
ὥς μήτε θεὸς μήτε τις ἄλλος  
τοῖσδ' ἐπεγῆθει.  
νῦν δ' αἰθέριον κίνυγμ' ὁ τάλας  
ἐχθροῖς ἐπίχαρτα πέπονθα.

## 4. Translate,—

ΠΡ. νῦν δ' οὐδέν ἐστι τέρμα μοι προκείμενον  
 μόχθων, πρὶν ἂν Ζεὺς ἐκπέσῃ τυραννίδος.  
 ΙΩ. ἦ γάρ ποτ' ἐστὶν ἐκπεσεῖν ἀρχῆς Δία;  
 ΠΡ. ἦδοι' ἂν, οἶμαι, τήνδ' ἰδοῦσα συμφοράν.  
 ΙΩ. πῶς δ' οὐκ ἂν, ἥτις ἐκ Διὸς πάσχω κακῶς;  
 ΠΡ. ὥς τοίνυν ὄντων τῶνδ' εἰ σοὶ μαθεῖν πάρα.  
 ΙΩ. πρὸς τοῦ τύραννα σκῆπτρα συληθήσεται;  
 ΠΡ. αὐτὸς πρὸς αὐτοῦ κενοφρόνων βουλευμάτων.  
 ΙΩ. ποίῳ τρόπῳ; σήμενον, εἰ μή τις βλάβη.  
 ΠΡ. γαμῆ γάμον τοιοῦτον ᾧ ποτ' ἀσχαλῶ.  
 ΙΩ. θέορτον, ἢ βρότειον; εἰ ῥητὸν, φράσον.  
 ΠΡ. τί δ' ὄντιν'; οὐ γὰρ ῥητὸν ἀνδᾶσθαι τόδε.  
 ΙΩ. ἦ πρὸς δάμαρτος ἐξανίσταται θρόνων;  
 ΠΡ. ἦ τέξεταί γε παῖδα φέρτερον πατρός.  
 ΙΩ. οὐδ' ἐστὶν αὐτῷ τῆσδ' ἀποστροφὴ τύχης;  
 ΠΡ. οὐ δῆτα, πλὴν ἂν ἐγὼ 'κ δεσμῶν λυθῶ.  
 ΙΩ. τίς οὖν ὁ λύσων σ' ἐστὶν ἄκοντος Διός;  
 ΠΡ. τῶν σῶν τιν' αὐτὸν ἐκγόνων εἶναι χρεῶν.

Give the descent of Hercules from Io.

## 5. Translate,—

“Ὡς οἱ μὲν τὰ πένοντο κατὰ στρατόν. οὐδ' Ἀγαμέμνων  
 Λῆγ' ἔριδος, τὴν πρῶτον ἐπηπείλησ' Ἀχιλλῆϊ,  
 Ἄλλ' ὃ γε Ταλθύβιον τε καὶ Εὐρυβάτην προσέειπεν,  
 Τῷ οἱ ἔσαν κήρυκε καὶ ὀτρυνῶ θεράποντε.  
 “Ἐρχεσθον κλισίην Πηληϊάδεω Ἀχιλλῆος·  
 Χειρὸς ἐλόντ' ἀγέμεν Βρισηΐδα καλλιπάρηον.  
 Εἰ δέ κε μὴ δώσωσιν, ἐγὼ δέ κεν αὐτὸς ἔλωμαι  
 Ἐλθὼν σὺν πλεόνεσσι· τό οἱ καὶ ῥίγιον ἔσται.”  
 “Ὡς εἰπὼν προΐει, κρατερὸν δ' ἐπὶ μῦθον ἔτελλεν.  
 Τῷ δ' ἄεκοντε βάτην παρὰ θῖν' ἄλδος ἀτρυγέτιοι,  
 Μυρμιδόνων δ' ἐπὶ τε κλισίας καὶ νῆας ἰκέσθην.  
 Τὸν δ' εὖρον παρὰ τε κλισίῃ καὶ νηὶ μελαίνῃ  
 Ἦμενον· οὐδ' ἄρα τῷ γε ἰδὼν γήθησεν Ἀχιλλεύς.  
 Τῷ μὲν ταρβήσαντε καὶ αἰδομένῳ βασιλῆα  
 Στήτην, οὐδέ τί μιν προσεφώνεον οὐδ' ἐρέοντο·  
 Αὐτὰρ ὁ ἔγνω ἦσιν ἐνὶ φρεσὶ, φώνησεν τε·  
 “Χαίρετε, κήρυκες, Διὸς ἄγγελοι ἠδὲ καὶ ἀνδρῶν.  
 Ἄσπον ἔτ'· οὐ τί μοι ὕμμες· ἐπαίτιοι, ἀλλ' Ἀγαμέμνων,  
 Ὁ σφῶι προΐει Βρισηΐδος εἵνεκα κούρης·  
 Ἄλλ' ἄγε, διογενὲς Πατρόκλεις, ἔξαγε κούρην  
 Καὶ σφῶϊν δός ἄγειν· τῷ δ' αὐτῷ μάρτυροι ἔστων  
 Πρὸς τε θεῶν μακάρων πρὸς τε θνητῶν ἀνθρώπων  
 Καὶ πρὸς τοῦ βασιλῆος ἀπηνέος, εἰ ποτε δ' αὖτε  
 Χρεῖώ ἐμεῖο γένηται ἀεικέα λοιγὸν ἀμῦναι  
 Τοῖς ἄλλοις· ἦ γὰρ ὃ γ' ὀλοῖσι φρεσὶ θύει,  
 Οὐδέ τι οἶδε νοῆσαι ἅμα πρόσσω καὶ ὀπίσσω,  
 Ὅπως οἱ παρὰ νηυσὶ σοὶ μαχέονται Ἀχαιοί.”

