SESS. II.—1897.
NEW ZEALAND.

EDUCATION:

TEACHERS' AND CIVIL SERVICE EXAMINATIONS.

[In continuation of E.–1A, 1896.]

Presented to both Houses of the General Assembly by Command of His Excellency.

The INSPECTOR-GENERAL of SCHOOLS to the Hon. the MINISTER of EDUCATION.

SIR,— Education Department, Wellington, 29th March, 1897.

I have the honour to report upon the annual examinations of candidates for teachers' certificates, and for admission to, or promotion in, the Civil Service. The examinations were held in January, between the 6th and 15th days of the month, at the thirteen towns which are the seats of Education Boards, and also at Whangarei, Thames, Tauranga, Whakatane, Gisborne, Westport, Oamaru, and Palmerston South.

The number of candidates was 1,311, made up as follows: For the Junior Civil Service examination, 446; for the Senior Civil Service examination, 101; for certificate examinations, 731; for drawing (pupil-teachers only), 33.

The expenses of the examinations amounted to £805 7s. 5d., and the fees paid by candidates to £1,004 17s. 6d. Printing and clerical work are not included in the account of expenses.

The results of the Senior Civil Service examination were made known on the 19th of February, the results of the Junior Civil Service examination on the 22nd, and those of the teachers' examinations on the 23rd of the same month.

Of the 101 Senior Civil Service candidates, one applied to be examined in shorthand only, but did not sit for the examination; two had already passed the examination, but wished to pass in a seventh subject for the purposes of the Barristers' General Knowledge examination, and one of these was successful; and 30 came up to complete examinations in which they had already been partially successful. Out of the 98 ordinary candidates, 55 passed the examination, three of them with distinction. (See *Gazette*, 25th February, 1897.)

The names of 298 of the Junior Civil Service candidates were published, in the order of marks, in the *Gazette* of the 25th February; the remaining 148 failed to reach the minimum required, which is one-third of the possible total.

Of the 33 pupil-teachers who availed themselves of the regulation which allows them to come up for one branch of drawing at a time, 27 satisfied the examiner.

At the teachers' examination, 1 was a candidate for Class C (University status being taken into account), 205 were candidates for the whole examination for Class D, and 134, having been credited with "partial success" for Class D, came up to complete their examination; 241 were candidates for the whole examination for Class E, and 150 came up to complete the examination for that class. Among these 731 candidates were 168 candidates who had already passed for Class E, and were seeking promotion to Class D; and of the remainder—563 in number—114 were teachers in the service of the Boards, 291 were pupil-teachers, and 53 were normal-school students in training; while 42 were persons who had ceased to be teachers, pupil-teachers, or normal students, and 63 had never sustained any such relation to the public schools.

Of the whole number of 731 candidates, 267 have "passed" (148 for D, and 119 for E), and 191 have achieved "partial success" (69 for D, and 122 for E), while 273 have failed to improve their status. Of these last, 73 have been added to the list of absolute failures, the rest of the 273 being either absent candidates or candidates who were unsuccessful in attempting to complete "partial success." The names removed from the "failure" list by this examination numbered 22, and, as 73 names have been added to it, the list is increased by 51 (from 689 to 740). This list contains the accumulation of nineteen years. As the result of the examination, 192 new certificates will be issued (1 for Class C, 72 for Class D, and 119 for Class E), and 75 certificates of Class E will be raised to Class D.

The following table exhibits some of these statistics, and shows besides that the normal students are again the most successful class of candidates:—

Status before Examination.	Number of Candidates.	Results of Examination.					
		Pass for D.	Pass for E.	Pass for E, and Partial Pass for D.	Partial Pass for D.	Partial Pass for E.	Total.
Passed before for E ..	168	75	...	...	30	...	105
Not passed before—							
Teachers	114	13*	25	7	4	7	56
Pupil-teachers ...	291	19	65	5	14	92	195
Normal students ...	53	31	...	4	11	5	51
Retired	42	4	8	2	2	6	22
Outside candidates ...	63	6	3	...	8	12	29
Totals ...	731	148	101	18	69	122	458

* Includes one for Class C.

The analysis of the results according to education districts is as follows :—

—		D Passes.	E Passes.	E Passes, with Partial Pass for D.	Partial Pass for D.	Partial Pass for E.
I. Candidates for promotion from E to D—168 :—						
Auckland	60	24	..	..	13	..
Taranaki	5	..	..	..	2	..
Wanganui	16	9	..	..	2	..
Wellington	17	8	..	..	3	..
Hawke's Bay	6	4	..	..	2	..
Marlborough	0	..	..	..	..	..
Nelson	7	4	..	..	1	..
Grey	2	..	..	..	1	..
Westland	3	2	..	..	..	..
North Canterbury	17	12	..	..	1	..
South Canterbury	12	5	..	..	4	..
Otago	7	2	..	..	..	..
Southland	16	5	..	..	1	..
II. Candidates that have not passed before—563 :—						
(*a.*) Teachers—114,—						
Auckland	16	1	3	..	1	2
Taranaki	6	..	3	..	..	..
Wanganui	18	2	6	1	1	2
Wellington	4	1	1	..	..	..
Hawke's Bay	6	..	1	..	..	..
Marlborough	5	..	..	1	1	1
Nelson	16	2*	4	..	1	1
Grey	10	1	2	..	..	..
Westland	4	..	1	1	..	1
North Canterbury	10	3	1	..	..	..
South Canterbury	8	2	1	2	..	..
Otago	..	..	..	..	..	..
Southland	11	1	2	2	..	..
(*b.*) Pupil-teachers—291,—						
Auckland	121	8	41	2	2	34
Taranaki	..	..	..	..	..	..
Wanganui	20	..	3	..	..	7
Wellington	46	1	4	..	3	14
Hawke's Bay	23	1	4	..	..	12
Marlborough	2	1	..	1	..	..
Nelson	16	2	1	..	..	5
Grey	6	..	2	..	..	1
Westland	6	..	..	2	..	2
North Canterbury	11	3	3	..	..	4
South Canterbury	11	1	1	..	2	5
Otago	6	..	..	..	4	1
Southland	23	2	6	..	3	8
(*c.*) Normal School—53,—						
Wellington	1	..	..	1	..	..
North Canterbury	29	16	..	1	7	4
Otago	22	14	..	2	4	1
Southland	1	1	..	..	..	..
(*d.*) Candidates that have retired from the service—42,—						
Auckland	5	..	2	..	..	..
Taranaki	2	..	1	..	..	1
Wanganui	..	..	..	..	..	..
Wellington	3	..	..	..	1	..
Hawke's Bay	2	..	..	..	..	..
Marlborough	1	..	..	..	..	1
Nelson	3	1	..	..	..	..
Grey	2	..	..	1	..	..
Westland	2	..	1	..	..	..

* Including 1, who gains Class C.

—		D Passes.	E Passes.	E Passes, with Partial Pass for D.	Partial Pass for D.	Partial Pass for E.
(*d.*) Candidates that have retired from the service—*continued.*						
North Canterbury	10	1	2	1	..	1
South Canterbury	5	..	1	..	..	2
Otago	6	1	1	..	1	..
Southland	1	1	..	..	..	..
(*e.*) Candidates that have not been in the service—63,—						
Auckland	18	..	1	..	2	3
Taranaki	1	..	..	..	..	1
Wanganui	1	..	..	..	..	..
Wellington	2	..	..	..	..	..
Hawke's Bay	0	..	..	..	..	..
Marlborough	0	..	..	..	..	..
Nelson	6	..	..	..	..	1
Grey	2	..	..	..	..	..
Westland	1	1	..	..	..	..
North Canterbury	8	2	1	..	..	1
South Canterbury	4	..	1	..	..	1
Otago	11	..	..	..	5	1
Southland	9	3	..	..	1	4

In many cases work done at the last matriculation examination of the New Zealand University was taken into account as if it had been done at the teachers' examination to which this report relates.

With this I send the list of passes and cases of partial success at the teachers' examination, and a set of the examination papers.

I have, &c.,
W. Jas. Habens.

EXAMINATION LISTS.

I.—Passed for Class C.

(University status being taken into account.)

Nelson—
Eves, Charles Arthur

Passed for Class D.

Auckland—
Ballantine, Agnes Jane
Browne, Edith Bernice
Carr, Eva Helen
Carse, Harry
Clarke, Frederic Arthur
Dunn, Florence Beatrice
Forde, Herbert Ernest
Hamilton, Alfred Gaspar
Harris, Richard John
Herlihy, Patrick
Johnston, Susanna
Jones, Ruth Branscombe
Jones, Thomas Augustus
Lambourne, Nelson Thomas
Law, Norman Heyworth Sanger
Lusk, Harold Butler
McGibbon, Helen Margaret Stuart
McNaughton, David William
Mill, John Chalmers
Moor, William James
Morison, Jessie
Perry, Arthur Mant
Phillips, John Stephens
Pocock, George Harry
Ponsford, Dora
Power, Ethel Augusta Wilson
Rice, Thomas Dominic
Taylor, Helena Mildred
Thomson, Albert Henry William
Upton, Constance Mabel
Walters, Ernest James
Walton, Robert Henry
Wily, Harry Herbert Daniel

Taranaki—
Hill, Reginald Walter

Wanganui—
Armstrong, Norman Graham
Holden, Claude
Jackson, Percy George
Mackay, Duncan Henry
Muir, William John Wilson
Nairn, James
Nairn, John Ralph
Purnell, George Proctor
Staffan, Mary McKay
Warne, Catherine Towler

Wellington—
Ballachey, Ernest Harold
Cooper, Emily Margaret
Craig, Maggie Helen
Feist, Adolph Monod
Fitchett, Jessie Hannah
Gregory, Frederick William
Guest, John Joseph
Mead, John Joseph
Ranwell, Annie Preston
Sanson, Herbert

Hawke's Bay—
Andersen, Ellen Andrea
Baker, Frances Elizabeth Eling
Brown, James Francis
McLennan, Duncan
Westoby, Margaret Robertha

Marlborough—
Williams, Rosalie Georgina

Nelson—
Bisley, Frederick Arthur
Coleman, Bernard Francis Peter
Hughes, Frances
Johnson, Bessie Florence
Livesey, Ernest Millington
Mabin, Blanche Miriam
Poole, William Elgar
Smith, Florence

Grey—
Bishop, Emma

Westland—
Moore, Mary Margaret
Potts, Wilhelmina Sarah
Sullivan, Mary Margaret

North Canterbury—
Amos, William Henry Neville
Arnott, David
Bonnington, Rosamond
Brown, John
Bussell, Kate Marie
Carpenter, Margaret Alice
Cutler, Thomas Edward
Edkins, Mary
Edwards, Alice
Flesher, Bertha Emily Louisa
Harvey, Matilda Elizabeth
Hills, Thomas
Hitchcox, Oney Elsie
Howard, Emily Charlotte
Hudson, Edward Varley
Kime, Henrietta
Leversedge, Margaret Jane
Lewis, Beatrice Mary
McGallan, Janet
McRae, Teresa

North Canterbury—*continued.*
Murphy, Annie
Newman, Mabel Maud
Newton, Kate Evelyn
Noble, Elizabeth Maudlin
O'Callaghan, Dora Sarah
Osborn, Alice Ellen
Reeve, Annie Louisa
Ritchie, Annie
Robson, Annie
Shirlaw, David McFedries
Simmons, Ellen
Smith, Rose Mabel
Taylor, Ada Margery
Turner, Annie Jane
Verran, Edith
Watson, Margaret Roger
Withell, Charles William

South Canterbury—
Black, Flora Lucretia
Cooke, Montague Percy
Fyfe, Evelyn
McCaskill, Donald
Meredith, Charles
Schmedes, Cornelius Frederick
Scott, Annie
Tulloch, Elizabeth

Otago—
Abel, William Fulton
Farnie, Grace Margaret
Greig, Violet Maud
Harlow, Wilhelmina
Hopcraft, Janet Law
Mackellar, Isabel Margaret
McLeod, Allanetta Pauline
Main, Catherine Paterson
Melville, John
Niven, James
Paul, Eliza Ferguson Mary Hume
Peters, Amelia Frances
Scott, Marjory Turnbull
Smith, Annie Lyall Grant
Thomson, Lillias Isabella
Trainor, Mary
White, Albert Humffrey

Southland—
Baird, Annie Agnes
Blue, Francis Ritchie
Brownlie, Robert
Gazzard, Thomas Edward
Gilfedder, Thomas Joseph
Haydon, Kate Florence
Hewlett, Henry Charles
McKenzie, Mary Sime Hunter
Meiklejohn, John

Southland—*continued.*
Perrin, Margaret Collier
Rout, Alice Bradford
Sutherland, Frederick Robert Hughes
Watson, Isabella Henderson

PASSED FOR CLASS E.

Auckland—
Ashman, Eva May
Banks, Ernest Jasper
Broadfoot, Bessie Euribe
Burns, Hector Kenneth
Butcher, Margaret
Carter, Hannah Edith
Cooper, Theodosia Margaret
Corbett, Robert John
Dean, William Ferrier
Downard, Elizabeth Charlotte Gower
Dunstan, Catherine
Emson, Adelaide
Eyes, Lily Antigone
Fraser, Mary
Graham, William George
Hardy, Florence Frances
Hawkes, Louisa Adelaide
Hodgson, Ada Blanche
Holder, Marian Constance
Hutchinson, Charlotte Susan
Lamb, Edith Isabella
Lambert, Marion Edith
Lane, Mary Jane
Lockington, Isabella
Macgregor, Alexander
McIlhone, Ethel Josephine
Miller, Alexander Tweedale Anderson
Moon, Mark Henry
Mullins, Francis James
Nutsford, Louisa Margaret
O'Meagher, Mazey Annie
Palmer, Gertrude
Penzholz, Augusta
Philips, Maud
Plant, Laura Victoria
Priestley, Maurice
Quaid, Margaret Ann
Roberts, Kate Eveline
Rodgers, Thomas
Scott, Kate Julia
Skelton, Marcus Noble
Stephenson, Edward William
Stewart, Jane
Stewart, Margaret
Sutton, James
Usher, Agnes
Wilson, Charles
Wilson, Estelle Rowlerson
Young, Margaret Catherine
Taranaki—
Irvine, Margaret
King, Clara Annie
Mynott, Laura Elizabeth
Reed, Laura
Wanganui—
Buchler, Arthur Owen
George, Ethel May
Hird, William Edward
McDonogh, Marian Hylton
McEwen, Agnes Henrietta Phœbe
Matheson, Peter
Shortall, Mary Ruth
Watt, Ivie Durie
Watts, Ada Louise
Watts, Eleanor
Wellington—
Birnie, Helen
Dempsey, Kate
Donald, Jane Margaret
Glasgow, Jane Thompson
Hardwick, Kate Adèle
Thompson, Hannah Gertrude
Hawke's Bay—
Barkwith, Elizabeth Emma
Gallien, Mabel Theresa
Halliday, George
Macdonald, Donald
Moore, Ella Mabel
Marlborough—
Brewer, Lottie Maria
Webb, James Samuel
Nelson—
Franklyn, Florence Agnes
Glen, Lillias Reid
Moore, Euphemia Jane
Salmond, Annie
Street, Samuel William
Grey—
Dixon, Grace
Malone, Michael
Skoglund, Wilhelmina Charlotta
Smith, Arabella
West, Annie Eliza
Westland—
Crowley, Honora May
McCarty, Catherine Mary
McIntosh, Annie
O'Brien, Margaret
Smith, Cecilia Kermick
North Canterbury—
Alexander, Gertrude Mabel
Deakin, Eleanor May
Dickinson, Myra Felicia
Hayman, Frederick James
McLauchlan, Mabel Jane Ross
McMeekan, Kate
McNeil, Christina
Wauchop, Elizabeth Lilian
Wilson, Myra Lyster
South Canterbury—
Hooper, Ethel Emma
Jones, Amy Ellen
McLeod, Janet
Ritchie, Annie Murray
Sibly, Clara Amelia Cullis
Sunaway, Edith Hester
Otago—
Brims, Blanche Dolina
Kay, Margaret
McKay, Jeannie McLean
Southland—
Adams, Elizabeth Anne
Joyce, Aline
Lea, Albert George
McKenzie, Donald
McKay, Mary Gillanders
McLean, Margaret
Meek, Robert Percy
Saunders, Jeannie Wilkie
Ward, Edward Harvey
Wilson, Elizabeth Martha

II.—OBTAINED "PARTIAL PASS" FOR CLASS D.

