# Research into Prize Winning Cattle

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c1901

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f1

The Royal Society
Burlington House

December 7th. 1901.

UNIVERSITY COLLEGE LONDON
GALTON
PAPERS
2/5/11/3/1
149/3

Sir

I beg to acknowledge, with many thanks, the receipt of the Postal Order for 15/-.

Enclosed I send a statement of the value of the prizes awarded to Shorthorn Bulls & Cows in the years 1868, 1878 & 1888. as requested.

I am, Sir.
Yours obediently.
Robert Sheppard

F. Galton, Esq.
F.R.S.

# Shorthorn Cows.

| | | Above 3 years old | Heifers under 3 years | Yearling Heifers above 1 & under 2 | Heifer Calves over ½ & under 1 year old |
|---|---|---|---|---|---|
| | 1st | £20 | £15 | £15 | £10 |
| Leicester | 2nd | £10 | £10 | £10 | £5 |
| 1868. | 3rd | £5 | £5 | £5 | — |
| | — | — | — | — | — |
| | 1st | £20 | £20 | £20 | £20 |
| Bristol | 2nd | £15 | £15 | £15 | £15 |
| 1878 | 3rd | £10 | £10 | £10 | £10 |
| | 4th | £5 | £5 | £5 | £5 |

| | | Cows calved in or before 1884 | Cows or Heifers calved in 1885 | Heifers calved in 1886 | Heifers calved in 1887 |
|---|---|---|---|---|---|
| | 1st | £20 | £20 | £20 | £20 |
| Nottingham | 2nd | £10 | £10 | £10 | £10 |
| 1888 | 3rd | £5 | £5 | £5 | £5 |
| | — | — | — | — | — |

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(1) Cattle who have a fair chance of winning a prize are usually exhibited  p6 dictated. AFB
Draft A 2

(2) Grades of merit, as derived from Class places
p7. dictated. AFB.

(3) Values of Forecasts as dependent on past success
in 1st 2nd & 3rd years respectively
p6 Dictated to AFB
7

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1. 15 10 5
2. 20 10 5
3. 25 15 5

[illegible]
Séance d'un trait

4. 20 15 10 5
5. 30 20 15 10

Bulls
winners of prizes
at successive ages

Summaries of
Bulls and Cows

# CY N

# EXERC BOOK.

1.

5

SCHOOL.

Name, Francis Galton
42 Rutland Gate SW

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f1r (1)

1865 Plymouth Shorthorn Bulls

|  | 3 & more yrs old | 2 years old | 1 year old | Bull calf |
|---|---|---|---|---|
| 1. 4th | Lord Chancellor | Duke of Devonshire | Friar Tuck | Friar Bacon |
| 2 | Favorite | Baron Blencoe | Commander in Chief | Corporal |
| 3 3rd | Holwood | Knight of North Spray | Battersea ford frank | (only 2 prizes given) |
| R 4th | Marquis Cornwallis | Lord Louis | Lord Lovel | Plym.th Carl |

1866 ? Cambridge no list of winners

32
28
24
24
24
132
Avg 130

1867 Bury St Edmunds no cattle

Begin with 1868

1868 Leicester

|  | I above 3 yrs | II above 2 & under 3 | III above 1 & under 2 | IV Bull calves above ½ under 1 |
|---|---|---|---|---|
| 1 | Commander in Chief | Baron Geneva | Bolivar * | Knight of the Bath * |
| 2 | Knight of Knowlmere | Charles le Beau | Rosalie | Knight of the Crescent |
| 3 | Hardman | Baron Warlaby | Cotswold Grazier | — |
| R.N. | Heir of Englishman * | General Hopewell | Fra Diavolo | Ld Montgomery |

2) 1869 Manchester Shorthorn Bulls

| | above 3 years | above 2 under 3 | above 1 under 2 | above ½ under 1 |
|---|---|---|---|---|
| 1 | Earl of Derby | Bolivar ×$^{68}$ | Knight of the Bath ⓧ$^{68}$ | Lord Fr-abeau |
| 2 | Edgar × | Charlie | Lord Beaumont | Baron Clittenge |
| 3 | Heir of Englishman ×$^{68}$ | Mandarin | Knight of the Whistle | |
| Res$^d$ | Prince Fred$^k$ 2$^{nd}$ | Lord Henry | Baron Hubback × | Royal Broughton |

1870 Oxford

| | | | | |
|---|---|---|---|---|
| 1 | Bolivar ×$^{68\,69}$ | Scotsman | By this × | Robin Hood |
| 2 | Edgar ×$^{69}$ | Baron Hubback$^{69}$* | Lord Irwin* | Master Glanville* |
| 3 | Baron Killerby | Man's Estate | Heydon Duke | |
| Res$^d$ | Sovereign | Duke of Babraham | Magdala<br>roan 1 year 9 months bred by Earl of [illegible] | Maid of Oxford's Baron |

1871 Wolverhampton

| | | | | |
|---|---|---|---|---|
| 1 | Edgar *$^{69,70}$ | Lord Irwin *$^{70}$ | Baron Hubback 2$^{nd}$ | British Flag |
| 2 | Telemachus* | Royal Windsor* | Cherub | Leeman * |
| 3 | Ironmaster | Baron Lawrie | Ignoramus * | 3$^d$ Kings Red Prince |
| 4, 5 | - Man's estate | By this *$^{70}$ | Prince Charlie * | |
| ~~Res$^d$~~ | ~~L$^d$ Morpeth~~ | ~~Standard Bearer~~ | ~~Earl of Warwickshire 3$^d$*~~ | |

1872 Cardiff

| | | | | |
|---|---|---|---|---|
| 1 | Royal Windsor* | Ignoramus *$^{71}$ | Leeman *$^{(71)}$ | Rapid |
| 2 | Lord Irwin$^{70,71}$* | Earl of Warwickshire 3$^d$ *$^{71}$ | Duke of Aosta* | Hubback Jun$^r$ |
| 3 | Flag of Britain | Prince Charlie *$^{71}$ | Baron Colling 2$^d$ | Royal Geneva |
| 4 | Lord Napier | Master Glanville$^{(70x)}$ | Kenelm Butterfly | |
| ~~Res$^d$~~ | ~~S$^t$ Ringgan~~ | ~~Saunterer~~ | ~~Magdala in 2 above~~<br>roan 1 year 3 months bred by Col Lloyd Lindsay | ~~Llantrithyd~~ |

1873 Hull Shorthorn Bulls f.25 (3

|  | above 3 years | above 2, under 3 | above 1, under 2 | above ½, under 1 |
|---|---|---|---|---|
| 1 | Telemachus*$^{71}$ | Duke of Aosta$^{72}$ | Sir Arthur Ingram* | Lord Godolphin* |
| 2 | Lord Irwin*$^{70,71\ 72}$ | Cambridge Duke 5th | Newbro' 4th | Duke of Genoa |
| 3 | 3rd Earl Warwickshire$^{71,72}$ | Heydon Duke | Red Knight | Baron Irwin |
| 4 | Colonist | Jack Frost | Ben Brace |  |
| ~~Res^d~~ | ~~Royal Lancaster~~ | ~~Leeman~~*$^{(71)72}$ | ~~Forester~~ | ~~Rapid Rhone~~* |

1874 Bedford

|  |  |  |  |  |
|---|---|---|---|---|
| 1 | Lord Irwin$^{70\ 71\ 72\ 73}$ | Sir Arthur Ingram$^{73}$ | Lord Godolphin (73) | Lord Rockville |
| 2 | Telemachus$^{71,73}$ | Robert Stephenson | Prince Ruffert | Duke of Chamburgh* |
| 3 | Duke of Aosta$^{72,73}$ | Oxford Cheerboy | Rapid Rhone* (73) | Ranger Prince |
| 4 | Protector | Prince of Cashmere | Aachen |  |
| ~~Res^d~~ | ~~Knight Templar 3^d~~ | ~~Cymbeline~~ | ~~Charon~~ | ~~Royal Oxf^d Gwyn~~ |

1875 Taunton

|  |  |  |  |  |
|---|---|---|---|---|
| 1 | Duke of Aosta$^{72,73,74}$ | Rosario | Pioneer* | Duke of Ock |
| 2 | Sir Arthur Ingram$^{74}$ | Rapid Rhone (73) 74. | Duke of Chamburgh (74) | Hudibras |
| 3 | Robert Stephenson$^{74}$ | Baron Irwin | Royal Irwin* | 3^d Baron Wild Eyes |
| Res^d | Cymbeline | Volunteer 2^d | Gallant Gay* | Mantalini Chief |

1876 Birmingham ?

|  |  |  |  |  |
|---|---|---|---|---|
| 1 | Telemachus* 6th | Pioneer$^{75}$ | General Fusee* |  |
| 2 | Sir Arthur Ingram$^{74\ 75}$ | Telemachus 9th | Charmer 24th | None awarded |
| 3 | Hindoo Chief | Sweet Pea | Iole |  |
| 4 | Serjeant Irwin* | Gallant Gay$^{75}$ | Blushing Rose | ? |
| ~~Res^d~~ | ~~Robert Stephenson~~$^{74,75}$ | ~~Royal Hesoring 2^d~~ | ~~Ruby 6th~~ |  |

4) 1877 Liverpool Shorthorn Bulls

| | above 3 years | above 2 & under 3 | above 1 & under 2 | above ½ & under 1 |
|---|---|---|---|---|
| 1 | Sir Arthur Ingram$^{74\ 75\ 76}$ | Snowstorm | Fitz William | Vice Admiral* |
| 2 | Telemachus 6th$^{76}$ | Rear Admiral* | Kalamazoo* | Baron Ryedale |
| 3 | Sergeant Irwin$^{76}$ | Lavangro | Flag of France | Mytton Chief |
| 4 | Duke of Chamburgh$^{74\ 75}$ | General Fraser$^{76}$ | Bright Duke* | Cartande |
| ~~Res^d~~ | ~~Rambler~~ | ~~Sir Hugo Irwin~~ | ~~General Flint~~ | ~~Belgrade~~ |

1878 Bristol

| | | | | |
|---|---|---|---|---|
| 1 | Attraction Lord* | Kalamazoo$^{77}$ | Vice Admiral ⑦⑦* | Masterman |
| 2 | Sir Arthur Ingram$^{74\ 75\ 76\ 77}$ | Pearl Diver | Churchill | Prince Victor |
| 3 | General Fraser$^{76\ 77}$ | Baronesse Windsor | Cowslip Boy* | Scottern Butterfly 2nd |
| 4 | Oxford Duke 10th | Favourite | Lord Mayor | Wild Oxonian* |
| ~~Res^d~~ | ~~Royal Irwin$^{75}$~~ | ~~Huntley~~ | ~~Lord St Vincent~~ | ~~Autumnus~~ |

1879 Kilburn

| | | | | |
|---|---|---|---|---|
| 1 | Anchor | Vice Admiral (77) 78 | Master Harbinger | Mercury |
| 2 | Rear Admiral$^{77}$ | Cowslip Boy$^{77}$ | Prince Regent | R^t Hon Devonshire Dumplings |
| 3 | Attraction Lord$^{78}$ | Osman | Arthur Benedict* | Wild Freshman |
| 4 | Royal Windsor$^{72}$ (aged 10 years) | Patricio | Wild Oxonian (78) | County Boy |
| ~~Res^d~~ | ~~Sir Arthur Ingram$^{74\ 75\ 76\ 77\ 78}$~~ | ~~Duke of Hazelcote 48th~~ | ~~Lord of Ryedale~~ | ~~Lord Darlington~~ |

1880 Carlisle

| | | | | |
|---|---|---|---|---|
| 1 | Duke of Howl 9th | Prince Imperial | Oxford Rose | Knight of Kars |
| 2 | Vice Admiral (77) 78 79 Champion | Master Harbinger | Sir Charles | Goldsmith |
| 3 | Attraction Lord$^{78\ 79}$ | Flag Officer | Oxf^d Duke Kilhow 2^d | S^t Swithin |
| 4 | Bright Duke$^{77}$ | Prince Louis | Royal Windsor same name in 79 | Lord George Hamilton |
| ~~Res^d~~ | ~~Rear Admiral$^{77\ 78}$~~ | ~~Arthur Benedict$^{79}$~~ | ~~Lord Zetland*~~ | ~~Crown Prince~~ |

~~Champion Duke of Howl 9th~~

1881 Derby Shorthorn Bulls f.31 (5

| | above 3 | above 2, under 3 | above 1 under 2 | above ½ under 1 |
|---|---|---|---|---|
| 1 | Vice Admiral (77)78,79,80<br>Champion | Lord Zetland 80, | Orange | Andrea del Sarto |
| 2 | Telemachus 9th | Beau Benedict*<br>now 2 years & 4 months | Hovingham | Model X |
| 3 | Master Harbinger* | Oxford Duke of Killhow 2 | Baron Sedgwick* | |
| Rs | Harold | Juniper | Master Belleville | Brian Boru |

1882 Reading

| | calved in 1876, '77 & 78 | calved in 1879 | calved in 1880 | calved in 1881 |
|---|---|---|---|---|
| 1 | Caractacus | Lord Zetland* | Bright Helm* | Trojan |
| 2 | Osmanli | Rover | Baron Sedgwick 81<br>same as above | Sir Arthur Ingram 2d |
| 3 | Master Harbinger 81 | Duke Oneida | Harry Hotspur | Pearl Dealer |
| Res | Great Northern Duke | Beau Benedict (81<br>same as above | Rosedale Oxford* | Andrew Fairservice |

Note 2 repetitions in same class, due to alteration of headings
no champion

1883 York

| | Calved in 77, 78 & 79 | calved in 1880 | calved in 1881 | calved in 1882 |
|---|---|---|---|---|
| 1 | Lord Zetland 82 | Bright Helm 82 | Self Esteem 2nd*<br>Champion Prize | Acropolis |
| 2 | Hovingham* | Baron Sedgwick 81.82 | Grand Ruth | Holker 2d |
| 3 | Beau Benedict 81 82 | Captain Boycott | Tambour Major | Baron Manormoor 2d |
| res | Hesperus | Rosedale Oxford 82 | Duke of Tregunter 9th | Middy |

1884 Shrewsbury

| | Calved in 78 79 & 80 | calved in 1881 | calved in 1882 | calved in 1883 |
|---|---|---|---|---|
| 1 | Hovingham 83 | 1 Self Esteem 2d 83 | Prince of Dougland | Royal Ingram* |
| 2 | Bright Helm 82 83 | 2 Duke of Cornwall | Sir Stafford | Star of Cornwall |
| 3 | — | 3 — | Polar Star | Bright Andrew |
| Res | Rosedale Oxford 82,1883 | Sir Robert Seal | Tel el Kebir | Lord Marnhull 3d |

b) 1885 Preston Short Horn Bulls f.3v

| | Calved in 1880 or 81 | Calved in 1882 | Calved in 1883 | in 1884 |
|---|---|---|---|---|
| 1 | Earl of Oxford | Royal Baron | Royal Ingram* (84)<br>Champion | Hopewell |
| 2 | Self Esteem $^{83\ 84}_{2}$ | Sir Stafford | Lord Salisbury | Golden Treasure |
| 3 | Paulowitz | — | Ruckley* | Baron Oxford |
| Res^d | Baron Sedwick $^{81\ 82\ 84}$ | — | Sea Captain | Confidence* |

1886 Norwich

| | Calved in 81 or 82 | Calved in 1883 | Calved in 1884 | Calved in 1885 |
|---|---|---|---|---|
| 1 | Prince of Halnaby* | Royal Ingram $^{(84)\ 85}$ | Golden Treasure | Royal Hovingham |
| 2 | Hiawatha | Ruckley $^{85}$ | Dryops | Royal Arthur |
| 3 | — | [illegible] | Confidence (85) | Melton* |
| Res^d | Self Esteem $^{83\ 84\ 85}_{2}$ | Mountain Chief 2^nd | The Baronet* | New Year's Gift |

1887 Newcastle on Tyne

| | Calved in 1882 or 83 | Calved in 1884 | Calved in 1885 | Calved in 1886 |
|---|---|---|---|---|
| 1 | Royal Ingram $^{(84)\ 85\text{-}86}$ | Baronet $^{86}$ | Ingram's Fame<br>Champion | Golden Hind |
| 2 | Veteran | Royal Victor | Chief Justice | Royal Dalesman |
| 3 | Reformer | Prince Arthur | Melton* (86) | Hopeful |
| Res^d | Prince of Halnaby $^{86}$ | British General | Mac Beath*<br>or Macbeth | Self Conceit* |

1888 Nottingham

| | 9 entries<br>Calved in 1883 or 84 | 11 entries<br>Calved in 1885 | 16 entries<br>Calved in 1886 | 47 entries<br>Calved in 1887 |
|---|---|---|---|---|
| 1 | Mario*<br>Champion | Master Shapely<br>Reserve for Champion | Self Conceit (87) | Royal Fieldsman |
| 2 | Ruckley $^{85\ 86}$ | Macbeth 87 | Royal Saxon | Ironclad* |
| 3 | Pilot | Melton (86) 87 | Fylde Ingram | Roseberry |
| Res^d | Aristocrat | Silkie Lad | Golden Treasure | Dauntless* |

They begin here to give "Commanded"

1889 Windsor Short Horn Bulls f.40 (7)

| | calved in 1883, 84, 85 | calved in 1886 | calved in 1887 | calved in 1888 |
|---|---|---|---|---|
| 1 | Mario $^{88}$<br>reserve for Champion | Prosperity | Iron clad ⑧⑧<br>Champion | New Years Gift* |
| 2 | Royal Ingram $^{'85 '86 '87}$ | Red Rover | Royal Warrior | Sir Douglas |
| 3 | Mac Beath $^{87 88}$ | Flower Boy | Lord Frederick | Heir of Windsor |
| Res | Aristocrat $^{88}$ | St Patrick | Dauntless $^{88}$ | Royal Windsor |

3rd Series begins here

1890 Plymouth

| | Calved 1884, 5, 6, or 7 | Calved in 1888 | Calved in 1889 | No bull calve. |
|---|---|---|---|---|
| 1 | Challenge Cup<br>reserve for Champion | New Years Gift ⑧⑧<br>Champion | Count Lavender* | |
| 2 | Proconsul Pippin | Prince Rupert | Pol | |
| 3 | Crown Prince | Rob Roy | Lord Fauntleroy | |
| Res | Hercules | Flag of Truce | Royal Rover | |

1891 Doncaster

| | calved in 1885, 6, 7 or 8 | Calved in 1889 | Calved in 1890 |
|---|---|---|---|
| 1 | Nugget | Windsor Royal<br>Champion | Eryholme Prince 35th<br>reserve for Champion |
| 2 | Merry Beau | Major* | Claude Melnotte |
| 3 | Commander | Duncan Grey | Baron Bridekirk 3d |
| Res | Gunboat | Donovan | King Alfred |

1892 Warwick

| | Calved in 1886, 7, 8, or 9 | calved in 1890 | calved in 1891 |
|---|---|---|---|
| 1 | Major $^{91}$<br>Champion | Fairfax*<br>reserve for Champion | Fairy King* |
| 2 | Count Lavender $^{90}$ | Rosedale Farmer | Broughton Lad |
| 3 | Judge of Assize | Rob Roy | Capt Ingram |
| Res | St Clair | Lord Penda | Red Rover* |

8) 1893 Chester Short Horn Bulls

| Calved in 1888, 9, or 1900 | Calved in 1891 | Calved in 1892 |
|---|---|---|
| 1 Earl of Faversham<br>Champion | Fairy King 92 | Royal Harbinger |
| 2 Major 91 92<br>reserve for Champion | Asterisk | Czarowitz * |
| 3 Count Lavender 90 92 | Red Rover 92 | Sherlowe Duke |
| Res' Fairfax 92 | Buccaneer | Prince Arthur |

1894 Cambridge

| Calved in 1889, 90 or 91 | Calved in 1892 | Calved in 1893 |
|---|---|---|
| 1 Fairy King 92 93<br>Reserve Champion | Czarowitz 93<br>Champion | Vain Robin |
| 2 Count Lavender 90 92 93 | Joe Ingram | Champion Cup * |
| 3 Fairfax 92 93 | Lord Conyers | Major Munro * |
| Res' British Cheer | Lambert | Excelsior |

Cin 94

1895 Darlington

| Calved in 1890 91 or 92 | Calved in 1893 | Calved in 1894 |
|---|---|---|
| 1 Nonsuch<br>Champion | Champion Cup 94<br>reserve for Champion | Coast Victor |
| 2 Mountaineer * | Recorder | Oxford duke of Calthwaite 29" |
| 3 Maximus | Major Munro 94 | British Chief |
| Reser Asterisk | Golden Robin | Sir Arthur Teasdale |

1896 Leicester

| Calved in 1891, 92 or 93 | Calved in 1894 | Calved in 1895 |
|---|---|---|
| 1 Royal Herald<br>Champion | Celt<br>reserve for Champion | Marmion |
| 2 Champion Cup 94 95 | Wiltshire Coast | Bright Archer |
| 3 Mountaineer 95 | Border Reiver * | Marengo * |
| Res' Treforest | Look ahead | The New Boy |

1897 Manchester Short Horn Bulls f.Sc (9

| Calved in 1892, 93 & 94 | Calved in 1895 | Calved in 1896 |
|---|---|---|
| 1 Master Ailesbury | Master Recorder | Major Linton |
| 2 Leonard | Champion<br>Marengo $^{96}$<br>reserve fr Champion | Duke of Somerset |
| 3 Maximus | Alto* | Royal Marvel |
| Res$^{d}$ Border Riever$^{96}$ | Norse King | Bapton Robin |

1898 Birmingham

| calved in 1893 94 & 95 | calved in 1896 | calved in 1897 |
|---|---|---|
| 1 Marengo $^{96}$ 97<br>Champion | Misty Morning | Ingram's Style<br>reserve fr Champion |
| 2 Border Riever $^{96}$ 97 | Bapton Victor | Millionaire |
| 3 Prince of the North | Spartan | Councillor |
| reserve Father O'Flynn | Bapton Victory* | Count Beauty* |

1899 Maidstone

| calved in 1894, 5 & 6 | calved in 1897 | calved in 1898 |
|---|---|---|
| 1 Alto $^{97}$ | Count Beauty<br>reserve fr Champion | Bapton Emperor<br>Champion |
| 2 Stephanos* | Estimation | Royal Duke* |
| 3 Sir Lawrence Riby | Matchless | Royal Jeweller |
| Res$^{d}$ Bapton Victory $^{98}$ | Merry Merlin | Lavender Yet |

1900 York

| calved in 1896 & 7 | calved in 1898 | calved in 1899 |
|---|---|---|
| 1 Stephanos $^{99}$ | Royal Duke $^{95}$<br>Champion | Royal Norseman |
| 2 Lord James Douglas | Pride of Collynie*<br>reserve fr champion | New Years Gift |
| 3 Highland Blizzard | Crystal Quality | Prince Alto |
| Res$^{d}$ Marvel | Bashful Youth | King Alto |

1901 Cardiff

| | | |
|---|---|---|
| 1 Royal Duke $^{1900}$ | 1 Baron Abbotsford | 1 Silver Bells |
| 2 Pride of Collynie $^{1900}$ | 2 Brilliant Star | 2 Victor |
| 3 Inspector | 3 Gainsford rising star | 3 Baron's Pride |
| Res$^{d}$ Royal Seal | Res$^{d}$ Ingram's Perfection | Res$^{d}$ Duke of Hamilton 3$^{d}$ |

10

Separate paper to be preserved

f5v

| Classes | | | page 1 | | page 2 | | page 3 | | Total |
|---|---|---|---|---|---|---|---|---|---|
| I | II | III | 卌 | 5 | 卌 ||| | 8 | |||| | 4 | 17 |
| I | II | – | || | 2 | || | 2 | 卌 | | 6 | 10 |
| I | – | III | | | 1 | | – | | | 1 | 2 |
| – | II | III | 卌 | | 6 | |||| | 4 | |||| | 4 | 14 |
| I | – | – | 卌 | | 6 | |||| | 4 | ||| | 3 | 13 |
| – | II | – | | | 1 | | – | | – | 1 |
| – | – | III | | – | | – | | – | – |
| – | – | – | 卌 | 5 | 卌 || | 7 | 卌 ||| | 8 | 20 |
| | | | | 26 | | 25 | | 26 | 77 |

×3 51

×2 52

14 (differt classes

11 ] [illegible]

~~[illegible]~~ balls 20 same class

13 ] no. of [illegible] balls

×1

0

77/137 (1.34 average [illegible] 77

77
600
539

Unmarked balls disregarding IV & all above 4 in a class

| | | | | | |
|---|---|---|---|---|---|
| 1868 | 12 - 2 | 10 | 1884 | 10 - 4 | 6 |
| 9 | 12 - 4 | 8 | 5 | 10 - 4 | 6 |
| 1870 | 12 - 5 | 7 | 6 | 10 - 4 | 6 |
| 1871 | 12 - 6 | 6 | 7 | 12 - 5 | 7 |
| 2 | 12 - 7 | 5 | 8 | 12 - 5 | 7 |
| 3 | 12 - 5 | 7 | 9 | 12 - 4 | 8 |
| 4 | 12 - 5 | 7 | 1890 | 12 - 2 | 10 |
| 5 | 12 - 8 | 4 | 1 | 12 - 1 | 11 |
| 6 | 12 - 5 | 7 | 2 | 12 - 5 | 7 |
| 7 | 12 - 7 | 5 | 3 | 12 - 6 | 6 |
| 8 | 12 - 6 | 6 | 4 | 12 - 5 | 7 |
| 9 | 12 - 7 | 5 | 5 | 12 - 3 | 9 |
| 1880 | 12 - 3 | 9 | 6 | 12 - 4 | 8 |
| 1 | 12 - 5 | 7 | 7 | 12 - 3 | 9 |
| 2 | 12 - 6 | 6 | 8 | 12 - 4 | 8 |
| 3 | 12 - 7 | 5 | 9 | 12 - 3 | 9 |
| | | 104 ✓ | 1900 | 12 - 3 | 9 |
| | | | 01 | 12 - 2 | 10 |
| | | | | | 143 ✓ |

34 years
12
408
left 6
402

61

104
143
247 unmarked
+ 77 marked
324 Total

82

10[illegible]

Short Horn Bulls, R. Agric: Jour: beginning with 1868 11

f65

| | | I | II | III | IV |
|---|---|---|---|---|---|
| | | above 3 years | above 2 and under 3 | above 1 and under 2 | above ½ and under 1 |
| Heir of Englishman | 2 | R 68 \| 3/69 | | | |
| Bolivar | 1 | 1/70 | 1/69 | 1/68 | |
| Knight of the Bath | 0 | | | 1/69 | 1/68 |
| Edgar | 3 | 2/69 \| 2/70<br>1/71 | | | |
| Baron Hubback | 0 | | 2/70 | R$^d$ 69 | |
| Bythea | 0 | (aged 10 years +) | 3/71 | 1/70 | |
| Royal Windsor | 2 | 1/72 and 4/79 | | | |
| Lord Irwin | 3 | 2/72 \| 2/73<br>1/74 | 1/71 | 2/70 | |
| Master Glanville | 0 | | | 4/72 | 2/70 |
| Telemachus | 3 | 2/71 \| 1/73<br>2/74 | | | |
| Ignoramus | 0 | | 1/72 | 3/71 | |
| Prince Charlie | 0 | | 3/72 | 4/71 | |
| Earl of Warwickshire | 3, 1 | 3/73 | 2/72 | R/71 = 1/5th | |
| Seaman | 0 | | R/73 = 1/5th | 1/72 | 2/71 |
| Duke of Aosta | 2 | 3/74 \| 1/75 | 1/73 | 2/72 | |
| Sir Arthur Ingram | 5 | 2/75 \| 2/76<br>1/77 \| 2/78 \| 4/79 | 1/74 | 1/73 | |
| Lord Godolphin | 0 | | | 1/74 | 1/73 |
| Rapid Rhone | 0 | | 2/75 | 3/74 | Res$^d$ 73 = 1/5th |
| Robert Stephenson | 1 | 3/75 \| R$^d$ 76 = 1/5 | 2/74 | | |
| Duke of Chamburgh | 1 | 4/77 | | 2/75 | 2/74 |
| Pioneer | 0 | | 1/76 | 1/75 | |
| Royal Irwin | 0 | R/78 = 1/5th | | 3/75 | |
| Gallant Guy | 0 | | 4/76 | Res/75 = 1/4 | |
| Telemachus 6th | 2 | 1/76 \| 2/77 | | | |
| Serjeant Irwin | 2 | 2/76 \| 3/77 | | | |
| General Faree | 1 | 3/78 | 4/77 | 1/76 | |

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12

f.6v

| | Calves | I | II | III |
|---|---|---|---|---|
| x | 1 | ~~R~~ | | 1 |
| | 2 | | 4 | |
| | 2 | | | 1 |
| x | 1 | | | 1 |
| | 2 | 4 | | 2 |
| X | 1 | 2&1 | 1 | [illegible] |
| 0 | 4 | | | 4 |
| x | 1 | 1 | 1 | 1 |
| ~~2~~ Cal | ~~V~~ 3 | | 3 | 3 |
| 0 | 4 | | | 1 |
| | 2 | | | 1 |
| | 4 | | | ~~II~~ |