What was the Digamma? Point out any words in this passage which require it for metrical reasons.

SATURDAY, 20TH SEPTEMBER, 1862. 11·30 A.M. to 2 P.M.

## 1. Translate,—

Sit Scipio clarus, ille, cujus consilio atque virtute Hannibal in Africam redire, atque ex Italiâ decedere, coactus est: ornetur alter eximiâ laude Africanus, qui duas urbes huic imperio infestissimas, Carthaginem Numantiamque, delevit: habeatur vir egregius L. Paulus, ille, cujus currum rex potentissimus quondam et nobilissimus, Perses, honestavit: sit in æternâ gloriâ Marius, qui bis Italiam obsidione et metu servitutis liberavit: anteponatur omnibus Pompeius, cujus res gestæ atque virtutes iisdem, quibus solis cursus, regionibus ac terminis continentur. Erit profecto, inter horum laudes, aliquid loci nostræ gloriæ; nisi forte majus est patefacere nobis provincias, quo exire possimus, quam curare, ut etiam illi, qui absunt, habeant, quo victores revertantur.

Quamquam est uno loco conditio melior externæ victoriæ, quam domesticæ; quod hostes alienigenæ aut oppressi serviunt, aut recepti beneficio se obligatos putant: qui autem ex numero civium, dementiâ aliquâ depravati, hostes patriæ semel esse coeperunt, eos, cum a perniciæ reipublicæ repuleris, nec vi coercere, nec beneficio placare possis. Quare mihi cum perditis civibus æternum bellum susceptum esse video: quod ego, vestro bonorumque omnium auxilio, memoriæque tantorum periculorum, (quæ non modo in hoc populo qui servatus est, sed etiam in omnium gentium sermonibus ac mentibus, semper hærebit) a me atque a meis facile propulsari posse confido. Neque ulla profecto tanta vis reperietur, quæ conjunctionem vestram equitumque Romanorum, et tantam conspirationem bonorum omnium, perfringere et labefactare possit.

In what years were Carthage and Numantia destroyed? Quote from the Odes of Horace allusions to each event.

## 2. Translate,—

Parte altera pugnae Paullus, quamquam primo statim proelio funda graviter ictus fuerat, tamen et occurrit saepe cum confertis Hannibali et aliquot locis proelium restituit, protegibus eum equitibus Romanis, omissis postremo equis, quia consulem et ad regendum equum vires deficiebant. Tum deinde nuncianti cuidam jussisse consulem ad pedes descendere equites; dixisse Hannibalem ferunt 'Quam mallet, vinctos mihi traderet!' Equitum pedestre proelium, quale jam haud dubia hostium victoria, fuit, cum victi mori in vestigio mallent quam fugere, victores morantibus victoriam irati trucidarent quos pellere non poterant. Pepulerunt tamen jam paucos superantes et labore ac vulneribus fessos. Inde dissipati omnes sunt, equosque ad fugam qui poterant repetebant. Cn. Lentulus tribunus militum cum praetervehens equo sedentem in saxo cruore oppletum consulem vidisset, 'L. Aemili' inquit, 'quem unum insontem culpa cladis hodiernæ dei respicere debent, cape hunc equum, dum et tibi virium aliquid superest, comes ego te tollere possum ac protegere. Ne funestam hanc pugnam morte consulis feceris: etiam sine hoc lacrimarum satis luctusque est.' Ad ea consul 'Tu quidem, Cn. Corneli, macte virtute esto, sed cave, frustra miserando exiguum tempus e manibus hostium evadendi absumas. Abi, nuncia publice Patribus, urbem Romanam munit ac priusquam hostis victor adveniat, praesidiis firmet; privatim Q. Fabio, L. Aemilium praeceptorum ejus memorem et vixisse adhuc et mori. Memet in hac strage militum meorum patere expirare, ne aut reus iterum ex consulatu sim, aut accusator collegae existam, ut alieno crimine innocentiam meam protégam.' Haec exigentes prius turba fugientium civium, deinde hostes oppressere: consulem, ignorantes quis esset, obruere telis; Lentulum inter tumultum abripuit equus.

Quote allusions from Horace and Virgil to Paullus, Fabius, and Hannibal.

## 3. Translate,—

Jam pauca aratro jugera regiae  
Moles relinquent, undique latius  
Extenta visentur Lucrino  
Stagna lacu platanusque caelebs  
Evincet ulmos. Tum violaria et  
Myrtus et omnis copia narium  
Spargent olivetis odorem  
Fertilibus domino priori;  
Tum spissa ramis laurea fervidos  
Excludet ictus. Non ita Romuli  
Præscriptum et intonsi Catonis  
Auspiciis veterumque norma.  
Privatus illis census erat brevis,  
Commune magnum: nulla decempedis  
Metata privatis opacum  
Porticus excipiebat Arcton;  
Nec fortuitum spernere cespitem  
Leges sinebant, oppida publico  
Sumptu jubentes et Deorum  
Templa novo decorare saxo.