Auckland—
Alexandre, Elise Louisa
Bower, Eva
Braithwaite, James Henry
Brown, Sarah Elizabeth
Browne, Lilian Mabel
Campbell, Hugh John Joseph
Ewart, Edmund Oscar
Field, Alice Margaret
Jones, Sarah Grace
Jury, Ulia Alice Maud
Lockington, Isabella
Marsdon, James Nelson
Moon, Mark Henry
Perkins, Edward
Robinson, Elizabeth Alice
Sheppard, Albert Lewin
Thompson, Frances Ethel
Tidmarsh, Henry Herbert Collins
Trayes, Alfred Ernest
White, Caroline
Taranaki—
Gayne, Violet Emily
Tyrer, Florence Antony Ronald
Wanganui—
Clapham, George Spencer
Hird, William Edward
Ironmonger, Edwin Lovell
Lilly, James Osborn
Wellington—
Benzoni, Frances Eleanor Sophia
Connell, Frederick William
Duncan, Annie
Evans, Edith Mary
Glasgow, Jane Thompson
Jacobs, Phœbe
Manifold, Dorothy
Turkington, Samuel
Hawke's Bay—
Leslie, David Ernest
Sidebottom, Nathaniel Ernest
Marlborough—
Brewer, Lottie Maria
McGavin, Elizabeth Annie
Webb, James Samuel
Nelson—
Lander, Thomas
Malcolm, Arthur
Grey—
Dixon, Grace
Wickes, Arthur John
Westland—
Crowley, Honora May
McCarty, Catherine Mary
McIntosh, Annie
North Canterbury—
Bird, Charles
Chapman, Lucy
Dickinson, Myra Felicia
Kendall, Kate
Lockwood, Mabel Fanny
Perham, Theresa
Starkiss, Fanny
Stout, Robert
Trezise, Mabel
Wilson, Myra Lyster
South Canterbury—
Aimers, Amelia
Evans, Amy Elizabeth
Gore, William James Ramsay
Jones, Lily
Leslie, Annie
McCaskill, Marion
McLeod, Janet
Ritchie, Annie Murray
Otago—
Bowie, Jane Milne
Bringans, John
Campbell, Jessie
Cormack, Henrietta
Early, Marion Frances
Greaves, Alice
Hogg, Sarah Jane
Irwin, Emma
Kay, Margaret
Kennedy, Douglas William
McKay, Jeannie McLean
Murphy, Frank Gabriel
Murray, Florence
Percy, Mary
Tempero, Emma Caroline
West, Mary
Southland—
Dundas, Jessie Ann
Keith, Ida Eliza
Lind, Janet
McKenzie, Donald
Meek, Robert Percy
Pasley, Margaret Sabine
Ramsay, Williamina Allan

OBTAINED "PARTIAL PASS" FOR CLASS E.

Auckland—
Aubin, Lilian Annie
Barber, George
Booth, Alice Mary
Bowles, Susanna Kate
Braithwaite, Lily Harriett
Cahill, William John
Cameron, Helen
Carson, Margaret Ellen
Collins, Rosina Valentine
Crawford, Maud Marian
Driver, Maud Elizabeth
Evans, Jessie Violet
Farrell, Daisy Isobel Pennington
Floyd, Elizabeth Heriot
Fraser, Anne Beatrice
Garland, Susanna Mary
Gavey, Rose Langford
Gillibrand, Emma
Graham, Violet Frances Gwendoline
Green, Bertram Martin
Hawkes, Annie Eliza
Hoe, Dolina
Hosking, Blanche Beatrice
Jane, Annie
Kirkbride, Mary Grace
Lambert, Alberta Wynifred
Lowrie, William
McInness, Donald
Mackay, Edward Hugh
McKay, Lillian Gormhuile
Mainwaring, Emma
Meiklejohn, Lemuel Sydney Arnott
Parker, May
Piggot, Theodora Elizabeth
Plumley, Alice Grace
Smith, George Hugh
Thorpe, Harriet Daisy
Vos, Evelyn Constance
Walker, Spenceley

Taranaki—
Andrews, Alice May
Smith, Kate Elizabeth
Wanganui—
Black, Prudence Amelia
Cuningham, Catherine Jane
Jenkinson, Margaret Bridson
Lyall, George Alexander
Mowbray, Gertrude
Murdoch, James Macqueen
Scott, Mary, iii
Stevens, Minnie Howard
Thurston, Daniel Peter
Wellington—
Bird, Florence Rosina
Braithwaite, Lilian Bessie
Brunton, Helen Orr
Carter, Elsie
Collins, Florence Bertha
Gould, William Horace
Jacob, Margaret Hemment
Kean, Balfour
Mackay, Kate Maud
Mills, Hilda
Roberts, Florence Grace
Stevens, Winifred Laura
Toohill, Maria Harriette
Walton, Margaret Catherine
Hawke's Bay—
Cantle, Kathleen
Dugleby, Ethel Gertrude
George, Florence Rose
Grant, Annie Lawson
Lindsay, Rose Earl
McCutcheon, Eccles Alexander
McVay, Ella Muriel
Moore, Elizabeth
Robertson, Margaret Maud
Roythorne, Ellen Annie
Sadler, Mabel
Stephenson, Louisa Jane
Marlborough— [doline
Beauchamp, Laura Elizabeth Gwen-
Wilmot, David Henry
Nelson—
Colthart, Margaret Louisa
Cowles, Richard Kenneth
Lammas, Maud
Mackay, Jean Lindsay
Nalder, Rose Mary
Packard, Frances Minnie Baird
Page, May
Grey—
Roche, Edwina Marie Teresa
Westland—
Andrewes, Alfred Austin
Benjamin, Eva
Preston, Amanda Cecil
North Canterbury—
Bell, Henry
Chapman, Gertrude
Comer, Alice Emma
Corsbie, Edith Rosa Evans
Foster, Frances Estelle
Hewinson, Emma Witts
Hynes, Josephine
Manifold, Lucy
Pavitt, Marie Augusta
Sloan, Emily
South Canterbury—
Cormack, Elizabeth
Fleming, James John William
Harris, Thora Charlotte
Montgomery, Katherine Mary
Pringle, Marion Inglis
Pye, Annie Martha
Smith, Donald
Smith, Ellen
Otago—
Brownlee, Tanzie Hay
Drummey, Agnes Jerina
Ferguson, Catherine Ann Wilson
Southland—
Cameron, Jessie
Gibb, Robert
Macandrew, Elizabeth Ann Legge Fordyce
Macdonald, Alexandrina
McDonald, Christina
Macdonald, Sarah Mary Matilda
McKenzie, Helen
McKenzie, Hughina Josephine
McSherry, Henry
Meek, Ada Mary
Orr, Charlotte Elliott
Ridland, Christina

III.—Prizes.

Elementary Experimental Science—
Greig, Violet Maud, Otago, first prize
Brownlie, Robert, Southland, second prize
Kime, Henrietta, North Canterbury, second prize

[Note.—As the competitors for second place are equal, two second prizes of £3 are given instead of a second and a third prize.]

Drawing—
Ritchie, James, South Canterbury, first prize
Seager, Edith, Wellington, second prize
Brownlie, Robert, Southland, third prize

IV.—Special Mention.

Class D.

English—
Cormack, Henrietta, Otago
Kendall, Kate, North Canterbury
Lusk, Harold Butler, Auckland
McCaskill, Marion, South Canterbury
Shirlaw, David McFedries, North Canterbury
Smith, Florence, Nelson
Verran, Edith, North Canterbury
Wilson, Myra Lyster, North Canterbury
Arithmetic—
McIntosh, Annie, Westland
Shirlaw, David McFedries, North Canterbury
Geography—
Connell, Frederick William, Wellington
Tyrer, Florence Antony Ronald, Taranaki
Verran, Edith, North Canterbury
Walton, Robert Henry, Auckland
History—
Aimers, Amelia, South Canterbury
Bisley, Frederick Arthur, Nelson
Harvey, Matilda Elizabeth, North Canterbury
McNaughton, David William, Auckland
Osborn, Alice Ellen, North Canterbury
Ponsford, Dora, Auckland
Elementary Experimental Science—
Arnott, David, North Canterbury
Brownlee, Robert, Southland
Greig, Violet Maude, Otago
Herlihy, Patrick, Auckland
Kime, Henrietta, North Canterbury
Leversedge, Margaret Jane, North Canterbury
Peters, Amelia Frances, Otago
Trainor, Mary, Otago
Walton, Robert Henry, Auckland
Agriculture—
Evans, Amy Elizabeth, South Canterbury
Law, Norman Heyworth Sanger, Auckland
Mill, John Chalmers, Auckland
Ponsford, Dora, Auckland
Watson, Isabella Henderson, Southland
Algebra—
Kendall, Kate, North Canterbury
McCaskill, Marion, South Canterbury
McIntosh, Annie, Westland
Manifold, Dorothy, Wellington
Moor, William James, Auckland
Ponsford, Dora, Auckland
Williams, Rosalie Georgina, Marlborough
Euclid—
Cormack, Henrietta, Otago
Kennedy, Douglas William, Otago
Lusk, Harold Butler, Auckland
Shirlaw, David McFedries, North Canterbury
Walton, Robert Henry, Auckland
Chemistry—
Mead, John Joseph, Wellington
French—
Ranwell, Annie Preston, Wellington
Latin—
Shirlaw, David McFedries, North Canterbury

Class E.

English—
Armstrong, Norman Graham, Wanganui
Campbell, Jessie, Otago
Chapman, Gertrude, North Canterbury
Lane, Mary Jane, Auckland
Lockwood, Mabel Fanny, North Canterbury
McNeil, Christina, North Canterbury
Sibly, Clara Amelia Cullis, South Canterbury
Geography—
Brownlee, Tanzie Hay, Otago
Fleming, James John William, South Canterbury
Meiklejohn, Lemuel Sydney Arnott, Auckland
Elementary Science—
Cowles, Richard Kenneth, Nelson
Lyall, George Alexander, Wanganui
Agriculture—
Alexander, Gertrude Mabel, North Canterbury
Bowles, Susanna Kate, Auckland
Meiklejohn, Lemuel Sydney Arnott, Auckland
Murdoch, James Macqueen, Wanganui
Smith, George Hugh, Auckland
Wauchop, Elizabeth Lilian, North Canterbury
Domestic Economy and the Laws o Health—
Andrews, Alice May, Taranaki
Beresford, Mabel, Grey
Chapman, Gertrude, North Canterbury
Collins, Florence Bertha, Wellington
Dugleby, Ethel Gertrude, Hawke's Bay
Garland, Rachel Marion, Grey
Hooper, Ethel Emma, South Canterbury
Lane, Margaret Fanny, Auckland
McCarty, Catherine Mary, Westland
McKenney, Janie, Grey
McNeil, Christina, North Canterbury
Montgomery, Katherine Mary, South Canterbury
Packard, Frances Minnie Baird, Nelson
Plant, Laura Victoria, Auckland
Pringle, Marion Inglis, South Canterbury
Spiller, Minnie Geraldine, Hawke's Bay
Vos, Evelyn Constance, Auckland

Classes D and E.

School Management—
Buchler, Arthur Owen, Wanganui
Dugleby, Ethel Gertrude, Hawke's Bay
Kime, Henrietta, North Canterbury
Meek, Robert Percy, Southland
Mynott, Laura Elizabeth, Taranaki
Penzholz, Augusta, Auckland
Power, Ethel Augusta Wilson, Auckland
Walton, Robert Henry, Auckland
Drawing—
Blue, Francis Ritchie, Southland, geometrical
Brownlee, Robert, Southland, free-hand
Gore, William James Ramsay, South Canterbury, perspective
Hooper, Ethel Emma, South Canterbury, freehand
Lane, Margaret Fanny, Auckland, freehand
McCutcheon, Eccles Alexander, Hawke's Bay, model
McKenzie, Hughina Josephine, Southland, freehand
Parker, May, Auckland, freehand
Ritchie, James, South Canterbury, freehand, model, and perspective
Seager, Edith, Wellington, geometrical and perspective
Wells, Nora Letitia, Westland, free-hand

EXAMINATION PAPERS.

School Management and Art of Teaching.—For Classes D and E. Time allowed: 3 hours.

[Candidates should answer one question in each section, but not more than one.]

SECTION I.

Complete the accompanying section of a daily-attendance register, carrying out the totals, and calculating the averages as at the end of a quarter.

[For Register see next page.]

SECTION II.

Draw up a time-table for one of the following:—

(1.) The upper department of a country school, the department consisting of 35 pupils, in Class X., S6, S5, S4, S3, and the teacher in charge of it being sometimes assisted, in the more mechanical work, by a monitor from Class X.

(2.) A class-room, with 50 boys and girls in S2 and S3, under one teacher, unassisted.

(3.) An infant school, S1, P1, P2, P3, under mistress and a P.T. 2nd year.

SECTION III.

Write teaching notes for one of the following lessons, stating class, and time allowed for lesson, and giving special prominence to method, and to use made of blackboard.

(1.) On the function and classification of the several kinds of subordinate clauses in a complex sentence.

(2.) On the influence of locality on English manufactures.

(3.) On stocks (first lesson).

(4.) An object-lesson on colour.

(5.) On the Maoris.

SECTION IV.

1. Describe a reading-lesson, with a class of 50 boys and girls in S4, and state the time it would occupy.

2. What position of body, hand, and pen do you consider best for pupils in a writing-lesson? Give your reasons.

3. Draw up an outline syllabus of a suitable course of lessons on the growth of the British Empire during the last hundred years.

SECTION V.

1. What is the particular value, *as an educational instrument*, of each of the following subjects: Parsing, English history, arithmetic, writing, music?

2. Show the importance to the pupil of the neat and logical setting-out of solutions of problems in arithmetic.

3. What points of superiority are claimed for the kindergarten over other systems of infant training.

SECTION VI.

1. Show how undue severity of discipline operates in antagonism to the true purpose of the school.

2. "Habitual self-control is an essential element in the character of a strong teacher." Point out the truth of this statement.

3. If copying is rife in a class, wherein may both teacher and pupils be to blame for it? And how may the evil be checked?

Elementary Experimental Science.—For Class D. Time allowed: 3 hours.

1. The following sentences are taken from the authorised list of experiments for Class D:—

(*a.*) "Illustrate energy of motion and position by pendulum."

(*b.*) "Take specific gravity of body lighter than water."

(*c.*) "Charge gold-leaf electroscope by induction."

(*d.*) "Show production of solar spectrum."

Describe accurately how you would, in each case, carry out the instruction given.

2. How would you try to make clear to a class the meaning attached to the word "force"?

3. How is a sound-wave propagated? What experiments can you quote in support of your answer?

4. Give the outlines of what you consider a sufficient lesson on "burning."

5. How would you prepare a small quantity of hydrochloric acid? What experiments would you make in trying to illustrate its chief properties?

6. Explain the construction of a Bunsen's *bichromate* battery. Why is potassium bichromate added to the exciting liquid?