12

68 t 90
= 22
3
66 exhibited
12 after success
1 in 5½

The first class calves
~~[illegible]~~ numbers did excellently,
The 4 class badly
2 class ~~[illegible]~~ moderate
3 class ~~[illegible]~~ good

take Hereford 1 next

The various combination of cases of more than 2 entries in I II & III (W is disregarded
Taken out on a separate paper

| | | | 1st page | 2d page | 3d page | Totals | |
|---|---|---|---|---|---|---|---|
| I | II | III | 5 | 8 | 4 | 17 | 17 |
| I | II | – | 2 | 2 | 6 | 10 | 26 |
| I | – | III | 1 | – | 1 | 2 | |
| – | II | III | 6 | 4 | 4 | 14 | |
| I | only | | 6 | 4 | 3 | 13 | 14 |
| – | II | – | 1 | – | – | 1 | |
| – | – | III | – | – | – | 0 | |
| – | – | – | 5 | 7 | 8 | 20 | 20 |
| | | | 26 | 25 | 26 | 77 | 77 |

| | | | |
|---|---|---|---|
| 0 | 12 | 8 | 10 |
| 1 | 5 | 12 | 9 |
| 2 | 5 | 4 | 6 |
| 3 | 3 | 1 | 1 |
| above | 1 | | |
| | 26 | 25 | 26 = 77 |

| | | I | II | III | IV |
|---|---|---|---|---|---|
| Rear Admiral | 1 | 2/79 \| Resd 5/80 | 2/77 | | |
| Kalamazoo | 0 | | | 2/77 | |
| Bright Duke | 0 | | | ~~4/77~~ | |
| Vice Admiral | 2 | 2/80 \| 1/81 | 1/79 | 1/78 | 1/77 |
| Attraction Lord | 3 | 1/78 \| 3/79<br>3/80 | | | |
| Cowslip Boy | 0 | | 2/79 | 3/78 | |
| Wild Oxonian | 0 | | | 4/79 | 4/78 |
| Arthur Benedict | 0 | | resd 5/80 | 3/79 | |
| Duke of Howl John | 1 | 1/80 | | | |
| Bright Duke | 1 | 4/8 | | | |
| Lord Zetland | 1 | 1/83 | 1/81 \| repetn 1/82 | resd 5/80 | |
| Master Harbinger | 2 | 3/81 \| 3/82 | | | |
| Beau Benedict | 1 | 3/83 | 2/81 \| repet Res 82 = 9/82 | | |
| Baron Sedgwick | 1 | resd - 85 | 2/83 | 3/81 \| repetn 1/82 | |
| Rosedale Oxford | 1 | Resd/84 | resd/83 | {Rsd 81 repet (= 4/81)<br>{resd 82 | |
| Bright Helm | 1 | 2/84 | 1/83 | 1/82 | |
| Hovingham | 2 | 2/83 \| 1/84 | | | |
| Self Esteem | 1 | resd - 86 | 1/84 | 1/83 | |
| Royal Ingram | 1 | 1/87 | 1/86 | 1/85 | 1/84 |
| Earl of Oxford | 1 | 1/85 | | | |
| Ruckley | 1 | 2/88 | 2/86 | 3/85 | |
| Confidence | 0 | | | 3/86 | Res<br>resd 85 |
| Prince of Halnaby | 2 | 1/86 \| resd 87 | | | |
| The Baronet | 0 | | 1/87 | resd - 86 | |
| Melton | 0 | | 3/88 | 3/87 | 3/86 |

| | | | | | |
|---|---|---|---|---|---|
| Ingram's Fame | 0 | | | 1/87 | |
| Macbeth | 1 | 3/89 | 2/88 | res$^{d}$- 87 | |
| Self Conceit | 0 | | | 1/88 | res$^{d}$- 87 |
| Mario | 2 | 1/88<br>1/89 | | | |
| Ironclad | 0 | | | 1/89 | 2/88 |
| Dauntless | 0 | | | res$^{d}$ 89 | Res$^{d}$ 88 |
| Royal Ingram | 1 | 2/89 | | | |
| Aristocrat | 1 | Res$^{d}$ 89 | | | |
| New Year's Gift | 0 | | 1/90 | | 1/89 |
| Count Lavender | 3 | 2/92<br>3/93<br>2/94 | | 1/90 | No more bull calves |
| Major | 2 | 1/92<br>3/93 | 2/91 | | |
| Fairfax | 2 | res$^{d}$ 93<br>3/94 | 1/92 | | |
| Fairy King | 1 | 1/94 | 1/93 | 1/92 | |
| Red Rover | 0 | | 3/93 | res$^{d}$-/93 | |
| Czarowitch | 0 | | 1/94 | 2/93 | |
| Champion Cup | 1 | 2/96 | 1/95 | 2/94 | |
| Major Munro | 0 | | 3/95 | 3/94 | |
| Mountaineer | 2 | 2/95<br>3/96 | | | |
| Border Reiver | 2 | Res$^{d}$ 97<br>2/98 | 3/96 | | |
| Marengo | 1 | 1/98 | 2/97 | 3/96 | |
| Alto | 1 | 1/99 | 3/97 | | |
| Baptist Victory | 0 | | res$^{d}$ 98 | | |
| Count Beauty | 0 | | 1/99 | R$^{d}$ 98 | |
| Stephanos | 2 | 2/99<br>1/00 | | | |
| Royal Duke | 1 | 1/01 | 1/00 | rest unknown as yet | |
| Pride of Collynie | 1 | 2/01 | 2/00 | | |

f.8 ✓

Rosa [illegible] Sir Lawrence

Crewe

Mrs Cresson

Mrs Cunliffe

Cunliffe

F.G. Lady Jorn

Eva Cunliffe

Mrs Cram

f.9r 17

No. of times in which a prize in I (1 2 3 or Reserved) was won by same ball

| | | |
|---|---|---|
| 0 | 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 | 30 |
| 1 | 𝍸 𝍸 𝍸 𝍸 𝍸 \| | 26 |
| 2 | 𝍸 𝍸 𝍸 | 15 |
| 3 | 𝍸 | 5 |
| 4 | | |
| 5 | \| | 1 |
| | | 77 ✓ (right) |

worked on a separate paper

$77 / 324 ( 4.2$
$\underline{308}$
$160$

= 1 in 4.2

247 balls got only 1 prize
77 more than 1 prize (20 of these being more than 1 in class)

Total 324 entries of different balls
402 entries altogether
78

from p. 10

Of the 77 repeated winners 17 had a prize in each of the 3 classes
26 - - - - - 2 of them

f.9v

48/2300(47.9
192
380
336
440
432

48)1900(39.6
144
460
432
280
288

48)500(10.4
48
20.0

48/100(2

Percents
47.9
39.6
10.5
2
~~99.9~~
100.0

Compare Cows p 27

|  |  |  |  |  | Trust |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| Edgar | 2 | 2 | 1 |  | 2 | 1 | 2 | — | rise fall back |
| Lord Lovan | 2 | 2 | 1 |  | 2 | 2 | 1 | — | stat rise |
| Telemachus | 2 | 1 | 2 |  | 2 | 2 | 1 | — | ″ ″ |
| Alexandrian Lord | 1 | 3 | 3 |  | 2 | 3 | 2 | — | fall recover |
| Count Laoch | 2 | 3 | 2 |  | 1 | 3 | 3 |  | fall stationary |
| Sibyllin Tagore | 1 | 2 | 1 | 2 |  |  |  |  |  |

(From Revised list by Sheppard, R. Soc)

## Wranglers in Class a, that is the class of [illegible]

3 years a class
latterly only 3 or 4 years

19

f.105

| No. of cases | | | |
|---|---|---|---|
| 23 | once | 23 | I – IV – III – iii – IV – ii – iii – ii – IV – i – III – IV – ii, IV – ii, iii – I – I – IV – II – I – I – IV. |
| 19 | twice | 38 | IV, III \| i, IV \| iii, i \| i, ii \| iv, iii \| ii, i \| iii, ii \| ii, i \| ii, IV \| I, ii \| i, IV \| i, i \| IV, ii \| i, II |
| 5 | three times | 15 | II, II, I – II, II, I – ; II, I, II – I, iii, iii – ii, iii, ii – |
| 1 | four times | 4 | I, II, I, II. |
| 48 | | 80 | |

twice continued, IV, iii \| ii, iii \| iii, ii \| – IV, ii \| ii, i \|

| | | From above I | III | iii | IV | | | | No. of cases |
|---|---|---|---|---|---|---|---|---|---|
| once | | 𝍸 I<br>6 | 𝍸<br>5 | 𝍸<br>5 | 𝍸 II<br>7 | about an equal chance as to class place | | | 23 |
| | | I | II | III | IV | rising | stationary | falling | |
| twice | Earliest I | I ① | III ③ | (–) | II ② | | 1 | 5 | 6 |
| | II | III ③ | (–) | I ① | I ① | 3 | – | 2 | 5 |
| | III | I ① | I ① | I ① | (–) | 2 | 1 | – | 3 |
| | IV | (–) | II ② | II ② | I ① | 4 | 1 | – | 5 |
| | | | | | | 9 | 3 | 7 | 19 |

about equal chance whether position improves or not

| | | | | | |
|---|---|---|---|---|---|
| thrice | first effect | fall II | second effect | fall I | 5 |
| | | flat II | | stationary I | |
| | | rise I | | rise to first position I | |
| | | | | " " higher II | |
| four times (fall, recover, fall) | | | | | 1 |

20

83/400(5
415

28
27
24
4
83

83/200(2.5
166
34

83/300(3.5
249
411
415

83/1300(15.7
83
470
415
550
498
52

13.2/

83/1800(21.7
166
140
83
570
581

Compare Cows / p 29

---

Results
83 bull calves got prizes (including ~~a~~ reserved prizes)
only 18 (or 21.7 %) of them ever got another prize
of these 11 (or 13.2% of the whole 83) got merely a c
2 (or 2.5%) got merely a b
none (or 0.0 %) got merely an a
1 3 (or 3.5%) got two classes ; one a(a and c); two a(b and c)
2 2 (or 2.5%) got all three classes and a first place too, i.e. each of them ~~they each competed~~ 4 times in Class a and ~~each~~ ~~was~~ placed first in it 2 times, and second 2 times
21.7
Sir Walter Ingram appeared

* 3 or (3.5%) get an a disregarding all else
2+2 = 4 (or 5%) get a b "

# Bull calves, class d.

21
f.115

Of 83 prize winning bull calves (class d)
18 got one or more subsequent prizes = 21.7 % (v. roughly say ¼)

3 of them Vice Admiral $\overline{II}$–1, ~~Royal Emperor~~ Spitalkin 1, $\overline{II}$, 1, $\overline{II}$ (and Royal Emperor 1, II) appeared in every one of the 3 subsequent stages

~~2 [illegible] subsequent stages ||| | || a b c~~
~~after 3~~
~~1 subsequent stage 𝍸 𝍸 || ||| 𝍸 𝍸~~
~~[illegible] 1~~

of 83 of class d who appear also in nothing else but

| | | | | | |
|---|---|---|---|---|---|
| abc<br>\|\| ([illegible]) | | | 2 | 2.5 % | |
| ac<br>1 Earl of Chandos | ab | bc<br>\|\| | 3 | 3.5 % | |
| a | b<br>\|\| | c<br>𝍸 𝍸 1 | 13<br>18 ✓ | 15.7 | { 2.5 b<br>or { 13.2 c |
| | | | | 21.7 | |

per cent 13.2 out of the per cent 27.7 got C & nothing else
about half of them

20
24 +1
5
49 +1 entries of C

132/3900(29.55
264
1260
1188
720
650
70

132/1000(7.5
924
760

132/1700(12.5
132
380
264
1160

49/39.0(.796 gain a subsequent class
34.3
470
441
290

132/400(3
396

17+18 = 35

49) 35.0(.71
343
70

132/1800(13.9
132
480
264
1160

Results bulls of Class C about 1 year old

There were 132 prize winners in class C
Of these, 39 took one or more subsequent prizes 29.6%
and 10 had taken a d, and no subsequent one 7.5%
49

| The 39 subsequent prize winners are made up | 29.6% of the whole 132 |
|---|---|
| 18 got a b prize & nothing more | 13.6% |
| 4 got an a prize (once or more) and no b | 3.0% |
| 17 got both a and b prizes | 13.0% |
| 39 | 29.6 |

18+17 gain a b = 26.6%

49 ①  132 bulls in all, who were prize winners of these,

Prize Young Bulls 1 year Class C

| Who gain | Each gain 2 prizes altogether at least | | | |
|---|---|---|---|---|
| ab | 𝍸 𝍸 𝍸 II | 17 | | |
| a | IIII | 4 | 39 | = 0.796 % |
| b | 𝍸 𝍸 𝍸 III | 18 | 17+18 = 35 or 0.71 %<br>get a b class | |
| d only | 𝍸 𝍸 | 10 — | 10 | |
| | | 49 | 49 | |

A.Rr

129 ) 3100 ( 24.0
258
520
416
4

129 ) 5200 ( 40.3
516
400

129 ) 2100 ( 16.27
129
810
774
360
258
1020

Results  Bulls of class b (2 years old)

There were 129 prize including reserved prize-winners
and 52 of them gained or had gained at least one additional prize 40.3%

---

Of these 52  31 gained ~~a~~ prize in a = 24 %
21 did not gain in a, but had gained some prize or prizes
52
16.3%
40.3

UNIVERSITY COLLEGE LONDON GALTON PAPERS

129 Prize Bull class B (2 years)
52 of whom gained or had gained another prize

| | | | |
|---|---|---|---|
| who gain A | 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 \| | 31 | = 24% |
| who don't " | 𝍸 𝍸 𝍸 𝍸 \| | 21 | |
| | total | 52 | |

13/100 (7½
91

35/1000 (28.6
70
300
280
200

3.5 = 1 in 28.6
13 = 1 in 7½
16 = 1 in 6
26 or 24 = 1 in 4
5.0 = 1 in 20

roughly
28 or 29
7 or 8
6
4

Summary

~~Prize~~ winners of

| | b | c | d |
|---|---|---|---|
| per cent who gain a | 24 | 16% | 3.5 |
| b | | 26.6 | 5.0 |

| Disregarding previous prizes the per-cent of prize winners of | who gain prizes afterwards in c | b | a | Total Nº | The proportion being otherwise c | b | a |
|---|---|---|---|---|---|---|---|
| class d (calves | 13.2 | 5.0 | 3.5 | [illegible] | 1 in 7 or 8 | 1 in 20 | 1 in 28 or 29 |
| " c (1 year | | 26.6 | 16.0 | 42.6 | — | 1 in 4 | 1 in 6 |
| " b (2 years) | | | 24.0 | 24.0 | — | — | 1 in 4 |

out of 48 winners of class a (begun with Edgar)
only 11 never had a previous prize

see last page of abstracts

but these were very fortunate ?

for Cows: see p 29

| | Nº of prizes in a taken by them 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| | | 𝍸 \|\|\|<br>8 | \|\|\|<br>3 | | |
| nº of prizes | | 16 | 9 | | 25 total |

f. 13v

| 26<br>all entries | Total Entries<br>* cows | placed<br>of Cows *<br>Cows without * | cows not * |
|---|---|---|---|
| 131 | 32 | | |
| 125 | 32 | | |
| 132 | 33 | | |
| 123 | 11 | | |
| 511 | 108 | | |

| A | B | C | D |
|---|---|---|---|
| 14 | 17 | 18 | 20 |
| 8 | 14 | 16 | 16 |
| 6 | 13 | 11 | 17 |
| 4 | 9 | 8 | 12 |
| 5 | 11 | 11 | 16 |
| 37 | 64 | 64 | 81 |

Total not *
246
Total * → 108
Total cows — 354

I, I Lady Fragrant, Vivandiere, Lady Pamela, Warfare, Jewel 2nd

III Molly Millicent

354/10800(33.6% get repeated or just about 1/3
962
1180
962
2180
1770)
410

| Earliest entry | Latest entry I | II | III | IV | Latest lowest | stat | latest highest |
|---|---|---|---|---|---|---|---|
| 1 | 1 1 ⑥ 5 | 3 ④ 1 | – ⊖ – | 2 ② – | 16 | 6 | |
| II | 3 ③ – | –5 ① 1 | 1 ② 1 | 1 ① – | 3 | 1 | 3 |
| III | 1 ④ 3.2 | 1 ② 1 | 7 ② 1 | – ② 2 | 2 | 2 | 6 |
| IV | 1 ② 1 | 2 ② – | 2 ③ 1 | 1 ① – | | 1 | 7 |
| | | | | | 11 | 10 | 16 |

rise

falls

36

39

For rest see back of stray page.

Cows (see for Bulls p.19)

f.14r

| Per Cents | No. of Cows | once | No. of Calves | |
|---|---|---|---|---|
| | 25 | once<br>twice | 25 | III, III, II, III, II, III, I, I, I, I, II, IV, III, III, II, III, I, I, IV, III, III,<br>IV, II, III, III, |
| | 18 | 2 times | 36 | $\overset{\wedge}{\text{I}}$, I \| IV, III \| $\overset{\times}{\text{I}}$, I \| I, II \| III, I \| II, II \| III, II \| IV, I \| III, IV \| III, I \| III, III \| $\overset{\times}{\text{I}}$, II \| II, III \|<br>III, IV \| $\overset{\wedge}{\text{I}}$, I \| I, $\overset{\wedge}{\text{I}}$ \| III, I \| IV, IV \| |
| | 7 | 4 times<br>3 times<br>5 times | 21 | III, II, II, \| III, IV, II \| II, II, III \| I, $\overset{\times}{\text{I}}$, I \| III, II, I \| II, II, II \| IV, II, I \| |
| | 1 | 4 times | 4 | IV, I, I, IV \| |
| | 1 | 5 times | 5 | IV, II II, I, II<br>lowest look level |
| | 52 | | 91 | |

Compare bulls p.19

| | from above I | II | III | IV |
|---|---|---|---|---|
| once | 𝍸 \| | 𝍸 | 𝍸 𝍸 \| | \|\|\| |
| | 6 | 5 | 11 | 3 |

| | Earliest | I | II | III | IV |
|---|---|---|---|---|---|
| twice | I | 𝍸 | \| | | |
| | II | | | \| | |
| | III | \|\|\| | \| | \| | \|\| |
| | IV | \| | | \| | \| |

falls

stationary

rises

| Latest | | |
|---|---|---|
| lowest | stationary | highest |
| 4 | 8 | 6 |

| | | rise | stat | fall |
|---|---|---|---|---|
| thrice | rise | | \|\| | \| |
| | stat | | \|\| | \|\| |
| | fall | | | |

4 times | rise stat fall

5 times | rise stat rise fall

25 25 50

18

7

4

5

56

28

f.14v

2/3
1/5
1/12
1/33

$191 :: 100 :: a : x$

$x = a \times \frac{100}{191} = a \times 0.524$

Sabb ~~bp~~ 66 —

Percent

|  |  | % |  |
|---|---|---|---|
| 191 | 100 | 100 |  |
| 131 | 68.6 | 69 | 2/3 never mentioned |
| 41 | 21.4 | 22 | class<br>[illegible] a c class |
| 13 | 6.8 |  | both classes<br>[illegible] at b.c |
| 6 | 3.1 |  | [illegible] classes |
| 191 | 99.9 | 100 |  |

|  | [ ] |
|---|---|
| 4 | 7 |
| 11 | 22 |
| 14 | 25 |
| 15 | 18 |
| 44 | 72 |

|  | [ ] |
|---|---|
| 5 | 2 |
| 18 | 10 |
| 17 | 10 |
| 19 | 9 |
| 59 | 31 |

|  | ⊕ |
|---|---|
| 5 | 2 |
| 14 | 3 |
| 14 | 3 |
| 19 | 4 |
| 52 | 12 |

| Cards<br>Total cards | winners of a ⊕<br>Had previous prize | Of these<br>Had no previous prize |
|---|---|---|
| 32 | 19 | 4 + 3 |
| 32 | 14 | 3 |
| 33 | 14 | 3 |
| 11 | 5 | 2 |
| 108 | 52 | 12 + 3 = 15 |

## Cows

f.15r → 29

out of 108 calves, who win prizes in class d

only 42 are mentioned again

| of these gave | | | from p 21 Bull calves<br>83 got prizes<br>18 are mentioned again | Total calves<br>191<br>60 |
|---|---|---|---|---|
| merely a c | 卌 卌 卌 卌 卌 II | 27 | 11 | 38 |
| " " b | I | 1 | 2 | 3 |
| " " a | | – | – | – |
| " " a & b | II | 2 | – | 2 |
| " " a & c | | – | 1 | 1 |
| " " b & c | 卌 III | 8 | 2 | 10 |
| a, b & c | IIII | 4 | 2 | 6 |
| | | 42 ✓ | 18 | 60 |

Compare p. 2[illegible]

---

out of 132 heifers class c winners

only 44 are mentioned also in b or a

(a) 27 had got d)

| | | | Bulls p 22<br>132 winners<br>39 got a or b<br>(18 had got d) | Total Cattle<br>264<br>83<br>(37) |
|---|---|---|---|---|
| merely in b | 卌 卌 卌 卌 卌 II | 27 | 18 | 45 |
| a | 卌 I | 6 | 4 | 10 |
| a & b | 卌 卌 I | 11 | 17 | 28 |
| | | 44 | 39 | 83 |

---

out of 1[illegible] young cows, prizes in class b — Bulls p 24 — 129

only 31 attain class a — 31

Compare bulls p. 24

---

out of 52 winners of class a

only 15 (37 had a previous prize) (12+3) never had a previous prize. ~~They [illegible] 1870~~

but these were especially fortunate, the no. of times they took the prize being every one of them taking more than one ?

| | 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| | | 卌 III | III | I | | 12 ✓ |
| | | 8 | 3 | 1 | | |
| No 1 prizes | | 16 | 9 | 4 | | 29 |

## Bulls from the 5 original sheets

|  |  | plain |  |  |  |  | * |  |
|---|---|---|---|---|---|---|---|---|
|  | a | b | c | d | a | b | c | d |
|  | 13 | 19 | 17 | 21 | 19 | 15 | 15 | 7 |
|  | 8 | 13 | 13 | 24 | 20 | 15 | 15 | 3 |
|  | 7 | 10 | 14 | 17 | 15 | 10 | 10 | 7 |
|  | 11 | 17 | 17 | 4 | 13 | 7 | 7 | 0 |
| Total | 11 | 17 | 22 | — | 13 | 7 | 2 | — |
| 275 | 50 | 76 | 83 | 66 |  |  |  |  |

* from Abstract all classes
3 sheets f.15v
[illegible]

33 *3
33
12

78 +3
275
353

## Cows from the 5 original sheets

|  |  | plain |  |  |  |  | * |  |
|---|---|---|---|---|---|---|---|---|
|  | a | b | c | d | a | b | c | d |
|  | 14 | 17 | 18 | 20 | 18 | 14 | 14 | 6 |
|  | 8 | 14 | 11 | 16 | 20 | 14 | 17 | 11 |
|  | 6 | 13 | 11 | 17 | 17 | 9 | 13 | 7 |
|  | 4 | 9 | 8 | 12 | 20 | 11 | 16 | 10 |
| Total | 5 | 11 | 11 | 16 | 19 | 12 | 13 | 8 |
| 241 | 37 | 64 | 59 | 81 |  |  |  |  |

* from abstract all classes
*

32
32
33
11
108
241
349

Bulls (see back p 19 &c)

| | Total plain |
|---|---|
| a | 50 |
| b | 76 |
| c | 83 |
| d | 66 |
| | 275 |
| → | 78 Total * |
| | 353 Grand Total of bulls |

for Cows see 26

Cows p 26

| Total plain |
|---|
| 37 |
| 64 |
| 59 |
| 81 |
| 241 |
| 108 * |
| 349 |

Bulls and Cows

p.165

| plain | * | |
|---|---|---|
| 275 Bulls | 78 | 353 |
| 241 Cows | 108 | 349 |
| 516 | 186 | |

Total cattle 702

| | 100 winners in Class A | | | | | | Total prize documents |
|---|---|---|---|---|---|---|---|
| | once | twice | 3 ti | 4 ti | 5 ti | Total | |
| p 19 Bulls | 23 | 19 | 5 | 1 | | 48 | 353 |
| p 27 Cows | 25 | 18 | 7 | 1 | 1 | 52 | 349 |
| Total Cattle | 48 | 37 | 12 | 2 | 1 | 100 | 702 |

only 1 in 7 of the cattle that were exhibited get an A class

| Entries | 48 | 74 | 36 | 8 | 5 | 171 |
|---|---|---|---|---|---|---|

average 1 : 1¾
= 4:7

32

Include first 3

Total of *a cattle entered

f16V

| | Total | Bulls | did win a | Cows | did win a | Totals |
|---|---|---|---|---|---|---|
| *a who were not winners in a | 33 | 15 | (18) | 13 | (16) | 29 |
| | 33 | 12 | (21) | 17 | (15) | 32 |
| | 12 | 3 | (9) | 19 | (14) | 33 |
| | 78 | 30 | 48 | 6 | (5) | 11 |
| | | | | 56 | 50 | 48 |
| add placing's | | 50 | | 37 | | |
| | | 80 | (48) | 93 | (53) | 173* |

Of those who did win an *a place

| | | Bulls | | Cows | | | | |
|---|---|---|---|---|---|---|---|---|
| No who won | one only | 𝍸 𝍸 𝍸 𝍸 \|\|\| | 23 | 𝍸 𝍸 𝍸 𝍸 𝍸 | 25 | (47) 48 | 48 |
| subtract 1 to 3 to be omitted 2 | two | 𝍸 𝍸 𝍸 \|\|\|\| | 19 | 𝍸 𝍸 𝍸 \|\|\|\| | (24) 19 | (37) 38 | 76 |
| 1 | three | 𝍸 | 5 | 𝍸 \|\| | (17) 7 | 12 | 36 |
| | four | 1 | 1 | 1 | 1 | 2 | 8 |
| | five | | | 1 | 1 | 1 | 5 |
| | | | 48 | | 53 | 101 (98) | 173 |

So 261 places were awarded in class a

of these 173 places were given to 101 who gained from 1 to 5 times

88 were given single places

261
101
362 = no of different cattle who were placed in a

antecedents of winners in a

3 Lady Mayoress Miss Tatersall Miss Tatersall

|  | Bulls | Cows | Cattle |  |
|---|---|---|---|---|
|  | subtract 2 | subtract 8 (123) |  |  |
| Total places given in a | 130 | 131 | 261 | (253) |
| of these "places" that no other prizes — | 50 | 37 | 173 |  |
| & * who won no a | 30 | 56 |  |  |

Of these n° who had won no previous class 10 (+ 18 not without 1st 3)

who had won a previous class

| name of class |  |  |  | Bulls (sheet) 1 | 2 | 3 | 4 | 5 | Total | Cows sheet 1 | 2 | 3 | 4 | 5 | Total | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| none |  |  |  | 7 | 3 | 3 |  |  | 13 | ③4 | 3 | 3 | 2 |  | 12 | 25 |
| a | b |  |  | 5 | 4 | 4 |  |  | 13 | 7 | 2 | 7 | 2 |  | 18 | 31 |
| a | c |  |  | 1 | 2 |  |  |  | 3 | 3 | 2 | 1 | 1 |  | 7 | 10 |
| a | d |  |  | – |  |  |  |  | – |  | 1 |  |  |  | 1 | 1 |
| a | b | c |  | 5 | 8 | 2 |  |  | 15 | 2 | 3 | 2 |  |  | 7 | 22 |
|  | b | d |  | – | 1 |  |  |  | 1 |  | 1 |  |  |  | 1 | 2 |
|  | c | d |  | 1 |  |  |  |  | 1 |  |  |  |  |  | – | 1 |
| a | b | c | d | – | 1 |  |  |  | 1 |  | 3 | 1 |  |  | 4 | 5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 97 |
|  |  |  |  | ~~1~~ | ~~2~~ | ~~1~~ |  |  | ~~44~~ | 16 | 15 | 14 | 5 |  | 50 |  |
|  |  |  |  | 19 | 19 | 9 |  |  | 47 | 19 | 19 | 9 |  |  | 47 |  |
|  |  |  |  |  |  |  |  |  |  | 35 | 34 | 23 | 5 |  | Total | 97 |

Bulls and Cows

the 3 first cows being omitted.
their antecedents being unknown.