Exegi monumentum ære perennius  
 Regalique situ pyramidum altius ;  
 Quod non imber edax, non Aquilo impoter.  
 Possit diruere aut innumerabilis  
 Annorum series et fuga temporum.  
 Non omnis moriar multaue pars mei  
 Vitabit Libitinam : usque ego postera  
 Crescam laude recens, dum Capitolium  
 Scandet cum tacita Virgine pontifex.  
 Dicar, qua violens obstrepit Aufidus  
 Et qua pauper aquæ Daunus agrestium  
 Regnavit populorum, ex humili potens  
 Princeps Æolium carmen ad Italos  
 Deduxisse modos. Sume superbiam  
 Quæsitam meritis, et mihi Delphica  
 Lauro cinge volens, Melpomene, comam.

Write brief explanatory notes on lines 2 and 9 of the latter Ode ; also on the expressions Aquilo impotens ; Æolium carmen ; Delphica lauro.

4. Translate,—

At procul in sola secretæ Troades acta  
 Amissum Anchisen flebant, cunctæque profundum  
 Pontum aspectabant flentes : “ Heu, tot vada fessis,  
 Et tantum superesse maris ! ” vox omnibus una.  
 Urbem orant ; tædet pelagi perferre laborem.  
 Ergo inter medias sese haud ignara nocendi  
 Conjicit, et faciemque deæ vestemque reponit :  
 Fit Beroë, Ismarii conjux longæva Dorycli,  
 Cui genus et quondam nomen natique fuissent ;  
 Ac sic Dardanidum mediam se matribus infert :  
 “ O miseræ, quas non manus”, inquit, “ Achaïca bello  
 Traxerit ad letum patriæ sub mœnibus ! o gens  
 Infelix ! cui te exitio fortuna reservat ?  
 Septima post Trojæ excidium jam vertitur æstas,  
 Quum freta, quum terras omnes, tot inhospita saxa  
 Sideraque emensæ ferimur ; dum per mare magnum  
 Italiam sequimur fugientem, et volvitur undis.  
 Hic Erycis fines fraterni, atque hospes Acestes :  
 Quid prohibet muros jacere, et dare civibus urbem ?  
 O patria, et rapti nequidquam ex hoste penates,  
 Nullane jam Trojæ dicentur mœnia ? nusquam  
 Hectoreos amnes, Xanthum et Simoënta, videbo ?  
 Quin agite, et mecum infaustas exurite puppes.  
 Nam mihi Cassandra per somnum vatis imago  
 Ardentes dare visa faces. Hic quærite Trojam ;  
 Hic domus est, inquit, vobis. Jam tempus agi res ;  
 Nec tantis mora prodigiis. En quatuor aræ  
 Neptuno. Deus ipse faces animumque ministrat.”

Where are Ismarus and Eryx ? What legend connects with the former ? What history with the latter ? To what goddess, and why, did the latter give a name ?

5. Give the dates, from the Christian Era, of the birth and the death of Cicero, Livy, Virgil, and Horace.

## French.

SATURDAY, 20 SEPTEMBER, 1862. 3 P.M. to 5.30 P.M.

## 1. Translate into English,—

Bientôt on entendit un bruit de bottes et d'armes, qui annonçait l'arrivée du prince ; on ouvrit les deux battants : les gardes du cardinal frappèrent trois fois leurs piques sur le parquet, et le roi parut.

Il marchait en s'appuyant sur une canne de jonc d'un côté, de l'autre sur l'épaule de son confesseur, le P. Sirmond, qui se retira et le laissa avec le cardinal ; celui-ci s'était levé avec la plus grande peine, et ne put faire un pas au-devant du roi, parce que ses jambes malades étaient enveloppées ; il fit le geste d'aider le prince à s'asseoir près du feu, en face de lui. Louis XIII. tomba dans un grand fauteuil garni d'oreillers, demanda et but un verre d'élixir préparé pour le fortifier contre les évanouissements fréquents que lui causait sa maladie de langueur, fit un geste pour éloigner tout le monde, et, seul avec Richelieu, lui parla d'une voix languissante.

Je m'en vais, mon cher Cardinal ; je sens que je m'en vais à Dieu ; je m'affaiblis de jour en jour ; ni l'été, ni l'air du midi ne m'ont rendu mes forces.

Je précéderai Votre Majesté, répondit le ministre ; la mort a déjà conquis mes jambes, vous le voyez, mais tant qu'il me restera la tête pour penser, et la main pour écrire, je serai bon pour votre service.—Et je suis sûr que votre intention était d'ajouter le cœur pour m'aimer, dit le roi.—Votre Majesté en peut-elle douter ? répondit le cardinal, en fronçant le sourcil, et se mordant les lèvres par l'impatience que lui donnait ce début—Quelquefois j'en doute, reprit le prince ; tenez, j'ai besoin de vous parler à cœur ouvert, et de me plaindre de vous à vous-même. Il y a deux choses que j'ai sur la conscience, depuis trois ans ; jamais je ne vous en ai parlé, mais je vous en voulais en secret ; et même, si quelque chose eût été capable de me faire consentir à des propositions contraires à vos intérêts, c'eût été ce souvenir.

## 2. Parse all the verbs in the first sentence, and explain the idioms "se mordant les lèvres," "Je vous en voulais."

3. In the above passage, explain the different significations attached to *que*. When does the Indicative follow the Conjunction *que*? and when the Subjunctive?