Year 189______ *Quarter ending* ______________________

No.	Admission No.	Name.	Age. Y.	Age. M.	Time since Admission. Y.	Time since Admission. M.	Standard last passed.	First Week. .... to .... M.	T.	W.	TH.	F.	Second Week. .... to .... M.	T.	W.	TH.	F.	Third Week. .... to .... M.	T.	W.	TH.	F.	Fourth Week. .... to .... M.	T.	W.	TH.	F.	Times present. 1st Week.	2nd "	3rd "	4th "	Total for Period.	Remarks.	No.
1					6	3		X	X	/	X	X	X	X	X	X	/	X	HOLIDAY.	X	X	X	X	X	X	X	X							1
2					6	2		X	X	X	X	X	X	X	X	X	/	X		X	X	/	X	X	X	X	X							2
3					5	4		X	X	/	X	X	/	X	X	X	X	X		X	X	X	X	X	X	X	X							3
4					3	5		X	X		X	X	X	\				X		X	X	X		X	X	X								4
5					2	8		X	X	X	X	X	X	X	X	/	X	X			X	X	X		/	X	X							5
6					2	8		X	X		X		X		X	X		X		/	X	X	X	X	X	X	X							6
7					1	6		X	X	X	X	X	X	X	X	X	X	X		X	X	X	Left											7
8						8		X	X		/	/	\		X		/	X					X		X	X	X							8
9						1		X	X	\	X	\		X	X	X	X	\		X	/	/	X	\		X	/							9
10													X	/	X	X	X	X		X	X		\	X	X	X	X							10
11													X	X	X	X	/	X		X	X	X	/	X	\	/								11
12																		X		X	\	X	X	X	X	X	X							12
13																		X		X	/		X	X	\	X								13
14																							X	X	X	/	X							14
15																																		15
16																																		16
17																																		17
18																																		18
19																																		19
20																																		20

Number of attendance .. .. { Morning						For working average enter (below) the numbers for the period, omitting half-days on which the attendance was less than half the roll-number.
{ Afternoon ..						
Total attendance						Attendances—
Number of times the school has been open						Times—
Average attendance						Working average }
Weekly roll-number					Average roll—	

Elementary Science.—For Class E. Time allowed: 3 hours.

1. How is force usually measured? Define acceleration. A hoop rolling down hill gains speed: explain why.
2. Upon what do ductility and malleability depend? How would you make a lead wire?
3. How are deep-sea operations conducted? On what principles are the diving-bell and the diving-dress designed?
4. A sounding tuning-fork held over the open end of a lamp-glass partly immersed in water emits the largest volume of sound when the glass is immersed to a certain definite depth. Explain this. What musical instruments depend upon resonance for the pitch of their notes?
5. What are the laws of reflection? Draw a diagram to show how an image is formed in a mirror. How is it that you can see your whole image in a mirror half your height?
6. What form of energy is latent heat? How would you find the latent heat of steam and of water?
7. How would you make a mariner's compass and a dipping-needle?
8. State what will happen when a current is sent through water, sulphate of copper, and chloride of gold, the three solutions being placed in series.
9. Give the names and formulæ of the oxides of nitrogen, and show how you would test for nitrous oxide.
10. Discuss fully the relations existing between plants and animals.

Domestic Economy and Laws of Health.—For Class E. Time allowed: 3 hours.

1. State the disadvantage of lack of cleanliness—first, in cooking utensils; second, in household arrangements. Explain the idea of trapping drains.
2. How would you ventilate a room? State the advantages and disadvantages of an open grate for this purpose. Make a sketch to show the course of the flame through a cooking-range.
3. It is commonly said that colonial people eat too much meat: what are your ideas on the subject? What are your ideas on tea-drinking? Can you give any reason why workmen so commonly take tea with their out-door meals?
4. How would you make a sponge cake? What is the use of beating the eggs so much? Explain fully the use of yeast in cooking.
5. Describe how you would grill a chop, boil a leg of mutton, and make beef tea; and give your reasons for the methods employed.
6. Describe vaccination: explain fully the theory of its action. Diseases are sometimes carried by its means. What would you do, abolish the system or use lymph from the calf?
7. Name the senses and the nerves connected with them, and draw a diagram representing a section of the eye.
8. Contrast the effects of smoking, of drinking, and of the use of opium.
9. What are your ideas as to the effects of cycling regarded as exercise? Describe the kind of costume you consider most suitable for cycling, and give your reasons.
10. It is said that in its many forms consumption is the cause of one-fourth of all the deaths that occur: what do you know of the disease, especially with respect to infection, heredity, and remedial measures?

Elementary Knowledge of Agriculture.—For Class D. Time allowed: 3 hours.

1. Contrast the leaves of monocotyledons and dicotyledons, and state the functional value of the petiole.
2. Describe the flower of the broom, and give an account of the fertilization of the ovule.
3. Describe evaporation. How would you show experimentally that air contains water?
4. What constituents of their food do plants obtain from the soil? How are these constituents taken up by the plant? How would you illustrate endosmose experimentally? What are films of precipitation?
5. Describe experiments to illustrate the chief properties of lime. Describe how you would proceed to apply lime in the caustic condition to the soil.
6. Give the chief compounds of phosphorus employed as manures, and state the especial value of each.
7. What are the chief agricultural compounds of nitrogen? How would you obtain nitric acid from "cubic nitre" (nitrate of soda) and ammonia from "sal ammoniac" (chloride of ammonia)?
8. Describe the changes that take place in the preparation of farm-yard manure. What procedure do you consider best to fix the nitrogen?
9. Describe and explain the importance of crop rotation. Give examples. What modifications would you make for light and heavy soils respectively?
10. What are the chief uses of clay in plant growth? What do you know of the double silicates of aluminium with other elements?

Elementary Knowledge of Agriculture.—For Class E. Time allowed: 3 hours.

1. Describe the leaf of a monocotyledonous plant, and give the functions of its several parts.
2. Name the principal parts of a flower, and state the function of the pollen.
3. What constituents of the plant are obtained from the air?
4. Describe the action of carbonic acid on soils.
5. What is the importance of lime in agriculture? How is it usually applied?
6. What is phosphorus? What is its use in agriculture? What substances used in farming contain it?
7. How does draining affect the character of a soil?
8. How would you prepare and deal with farm-yard manure to secure a maximum efficiency?
9. Of what importance is it that seed be good and clean?
10. Describe the life-history of any insect injurious to vegetation.

English Grammar and Composition.—For Class D. Time allowed: 3 hours.

[NOTICE.—All candidates are required to attempt the spelling and punctuation exercise].

1. Explain clearly what you mean by "tense," and give a complete account of the tenses of a fully conjugated English verb.
2. Discuss the use of the subjunctive mood in English.
3. Explain the grammatical construction of the italicised words in the following sentences:—
   (*a.*) Many a *time* have I played with him.
   (*b.*) I will accept nothing *less*.
   (*c.*) Come and see me next *week*.
   (*d.*) He was pitched out of doors *neck* and crop.
   (*e.*) Have you ever heard Patti *sing?*
   (*f.*) He is too clever *to make* such a mistake.
   (*g.*) The longer you stay *the worse* for you.
4. Explain the various uses of *but* in the following sentences:—
   (*a.*) The boy stood on the burning deck whence all *but* he had fled.
   (*b.*) My love she's *but* a lassie yet.
   (*c.*) I cannot *but* try.
   (*d.*) No man may take the man *but* he have authority from the sheriff.
   (*e.*) It shall go hard *but* we shall damage the theory.
   (*f.*) Ten to one *but* the police have got them.
   (*g.*) It never rains *but* it pours.
   (*h.*) He left not faction, *but* of that was left.
   (*i.*) They not only tell lies, *but* bad lies.
   (*k.*) Come, *but* that's drawing it rather strong.
   (*l.*) Not *but* what the picture has its darker side.
   (*m.*) Nay, *but* me no *buts;* I have set my heart upon it.
5. Punctuate the following, and put capital letters where they are required:—

At length the letters were disposed of excepting one which he reserved for a particular audience having locked the more confidential correspondence in a drawer mr. carker the manager rang his bell why do you answer it was his reception of his brother the messenger is out and i am the next was the submissive reply you are the next muttered the manager yes creditable to me there pointing to the heaps of opened letters he turned disdainfully away in his elbow-chair and broke the seal of that one which he held in his hand i am sorry to trouble you james said the brother gathering them up but oh you have something to say i knew that well mr. carker the manager did not raise his eyes or turn them on his brother but kept them on his letter though without opening it well he repeated sharply i am uneasy about harriet harriet who what harriet i know nobody of that name she is not well and has changed very much of late she changed very much a great many years ago replied the manager and that is all i have to say.

6. Point out and correct anything that you see wrong in the following passages:—
   (*a.*) Everybody's world is just what they would like to make it.
   (*b.*) He wanted somebody—whom it was did not matter.
   (*c.*) The moss-rose smells more sweetly than all the rest.
   (*d.*) Each felt for the other and of course for themselves.
   (*e.*) And shall hit on some plan to the nuisance abate.
   (*f.*) Please send me a copy of the Shakespeare Memorial, and for which I enclose eighteen postage stamps.
7. Point out the chief faults of style in the following passage, and rewrite it so as to avoid them:—

Monsieur Montrevil was a person utterly unknown to me, nor had I ever intercourse or correspondence with him; so that what I shall say of him cannot proceed from affection or prejudice, nor if I shall say anything for his vindication from those reproaches which he did, and does lie under, both with the English and Scottish nation, countenanced enough by the discountenance he received from the Cardinal after his return, when he was, after the first account he had given of his negociation, restrained from coming to the court, and forbid to remain in Paris, and lay under a formed, declared dislike till his death; which with grief of mind shortly ensued. But as it is no unusual hardheartedness in such chief ministers, to sacrifice such instruments, how innocent soever, to their own dark purposes, so it is probable, that temporary cloud would soon have vanished, and

that it was only cast over him, that he might be thereby secluded from the conversation of the English court; which must have been reasonably very inquisitive, and might thereby have discovered somewhat which the other Court was carefully to conceal: I say, if what I here set down of that transaction, shall appear some vindication of that gentleman from those imputations under which his memory remains blasted, it can be imputed only to the love of truth, which ought, in common honesty, to be preserved in history as the very soul of it, towards all persons who come to be mentioned in it; and since I have in my hands all the original letters which passed from him to the King, and the King's answers and directions thereupon, or such authentic copies thereof, as have been by myself examined with the originals, I take it to be a duty incumbent on me to clear him from any guilt with which his memory lies unjustly charged, and to make a candid interpretation of those actions, which appear to have resulted from ingenuity, and upright intentions, how unsuccessful soever.

8. Write an essay on one of the following subjects:—
   (*a.*) The Armenian persecution.
   (*b.*) The political outlook in New Zealand.
   (*c.*) Travel.
   (*d.*) Reading.
   (*e.*) Spring.
   (*f.*) Poetry.
9. As a test of spelling, write the words dictated by the Supervisor.

Spelling (Part of a Paper on English Grammar and Composition).—For Class D.

The Supervisor will be so good as to read over slowly and then dictate the following words:—

Solstitial, reredos, dilettante, chrysalis, surveillance, desuetude, reconnoitre, oriflamme, intaglio, ipecacuanha, vacillating, surcingle, ostracism, labyrinthine, schismatic, silhouette, ophicleide, tracheotomy, pageantry, sybarite, argillaceous, phylactery, empiric, subpœna, tocsin.

English Grammar and Composition.—For Class E, and for Junior Civil Service Time allowed: 3 hours.

[NOTICE TO CANDIDATES.—All candidates are required to attempt the spelling and the punctuation exercise].

1. Define *case*. Name the cases used in old English; and trace the history of the English possessive case.
2. Point out, with examples, the functions of the subjunctive mood in English.
3. Define the terms *sentence*, *clause*, and *phrase*. Classify (1) sentences, and (2) clauses; and give *one* example of each class.
4. What parts of speech and what classes of words in modern English are derived mainly from Anglo-Saxon? Illustrate your answer.
5. Explain and illustrate what is meant by *unity* in sentence-structure.
6. Rewrite the following sentences in correct English:—
   (1.) I only received it yesterday.
   (2.) Either of the three will do.
   (3.) He neither offended him or his brother.
   (4.) Finding him at home, it was decided not to go further.
   (5.) No writer would write a book, unless he thinks it will be read.
7. The following is a sentence analysed into its component parts. Recombine the parts into a sentence, and supply the proper connectives:—
   A. Colonel Mure said (principal clause).
   B. He would have surrendered at once (noun clause to A).
   C. He had been summoned (conditional clause to B).
   D. He thought (adversative clause to A).
   E. It was his duty to offer resistance (noun clause to D).
   F. He should be either attacked or summoned (time clause to E).
8. Write two paragraphs on *one* of the following subjects, attending carefully throughout to expression, punctuation, and neatness of form:—
   (1.) The general election.
   (2.) Nature and art.
   (3.) The postman's knock.
9. Punctuate the following passages; and put capitals where they are required:—
   (1.) the religio laici which borrows its title from the religio medici of browne is almost the only work of dryden that can be considered as a voluntary effusion
   (2.) dr johnsons chief works are the following rasselas the dictionary the lives of the poets and the vanity of human wishes
   (3.) samuel rogers undertook to ask sir philip francis whether he was the author of junius approaching the knight in a room full of people he said will you sir philip excuse my asking you a single question at your peril sir was the harsh and laconic answer the poet instantly retreated and said to his friends i know not whether he is junius but if he be he is certainly junius brutus

[Candidates are requested to write the punctuation exercise on a separate sheet of paper. No marks will be given for any point unless it is quite distinct.]

10. As a test of spelling, write the words dictated by the Supervisor.

[Candidates are requested to number the words, to write them in a column, and to use a separate sheet of paper for the spelling exercise. No marks will be given for any word that contains a doubtful letter.]

Spelling (Part of a Paper on English Grammar and Composition).—For Class E, and for Junior Civil Service.

The Supervisor will be so good as to read through and then slowly dictate the following words, afterwards reading the whole of them again to afford opportunity for correction:—

Paroxysm, gauze, ceiling, woollen, colossal, embarrassed, idiosyncrasy, schism, eclectic, hygiene, fugue, coquette, harassing, languor, hectic, weird, hybrid, reminiscences, sentient, spontaneity.

English (Paper I., Composition and Précis*).—For Senior Civil Service. Time allowed: 3 hours.*

1. Correct anything that you see wrong in the following sentences:—
   (*a.*) Having taken an apprentice, the shop will be kept open each day till 8 p.m.
   (*b.*) Would anybody in their senses think of doing that?
   (*c.*) He seldom or ever bestowed on John an encouraging word.
   (*d.*) And yet no one spoke to her nor disturbed her.
   (*e.*) It was a very different thing to say a thing than to do it.
   (*f.*) Nothing is so hard in the way of owning one's self wrong as to admit that we have been deceived.
   (*g.*) He is very particular as to who Mary associates with.
   (*h.*) He was as bad, if not worse, than his brother.
2. Write an essay on one of the following subjects:—
   (*a.*) The character of Tito Melema.
   (*b.*) Shakspere's treatment of the supernatural as exemplified in "The Tempest."
   (*c.*) Ambition.
   (*d.*) Heroism.
3. Make an abstract of the following correspondence:—

   [An abstract serves as an index, and should give the date of each letter, the names of the writer and the person addressed, and, in as few words as possible, the subject-matter of each letter.]

4. Draw up a *précis* of the same correspondence.

   [A *précis* is a brief and clear statement of what passed, not letter by letter, but in the form of a narrative. It should include everything material, and be expressed very clearly, and as briefly as is compatible with completeness and distinctness.]

No. 1.

Council of Foreign Bondholders, 17, Moorgate Street, London, E.C.,
12th July, 1892.

Sir,—

I have the honour to acknowledge the receipt of your letter of the 21st April last, and very much regret the decision come to by your Government.