Roughly, of 100 winners of place in class a

25 no previous win 1/4
42 two classes nearly 1/2 or
25 three 1/4
5 four 5%

p 24
after success of    prize cattle of class b

8
gained a both 31°   cow 31%
[illegible]

%
~~3½~~
31

$$264 : 100 :: a : x$$

$$x = a\,\frac{100}{264} = a \times .379$$

from p. 28 29

| After success of 191 prize calves class c | | % |
|---|---|---|
| nearly 2/3 | appear no more in the lists | 69 |
| 1/5 | obtain one other class which is nearly always a c class | 21 |
| 1/12 | obtain 2 classes which b & c largely preponderating over [illegible] | 7 |
| 1/33 | obtain all 3 classes a b and c | 3 |
| | | 100 |

p 33

| Antecedents of winners of a class | | 97 | % |
|---|---|---|---|
| 1/4 | had won nothing previously | 25 | 26 |
| nearly 1/2 | had won once previously | 42 | 44 |
| 1/4 | " " twice " | 25 | 25 |
| 1/20 | " " three times | 5 | 5 |
| | | 97 | 100 |

p. 29

| After success of 264 prize cattle of class c | % | |
|---|---|---|
| | 100 | 100 |
| 181 are not mentioned again | 68.5 | 68 |
| 45 get b only | 17.0 | 17 } 21 |
| 10 " a " | 3.8 | 4 |
| 28 " b and a | 10.6 | 11 |
| 264 | 99.9 | 100 |

36

f18v

falling

4 × 1 4 3 × 1 3
2 × 3 6 4 × 2 8
2 × 1 2 2 × 2 4
1 × 2 3 2 × 3 6
2 × 1 2 2 × 2 4
11 11) 16 (1.45 3 × 1 3
11 16 16) 28 (1.75
50 16
44 120
60 112
8

1.45
1.75
2/3.20
1.60 Common mean of rise and fall

3/3.20 ( ditto
1.1 of rise stationary and fall

more exactly
11 × 1.45 11 16
10 × 0 10 0
16 × 1.75 16 28
divided by 11 + 10 + 16 37) 44 (1.18 say 1.20
37
~~33~~
70
37
330
296
34

from p 26

36 cattle who win as a class thrice

| First entry | Last entry | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| I | 6 | 4 | – | 2 |
| II | 3 | 1 | 2 | 1 |
| III | 4 | 2 | 2 | 2 |
| IV | 2 | 2 | 3 | 1 |

Class place

| rising | stationary | falls |
|---|---|---|
| 16 | 10 | 11 |

p 29 – 10

of those who win as a class once, 48 in number

| cattle | bulls | cows | |
|---|---|---|---|
| 12 | 6 | 6 | have the first place |
| 10 | 5 | 5 | second |
| 16 | 5 | 11 | third |
| 10 | 7 | 3 | fourth |
| | 23 | 25 | |

38/ Bulls Class b future prizes

class place { I = 5, II = 2, III = 1, IV = 0 } relative values of prizes, (25, 10, 5, 0)

f.19✓

| | | | | Total |
|---|---|---|---|---|
| I | 5, (2+2), (1+5), (5+2) = $\frac{22}{4}$ | (2+5), 2, (2+0), (5+2), 5, (0+1), 5 = $\frac{29}{7}$ ($\frac{19}{7}$) | 2, | $\frac{53}{12}$<br>4.42 |
| II | (5+0), 1, 1, 2, 2 = $\frac{11}{5}$ | (1+1), 1, 0, 2, 1 (5+2) ($\frac{14}{6}$) = $\frac{13}{6}$ | 0,5, | $\frac{29}{12}$<br>2.42 |
| III | 1 = $\frac{1}{1}$ | 5, ($\frac{5}{4}$) = $\frac{5}{4}$ | (0+2), 5 | $\frac{13}{4}$<br>3.25 |
| IV | 1 = $\frac{1}{1}$ | 0, ($\frac{2}{3}$) = $\frac{1}{3}$ | 0 | $\frac{1}{3}$<br>0.33 |

Cows of class b future prizes
class b

| | | | | | | Mean of means |
|---|---|---|---|---|---|---|
| I | 1, 5 [illegible] | (1+5) (1+0) (5+5) (2+1), 5, (5+5), 1 | ($\frac{14}{9}$) | $\frac{42}{9}$ | 4.42<br>4.67<br>9.09 | 4.5 |
| II | (2+2), (0+5) | 0, $\overset{*}{5}$, 1, 2, (0+2) (2+1), 0, 1, (5+5), 0, (0+2) | ($\frac{10}{13}$) | $\frac{35}{13}$ | 2.42<br>2.69<br>5.11 | 2.6 |
| III | 1, 2, (1+0) | 1, 2 | ($\frac{6}{5}$) | $\frac{7}{5}$ | 3.25<br>1.40<br>4.65 | 2.3 |
| IV | 1, 2, | 1, | ($\frac{3}{3}$) | $\frac{4}{3}$ | 0.33<br>1.33<br>1.66 | 0.8 |

Cattle bulls & cows on Equal terms

Total 61 cattle

$$\frac{53+42}{12+9} = \frac{95}{21} = 4.52 \quad \Big| \quad \frac{29+35}{12+13} = \frac{64}{25} = 2.56 \quad \Big| \quad \frac{(13+7)}{4+5} = \frac{20}{9} = 2.22 \quad \Big| \quad \frac{1+4}{3+3} = \frac{5}{6} = 0.83$$

← No who gained anything

← relative prize winning powers

4.42
4.67
4.23

$19+14 = \frac{33}{21}$ 1.57 | $16+20 = \frac{36}{25}$ 1.44, $5+6 = \frac{11}{9}$ 1.22; $3+4 = \frac{7}{6}$ 1.17 Total 61 | = a 1.35 b 1.23 c 1.04 | d 1.00

# Class C

Bulls

I | $\overline{5+5}$, 0, $\overline{5+5+2}$, 5, $\overline{0+1}$ | $\overline{5+2+5}$, $\overline{2+1+1}$, $\overline{5+2}$ $\overline{5+2+0}$ $\overline{5+5+2}$
$\overline{5+5}$, $\overline{5+5}$ | 12 cases 90 marks ㉗

II | $\overline{5+2+2}$, 0, 5, 5, || $\overline{2+5}$, 2, 5, $\overline{5+2}$ | 8 cases 40 marks ⑫

III | 5, 2, | 2, 1, $\overline{2+0}$, $\overline{2+2}$, 2, 1, $\overline{2+5}$ | 9 cases 26 marks ⑫

IV | 2, 1, $\overline{5+1+5}$, 0, 0, || $\overline{0+0}$, 5, $\overline{2+1}$, 1, 5 | 10 cases 28 marks ⑭

Cows

I1 | $\overline{1+1}$, 1, $\overline{5+5}$, 0, 5, 5, | 0, $\overline{5+1+5}$, 2, $\overline{2+0}$, 5, $\overline{5+5+5}$, 0 | 5, $\overline{5+5}$, 1 | 5,
17 cases 79 marks ㉕

II2 | 5, 1, 1, 2 | 5, 1, $\overline{2+2}$, $\overline{5+2+1}$, | 5, 1, 5, $\overline{2+5+5}$, 5, | 2,
14 cases 57 marks ⑲

III3 | 2, 2, 5, 0 | 2, 0, || 2, 1 8 cases 14 marks ⑧

IV | 5, | 0, 1, $\overline{5+5+5}$ mostly Mothers | $\overline{2+0}$, 5, 1 | 7 cases 29 marks ⑩

$\frac{90+79}{12+17} = \frac{169}{29}$ 5.83 | $\frac{40+57}{8+14} = \frac{97}{22}$ 4.41 | $\frac{26+14}{9+8} = \frac{40}{17}$ 2.35 | $\frac{28+29}{10+7} = \frac{57}{17}$ 3.35 | Tota Cases 85

$27+25 = \frac{52}{29}$; $12+19 = \frac{31}{22}$; $12+8 = \frac{20}{17}$; $14+10 = \frac{24}{17}$

| | | | |
|---|---|---|---|
| 1.79 | 1.41 | 1.18 | 1.41 |
| 1.27 | 1.00 | 0.84 | 1.00 |

40) Class D see 2 last pages

f.20✓

Bulls

I $5, 5, 5, \overset{\text{Vice admiral}}{\overline{5+5+2+5}}, \overset{\text{Royal Ingram}}{\overline{5+5+5+2}}, \overline{5+5}$ 6 cases 59 marks ⑬

II $0, 5, \overline{2+0}, 5, 5,$ 5 cases 17 marks ⑥

III $1, \overline{1+1}$ 2 cases 3 marks II ③

IV $\overline{1+2}, 0, 1, 5, 0,$ 5 cases 9 marks IV ⑥

Cows

5/7 omitted Lady Pamela

I $0, \overline{0+0}, \overline{5+0}, 2, \overline{5+2}, \overline{5+2+0}\ \overline{5+5+5}, 5, \overline{2+2+2}, 5\ \overline{2+1}, 2,$
$5, 1, 1, \overline{0+1}, \overline{2+2},$ 17 cases 69 marks ㉙

II $\overline{1+2}, 2, 1, \overline{1+0}, 1, 2, 5, 0, \overline{0+2+0}, 5, 0, 1$ 12 cases 23 marks ⑯

III $\overline{5+5}, 5, 1, 1, 5, 2, 0.$ 7 cases 24 marks ⑧

IV $0, 2, 0, \overline{2+1}, 0, 5.$ 6 cases 10 marks ⑦

| I | II | III | IV | |
|---|---|---|---|---|
| $\frac{59+69}{6+17} = \frac{128}{23}$<br>5.57 | $\frac{17+23}{5+12} = \frac{40}{17}$<br>2,35 | $\frac{3+24}{2+7} = \frac{27}{9}$<br>3.00 | $\frac{9+10}{5+6} = \frac{19}{13}$<br>1.46 | Total cases 62 |

$13+29 = \frac{42}{23}$; $6+16 = \frac{22}{17}$; $3+8 = \frac{11}{9}$; $6+7 = \frac{13}{13}$

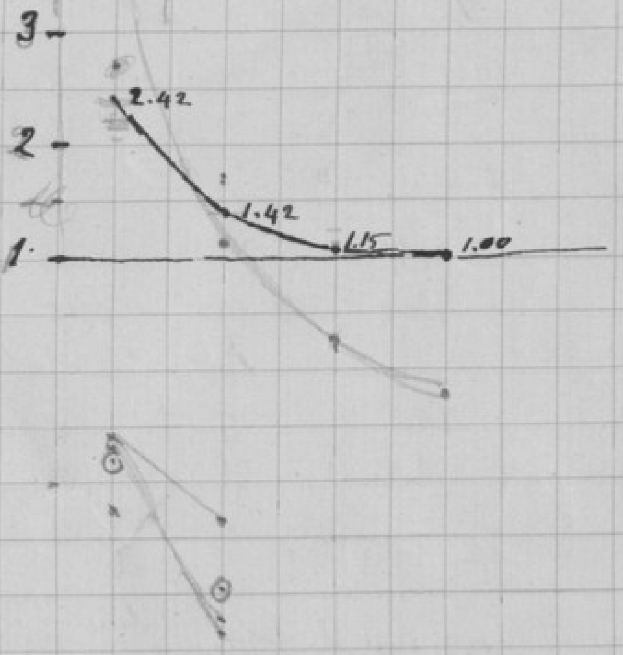
1.83 1.29 1.22 1.00

f.21r 41

These are relative, not absolute,

Average Winnings according to Place in the class

| | I | II | III | IV | Total cases |
|---|---|---|---|---|---|
| | I | II | III | IV | Total cases |
| in class b B | 4.52 | 2.56 | 2.22 | 0.83 | 61 |
| c D | 5.83 | 4.41 | 2.35 | 3.35 | 85 |
| d | 5.57 | 2.35 | 3.00 | 1.40 | 62 |
| | 15.92 | 9.32 | 7.57 | 6.58 | 208 |
| mean | 5.3 | 3.1 | 2.5 | 2.2 | |
| or taking b+c+d (under IV) as unit. | 2.42 | 1.42 | 1.15 | 1.00 | |



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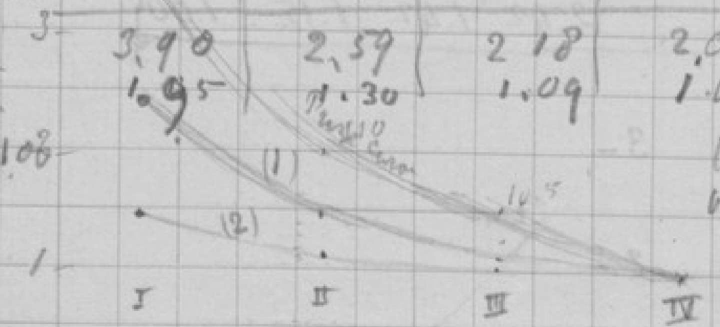
42) On Supposition (2) that the Marks are equal for every place f.21v

| | I | II | III | IV | No. of cases | ~~[illegible] Marks~~ |
|---|---|---|---|---|---|---|
| in class b | 1.35 | 1.23 | 1.04 | 1.00 | | |
| c | 1.27 | 1.00 | 0.84 | 1.00 | | |
| d | 1.83 | 1.29 | 1.22 | 1.00 | | |
| | 4.45 | 3.52 | 3.10 | 3.00 | | |
| (2) | 1.48 | 1.17 | 1.03 | 1.00 | (2) | |
| on other supposition p 41 (1) | 2.42 | 1.42 | 1.15 | 100 | (1) | |
| Sum | 3.90 | 2.59 | 2.18 | 2.00 | | |
| mean | 1.95 | 1.30 | 1.09 | 1.00 | | |



(1) & (2) are limiting values between which the truth lies

| | | | |
|---|---|---|---|
| Diffs (2) | 0.31 | 0.14 | 0.03 |
| (1) | 1.00 | 0 27 | 0.15 |

| | | | | |
|---|---|---|---|---|
| (2) | 1.48 | 17 | 3 | 0 (+1) |
| × 1.67 | 25 | 28 | .5 | 0 (+5) |
| Range | 25 | 10 | 5 | |

anyhow it shows that the forecast of ultimate success is much higher for the 1st place than for the 2nd; it is higher for 2nd than 3rd & for 3rd than for 4th

Early prize-winning and subsequent performances — Cattle

The material dealt with dates, numbers, no. of prizes & what for

Tendency to send the same animal repeatedly, if likely to win

Evidences from a

Value of class-place, as seen in after careers of a. higher 1, merit

Calves (d, c, b) & their after success } relative value of forecasts

Number of a who had 0, 1, 2, &c marks as well

Conclusion: [illegible]

f.23v

Cattle placed 3 times in A (the middle ~~is~~ written in figures disregarded)

| Earliest entry \| Latest entry | I | II | III | IV | Latest lowest | stat | latest highest |
|---|---|---|---|---|---|---|---|
| I | 1 |  | 3 |  |  |  |  |
| II | 2 2 | 1 3<br>2 | 2 |  | 2 | 4 | 6 |
| III | 1 | 2 4 |  |  |  |  |  |
| IV | 2 |  |  |  |  |  |  |
| add from p 26 |  |  |  |  | 11 | 10 | 16 |
|  |  |  |  |  | 13 | 14 | 22 |
|  |  |  |  |  | 1 | 1 |  |
|  |  |  |  |  |  |  | 1 |
| total 32 |  |  |  |  | 14 | 15 | 23 |
| as |  |  |  |  | 3 | 3 | 4½ |
| as |  |  |  |  | 5 |  | 4 |

4 times bulls I, II, I, III }
cows IV, I, I, IV }
5 times cow IV, " " III

23 : 29 say 24 : 30 = 4 : 5

# ARITHMETICAL TABLES.

### Numeration Table.

| | |
|---|---|
| Units, | 1 |
| Tens, | 12 |
| Hundreds, | 123 |
| Thousands, | 1234 |
| Tens of Thousands, | 12,345 |
| Hundreds of Thousands, | 123,456 |
| Millions, | 1,234,567 |
| Tens of Millions, | 12,345,678 |
| C. of Millions, | 123,456,789 |

### Sterling Money Table.

| | | |
|---|---|---|
| 4 Farthings | 1 Penny | *d.* |
| 12 Pence | 1 Shilling | *s.* |
| 2 Shillings | 1 Florin. | |
| 2 Shillings & Sixpence | 1 Half Crown | |
| 5 Shillings | 1 Crown | *cr.* |
| 10 Shillings | 1 Half Sov. | |
| 20 Shillings, 1 Sov. or | 1 Pound | £ |
| 21 Shillings | 1 Guinea. | |

### Arithmetical Signs.

+Plus; Sign of Addition.
−Minus; Sign of Subtraction.
×Sign of Multiplication.
÷Sign of Division.
=Sign of Equality.
: :: : Sign of Proportion.
√Sign of the Square Root.
∛Sign of the Cube Root.
° Degree, ′minute, ″second.
∴Therefore.

### Troy Weight.

For Gold, Silver, and Jewels.

| | | |
|---|---|---|
| 24 Grains | 1 Pennyweight, | *dwt* |
| 20 Pennyweights | 1 Ounce | *oz.* |
| 12 Ounces | 1 Pound. | *lb.* |

### Apothecaries' Weight.

For Mixing Medicines.

| | | |
|---|---|---|
| 20 Grains | 1 Scruple | *scr.* |
| 3 Scruples | 1 Dram | *dr.* |
| 8 Drams | 1 Ounce | *oz.* |
| 12 Ounces | 1 Pound | *lb.* |

### Avoirdupois Weight.

For all goods except Gold, Silver, and Jewels.

| | | |
|---|---|---|
| 16 Drams | 1 Ounce | *oz.* |
| 16 Ounces | 1 Pound | *lb.* |
| 14 Pounds | 1 Stone | *st.* |
| 28 Pounds | 1 Quarter | *qr.* |
| 4 Quarters | 1 Hundredweight | *cwt.* |
| 20 Cwt. | 1 Ton | *tn.* |

### Hay and Straw Weight.

| | |
|---|---|
| 36 ℔ Straw | 1 Truss. |
| 56 ℔ Old Hay | 1 Truss. |
| 60 ℔ New Hay | 1 Truss. |
| 36 Trusses | 1 Load. |

### Long or Lineal Measure.

| | | |
|---|---|---|
| 12 Lines | 1 Inch | *in.* |
| 12 Inches | 1 Foot | *ft.* |
| 3 Feet | 1 Yard | *yd.* |
| 2 Yards | 1 Fathom | *f.* |
| 5½ Yards | 1 Pole. | |
| 40 Poles | 1 Furlong | *fur.* |
| 8 Furlongs or 1760 yards | 1 Mile. | |

### Cloth Measure.

2¼ inches......=1 nail.
4 nails........=1 quarter of a yard.
4 quarters...=1 yard.

### Solid or Cubic Measure.

1728 cubic inches=1 cubic foot.
27 cubic feet =1 cubic yard.
24¾ cubic feet =1 solid perch mason's work.
12¾ cubic feet =1 solid perch brickwork.

### Imperial Heaped Measure.

| | | Lbs. Avoird. of water. |
|---|---|---|
| 8 gallons | =1 bushel...= | 80 |
| 3 bushels | =1 sack.....= | 240 |
| 12 sacks | =1 chaldron= | 2880 |

### Imperial Dry Measure.

| | | Avoird. of water lb. | oz. |
|---|---|---|---|
| 2 glasses | =1 naggin...= | 0 | 5 |
| 4 naggins | =1 pint......= | 1 | 4 |
| 2 pints | =1 quart....= | 2 | 8 |
| 4 quarts | =1 gallon...= | 10 | 0 |
| 2 gallons | =1 peck.....= | 20 | 0 |
| 4 pecks | =1 bushel..= | 80 | 0 |
| 8 bushels | =1 quarter = | 640 | 0 |

### Square Measure.

144 square inches=1 square foot.
9 square feet =1 square yard.
30¼ square yards =1 square pole.
40 square poles =1 rood.
4 roods =1 acre.

### Table of Motion.

60″ seconds............=1 minute.
60′ minutes............=1 degree.
30° degrees............=1 sign.
12 signs, or 360°....=the circle of the earth.

### Table of Time.

| | |
|---|---|
| 60 Seconds | 1 Minute. |
| 60 Minutes | 1 Hour. |
| 24 Hours | 1 Day. |
| 7 Days | 1 Week. |
| 4 Weeks | 1 Month. |
| 365 Days | 1 Year. |
| 366 Days | 1 Leap Year. |
| 52 Weeks | 1 Year. |
| 12 Calendar or 13 Lunar Months | 1 Year. |

**Days in the Months.**

Thirty days hath September,
April, June, and November,
All the rest have thirty-one,
Excepting February alone, [clear,
Which has but twenty-eight days
And twenty-nine in each leap year.

# MULTIPLICATION TABLE.

| 2 TIMES | 3 TIMES | 4 TIMES | 5 TIMES | 6 TIMES | 7 TIMES | 8 TIMES | 9 TIMES | 10 TIMES | 11 TIMES | 12 TIMES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 are 2 | 1 are 3 | 1 are 4 | 1 are 5 | 1 are 6 | 1 are 7 | 1 are 8 | 1 are 9 | 1 are 10 | 1 are 11 | 1 are 12 |
| 2 — 4 | 2 — 6 | 2 — 8 | 2 — 10 | 2 — 12 | 2 — 14 | 2 — 16 | 2 — 18 | 2 — 20 | 2 — 22 | 2 — 24 |
| 3 — 6 | 3 — 9 | 3 — 12 | 3 — 15 | 3 — 18 | 3 — 21 | 3 — 24 | 3 — 27 | 3 — 30 | 3 — 33 | 3 — 36 |
| 4 — 8 | 4 — 12 | 4 — 16 | 4 — 20 | 4 — 24 | 4 — 28 | 4 — 32 | 4 — 36 | 4 — 40 | 4 — 44 | 4 — 48 |
| 5 — 10 | 5 — 15 | 5 — 20 | 5 — 25 | 5 — 30 | 5 — 35 | 5 — 40 | 5 — 45 | 5 — 50 | 5 — 55 | 5 — 60 |
| 6 — 12 | 6 — 18 | 6 — 24 | 6 — 30 | 6 — 36 | 6 — 42 | 6 — 48 | 6 — 54 | 6 — 60 | 6 — 66 | 6 — 72 |
| 7 — 14 | 7 — 21 | 7 — 28 | 7 — 35 | 7 — 42 | 7 — 49 | 7 — 56 | 7 — 63 | 7 — 70 | 7 — 77 | 7 — 84 |
| 8 — 16 | 8 — 24 | 8 — 32 | 8 — 40 | 8 — 48 | 8 — 56 | 8 — 64 | 8 — 72 | 8 — 80 | 8 — 88 | 8 — 96 |
| 9 — 18 | 9 — 27 | 9 — 36 | 9 — 45 | 9 — 54 | 9 — 63 | 9 — 72 | 9 — 81 | 9 — 90 | 9 — 99 | 9 —108 |
| 10 — 20 | 10 — 30 | 10 — 40 | 10 — 50 | 10 — 60 | 10 — 70 | 10 — 80 | 10 — 90 | 10 —100 | 10 —110 | 10 —120 |
| 11 — 22 | 11 — 33 | 11 — 44 | 11 — 55 | 11 — 66 | 11 — 77 | 11 — 88 | 11 — 99 | 11 —110 | 11 —121 | 11 —132 |
| 12 — 24 | 12 — 36 | 12 — 48 | 12 — 60 | 12 — 72 | 12 — 84 | 12 — 96 | 12 —108 | 12 —120 | 12 —132 | 12 —144 |

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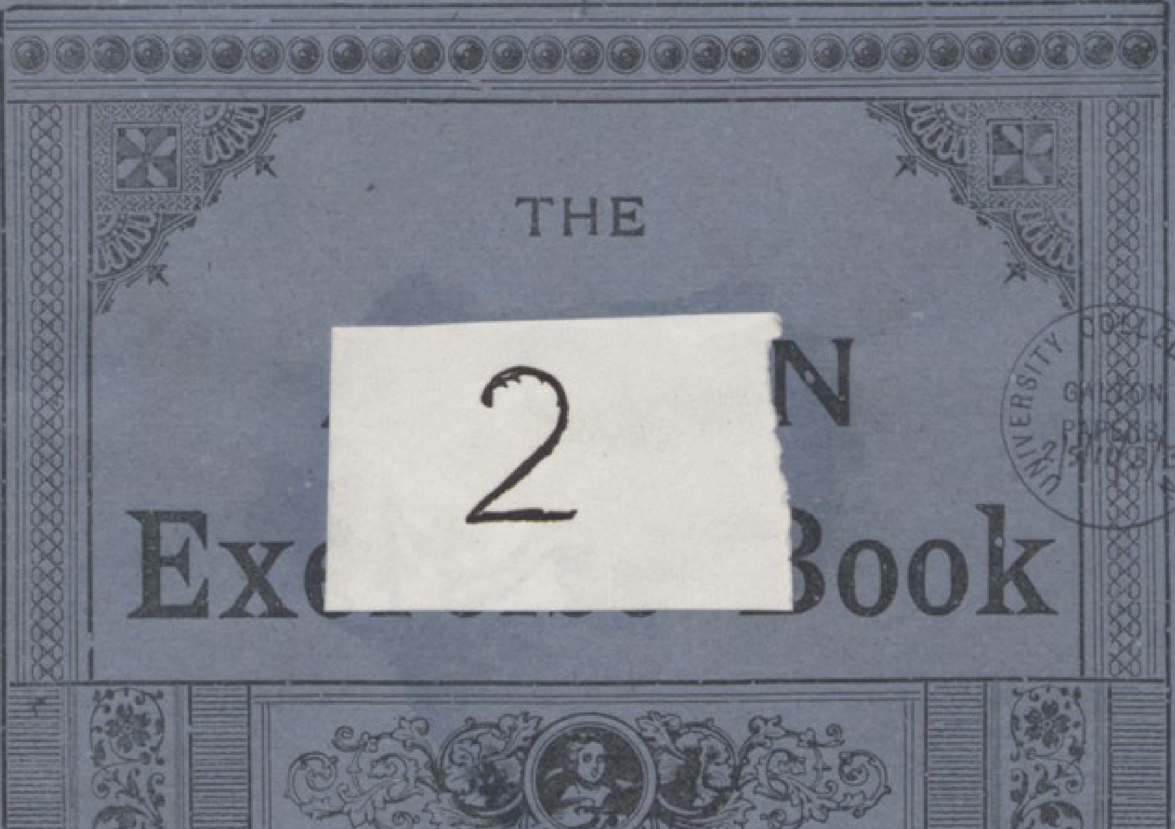

THE

2

N

Exe Book

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PAPERS
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Name, ____________________

Subject, ____________________

f.2r

C

won places subsequently in

| Class | | I | II | III | Total | | | | |
|---|---|---|---|---|---|---|---|---|---|
| First place winners | | | | | | | | | |
| classes | a | 5 | 1 | – | 6 | | | | |
| | b | 8 | 1 | 5 | 14 | | | | |
| | c | 14 | 2 | 5 | 21 | | | | |
| | | [illegible] | 4 | 10 | 40 | 6.2 | 1.0 | 2.5 | 10.0 |
| Second place in | a | – | 1 | [illegible] | 2 | | | | |
| | b | [illegible] | [illegible] | [illegible] | 10 | | | | |
| | c | [illegible] | [illegible] | – | 19 | | | | |
| | | [illegible] | [illegible] | [illegible] | 34 | 3.6 | 3.8 | 2.6 | 10.0 |
| third place in | a | [illegible] | [illegible] | [illegible] | 5 | | | | |
| | b | – | 2 | [illegible] | 7 | | | | |
| | c | 1 | 4 | 1 | 6 | | | | |
| | | 2 | 9 | 4 | 15 | 2.1 | 4.7 | 2.4 | 10.1 |

Superseded

average 2.4

3.6
2.4

1
III
III

1.2
3 | 7.2
2.4

(Revised all) (A)

f.2v

| Bulls only in A on first trial | with 2 first years of trial only won places subsequently in A<br>I | | | II | | | III | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| First place | I | I | 1 | IIII | IIII | 4 | I | I | 1 | 6 |
| Second | IIII | IIII | 4 | II | II | 2 | II | II | 2 | 8 |
| third | I | I | 1 | | | – | II | II | 2 | 3 |

| Cows only in A on first trial | in the 2nd year of trial only wins again a place in A<br>I | | | II | | | III | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| first place | 𝍸 | 𝍸 | 5 | I | I | 1 | | | – | 6 |
| Second | | | – | III | III | 3 | II | II | 2 | 5 |
| third | III | III | 3 | III | III | 3 | I | I | 1 | 7 |

| Bulls<br>Earliest place in A | | second place in A<br>i | ii | iii | Total |
|---|---|---|---|---|---|
| | first | 1 | 4 | 1 | 6 |
| | second | 4 | 2 | 2 | 8 |
| | third | 1 | — | 2 | 3 |
| Cows | first | 5 | 1 | — | 6 |
| | Second | — | 3 | 2 | 5 |
| | third | 3 | 3 | 1 | 7 |
| **all cattle A** | first | 6 | 5 | 11 | 12 |
| | second | 4 | 5 | 4 | 13 |
| | third | 4 | 3 | 3 | 10 |

(all revised) (B)

## Bulls in B

| With first level who occupy | win subsequently places in A during the 2 subsequent years as | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | | | II | | | III | | | Total |
| first place | 卌 \|\|\| | 卌 \|\|\| | 8 | 卌 \|\| | 卌 \|\| | 7 | \|\| | \| | 1 | 16 |
| second | \|\|\| | \|\|\| | 3 | \|\|\|\| | \|\|\|\| | 4 | 卌 \| | 卌 \| | 6 | 13 |
| third | \| | \| | 1 | \| | \| | 1 | — | — | — | 2 |

## Cows in B

| | I | | | II | | | III | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| first place | 卌 \|\|\| 8 | 卌 \|\|\| | 8 | \| 2 | ✓ \| | 1 | \|\|\|\| 4 | ✓ 卌 | 5 | 14 |
| Second | \|\|\| 3 | \|\|\| | 3 | 5 卌 | 卌 | 5 | \|\| 2 | \|\| | 2 | 10 |
| third | | | – | \|\|\| 3 | \|\|\| | 3 | \|\|\| 3 | \|\|\| | 3 | 6 |

| Bulls in B place in B | wins places in A | | | |
|---|---|---|---|---|
| | I | II | III | total |
| first | 8 | 7 | 1 | 16 |
| second | 3 | 4 | 6 | 13 |
| third | 1 | 1 | – | 2 |
| Cows in B first | 8 | 1 | 5 | 14 |
| second | 3 | 5 | 2 | 10 |
| third | – | 3 | 3 | 6 |
| All cattle B first | 16 | 8 | 6 | 30 |
| second | 6 | 9 | 8 | 23 |
| third | 1 | 4 | 3 | 8 |

# Bulls class C
(all revised)

Bulls in C

win subsequent places in A or B

| Who occupy the | in A I | | in A II | | in A III | | in B I | | in B II | | in B III | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| first place in C | 7 𝍸‖ | 7 𝍸‖ | 5 𝍸 | 6 𝍸\| | 5 𝍸 | 4 \|\|\|\| | 8 𝍸\|\|\| | 8 𝍸\|\|\| | 1 \| | 2 ‖ | – | |
| second place in C | – | \|\|\|\| | 3 \|\|\| | \|\|\| | – | \| | 4 \|\|\|\| | 4 \|\|\|\| | 1 \| | 2 ‖ | – | |
| third place in C | 1 ‖ | | 1 \| | \| | 1 \| | | 1 \| | \| | 5 𝍸 | 3 \|\|\| | 2 ‖ | \|\|\| |

Wrong old art else

| a | b | c |
|---|---|---|
| page 1 | | |
| ✓ 1 | 1 | 1 × |
| ✓ 2 2 | 1 | 2 × |
| ✓ – | 1 | 3 × |
| ✓ 3,1 | 1 | 2 × |
| ✓ 1,2 | 1 | 1 × |
| ✓ – | 2 | 3 × |
| ✓ – | 1 | 1 × |
| ✓ 3 | – | 1 × |
| ✓ – | 1 | 2 × |
| ✓ – | 1 | 2 × |

| a | b | c |
|---|---|---|
| page 2 | | |
| ✓ 2,1 | 1 | 1 × |
| ✓ – | 2 | 3 × |
| ✓ 3.3 | 2 | 1 × |
| ✓ – | 3 | 3 × |
| ✓ 2,1 | – | 2 × |
| ✓ – | 2 | 3 × |
| ✓ 2 | 1 | 1 × |
| ✓ 2 | 1 | 1 × |
| ✓ – | 2 | 2 × |
| ✓ 1 | 1 | 1 × |
| ✓ 2 | 2 | 3 × |
| ✓ – | 3 | 3 × |
| ✓ 2,3 | – | 1 × |
| ✓ 1 | 1 | 1 × |

| a | b | c |
|---|---|---|
| page 3 | | |
| ✓ – | 1 | 2 × |
| ✓ 2 | 1 | 2 × |
| ✓ – | 3 | 3 × |
| ✓ 1 | 2 | 3 × |

| a | b | c | |
|---|---|---|---|
| 1 | 1 | 1 | |
| 1,2 | 1 | 1 | |
| – | 1 | 1 | |
| 3 | – | 1 | |
| 2 1 | 1 | 1 | |
| 3 3 | 2 | 1 | |
| 2 | 1 | 1 | |
| 2 | 1 | 1 | |
| 1 | 1 | 1 | |
| 2 3 | – | 1 | |
| 1 | 1 | 1 | |
| 4 I | 8 I | ~~12~~ 12 | |
| 5 II | 1 II | 6 (I) | |
| 4 III | – III | 4 | |
| 1st place in C gains 13 | 9 | 11 | 33 |