## 4. Translate into French,—

"Half way between Delft and the Hague is a village named Ryswick ; and near it there stood, in a rectangular garden, which was bounded by straight canals, and divided into formal woods, flower beds, and melon beds, a seat of the Prince of Orange. The house seemed to have been built expressly for the accommodation of such a set of diplomatists as was to meet there. In the centre was a large hall, painted by Honthorst. On the right hand and on the left were wings exactly corresponding to each other. Each wing was accessible by its own bridge, its own gate, and its own avenue. One wing was assigned to the Allies, the other to the French, the hall in the centre to the Mediator. Some preliminary questions of etiquette were, not without difficulty, adjusted ; and at length, on the ninth of May, many coaches and six, attended by harbingers, footmen, and pages, approached the mansion by different roads. The Swedish Minister alighted at the grand entrance ; the procession from the Hague came up the side alley on the right ; the procession from Delft came up the side alley on the left. At the first meeting the full powers of the representatives of the belligerent governments were delivered to the Mediator. At the second meeting, forty-eight hours later, the Mediator performed the ceremony of exchanging their full powers."

## 5. Translate into English the following passage :—

*Scapin*.—Monsieur votre fils..

*Géronte*.—Hé bien ? mon fils..

*Scapin*.—Est tombé dans une disgrâce la plus étrange du monde.

*Géronte*.—Et quelle ?

*Scapin*.—Je l'ai trouvé tantôt tout triste de je ne sais quoi que vous lui avez dit, où vous m'avez mêlé assez mal-à-propos ; et cherchant à divertir cette tristesse, nous nous sommes allés promener sur le port. Là, entre autres plusieurs choses, nous avons arrêté nos yeux sur une galère turque assez bien équipée. Un jeune Turc de bonne mine nous a invités d'y entrer, et nous a présenté la main. Nous y avons passé. Il nous a fait mille civilités, nous a donné la collation, où nous avons mangé des fruits les plus excellents qui se puissent voir, et du vin que nous avons trouvé le meilleur du monde.

Géronte.—Qu'y a-t-il de si affligeant à tout cela ?

Scapin.—Attendez, monsieur, *nous y voici*. Pendant que nous mangions, il *a fait mettre* la galère en mer ; et se voyant éloigné du port, il *m'a fait mettre dans* un esquif, et m'envoie vous dire que, si vous ne lui envoyez par moi tout-à-l'heure cinq cents écus, il *va vous emmener* votre fils en Alger.

Géronte.—Comment diantre ! cinq cents écus ?

Scapin.—Oui, monsieur ; et *de plus* il ne m'a donné pour cela que deux heures.

Géronte.—Ah ! *le pendard de Turc ! m'assassiner de la façon !*

Scapin.—C'est à vous, monsieur, d'aviser promptement aux moyens de sauver des fers un fils que vous aimez avec tant de tendresse.

Géronte.—Que diable allait-il faire dans cette galère ?

Scapin.—Il ne songeait pas à ce qui est arrivé.

Géronte.—*Va-t'en*, Scapin, *va-t'en vite* dire à ce Turc que je vais envoyer la justice après lui.

Scapin.—La justice en pleine mer ! vous moquez-vous des gens ?

Géronte.—Que diable allait-il faire dans cette galère ?

Scapin.—Une méchante destinée conduit quelquefois les personnés.

Géronte.—Il faut, Scapin, il faut que tu fasses ici l'action d'un serviteur fidèle.

Scapin.—Quoi, monsieur ?

Géronte.—Que tu ailles dire à ce Turc qu'il me renvoie mon fils, et que tu *te mets à sa place*, jusqu'à ce que j'aie amassé la somme qu'il demande.

Scapin.—Hé ! monsieur, songez-vous à ce que vous dites ? et vous figurez-vous que ce Turc ait si peu de sens, *que d'aller recevoir* un misérable comme moi à la place de votre fils ?

Géronte.—Que diable allait-il faire dans cette galère ?

Scapin.—Il ne devinait pas ce malheur. Songez, monsieur, qu'il ne m'a donné que deux heures.

Géronte.—Tu dis qu'il demande..

Scapin.—Cinq cents écus.

Géronte.—Cinq cents écus ! N'a-t-il point de conscience ?

Scapin.—Vraiment oui, de la conscience à un Turc !

Géronte.—Sait-il bien ce que c'est que cinq cents écus ?

Scapin.—Oui, monsieur, il sait que c'est mille cinq cents livres.

Géronte.—Croit-il, le traître, que mille cinq cents livres se trouvent dans le pas d'un cheval ?

Scapin.—Ce sont des gens qui n'entendent point de raisons.

Géronte.—Mais que diable allait-il faire dans cette galère ?

Scapin.—Il est vrai ; mais quoi ! on ne prévoyait pas les choses. De grâce, monsieur, dépêchez.

Géronte.—Tiens, voilà la clef de mon armoire.

Scapin.—Bon.

Géronte.—Tu l'ouvriras.

Scapin.—Fort bien.

Géronte.—Tu trouveras une grosse clef du côté gauche qui est celle de mon grenier.

Scapin.—Oui.

Géronte.—Tu iras prendre toutes les hardes qui sont dans cette grande manne, et tu les vendras aux frippiers, pour aller rachéter mon fils.