I have now the honour to inform you that a committee has been formed to act in conjunction with this Council for the protection of the interests of the debenture-holders of the New Plymouth Harbour Board. The committee is constituted as follows: The Right Hon. Sir John Lubbock, Bart., M.P. (chairman), Mr. Walter Busby (vice-chairman), Mr. A. W. Ballance, Mr. Hyde Clarke, Mr. Gilbert Farie, Mr. Daniel de Pass, Mr. E. C. Schomberg, and General Sir Luther Vaughan, K.C.B.

The bondholders are, I believe, still prepared to accept a fair settlement of their claim, as suggested in my letter of the 2nd April, 1891.

I have, &c.,
John Lubbock, Chairman.

The Hon. J. Ballance,
Colonial Treasurer and Minister of Native Affairs, New Zealand.

No. 2.

Premier's Office, 7th September, 1892.

Sir,—

I have the honour to acknowledge the receipt of your letter of the 12th July last, No. 1126/92, informing me that a committee has been formed to act in conjunction with your Council for the protection of the interests of the debenture-holders of the New Plymouth Harbour Board, and stating your belief that the bondholders are still prepared to accept a fair settlement of their claim, as suggested in your letter of the 2nd April, 1891, and to inform you that your letter has been laid before Parliament.

I have, &c.,
R. J. Seddon,
Acting-Premier.

The Right Hon. Sir John Lubbock, Bart., M.P.,
Chairman, Council of Foreign Bondholders, 17, Moorgate Street, London, E.C.

No. 3.

Downing Street, 10th August, 1892.

My Lord,—

I have the honour to transmit to you, for communication to your Ministers, a copy of a letter from the Council of Foreign Bondholders respecting the debenture debt of the New Plymouth Harbour Board.

I have caused the Council to be informed in reply that the matter is not one in which I can interfere.

I have, &c.,
Knutsford.

Governor the Right Hon. the Earl of Glasgow, G.C.M.G, &c.

Enclosure in No. 3.

Council of Foreign Bondholders, 17, Moorgate Street, London, E.C.,
9th July, 1892.

My Lord,—

I have the honour, by direction of this Council, to inform you that a committee has been formed to act in conjunction with the Council for the protection of the interests of the debenture-holders of the New Plymouth Harbour Board. The following gentlemen have consented to serve: The Right Hon. Sir John Lubbock, Bart., M.P. (chairman), Sir Walter Busby (vice-chairman), Mr. A. W. Ballance, Mr. Hyde Clarke, Mr. Gilbert Farie, Mr. Daniel de Pass, Mr. E. C. Schomberg, and General Sir Luther Vaughan, K.C.B.

In order that your Lordship may be fully acquainted with the merits of the case, I have the honour to send you with this letter copies of correspondence which has passed between the Government of New Zealand and this Council, and I am desired to express the hope of the Council that your Lordship may be able to assist the bondholders in their efforts to obtain the redress they are entitled to at the hands of the New Zealand Government.

As explained in Sir John Lubbock's letter to Mr. Ballance of the 2nd April, 1891, the bondholders would be prepared to accept any fair arrangement by which the colonial Government assumed the responsibility for the loan, even though they had to sacrifice a portion of their interest.

I have, &c.,

The Right Hon. Lord Knutsford, G.C.M.G., &c. C. Cheary, Secretary.

No. 4.

Dear Mr. Ballance,— Mount Royal, Hawera, 18th February, 1893.

Re *New Plymouth Harbour Board.*

The bondholders time after time have made advances which, if responded to by your Government, would, I think, result in relieving the unfortunate ratepayers almost at once from the greater part of the heavy rate which those settlers within the Hawera Rating District are now compelled to pay, and that without asking the colony to contribute, and without any liability being cast upon it.

Now, without some arrangement is come to by the Government guaranteeing the bondholders, say, 4 per cent. until the term of the loan expires, the Board will have to pay 6 per cent. until that time. The arrears on the coupons will also continue to increase. On the 1st November, 1892, the arrears amounted to £9,200. To my mind, the reason the committee in London, through Sir John Lubbock and others, have again approached the Government is that a number of the bondholders are unwilling to surrender their bonds to the committee lest they will have to contribute in case of a lawsuit. They, therefore, would rather, in the absence of information which they cannot possibly possess, sell their bonds at a loss than hold them in their present unsatisfactory condition.

I understand that they are now quoted in London at 80 per cent.; and, as the arrears on the coupons of last November amount to, say, £7 2s. 6d. per cent. on the quotations, the unpaid coupons and parts of coupons are included, the sellers would only receive about £73 for each £100 bond; but if the bondholders get 4 per cent., with a Government guarantee, their securities would be marketable at par instead of £73, or an advance of £27 per cent. on the £100. I do not know how many bonds are held by those holders who have accepted the committee's proposals and how many by those who have declined them; but the fact that fresh advances have been made would indicate that not only the sellers, but that the majority of the holders, would at once accept a settlement on the lines indicated rather than carry on in their present unsatisfactory position.

If the bondholders were found to be ready to accept the 4 per cent. with a Government guarantee and an immediate payment of the coupons in arrear, an arrangement, I feel sure, could be made with the Harbour Board whereby the guarantee could be given without any liability whatever being incurred on behalf of the colony. The interest on the guaranteed bonds would then amount to £8,000. The Government could capitalise as much of the deferred-payment and perpetual-lease land necessary to make up the £9,200, leaving the balance payable quarterly to the Board as at present.

After the receipt of the proportion of the Land Fund which had not been capitalised the Board could legally impose a rate, not being more than ¾d. in the pound, that would cover the difference between the Land Fund and the £8,000 that was found necessary to provide. The net amount of the rate for this and next year is, approximately, £6,900 per annum, and, in my opinion, will never be less.

The rateable value of the land in the harbour rating district is 40 per cent. higher than previous current years, and I feel sure, from what is taking place, that the next valuation will be much higher than the present.

If your Government can see its way to open negotiations with the bondholders, the result of such an arrangement would be that, taking the Land Fund received by the Board during the year ending the 30th June last, £6,311, and deducting the small deficit which the capitalisation of about one-fourth of the revenue derived from the deferred-payment and perpetual-lease land already disposed of would entail, which at 5 per cent. would amount to £460, there would then be an income to the Board of almost £6,000 per annum from this source, if action was taken at once. The income for current years will realise more than £11,000, and leave a surplus on account of next year of about £3,000. Therefore, after the present year the rate could be reduced from ¾d. in the pound to less than ⅝d., and be further reduced in the near future, and eventually a total abolition of the rate would be brought about.

Now, the results to be obtained by an arrangement upon these lines of prudence and economy would be that the bondholders would be satisfied, and a matter that has given financial and other journals antagonistic to New Zealand an opportunity of injuring its credit would be satisfactorily settled and finally disposed of. Unless action is at once taken to approach the bondholders our opportunity will be lost, for the reason that the increase of the rate by the last valuation was 40 per cent. upon the previous one. With the increased rate and the Land Fund the Board will be able to meet their coupon in May next in full. This would give the bondholders renewed confidence in their securities, and so prevent their acceptance of the terms suggested. I am certain that if the Government made the overtures there would be few, if any, of the bondholders who would refuse to exchange their 6-per-cent. debentures for a guaranteed bond at 4 per cent. and payment in cash of the coupons in arrear at the 6 per cent. A potent inducement to many of the bondholders to accept terms is that they have invested trust funds in these bonds, and would be only too glad to seize the opportunity of obtaining bonds at a par rate, and so avoid any action being brought against them for a breach of trust.

It may be said by you that the Government giving a guarantee to the New Plymouth bondholders would open the door to the claims of other harbours that like treatment should be extended to them. No analogy whatever exists between the case of this Board and any other, as you know the endowments on which the New Plymouth Harbour Board raised the loan was administered by the present and past Governments, the Board having no voice whatever in the matter. The Government was really the Board's trustee, and is therefore responsible for the carrying-out of its trust. In all other cases the land endowments have been given to the Boards to deal with by themselves.

Hoping to receive your reply almost at once, as there is not a moment to lose,

I have, &c.,

Hon. J. Ballance, Wellington. F. McGuire.

No. 5.

Sir,— Premier's Office, Wellington, 24th March, 1893.

The Government have had under consideration your letter of the 18th ultimo, and in reply I have to inform you that they are unable to entertain the proposals contained therein, believing that to do so would be to take advantage of the ignorance of the bondholders as to the actual position of the Board. The financial operation, it seems to the Government, would therefore be of an objectionable character.

The Government have received with pleasure the intimation contained in your letter that the Harbour Board will shortly be in a position to redeem its credit by the payment of interest in full and the discharge of its obligations.

I have, &c.,

F. McGuire, Esq., M.H.R., Mount Royal, Hawera. J. Ballance.

No. 6.

Council of Foreign Bondholders, 17, Moorgate Street, London, E.C.,

Sir,— 23rd February, 1893.

I have the honour to enclose, for your information, a copy of two resolutions passed yesterday at a general meeting of holders of New Plymouth Harbour Board 6-per-cent. debentures, held at the offices of this Council.

The Committee, a list of whom I had the honour to send you in my letter of the 12th July last, has been strengthened by the addition of Mr. J. S. Scrimgeour.

I have, &c.,

The Hon. J. Ballance, John Lubbock, Chairman.
Colonial Treasurer and Minister of Native Affairs, New Zealand.

Enclosure in No. 6.

At a general meeting of holders of New Plymouth Harbour Board 6-per-cent. debentures, held at the offices of the Council of Foreign Bondholders, 17, Moorgate Street, London, on Wednesday, the 22nd February, 1893, it was resolved,—

1. That this meeting of holders of New Plymouth Harbour Board 6-per-cent. debentures hereby confirms the appointment of the Committee already constituted by the Council of Foreign Bondholders, and requests the Council, in conjunction with the Committee, to take such measures as they may deem desirable for the protection of the bondholders' interests.

2. That this general meeting calls on bondholders to deposit their bonds with the Council, against certificates of deposit, with authority to conclude arrangements for a settlement of their claims, subject to ratification at a general meeting of bondholders; and to provide for the expenses by an assessment not exceeding 2 per cent. on the face-value of the bonds deposited.

No. 7.

Sir,— Premier's Office, 14th April, 1893.

I have the honour to acknowledge the receipt of your letter of the 23rd February last, enclosing copies of resolutions passed on the 22nd idem at a general meeting of holders of New Plymouth Harbour Board debentures, and informing me that Mr. J. S. Scrimgeour had joined the Committee. Your letter will be laid before Parliament during the approaching session.

I have, &c.,

The Right Hon. Sir John Lubbock, Bart, M.P., J. Ballance.
Chairman, Council of Foreign Bondholders, 17, Moorgate Street, London, E.C.

English (Paper II., Literature and Books).—For Senior Civil Service. Time allowed: 3 hours.

1. Give some account of the plot of "The Tempest," quoting, if you can, what you consider the most striking passages.

2. Explain the following passages, mentioning the speaker of each:—

(*a.*) If he be not born to be hanged, our case is miserable.

(*b.*) O, a cherubin
Thou wast that did preserve me.

(*c.*) The still-vex'd Bermoothes.

(*d.*) There's nothing ill can dwell in such a temple.

(*e.*) Thou dost snore distinctly;
There's meaning in thy snores.

(*f.*) A very ancient and fish-like smell.

(*g.*) The isle is full of noises,
Sounds, and sweet airs that give delight, and hurt not.

(*h.*) Travellers ne'er did lie,
Though fools at home condemn 'em.

(*i.*) We are such stuff
As dreams are made on; and our little life
Is rounded with a sleep.

(*k.*) I will discase me, and myself present
As I was sometime Milan.

(*l.*) Now I want
Spirits to enforce, art to enchant.

3. What town is the scene, and what years of the Christian era the period, of the story of "Romola"? Give some account of the actual historical events that enter into its plot.

4. Give a brief account of the plot of "Romola," and mention what part is played in the story by Nello, Francesco Cei, Bratti Ferravecchi, Niccolò Goro, Monna Ghita, Maestro Tacco, Niccolò Ridolfi, Giannozzo Pucci, Monna Lisa.

5. Give some account of the character and work of Savonarola as depicted in "Romola."

6. Account for the great outburst of literature in the reign of Queen Elizabeth, and mention the chief Elizabethan dramatists and their works.

7. Name the authors of the following works, and give such a description of any two of them as to show that you have read them: "Euphues," Faerie Queene," "Every Man in his Humour," "Arcadia," "Scholemaster," "Steele Glass," "Laws of Ecclesiastical Polity," "Art of Poetrie," "Shepheardes Calendar," "Nosce Teipsum," "Jew of Malta."

Arithmetic.—For Class D. Time allowed: 3 hours.

1. Reduce to its simplest form $\frac{3\cdot064\dot{8}1\dot{4}}{5\cdot5-2\cdot8}-2\cdot\dot{1}42857+3\frac{5}{21}$.

2. Express 5oz. avoirdupois as the decimal of a pound troy.
If ·075 of a ton cost £61 12s., what is the cost of 1·875lb.?

3. A box without lid is made of lead, a substance which weighs 11·4 times as heavy as water: the box is everywhere 1in. thick, and its external dimensions are 5ft. 2in., 3ft. 6in., 2ft. 4in.; what is its weight, assuming that a cubic foot of water weighs 62½lb. avoirdupois?

4. A block of land in the form of a square contains 116,640 acres, and it is to be represented on a map drawn to the scale of an inch to the mile, what will be the length of the side of the square on the map?

5. A block of metal which contains 7 cubic feet is drawn out into wire 3 miles long: assuming that the section of the wire is everywhere a circle of the same area, and that the area of a circle is found by multiplying the square of the radius by $3\frac{1}{7}$, find the diameter of the wire.

6. A merchant makes four successive ventures, using each time all his capital: in the first he gains 5 per cent., in the second he gains 20 per cent., in the third he loses $14\frac{2}{7}$ per cent., and in the fourth he loses 10 per cent: calculate the ratio of his capital after his last venture to that at the beginning.

7. Find the discount on £170 18s. 5d., due fifty-two days hence, at 2½d. per £100 per day, simple interest.

8. What sum of money must be invested in the 4-per-cents. at 112 to give an income £320 3s., after paying 6d. in the pound income-tax?

9. If the discount on a sum of money due at the end of two years and a half be to its simple interest for the same period as 80:87, at what rate is the interest calculated? And if the discount and interest together amount to £46 5s. 5½d., what is the sum of money?

10. One thousand sovereigns weigh 256½oz., one thousand German 20-mark pieces weigh 7·962 kilogrammes, and an ounce = 3·1035 grammes: assuming that the gold in the two kinds of coins is of the same degree of fineness, find from these data the value, to the nearest pfennig, of an English sovereign in German money, it being given that there are 100 pfennigs in a mark.

11. If the squares of the times of revolution of the planets round the sun be proportional to the cubes of their distances from the sun, find the periods of revolution of Venus and Mars, their distances from the sun being expressed by ·723, 1·524, when the distance of the earth from the sun is unity.

12. A man borrowed a sum of money, and agreed to pay it off by three annual instalments of £500 each, the first payment being made a year after the sum is borrowed: reckoning that money is worth 5 per cent. compound interest, find the sum borrowed.

Arithmetic.—For Class E, and for Junior Civil Service. Time allowed: 3 hours.

1. What is meant by greatest common measure? In the centigrade, Fahrenheit, and Réaumur thermometers the melting-point of ice is marked 0°, 32°, and 0° respectively, and the boiling-point of water 100°, 212°, and 80°: state generally what temperatures can be expressed in integral numbers of degrees on all three scales at once.

2. What do you understand by least common multiple?

Find the least common multiple of a pound troy and a pound avoirdupois. Give the answer in both denominations.

3. What length of Brussels carpet $\frac{3}{4}$ yard wide is required for a room 33ft. 10in. long and 25ft. 10in. wide, without any transverse seam, the length of the pattern being 1ft. 6in.?

What will it cost, at 5s. 3d. a yard?

4. What principal does it take to yield £1 of yearly interest when invested in each of the following stocks: 5-per-cents, at 140; 6-per-cents, at $168\frac{1}{2}$; and 8-per-cents, at $223\frac{1}{2}$?