1 9 2

| 2nd place in C | | |
|---|---|---|
| 2 2 | 1 | 2 |
| 3,1 | 1 | 2 |
| – | 1 | 2 |
| – | 1 | 2 |
| 2,1 | – | 2 |
| 1 | 2 | 2 |
| – | 1 | 2 |
| 2 | 1 | 2 |
| 2 I | 6 I | 8 |
| 4 II | 1 II | 5 |
| 1 III | – III | (II) 1 |

| 3rd place in C | | | |
|---|---|---|---|
| – | 2 | 3 | |
| – | 3 | 3 | |
| – | 2 | 3 | |
| 2 | 2 | 3 | |
| – | 3 | 3 | |
| – | 1 | 3 | |
| – | 2 | 3 | |
| – | 3 | 3 | |
| 1 | 2 | 3 | |
| 1 I | 1 I | 9 | 2 |
| 2 II | 5 II | (III) | 7 |
| | 3 III | | 3 |

# Cows Class C.

all revised

4

f4r

| A | B | C | | A | B | C |
|---|---|---|---|---|---|---|
| 3 | 3 | 1 | x | 3 | 3 | 1 |
| – | 1 | 2 | ✓ | – | 3 | 1 |
| – | 2 | 3 | ✓ | 1 | 1 | 1 |
| – | 2 | 3 | ✓ | – | 1 | 1 |
| – | 3 | 1 | x | – | 1 | 1 |
| 3 | – | 2 | ✓ | 3, 1 | 1 | 1 |
| – | 1 | 3 | ✓ | – | 2 | 1 |
| 1 | 1 | 1 | x | – | 2 | 1 |
| – | 3 | 2 | ✓ | – | 1 | 1 |
| – | 1 | 1 | x | 1 | 1 | 1 |
| – | 1 | 1 | x | – | 1 | 1 |
| – | 2 | 2 | ✓ | 1 | 1 | 1 |
| 3, 1 | 1 | 1 | x | – | 3 | 1 |
| – | 2 | 1 | x | – | 1 | 1 |
| 2 | – | 3 | ✓ | – | 1 | 2 |
| – | 2 | 1 | x | 3 | – | 2 |
| – | 1 | 2 | ✓ | – | 3 | 2 |
| – | 1 | 1 | x | – | 2 | 2 |
| 1 | 1 | 1 | x | – | 1 | 2 |
| – | 3 | 2 | ✓ | – | 3 | 2 |
| 2 | 2 | 2 | ✓ | 2 | 2 | 2 |
| 2, 3 | 1 | 2 | ✓ | 2, 3 | 1 | 2 |
| – | 1 | 1 | x | 1 | – | 2 |
| 1 | – | 2 | ✓ | – | 3 | 2 |
| – | 3 | 2 | ✓ | – | 1 | 2 |
| 1 | 1 | 1 | x | 1, 1 | 2 | 2 |
| – | 1 | 2 | ✓ | – | 1 | 2 |
| 1, 1 | 2 | 2 | ✓ | – | 2 | 2 |
| – | 1 | 2 | ✓ | – | 2 | 3 |
| – | 3 | 1 | x | – | 2 | 3 |
| – | 2 | 3 | ✓ | – | 1 | 3 |
| – | 1 | 1 | x | 2 | – | 3 |
| 3 | – | 3 | ✓ | – | 2 | 3 |
| – | 2 | 2 | ✓ | 3 | – | 3 |
| | 1 | | | | | |

| A | | B | | C | |
|---|---|---|---|---|---|
| 4 | I | 9 | I | | 13 |
| 0 | ij | 2 | ij | I | 2 |
| 2 | iij | 3 | iij | | 5 |
| 3 | I | 5 | I | | 8 |
| 2 | ij | 4 | ij | II | 6 |
| 2 | iij | 3 | iij | | 5 |
| – | I | 1 | I | – I | 1 |
| 1 | ij | 3 | ij | ij | 4 |
| 1 | iij | – | iij | III | 1 |

Summary

| Class C | place | I | II | III |
|---|---|---|---|---|
| Bulls | 1 | 12 | 6 | 4 |
| | 2 | 8 | 5 | 1 |
| | 3 | 2 | 7 | 3 |
| Cows | 1 | 13 | 2 | 5 |
| | 2 | 8 | 6 | 5 |
| | 3 | 1 | 4 | 1 |

| C | place in C | with total places | | |
|---|---|---|---|---|
| All cattle 1 C class | 1 | 25 | 8 | 9 |
| | 2 | 16 | 11 | 6 |
| | 3 | 3 | 11 | 4 |

Bulls class D (all revised)

| | A | B | C | D | |
|---|---|---|---|---|---|
| | – | – | 1 | 1 | ✓ |
| | – | – | 1 | 2 | ✓ |
| | – | – | 1 | 1 | ✓ |
| | – | 3 | – | 3 | ✓ |
| | – | – | 2 | 2 | ✓ |
| | – | – | 1 | 1 | ✓ |
| vice admiral | 2, 1 | 1 | 1 | 1 | ✓ |
| Royal Dragoon | 1 | 1 | 1 | 1 | ✓ |
| | | | 1 | 2 | ✓ |
| | | 3 | 3 | 3 | ✓ |
| | | | 1 | 2 | ✓ |
| new [illegible] gift | 1 | 1 | – | 1 | ✓ |

| A | B | C | D |
|---|---|---|---|
| . | – | 1 | 1 |
| | – | 1 | 1 |
| | – | 1 | 1 |
| 2,1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 |
| 1 | 1 | – | 1 |

11 I
1 II (D I) =
0 III

| A | B | C | D |
|---|---|---|---|
| | – | 1 | 2 |
| | | 2 | 2 |
| | | 1 | 2 |
| | | 1 | 2 |

3 I
5 II (D ii)
– III

| A | B | C | D |
|---|---|---|---|
| | 3 | – | 3 |
| | 3 | 3 | 3 |

– I
– II D iii
5 . III

Total No of Cattle in A B C D respectively

| | | | | | Total |
|---|---|---|---|---|---|
| all the Bulls | A | 130 | all the Cows | A 131 | 261 |
| | B | 128 | | B 124 | 252 |
| | C | 132 | | C 132 | 264 |
| | D | 83 | | D 123 | 206 |
| | | 473 | | 510 | 983 |

See p19

Cows class D (all voted)

| | A | B | C | D | |
|---|---|---|---|---|---|
| | – | 2 | 3 | 1 | x |
| | – | – | 3 | 1 | x |
| | – | – | 2 | 2 | x |
| | – | 1 | 1 | 3 | x |
| | – | – | 1 | 1 | x |
| | 1 | – | – | 3 | x |
| | – | – | 2 | 1 | x |
| | – | – | 3 | 2 | x |
| | – | 2 | 1 | 1 | x |
| | – | 2 | 1 | 1 | x |
| | – | – | 3 | 2 | x |
| Lady [illegible] | 1 | 1 | 1 | 1 | x |
| | – | – | 3 | 2 | x |
| | – | – | 2 | 2 | x |
| | – | – | 1 | 1 | x |
| | 2 | 2 | 2 | 1 | x |
| | – | – | 3 | 3 | x |
| | – | – | 1 | 1 | x |
| | – | – | 1 | 2 | x |
| | – | 3 | 2 | 1 | x |
| | – | – | 2 | 1 | x |
| | – | – | 3 | 3 | x |
| | – | 2 | – | 2 | x |
| | – | – | 1 | 2 | x |
| | – | – | 1 | 1 | x |
| | – | – | 3 | 1 | x |
| | – | – | 3 | 1 | x |
| | – | 3 | – | 1 | x |
| | – | – | 1 | 3 | x |
| | – | – | 2 | 3 | x |
| | – | 2 | 2 | 1 | x |
| | – | – | 3 | 2 | ✓ |

| A | B | C | D |
|---|---|---|---|
| ~~2~~ | 2 | 3 | I |
| – | – | 3 | |
| – | – | 1 | |
| – | – | 2 | |
| – | 2 | 1 | |
| – | 2 | 1 | |
| 1 | 1 | 1 | |
| – | – | 1 | |
| 2 | 2 | 2 | |
| – | – | 1 | |
| – | 3 | 2 | |
| – | – | 2 | |
| – | – | 1 | |
| – | – | 3 | |
| – | – | 3 | |
| – | 3 | – | |
| – | 2 | 2 | |
| – | – | 2 | II |
| – | – | 3 | |
| – | – | 3 | |
| – | – | 3 | |
| – | – | 2 | |
| – | – | 1 | |
| – | 2 | – | |
| – | – | 1 | |
| – | – | 3 | |
| – | 1 | 1 | III |
| 1 | – | – | |
| – | – | 3 | |
| – | – | 3 | |
| – | – | 1 | |
| – | – | 2 | |

I
9 I
17 II
6 III
26

II
2 I
3 II
4 III
9

III
4 I
1 II
2 III
7

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GALTON PAPERS
2/3/11/3/2

Summary of revised data

| | Places won after | | |
|---|---|---|---|
| **Class C Bulls** | I | II | III |
| first place | 12 | 6 | 4 |
| second | 8 | 5 | 1 |
| third | 2 | 7 | 3 |
| Cows first | 13 | 2 | 5 |
| second place | 2 | 6 | 5 |
| third | 1 | 4 | 1 |
| Bulls and Cows first | 25 | 8 | 9 |
| second | 16 | 11 | 6 |
| third | 3 | 11 | 4 |

| I | II | III |
|---|---|---|
| 44 | 30 | 19 |

| | | | |
|---|---|---|---|
| **Class D Bulls** first | 11 | 1 | — |
| second | 3 | 5 | — |
| third | — | — | 5 |
| Cows first | 9 | 11 | 6 |
| second | 2 | 3 | 4 |
| third place | 4 | 1 | 2 |
| Bulls and Cows first place | 20 | 12 | 6 |
| second | 5 | 8 | 4 |
| third | 4 | 1 | 7 |

| I | II | III |
|---|---|---|
| 29 | 21 | 17 |

# Summary of revised data

| Class A Bulls | places won on second trial | | | Total. |
|---|---|---|---|---|
| on first trial | I | II | III | |
| first place | 1 | 4 | 1 | |
| second | 4 | 2 | 2 | |
| third | 1 | — | 2 | |
| on first trial Cows first place | 5 | 1 | – | |
| second | — | 3 | 2 | |
| third | 3 | 3 | 1 | |
| Bulls and Cows first place | 6 | 5 | 1 | |
| second | 4 | 5 | 4 | I II III |
| third | 4 | 3 | 3 | 14 13 8 |
| Class B Bulls | places won subsequently | | | |
| first place | 8 | 7 | 1 | |
| second | 3 | 4 | 6 | |
| third | 1 | 1 | - | |
| Cows first place | 8 | 1 | 5 | |
| second | 3 | 5 | 2 | |
| third | — | 3 | 3 | |
| Bulls and Cows first | 16 | 8 | 6 | |
| second | 6 | 9 | 8 | |
| third place | 1 | 4 | 3 | 23 21 17 |

Conclusions from revised data

£30 in £15, 10 & 5 (1868 & revd)

£

$67 \times 15 + 33 \times 10 + 22 \times 5 = 1005 + 330 + 110 = 1445$

$31 \times 15 + 33 \times 10 + 22 \times 5 = 465 + 330 + 110 = 905$

$12 \times 15 + 19 \times 10 + 17 \times 5 = 180 + 190 + 85 = 455$

$2805$

$2805 : 30 :: a : x \quad x = \frac{30}{2805} = 1.07 \times 1445 = 15.4$

$\times 905 = 9.7$

$455 = 4.9$

£ 30.0

£35 in £20, 10 and 5, 1888

$67 \times 20 + 33 \times 10 + 22 \times 5 = 1340 + 330 + 110 = 1780$

$31 \times 20 + 33 \times 10 + 22 \times 5 \quad 620 + 330 + 110 \quad 1060$

$12 \times 20 + 19 \times 10 + 17 \times 5 \quad 240 + 190 + 85 \quad 515$

$3355$

$x = \frac{35}{3355} = 104, \times 1780 = 18.5$

(or 105)

$1060 = 11.0$

$515 = 5.4$

$34.9$

right

$18.6$

$11.0$

$5.4$

$35.0$

(for 25 10 5
see page 11

$105 \times 1780 = 18.7$

$1060 = 11.1$

$515 = 5\ 4$

£45 in £20, 15, 10 Brit 78

$67 \times 20 + 33 \times 15 + 22 \times 10 = 1340 + 495 + 220 = 2055$

$31 \times 20 + 33 \times 15 + 22 \times 10 = 620 + 495 + 220 = 1335$

$12 \times 20 + 19 \times 15 + 17 \times 10 = 240 + 285 + 170 = 695$

$4085$

$x = \frac{45}{4085} = 111 \times 2055 = 22.6 \quad 22.2$

$\times 1335 = 14.7 \quad 14.6$

$\times 695 = 7.7 \quad 7.6$

$45.0 \quad 44.4$

Condensed summary of repeated dogs

f.7ar 10

| Winners of | | total places subsequently won first | second II | third III | Total places won in a b c and d I | II | III | Total |
|---|---|---|---|---|---|---|---|---|
| first place in 66 | A | 6 | 5 | 1 | | | | |
| " " 65 | B | 16 | 8 | 6 | | | | |
| " " 66 | C | 25 | 8 | 9 | | | | |
| Total 252. 55 | D | 20 | 12 | 6 | 67 | 33 | 22 | 122 |
| second place 66 | A | 4 | 5 | 4 | | | | |
| " " 65 | B | 6 | 9 | 8 | | | | |
| " " 66 | C | 16 | 15 | 6 | | | | |
| Total 252 " 55 | D | 5 | 8 | 4 | 31 | 33 | 22 | 86 |
| third place 63 | A | 4 | 3 | 3 | | | | |
| " " 60 | B | 1 | 4 | 3 | | | | |
| " " 66 | C | 3 | 11 | 4 | | | | |
| Total 231 " 42 | D | 4 | 1 | 7 | 12 | 19 | 17 | 48 |

for future prizes of C only

| | places subsequently won | | |
|---|---|---|---|
| first place in C | 25 | 8 | 9 |
| second " " | 16 | 16 | 6 |
| third " " | 3 | 11 | 4 |

$\frac{1105}{198} = 5.6$

dogs in I gets £8. 8 according head
II " £5. 12
III " £2 16

175/264

4.3

7

Value of prizes on scale of £15 10 5 series total 30

| | values of prizes won by C | | | Total won | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| first place in C | 375 | 80 | 45 | 500 | 6.0 | 22.5 | 4.8 | 27 | 30.0 |
| second " " | 240 | 160 | 30 | 430 | 7.1 | 17.0 | 11.8 | 2.1 | 30.9 |
| third " " | 45 | 110 | 20 | 175 | 1.71 | 7.7 | 18.8 | 3.4 | 19.9 |
| | | | | 1105 | | 47.2 | 34.9 | 8.2 | 90.9 |
| | | | | x = 393 | | 15.7 | 11.6 | 27 | 30.0 |

132+132 = 264 of I II III or IV
= 66 of each = 198 of I II III cases

as test in page 9
£25 £10 £5 total £40

$67 \times 25 + 33 \times 10 + 22 \times 5 = 1675 + 330 + 110 = 2115$ 21.6
$31 \times 25 + 33 \times 10 + 22 \times 5 = 775 + 330 + 110 = 1215$ 12,4
$12 \times 25 + 19 \times 10 + 17 \times 5 = 300 + 190 + 85 = \underline{575}$ $\underline{5.9}$
$£ = \frac{40}{3905} = 102$ 3905 39.9

Summary from page 9 & above
Prizes £15, £10, £5 Total £30; results 15.4, 9.7, 4.9
£20, £10, £5 " £35; " 18.6, 11.0, 5.4
£25, £10, £5 " £40 " 21.6, 12.4, 5.9
£20 £15 £10 " £45 22.6, 14.7, 7.7

206 calves in one or other of the 4 places in 𝛿
or 51.5 in each of them

$\frac{450.0}{52.5} = 8.[illegible]$ $\frac{175.0}{52.5} = 3.3$ $\frac{105.0}{52.5} = 1,92$

f.7b

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6<br>A 5<br>1 | 90<br>50<br>5<br>145 | 4<br>5<br>4 | 60<br>50<br>20<br>130 | 4<br>3<br>3 | 60<br>30<br>15<br>105 | 145<br>130<br>105<br>380 |
| 16<br>B 8<br>6 | 240<br>80<br>30<br>350 | 6<br>9<br>8 | 90<br>90<br>40<br>220 | 1<br>4<br>3 | 15<br>40<br>15<br>70 | 350<br>220<br>70<br>540 |
| 25<br>C 8<br>9 | 375<br>80<br>45<br>500 | 16<br>11<br>6 | 240<br>165<br>90<br>435 | 3<br>11<br>4 | 45<br>110<br>20<br>175 | 500<br>435<br>175<br>1110 |
| 20<br>D 12<br>6 | 300<br>120<br>30<br>450 | 5<br>8<br>4 | 75<br>80<br>20<br>175 | 4<br>1<br>7 | 60<br>10<br>35<br>105 | 450<br>175<br>105<br>730<br>[934] |

8 contains only 55 / 55 / 42 / 152 obs against 66 65 66 / 66 65 66 / 65 60 66 — 194

∴ raise remaining 8 in that proport

[illegible] $\frac{194}{152} = 1.28 \times 152 =$

$730 \times 1.28 = 934$

6

3 | 582 = 194

197
197
189
3 | 582
194

Class D only the average prize earning subsequently

| | No of places | | |
|---|---|---|---|
| 1st place in D | 20 | 12 | 6 |
| 2d " " | 5 | 8 | 4 |
| 3d " " | 4 | 1 | 7 |

see p 14

value of prizes in £ on the £15, 10, 5 scale

| | £ | £ | £ | £ |
|---|---|---|---|---|
| 1st place | 300 | 120 | 30 | 450 |
| 2d " | 75 | 80 | 20 | 175 |
| 3d " | 60 | 10 | 35 | 105 |
| | 435 | 210 | 85 | 730 |

£ won by D in after prizes

Total cases 83 bull calves 123 cows " = 206 in all £ $\frac{730}{153.6}$ for 3 places and = ·54

| | or No of place winners | |
|---|---|---|
| or for I | 51.5 | £ $\frac{450.0}{51.2}$ = £8.8 per head |
| II | 51.5 | $\frac{175.0}{51.2}$ = 3.4 |
| III | 51.5 | $\frac{105}{51.2}$ = 1.9 |
| IV | 51.5 | |
| | 206.0 | |

Comparison of C & D

C cattle I, II & III gain on average, after-prize worth £5. 12s. per head

D calves who are placed I, II, & III — — £3 10s. 10d "

notwithstanding that D has one more year for after competition

that is 4 (2A + B + C) instead of 3 (2A + B)

reducing D winning by 1/4 i.e. by 17s. 9d it becomes £2. 13. 1.
" or little more than half as good a forecast as C

13/ Page of MSS original sheets by Sheppard. No of cases in each place in each page

f.8v

Total of Bulls who are placed 1 2 3rd 4 | Total of Cows who are placed 1 2 3 4

| Page | A | B | C | D | | Page | A | B | C | D | | Bulls and Cows Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 8 | 8 | 8 – {3 third 1 fourth | | 1 | 8 | 8 | 8 | 8 – 6 third | | |
| 2 | 7 | 7 | 7 | 7 – 1 third | | 2 | 7 | 7 | 7 | 7 – 1 third | | |
| 3 | 6 – 2 third | 6 – 3 third | 6 | 6 | | 3 | 6 – 1 third | 6 – 2 third | 6 | 6 | | |
| 4 | 6 | 6 | 6 | 1 ended in 1889 | | 4 | 6 | 5 | 6 | 6 – 2 third | | |
| 5 | 6 | 6 | 6 | | | 5 | 6 | 6 – 1 fourth | 6 | 6 | | |
| Total 1st place | 33 | 33 | 33 | 22 | 121 | Total 1st place | 33 | 32 | 33 | 33 | 131 | 252 |
| second place | 33 | 33 | 33 | 22 | 121 | 2d ,, | 33 | 32 | 33 | 33 | 131 | 252 |
| third place | 31 | 30 | 33 | 18 | 112 | 3d ,, | 32 | 30 | 33 | 24 | 119 | 231 |
| fourth place | 33 | 33 | 33 | 21 | 120 | 4th | 33 | 31 | 33 | 33 | 130 | 250 |
| all places | 130 | 129 | 132 | 83 | 474 | Total | 131 | 125 | 132 | 123 | 511 | 985 |
| | | | | | | | 130 | 129 | 132 | 83 | | |

| All places | Bulls and Cows — | 261 | 254 | 264 | 206 | 985 |
|---|---|---|---|---|---|---|
| | | mature | adult | young | calves | |

| Bulls and Cows | mature A | adult B | young C | calves D | Total |
|---|---|---|---|---|---|
| First place | 66 | 65 | 66 | 55 | 252 |
| Second | 66 | 65 | 66 | 55 | 252 |
| third | 63 | 60 | 66 | 42 | 231 |
| fourth | 195 66 | 190 64 | 198 66 | 54 | 250 |
| Total | 260 | 254 | 264 | 206 | 985 |

from p 9

~~of ABCAD (on scale of £15, 10, 5.)~~

~~282 Cattle in 1st place win £2805 in subsequent prizes~~
~~11 duplicates a class deduct~~
~~241 winnings per head £11.60 | 20.1~~
~~252 in 2d place win £905 " £3.59 | 6.2~~
~~231 in 3d place 455 £1.97 | 3.4~~
~~17.16 | 29.7~~

~~a : x :: 17.16 : £30~~
~~$x = \frac{30}{17.2} a = 1.74a$~~

| Winners of places as below | win subsequently in A 261 1, 2, 3 | Total | B 254 1, 2, 3 | Total | C 264 1, 2, 3 | Total | D 206 1, 2, 3 | Total | Grand Total |
|---|---|---|---|---|---|---|---|---|---|
| First | 6, 5, 1 | 12 | 16, 8, 6 | 30 | 25, 8, 9 | 42 | 20, 12, 6 | 38 | 122 |
| Second | 4, 5, 4 | 13 | 6, 9, 8 | 23 | 16, 11, 6 | 33 | 5 8, 4 | 17 | 86 |
| Third | 4, 3, 3 | 10 | 1, 4, 3 | 8 | 3, 11, 4 | 18 | 4, 1, 7 | 12 | 48 |
|  |  | 35 |  | 61 |  | 93 |  | 67 | 256 |

Duplicates pages of abstract

|  |  | 1 | 2 | 3 | 4 d |  |
|---|---|---|---|---|---|---|
| A | Bulls | 1 | 1 | – | – | 11 |
|  | Cows | 2 | 4 | 3 |  |  |

? raise entries in D to ratio of 260 : 206
261
254
264
3|779
260

$\frac{260}{206} = 1.26$

They also define with numerical exactness (the differences in actual merit expressed by occupying the first, second or third places, in the classes about to be described. The case to be considered is ~~interesting of being~~ a particular instance of a very common problem, that has hitherto never attacked with thoroughness, it will

Cattle.

(In at least one form of competition)

The material exists in the Journ R. Agr Soc for determining ~~[illegible]~~ numerically the degree to which ~~of the value~~ of prizes (won) in early life give trustworthy ~~and~~ forecasts of similar successes after years. Prizes have been yearly adjudged among Shorthorn bulls & cows severally for many years past to (1) calves (2) young ~~[illegible]~~ cattle, (3) adult (4) mature. Those I shall deal with range from 1868 to 1900 inclusive that is during 33 years. The number of ~~firsts to be~~ prizes ~~subject to some deduction~~ is therefore 33 (years) × 4 (classes) × 2 (sexes) or 264 altogether. ~~There are~~ slight unimportant deductions have to be made for the occasional but rare non-award of a prize & to the fact that prizes for bull calves ~~were stopped~~ ceased after 1869. There is a further small break in the continuity of the record owing the ~~above licences as I have~~ [illegible] the classes to which I have applied the names calves, young, adult & mature being somewhat differently defined at the beginning and at the end of the period. At first they referred to animals (1) under 1 year of age (2) of 1 & under 2, (3) of 2 & under 3 (4) of 3 & upwards. Latterly they referred to (1) animals born in same year as that of the exhibition (2) to those born the year before (3) to those born the second year before (4) to those born in the third or fourth year before. I do not regard these alterations as

I will take no further notice of these ~~[illegible]~~ unimportant, except as regards the ~~admission~~ ~~older~~ of cattle permission of mature of many to compete during many years ~~of them~~ in succession instead of during two years only.

I was informed on good authority that the Shorthorn prize winners at the shows of the R. Agr Soc might fairly be taken to represent the best cattle in England of that kind in the year. Success is so highly valued as an honor by the ~~[illegible]~~ wealthy breeders of this ~~high~~ important stock that consideration of cost & previous successes do not deter them from re-exhibition so long as there is good chance of success and again, that the ~~g~~ money gains of success, independently of the prizes, are considerable inasmuch as they enhance the value of the ~~stock~~ whole herd to which they belong. The data afford some material for testing this opinion. The same animal is certainly in many cases, ran year after year because they appear ~~twice~~ time after time as prize winners. Otherwise I have not access to ~~the [illegible]~~ lists of all the entries in which doubtless would be found the names of many that had been sent but failed to win. Still less do I know anything of the reasons that may have deterred the owner from sending a

Bulls × Cows see p 13

see p 5, at bottom)

See back p. 5 [illegible]) Total competitors (minus repetitions) for all [illegible] 983

Total ~~competitors~~ entries 1868–1900 (including repetitions) 983 ~~in~~ all 4 places

or 246 entries in each class place    won by the 246 in each case

$\frac{1}{246}$ = .00406 × 67    33    22    when first places

Cattle    .27202    .13400    .08932

.00406 ×    31    33    22    when second places

.126    .133    .089

.00406 ×    12    19    17    when third places

.048    .077    .069

.446    .344    .247    average no. of class-places

Total 11.3 | 6.7    3.4    1.2    worth of prize-money gained £ 15, 10, 5

b. £15 × (67 + 31 + 12 = ) × 11 0 = 1610 previous prize-winners on subsequent occasions.

on £15, 10, 5 scale
= p.9 £1445 ×

= 905

= 445

£2505
among 246 animals of Class A
= = 11.6 each

h5 Voller

Value of a first place on the £15 10 5 scale
average place by 1st class

in A $\frac{1}{261} \times 6 = 0.023$

B $\frac{1}{252} \times 16 = 0.063$

C $\frac{1}{264} \times 25 = 0.095$

D $\frac{1}{206} \times 20 = 0.097$

$0.278 \times$ £15 worth $= 4.17$

First places altogether on equal terms

$\frac{67 \times 15}{246} = \frac{1005}{246} = 4.09$

21) Repeated Entries in Class A, Bulls & Cows f.12v

In ~~14~~ 15 out of the 33 years the 1st place man submitted himself (1868 – 1900 inclusive = 33 years
13 " " " 2nd " " " at least once again
4 3rd
4th

| First Entry | Second entry 1 | 2 | 3 | 4 | Total | |
|---|---|---|---|---|---|---|
| 1 | 卌II<br>II 9 | 卌<br>III 8 | I 1 | II<br>I 3 | 15, (21), 6 | 21 |
| 2 | IIII<br>卌I 10 | 卌<br>II 7 | IIII<br>II 6 | I 1 | 14, (24), 10 | 24 |
| 3 | IIII 4 | III<br>I 4 | III<br>I 4 | III 3 | 13, (15), 2 | 15 |
| 4 | II 2 | III<br>I 4 | III 3 | III 3 | 11, (12), 1. | 12 |
| | | | | | | 72 |

9 stationary 12 sinking

a 1 fails to get a second 1 more often than not.