Scapin, (*en lui rendant la clef*).—Hé ! monsieur, rêvez-vous ? Je n'aurais pas cent francs de tout ce que vous dites ; et, de plus, vous savez le peu de temps qu'on m'a donné.

Géronte.—Mais que diable allait-il faire dans cette galère ?

Scapin.—Oh ! que de paroles perdues ! Laissez là cette galère, et songez que le temps presse, et que vous courez risque de perdre votre fils.

6. When is *arrêter* conjugated with *avoir* ? when with *être* ? Explain the idioms "*fait mettre*," "*va vous emmener votre fils*," "*pendard de Turc*," "*de la façon*," "*va-t'en*," "*il faut que tu fasses*," "*que d'aller recevoir*," "*de plus*," "*tu te mets à sa place*." Why is *mets* in the indicative ?

7. Give the English of the following words, and also their Homonymes (having similar sounds but different meanings), with the English of each :—

Faîte. Clerc. Matin. Paume. Saut. Boite. Corps. Crin. Bon. Sans. Voix.  
Plaine. Mur. Cour.

### Natural Philosophy.

MONDAY, 22ND SEPTEMBER, 1862. 9 A.M. to 12.

1. Enunciate and prove the principle of the "Parallelogram of Forces."
2. Find the conditions of equilibrium of any system of forces acting in one plane at the same point.
3. Find the Ratio of the Power to the Weight in the Third System of Pulleys—(1.) When the pulleys are weightless; and (2.) When the weight of the first equals  $P$ , the second  $2P$ , .... the  $n$ th  $2^{n-1}P$ .
4. Define "Static Friction," and state what experiments have shewn concerning its measure in any case. If  $\alpha$  be the inclination of a rough inclined plane when a body is just sustained upon it, shew that the coefficient of friction  $(\mu) = \tan. \alpha$ .
5. A heavy body ( $W$ ) is just sustained on a rough inclined plane by a cord which passes over a fixed pulley, and is attached to the middle point of another cord the ends of which are fixed to a horizontal iron bar, weight  $w$ , from the same points of which again hang two cords suspending two heavy blocks. The coefficient of friction for the plane being  $\mu$ , that of the pulley  $\nu$ , the inclination of the plane  $\alpha$ , that of the first cord to the inclined plane  $\beta$ , and the angle subtended by the iron bar at the middle point of the second cord being  $\gamma$ , determine the weight of the blocks.
6. State the principle of "Virtual Velocities," and prove it in the case of a single particle acted on by any number of forces in the same plane.
7. Obtain the equations of motion—  

$$(1.) v=ft. \quad (2.) s=\frac{1}{2}ft^2. \quad (3.) v^2=V^2+2fs.$$
 And explain clearly the meaning of the symbols used.
8. A body is projected with a velocity  $u$  in the direction of a uniform accelerating force. After describing a certain space  $s$  its velocity is increased by  $v$ ; but it needs to pass through a space  $2s$  in order to acquire a further additional velocity  $v$ . Shew that  $u=\frac{v}{2}$ .
9. State the Third Law of Motion, and describe Atwood's machine by means of which it may be verified.
10. If two bodies begin to fall at the same time from the common vertex of two planes inclined at different angles to the horizon, the line joining them will move parallel to itself.
11. Prove that the path of a projectile is a parabola, of which the axis is vertical. Determine at what angle a body should be projected that its 'range' may be greatest.
12. Distinguish between elastic and inelastic bodies.  
 Prove that if  $m, m'$  be the masses of two elastic balls moving in the same direction with velocities  $u, u'$  before impact, and  $v, v'$  be their velocities after impact, then
 
$$mv + m'v' = mu + m'u'.$$
13. Define a fluid. What is the characteristic property of fluids? How may pressure at any point within a fluid be measured?
14. When two fluids meet in a bent tube, the altitudes of their surfaces above the horizontal plane in which they meet are inversely as their densities.  
 Equal volumes of two fluids which do not mix occupy the half of a vertical circular tube. Determine the angle which the bounding diameter makes with the vertical.
15. Describe the Barometer in common use, and explain the method of finding the difference of altitude of two stations above the earth's surface by means of it.
16. Explain the action of the Common Pump.
17. The sum of the graduations on a Fahrenheit and Centigrade Thermometer is  $270^\circ$ . Determine the temperature by each.

## Pure Mathematics.—III.

MONDAY, 22ND, SEPTEMBER, 1862. 2 P.M. to 5 P.M.

(\* To be treated geometrically.)

- \*1. Define the terms 'axis,' 'latus rectum,' 'centre,' 'focus,' as applied to the Conic Sections.

Shew that in the parabola the latus rectum is equal to four times the distance of the focus from the vertex.

- \*2. Define a tangent: and prove that in the parabola the tangent at any point makes equal angles with the focal distance of that point and the diameter through it.

- \*3. If a right cone be cut by a plane which is parallel to a line in its surface, the section will be a parabola.

- \*4. Prove that, in the ellipse,—

(1.)  $SP + HP = 2AC.$

(2.)  $SY \cdot HZ = BC^2.$

(3.)  $TG \cdot CN = CD^2.$

- \*5. A straight line drawn parallel to one asymptote of an hyperbola, and terminated by the conjugate hyperbolas, is bisected by the other asymptote.