Express the answers in decimals of £1.

5. If a cubic foot of water weighed exactly 62·50lb., a half-pint would contain 17·28in., but it actually contains almost 17·33in: find a more correct value for the weight of a foot of water, to two places of decimals.

6. Half of a field is planted with early potatoes, 2ft. 9in. from row to row, and 2 links from set to set in the rows. The other half is planted with a later kind, 5 links from row to row, and 1ft. 6in. from set to set. If there are 4,000 more sets of the early kind than of the late, what is the area of the whole field?

7. What is the difference between theoretical and practical discount?

A bill for £840, due in three months, is discounted for £829 10s., the bank rate being 5 per cent.: what profit does the broker make on the transaction?

8. Coffee loses weight in roasting, so that a 60lb. bag of green coffee yields only 48lb. to 50lb. of roast: find the greatest and least values of 1lb. of raw coffee if the roast is sold for 2s. a pound, neglecting the cost of roasting.

9. Simplify—

$$\frac{5\frac{1}{3}\text{ of }\dfrac{1}{\dfrac{1}{2\frac{1}{4}}+1\frac{1}{3}}}{(4\frac{1}{5}+5\frac{1}{4})\div(4\frac{1}{4}+3\frac{2}{3})}$$

10. When the dollar is worth 4s. 3d., and the pound sterling is worth 25 francs 33 centimes, what sum of French money is equivalent to $1,600?

11. Calculate the square root of 6877·219041.

12. If a grocer mixes nine chests of one-and-tenpenny tea with one chest of three-shilling tea, and sells the mixture at a profit of 25 per cent., what is his retail price?

Arithmetic.—For Senior Civil Service. Time allowed: 3 hours.

1. Show why it is that if a number is an exact divisor of two other numbers it also divides exactly their sum or difference. Find the greatest common multiple and the least common multiple of 8001, 13335, and 18669.

2. Simplify $\dfrac{13(\frac{6}{13}-\frac{2}{7}\frac{5}{8})-21(\frac{1}{3}-\frac{1}{4})}{13(\frac{1}{3}+\frac{1}{7})+5(\frac{1}{2}+\frac{1}{3}+\frac{1}{6}+\frac{1}{7})}$; and find the value of $\dfrac{2\frac{2}{5}\text{ of }1\frac{5}{7}}{2\frac{2}{5}-1\frac{5}{7}}$ of $\cdot\dot{3}5\dot{7}1428\dot{5}$ of a ton $+\dfrac{1\cdot\dot{1}\dot{6}}{1\cdot\dot{1}\dot{6}}$ of $\frac{11}{16}$ of 1 ton 13cwt.

3. A litre contains 1,000 cubic centimetres, and a gallon contains 277·274 cubic inches: if 1ft. = 30·48 centimetres, express a pint as the decimal of a litre.

4. The hands of a watch are observed to come together at intervals of $65\frac{1}{2}$ minutes true time: find how much the watch gains or loses per day.

5. Find the value of 86 tons 17cwt. $24\frac{1}{2}$lb. of sugar at £1 6s. 8d. per hundredweight.

6. A cubical cistern contains 244 cubic feet 243 cubic inches: find the expense of lining its bottom and sides with lead, at 1s. 4d. per square foot.

7. A can do a piece of work in 5 days and B twice as much in 11 days: they begin to do it together, but after they have worked for 1 day B's place is taken by C, and the work is finished in $2\frac{1}{8}$ days more: in what time could C alone do the work?

8. If 40 lb. of gold be coined into 1,869 sovereigns, and a sovereign be worth 25·17 francs, find the weight of gold in a 20-franc piece.

9. Extract the cube root of $6+2\sqrt{5}$ to three decimal places.

10. What sum of money must be invested at 4 per cent. to amount in three years, at compound interest, to £7,030 8s.?

11. A dealer sold a horse at a price which would have brought him a profit of 25 per cent., but he was obliged to accept from the purchaser a composition of 13s. 4d. in the pound: how much per cent. did he lose?

12. A and B became partners in a business for a term of four years, contributing the capital in the proportion of 1 to 3 respectively, and it was agreed that A should receive 15 per cent. of the gross profits for his services as manager. At the end of two years B sold to A one-third of his share in the partnership, and at the end of three years he sold to A one-half of his remaining share. How should a gross profit of £3,560 be divided between the partners at the termination of the period of partnership?

Geography.—For Class D. Time allowed: 3 hours.

1. What motions has the earth? What effects are produced by these motions? What evidence have we in favour of them?
2. Why are degrees of latitude of nearly the same length all over the surface of the earth, whilst the lengths of degrees of longitude are subject to large variations? What conclusion do we draw from the fact that degrees of latitude are not everywhere of exactly the same length? Where are they longest?
3. Make a sketch of the course of the River Danube and its tributaries; show also the principal towns on their banks, and note anything for which each is celebrated.
4. Whereabouts in Australia are Albany, Townsville, Port Darwin, Bathurst, Ballarat, Fremantle, Toowoomba, Parramatta, Geelong, Rockhampton?
5. Write as full an account as you can of the river system of North America.
6. Enumerate the islands which are adjacent to the coast of Asia, beginning from the north, and state to what nation each belongs.
7. Whence does England draw her chief supplies of cotton, grain, tea, sugar, coffee, gold, silver, and lead?
8. What are the political divisions of South America, and their chief towns? Give as accurately as you can the position of each town mentioned.
9. Draw a map of Africa, and insert on it the following places: Johannesburg, Khartoum, Ismailia, Coomassie, Delagoa Bay, Lake Tanganyika, Cape Verde, Cape Bon, River Niger, River Limpopo, d'Urban, Suakin.

Geography.—For Class E, and for Junior Civil Service. Time allowed: 3 hours.

1. Draw a diagram to illustrate the changes of the seasons. Show the position of the earth relatively to the sun at each of the four seasons. In what portion of Europe is the climatic effect of the transition between the seasons most gradual?
2. Draw an outline map of Africa, showing the various settlements effected by Europeans, and the best defined of the Native States.
3. Enumerate the table-lands and the lowland plains of Asia.
4. Name the countries from which gold, zinc, and platinum are obtained.
5. Give the positions of the following capes: The Skaw, Roca, Matapan, Romania, Al Had, Baba, Guardafui, Agulhas, Charles, Prince of Wales, Parina.
6. Write notes showing the advantages for commercial purposes of the following ports: Hull, Liverpool, Glasgow, Belfast, Swansea, Odessa, Marseilles, Memel, New Orleans, San Francisco, Bombay, Sydney, Wellington.
7. Through what countries and islands does the equator pass? In what zone are these countries situated?
8. Give a description of the hot-springs district of the North Island, and the different routes by which it may be reached.
9. Give the names of the most important of the dependant Native states of India, and of the tributary Native states. Name three of their most important towns.
10. Write the names of eight Chinese towns, with notes as to their political or commercial importance.

History.—For Class D. Time allowed: 3 hours.

1. Relate the most important acts of King Charles and of the Parliament between the issue of the Grand Remonstrance and the Battle of Edgehill.
2. Give a summary of the events after the death of Cromwell which led to the Restoration.
3. What was the condition of the people, the agriculture, and the manufactures at the close of the Stuart period?
4. Trace the growth of French power in India, and its final overthrow.
5. When, and by whom, was Gibraltar gained for England? Describe (with date) the memorable siege of that place.
6. State the causes of the monetary crisis of 1797. How was it met; and with what result?
7. Write short notes on three of the following subjects: Icon Basilike, Navigation Act, Ship-money, Cabal Ministry, Letters of Junius, Corn-laws.
8. What Englishman do you consider has come nearest to the distinction of being the "foremost man of all the world" in his own day? Give reasons for your opinion.
9. Write what you know of the reigns of Athelstone and Harold II.
10. What do you know of Geoffrey Chaucer, Wickliffe, Lady Margaret Beaufort, Sir Thomas More?

History.—For Class E, and for Junior Civil Service. Time allowed: 3 hours.

1. What great battles were won by the English during the reign of Edward III.? State their consequences.
2. Under what circumstances was the Great Charter adopted? State its most important provisions.
3. State the provisions of the Corporation Act, the Test Act, and the Act of Uniformity. What were the results of their enforcement?
4. What do you know of the condition of the poorer classes in England in the time of William II., Elizabeth, and William IV.?

5. State the provisions of the Habeas Corpus Act. Under what conditions was it passed?
6. What part was taken by Halifax in the Great Revolution?
7. Name the greatest British general between 1799 and 1837. Give some account of his career, and state the results of his most important victories.
8. Write a brief essay on James II. and another on William III.
9. State the effects of the repeal of the corn-laws in Great Britain.

History.—For Senior Civil Service. Time allowed: 3 hours.

1. What peculiar difficulties beset William III. in forming a Ministry? What was the character of his first Ministry? Name four of the leading members of it.
2. What great constitutional change, in progress during the Stuart period, was completed on the accession of the House of Hanover?
3. Discuss Walpole's right to be considered a great finance Minister. Account for the prevalence of bribery at that period.
4. England has recently been accused of enriching herself in a great war, and "finally robbing her exhausted allies of the fruits of their victories by calmly going over to the enemy": to what action on the part of England does this refer? Show how far the charge may be justified, and to what extent it is without foundation.
5. Relate in detail Burgoyne's disasters, and Cornwallis's surrender at Yorktown.
6. What three great acts of injustice and cruelty was Warren Hastings charged with? Give the history of each of them.
7. Describe the industrial development of England in the last forty years of the 18th century.
8. Who were the leading members of the Ministry of All the Talents? What was their policy, their most useful measure, and the cause of their resignation?
9. What do you know of George Canning, Lord Castlereagh, Lord Wellesley, Lord Grey?

Latin.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

1. Decline, in the singular number only, *quivis homo; uterque consul; unum nomen; aes grave.*

How are adverbs usually formed—(1) from adjectives of the first and second declensions; (2) from adjectives of the third declension?

Give the comparatives and superlatives of *graviter; acriter; bene; male; prope.*

Give the parts of *veto; fallo; gaudeo; vincio; fundo; suadeo; aufero.*

2. Mention some verbs which govern the dative case. What is the Latin for "I am persuaded"?

How is motion to a place expressed in Latin—(1) in the case of common nouns, such as *urbs, insula, regio;* (2) in the case of proper names?

What are the so-called supines, and how are they used? Explain the formation of the ordinary future infinitive passive.

3. Translate into Latin:—

Cæsar was able to conquer his enemies, but he was not able to conquer envy.

My son, do not follow evil examples.

He says that he is sorry for his folly.

He fortified the camp that he might the more easily keep off the enemy.

Do you suppose that this great universe was made by chance?

The general was afraid that the troops would not be able to stand against the charge of the cavalry.

(NOTE.—Universe, *mundus;* to stand against, *sustinere.*)

4. Translate:—

De adventu Xerxis cum fama in Græciam esset perlata, Athenienses miserunt Delphos consultum quidnam facerent de rebus suis. Deliberantibus Pythia respondit ut moenibus ligneis se munirent. Id responsum quo valeret cum intelligeret nemo, Themistocles persuasit consilium esse Apollinis ut in naves se suaque conferrent; eum enim a deo significari murum ligneum. Tali consilio probato addunt ad superiores totidem naves triremes suaque omnia quæ moveri poterant partim Salamina, partim Troezena deportant: arcem sacerdotibus paucisque majoribus natu ad sacra procuranda tradunt, reliquum oppidum relinquunt.

French.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

1. Translate into English—

L'aimable ignorant prit alors la parole, et dit: Vous avez très bien remarqué, madame, que la grande fin de l'homme est de réussir dans la société: de bonne foi est-ce par les sciences qu'on obtient ce succès? S'est-on jamais avisé dans la bonne compagnie de parler de géométrie? Demande-t-on jamais à un honnête homme quel astre se lève aujourd'hui avec le soleil? S'informe-t-on à souper si Clodion le Chevelu passa la Rhin? Non, sans doute, s'écria la marquise de la Jeannotière, que ses charmes avaient initiée quelquefois dans le beau monde; et monsieur mon fils ne doit point éteindre son génie par l'étude de tous ces fatras. Mais enfin que lui apprendra-t-on? Car il est bon qu'un jeune seigneur puisse briller dans l'occasion, comme dit monsieur mon

mari : je me souviens d'avoir ouï dire à un abbé que la plus agréable des sciences était une chose dont j'ai oublié le nom, mais qui commence par un B. Par un B, madame? ne serait-ce pas la botanique? Non, ce n'était point de botanique qu'il me parlait; elle commencait, vous dis-je, par un B, et finissait par un on. Ah! j'entends, madame, c'est le blason: c'est à la vérité une science fort profonde, mais elle n'est plus à la mode depuis qu'on a perdu l'habitude de faire peindre ses armes aux portières de son carrosse; c'est la chose du monde la plus utile dans un État bien policé: d'ailleurs cette étude serait infinie; il n'y a point aujourd'hui de barbier qui n'ait ses armoiries; et vous savez que tout ce qui devient commun est peu fête.

2. Translate into French—

We may here remark, my dear child, that a little before he thus subdued Scotland, this same Edward the First had made conquest of Wales, that mountainous part of the island of Britain into which the Britons had retreated from the Saxons, and where, until the reign of this artful and ambitious prince, they had been able to maintain their independence.

3. Translate also—

Where are you, sir?—I am here.
What are you doing?—I am writing.
To whom do you write?—To my sister.
Where is she?—She is in England.
How long has she been there?—More than a year.
Will she come back soon to New Zealand?—Yes; she intends to be back in two months.
Pray give me paper, ink, and pens?—Here is what you ask for.

4. Correct the mistakes in the following sentences, and give your reasons for so doing:—

(*a.*) Une femme peut être aimable sans beauté, mais il est bien rare qu'elle la soit sans un esprit cultivé.
(*b.*) Le matin de la vie, comme le matin du jour, sont pleins de pureté et d'harmonie.
(*c.*) Ne vous informez pas ce que les méchants disent de vous.
(*d.*) La religion exige que nous sacrifions nos ressentiments.
(*e.*) L'Espagne s'honore d'avoir vu naître les deux Sénèques.
(*f.*) Des blancs-seings sont une arme perfide.
(*g.*) Les réponses des personnes distraites ne sont souvent que des coqs-à-l'âne.
(*h.*) Nos vaisseaux sont tous prêts, et le vent nous appèle.
(*i.*) Madame de Sévigné s'est rendu célèbre par le naturel et les grâces qu'elle a répandu dans son style.
(*j.*) Elle s'est vu renaître dans ce prince, qui fait vos plus chers délices et les nôtres.

5. Explain the peculiarities of the verbs ending in *cer*, *ger*, *ier*, *yer*, and *éer*, and those of the three verbs *bénir*, *fleurir*, and *haïr*.

6. Give the French for—

You had deceived yourselves (se tromper).
I would not have fallen (tomber).
You never speak (parler).
Let us make haste (se dépêcher).
We will warm (chauffer).

7. Distinguish between—*le bal* and *la balle*, *le but* and *la butte*, *le capital* and *la capitale*, *le coup* and *la coupe*, *le goût* and *la goutte*, *le mal* and *la malle*, *le tas* and *la tasse*, *le ton* and *la tonne*, *un couple* and *une couple*, *un pair* and *une paire*.

8. Write down the third person singular of the present and preterite indicative of *boire*, *joindre*, *se taire*, *devoir*, *vivre*, *rire*, *faire*, *cuire*, *falloir*, *venir*.

9. Give the French for—He and I. My daughters or his. She who. Is that for me? His sister and mine. Your father and mother. King Charles the Seventh. Pope Sextus the Fifth. Two halves make one whole. One-third of his income.