The most frequent first entries are 1 & 2;
3, & especially 4, are the least frequent.
Sinking Stationary & Rising are about equi-frequent.
1 to 1 or 2 & 2 to 1 or 2 are 34 in 4 squares
or nearly half of the total 72, in 16 squares contained
that is, about 3 times the frequency elsewhere

| | | | Total |
|---|---|---|---|
| Sinking | 8, 1, 3<br>6, 1<br>3 | 12<br>7<br>3 | 22 |
| Stationary | 9, 7, 4 3 = | | 23 |
| Rising | 10<br>4, 4<br>2, 4, 3 | 10<br>8<br>9 | 27 |
| | | | 72 |

| | |
|---|---|
| 34 | 11 |
| 14 | 13 |

33
42 39

Bulls Class A

A & B are merely distinct class here. They do not refer to class

22

f. 13r

First or early entry | Second or after

| A | | B | | A | | B | | A | | B | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 3 ✓ | 2 | 1 ✓ | 4 | 3 ✓ | | | 1 | 1 ✓ | | |
| 2 | 2 ✓ | 2 | 1 ✓ | 2 | 3 ✓ | | | 2 | 2 ✓ | 2 | 3 ✓ |
| 2 | 2 ✓ | | | 3 | 3 ✓ | | | 1 | 1 ✓ | 1 | 1 ✓ |
| 2 | 1 ✓ | 1 | 2 ✓ | 4 | 2 ✓ | | | 2 | 3 ✓ | | |
| 1 | 4 ✓ | | | 2 | 1 ✓ | | | 3 | 4 ✓ | 2 | 2 ✓ |
| 3 | 1 ✓ | 2 | 1 ✓ | Cows | | | | 4 | 2 ✓ | 2 | 1 ✓ |
| 1 | 2 | 1 | 2 ✓ | 1 | 1 ✓ | | | 2 | 3 ✓ | 1 | 2 ✓ |
| 1 | 2 ✓ | | | 3 | 2 ✓ | 2 | 2 ✓ | 3 | 2 ✓ | 2 | 1 ✓ |
| 4 | 3 ✓ | | | 4 | 3 ✓ | | | 1 | 1 ✓ | | |
| 2 | 1 ✓ | | | 1 | 1 ✓ | | | 2 | 2 ✓ | 2 | 2 ✓ |
| 1 | 3 ✓ | 3 | 3 ✓ | 1 | 2 ✓ | | | 1 | 1 ✓ | | |
| 3 | 3 ✓ | | | 3 | 1 ✓ | | | 4 | 2 ✓ | 2 | 1 ✓ |
| 2 | 1 ✓ | | | 2 | 2 ✓ | | | 3 | 1 ✓ | | |
| 2 | 4 ✓ | | | 3 | 2 ✓ | | | 4 | 4 ✓ | | |
| 1 | 2 ✓ | | | 4 | 1 ✓ | | | | | | |
| 1 | 4 ✓ | | | 3 | 4 ✓ | | | | | | |
| 1 | 1 ✓ | | | 3 | 1 ✓ | | | | | | |
| 4 | 4 ✓ | | | 3 | 4 ✓ | 4 | 2 ✓ | | | | |
| 2 | 3 ✓ | 3 | 2 | 4 | 1 ✓ | 5 | 1 ✓ | | | | |
| Major! 1 | 2 ✓ | | | 3 | 3 ✓ | 1 | 4 ✓ | | | | |
| | | | | May Duchess | | | | | | | |
| 20 | | 7 | | 19 | | 4 | | 14 | | 8 | } Total 72 |

first & second entries 53
Subsequent 19
total 72

UNIVERSITY COLLEGE LONDON GALTON PAPERS

| | |
|---|---|
| 380 | a |
| 540 | 2a |
| 1110 | 3a |
| [934] | 4a |
| | 10.a |
| 2964 | |

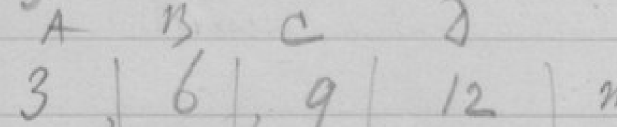
take 300 as the unit equivalent to a

| | A | B | C | D | |
|---|---|---|---|---|---|
| (1) | 3, | 6, | 9 | 12 | measured series |
| (2) | 3.8 | 5.4 | 11.1 | 9.3 | obs^d - series |
| diff^ces | +.8 | -.6 | +1.2 | -2.7 | |

Unquestionably D is the worst

or instead of differences take the following proportion $\frac{(2)}{(1)}$

| | | | | |
|---|---|---|---|---|
| prop^n = | 1.27 | 0.90 | 1.23 | 0.78 |



f.14r (24)

The subsequent winnings of those who won a place 1 2 3 or 4th on their first trial in Class A, or a place in B, or in C, or in D. Converting the places as given in Table ( ) into winnings on the £15, 10, 5 scale, and redistributing them, we find as follows

Subsequent Earnings of a place winner in

| Class A | Class B | Class C | Class D [revised] |
|---|---|---|---|
| £980 | £540 | £1110 | £730 £[934] |

The revision of D is necessary because of the paucity of cases 152 against an average of 194 in the other classes. This being due to the stoppage of prizes for Bull calves after 1889. The revision consists in raising the £720 in the above proportion.

The number of chances that occur of subsequent prize winning to the place winners are 1 for A, 2 for B, 3 for C and 4 for D therefore if the forecasts of future success were equal in these 4 cases, the winning would run in that proportion

C & A go closely together, B badly & D the worst.

$A4^{L}$ $A3^{rd}$ B $C^{1}$ D 68

Corrigenda Add Cardiff

1868 not to count it being impossible for repetitions to occur in it

| | | |
|---|---|---|
| 1869 D of might win A4th year in | 1872 | ignore entries 68–71 inclusive |
| C | 71 | 68–70 |
| B | 70 | 68. 69 |
| A third | 69 | |
| A fourth | 68 | |
| | | ignore |

subtract 1 at least

---

(subtracted so)

1 [A4^x | A3 | B C D]
01, 00, 99 98 97

1901

| | ignore entries under | |
|---|---|---|
| D | in 98 and after | 4 |
| C | 99 | 3 |
| B | 00 | 2 |
| A3 A4th | | 6 |

places won subsequently Bulls

total years 1868–1901 inclusive = 34 years | whole 33

| | | a | b | c | d |
|---|---|---|---|---|---|
| add to Bulls | Royal Duke | 1/01 | 1/00 | π 99 | |
| | Collynie | 2/01 | 2/00 | | |
| add to Cows | Welcome | 2/01 | | | |
| | Warrior Queen | 1/01 | | | |

There is no sign of D previous to 1868 having subsequent winnings (is no C)
nor of D of the last 2 years having any
similarly as to C

$$\frac{67 w_1 + 33 w_2 + 22 w_3}{31 w_1 + 33 w_2 + 22 w_3} = \frac{w_1}{w_2} \qquad (1)$$

$$\frac{61 w_1 + 33 w_2 + 22 w_3}{12 w_1 + 19 w_2 + 17 w_3} = \frac{w_2}{w_3} \qquad (2)$$

$$67 w_1 w_2 + 33 w_2^2 + 22 w_2 w_3 = 33 w_1^2 + 33 w_1 w_2 + 22 w_1 w_3$$

$$61 w_1 w_3 + 33 w_2 w_3 + 22 w_3^2 = 12 w_1 w_2 + 19 w_2^2 + 17 w_2^2 w_3$$

# ARITHMETICAL TABLES.

## Numeration Table.

| | |
|---|---|
| Units, | 1 |
| Tens, | 12 |
| Hundreds, | 123 |
| Thousands, | 1234 |
| Tens of Thousands, | 12,345 |
| Hundreds of Thousands, | 123,456 |
| Millions, | 1,234,567 |
| Tens of Millions, | 12,345,678 |
| C. of Millions, | 123,456,789 |

## Sterling Money Table.

| | | |
|---|---|---|
| 4 Farthings | 1 Penny | *d.* |
| 12 Pence | 1 Shilling | *s.* |
| 2 Shillings | 1 Florin. | |
| 2 Shillings & Sixpence | 1 HalfCrown | |
| 5 Shillings | 1 Crown | *cr.* |
| 10 Shillings | 1 Half Sov. | |
| 20 Shillings, 1 Sov. or | 1 Pound | £ |
| 21 Shillings | 1 Guinea. | |

## Arithmetical Signs.

+ Plus; Sign of Addition.  
− Minus; Sign of Subtraction.  
× Sign of Multiplication.  
÷ Sign of Division.  
= Sign of Equality.  
: :: : Sign of Proportion.  
√ Sign of the Square Root.  
∛ Sign of the Cube Root.  
° Degree, ′minute, ″second.  
∴ Therefore.

## Troy Weight.

**For Gold, Silver, and Jewels.**

| | | |
|---|---|---|
| 24 Grains | 1 Pennyweight | *dwt.* |
| 20 Pennyweights | 1 Ounce | *oz.* |
| 12 Ounces | 1 Pound | *lb.* |

## Apothecaries' Weight.

**For Mixing Medicines.**

| | | |
|---|---|---|
| 20 Grains | 1 Scruple | *scr.* |
| 3 Scruples | 1 Dram | *dr.* |
| 8 Drams | 1 Ounce | *oz.* |
| 12 Ounces | 1 Pound | *lb.* |

## Avoirdupois Weight.

**For all Goods except Gold, Silver, and Jewels.**

| | | |
|---|---|---|
| 16 Drams | 1 Ounce | *oz.* |
| 16 Ounces | 1 Pound | *lb.* |
| 14 Pounds | 1 Stone | *st.* |
| 28 Pounds | 1 Quarter | *qr.* |
| 4 Quarters | 1 Hundredweight | *cwt.* |
| 20 Cwt | 1 Ton | *tn.* |

## Hay and Straw Weight.

| | |
|---|---|
| 36 lb. Straw | 1 Truss. |
| 56 lb. Old Hay | 1 Truss. |
| 60 lb. New Hay | 1 Truss. |
| 36 Trusses | 1 Load. |

## Long or Lineal Measure.

| | | |
|---|---|---|
| 12 Lines | 1 Inch | *in.* |
| 12 Inches | 1 Foot | *ft.* |
| 3 Feet | 1 Yard | *yd.* |
| 2 Yards | 1 Fathom | *f.* |
| 5½ Yards | 1 Pole. | |
| 40 Poles | 1 Furlong | *fur.* |
| 8 Furlongs or 1760 yards | 1 Mile. | |

## Cloth Measure.

2¼ inches....=1 nail.  
4 nails......=1 quarter of a yard.  
4 quarters..=1 yard.

## Solid or Cubic Measure.

1728 cubic inches = 1 cubic foot.  
27 cubic feet = 1 cubic yard.  
24¾ cubic feet = 1 solid perch mason's work.  
12⅜ cubic feet = 1 solid perch brickwork.

## Imperial Heaped Measure.

| | | Lbs. Avoird. of water. |
|---|---|---|
| 8 gallons | =1 bushel.. | = 80 |
| 3 bushels | =1 sack.... | = 240 |
| 12 sacks | =1 chaldron | =2880 |

## Imperial Dry Measure.

| | | Avoird. of water. lb. | oz. |
|---|---|---|---|
| 2 glasses | =1 naggin | = 0 | 5 |
| 4 naggins | =1 pint... | = 1 | 4 |
| 2 pints | =1 quart.. | = 2 | 8 |
| 4 quarts | =1 gallon.. | = 10 | 0 |
| 2 gallons | =1 peck.. | = 20 | 0 |
| 4 pecks | =1 bushel | = 80 | 0 |
| 8 bushels | =1 quarter | =640 | 0 |

## Square Measure.

144 square inches = 1 square foot.  
9 square feet .. = 1 square yard.  
30¼ square yards = 1 square pole.  
40 square poles = 1 rood.  
4 roods = 1 acre.

## Table of Motion.

60″ seconds ...... = 1 minute.  
60′ minutes ...... = 1 degree.  
30° degrees ....... = 1 sign.  
12 signs, or 360° .. = the circle of the earth.

## Table of Time.

| | |
|---|---|
| 60 Seconds | 1 Minute. |
| 60 Minutes | 1 Hour. |
| 24 Hours | 1 Day. |
| 7 Days | 1 Week. |
| 4 Weeks | 1 Month. |
| 365 Days | 1 Year |
| 366 Days | 1 Leap Year. |
| 52 Weeks | 1 Year. |
| 12 Calendar or 13 Lunar Months | 1 Year. |

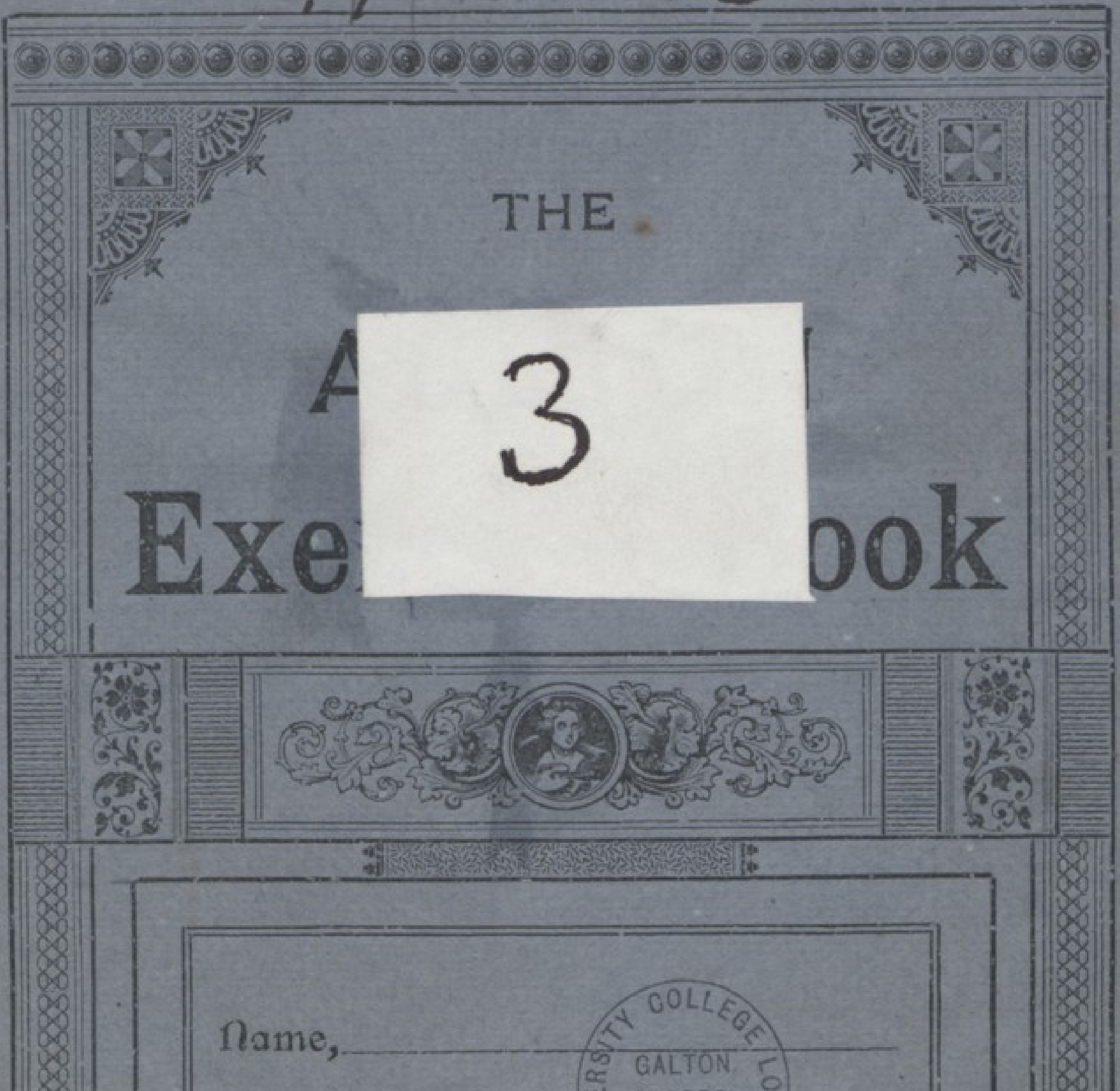
### Days in the Months.

Thirty days hath September,  
April, June, and November,  
All the rest have thirty-one,  
Excepting February alone, [clear.  
Which has but twenty-eight days  
And twenty-nine in each leap year.

# MULTIPLICATION TABLE.

| 2 TIMES | 3 TIMES | 4 TIMES | 5 TIMES | 6 TIMES | 7 TIMES | 8 TIMES | 9 TIMES | 10 TIMES | 11 TIMES | 12 TIMES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 are 2 | 1 are 3 | 1 are 4 | 1 are 5 | 1 are 6 | 1 are 7 | 1 are 8 | 1 are 9 | 1 are 10 | 1 are 11 | 1 are 12 |
| 2 — 4 | 2 — 6 | 2 — 8 | 2 — 10 | 2 — 12 | 2 — 14 | 2 — 16 | 2 — 18 | 2 — 20 | 2 — 22 | 2 — 24 |
| 3 — 6 | 3 — 9 | 3 — 12 | 3 — 15 | 3 — 18 | 3 — 21 | 3 — 24 | 3 — 27 | 3 — 30 | 3 — 33 | 3 — 36 |
| 4 — 8 | 4 — 12 | 4 — 16 | 4 — 20 | 4 — 24 | 4 — 28 | 4 — 32 | 4 — 36 | 4 — 40 | 4 — 44 | 4 — 48 |
| 5 — 10 | 5 — 15 | 5 — 20 | 5 — 25 | 5 — 30 | 5 — 35 | 5 — 40 | 5 — 45 | 5 — 50 | 5 — 55 | 5 — 60 |
| 6 — 12 | 6 — 18 | 6 — 24 | 6 — 30 | 6 — 36 | 6 — 42 | 6 — 48 | 6 — 54 | 6 — 60 | 6 — 66 | 6 — 72 |
| 7 — 14 | 7 — 21 | 7 — 28 | 7 — 35 | 7 — 42 | 7 — 49 | 7 — 56 | 7 — 63 | 7 — 70 | 7 — 77 | 7 — 84 |
| 8 — 16 | 8 — 24 | 8 — 32 | 8 — 40 | 8 — 48 | 8 — 56 | 8 — 64 | 8 — 72 | 8 — 80 | 8 — 88 | 8 — 96 |
| 9 — 18 | 9 — 27 | 9 — 36 | 9 — 45 | 9 — 54 | 9 — 63 | 9 — 72 | 9 — 81 | 9 — 90 | 9 — 99 | 9 —108 |
| 10 — 20 | 10 — 30 | 10 — 40 | 10 — 50 | 10 — 60 | 10 — 70 | 10 — 80 | 10 — 90 | 10 —100 | 10 —110 | 10 —120 |
| 11 — 22 | 11 — 33 | 11 — 44 | 11 — 55 | 11 — 66 | 11 — 77 | 11 — 88 | 11 — 99 | 11 —110 | 11 —121 | 11 —132 |
| 12 — 24 | 12 — 36 | 12 — 48 | 12 — 60 | 12 — 72 | 12 — 84 | 12 — 96 | 12 —108 | 12 —120 | 12 —132 | 12 —144 |

Copy Book 3



THE

A

Exe ook

3

Name,

Subject,

UNIVERSITY COLLEGE LONDON
GALTON PAPERS
2/5/11/3/4

O

From the series copied out by A. Frank B.

1-4 Taken out from the MS. Subsequent places

9, 11 Comparative merits of different scales of prizes

// 42 Contents

| Bulls | 3rd year place | Subsequent places in 4th year 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|---|
| page 1 | first | I 1 | III 3 | I 1 | I 1 |
| | second | IIII 4 | II 2 | II 2 | I 1 |
| | third | I 1 | 0 | II 2 | 0 |
| | fourth | 0 | I 1 | III 3 | I 1 |

| Cows | place | | | | |
|---|---|---|---|---|---|
| page 1 | first | IIII 5 | I 1 | 0 | 0 |
| | second | 0 | III 3 | II 2 | I 1 |
| | third | III 3 | II 2 | I 1 | I 1 |
| | fourth | II 2 | II 2 | I 1 | I 1 |

| Bulls + Cows | | 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|---|
| | first | 6 | 4 | 1 | 1 |
| | second | 4 | 5 | 4 | 2 |
| | third | 4 | 2 | 3 | 1 |
| | fourth | 2 | 3 | 4 | 2 |
| | | 16 | 14 | 12 | 42 |

Bulls **B** Subsequent places in A 3rd & 4th years

| page | place | 1st | | 2nd | | 3rd | | 4th | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | first | 𝍸\|\|\|\| | 9 | 𝍸\| | 6 | \|\| | 2 | \|\| | 2 |
| | second | \|\|\|\| | 4 | 𝍸 | 5 | 𝍸\| | 6 | \|\| | 2 |
| | third | \| | 1 | \| | 1 | | 0 | \|\| | 2 |
| | fourth | | 0 | | 0 | \| | 1 | \|\| | 2 |

Cows

| page | place | 1st | | 2nd | | 3rd | | 4th | |
|---|---|---|---|---|---|---|---|---|---|
| 3 | first | 𝍸\|\|\|\| | 9 | \| | 1 | 𝍸 | 5 | \| | 1 |
| | second | \|\|\| | 3 | 𝍸 | 5 | \|\| | 2 | 𝍸\| | 6 |
| | third | \| | 1 | \|\|\| | 3 | \|\|\| | 3 | | 0 |
| | fourth | | 0 | \| | 1 | \|\| | 2 | | 0 |

Bulls & Cows

| place | 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| first | 18 | 7 | 7 | 3 |
| second | 7 | 10 | 8 | 8 |
| third | 2 | 4 | 3 | 2 |
| fourth | 0 | 1 | 3 | 2 |
| ✓ | 27 | 22 | 21 | \|\| 70 |

Subsequent places in
B and in A third & A fourth years

Bulls C

| page | place | 1st | | 2nd | | 3rd | | 4th | |
|---|---|---|---|---|---|---|---|---|---|
| 4 | first | 𝍸𝍸\|\|\| | 13 | 𝍸\| | 6 | \|\|\|\| | 4 | \|\|\| | 3 |
| | second | 𝍸\|\|\| | 8 | 𝍸 | 5 | \| | 1 | \| | 1 |
| | third | \|\| | 2 | 𝍸\| | 6 | \|\|\| | 3 | \| | 1 |
| | fourth | \|\| | 2 | \|\| | 2 | \|\|\| | 3 | \|\|\|\| | 4 |

Cows

| page | place | 1st | | 2nd | | 3rd | | 4th | |
|---|---|---|---|---|---|---|---|---|---|
| 5 & 6 | first | 𝍸𝍸\|\|\| | 13 | \|\| | 2 | 𝍸 | 5 | \|\|\|\| | 4 |
| | second | 𝍸\|\|\| | 8 | 𝍸\| | 6 | 𝍸 | 5 | | 0 |
| | third | \| | 1 | \|\|\|\| | 4 | \| | 1 | \|\| | 2 |
| | fourth | 𝍸 | 5 | \| | 1 | \|\| | 2 | \|\| | 2 |

Bulls & Cows

| place | 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| first | 26 | 8 | 9 | 7 |
| second | 16 | 11 | 6 | 1 |
| third | 3 | 10 | 4 | 3 |
| fourth | 7 | 3 | 5 | 6 |
| | 52 ✓ | 32 | 24 | \|\| 108 |

Subsequent places of the prize cattle :

f.4v

| in | first place | second | third |
|---|---|---|---|
| A | 16 | 14 | 12 |
| B | 27 | 22 | 21 |
| C | 52 | 32 | 24 |
| D | 40 | 25 | 23 |

Subsequent winnings on the 15 10 5 scale

|  | ×4 by £15<br>£ | by £10<br>£ | by £5<br>£ |  |  |
|---|---|---|---|---|---|
| A | 240 | 140 | 60 | 440 |  |
| B | 405 | 220 | 105 | 730 | 290<br>1170<br>490 |
| C | 780 | 320 | 120 | 1220 |  |
| D | 600 | 250 | 115 | 965 |  |

Subsequent places in

Bull Calves D C & B & A third & A fourth years

| page | place | 1st | | 2nd | | 3rd | | 4th | |
|---|---|---|---|---|---|---|---|---|---|
| 7 | first | 𝍸𝍸 | 10 | \| | 1 | | 0 | | 0 |
| | second | \|\|\| | 3 | \| | 1 | | 0 | \|\| | 2 |
| | third | | 0 | | 0 | \|\|\| | 3 | | 0 |
| | fourth | \| | 1 | \| | 1 | \|\| | 2 | \|\| | 2 |

Cow Calves

| page | place | 1st | | 2nd | | 3rd | | 4th | |
|---|---|---|---|---|---|---|---|---|---|
| 8 & 9 | first | 𝍸\|\|\|\| | 9 | 𝍸𝍸\| | 11 | 𝍸\| | 6 | 𝍸 | 5 |
| | second | \|\|\| | 3 | \|\|\| | 3 | \|\|\|\| | 4 | 𝍸\| | 6 |
| | third | \|\|\|\| | 4 | \| | 1 | \|\| | 2 | \| | 1 |
| | fourth | \| | 1 | \|\| | 2 | \| | 1 | \|\| | 2 |

Bulls & Cows

| place | 1st | × 1.27 | 2nd | × 1.27 | 3rd | × 1.27 | 4th | × 1.27 |
|---|---|---|---|---|---|---|---|---|
| first | 19 | 24 | 12 | 15 | 6 | 8 | 5 | 6 |
| second | 6 | 8 | 4 | 5 | 4 | 5 | 8 | 9 |
| third | 4 | 5 | 1 | 1 | 5 | 6 | 1 | 1 |
| fourth | 2 | 3 | 3 | 4 | 3 | 4 | 4 | 5 |
| | | 40 | | 25 | | 23 | 88 | |

$\overset{£}{2935} : \overset{£}{30}$

$:: \overset{£}{15 25} : x \quad x = \frac{30}{2935} \times 1525 = \frac{1}{100} \times 1.02 \times 1525 = 15.5$

$\times 950 \qquad ) \times 950 = 9.7$

$\times 460 \qquad 460 = 4.7$

$29.9$

| sh:ln |
|---|
| 15.0 |
| 10.0 |
| 5.0 |
| 30.0 |

Or Taking the middle letter as unit £10

| £ | | Calc | obs |
|---|---|---|---|
| 15 | 950 × 1,5 = | 14,25 | 15,25 |
| 10 | × 1 = | 950 | 9,50 |
| 5 | × 0,5 = | 475 | 4,75 |
| 30 | | | 29.50 |

$\times \frac{1000}{950} = 1.05$

f.65 6

from p.11 Copybook 3

| winners of first places | win subsequently on scale of £15 £10 £5 | | |
|---|---|---|---|
| | first place | second pl | third |
| in A B C & D | 74 | 34 | 25 |
| | £1110 | £340 | £75 |

Total £1525

wrong

| | | | |
|---|---|---|---|
| Second places | 35 | 31 | 23 |
| & the £ | 525 | 310 | 115 |

See

Total £950

| | | | |
|---|---|---|---|
| Third place | 14 | 17 | 16 |
| | £210 | 170 | 80 |

Total £460

grand total £2935

7) From p 12

Total subsequent winnings of 3[60 A + 60 B + 60 C] on the £15, 10, 5 total = 2935, the original prizes of these were 3[60 × (£15 + £10 + £5)] = 1800 × 3 = 5400
= 180 × 10 =

$\frac{5400}{2935} = 1.84$ Let $w_1$, $w_2$, $w_3$ = true worth of a 1st 2nd 3rd [illegible]

£ £

$1.84 \times 15 \times 180 = 27.6 \times 180 = 4968 = 74 w_1 + 34 w_2 + 25 w_3$

$1.64 \times 10 \times 180 = 18.4 \times 180 = 3312 = 31 w_1 + 31 w_2 + 23 w_3$

$1.84 \times 5 \times 18 = 92 \times 18 = 1656 = 14 w_1 + 17 w_2 + 16. w_3$

$16. w_3 = 1656 - 14 w_1 - 17 w_2 \times 1.44 \quad 2390 - 20 w_1 - 24 w_2$

$23. w_3 = 3312 - 31 w_1 - 31 w_2$

value of forecast in subsequent game

A & C & B & C [illegible] [illegible] [illegible] of 1st class

condition of $A_3$ & $A_4$ are peculiar

Taking the average gain at this in one [illegible] it ought to be double in 2 [illegible]

let us see how it stands

from p 11 [illegible]

first sec th

260 first in A B C [D] case. win 74 34 25

$260 \times 15 = 3900$ win 1525 2,57

$260 \times 10 = 2600$ " 950 2.74

$260 \times 5 = 1300$ " 460 2.83

7800 2935

8. 1.4 mean 2.75

2,66

$\frac{1}{2{,}66} = .376$

from page 11.