6. Interpret the equations—

(1.)  $y=mx+c.$  (2.)  $y=b.$  (3.)  $x=ay.$  (4.)  $(x-a)(y-b)=0.$

and shew that the general equation of the first degree *always* represents a straight line.

7. Find the equations to the straight lines which pass through a given point, and make a given angle with a given straight line.

8. If
- $a=0, \beta=0$
- , be the equations to two straight lines expressed in terms of the perpendiculars from the origin and their inclinations to the axis of
- $x$
- , prove that
- $a-\beta=0$
- , and
- $a+\beta=0$
- represent lines passing through their intersection and bisecting the angles between them.

9. Investigate formulæ for the transformation of co-ordinates from one rectangular system to another.

10. Trace the parabola from its equation
- $y^2=4ax$
- .

11. Find the equation to the tangent at any point of the ellipse; and shew that from any external point two tangents can be drawn to an ellipse.

12. If
- $PP'$
- be a chord of an ellipse subtending at the focus
- $S$
- the angle
- $2\beta$
- , and this angle be bisected by
- $SQ$
- which is inclined to the axis of
- $x$
- at an angle
- $\alpha$
- , prove that the polar equation of
- $PP'$
- is—

$$\frac{c}{r} = e \cos. \theta + \sec. \beta \cos. (\alpha - \theta),$$

where  $c$  is the latus rectum, and  $e$  the eccentricity.Hence deduce the polar equation of the tangent at  $Q$ .

13. When is one magnitude said to be a function of another? In a function of two variables, distinguish clearly between the independent and the dependent variable. Give an example of an implicit and an explicit function. What do you mean by a transcendental function?

14. Define strictly the differential co-efficient of a function of one variable: and from your definition obtain that of the product of two such functions.

Give a geometrical illustration of the meaning of a differential co-efficient.

15. Obtain the differential co-efficient of—

(1.)  $a+bx^{\frac{1}{2}}.$

(5.)  $x^{\frac{1}{x}}.$

(2.)  $\frac{x(c^2-x^2)}{c^2+x^2}.$

(6.)  $e^{e^x}.$

(3.)  $\text{Sin. } x. \text{ Sin. } 2x. \text{ Sin. } 3x.$

(7.)  $\frac{1}{\log_e x} - \frac{x}{\log_e x}.$

(4.)  $(2a^{\frac{1}{2}}+x^{\frac{1}{2}})\sqrt{(a^{\frac{1}{2}}+x^{\frac{1}{2}})}.$

(8.)  $\log_e (a+bx+\sqrt{c+2abx+b^2x^2}).$



## English Language.

TUESDAY, 23RD SEPTEMBER, 1862. 8.30 A.M. to 11 A.M.

1. Explain how it is that there are so many words common to the English and the French languages. Illustrate your answer by examples.
2. *Pater*, father. State and name the law by which these two words are identified; and give other examples of its application.
3. Do you consider the English Language more closely allied to French or to German. Give reasons for your answer.
4. Discuss the derivation of the following words:—Kerchief, marquis, causeway, poetry, echelon, huckster, alms, many, acorn, book.
5. Explain clearly and discuss the constructions in the following:—
 

To be weak is miserable,  
Doing or suffering.  
They tame but one another still.  
Either you or I is wrong.  
Full many a flower is born to blush unseen.  
The first four books of Virgil.
6. "The formative plastic powers of a language are always waning, and diminishing more and more." Explain and illustrate this dictum.
7. Trace to their original meanings, and contrast, the English, the Greek, and the Latin words expressing the notion "worth."
8. "New names are often formed from the names of persons actual or mythical." Give instances of this.
9. Mention briefly the leading theories as to the origin of language.
10. Contrast the advantages and the disadvantages of a copious system of inflection like the Greek, and a limited one like the English.
11. Analyse the following local names:—Greenwich, Northamptonshire, Dunkirk, Sheppey, Exeter, Suffolk, Essex, Inverness.
12. From what authors are the following passages taken? Name the work in which they occur, and give the period at which the writer flourished:—
  - (1.) Only the actions of the just  
Smell sweet and blossom in their dust.
  - (2.) The evil that men do lives after them,  
The good is oft interred with their bones.
  - (4.) Where ignorance is bliss  
'Tis folly to be wise.
  - (5.) Till old experience do attain  
To something like prophetic strain.
  - (6.) The Angel of Death spread his wings on the blast.
  - (7.) And because right is right, to follow right  
Were wisdom, in the scorn of consequence.
  - (8.) Come one, come all, this rock shall fly  
From its firm base as soon as I.
  - (9.) To every man upon the earth  
Death cometh soon or late.
  - (10.) Our birth is but a sleep and a forgetting.

## General Classical Paper.

TUESDAY, 23RD SEPTEMBER, 1862. 11·30 A.M. to 2 P.M.