German.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

1. Mention some half-dozen adjectives which do not modify *a*, *o*, or *u* in their comparative and superlative.

2. Decline in full (singular and plural): *eine schöne Gesichte*, *mein lieber Freund*, *das kleine Dorf*.

3. Give the meaning, gender, and plural, of *Strahl*, *Rand*, *Zahl*, *Trübsal*, *Stachel*.

4. Translate: vain of; glad of; jealous of; polite to; proud of.

5. Form abstract nouns from: *gut*, *hoch*, *schön*, *eitel*, *arm*.

6. Translate: *der Band*, *das Band*, *der Erbe*, *das Erbe*, *der Hut*, *die Hut*, *der See*, *die See*, *der Thor*, *das Thor*.

7. What words designating females are not gramatically feminine in German?

8. Give the first person singular of each tense of the verb *wegnehmen*.

9. Give in full the present indicative, the present subjunctive, the imperfect indicative, the imperfect subjunctive, and the past participle of *helfen*.

10. Translate: *At what* did you work all day? *What* are you doing? *What* a man! *What!* are you still in bed? *What* did you do that for?

11. Translate: (*a.*) Where are you going to this afternoon. (*b.*) I am going to the post-office at half-past two to post some letters for my wife. (*c.*) At what o'clock will you come home again? (*d.*) I cannot tell you, as I have a great deal of business to do in town. (*e.*) Take your umbrella with you, as I am sure it is going to rain. (*f.*) If it rains I shall come back by the five o'clock train. (*g.*) Will you go to the library for me, and get me some interesting book? (*h.*) What books

do you prefer reading? (*i.*) Travels, good novels, or the biography of some celebrated person. (*j.*) There is no necessity for you to get these books from the library, as I will lend you any of mine, and I have a large collection of all kinds of works. (*k.*) You are very kind; I accept your offer with much pleasure, and will call the day after to-morrow to select what I want for the present.

Translate into English:—

THE MONKEY WITH THE WATCH.

Ein Affe fand einst eine Taschenuhr,
Die band er sich mit einer Schnur
Fest um den Leib. Darauf besieht er sich und spricht:
"Wo fehlt's doch dieser Uhr? denn richtig geht sie nicht."
Er macht sie auf und stellet sie zurücke;
Doch in dem andern Augenblicke
Rückt er sie wieder vor:
Jetzt meistert er am Zifferblättchen,
Hält sie ein wenig an das Ohr
Und spricht: "der Schlag ist falsch!" nimmt noch einmal sie vor
Und künstelt an dem Kettchen,
Stösst in die Räderchen; und kurz, er rückt und dreht
So lange, bis sie stille steht.
Es ging ihm, wie es jedem geht,
Der etwas meistern will, wovon er nichts versteht.

Also—

THE TWO GOATS.

Zwei Ziegen begegneten einander auf einem schmalen Stege, der über einen tiefen reissenden Waldstrom führte; die eine wollte herüber, die andere hinüber.

"Geh mir aus dem Wege!" sagte die eine.

"Das wäre mir schön," rief die andere. "Geh du zurück und lass mich hinüber; ich war zuerst auf der Brücke."

"Was fällt dir ein?" versetzte die erste; "ich bin viel älter als du, und sollte dir weichen? Nimmermehr!"

Beide bestanden hartnäckiger darauf, dass sie einander nachgeben wollten; jede wollte zuerst hinüber, und so kam es vom Zanke zum Streite und zu Thätlichkeiten. Sie hielten ihre Hörner vorwärts und rannten zornig gegeneinander. Von dem heftigen Stosse verloren aber beide das Gleichgewicht; sie stürzten mit einander über den schmalen Steg hinab in den reissenden Waldstrom, aus welchem sie sich nur mit Mühe ans Ufer retteten.

Algebra.—For Class D, and for Junior Civil Service. Time allowed: 3 hours.

1. If $a=2$, $b=3$, $c=4$, find the values of—
   (1.) $\dfrac{b^2+c^2-a^2}{4b^2+c^2+a^2}$; (2.) $\sqrt{\dfrac{a+b+c}{a+b-c}}$.
2. Add together $2x^3+3x^2-4x+1$, x^3+5x^2+4x-3, $3x^3-3x^2+3x+5$ and $1+x-x^3-2x^3$.
3. Multiply the result obtained in the last question by $\frac{1}{4}x^3+\frac{1}{4}x^2-\frac{1}{4}x-\frac{1}{4}$.
4. Divide $x^6+2x^5+x^4-x^2-2x-1$ by x^3-x^2+x-1.
5. Find the highest common divisor of $15x^4-2x^3+x^2-6x-8$ and $5x^4+16x^3+17x^2+14x+8$.
6. Find the lowest common multiple of $5x^2-x-4$, $3x^2-x-2$ and $15x^2+22x+8$.
7. Simplify—
   (1.) $\dfrac{15x^4-2x^3+x^2-6x-8}{5x^4+6x^3-5x^2+2x-8}$;
   (2.) $\dfrac{x+1}{5x^2-x-4}+\dfrac{2-x}{3x^2-x-2}+\dfrac{2x-9}{15x^2+22x+8}$.
8. Solve the equations—
   (1.) $\dfrac{5x+1}{6}+\dfrac{6x+1}{7}+\dfrac{7x+1}{8}=3$;
   (2.) $\dfrac{7x+1}{5x+14}=\dfrac{7x-9}{5x-2}$;
   (3.) $\begin{cases}5x+3y=11.\\7x+5y=17.\end{cases}$
9. Simplify—
   (1.) $\dfrac{x^2-3x+2}{x^2+3x+2}\times\dfrac{x^2+4x+3}{x^2-5x+6}\times\dfrac{x^2-x-6}{x^2+2x-3}$;
   (2.) $\left\{\dfrac{x+2}{x-2}+\dfrac{x-2}{x+2}-2\right\}\div\left\{\dfrac{1}{x-2}+\dfrac{1}{x+2}+\dfrac{x}{4-x^2}\right\}$.
10. At the Teacher's Examination, in a certain year, 114 candidates altogether passed for E, consisting of teachers, pupil-teachers, and irregular candidates. The number of teachers exceeded that of the irregular candidates by unity; the number of pupil-teachers was half the sum of the number of irregular candidates and six times the number of teachers: how many were there of each class?

Algebra.—For Senior Civil Service. Time allowed: 3 hours.

1. If $a = 1$, $b = 2$, $c = 3$, find the values of—

(1.) $a^3 + b^3 - c^3 + 3abc$;

(2.) $\dfrac{\sqrt[3]{a^2 + b^2 + \frac{1}{3}c^2}}{\sqrt[5]{a^2 + 9b^2 + 3c^2}} + \dfrac{\sqrt[7]{a3 + 7b^3 + c^3 - 3}}{\sqrt[8]{8a^3 + 9b^3 + 240c^3 + 1}}$.

2. State the rule of signs in multiplication. Prove that the smallest numerical value of $x + \frac{1}{x}$ is 2.

3. Multiply $5x^3 + 4x^2 + 3x + 4$ by $5x^3 - 4x^2 + 3x - 4$; and divide the product by $5x^2 + x + 4$.

4. Define the highest common divisor of two algebraical expressions. Find the highest common divisor of $5x^3 + 4x^2 + 3x + 4$ and $25x^4 + 39x^2 + 16$.

5. Find the lowest common multiple of the expressions given in the last two questions.

6. Define a fraction. State what must be the meaning attached to the multiplication of one fraction by another in order that $\frac{a}{b} \times \frac{c}{d}$ may equal $\frac{ac}{bd}$.

7. Simplify:—

(1.) $\dfrac{5x^3 + 4x^2 + 3x + 4}{25x^4 + 39x^2 + 16}$.

(2.) $\left\{\dfrac{3x-2}{3x+2} + \dfrac{3x+2}{3x-2} + \dfrac{8}{4-9x^2}\right\} \div \left\{\dfrac{3x+2}{3x-2} - \dfrac{3x-2}{3x+2}\right\}$.

(3.) $\left(a - \dfrac{x^2 - ab}{a-b}\right)\left(b + \dfrac{x^2 - ab}{a-b}\right) + \left(\dfrac{x^2 - ab}{a-b}\right)^2$.

8. State the axioms which are used in the solution of a simple equation.

Solve the equation—

$$\frac{3x+2}{5} + \frac{7x+4}{11} = \frac{8x+5}{13} + \frac{7x+3}{10},$$

pointing out at each step the axiom employed.

9. Solve the equations:—

(1.) $\dfrac{ax+b}{cx+d} = \dfrac{ax+p}{cx+q}$.

(2.) $\dfrac{16-x}{2} + \dfrac{(x-8)^2}{2(x-4)} + \dfrac{12}{4-x} = 0$.

(3.) $\dfrac{1}{1 + \dfrac{1}{x + \frac{1}{8}}} = \dfrac{17}{25}$.

10. Find the square root of $25x^4 + 10x^3 + 41x^2 + 8x + 16$. Show that your process *proves* that the square of the result is equal to the original expression.

11. A certain quantity of carpet is required to cover the floor of a room: if the width of the room were 2ft. less, and the length 1ft. more, 4 yards less of carpet would be required: if the room were 2ft. wider and 4ft. longer, it would take 20 yards more than it actually does: the width of the carpet being 2ft., find the length and breadth of the room.

12. At a certain post-office the total postage for the mail, consisting of local letters which are charged 1d., general letters charged 2d., and letter-cards at 1½d., is £10: if the numbers of local letters and letter-cards were interchanged the total sum would be £9 15s. 10d.; while if, the number altogether remaining the same, each letter and letter-card had cost 2d. the cost would have been £10 16s. 8d.: find the number of each.

Euclid.—For Class D, and for Junior Civil Service. Time allowed: 3 hours.

1. Show that if two triangles have two sides of the one equal to two sides of the other, each to each, and have also the angles contained by those sides equal, then the triangles are equal in every respect. Show that the line that bisects the vertical angle of an isosceles triangle bisects the base at right angles.

2. Show that if two straight lines intersect one another the opposite angles are equal. What is the converse of this?

3. Show that if two lines be drawn to a point within a triangle from the extremities of its base their sum is less than the sum of the remaining sides, but they contain a greater angle.

4. State Euclid's axiom respecting parallel straight lines, and enunciate the proposition which Euclid establishes by the aid of this axiom. Show that straight lines which are parallel to the same straight line are parallel to one another.

5. Show that if two equal triangles be upon the same base the line joining their vertices is parallel to the base if the triangles are on the same side of it, and is bisected by the base if they are upon opposite sides of it.

6. Show that in a right-angled triangle the square on the hypotenuse is equal to the sum of the squares on the other two sides.

7. Enunciate the first three propositions of Book II., and prove one of them.

8. Show how to divide a given finite line into two segments such that the rectangle contained by the whole line and one segment may be equal to the square on the other segment.

9. If a line AB is divided in C so that the square on AC is twice that on BC, prove that the sum of the squares on AB, BC is twice the rectangle contained by AB, AC.

Euclid Books (I.–IV.).—For Senior Civil Service: Time allowed: 3 hours.

1. Explain the terms *axiom, theorem, hypothesis, corollary.* Distinguish between a *direct* and an *indirect* demonstration, and between a *converse* and a *contrary* proposition.

2. If a parallelogram and a triangle be on the same base and between the same parallels, the parallelogram shall be double of the triangle.

Two triangles are formed by drawing lines from the extremities of two opposite sides of a parallelogram to any point without it: show that half the parallelogram is equal to the sum or difference of the two triangles according to the position of the point.

3. On a given straight line to describe a parallelogram which shall be equal to a given triangle, and have one of its angles equal to a given rectilineal angle.

4. If a straight line be divided into two equal and also into two unequal parts, the squares on the two unequal parts are together double of the square on half the line and of the square on the line between the points of section.

5. To describe a square that shall be equal to a given rectilineal figure.

Show how to describe a rectangle that shall be equal to a given square, and shall have one of its sides equal to a given straight line.

6. If one circle touch another internally at any point, the straight line which joins their centres being produced shall pass through that point.

If through the point of contact any two straight lines be drawn cutting the circles, show that the chords of the intercepted arcs will be parallel to one another.

7. If from any point without a circle two straight lines be drawn, one of which cuts the circle and the other touches it, the rectangle contained by the whole line which cuts the circle and the part of it without the circle shall be equal to the square on the line which touches it.

8. Two equal circles touch each other externally, and through the point of contact chords are drawn, one to each circle, at right angles to one other: show that the straight line joining the other extremities of these chords is equal and parallel to the straight line joining the centres of the circles.

9. In a given circle to inscribe a triangle equiangular to a given triangle.

If a triangle be inscribed in a circle, the sum of the angles in the three segments exterior to the triangle will be equal to four right angles.

10. To inscribe a regular pentagon in a given circle.

Show that the lines joining the angular points of a regular pentagon are parallel to sides of the pentagon.

Mechanics.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

1. Define *velocity, acceleration, mass, force, energy, power.* In what units are they respectively measured?

2. Explain what is meant by the *composition* and *resolution* of velocities.

A stone being thrown horizontally from a train at right angles to the rails, its actual course makes an angle of 60° with the rails, and its actual velocity is 80ft. per second, find the speed of the train.

3. Enunciate Newton's laws of motion.

A force equal to the weight of 1lb. acts upon a mass of 2oz., find the acceleration and the momentum generated in two minutes.

4. A balloon is at a height of 2,000ft., and is ascending vertically, with a velocity of 200ft. per second, when a stone is dropped from it: find the time that elapses before the stone reaches the ground, and the velocity which it acquires, leaving out of account the resistance of the air.

5. When three forces acting at a point are in equilibrium, show that they are proportional each to the sine of the angle between the other two.

Forces of 12lb., 12lb., and 20lb. act at a point, and are inclined to one another at angles of 120°: find their resultant.

6. A uniform bar, 6ft. in length, has a weight of 20lb. suspended at one end and a weight of 30lb. at the other end: where must an additional weight of 40lb. be suspended in order that the bar may balance about its middle point?

7. Find the relation of the power to the weight in the inclined plane, neglecting friction.

A horizontal force of 60lb. supports a weight on an inclined plane 26ft. in length and 10ft. in height: find the weight and the pressure on the plane.

8. Find the conditions of equilibrium of a floating body.

The specific gravity of lead is 11·5 and that of cork is 0·25: find the greatest weight of lead which can be floated in water by being attached to half a cubic foot of cork.

9. What is meant by the *whole pressure* of a liquid on a surface? Is there any case in which the *whole pressure* is equal to the *resultant pressure?*

The water in a dock rises to the height of 16ft. against a gate, the breadth of which 28ft.: find the pressure upon the gate in tons.

10. Describe the common pump and the condensing syringe.

Physics.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

1. State the law of the expansion of a gas by heat, supposing its pressure to remain constant.

A gas occupies 1,200 cubic inches at the temperature of −13° C., what volume will it occupy at the temperature of 52° C. under the same pressure?

2. Describe Hope's experiment for determining the temperature of maximum density in water.

3. Give full explanations of the following terms: *Unit of heat, specific heat, latent heat, radiant heat, absorption of heat, convection of heat.*

4. Steam at 100° C. is led into 300 grammes of water at 0° C., and when the water has risen 24½° C. in temperature it is found to have gained 12 grammes in weight: what value does this give for the latent heat of steam?

5. What is meant by a "musical interval"? What names are given to the intervals between C and E and between C and G on the diatonic scale? If the frequency of C is 260, what are the frequencies of E and G?

6. Draw diagrams illustrating the formation of the image when an object is placed in front of a concave mirror.

An object 3in. high is placed in front of a convex mirror at the distance of 15in.: if the focal length of the mirror is 12in., find the position and height of the image.

7. What is the law of the variation of luminous intensity with respect to distance? How would you verify this law by means of a photometer?

8. Give descriptions of an *electrophorus*, an *electroscope*, a *galvanometer*, and a *voltameter*.

9. Mention some different methods of magnetizing a steel bar. What properties does the bar thereby acquire?

10. State the law of electrical resistance in a uniform wire. What is the practical unit of resistance called, and how is it defined?