$0.376 \times 260 = 97.76$ say 98

| | | | |
|---|---|---|---|
| (1) | $98 w_1 = 74 w_1 + 34 w_2 + 25 w_3$ | $= 1470$ | $18{,}5 + 11.6 + 35 = 66$ |
| (2) | $98 w_2 = 35 w_1 + 31 w_2 + 23 w_3$ | $= 980$ | |
| (3) | $98 w_3 = 14 w_1 + 17 w_2 + 16 w_3$ | $= 490$ | |

? t

from (1) $24 w_1 = 34 w_2 + 25 w_3$

from (2) $35 w_1 = 67 w_2 - 23 w_3$

$\frac{24}{35} = .69$ $24 w_1 = 46 w_2 + 16 w_3$, $21 w_2 = 39 w_3$; $w_2 = 1.86 w_3$

from (3) $82 w_3 = 14 w_1 + \{17 \times 1.86 + 16\} w_3$

47

$35 w_3 = 14 w_1$ $w_1 = \frac{35}{14} w_3 = 2.5 w_3$

$w_1$ 2.50
$w_2$ 1.86
$w_3$ 1.00

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9 Comparative merits of different Scales of Prizes

f.7v

[illegible] 1.005

| | | | | |
|---|---|---|---|---|
| 74 × 15 = 1110 | 34 × 10 = 340 | 25 × 5 = 125 | 1575 | 15.8<br>.9 |
| 35 × 15 = 525 | 31 × 10 = 310 | 23 × 5 = 115 | 950 | 9.6 |
| 14 × 15 = 210 | 17 × 10 = 170 | 16 × 5 = 80 | 460 | 4.6 |
| 1845 | 820 | 320 | 2985 | |

2985

$\frac{30}{2985} \times a$

$= \frac{1}{100} \times$ [illegible] 15.8 9.6 4.6 3.2 = 30.1

35 = 20 + 10 + 5 $\times \frac{1}{100} \times .973$

1480 + 340 + 125 = 1945 19.0

700 + 310 + 115 = 1125 10.9

280 + 170 + 80 = 530 5.1

2460 + 820 + 320 = 3600 35.0

$\frac{35}{360} = \frac{1}{1000} \times 97$

45 = 25, 15, 5

1850 + 510 + 125 = 2485 24.0

875 + 465 + 115 = 1455 14.2

350 + 255 + 80 = 685 6.7

3075 + 1230 320 4625 45.0

$\frac{45000}{4625} = \frac{1}{1000} \times 9.7$

A.8 r 1.10

| Sum of original prizes | 1st<br>74 | 2d<br>32 | 3d<br>25 | 4th<br>17 | Total |
|---|---|---|---|---|---|
| 30 | × 15 = 1110 | × 10 = 340 | × 5 = 125 | × 0 = — | 1575 |
| | 1.91 × 1110 = [illegible] | 19 | | | |
| 35 | × 20 = 1480 | × 10 = 340 | × 5 = 125 | × 0 = — | 2045 |
| 45 | × 25 = 1850 | × 15 = 510 | × 5 = 125 | × 0 = — | 2485 |
| 50 | × 20 = 1480 | × 15 = 510 | × 10 = 250 | × 5 = 85 | 2325 |
| 75 | × 30 = 2220 | × 20 = 680 | × 15 = 375 | × 10 = 170 | 3445 |

$x : a$ :: Sum of original prizes : total Salsey winnings

$$x = \frac{\text{Sum of original prizes}}{\text{total Salsey winnings}} \times a$$

$\frac{30}{1575} \times a = \frac{1}{100} \times 1.91 \times 1110$
$= [illegible]$

| 11 | 1st | 2nd | 3rd | 4th | |
|---|---|---|---|---|---|
| 1 | 74 | 34 | 25 | 17 | |
| 2 | 35 | 31 | 23 | 20 | |
| 3 | 14 | 17 | 16 | 7 | |
| 4 | 12 | 11 | 16 | 15 | |
| Pupils | 20 | 15 | 10 | 5 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 1480 | 510 | 250 | 85 | 2325 | 22.4 |
| 700 | 465 | 230 | 100 | 1495 | 14.4 |
| 280 | 255 | 160 | 35 | 730 | 7.0 |
| 240 | 165 | 160 | 75 | 640 | 6.2 |
| 2700 | 1395 | 800 | 295 | 5190 | 50.0 |

$\frac{50}{5190} = \frac{1}{1000} \times 9.63$

| Pupils 30 | 20 | 15 | 10 | 75 | |
|---|---|---|---|---|---|
| 2130 | 680 | 375 | 170 | 3355 | 33.1 |
| 1050 | 620 | 345 | 200 | 2215 | 21.8 |
| 420 | 340 | 240 | 70 | 1070 | 10.6 |
| 360 | 220 | 240 | 150 | 970 | 9.5 |
| 3960 | 1860 | 1200 | 590 | 7610 | 75.0 |

$\frac{75}{7610} = \frac{1}{1000} = 9.86$

Contents

1 | Preliminary

2 | Readiness (– ten) p 2 3 in A / p 3, 4, 5 in C

3 | "First, 2nd & 3rd," – see Table 2 for general impressions
figures of merit diag & loose sheet in B
Table 3

4 | Forecast Tables 4 onward

Calculated on
15 8 4 2

| Holders 1 | Gain subsequent places in | | | | Prize money |
|---|---|---|---|---|---|
| | × 15 | × 8 | × 4 | × 2 | |
| First | 1112 | 272 | 100 | 34 | 1518 |
| Second | 525 | 248 | 72 | 40 | 885 |
| Third | 210 | 68 | 64 | 14 | 356 |
| Fourth | 180 | 22 | 64 | 30 | 296 |

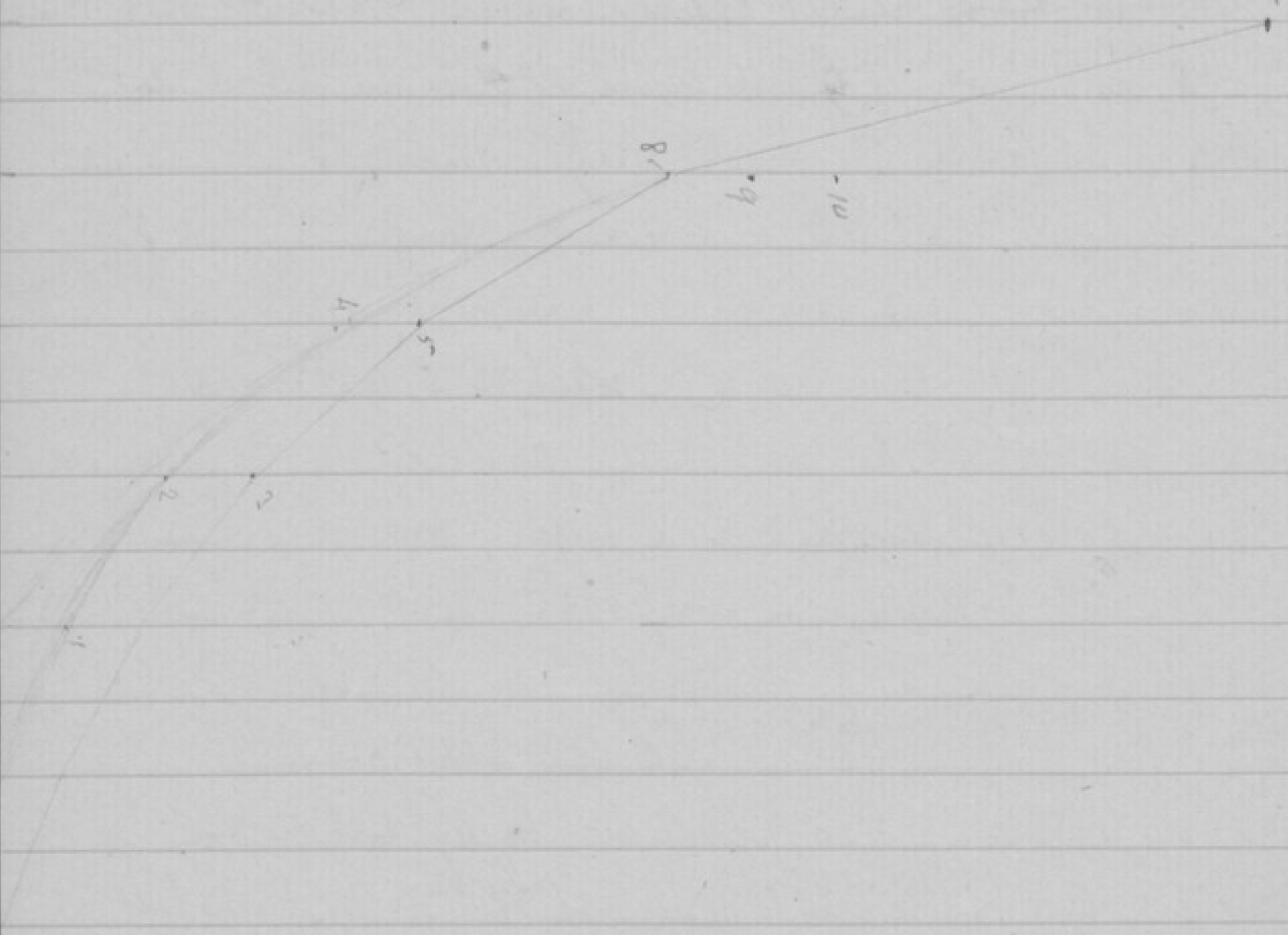
| Holders 1 Places | Gain subsequent places in | | | |
|---|---|---|---|---|
| | First and second | third and fourth | first and second | third and fourth |
| First | 108 | 42 | 174 | 85 |
| Second | 66 | 43 | | |
| Third | 31 | 23 | 54 | 54 |
| Fourth | 23 | 31 | | |

Table .

| Holders of | Places gained in subsequent years | | | | | | |
|---|---|---|---|---|---|---|---|
| | first places | second places | third place | fourth places | Total Places | 123 only | actual * Prize money |
| First places | 74 | 34 | 25 | 17 | 150 | 133 | 1575 |
| Second | 35 | 31 | 23 | 20 | 109 | 89 | 950 |
| Third | 14 | 17 | 16 | 7 | 54 | 47 | 460 |
| Fourth | 12 | 11 | 16 | 15. | 54 | 39 | 370 |

* calculated at the usual £15 for a first place £10 for a second and £5 for a third & nothing for a fourth    see Life p 9 for calc

The relation between prizes already earned and future prize-earning capacity is clearly shown by Table . . Whether judged by class place or by cash, the subsequent gains of those who have already gained first second & third places are roughly as 15, 10, and 5 and the distribution of the three prizes in those relative values ~~in fully~~ ~~justified~~ as round numbers, is justified.



as figures of ~~absolute~~ superior merit) at a somewhat lower level than that of the 4th complete

~~But a much~~ nearer better allowance approximation would be the allowance

£15 (or 16) marks for the first, £9 for the second. £~~5~~ 4 for the third and 2

£4 for the fourth a [illegible] 8 ~~which~~ When these are protracted, as

in the figure they fall into a reasonably shaped

curve, that would allow ~~when~~ some merit ~~however small~~

to the 4th and to [illegible] classes lower than the 4th, which the 15, 10, 5

scale does not. The cow Molly Millicent

gained only a 4th ~~[illegible]~~ place as a heifer, but

she obtained first places in every other class

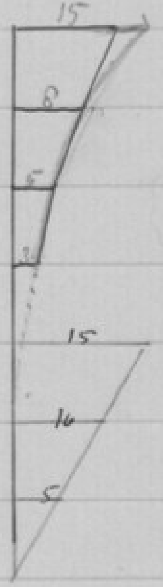
including two of them in A. Many animals must

have failed that succeeded afterwards ~~in D and E or C when older animals~~

else the instances of first prizes won ~~by~~ by ~~hitherto un~~

cattle whose names had never appeared before then in the prize list

could hardly ~~have~~ be~~en~~ accounted for.



The holders of a First place are more than twice as likely to gain another first, ~~in a subsequent year~~ ~~place~~ in a subsequent year than are those of a Second, and these than those of a third, the proportions being 74, 35, 14. The holders of the Third place have better, but only a little better prospects than those of the Fourth.

By grouping the ~~figures~~ 16 entries in the Table into 4 more comprehensive ones, as in Table . The firsts & seconds taken together are more than 3 times as successful in ~~subsequently~~ winning firsts or seconds in a subsequent occasion, as are ~~as~~ the thirds & fourths 174 against 54.

For ~~the~~ more exact appraisement of their subsequent successes of the holders of each class, we must find ~~a~~ figures to represent the relative worths of first second ~~&c~~ third & fourth places. ~~In fact~~ We must arrange have a system of prizes of our own, that shall be justified by the observed subsequent successes. The usual prizes of £15 for the first, 10 for the second & 5 for the third & nothing for the fourth & those below is a very fair distribution of prize-money, so far as it goes, but does not quite suit our purposes

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1

| 16× | | 8× | | 4× | | 2× | | |
|---|---|---|---|---|---|---|---|---|
| 74 = | 1184 | 34 = | 272 | 25 = | 100 | 17 = | 34 | 1590 |
| 35 = | 560 | 31 = | 248 | 23 = | 92 | 20 = | 40 | 940 |
| 14 = | 224 | 17 | 136 | 16 = | 64 | 7 = | 14 | 440 |
| 12 = | 192 | 11 | 88 | 16 = | 64 | 15 = | 30 | 374 |

| 15× | | 9× | | 4× | | 3× | | |
|---|---|---|---|---|---|---|---|---|
| 74 = | 1110 | 34 | 306 | 25 | 100 | 17 | 51 | 1547 |
| 35 | 525 | 31 | 279 | 23 | 92 | 20 | 60 | 956 |
| 14 | 210 | 17 | 153 | 16 | 64 | 7 | 21 | 448 |
| 12 | 180 | 11 | 99 | 16 | 64 | 15 | 45 | 388 |

| 14× | 9× | 4× | 3× | |
|---|---|---|---|---|
| | | | | 1473 |
| | | | | 921 |
| | | | | 434 |
| | | | | 376 |

| 14× | | 8× | | 4× | | 2× | | Ireland<br>2 | |
|---|---|---|---|---|---|---|---|---|---|
| 74 | 1036 | 34 | 272 | 25 | 100 | 17 | 34 | | 1442 |
| 35 | 490 | 31 | 248 | 23 | 92 | 20 | 40 | | 870 |
| 14 | 196 | 17 | 136 | 16 | 64 | 7 | 14 | | 410 |
| 12 | 168 | 11 | 88 | 16 | 64 | 15 | 30 | | 350 |

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because it ~~omits~~ disregards the fourth place & all below it. The most reasonable idea is to suppose a certain standard of efficiency independant of class place, such that the animal must surpass else no prize at all w^d be awarded to him. This corresponds with practice. Therefore the standard of merit ~~does~~ ought not probably to stop suddenly short below the third place but to be somewhat prolonged and the curve of merit should be more of the geometric ~~kind~~ pattern as in Table II than of the arithmetic [illegible] as in Table I.

Gom p24

For our rough purposes ~~£16~~ perhaps better (say £16) for the first, £8 for the second, £4 for the third & £2 for the fourth (total = £30), will be preferable to £15 for the first £10 for the second & £5 for the third total = £30, It leaves the termination of the curve indefinite. The curve as it would go on ~~might either be prolonged~~ (which w^d appear perhaps only in decimals) to infinity, or by a trifling modification of the ~~terms~~ the abrupt figures that could be ~~are~~ converted into a curve that sh^d cut the axis ~~at a point a little two or three grades below the fourth~~ at a few or more, below the fourth place, ~~at the point (wherever it may be situated)~~ where ~~at which~~ the average grade of ~~pass~~ subsequent prize winning capacity in subsequent years might be reckoned as Zero.

f.13v

$xa$, $xb$, $xc$, $xd$ are the prizes to be allotted $1^{st}$ $2^{nd}$ $3^{rd}$ $4^{th}$ in strict accordance with their subsequent prize winning capacities

$k = a + b$ $\quad l = c + d$ $\quad$ then see p. 13

$$\frac{174k + 85l}{54k + 54l} = \frac{k}{l}$$

$85l^2 + 120kl = 54k^2$ $\quad$ make $l = 1$ $\quad$ ie $xl = 1$ or $x = \frac{1}{l}$

$54k^2 - 120k = 85$ $\qquad k^2 - 2.22k = 1.57$

$k^2 - 2.22k + \underset{(1.11)^2}{1.23} = 86.25$

$k + 1.11 = 9.27$ $\qquad k = 1.16$ $\qquad \frac{9.77}{1.16} = 8$ ie $k = 8l$ (1)

---

$(a+b) = 8(c+1)$

$a = 8c + 8 - b$ (1)

$$\frac{74a + 34b + 25c + 17}{35a + 31b + 23c + 20} = \frac{150a}{109b};$$

Substituting for $a$ from (1)

$$\frac{(592c + 592 - 74b) + 34b + 25c + 17}{(280c + 280 - 35b) + 31b + 23c + 20} = \frac{1200c + 1200 - 150b}{109b}$$

$$\frac{617c - 40b + 609}{303c - 325b + 300} = \frac{1200c - 150b + 1200}{109b}$$

omitting 2 decimal places

$673bc - 44b^2 + 664b = 3336 - 455bc + 3336c$

$\qquad - 3575bc + 487b^2 - 3575b$

$\qquad + 3600 + 450 + 3600$

---

dividing by $330bc - 354b^2 + 327b$

$$218bc - 44b^2 + 664b = 3336 + 3336c$$

abominable equation!

| 14.5× | | 8.5× | | 4.5× | | 1.35 | | |
|---|---|---|---|---|---|---|---|---|
| 74 | 1073 | 34 | 289 | 25 | 113 | 17 | 26 | 1501 |
| 35 | 50.7 | 31 | 264 | 23 | 103 | 20 | 30 | 904 |
| 14 | 20.3 | 17 | 145 | 16 | 72 | 7 | 11 | 431 |
| 12 | 17.4 | 11 | 94 | 16 | 72 | 15 | 23 | 363 |

| £14× | | £9× | | £4× | | £3× | | Total £30 | |
|---|---|---|---|---|---|---|---|---|---|
| 74 = | 1036 | 34 | 306 | 25 | 100 | 17 | 57 | 1493 | * |
| 35 = | 490 | 31 | 279 | 23 | 92 | 20 | 60 | 921 | |
| 14 = | 196 | 17 | 153 | 16 | 64 | 7 | 21 | 434 | * |
| 12 = | 168 | 11 | 99 | 16 | 64 | 15 | 45 | 376 | |
| | 1890 | | 837 | | 320 | | 177 | 3224 | * |

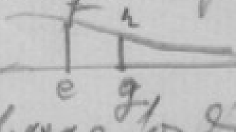
| 14× | 9× | 3.75× | | 3.15× | | |
|---|---|---|---|---|---|---|
| 1036 | 306 | 25 | 94 | 17 | 54 | 1490 |
| 490 | 279 | 23 | 86 | 20 | 63 | 918 |
| 196 | 153 | 16 | 60 | 7 | 22 | 431 |
| 168 | 99 | 16 | 60 | 15 | 47 | 374 |

Continued from p 20

If the total prize money be maintained at £30, ~~&~~ if for ~~our rough purposes~~ the several prizes are to be in integral numbers and if 4 prizes are to be given, the values £14, £9, £4, and £3 will satisfy the observed facts quite closely enough for rough purposes.

| Holders' | gain places as below in subsequent years | | | | Prize money gained in subsequent years as calculated by the several scales | | | |
|---|---|---|---|---|---|---|---|---|
| Places as below | First Places | Second Place | Third Place | Fourth Place | £15, 10, 5, 0 | Scale as | £14, 9, 4, 3 | Scale |
| First | | | | | 1575 | 15 | 1493 | 14 |
| Second | | | | | 950 | 10 | 921 | 9 |
| Third | | | | | 460 | 5 | 434 | 4 |
| Fourth | | | | | 370 | 0 | 370 | 3 |

Answer to Pearson / March 3. f.16 26

Explanation ought to have been given why I placed the individual where I did between the septa. In the first instance I thought of m classes each containing the same number, n, of individuals, so that m = na. Then the arrangement being such that the septa which enclose the classes refer to ~~form~~ a series of values separated by equal grades of probability, it followed from considerations of symmetry that the individuals within each class would be similarly situated; that is, that they also would stand from one another at equal distances. In this way alone would the whole series of individuals form a regularly dispersed array, each at equal distance apart from his neighbours. Keeping firm hold of this idea of equality of interval the median member of each class would be ~~the~~ most suitable representative of the class. It follows from this that the median of the  tail of the curve would be at the point whose ordinate cuts off one half of the values contained in the infinitely long tail. Or again, if we kept n constant, while decreasing a or continually enlarging m, we reach at last the condition of a = 1, m = n, the (having the same regard to symmetry) which case the position of each individual variate would be half the way [illegible] between the septa that enclose it.

If I used the expression half-way between that the individuals fell at the point where [illegible] the septa that enclose them it was faulty. I meant half-way between the values contained between the septa that enclose it corresponds to

# ARITHMETICAL TABLES.

### Numeration Table.

Units,..............................1
Tens,..........................1 2
Hundreds,....................1 2 3
Thousands, ..................1 2 3 4
Tens of Thousands,........1 2, 3 4 5
Hundreds of Thousands, 1 2 3, 4 5 6
Millions...............1, 2 3 4, 5 6 7
Tens of Millions,.....1 2, 3 4 5, 6 7 8
C. of Millions,.....1 2 3, 4 5 6, 7 8 9

### Sterling Money Table.

4 Farthings..........1 Penny...*d.*
12 Pence..............1 Shilling..*s.*
2 Shillings............1 Florin.
2 Shillings&Sixpence 1 HalfCrown
5 Shillings ...........1 Crown..*cr.*
10 Shillings ...........1 Half Sov.
20 Shillings, 1 Sov. or 1 Pound..£
21 Shillings............1 Guinea.

### Arithmetical Signs.

+ Plus; Sign of Addition.
− Minus; Sign of Subtraction.
× Sign of Multiplication.
÷ Sign of Division.
= Sign of Equality.
: :: : Sign of Proportion.
√ Sign of the Square Root.
∛ Sign of the Cube Root.
° Degree, ′minute, ″second.
∴ Therefore.

### Troy Weight.

**For Gold, Silver, and Jewels.**

24 Grains......1 Pennyweight *dwt.*
20 Pennyweights ...1 Ounce ....*oz.*
12 Ounces..........1 Pound....*lb.*

### Apothecaries' Weight.

**For Mixing Medicines.**

20 Grains.........1 Scruple....*scr.*
3 Scruples.......1 Dram......*dr.*
8 Drams.........1 Ounce.......*oz.*
12 Ounces........1 Pound......*lb.*

### Avoirdupois Weight.

**For all Goods except Gold, Silver, and Jewels.**

16 Drams....1 Ounce............*oz.*
16 Ounces ....1 Pound............*lb.*
14 Pounds....1 Stone.............*st.*
28 Pounds....1 Quarter...........*qr.*
4 Quarters..1 Hundredweight *cwt.*
20 Cwt .......1 Ton .............*tn.*

### Hay and Straw Weight.

36 lb. Straw ...............1 Truss.
56 lb. Old Hay ............1 Truss.
60 lb. New Hay ............1 Truss.
36 Trusses.................1 Load.

### Long or Lineal Measure.

12 Lines........1 Inch ........*in.*
12 Inches .......1 Foot.........*ft.*
3 Feet ..........1 Yard .......*yd.*
2 Yards ........1 Fathom......*f.*
5½ Yards........1 Pole.
40 Poles .........1 Furlong.....*fur.*
8 Furlongs or 1760 yards..1 Mile.

### Cloth Measure.

2¼ inches....=1 nail.
4 nails......=1 quarter of a yard.
4 quarters..=1 yard.

### Solid or Cubic Measure.

1728 cubic inches=1 cubic foot.
27 cubic feet =1 cubic yard.
24¾ cubic feet =1 solid perch mason's work.
12⅜ cubic feet =1 solid perch brickwork.

### Imperial Heaped Measure.

Lbs. Avoird. of water.
8 gallons ......=1 bushel ..= 80
3 bushels......=1 sack ....= 240
12 sacks.........=1 chaldron=2880

### Imperial Dry Measure.

| | Avoird. of water. lb. | oz. |
|---|---|---|
| 2 glasses......=1 naggin = | 0 | 5 |
| 4 naggins......=1 pint ...= | 1 | 4 |
| 2 pints.........=1 quart..= | 2 | 8 |
| 4 quarts .......=1 gallon..= | 10 | 0 |
| 2 gallons ......=1 peck ..= | 20 | 0 |
| 4 pecks ........=1 bushel = | 80 | 0 |
| 8 bushels......=1 quarter= | 640 | 0 |

### Square Measure.

144 square inches=1 square foot.
9 square feet ..=1 square yard.
30¼ square yards =1 square pole.
40 square poles =1 rood.
4 roods =1 acre.

### Table of Motion.

60″ seconds ......=1 minute.
60′ minutes.......=1 degree.
30° degrees.......=1 sign.
12, signs, or 360°..=the circle of the earth.

### Table of Time.

60 Seconds.........1 Minute.
60 Minutes..........1 Hour.
24 Hours............1 Day.
7 Days..............1 Week.
4 Weeks............1 Month.
365 Days.............1 Year
366 Days..............1 Leap Year.
52 Weeks ...........1 Year.
12 Calendar or
13 Lunar Months 1 Year.

**Days in the Months.**

Thirty days hath September,
April, June, and November,
All the rest have thirty-one,
Excepting February alone, [clear.
Which has but twenty-eight days
And twenty-nine in each leap year.

# MULTIPLICATION TABLE.

| 2 TIMES | 3 TIMES | 4 TIMES | 5 TIMES | 6 TIMES | 7 TIMES | 8 TIMES | 9 TIMES | 10 TIMES | 11 TIMES | 12 TIMES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 are 2 | 1 are 3 | 1 are 4 | 1 are 5 | 1 are 6 | 1 are 7 | 1 are 8 | 1 are 9 | 1 are 10 | 1 are 11 | 1 are 12 |
| 2 — 4 | 2 — 6 | 2 — 8 | 2 — 10 | 2 — 12 | 2 — 14 | 2 — 16 | 2 — 18 | 2 — 20 | 2 — 22 | 2 — 24 |
| 3 — 6 | 3 — 9 | 3 — 12 | 3 — 15 | 3 — 18 | 3 — 21 | 3 — 24 | 3 — 27 | 3 — 30 | 3 — 33 | 3 — 36 |
| 4 — 8 | 4 — 12 | 4 — 16 | 4 — 20 | 4 — 24 | 4 — 28 | 4 — 32 | 4 — 36 | 4 — 40 | 4 — 44 | 4 — 48 |
| 5 — 10 | 5 — 15 | 5 — 20 | 5 — 25 | 5 — 30 | 5 — 35 | 5 — 40 | 5 — 45 | 5 — 50 | 5 — 55 | 5 — 60 |
| 6 — 12 | 6 — 18 | 6 — 24 | 6 — 30 | 6 — 36 | 6 — 42 | 6 — 48 | 6 — 54 | 6 — 60 | 6 — 66 | 6 — 72 |
| 7 - 14 | 7 — 21 | 7 — 28 | 7 — 35 | 7 — 42 | 7 — 49 | 7 — 56 | 7 — 63 | 7 — 70 | 7 — 77 | 7 — 84 |
| 8 — 16 | 8 — 24 | 8 — 32 | 8 — 40 | 8 — 48 | 8 — 56 | 8 — 64 | 8 — 72 | 8 — 80 | 8 — 88 | 8 — 96 |
| 9 — 18 | 9 — 27 | 9 — 36 | 9 — 45 | 9 — 54 | 9 — 63 | 9 — 72 | 9 — 81 | 9 — 90 | 9 — 99 | 9 —108 |
| 10 — 20 | 10 — 30 | 10 — 40 | 10 — 50 | 10 — 60 | 10 — 70 | 10 — 80 | 10 — 90 | 10 —100 | 10 —110 | 10 —120 |
| 11 — 22 | 11 — 33 | 11 — 44 | 11 — 55 | 11 — 66 | 11 — 77 | 11 — 88 | 11 — 99 | 11 —110 | 11 —121 | 11 —132 |
| 12 — 24 | 12 — 36 | 12 — 48 | 12 — 60 | 12 — 72 | 12 — 84 | 12 — 96 | 12 —108 | 12 —120 | 12 —132 | 12 —144 |

The ~~value~~ of Prizes in Youthful life as ~~a~~ guarantees of ~~after~~ subsequent success 1

~~guarantees~~

Draft A

f1

The ~~recor~~ Journ: of the R. Agr: Soc contains materials that ~~give~~ enables ~~give~~ us to measure ~~[illegible]~~ the value of prizes ~~winning~~ in Early life ~~as a trust worthy means of [illegible]~~ in forecasting ~~of~~ success in ~~later life~~ maturity. It has been the habit of the Society for many years past to adjudge prizes at their Agricultural Shows, ~~which are highly esteemed~~ those to Shorthorn cattle being ~~are~~ of especial interest ~~because~~ on account of the number of entries & the importance of the breed. As a rule 3 prizes have been given annually, ~~&~~ a fourth name being ~~is~~ added as a reserve, to each of the following four classes of them, both of Bulls & of Cows (1) ~~Bulls~~ of 3 or ~~more~~ years old (2) of 2 years old, (3) of 1 year old & (4) calves. ~~Similarly as to Bulls~~. So for each year there are 2×4×4 32 selected cattle, & ~~this~~ has been going on approximately without a break (2 sexes × 4 classes × 3 prizes & reserve) since 1868, or during 34 years, affording a prima facie collection of $\begin{array}{r}34\\32\\ \hline 68\end{array}$ 1088 selections. But this is not ~~however~~ quite the fact, (~~[illegible]~~ prizes to bull calves ceased after 1892) .. and the criterion of age was modified in . Since then, the ~~classes have gone not by age but by year of birth. Then for the present~~ & ~~and~~ the class (1) a has been limited to 3 or 4 years, so that no animal can ~~gain two~~ be placed oftener than twice in the a class, and the classes have been defined by year of birth not by age. thus in the present year the calves d were those born in 1901 c were those born in 1900; b, those born in 1899; and a those born either in 1898 or '97. The changes in the meaning of a b c d ~~difference is not important~~ & I disregard them contribute in no effect on my argument

33 66 264

calves | young | ~~[illegible]~~ adult | mature

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~~I cannot obtain list~~

~~One of the first things~~ I ~~wish~~ have first to make it clear ~~&~~ that the ~~[illegible]~~ owner of an animal who has won a place in a youthful class is by no means content to rest on ~~with~~ his laurels, but that he will run him again & again for the oldest classes if he thinks ~~he has a good~~ the chance of success to be fair. Considerations of cost & distance ~~are of~~ have little weight with the ~~wealthy~~ owners; ~~to whom~~ a place in class a adds to the value of ~~the~~ whole of his herd, & so repays the outlay; ~~[illegible]~~. Besides, ~~this~~ the owners of pedigree stock are usually ~~[illegible]~~ wealthy persons who breed for the honour & glory of the thing & would not allow cost of transport to destroy the chance of winning a prize. The evidence to be obtained from the returns lies in the frequency with which cattle who had achieved a ~~been~~ place in a were ~~again~~ sent up in subsequent years. Out of 100 different cattle who won ~~winners~~ of an a place, more than half won it repeatedly. In two cases it was won (not less than 4 times) by the same animal, Sir Arthur Ingram & ~~the cow~~ Snowflake; in one case it was ~~won~~ 5 times by ~~the~~ Wave of Loch Leven. Of late ~~years~~ the possibility of competing ~~is li~~ has (as already remarked) been limited to 2 years, but the repetitions continue, ~~notwithstanding that the~~ the place of the show being yearly changed from one part of the county to another, showing that the question of distance ~~& transport~~ has little weight.

~~p 3 average change of place 1.19 or say 1 1/4~~

they ~~do so~~ send up a second time when the chance of improving their place is as 16:11 say 1 1/2 to 1 see Table x p 3

f.3 3

The values of the prizes are £25 to the first, £10 to the second & £5 to the third in each class. The fourth named receives none, unless advanced to replace a vacancy. Thus in 1888 the second, Ancient Fashion, became ineligible, so her place was taken by the third Victoria and her £5 was awarded to the 4th ~~[illegible]~~ Waterloo Cherry 13th; The value of a first place is further enhanced by the established lottery of a Champion Prize of £20 which goes to the best bull of the year, who is not necessarily but usually of class a. Champion So the value of the awards run in the order of 5(+4), 2, 1, 0. The differences of merit, as expressed by superior numbering marks does not however seem to be so great. There were 35 cattle who won a place in a on two occasions, in 10 cases the second attempt was neither more nor less successful than the first, in 11 cases the animal fell one or more places and in 14 cases it rose. See Table I gather from this first that the class place is a fair criterion of the relative merit of the animal and secondly that the differences in condition that may occur in successive years are enough to make an average difference of (1.19) ~~places~~ nearly 1¼ place. Thirdly that only those animals are sent up a second time, in whom the chance of improving their class place to that of worsening it is as 14 : 11 say as 1½ to 1

[illegible] 2

4
5 3 5 5 4
3 2 2 3 3
2 1 1 2 2
1 1 1
4/12 3/8 11 10
3 average

We can at all events calculate the value of the prizes that winners in the several places of each class have obtained, presumably such as they will hereafter obtain supposing a continuance of the present conditions. To equalise the data I shall accept no more of the past winnings in a than the present arrangements would justify.

I will take the prizes to be £25 for I, £10 for II, £5 for III & £0 for IV (1) then combining the respective winnings in b, c, and ~~respectively~~ of order I II III & IV respectively the ~~mean~~ results ~~in I~~ are as in Table . (2) next take the prizes to be £1 for any one of the four class places, the results are as in Table To make these more comparable reduce both of them to units in which ~~IV~~ the resultant prize for IV in either series shall be the unit (100 units) then gives the proportions of

(1) I. 242 ; II 142 ; III 115 IV 100

(2) 148 117 103 100

mean 195 130 109 100

In both these extreme suppositions the forecast of future success is much higher for a first place than for a second, it is higher for a second than for a third, and distinctly higher for a third than for a fourth. There is not material to learn the true figure of merit for each place beyond that it lies somewhere ~~between~~ on or about the limiting values and is not inconsistent with I. ~~200~~ 120 II ~~150~~ 110 III ~~105~~ 105 about IV ~~100~~ 100

a ~~20~~ ~~100~~

Giving the supernumerary marks for merit above 100 of £20 £10 £5 £0.

strength 15 10 5 0 w^d be ~~better~~ a closer fit.