1. Write notes on the meaning and the etymology of ἀκέων, ἄμβροτος, τεταγών, σταθευτός, ἄγρυνπος, πεδάρσιος, ἀναποδίζειν, δείκηλα, ἀποδινήσας, λεπτόγεων, πολιορκεῖν, ισόρροπος.
2. Translate and explain the following; noticing and illustrating any peculiarities or difficulties:—
  - (1.) εὐδαιμονέστατος τῶν πρότερον βασιλέων.
  - (2.) ξυνήθη τὴν δίαιταν μεθ' ὅπλων ἐποιήσαντο.
  - (3.) ἐπὶ τὸ προσαγωγότερον τῇ ἀκροάσει ἢ ἀληθέστερον.
  - (4.) τίς ἀχῶ, τίς ὁδμὰ προσέπτα μ' ἀφεγγής;
  - (5.) δυοῖν δὲ θάτερον βουλήσεται  
κλύειν ἀναλκίς μᾶλλον ἢ μαιφόνος.
  - (6.) Obloquitur numeris septem discrimina vocum.
  - (7.) Abstinens  
Ducentis ad se cuncta pecuniæ.
  - (8.) Ut quemque destitueret vadum, impetu rapiente.
  - (9.) Libertini etiam in verba juraverunt.
  - (10.) Itaque plebei scitum quo oneratus magis quam honoratus sum, primus antiquo et abrogo.
3. Discuss the meaning and the derivation of—incolumis, adorea, pensum, lymphatus, administer, debilitatus, pruina, testa, decempeda, stipendium, trames, promulgo.
4. Explain the allusions in—tergemini honores: Martiis cœlebs calendis: licet injecto ter pulvere curras: legum æra liquefacta: forma tricorporis umbræ: fasces recepti: cœlique meatus describent radio: novissima verba: tauriformis Aufidus: interiore nota Falerni.
5. Mention some of the more marked points of contrast between the Ionic of Homer or Herodotus and the Attic of Æschylus or Thucydides.
6. Give some account of the lives of Horace and Virgil.
7. Trace the gradual development of Greek Tragedy.
8. Mark the scansion, and give the technical names of these lines,—
  - (1.) τίς ἀχῶ, τίς ὁδμὰ προσέπτα μ' ἀφεγγής;
  - (2.) ἐσορᾷς μ' ὥς ἑκδικα πάσχω.
  - (3.) κολχίδος τε γᾶς ἔνοικοι.
  - (4.) Solvitur acris hiems grata vice veris et Favoni.
  - (5.) Grato Pyrrha sub antro.
  - (6.) Te deos oro Sybarin cur properas amando.
9. Give the rules for the use of the temporal πρίν.
10. After what principal verbs, and with what meanings, would you employ ὅπως ποιήσεις, ὅπως ποιήσης, ὅπως ποιήσεαι, ὅπως ἂν ποιήσης?
11. Mention any Latin words employed—
  - (a.) In one number only.
  - (b.) With a different meaning in the different numbers.
12. Enumerate, with examples, the various possible usages of the accusative case.

### Ancient History and Geography.

TUESDAY, 23RD SEPTEMBER, 1862. 3 P.M. to 5.30 P.M.

1. Give, from Thucydides, an account of the history of Athens from the end of the Persian War<sup>n</sup> to the outbreak of the Peloponnesian War.
  2. Describe the Constitution of Athens as established by Clisthenes.
  3. Give the succession of the Kings of Egypt from Sesostris to Sethos, and mention one or two leading incidents of each reign.
  4. What is the opinion of Herodotus about Homer and his Poems?
  5. Give a short account of the Athenian Expedition to Sicily, and its results.
  6. Give, with dates, the succession of the Kings of Rome.
  7. When were the Laws of the Twelve Tables passed? Mention their principal provisions.
  8. Give a short account, with dates, of the Second Punic War.
  9. Detail briefly the events in the history of Rome from the death of Julius Cæsar to the battle of Actium.
  10. In what wars, in what year, and by whom, were fought the battles of Mycale, Sacriportus, Tenedos, Sentinum, Heraclea, Vesperis, Thapsus, Granicus?
  11. Describe the course of the Via Appia. When, and by whom, was it constructed?
  12. "Nili septemplex undas." Mention, in order, the Mouths of the Nile, distinguishing those given by Herodotus.
  13. What is the theory of the formation of Egypt set forth by Herodotus, and how does he support it?
  14. Give the geographical position of the Echinades, Lake Serbonis, Cyrene, Coreyra, Naupactus, Potidæa, Marea, Heliopolis, Ithome, Soloeis, Piræus.
  15. Also of Acrocerania, Hæmus, Nysa, Lanuvium, Aufidus, Saguntum, Cumæ, Fæsulæ, Tibur, Ariminum.
  16. Give the English equivalents for the following measures :—a plethrum, a stadium, a parasang, a schœnus.
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## TASMANIAN COUNCIL OF EDUCATION.

Hobart Town, 21st October, 1861.

## EXAMINATION FOR TASMANIAN SCHOLARSHIPS, 1862.

THE Council of Education have directed the publication of the following revised Scheme of Examination for the Tasmanian Scholarships for the Year 1862.

A copy of the Scheme will be supplied on application to the undersigned.

By Order of the Council,

MURRAY BURGESS, *Secretary.*

## REVISED Scheme of the Examination for the TASMANIAN SCHOLARSHIPS for the Year 1862.

## I.—CLASSICS.

GREEK.—Thucydides, Book I.; Herodotus, Book II.; Homer's Iliad, Book I.; Æschylus, Prometheus Vincetus.

LATIN.—Virgil, Æneid, Books V. and VI.; Horace, Odes; Livy XXI. and XXII.; Cicero, Catiline Orations.

Papers will be set for translation from English into Greek and Latin Prose, and from English Verse into Greek and Latin Verse.