A glow lamp takes a current of 0·8 ampere when the electro-motive force between its terminals is 100 volts: what is the resistance of the lamp?

Chemistry.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

1. Given nitric acid and ammonia, explain—showing the equations—how you would make nitrous oxide.

2. Given manganese dioxide, common salt, common saltpetre, sulphuric acid, how would you make the following?—

(*a.*) Chlorine.
(*b.*) Hydrochloric acid.
(*c.*) Nitric acid.
(*d.*) Aqua regia.

Give the equations, and sketch the apparatus required in each case.

3. How would you determine whether a given mixture of various gases contains free oxygen?

4. Describe an experiment to show that *charcoal, plumbago,* and *diamond* are different forms of the same element.

5. Show by equations the chemical changes that take place when the following substances burn in oxygen: (*a*) Hydrogen; (*b*) sulphuretted hydrogen; (*c*) sulphur; (*d*) methane (marsh-gas); (*e*) iron; (*f*) coal; (*g*) phosphorus; (*h*) coal-gas.

6. Explain—giving the equations and stating the conditions—how hydrogen gas can be made and collected from—(*a*) Water; (*b*) sulphuric acid; (*c*) hydrochloric acid.

7. Explain clearly how the composition of the atmospheric air is modified by—(*a*) Living animals; (*b*) living plants; (*c*) the burning of fires.

8. How many grammes of pure carbonate of lime are required to yield 1,000 litres of carbon dioxide gas, taking 0·5 litre as the volume of 1 gramme of CO_2 and 40 as the atomic weight of calcium?

9. Describe experiments to show the chief properties of chlorine.

Biology.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

N.B.—Candidates are requested to answer questions in one subject only. All answers should be illustrated, as far as possible, by diagrams.

Animal Physiology.

1. Describe the composition and functions of blood.
2. State what you know of the structure and functions of the spinal cord.
3. Name and classify those food-substances which are necessary for the diet of a human being.
4. Describe fully the structure of the skin in man.
5. Name and describe the bones of the limbs in man.
6. Describe the structure of the human eye.
7. Describe the structure and arrangement of the human teeth.
8. What is digestion? Describe the structure and functions of the various glandular organs which take part therein.

Botany.

1. Give the distinguishing characters of the following natural orders, and mention examples of each: *Compositæ, Primulaceæ, Liliaceæ, Cruciferæ.*
2. Draw diagrams to illustrate the typical structure of the flower in monocotyledons and dicotyledons respectively.

3. What is a tissue? Describe the following forms of vegetable tissue: *Epidermis, parenchyma, sclerenchyma, sieve-tubes, spiral vessels.*
4. State what you know concerning chlorophyll.
5. Describe the principal different kinds of ovary.
6. Does a plant respire? If so, how and why?
7. State what you know concerning transpiration.
8. Name and classify the principal forms assumed by foliage leaves. Distinguish between a leaf, a phyllode, and a phylloclade.

Shorthand (Senior).—For Senior Civil Service. Time allowed: 3 hours.

INSTRUCTIONS TO SUPERVISORS.

1. Inform candidates before the time for taking up this subject that they may use pen or pencil as they please for taking notes, which should be written on ruled paper, but that they must transcribe those notes into longhand with pen and ink.
2. Inform candidates that when once you have commenced to dictate you cannot stop until the passage is finished.
3. Dictate the passages at the following rates of speed:—
   (*a.*) 80 words per minute.
   (*b.*) 120 " "
   (*c.*) 150 " "

N.B.—It will be well to practise reading these aloud some time beforehand, looking at a watch or clock, so as to accustom yourself to reading at the exact rate indicated. The matter to be read is marked off into sections, each of which is to occupy a minute. The Supervisor will perhaps find it advisable to mark it off into smaller sections, each containing the number of words to be read in fifteen seconds, and to read one section in every quarter of a minute. As the candidates hear the passage read only once, the reader's articulation ought to be very clear, and the candidates ought to be so placed as to be able to hear well.

4. Candidates are at liberty to take down one, two, or three passages, as they choose. All the passages required by candidates are to be dictated before any one begins to transcribe; and there should be as little delay as possible between the readings.
5. Inform candidates that rapidity in transcribing notes into longhand is essential, and note carefully on the transcribed copy the exact time taken in transcription. Candidates must not look at their notes while a passage that does not concern them is being read.
6. Inform them also that the clearness and accuracy of the shorthand notes (which must in every case be sent in attached to the transcript) will be taken account of by the examiner; and that they must not alter the shorthand notes after the dictation is finished.

(*a.*) At the rate of 80 words per minute, takes 10 minutes.

Another piece of work which belongs peculiarly to a central department is the collection and preparation of national statistics. Statistics of acreage under different crops, with the annual and average produce per acre, and the number of live-stock in the United Kingdom, are collected and published by the present Board. The Board that we desire would go much further in this direction. We have at the present time no accurate idea of what is the
1 average composition of any | portion of our agricultural produce, for the simple reason that the collection of the scattered analyses, the rejection of imperfect work, and the averaging of the remainder is so large an undertaking that no private individual has had the courage to attempt the task. The results of this present lack of national information are not unimportant. We are obliged at the present time to employ German averages for all purposes of teaching or
2 calculation. These averages are in the main | prepared from German analyses, and relate to crops and foods grown in a different climate and under different conditions to our own. In the United States the want of national statistics respecting the composition of foods and crops has been supplied by their Department of Agriculture, which has published in one volume more than 3,000 analyses of American-grown foods, all properly classified and averaged. In the
3 same way the results of American digestion experiments, made exclusively | with American foods and American animals, have been collected and published, thus again obviating the necessity for relying solely on German figures. An efficient Department of Agriculture should be provided with a staff of officers representing all the sciences connected with agriculture; these offices should be furnished with suitable laboratories, and all the machinery required for carrying out investigations and making reports. Thus equipped, the department would be able to
4 attempt the solution of agricultural problems of pressing importance. The | work done at this Government institution would also serve as a model for the investigations carried on at the smaller experiment stations. The investigations thus conducted with public money should be of a thoroughly practical character, the results of which would have a direct bearing on the farmer's work. Let me venture on a single illustration. Persian barley has lately been imported into England in considerable quantity; its price has been lower
5 than that of any other kind of barley | in the market. A question at once arises in the mind of the cattle-feeder: Is it really cheap? Will a sovereign expended on these thin, shrivelled grains purchase a greater weight of food substance, and fatten an animal better, than the same money spent on English barley? The farmer can neither make a chemical analysis nor carry out an accurate feeding experiment, but a properly equipped Department of Agriculture could
6 do both, and in a few weeks issue a | report which would be of substantial benefit to the farmers of this country. Turning to the work done in this country by local authorities, he emphasized the point that all educational machinery requires inspection, and urged that County

Councils act unadvisedly when they try to rid themselves of trouble and responsibility by making grants to parish councils for technical education and then leaving them to direct the work.

7 Practical investigations, he proceeded, are urgently required if the operations of agriculture | are to be carried out in a scientific manner. The science of agriculture is, in fact, as yet in its infancy, and can be perfected only by well-arranged experiment. There is room for an immense variety of work. Every substance which the farmer uses, every living organism (plant or animal) with which he is concerned, every operation he conducts, must be thoroughly understood if it is to be employed to the best advantage. Great Britain is singularly behind

8 other | civilised countries in the work of agricultural investigation. The reason has apparently been very simple. In most European countries, and in the United States and Canada, the initiative has been taken by the Government. Ministers, having a just idea of the conditions on which national prosperity depends, have succeeded in obtaining public funds for the support of experiment stations, institutions provided with laboratories and skilled workers, and devoted

9 to the elucidation of agricultural problems. In England agricultural investigation has been | left to private enterprise, which has produced one first-class experiment station—that of Rothamsted—of which we are all rightly proud, but which is wholly inadequate for the growing needs of the country. I am not at this moment advocating the immediate creation of many first-class experiment stations, though there is ample scope for such in the hands of competent workers. One first-class station should certainly be at once started under the

10 immediate control of a reorganized Department of Agriculture. |

(*b.*) At the rate of 120 words per minute. Takes 10 minutes.

"What am I?" is a question we most of us try to answer at some time of our lives, with more or less of success; and it may be well for you to be helped at college to find the answer, so that when left to yourselves your time and energies may be free for the further questions, "What can I do?" and "How can I do it?" With regard to ethics, I hardly need dwell on the political advantage of its study; and, as to political economy, the mastery of its principles is an absolute necessity to every man who ventures to term himself a politician.

1 May I say a few words in relation to jurisprudence, and dogmatic as | well as natural theology? I know not, of course, the connection of your schools one with another, and therefore cannot tell how far the student in one school is expected to ground himself in the special studies of another, but returning to Johnston's definition, no man can be skilled in the science of government, or in the art and practice of administering public affairs, who has not, at any rate, tried to learn what can or should be done in any commonwealth by its laws, and how they should be enforced. And, again, as regards theology, it is a subject of such intense personal and social interest that we are apt to overlook its political importance; but how, for

2 instance, | can a man ignorant of the distinctive features of the Papal system, or who has not tried to find out what a Roman Catholic believes, come to a true opinion with regard to the conflict between Prince Bismarck and the Pope, which is, in fact, but a fresh campaign in the old war between Church and State? or how can he judge between M. Gambetta and the French Bishops in their educational contest? And, again, any man who tries to master the present Eastern Question must know why and how the Greek and Roman Churches differ, and what is the meaning of Mahomedanism and the real teaching of the Koran; and how may a

3 man be fit to take part | in the administration of India to whom Brahminism and Buddhism are meaningless words?

But I might take illustrations much nearer home. Suppose a man utterly ignorant of Scotch Presbyterianism, its doctrines and its history, what would he understand of Scotland, and what chance would he have of dealing successfully with Scotch public affairs? And yet theological knowledge is not often, I fear, considered necessary by politicians. Of all home questions, the most important by far is that of a State Church, and yet certainly in England, possibly in Scotland, there are many politicians who wish to disestablish and disendow the English or Scottish Churches, and not a few who strive to defend them, without having

4 even attempted to define to | themselves their doctrines and how or why they became churches at all, and who merely consider their relation to the State, without trying to estimate their real *raison d'être*. Some of these mental and moral studies may be pursued after scholastic education is finished, though doubtless with far more difficulty; but with two of your necessary subjects this difficulty is far greater—for many persons, I almost fear, practically insuperable. It is hard to learn logic and the physical sciences without the help of the lecturer or the mental discipline in the class-room. I should be wasting words in dwelling upon the advantage, for

5 my object, of acquiring the art of reasoning, but the political use of the physical | sciences, though not so apparent, is to my mind almost as great.

After all, man has to deal with nature as well as with his fellow-creatures; and though much of this contest must be individual, yet in much of it also men bind themselves together and fight and conquer nature in communities and in States, and thus public affairs become to a certain extent scientific affairs. How, for instance, contend with pauperism and crime without ascertaining the conditions of squalor and misery, of which they appear to be the necessary consequences, and if a man be altogether unacquainted with natural science he cannot ascer-

6 tain those conditions for himself; he must take them second-hand from an expert. He not | only has to ask the chymist or the physiologist to explain to him the laws of nature which he has to enforce; that, under ordinary circumstances, if he be wise, he will always do; but he cannot even read these laws; they are to him a dead language.

Again, education is, and must for long continue to be, a political subject; not only what elementary education the State must encourage and enforce, but in what manner it should assist or try to improve secondary schools and even universities. A committee of politicians

is now, in the shape of a Commission, considering the condition of your universities, and you
7 appear to wish that they should so do; and there seems in | Scotland to be an almost unanimous demand that the State should interfere with your secondary schools, and especially with their endowments. Now, how can higher education, either at school or at the university, be placed upon the best possible footing—and that I imagine to be the object of State interference—without an intelligent appreciation of the educational claims of the physical sciences, and specially of the extent to which they may be allowed to encroach upon the old classical domain?

I cannot make this remark without congratulating both the friends of science and all who care for your university, either as authorities or students, that you have my predecessor on
8 your University Commission. I know from experience that it | needs an exceptional amount of ignorance to withstand the rare power which Professor Huxley has of imparting information.

But these physical sciences are almost as useful to the political student in method as in matter. I speak, alas! from hearsay rather than from experience, but am I not right in saying that as in mathematics no deduction is permitted, or, indeed, is possible, except from a truth which is relevant to the truth which is sought, so in experimental science no result is considered to be obtained by induction unless all attainable facts have been weighed and compared? The scientific method may, then, be considered for a politician a better brain habit
9 than the mathematical, because we are forced so | often in public affairs to proceed by induction; and how much more successfully we should proceed if, before coming to a conclusion, we made it a rule to take all facts into account.

And this brings me to the subject which, of all others, bears, perhaps, most directly upon the general purport of my remarks, and that is the study of history. There is, indeed, no study more necessary to a man who tries to do his duty to his country. The records of history are the storehouse of facts for the politician. They give him guidance and warning; they record for him the experiments of the political laboratory. I will not discuss whether history
10 should be a special subject. |

(*c.*) At the rate of 150 words per minute. Takes 5 minutes.

I have seen the letters from Mr. Lionel Phillips and Mr. James Salter-Whiter referred to, and, without in any way impugning the good faith of those gentlemen, I cannot accept their version of what passed between the Reform Committee and Sir Jacobus de Wet on the morning of the 7th of January last, and perhaps the House will bear with me while I state what I understood took place. On the 6th of January, Dr. Jameson and his forces being prisoners, and Johannesburg being in armed, but passive, insurrection, Sir Hercules Robinson was informed by the Transvaal Government that Johannesburg must lay down its arms unconditionally within twenty-four hours, as a condition precedent to a discussion and consideration of grievances. He endeavoured to obtain some indication of the steps which would be taken in the event of disarmament, but without success. This decision was at once communicated
1 to | the Reform Committee at Johannesburg by a telegram from Sir Jacobus de Wet. Late on the same day (the 6th of January) the Government announced that it would hand over Dr. Jameson and all other prisoners to be dealt with as Her Majesty's Government should decide, but that the transfer would not take place until Johannesburg had complied with the ultimatum just mentioned. It was therefore agreed that Sir Jacobus de Wet should proceed early on the 7th to Johannesburg, in order to interview the Reform Committee, and explain the point to the people generally, who were infuriated with the Reform Committee, by whom they thought that Dr. Jameson had been invited and betrayed. The interview which followed in the morning is the subject-matter of this question. I have no official information of what passed in conversation, but Sir Jacobus de Wet has
2 given the following account of his | own part in a letter which appeared in the *Saturday Review* of the 4th of July: "Secondly, regarding the private promise which I am alleged to have made to the members of the Reform Committee—that if they brought about a peaceful disarmament the Transvaal Government would grant a free pardon, this is also incorrect. What I did say to individual members of the Committee, who asked what would be done with them, was that I had no official information, nor any intimation, on that point, but that in my private opinion nothing would be done. Any one knowing the circumstances and attitude of the President would have been justified in drawing such an inference." At the end of the morning's meeting the Reform Committee passed a resolution, saying that, having seriously considered the ultimatum of the Government that Johannesburg
3 must lay down its arms, they had unanimously | decided to comply with this demand. They went on to say that in coming to this decision the Committee had been actuated by a paramount desire to do everything possible to insure the safety of Dr. Jameson and his men, to advance the amicable discussion of the terms of settlement with the Transvaal Government, and to support the High Commissioner in his efforts. This resolution was telegraphed by Sir Jacobus de Wet to the Government at Pretoria, and elicited a reply from them, in which, after quoting the ultimatum of the day before, it was said, "As you will see, no single condition is included herein. The disarmament may be, as already stated, unconditional; therefore, whatever may happen with regard to the discussion of affairs or other things, of whatever nature, they have nothing to do with the laying down of arms. Whilst the resolution of the Committee calling itself | the Reform Committee makes mention of a discussion of grievances, and of
4 a motion in the matter of the safety of Dr. Jameson, and so on, it is extremely desirable that the Committee calling itself the Reform Committee should without delay be clearly placed in a knowledge of the true state of things." Sir Jacobus de Wet appears to have done what was

suggested, because at 4 o'clock in the afternoon of that day (7th January) the Reform Committee telegraphed to the High Commissioner, saying, "We have surrendered our arms unconditionally." It will thus be seen that up to the time of laying down their arms the Committee did not claim that either the Transvaal Government or the High Commissioner was pledged to them as regards their own personal liberty. Subsequently the Reform Committee were arrested, examined before a Magistrate, enlarged on bail, surrendered themselves in due course for trial. |

Shorthand (Junior).—For Junior Civil Service. Time allowed: 3 hours.