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**Class a** From p 37 of other book

| First entry of Cattle |  | second entry |  |  |  |
|---|---|---|---|---|---|
|  | I | II | III | IV | Total |
| place 1st | 6 | 4 | — | 2 | 12 |
| II | 3 | 1 | 2 | 1 | 7 |
| III | 4 | 2 | 2 | 2 | 10 |
| IV | 2 | 2 | 3 | 1 | 8 |
|  |  |  |  |  | 37 |

~~Bulls~~ Cattle of class b

| First Place in class |  | subsequently won places |  |  | Total places |
|---|---|---|---|---|---|
|  | I | II | III | IV |  |
| of Bulls 1 | 7 | 8 | 2 | 2 | 19 |
| of Cows 1 | 7 | 1 | 5 | 1 | 14 |
| of Cattle 1 | 14 | 9 | 7 | 3 | 33 |

| second Place in class b |  |  |  |  |  |
|---|---|---|---|---|---|
| of Bulls 2 | 2 | 4 | 6 | 2 | 14 |
| of Cows 2 | 4 | 6 | 3 | 6 | 19 |
| of Cattle | 6 | 10 | 9 | 8 | 33 |

| Third place in class b |  |  |  |  |  |
|---|---|---|---|---|---|
| of Bulls | 2 | 1 | 1 | [illegible] | 5 |
| of Cows | – | 2 | 2 | 2 | 6 |
| of Cattle | 2 | 3 | 3 | 3 | 11 |

| Fourth place in class b |  |  |  |  |  |
|---|---|---|---|---|---|
| of Bulls | — | - | 1 | 1 | 2 |
| of Cows |  | 1 | 2 |  | 3 |
|  | – | 1 | 3 | 1 | 5 |

f5v

268
149
69
486
81 162 243
III II I

ned. that only the first 3 shall receive prizes

prizes amounts for I II & III in proportionate to their achievement in winning subsequent prizes. The fact ~~in~~ ther prizes won by all three on the scale of 15, 10, 5 is 5 × 486 = £91.21

lative. No. of marks gained in subsequent years by I II III & IV class mar

Mean [illegible]

Balls & Cows treated on same terms

| | I | | II | | III | | IV | |
|---|---|---|---|---|---|---|---|---|
| | Number of Cases | Marks | Number of Cases | Marks | number of Cases | Marks | number of Cases | marks |
| Cases b | 21 | 67 | 25 | 50 | 9 | 16 | 6 | 35 |
| c | 29 | 111 | 22 | 69 | 17 | 34 | 17 | 39 |
| d | 23 | 90 | 17 | 30 | 9 | 19 | 11 | 15 |
| | 73 | 268 | 64 | 149 | 35 | 69 | 34 | 59 |
| × 5 | | 1340 | | 745 | | 345 | | |
| [illegible] | 3.49 | | 2.33 | | 1.97 | | 1.74 | |
| [illegible] ratios | 3 | | 2 | | 1.7 | | 1.5 | |
| | [illegible] £15 | | £10 | | £8.5 | | £7.5 | [illegible] |

Value of original prizes 780

## Subsequent winnings of prize cattle in Classes $A_{3^{rd}4}$, B, C, D, calculated from Table on the £15, £10, £5 scale

(65 x 3 places x 4 classes)

| 1950<br>260 winners in $A_{3^{rd}4}$ B.C.D | | Win subsequently | | | Total |
|---|---|---|---|---|---|
| 260 x 15 of £60 | = 3900 | £75 x 15 | £34 x 10 | £25 x 5 | £ ~~1845~~<br>1575 |
| x 10 of £40 | = 2600 | £35 x 15 | £31 x 10 | £23 x 5 | £ ~~820~~<br>950 |
| x 5 of £20 | = 1300 | £14 x 15 | £17 x 10 | £16 x 5 | £ ~~320~~ 460 |
| | 7800 | | | Total | 2985 |

improved and copied

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| All cattle | | win subsequent places in I | II | III | IV | Total. |
|---|---|---|---|---|---|---|
| First place in | a | 6 | 4 | — | 2 | 12 |
| " " | b | 14 | 9 | 7 | 3 | 33 |
| " " | c | 29 | 8 | 8 | 7 | 52 |
| " " | d | 20 | 12 | 4 | 6 | 42 |
| Total in abcd | | **69** | **33** | **19** | **18** | **139** |
| Second place in | a | 3 | 1 | 2 | 1 | 7 |
| | b | 6 | 10 | 9 | 8 | 33 |
| | c | 14 | 11 | 5 | 1 | 31 |
| | d | 5 | 5 | 5 | 7 | 22 |
| Total | | **28** | **27** | **21** | **17** | **93** |
| Third place in | a | 4 | 2 | 2 | 2 | 10 |
| | b | 2 | 3 | 3 | 3 | 11 |
| | c | 3 | 11 | 3 | 3 | 20 |
| | d | 4 | 1 | 5 | 1 | 11 |
| Total | | **13** | **17** | **13** | **9** | **52** |
| Fourth place in | a | 1 | 2 | 3 | 2 | 8 |
| | b | — | 1 | 3 | 1 | 5 |
| | c | 9 | 3 | 6 | 6 | 24 |
| | d | 2 | 3 | 3 | 5 | 13 |
| Total | | **12** | **9** | **15** | **14** | **50** |

284

334

15.12

10.08

5.04

Compare in the profession

regarding only I II & III

| | | |
|---|---|---|
| 15.12 | I 121 | 15.1 |
| | II 76 | 10 9.5 |
| | III 43 | 5 5.4 |
| | 6/239 | 25.0 |

40 ... = 5

No. of observed combinations in the first four class-places won by Mature Shorthorns in two successive years.
(For explanation see text)

| Place on first trial | Place on second trial | | | | Totals |
|---|---|---|---|---|---|
| | First | Second | Third | Fourth | 53 (72) 19 |
| First | 7 (9) 2 | 5 (8) 3 | 1 (1) – | 2 (3) 1 | 15 (21) 6 |
| Second | 4 (10) 6 | 5 (7) 2 | 4 (6) 2 | 1 (1) – | 14 (24) 10 |
| Third | 4 (4) – | 3 (4) 1 | 3 (4) 1 | 3 (3) – | 13 (15) 2 |
| Fourth | 2 (2) – | 3 (4) 1 | 3 (3) – | 3 (3) – | 11 (12) 1 |

This is much altered on Pearson

| Total who won place | Winners of | | Win subsequently first places | second places | third places | | | |
|---|---|---|---|---|---|---|---|---|
| 66 | first places in | A | 6 | 5 | 1 | 12 | 145 | |
| 65 | | B | 16 | 8 | 6 | 30 | | 4/10.16<br>2.54 |
| 66 | | C | 25 | 8 | 9 | 42 | | |
| 55 | | D | 20 | 12 | 6 | 38 | | |
| 252 | Totals | | 67 | 33 | 22 | 122 | | |
| 66 | second places in | A | 4 | 5 | 4 | 13 | 1.30 | |
| 65 | | B | 6 | 9 | 8 | 23 | | |
| 66 | | C | 16 | 11 | 6 | 33 | | |
| 55 | | D | 5 | 8 | 4 | 17 | | |
| 252 | Totals | | 31 | 33 | 22 | 86 | | |
| 63 | third places in | A | 4 | 3 | 3 | 10 | 105 | |
| 60 | | B | 1 | 4 | 3 | 8 | | |
| 66 | | C | 3 | 11 | 4 | 18 | | |
| 42 | | D | 4 | 1 | 7 | 12 | | |
| 231 | Totals | | 12 | 19 | 17 | 48 | | |

256

Valued winnings at £15, 10, 5 each

Averages per head of all competitors

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Subsequent winnings of prize cattle in classes A 3y?, B, C, D calculated from Table (   ) on the £15, 10, 5 scale

| 260 winners in A B C D | Win subsequently | | | Total | | |
|---|---|---|---|---|---|---|
| of £60 3y. | £74×15 | £34×10 | £25×5 | £ [illegible] | 1575 | 15.8 |
| of £40 | £35×15 | £31×10 | £23×5 | £ [illegible] | 950 | 9.5 |
| of £20 | £14×15 | £17×10 | £16×5 | £ [illegible] | 460 | 4.6 |
| | | | Total | 2985 | | 29.9 |

Copied

$\frac{30}{2985}$ = nearly $\frac{1}{100}$

# Comparative merits of various scales of prizes.

| | to first place | to second place | to third place | Total |
|---|---|---|---|---|
| 1. Scale of prizes, in £. | 15.0 | 10.0 | 5.0 | 30 |
| Ratios of subsequent winnings | 15.4 | 9.7 | 4.9 | 30 |
| 2. Scale of prizes, in £. | 20.0 | 10.5 | 5.0 | 35 |
| Ratios of subsequent winnings | 18.6 | 11.0 | 5.4 | 35 |
| 3. Scale of prizes, in £. | 25.0 | 10.0 | 5.0 | 40 |
| Ratios of subsequent winnings | 21.6 | 12.4 | 5.9 | 40 |
| 4. Scale of prizes, in £. | 20.0 | 15.0 | 10.0 | 45 |
| Ratios of subsequent winnings | 22.6 | 14.7 | 7.7 | 45 |

has been revised
& re written

11

(Draft B) f.11 (1)

# Prizes as guarantees of subsequent success.

Dictated to A F B

The particular problem to be discussed is one of a large class that is of frequent occurrence ~~frequently~~ and sometimes of great importance, but wh: to my knowledge has never been seriously attacked. The general problem includes the whole question of the value of competitive Exams: wh: form so prominent ~~large~~ a part ~~of~~ in modern educational ~~life~~, & in determining ~~the start~~ ~~of the ground~~ priority of position in the early stages of of official careers ~~preferment~~. The subject I am about to discuss is of far less importance than this, nevertheless ~~but still~~ it has an importance of its own especially to the ~~eyes of the~~ ~~large~~ numerous & wealthy breeders of pedigree stock. It refers to the prizes ~~now~~ annually awarded by the R. Agr: Soc: to shorthorn cattle. ~~They~~ Society awards prizes ~~also~~ to a vast variety of other descriptions of pedigree stock, but none are more

suitable for my purpose than ~~the~~ (Cattle Shorthorn)
It is a well ~~long~~ established breed ~~of cattle~~
that has long ~~which~~ has excited predominant interest
the wealthy owners of Shorthorn ~~these~~ herds, ~~have~~
emulated one another (keenly) in
producing the best stock; and they
are each kept accurately informed of
the best specimens that are being
reared by the others. They owners are moreover
~~always~~ prepared to send any of their
animals to competition, that have raised
reasonable hopes of success in
carrying off the much coveted (of the R. Agr: Soc prizes)
Thus though the number of entries at
each Show may be few ~~in number~~,
they are the cream of the best stock in
Engd & may fairly be considered to be
among the best if not the very best of all the animals, of
their age & description (in the country)
This subject will be shortly discussed

at more length; ~~I~~ in the meantime I will roughly state what I propose to establish.

First I have to explain how a figure of merit can be arrived at, that is appropriate to the 1st 2nd & 3rd places respectively in the various classes: so that if ~~a~~ one group of animals gains between them 10 first class places, 8 second, & 11 third, while another Similar group of animals (gaining) 8 first, 6 second, 7 third, the ~~relative~~ merits of the two groups may be expressed by two simple numbers.

Lastly I shall show the relative values of prizes awarded to calves; to cattle in their 1st year; to those in their 2nd year; & to those in their 3rd years; as guarantees of subsequent success, that are

I must ~~begin~~ by explaining the nature of the materials to be dealt with. Prizes have long been given annually to bulls & cows severally of ~~five~~ at each of 5 different ages, but the limits of those ages, are not strictly identical throughout. At first, count was made from the date of birth of the animals, afterwards from the date of year of the exhibition. Again the no: of the prizes has not been strictly uniform, though usually it has been confined to the winners of the 1st 2nd, & 3rd places, while the holder of the 4th place was mentioned as a reserve animal, in case of accident to one of the other three. The value of prizes has also materially altered from time to time. Lastly the limits of age of the older animals has greatly varied. At first, there was no upper limit but in every instance ~~all cases~~ animals of the 3rd & of the 4th year were eligable to compete in the first class. Thus by sacrificing a little material a fairly homogeneous series can be obtained. I group the animals of each year under five classes, A 4th. year, A 3rd y: B 2nd year; C ~~first~~ 1st year & D calves. The 1st four of these are practically equal in numbers. The calves are fewer, as the prizes awarded to bull calves ceased in 1888. By ~~multiplying~~

raising the figures that refer to the calves ~~latter~~ in the ratio of 127 : 100, the paucity of numbers in D is remedied. The returns ~~with~~ wh: I deal range from 1868 – 1901 inclus: i.e. over 33 years. ~~but~~ For two years before that date no returns were published, I began with 1868 because. The 1st of the 33 years is clearly unavailable, because having no predecessor, no "subsequent success" is possible. This leaves 32 years of wh: avowedly there is room for some doubt as to ~~the~~ completeness of the return of the 1st 2, 3, or even 4 years, at the beginning & end of the series. Internal evidence however showed that the risk of error through ~~not omitting~~ retaining them was extremely small, & I have disregarded that risk. In some cases one or more of the 3 prizes was not awarded, with the general upshot that the 32 years supply the equivalent of 30 years for bulls & cows respectively, i.e. for 60 years for cattle exclusive of sex.

f16 (6

I will now proceed to ~~show what~~ the evidence ~~can be derived~~ from the returns that ~~be~~ corroborates ~~of~~ the opinion already stated, that nearly all ~~the~~ shorthorn cattle who have a fair chance of a prize are entered at the Shows. It is chiefly derived from animals of the ~~A~~ A class. As already remarked during many years they were repeatedly exhibited in it ~~sent th~~. Thus the bull Sir Arthur Ingram gained 4 prizes in that class & the cow Snowflake ~~did~~ the same, while the "Wave of Loch Leven" gained no less than five; many both bulls & cows gained three prizes. The question I wished to solve ~~was~~ is whether the owner of an animal who won ~~winner~~ of a prize, esp: a 1st prize in A did ~~not~~ or did not rest satisfied with his laurels or whether he was willing to risk fortune again & again ~~with~~ in the hope of equal or greater success (See ~~par~~ ~~in copy book 2~~) Table I. It appears from this table that in 72 cases, 22 have lost position by making a second trial, 23 ~~are~~ remained stationary, & 27 have gained: or to put it in another form, 27 gain & 45 don't gain.

It is clear then that the lust of prize winning is sufficiently strong ~~enough~~ to make cattle owners face adverse odds, & barring a few accidental cases the owner of a bull of three years old & upwards who has a fair chance of winning a prize is pretty sure to send him. ~~and~~

Other evidences of the same general kind, but wh: I ~~do~~ will not give in detail, ~~are~~ appear~~ent~~ in the fact that prize cattle of the earlier ages are re sent for competition next year, with little apparent regard to what their places may have been on the first occasion. I therefore think that we are fairly justified in looking on the prize cattle as being substantially the best of their age & kind ~~in~~ England.

And that in dealing with these few selected animals we are practically dealing with the cream of all

~~figure of merit~~. The prizes awarded to the 1st, 2nd & 3rd in each class have varied greatly & cannot therefore have been all ~~rightly~~ justly apportioned. The object of a prize is twofold; first as a mere bait to attract f.18 (8

candidates, & secondly as a the definition of ~~mark between~~ their several merits. It is merely from the latter point of view that I shall now regard it. It is conceivable that in some Exams: a candidate sh.^d appear year after year for many years, being all along liable to some variation in his efficiency; & after a certain term of years to be learnt by experience, the winnings of all the ~~each~~ candidates would ~~in value~~ equal the value of the prize that they had first gained, always supposing that the prizes were justly apportioned according to their merits, or in any words to their prize-winning capacity. But without going so far we may say that the prizes won in a single year by equal groups of 1^st 2^nd & 3^rd place men ought ~~would~~ bear a uniform proportion ~~relation~~ to the prizes awarded to those places severally. This w.^d be equally true if we take the results of two, three or more years as I have done in Table 2; & it is very simple piece of arithmetic to ascertain whether or no the prizes fulfill the required conditions f.19 to work in with (8 × 9)

When the prizes are proportional to the subsequent prize-winning power, the winnings of the prize cattle $1^{st}$ $2^{d}$ & $3^{d}$ ~~of each degree~~ during any specified term of years would bear a like proportion to the ~~values of the~~ original prizes. Thus suppose the scale of £15 for a $1^{st}$ place, £10 for a second and £5 for a third to be appropriate, then the subsequent winnings during the same term of years of $1^{st}$ $2^{d}$ & $3^{d}$ place cattle will severally be proportionate to 15, 10 & 5. As the sum of the subsequent winnings W is to the sum of the original prizes P (here = 30 = 15+10+5) so the winnings by cattle of $1^{st}$ $2^{d}$ & $3^{d}$ place respectively will be to 15, 10 & 5.

It is ~~thus~~ easy in other ways to test the appropriateness of any scale of prizes. The work is as follows

so that by multiplying them by $\frac{P}{W}$ we obtain the required ratios

| Original prizes | Subsequent winnings: first place | second place | third place | Total subsequent winnings | required ratios P/W |
|---|---|---|---|---|---|
| £15 | 74×15 = 1110 | 34×10 = 340 | 25×5 = 125 | 1575 | 15.8 |
| £10 | 35×15 = 525 | 31×10 = 310 | 23×5 = 115 | 950 | 9.6 |
| £5 | 14×15 = 210 | 17×10 = 170 | 16×5 = 80 | 460 | 4.6 |
| P = 30 | | | | 2985 = W | 30.0 |

Multiplying $\frac{30}{2985}$ into $1^{st}$ places total of subsequent winnings, the required ratios are found to be 15.8, 9.6, 4.6 which agree very well with 15, 10, 5. In Table 3 a similar comparison is made of various other scales of prizes that have been adopted at one time or another. They all do fairly well, but none so well as the 15, 10, 5.

Now as a matter of fact the sequence of prizes allotted both at the beginning & at the end of ~~my~~ the series years does fulfil this requirement with close approximation. It is £15 for the 1st place, £10 for the 2nd, & 5£ for the 3rd. Clearly this cannot be strictly correct, because it makes the value of a 4th or fifth place nil. It is an arith: progress whereas it ought to be of a geom: order. However I shall adopt it for its simplicity & convenience. I give below a table ~~in~~ for which a comparison ~~is~~ can be made of ~~a few other~~ the values of any scales, also another table in which a few of them are compared for which [illegible] ~~& it will be observed~~ that 15, 10, 5 is by far the best.

Table 3.

Make another table from the entries in p 12 &c

f.21

Draft C

The significance of Prizes in Early life as guarantees of later success.

Shorthorn Cattle.

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P22|

The worth of prizes in youth as criterion of success in ~~maturity~~ after life

The ~~value~~ significance of prizes ~~as guarantees~~ in respect of subsequent success — Shorthorn Cattle.

In instance the ~~value~~ true worth of our large system of competition examinations cannot be rightly appreciated ~~so long~~ ~~as~~ problems of this kind remain unsolved. The present ~~has taken~~ here a comparatively simple case for ~~an~~ attempt, that it is by no means unnecessary in itself ~~but more~~. The experience gained in discussing it will be helpful in more difficult cases.

The ~~case~~ problem about to be considered is ~~one of a problem~~ one of a class that occurs frequently of ~~very~~ common occurrence & is sometimes of great importance, but ~~which~~ which have never to my knowledge ~~has~~ been seriously attacked. The prizes ~~to~~ which I am about to discuss ~~shall refer here~~ are those annually awarded ~~given~~ by the R. Agricultural Society to Shorthorn Cattle. They — ~~Prizes are~~ Prizes are also given prizes ~~to~~ a vast variety of ~~other kinds~~ descriptions of pedigree stock, but none seemed the most ~~so~~ suitable for my purpose of ~~inquiry~~ ~~as that which~~ ~~those given~~ ~~I have selected~~ shorthorns. It is a breed of cattle in which ~~that has continuously excited~~ predominant ~~great~~ interest has been taken during many past years and ~~has~~ ~~and been the cause~~ there has been of keen emulation ~~between~~ ~~among~~ between the wealthy owners of herds who are each kept accurately informed of the best specimens raised by the others ~~of their respective herds~~ and who are always prepared to send annually ~~for~~ competition ~~any of their own animals~~ ~~who~~ that raise reasonable hopes of success in ~~give promise~~ ~~of~~ carrying off the prizes. Thus though the entries annually at each show may be few in number, they are the cream of the best stock in England and ~~are~~ may fairly ~~representatives~~ be considered to be among the best, if not the very ~~X~~ ~~they~~ best specimens of ~~the whole stock~~ all the animals of that kind (in the County. ~~I shall shortly discuss~~ This subject will shortly be [illegible] more at length; In the mean time I will state what I propose to ~~shew~~ establish: ~~namely~~ first the ~~numerical~~ ratios of ~~differences of actual~~ merit ~~in numerical values~~ as tested by subsequent prize-winnings that ~~is connected~~ correspond to the first, second & third places respectively in the classes about to be described ~~and consequently~~ from which the ~~perfect ratio~~ just proportion between the values of the prizes that should be assigned to the holders of ~~those~~ the 1st 2nd & 3rd places, on those grounds alone is to be inferred ~~having reference to merit alone;~~ secondly the ~~probability that~~ [illegible] of a prize winner ~~whether~~ of any specified age in gaining ~~as a calf or as a young animal~~ a prize at each successive annual will gain ~~subsequent~~ completive prizes ~~in future as it grows older~~. ~~By the method just described~~ Consequently a figure of merit can be assigned, through the method [illegible] alluded to, to ~~found for~~ any ~~single~~ place in any year and to ~~a~~ ~~for~~ any number of ~~successive~~ places in successive years; therefore all ~~we have to do~~ all that remains is to correlate two numerical systems; — the one referring to ~~the~~ (corrected) prizes ~~[illegible]~~ won early in life, the other to the sum total of ~~their~~ subsequent corrected prizes, and to find the index of correlation between ~~them~~ the two.

insert Table I

A Table is given from which a strong argument may be drawn to shew that the owners of the winner of a single prize are not content to rest upon their laurels, but are ~~inclined~~ disposed to send the animal again & again, if there be reasonable hope of his gaining ~~another~~ a second prize. Each compartment of the table contains three sets of figures, the central one in brackets being the sum of the other two. The first set shows the number of times in which the competition occurred in the first & second ~~year~~ of the ~~two~~ years during which the mature animal was allowed to compete. All the ~~year~~ 33 exhibitions contributing to this set. But in the earlier exhibitions ~~the~~ an upper limit of age ~~did~~ was not fixed ~~and~~ so animals were able to compete and did compete more than ~~once~~ twice. The ~~second~~ third set ~~in brackets~~ refers to these subsequent competitions. Thus ~~[illegible]~~ the Bright Sir Arthur Ingram having gained the following places successively in the 4 years 1875–8 – first, second, first, second, ~~this~~ contributes to ~~achievement is entered~~ in the ~~first~~ first set as 1–2, & ~~in~~ to the ~~second~~ third set as 2–1, 1–2. This table makes the chances of the place remaining stationary in two successive competitions, or of its falling or of its rising, are about equal, if we ~~in the~~ ~~whole~~ take all the ~~entries~~ entries of the table as equally significant.

Confining attention now to the first set, it appears that 15 out of the 33 first-place ~~men~~ cattle in the first year, or nearly one half of them, competed again in the second year. They could not improve their ~~condition~~ record by doing so, at the best their place in the class would be maintained, and so it was ~~so~~ in 7 out of the 15, in the remaining 8 it was worsened. Yet in the face of this adverse risk the owners had re-exhibited them. It was much the same with the second-place cattle, 14 were re-exhibited of which 4 improved their position, 5 maintained it, and 5 worsened it.

The general chances ~~in favour~~ of gain or otherwise are best appreciated by considering the figures in brackets. Those situated along the diagonal from 1-1 to 4-4 refer to cases when the class-place was ~~the~~ stationary, they are 9+7+4+3 total 23; those in the upper right hand triangle have worsened, they are 8, 1, 3, 6, 1, 3, total 22; those in the lower left hand triangle have gained, they are 10, 4, 4, 2, 4, 3, total 27; Grand total of cases 72.

Another point comes out clearly, that ~~it is~~ the higher ~~[illegible]~~ placed cattle on the first occasion, who are the most frequently re-exhibited. This is strikingly seen by ~~grouping~~ arranging ~~dividing~~ the sixteen squares of the table into 4 ~~squares~~ groups of 4 squares each in which the upper left hand corner of ~~these~~ four groups contains the four combinations of 1 & 2. ~~In~~ This group contains ~~no less than~~ 9, 8, 10 & 7, total 34, or nearly half of the grand total of 72. The other three groups containing respectively 11, 13 and 14 cases. Therefore the motive for sending a first- or second-place animal (whose condition has not sensibly deteriorated) ~~are~~ stronger than in all the other contingencies in the proportion of about 3 to 1. ~~Evidently in~~ Those numerous cases in which the high condition of an animal is not maintained on the second year go far to account for its non exhibition. The owner's judgement has been adverse to its chance of success, as that of the judges wd. have been.

So there is fair reason for looking on the exhibited animals ~~may still be fairly regarded~~ as representing the cream of the existing stock in England. It is well to pause here to consider in what respects the difference shews itself between ~~the~~ a complete series of all cattle, and one formed by indiscriminate removal of ~~a portion~~ several of them, ~~such~~ as might be the result of ~~mere~~ whims of the owner or other accidental causes. To give exactness to our ideas let us suppose that ~~as~~ each member of the array of the ~~first~~ complete series passes in turn before a person who ~~stands by board~~ ~~a weeding arrangement, such as~~ stationed by an urn that contains black & white balls in ~~a~~ some definite proportion, from which ~~a~~ one ball is drawn by him to decide the fate of the animal; if white, the animal is passed, if black ~~then is he~~ the animal it is weeded out. For simplicity of numbers let there be one white ball to 2 blacks so that out of every three animals one only is retained then the first, second, third, &c places of the weeded array will tend to correspond with the ~~2nd~~ second, fifth, eighth, &c places of the complete array 123|45-6|789 The probable error of the two arrays will be identical but the differences between the successive class-places of the weeded ~~se~~ series will be greater than in those of the complete series. ~~What the differences~~ A reference to tables such as I have published (Nat Inheritance p. . ) deduced from the Probability Integral table, will show what the facts would be in any specified case, ~~of~~ when the complete series runs normally. The conclusion from the foregoing is that there is no reason to suspect ~~any~~ serious cause of error ~~when~~ through treating a weeded series, ~~as if it were a complete one~~ such as that which I am about to discuss, in the same general way as if it were a complete series, if we remember~~ing~~ that the values we shall obtain for the relative merits of the first, second & third places ~~as~~ refer to this series alone, and are not ~~of~~ generally applicable.

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Table I

Places won by Shorthorn Cattle of Class A (aged 3 years and upwards) on successive trials.

| Place on first trial in A | Place on the subsequent ~~year~~ trial | | | |
|---|---|---|---|---|
| | first | second | third | fourth |
| first | **9** | 8 | 1 | 3 |
| second | 10 | **7** | 6 | 1 |
| third | 4 | 4 | **4** | 3 |
| fourth | 2 | 4 | 3 | **3**. |

To Printer. The figures, surrounded by a blue circle are to be in heavy type

Example - the successive places won by the bull Edgar, in the years '69, '70, '71, being 2, 2, 1, are entered twice, - as 2-2; 2-1.

The dark diagonal figures show the number of cases where the animal held the same place on the two trials.

Those figures in the upper right hand triangle are the number of cases in which it ~~[illegible]~~ lost position, and those in the lower left hand triangle ~~are~~ those in which ~~[illegible]~~ it ~~[illegible]~~ gained position.