ANCIENT HISTORY.—Questions will be given upon the historical and geographical allusions contained in the above-named Greek and Latin Books, and in the philology of the Greek and Latin languages. Candidates will also be examined in Smith's History of Greece and Liddell's History of Rome.

## II.—MATHEMATICS.

Arithmetic; Algebra, except Theory of Equations; Euclid, Books I. to VI. inclusive, and XI. to 21st Proposition inclusive; Plane Trigonometry, including Logarithms; Conic Sections, treated both geometrically and analytically; and Simple Differentiations.

## III.—NATURAL PHILOSOPHY.

Elementary Statics, Dynamics, and Hydrostatics, as treated in Goodwin's Course of Mathematics.

## IV.—MODERN HISTORY.

History of Europe from 1688 to 1815 inclusive.

## V.—MODERN LANGUAGES.

The grammatical structure of the English Language, and French or German. Candidates may submit themselves for examination in either French or German, at their option.

FRENCH.—Passages will be given from Voltaire's Charles the XII. and Molière Les Fourberies de Scapin for translation into English, with questions on the parsing, and the historical and geographical allusions; also a passage from some other French author for translation into English, and from some English author into French.

GERMAN.—Passages will be given from Schiller's Revolt of the Netherlands, or Wallenstein, with questions on the parsing and the historical and geographical allusions; also a passage from some other German author for translation into English, and from an English author into German.

NOTE.—The following values have been affixed to the several subjects of examination:—

1. Classics	-	-	-	-	1500 Marks.
2. Mathematics and Natural Philosophy	-	-	-	-	1500 "
3. Modern History	-	-	-	-	250 "
4. Modern Languages—					
(a.) English	-	-	-	250 }	500 "
(b.) French or German	-	-	-	250 }	
TOTAL	-	-	-	-	3750 Marks.

It shall be essential to success that a Candidate gain at least 1650 Marks, of which either 900 shall have been gained in Classics or 750 in Mathematics.

## BOOKS RECOMMENDED.

History of England, Smith, W., Student's Hume, Murray, 7s. 6d.  
 ———, Gleig, G. R., School History, 6s., Parker.  
 ——— Greece, Smith, W., 7s. 6d., Murray.  
 ——— Rome, Liddell, H. G., 7s. 6d., Murray.  
 Arithmetic, Colenso, J. W., 4s. 6d., Longman.  
 Algebra, Colenso, J. W., Parts I. and II., p. 1, 4s. 6d. ditto, p. 2, 6s., Longman.  
 ———, Wood, J., edited by Lund, 15 Ed., 12s. 6d., Longman.  
 Trigonometry, Hall, T. G., 7s. 6d., Fellowes.  
 ———, Hymers, J., 8s. 6d., Whittaker.  
 Conic Sections, Analytical, Treatise on Conic Sections, Todhunter, J., 10s. 6d. Macmillan.  
 ———, Geometrical, Goodwin, H., Course of Mathematics, 15s., Deighton, Bell,  
 and Co.  
 Differential Calculus, Todhunter, J., 10s. 6d., Macmillan.  
 Elementary Statics, Dynamics, and Hydrostatics, (Goodwin's Course of Mathematics),  
 see above.

## REGULATIONS FOR THE TASMANIAN SCHOLARSHIPS.

Every Candidate for a Scholarship must, by the provisions of the Act, be above the age of sixteen and under the age of twenty years. He must also have been resident in the Colony for the period of five years next before the time of his examination, and have taken the Degree of Associate of Arts.

By the 14th Section of the Act, the examination for Tasmanian Scholarships must comprise the following subjects:—

1. Classics—Translations from Greek and Latin authors into English, Greek and Latin Composition, Ancient History, Philology.
2. Mathematics—Arithmetic, Algebra, Euclid, Plane Trigonometry.
3. Natural Philosophy—Elementary Statics, Dynamics, and Hydrostatics.
4. Modern History—The History of England.
5. The grammatical structure of the English Language, and French or German, at the option of the Candidate.

Every Scholar shall forward to the Secretary of the Council a certificate from the proper authority, testifying to his having become a Member of some University of the United Kingdom; and until such certificate be received by the Secretary to the Council, or by their accredited agent in Great Britain, the Council will not authorise the payment of the annual value of the Scholarship: provided always that this condition shall not apply in any case where it has been proved to the satisfaction of the Council that the Scholar has been prevented by sickness or other sufficient cause from entering himself on the books of an University.

The Council will order to be paid by the Secretary, or an accredited agent in Great Britain, half-yearly, to the said Scholar, the amount of his Scholarship for the half-year, upon the receipt by their Secretary, or by such accredited agent, of a testimonial from the authorities of the College or University to which he may belong, stating that he is conducting himself diligently and steadily.

In the event of any Tasmanian Scholar not being able to produce such a testimonial for any six months, he shall forfeit the amount to which he would be otherwise entitled for the said six months; and should he fail to do so for twelve months, his Scholarship shall be declared vacant, and he shall have no claim for moneys accruing therefrom: provided always, that this rule shall not apply to Scholars when they have been incapacitated by illness from attending to their College or University duties.

For the further encouragement of Tasmanian Scholars to prosecute their studies diligently in the University to which they belong, the Council of Education will cause to be published in the Government *Gazette* the names of such as may have obtained Prizes, Scholarships, or Exhibitions, or whose names may have appeared in the "Honour List," together with the description or class of honour which may have been awarded to them.