INSTRUCTIONS TO SUPERVISORS.

1. Inform candidates before the time for taking up this subject that they may use pen or pencil as they please for taking notes, which should be written on ruled paper, but that they must transcribe those notes into longhand with pen and ink.

2. Inform candidates that when once you have commenced to dictate you cannot stop until the passage is finished.

3. Dictate the passages at the following rates of speed:—

(*a.*) 50 words per minute.
(*b.*) 80 " "
(*c.*) 100 " "

N.B.—It will be well to practise reading these aloud some time beforehand, looking at a watch or clock, so as to accustom yourself to reading at the exact rate indicated.

4. Candidates are at liberty to take down one, two, or three passages, as they choose. All the passages required by candidates are to be dictated before any one begins to transcribe; and there should be as little delay as possible between the readings.

5. Inform candidates that rapidity in transcribing notes into longhand is essential, and note carefully on the transcribed copy the exact time taken in transcription. Candidates must not look at their notes while a passage that does not concern them is being read.

6. Inform them also that the clearness and accuracy of the shorthand notes (which must in every case be sent in attached to the transcript) will be taken account of by the examiner; and that they must not alter the shorthand notes after the dictation is finished.

(*a.*) At the rate of 50 words per minute. Takes 10 minutes.

The problem of our age is the proper administration of wealth, so that the ties of brotherhood may still bind together the rich and the poor in harmonious relationship. The conditions of human life have not only been changed, but revolutionized, within the past few years. In
1 former days there | was little difference between the dwelling, dress, food, and environment of the chief and those of his subjects. The Indians are to-day where civilized man then was. When visiting the Sioux, I was led to the wigwam of the chief. It was just like the others in
2 external appearance; and | even within the difference was trifling between it and those of the poorest of his braves. The contrast between the palace of the millionaire and the cottage of the labourer with us to-day measures the change which has come with civilization. This
3 change, however, is not to be deplored, but | welcomed as highly beneficial. It is well, nay essential for the progress of the race, that the houses of some should be homes for all that is highest and best in literature and the arts, and for all the refinements of civilization, rather
4 than that none should be so. Much | better this great irregularity than universal squalor. Without wealth there can be no Mæcenas. The "good old times" were not good old times. Neither master nor servant was as well situated then as to-day. A relapse to old conditions
5 would be disastrous to both—not the least to him who | serves—and would sweep away civilization with it. But whether the change be for good or ill, it is upon us, beyond our power to alter, and therefore to be accepted and made the best of. It is a waste of time to criticize the inevitable.

6 It is easy to | see how the change has come. One illustration will serve for almost every phase of the cause. In the manufacture of products we have the whole story. It applies to all combinations of human industry, as stimulated and enlarged by the inventions of this scientific
7 age. Formerly articles were manufactured | at the domestic hearth or in small shops which formed part of the household. The master and his apprentice worked side by side, the latter living with the master, and therefore subject to the same conditions. When these apprentices
8 rose to be masters, there was little or no change in | their mode of life, and they, in turn, educated in the same routine succeeding apprentices. There was, substantially, social equality, and even political equality, for those engaged in industrial pursuits had then little or no political voice in the State.

9 But the inevitable result of such a mode of manufacture | was crude articles at high prices. To-day the world obtains commodities of excellent quality at prices which the preceding generation would have deemed incredible. In the commercial world similar causes have produced similar results, and the race is benefited thereby. The poor enjoy what the rich
10 could not before afford. |

(*b.*) At the rate of 80 words per minute. Takes 10 minutes.

In trying to recall some of the occurrences that have been connected with my own shorthand work, one comes to my recollection which, if not the most striking, may certainly be said to have been the most startling in my experience. It was in the year 1883, at the time of the dynamite scare, when all London was perturbed by a series of diabolical attempts
1 at wholesale destruction by miscreants who are now in gaol paying the | penalty of their mis-

deeds. The first of these attempts was on the evening of the 3rd March, when a small bag containing a cake or two of giant powder, with a fuse inserted in it, was placed by the hand of a Fenian on the ledge of a window in the southern façade of the building occupied by the Local Government Board, Whitehall. While the criminals were at work on their dastardly outrage,
2 I was quietly taking notes within | a stone's throw of the spot—that is to say, at the Institution of Civil Engineers in Great George Street, Westminster, where a lecture was being delivered by the celebrated physicist, the late Sir William Siemens, to a very crowded and distinguished audience. It was one of a course of lectures which I had been engaged to report for the institution. The subject was "The Electrical Transmission and Storage of Power," and the
3 lecturer, curiously enough, was, at the time | to which I am referring, speaking not indeed of dynamite, but of a dynamic subject—namely the forces evolved by certain kinds of dynamo machines. This was the sentence which he had just uttered: "The enormous difference between the values here given shows sufficiently what scope there is for the development of the dynamo machine. For instance, in this machine 1lb. of copper produces 17 watts or units
4 of electro-motive force; in another (the last which has been | produced) the effect is 48. You will observe "——

At this moment the building was shaken by what might have been a terrific clap of thunder, which stopped the lecturer in the middle of his sentence, and brought my pen to a standstill, startling every one present, and giving a general impression that a violent explosion had taken place on the premises. With many an audience a panic would have been produced,
5 and as the means of exit were not of | the best the results of anything like a stampede in a densely-crowded hall would have been disastrous in the extreme. As it was, there was not the slightest indication of anything of the kind. A set of hard-headed engineers were not the men likely to lose their wits on such an occasion. All eyes were instinctively directed to the ceiling, where there was suspended a large sun or Drummond light as nearly as possible over the little
6 desk | at which I was writing, the prevailing idea being that there was something wrong with the gas. But no one stirred from his seat except the secretary, who, with great promptitude and presence of mind, immediately left the room by a back way close to where he was sitting, to ascertain if anything had happened on the premises, and very shortly afterwards returned and made the gratifying announcement that there was no injury to the building; but the cause
7 of | the shock was still shrouded in mystery. My note-book was covered with dust that had fallen from the ceiling, but before leaving off writing I hastily scribbled (with the instinct of a reporter, who does not like anything to escape him) the word "explosion" just at the moment that it happened. I suppose if an earthquake had taken place I should, in the same way, have made an attempt to record the fact.

8. The only damage done to the | building was that a semi-circular window high above the platform was smashed, but not a single pane in the skylight was broken. After a short interval Sir William Siemens continued his lecture as though nothing particular had happened, and it was not until the audience had separated that they ascertained the cause of the interruption. For myself, it was not until I reached my club that I became acquainted with the
9 facts of the case. A Central Press telegram had | been received announcing that a dynamite outrage had taken place at the offices of the Local Government Board, and this accounted only too well for the shock we had experienced. As was subsequently explained by Sir Frederick Abel, if the explosive used had been gunpowder instead of nitro-glycerine, not a window within half a mile of the Home Office would have escaped destruction. Nearly every window in
10 Whitehall Club, Parliament street, was broken, but the next house was untouched. |

(*c.*) At the rate of 100 words per minute. Takes 5 minutes.

Nothing is more sad than a landscape without birds. The well-known forest of Fontainebleau, so varied in its aspect, so majestic in its wooded glades, is always melancholy; not the song of a single bird breaks the silence. Destitute of water, for the sandy soil drinks up all the rain, having no spring nor stream, it is deadly for the bird, which flies away as from a land under a curse. Under the first impression, you admire it, but by degrees the feeling of
1 sadness oppresses you, and at last renders you insensible to its beauties. Of the many | varieties of birds, some prefer the fields, while others belong exclusively to the forest. These are eminently useful, destroying insects and other injurious animals; many of them furnishing excellent sport as game, and food for the table. There are two kinds of birds especially valuable, the woodpecker and the cuckoo. The first runs up the trunk of the tree, picking out all the caterpillars, wasps, and hornets, and then taps the bark to ascertain if there be any enemy lurking in the interior. Once on the scent, he tears off a piece of bark, and
2 hollows a spot until he | reaches the larva he is in search of. Unfortunately, the ignorant destroy this bird, on the plea that the holes he makes are detrimental to the tree; but this is unfounded, as he never attacks any but decayed wood, and prevents the spread of the malady. The cuckoo feeds principally on the hairy caterpillars, which other birds avoid; and it is said that in 1847 a pine forest in Pomerania was saved by a flight of migrating cuckoos, which installed themselves for some weeks, and cleared it completely of the caterpillars which
3 abounded there. Their sweet and | plaintive note is always welcome as the harbinger of spring. If among the smaller tribes of birds there are some which live principally on grain, there are none which do not redeem the damage they thus cause by the services they render in destroying insects. Nor must it be imagined that a bird is injurious when it lives on seeds only, for it thus destroys a great many weeds. Pigeons, which are exclusively granivorous, do eat the wheat; but in exchange they consume the seeds of fennel, poppy, spurge, and other
4 troublesome plants. While they are treasured in England and | Belgium, these birds are shot down in other countries without pity. The sparrow, too, which has received so much male-

diction, is equally useful, as a pair will often carry to their nest forty caterpillars an hour, or 3,000 a week. It happened that in the environs of Vienna, when every cultivator was obliged to pay a tax of two sparrow heads, the trees of the district were devoured by caterpillars, and it was found necessary to revoke the law. We spoke of the prodigious damage done to agriculture in France by people mercilessly killing small birds.

Maori.—For Senior and Junior Civil Service. Time allowed: 3 hours.

Translate the following into English:—

Ko Poneke te tino taone o Niu Tireni. Ehara i te mea i neke ake te nui o tenei taone i nga taone o Niu Tireni; engari ko te taone tena e noho ai Te Kawana, he mea whakahaere mai hoki i reira nga ture o te whenua. I ia tau, i ia tau e noho huihui ana ki Poneke nga tangata e whiri-whiria ana e nga tangata o Niu Tireni, ki te hanga Ture, ki te whakarite hoki i nga tikanga mo tenei whenua. E huaina ana enei tangata he mema no te Paremete. E huihui ana enei tangata ki te Whare Paremete. Ko ratou hei whakarite i te nui o nga moni e pau i te whakatu kura Maori, me te utu hoki mo nga kai whakaako.

Tera tetahi whare nui kei Poneke, he mea hanga ki te papa rakau—ko tenei pea te whare nui rawa o te ao i hanga ki te papa rakau. Kei tenei whare te nuinga o te mahi Kawanatanga e whakahaerea ana. Ko nga mema o te Paremete hei whakahau i nga mahi kia mahia, a ma te Kawanatanga me ana Minita e whakahau e whakamahi nga tangata mahi i aua mea i roto i taua whare nui nei. Ko ratou hei whakahaere i nga mahi reriwe, i nga tikanga whenua, i nga mahi rori, i nga poutapeta i nga "waea" me era atu me katoa e kiia ana e nga mema o te Paremete kia whakahaerea e ratou.

Translate the following into Maori:—

The Maoris account for the arrival of their ancestors in various ways. The general tradition is that their progenitors arrived from Hawaiki, in about ten principal canoes, but of different structure to those that we now see, and it is generally admitted by them that the chief Kupe, who came in the canoe Matahourua, was the first who took possession of New Zealand. This he did by naming all the rivers and mountains from Whanganui to Patea. He afterwards circumnavigated the whole of the northern island, giving names to many places as he sailed along its shores. Turi is the chief mentioned as having next arrived, in the canoe Aotea. Farther in point of time were the canoes Te Arawa and Tainui; the former was commanded by Tama-te-kapua and other chiefs, and first touched land at Whangaparaoa, a headland near the East Cape. Then they coasted along, touching at various places, where the chiefs gave names to the principal land-marks, their object being to take possession of the land, which they did as far as Cape Colville, where Tama-te-kapua died and was buried. His people then placed themselves under the guidance of Ngatoroirangi, and returned to Maketu. In the meantime the chiefs Ruaura and Toroa, in the canoe Matatua, had landed at Whakatane, and therefore part of the Arawa district was taken by them from Te-awa-o-te-Atua to Whangaparaoa.

Answer the following:—

How many numbers have personal pronouns in the Maori language? Give one example of the use of each, with translations, and explain the application of each number.

How would you express the word "self" in Maori?

Put the following into English:—

Na wai i a nga heihei ki waho o te mahinga?

Kua whakato ratou i a ratou taewa.

He waka ranei to Hemi raua ko Tamati inanahi.

He toki ta tetahi tangata.

E hapai ana ia i te pouaka.

Tera matou e haere ki Karori apopo.

Tera ranei koe e haere.

Kia tae koe ki te kainga kua to ke te ra.

Put the following into Maori:—

There were one hundred and thirteen pigs, all of them black ones.

I go. So do I. What do you think of doing to-morrow? I am going out in my canoe to fish.

I love her very much.

Trigonometry—For Senior Civil Service. Time allowed: 3 hours.

1. Find the supplements of 20°, 200°, and $-220°$, and express them in circular measure.

Divide a right angle into two parts, such that the number of degrees in the one part is to the circular measure of the other part as $270 : \pi$.

2. Express all the trigonometrical ratios of A in terms of tan A, and determine the values of the trigonometrical ratios of 60°.

3. Express cos A and cos 2 A in terms of sin A, and show that—

$$\frac{\sin A}{1+\cos A} = \tan \tfrac{1}{2} A = \frac{1-\cos A}{\sin A}.$$

4. Find an expression for all the angles which have a given sine.

If $\sin A + \cos A = 1$, find the general value of A.

5. Prove the relations—

(*a.*) $\sin (A+B) \cdot \sin (A-B) = \sin^2 A - \sin^2 B$;

(*b.*) $\dfrac{\sin A + \sin 3A}{\cos A + \cos 3A} = \tan 2A$;

(*c.*) $\dfrac{1-\tan^2 (45^\circ - A)}{1+\tan^2 (45^\circ - A)} = \sin 2A.$

6. Find an expression for $\sin (A+B+C)$ in terms of the ratios of A, B, and C.

If $A+B+C = 180^\circ$, show that—

$$\sin^2 A + \sin^2 B + \sin^2 C = 2 (1+\cos A \cos B \cos C).$$

7. If A be the angle of a triangle, find cos A and cos $\frac{1}{2}$ A in terms of the sides.

If the sides of a triangle are 12ft., 16ft., and 20ft., find the greatest angle and the area of the triangle.

8. Show how to solve a triangle when two sides and the contained angle are given, and give proofs of the formulæ employed.

Prove that in any triangle

$$a \cos A + b \cos B = c \cos (A-B).$$

9. Given log 2 = ·301, and log 3 = ·477, find the logarithms of 6, 15, ·18, and $\frac{1}{12}$.

Find also L sin 60°.

10. A steamer at sea sighted a lighthouse bearing due west, and after the steamer had proceeded on a west-north-west course for sixteen miles the bearing of the lighthouse was found to be south-west: find the distance of the steamer from the lighthouse at the time of each observation. [Given sin $22\frac{1}{2}^\circ$ = ·3827.]

Approximate Cost of Paper.—Preparation, not given; printing (3,175 copies), £27 11s. 6d.

Authority: JOHN MACKAY, Government Printer, Wellington.—1897.

Price 9*d.*]