From C4k Bk 3
p4

| Holders of | Gain subsequently | | | | Total Nos. | Total value of 1st, 2, 3 places £15, 10, 5 scale, [illegible] | |
|---|---|---|---|---|---|---|---|
| | first places | second places | third places | fourth places | | | |
| first places in A 3rd y. | 6 | 4 | 1 | 1 | | | |
| B | 18 | 7 | 7 | 3 | | | |
| C | 26 | 8 | 9 | 7 | | | |
| 1.27 × D | 24 | 15 | 8 | 6 | | | |
| Totals | 74 | 34 | 25 | 17 | 150 | 1575 | 10 |
| second places in A 3rd y. | 4 | 5 | 4 | 2 | | | |
| B | 7 | 10 | 8 | 8 | | | |
| C | 16 | 11 | 6 | 1 | | | |
| 1.27 × D | 8 | 5 | 5 | 9 | | | |
| Totals | 35 | 31 | 23 | 20 | 109 | 950 | 6 |
| third places in A 3rd y. | 4 | 2 | 3 | 1 | | | |
| B | 2 | 4 | 3 | 2 | | | |
| C | 3 | 10 | 4 | 3 | | | |
| 1.27 × D | 5 | 1 | 6 | 1 | | | |
| Totals | 14 | 17 | 16 | 7 | 54 | 460 | 3 |
| fourth places in A 3rd y. | 2 | 3 | 4 | 2 | | | |
| B | 0 | 1 | 3 | 2 | | | |
| C | 7 | 3 | 5 | 6 | | | |
| 1.27 × D | 3 | 4 | 4 | 5 | | | |
| Totals | 12 | 11 | 16 | 15 | 54 | 370 | 2½ |

for Calc.n see Copy book 3 p. 9, 11

## Comparative merits of various scales of prizes

Calculated from the Totals in Table 2.

| | to first place | to second place | to third place | to fourth place | Total |
|---|---|---|---|---|---|
| 1. Scale of prizes, in £. | 15.0 | 10.0 | 5.0 | — | 30 |
| Ratio of subsequent winnings | 15.8 | 9.6 | 4.6 | — | 30 |
| 2. Scale of prizes, in £. | 20.0 | 10.0 | 5.0 | – | 35 |
| Ratio of subsequent winnings | 19.0 | 10.9 | 5.1 | | 35 |
| 3. Scale of prizes, in £. | 25.0 | 15.0 | 5.0 | – | 45 |
| Ratio of subsequent winnings | 24.1 | 14.2 | 6.7 | | 45 |
| 4. Scale of prizes, in £. | 20.0 | 15.0 | 10.0 | 5.0 | 50 |
| Ratio of subsequent winnings | 22.4 | 14.4 | 7.0 | 6.2 | 50 |
| 5. Scale of prizes, in £. | 30.0 | 20.0 | 15.0 | 10.0 | 75 |
| Ratio of subsequent winnings | 33.1 | 21.8 | 10.6 | 9.5 | 75 |

# Value of forecast for the subsequent years.

| Places | Subsequent places | | | | Total winnings on the £15, £10, £5 scale | | | | Divided by 1.95 for average per head |
|---|---|---|---|---|---|---|---|---|---|
| | | 1st. | 2nd. | 3rd. | 1st. | 2nd. | 3rd. | Total | |
| in D | in C | 19 | 9 | 11 | £285 | £90 | £55 | *[£546] | £ 2.80 |
| in C | in B | 30 | 16 | 9 | £450 | £160 | £45 | £655 | £ 3.36 |
| in B | in A 3rd. | 15 | 14 | 13 | £225 | £140 | £65 | £430 | £ 2.21 |
| in A 3rd. | in A 4th. | 14 | 11 | 7 | £210 | £110 | £35 | £355 | £ 1.82 |
| | | | | | | | | | mean 2.54 |

* The actual total is £430; this is multiplied by 1.27 in order to correct for paucity of numbers in D

Value of original prizes won by 780 cattle (65 in each of 4 classes and 3 places) compared with their subsequent winnings.

| Winners in A 3rd y., B, C, and D value of prizes | Win subsequently for the several places 1st | 2nd | 3rd | Total subsequent winnings |
|---|---|---|---|---|
| £ | | | | £ |
| 260 × 15 = 3900 | 75 × 15 | 34 × 10 | 25 × 5 | 1575 |
| × 10 = 2600 | 35 × 15 | 31 × 10 | 23 × 5 | 950 |
| × 5 = 1300 | 14 × 15 | 17 × 10 | 16 × 5 | 460 |
| 7800 | | | | 2985 |

The subsequent winnings, as above, = 0.383, or a little more than 1/3rd of the original prizes.

| Holders of 1st, 2nd & 3rd places in | gain places subsequently of | | | Total subsequent winnings on the scale of £15, 10, 5 |
|---|---|---|---|---|
| | 1st | 2nd | 3rd | |
| | | | | £ |
| A, 3rd year | 14 | 11 | 8 | 360 |
| B | 27 | 21 | 18 | 705 |
| C | 45 | 29 | 19 | 1060 |
| D | 37 | 21 | 19 | 860 |

B's winnings exceed those of A 3rd year by 345
C's " " " B by 355
D's ought to exceed those of C by about 350
that is they ought to be £1410 but they are
only £860, or 0.6 of what might have been expected.

f1

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1. Bulls & cows 3d and 4th
2. {Bulls B to A3d & A4th
3. {Cows ditto
4. {Bulls C to B, A3d & A4th
5. {Cows ditto, continued in 6
6. {Cows C to $A_3$, $A_4$, & B
7. Bulls calves D to $A_3$, $A_4$, B, & C
8. } cow calves D to $A_3$ $A_4$, B and C
9. }
10. No of Entries in the original table, average 65 of each place of each class
11. **Summary** of subsequent places of the 1st 2d 3d & 4th pla
12. { **Summary** of winnings in £15, 10, 5 scale
    [Test of £25 10 5
13. ditto £20 10 5
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15. Simple trials D–C; C–B
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17. **Summary** of 15 & 16
18.

worked out in Copy Book 3 p 1–4

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(Copied by A Frank Butler)

f.2 1

| Bulls | | Cows | |
|---|---|---|---|
| 3rd year place | 4th year place | 3rd year place | 4th year place |
| ✓ 4 | 3 | ✓ 1 | 1 |
| ✓ 2 | 2 | ✓ 3 | 2 |
| ✓ 2 | 2 | ✓ 4 | 3 |
| ✓ 2 | 1 | ✓ 1 | 1 |
| ✓ 3 | 1 | ✓ 1 | 2 |
| ✓ 1 | 2 | ✓ 3 | 1 |
| ✓ 1 | 2 | ✓ 2 | 2 |
| ✓ 4 | 3 | ✓ 4 | 1 |
| ✓ 2 | 1 | ✓ 3 | 1 |
| ✓ 1 | 3 | ✓ 2 | 4 |
| ✓ 3 | 3 | ✓ 4 | 1 |
| ✓ 2 | 1 | ✓ 3 | 3 |
| ✓ 2 | 4 | ✓ 2 | 2 |
| ✓ 1 | 4 | ✓ 1 | 1 |
| ✓ 1 | 1 | ✓ 2 | 3 |
| ✓ 4 | 4 | ✓ 3 | 4 |
| ✓ 2 | 3 | ✓ 4 | 2 |
| ✓ 1 | 2 | ✓ 2 | 3 |
| ✓ 4 | 3 | ✓ 3 | 2 |
| ✓ 2 | 3 | ✓ 1 | 1 |
| ✓ 3 | 3 | ✓ 2 | 2 |
| ✓ 4 | 2 | ✓ 1 | 1 |
| ✓ 2 | 1 | ✓ 4 | 2 |
| | | ✓ 3 | 1 |
| | | ✓ 4 | 4 |

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# Bulls class B

| B | Subsq: places in A | |
|---|---|---|
| place | 3rd year place | 4th year place |
| ✓1 | 1 | — |
| ✓3 | 4 | — |
| ✓1 | 2 | 2 |
| ✓2 | 1 | — |
| ✓2 | 3 | — |
| ✓1 | 3 | 1 |
| ✓1 | 1 | 2 |
| ✓2 | 3 | — |
| ✓2 | 2 | — |
| ✓4 | 3 | — |
| ✓2 | 2 | — |
| ✓1 | 2 | 1 |
| ✓2 | 3 | 3 |
| ✓1 | 1 | — |
| ✓2 | 3 | — |
| ✓2 | 4 | — |
| ✓1 | 2 | — |
| ✓4 | 4 | — |
| ✓1 | 2 | 4 |
| ✓1 | 1 | — |
| ✓2 | 2 | — |
| ✓2 | 3 | — |
| ✓1 | 1 | — |
| ✓2 | 1 | 2 |
| ✓1 | 4 | 3 |
| ✓1 | 1 | — |
| ✓2 | 4 | — |
| ✓2 | 1 | — |
| ✓3 | 4 | 2 |
| ✓2 | 1 | — |
| ✓3 | 1 | — |
| ✓4 | 4 | — |
| ✓1 | 1 | — |
| ✓2 | 2 | — |

f4 3

# Cows. class B

| B | Subsq: places in A | |
|---|---|---|
| place | 3rd year place | 4th year place |
| ✓3 | 3 | — |
| ✓4 | 3 | — |
| ✓4 | 2 | — |
| ✓1 | 3 | — |
| ✓3 | 2 | — |
| ✓1 | 1 | — |
| ✓2 | 2 | 2 |
| ✓2 | 4 | 1 |
| ✓1 | 3 | 1 |
| ✓2 | 4 | — |
| ✓1 | 3 | 4 |
| ✓1 | 1 | — |
| ✓4 | 3 | — |
| ✓2 | 3 | — |
| ✓2 | 2 | — |
| ✓1 | 1 | 1 |
| ✓1 | 2 | 3 |
| ✓2 | 4 | 2 |
| ✓3 | 2 | 3 |
| ✓1 | 1 | — |
| ✓2 | 4 | — |
| ✓2 | 3 | — |
| ✓2 | 1 | 1 |
| ✓3 | 3 | — |
| ✓2 | 4 | — |
| ✓1 | 1 | 1 |
| ✓3 | 2 | — |
| ✓2 | 4 | 2 |
| ✓1 | 3 | ✓1 |
| ✓3 | 1 | — |

# Bulls. class C.

| C<br>place | Subsequent places in A<br>3rd year | 4th year | in B |
|---|---|---|---|
| ✓1 | 1 | — | 1 |
| ✓4 | — | — | 2 |
| ✓1 | — | — | 4 |
| ✓2 | 2 | 2 | 1 |
| ✓3 | — | — | 1 |
| ✓4 | — | — | 3 |
| ✓2 | 3 | 1 | 1 |
| ✓1 | 1 | 2 | 1 |
| ✓3 | — | — | 2 |
| ✓2 | 4 | — | — |
| ✓1 | — | — | 1 |
| ✓4 | — | — | 4 |
| ✓1 | 3 | — | 4 |
| ✓2 | — | — | 1 |
| ✓2 | — | — | 1 |
| ✓4 | — | 4 | — |
| ✓1 | 2 | 1 | 1 |
| ✓3 | — | — | 2 |
| ✓1 | 3 | 3 | 2 |
| ✓3 | — | — | 3 |
| ✓2 | 2 | 1 | — |
| ✓3 | — | 4 | 2 |
| ✓1 | 2 | — | 1 |
| ✓4 | 4 | — | 4 |
| ✓1 | 2 | 4 | 1 |
| ✓2 | — | — | 2 |
| ✓1 | 1 | — | 1 |
| ✓3 | 2 | — | 2 |
| ✓4 | — | — | 1 |
| ✓3 | — | — | 3 |
| ✓4 | 3 | — | 2 |
| ✓1 | 2 | 3 | — |
| ✓1 | 1 | — | 1 |
| ✓4 | — | — | 3 |
| ✓2 | — | — | 1 |
| ✓2 | 2 | — | 1 |
| ✓3 | — | — | 3 |
| ✓3 | 1 | — | 2 |
| ✓4 | — | — | 1 |

Cows. class C continued in p.6

| C | Subsequent places | | |
|---|---|---|---|
| place | in A 3rd year | 4th year | in B |
| ✓1 | 3 | – | 3 |
| ✓2 | – | – | 1 |
| ✓3 | – | – | 2 |
| ✓3 | – | – | 2 |
| ✓1 | – | – | 3 |
| ✓2 | – | 3 | – |
| ✓3 | – | – | 1 |
| ✓4 | 1 | – | – |
| ✓3 | – | – | 4 |
| ✓1 | 1 | – | 1 |
| ✓2 | – | – | 3 |
| ✓1 | 4 | – | – |
| ✓1 | – | – | 1 |
| ✓1 | – | – | 1 |
| ✓2 | – | – | 2 |
| ✓4 | 4 | – | – |
| ✓1 | – | – | 4 |
| ✓1 | 3 | 1 | 1 |
| ✓4 | – | – | 3 |
| ✓1 | – | – | 2 |
| ✓3 | 2 | – | – |
| ✓1 | – | 4 | 2 |
| ✓3 | – | – | 4 |
| ✓2 | – | – | 1 |
| ✓1 | – | – | 1 |
| ✓1 | – | 1 | 1 |
| ✓2 | – | – | 3 |
| ✓2 | 2 | – | 2 |
| ✓1 | – | – | 4 |
| ✓4 | 1 | 1 | 1 |
| ✓2 | 2 | 3 | 1 |

continued on p. 6.

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Cows. class C. continued from p. 5.

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| C place | Subsequent places in A 3rd year | 4th year | in B |
|---|---|---|---|
| ✓1 | — | — | 1 |
| ✓2 | 1 | — | — |
| ✓2 | — | — | 3 |
| ✓1 | 1 | — | 1 |
| ✓4 | 4 | — | 2 |
| ✓2 | — | — | 1 |
| ✓2 | 1 | 1 | 2 |
| ✓4 | — | — | 1 |
| ✓2 | — | — | 1 |
| ✓1 | — | — | 3 |
| ✓4 | — | — | 3 |
| ✓3 | — | — | 2 |
| ✓1 | — | — | 1 |
| ✓3 | 3 | — | — |
| ✓2 | — | — | 2 |

Bull Calves. Class D.

| D | Subsequent places in | | | |
|---|---|---|---|---|
| | A | | B | C |
| place | 3rd year | 4th year | | |
| ✓1 | – | – | – | 1 |
| ✓2 | – | – | 4 | – |
| ✓2 | – | – | – | 1 |
| ✓1 | – | – | – | 1 |
| ✓3 | – | – | 3 | – |
| ✓4 | – | – | 2 | 3 |
| ✓2 | 4 | – | – | 2 |
| ✓1 | – | – | – | 1 |
| ✓1 | 2 | 1 | 1 | 1 |
| ✓4 | – | – | – | 4 |
| ✓1 | 1 | – | 1 | 1 |
| ✓2 | – | – | – | 1 |
| ✓4 | – | – | – | 3 |
| ✓3 | – | – | 3 | 3 |
| ✓4 | – | – | – | 1 |
| ✓2 | – | – | – | 1 |
| ✓4 | – | – | – | 4 |
| ✓1 | – | – | 1 | – |
| – | – | – | – | – |

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Cows: Calves. Class D. (continued in p.9)

p.9

| | Subsequent places in | | | |
|---|---|---|---|---|
| D | A | | B | C |
| place | 3rd year | 4th year | | |
| ✓2 | – | – | – | 4 |
| ✓1 | – | – | – | 4 |
| ✓1 | – | – | 2 | 3 |
| ✓1 | – | – | 4 | 3 |
| ✓2 | – | – | – | 2 |
| ✓3 | – | – | 1 | 1 |
| ✓1 | – | – | 4 | 1 |
| ✓3 | – | 1 | – | – |
| ✓1 | – | – | – | 2 |
| ✓2 | – | – | – | 3 |
| ✓1 | – | – | 2 | 1 |
| ✓1 | – | 4 | 2 | 1 |
| ✓2 | – | – | 4 | 3 |
| ✓4 | – | – | – | 2 |
| ✓1 | – | 1 | 1 | 1 |
| ✓2 | – | – | – | 3 |
| ✓4 | – | – | – | 4 |
| ✓2 | – | – | – | 2 |
| ✓4 | 3 | – | 2 | – |
| ✓1 | – | – | – | 1 |
| ✓1 | 2 | – | 2 | 2 |
| ✓3 | – | – | – | 3 |
| ✓1 | – | – | – | 1 |

continued on p.9

# Cow Calves. Class D. (continued from p.8)

| D | Subsequent places in | | | |
|---|---|---|---|---|
| | A | | B | C |
| place | 3rd year | 4th year | | |
| ✓2 | – | – | – | 1 |
| ✓1 | – | – | 3 | 2 |
| ✓1 | – | – | – | 2 |
| ✓2 | – | – | – | 4 |
| ✓3 | – | – | – | 3 |
| ✓2 | 4 | – | 2 | 4 |
| ✓2 | – | – | – | 1 |
| ✓1 | – | – | – | 1 |
| ✓1 | – | – | – | 3 |
| ✓4 | – | – | – | 4 |
| ✓4 | – | – | – | 1 |
| ✓1 | – | – | – | 3 |
| ✓1 | – | – | 3 | 4 |
| ✓2 | – | – | 4 | 1 |
| ✓3 | – | – | – | 1 |
| ✓3 | – | – | – | 2 |
| ✓1 | – | – | 2 | 2 |
| ✓2 | – | – | – | 3 |
| ✓3 | – | – | – | 4 |

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Nº of Entries in the Original Table

| | | A | B | C | D | Total |
|---|---|---|---|---|---|---|
| Bulls ~~First~~<br>All four places | 1869 – 75 | 28 | 28 | 28 | 25 | 109 |
| | 1876 – 82 | 28 | 28 | 28 | 27 | 111 |
| | 1883 – 88 | 22 | 21 | 24 | 24 | 91 |
| | 1889 – 94 | 24 | 24 | 24 | 4<br>(only 89) | 76 |
| | 1895 – 00 | 24 | 24 | 24 | — | 72 |
| | 1901 | 4 | 4 | 4 | — | 12 |
| Cows. ~~First~~<br>All four places | 1869 – 75 | 28 | 27 | 28 | 23 | 106 |
| | 1876 – 82 | 28 | 28 | 28 | 27 | 111 |
| | 1883 – 88 | 23 | 22 | 24 | 24 | 93 |
| | 1889 – 94 | 24 | 24 | 24 | 22 | 94 |
| | 1895 – 00 | 24 | 23 | 24 | 24 | 95 |
| | 1901 | 3 | 3 | 4 | 4 | 14 |
| Bulls + Cows. ~~All~~ four places | | 260 | 256 | 264 | 204 | 984 |

in 33 years

For mean Nºs in A, B, & C.

| | | | |
|---|---|---|---|
| | ~~255~~ | 260 | ↑ |
| | ~~251~~ | 256 | |
| | ~~258~~ | 264 | ↓ |
| mean | ~~254.7~~ | 260 | 204 |

D requires raising in ratio of 260 to 204
that is being multiplied by 1.27 = 260

add 56
1040 Total cases when D is corrected

The slight differences between A, B, & C, may be disregarded, & all may be considered to consist of 260 cases.

Nº of cases of all 4 places in A = 260
Nº of cases of first places in A = $\frac{260}{4}$ = 65
similarly all through

Summary of subsequent places of 1st 2d 3d & 4th place

Omit

From Copy-book 3. p. 1234

| Total places (approximate) | Holders of | gain subsequently | | | |
|---|---|---|---|---|---|
| | | first places | second places | third places | fourth places |
| 65 | first places in A$^{3yr}$ | 6 | 4 | 1 | 1 |
| 65 | B | 18 | 7 | 7 | 3 |
| 65 | C | 26 | 6 | 9 | 7 |
| 65 | 1·27 × D | 24 | 15 | 8 | 6 |
| 260 | Totals | 74 | 34 | 25 | 17 |
| 65 | second places in A$^{3yr}$ | 4 | 5 | 4 | 2 |
| 65 | B | 7 | 10 | 8 | 8 |
| 65 | C | 16 | 11 | 6 | 1 |
| 65 | 1.27 × D | 8 | 5 | 5 | 9 |
| 260 | Totals | 35 | 31 | 23 | 20 |
| 65 | third places in A$^{3yr}$ | 4 | 2 | 3 | 1 |
| 65 | B | 2 | 4 | 3 | 2 |
| 65 | C | 3 | 10 | 4 | 3 |
| 65 | 1.27 × D | 5 | 1 | 6 | 1 |
| 260 | Totals | 14 | 17 | 16 | 7 |
| 65 | fourth places in A$^{3yr}$ | 2 | 3 | 4 | 2 |
| 65 | B | 0 | 1 | 3 | 2 |
| 65 | C | 7 | 3 | 5 | 6 |
| 65 | 1.27 × D | 3 | 4 | 4 | 5 |
| 260 | Totals | 12 | 11 | 16 | 15 |

Omit

Summary of winnings on the £15, 10, 5 scale

From page 11. On the most appropriate prizes

f.13 12

| Winners of [illegible] | Table of places<br>Won subsequently in all 4 trials | | | Winnings subsequently on the £15, 10, 5 scale | | | |
|---|---|---|---|---|---|---|---|
| | First place | Second place | Third place | £ | £ | £ | Total £ |
| First place | 74 | 34 | 25 | 1110 | 340 | 75 | 1525 |
| Second place | 31 | 31 | 23 | 535 | 310 | 115 | 950 |
| Third place | 14 | 17 | 16 | 210 | 170 | 80 | 460 |
| | | | | | | | 2935 |

See contd other book 3 [?]

$$\overset{£}{2935} : \overset{£}{30} :: 1525 : x$$

| | | Should be |
|---|---|---|
| $x = \frac{30}{2935} \times 1525 = \frac{1}{100} \times 1.02 \times 1525 =$ | 15.5 | 15.0 |
| $\times 950 =$ | 9.7 | 10.0 |
| $\times 460 =$ | 4.7 | 5.0 |
| | 29.9 | 30.0 |

---

Leicester 1868 Scale £25, 15, 5 Total £45

Xlgs into table of places

| | £ | £ | £ | Total £ |
|---|---|---|---|---|
| First place | 1850 | 510 | 125 | 2485 |
| Second | 775 | 465 | 115 | 1755 |
| Third | 350 | 255 | 80 | 685 |
| | | | | 4925 |

$$4925 : 35 :: a : x$$

$$x = \frac{45.000}{4925} \times a = \frac{1}{1000} \times 9.15\, a$$

| | | Sh^d be |
|---|---|---|
| a = 2485 | x = 22.7 | 25 |
| = 1755 | = 16.6 | 15 |
| = 685 | 6.3 | 5 |
| | 45.0 | 45 |

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Comparison of scales of prizes

This is wrong

| Bristol 1878 [illegible] | first place | second place | third place | fourth place | Subsequent winnings on scale of £30 | £25 | £25 | £20 | Total 80 |
|---|---|---|---|---|---|---|---|---|---|
| First place | 74 | 34 | 25 | 17 | 2220 | 850 | 625 | 340 | 4035 |
| Second place | 35 | 31 | 23 | 20 | 1050 | 775 | 575 | 400 | 2800 |
| Third place | 14 | 17 | 16 | 7 | 420 | 425 | 400 | 140 | 1385 |
| Fourth place | 12 | 11 | 16 | 15 | 360 | 275 | 400 | 300 | 1335 |
| | | | | | | | | | 9555 |

$x : a :: 9555 : 80$  $x = a \times \frac{80{,}000}{9550} = \frac{1}{1000} \times 8.38 \cdot a$

| a = | x = | as compared with |
|---|---|---|
| 4035 | 33.8 | 30 |
| 2800 | 23.5 | 25 |
| 1385 | 11.6 | 25 |
| 1335 | 11.1 | 20 |
| | 80.0 | 800 |

Nottingham 1888 as above but to 3 places only

| Subsequent winnings £ 20 | 10 | 5 | Total 35 |
|---|---|---|---|
| 1480 | 340 | 125 | 1945 |
| 700 | 310 | 115 | 1125 |
| 280 | 170 | 80 | 530 |
| | | | 3600 |

$x : a :: \overset{£}{35} : \overset{£}{3600}$

$x = \frac{35}{3600} \times a = \frac{1}{1000} \times 9.72 \times a$

| a = | x = | as compared with |
|---|---|---|
| 1945 | 18.9 | 20 |
| 1125 | 10.9 | 10 |
| 530 | 5.2 | 5 |
| | 35.0 | 35.0 |

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from p 11

| | First place | Second | Third | Fourth |
|---|---|---|---|---|
| First place | 74 | 34 | 25 | 17 |
| Second | 35 | 31 | 23 | 20 |
| Third | 14 | 17 | 16 | 7 |
| Fourth | 12 | 11 | 16 | 15 |

Test this with the following geometrical scale of prizes, each 2/3 of its predecessor

£18 , £12 , £ 8 , £5.33 Total £43.33

| above entries | × 18 | × 12 | × 8 | × 5.33 | | | |
|---|---|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ Total | ×.963 | as compared to |
| First place | 1332 | 408 | 200 | 90 | 2030 | 19.54 | 18 |
| Second | 630 | 372 | 184 | 107 | 1293 | 12.42 | 12 |
| Third | 252 | 204 | 128 | 37 | 621 | 5.98 | 8 |
| Fourth | 216 | 132 | 128 | 80 | 556 | 5.35 | 5 |
| | | | | | 4500 | | |

$a : x :: 4500 : 43.33$

$x = \frac{43330}{4500} \times \frac{1}{1000} a = \frac{1}{1000} 963 \times a$

? try 19, 11, 6, 5

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## Single Trials

| Bulls Places | | Cows Places | | Bulls | | Cows | |
|---|---|---|---|---|---|---|---|
| D | Subseq n C | D | subseq n C | C | Subseq n B | C | Subseq n B |
| ✓1 | 1 | ✓2 | 4 | ✓1 | 1 | ✓1 | 3 |
| ✓2 | 1 | ✓1 | 4 | ✓4 | 2 | ✓2 | 1 |
| ✓1 | 1 | ✓1 | 3 | ✓1 | 4 | ✓3 | 2 |
| ✓4 | 3 | ✓1 | 3 | ✓2 | 1 | ✓3 | 2 |
| ✓2 | 2 | ✓2 | 2 | ✓3 | 1 | ✓1 | 3 |
| ✓1 | 1 | ✓3 | 1 | ✓4 | 3 | ✓3 | 1 |
| ✓1 | 1 | ✓1 | 1 | ✓2 | 1 | ✓3 | 4 |
| ✓4 | 4 | ✓1 | 2 | ✓1 | 1 | ✓1 | 1 |
| ✓1 | 1 | ✓2 | 3 | ✓3 | 2 | ✓2 | 3 |
| ✓2 | 1 | ✓1 | 1 | ✓1 | 1 | ✓1 | 1 |
| ✓4 | 3 | ✓1 | 1 | ✓4 | 4 | ✓1 | 1 |
| ✓3 | 3 | ✓2 | 3 | ✓1 | 4 | ✓2 | 2 |
| 4 | 1 | ✓4 | 2 | ✓2 | 1 | ✓1 | 4 |
| ✓2 | 1 | ✓1 | 1 | ✓2 | 1 | ✓1 | 1. |
| ✓4 | 4 | ✓2 | 3 | ✓1 | 1 | ✓4 | 3 |
| | | ✓4 | 4 | ✓3 | 2 | ✓1 | 2 |
| | | ✓2 | 2 | ✓1 | 2 | ✓1 | 2 |
| | | ✓1 | 1 | ✓3 | 3 | ✓3 | 4 |
| | | ✓1 | 2 | ✓3 | 2 | ✓2 | 1 |
| | | ✓3 | 3 | ✓1 | 1 | ✓1 | 1 |
| | | ✓1 | 1 | ✓4 | 4 | ✓1 | 1 |
| | | ✓2 | 1 | ✓1 | 1 | ✓2 | 3 |
| | | ✓1 | 2 | ✓2 | 2 | ✓2 | 2 |
| | | ✓1 | 2 | ✓1 | 1 | ✓1 | 4 |
| | | ✓2 | 4 | ✓3 | 2 | ✓4 | 1 |
| | | ✓3 | 3 | ✓4 | 1 | ✓2 | 1 |
| | | ✓2 | 4 | ✓3 | 3 | ✓1 | 1 |
| | | ✓2 | 1 | ✓4 | 2 | ✓2 | 3 |
| | | ✓1 | 1 | ✓1 | 1 | ✓1 | 1 |
| | | ✓1 | 3 | ✓4 | 3 | ✓4 | 2 |
| | | ✓4 | 4 | ✓2 | 1 | ✓2 | 1 |
| | | ✓4 | 1 | ✓2 | 1 | ✓2 | 2 |
| | | ✓1 | 3 | ✓3 | 3 | ✓4 | 1 |
| | | ✓1 | 4 | ✓3 | 2 | ✓2 | 1 |
| | | ✓3 | 1. | ✓4 | 1 | ✓1 | 3 |
| | | ✓3 | 2 | | | ✓4 | 3 |
| | | ✓1 | 2 | | | ✓3 | 2 |
| | | ✓2 | 3 | | | ✓1 | 1 |
| | | ✓3 | 4 | | | ✓2 | 2 |

| Cows | | Bulls | | Bulls | | Cows | |
|---|---|---|---|---|---|---|---|
| B | Subsecq. A 3rd | B | A 3rd | A 3rd | A 4th | A 3rd | A 4th |
| ✓3 | 3 | ✓1 | 1 | ✓4 | 3 | ✓1 | 1 |
| ✓4 | 3 | ✓3 | 4 | ✓2 | 2 | ✓3 | 2 |
| ✓4 | 2 | ✓1 | 2 | ✓2 | 2 | ✓4 | 3 |
| ✓1 | 3 | ✓2 | 1 | ✓2 | 1 | ✓1 | 1 |
| ✓3 | 2 | ✓2 | 3 | ✓3 | 1 | ✓1 | 2 |
| ✓1 | 1 | ✓1 | 3 | ✓1 | 2 | ✓2 | 2 |
| ✓2 | 2 | ✓1 | 1 | ✓1 | 2 | ✓4 | 1 |
| ✓2 | 4 | ✓2 | 3 | ✓4 | 3 | ✓3 | 1 |
| ✓1 | 3 | ✓2 | 2 | ✓2 | 1 | ✓3 | 4 |
| ✓1 | 3 | ✓4 | 3 | ✓1 | 3 | ✓4 | 1 |
| ✓4 | 3 | ✓2 | 2 | ✓3 | 3 | ✓1 | 1 |
| ✓2 | 3 | ✓1 | 2 | ✓2 | 1 | ✓2 | 2 |
| ✓2 | 2 | ✓2 | 3 | ✓2 | 4 | ✓1 | 1 |
| ✓1 | 1 | ✓1 | 1 | ✓1 | 4 | ✓2 | 3 |
| ✓1 | 2 | ✓4 | 3 | ✓1 | 1 | ✓3 | 4 |
| ✓2 | 4 | ✓2 | 4 | ✓4 | 4 | ✓4 | 2 |
| ✓3 | 2 | ✓1 | 2 | ✓2 | 3 | ✓2 | 3 |
| ✓1 | 1 | ✓4 | 4 | ✓1 | 2 | ✓3 | 2 |
| ✓2 | 4 | ✓1 | 2 | ✓4 | 3 | ✓1 | 1 |
| ✓2 | 3 | ✓1 | 1 | ✓2 | 3 | ✓2 | 2 |
| ✓2 | 1 | ✓2 | 2 | ✓3 | 3 | ✓1 | 1 |
| ✓3 | 3 | ✓2 | 3 | ✓4 | 2 | ✓4 | 2 |
| ✓2 | 4 | ✓2 | 1 | ✓2 | 1 | ✓3 | 1 |
| ✓1 | 1 | ✓1 | 4 | | | ✓4 | 4 |
| ✓2 | 4 | ✓1 | 1 | | | | |
| ✓1 | 3 | ✓1 | 2 | | | | |
| ✓3 | 1 | ✓3 | 4 | | | | |
| | | ✓2 | 1 | | | | |
| | | ✓4 | 4 | | | | |
| | | ✓1 | 1 | | | | |
| | | ✓2 | 2 | | | | |

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# Places

Bulls

| in D | Subsequent in C 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 5 | | | |
| 2 | 3 | 1 | | |
| 3 | | | 1 | |
| 4 | | | 2 | 2 |
| | | Cows | | |
| 1 | 7 | 5 | 4 | 2 |
| 2 | 2 | 2 | 4 | 3 |
| 3 | 2 | 1 | 2 | 1 |
| 4 | 1 | 1 | 0 | 2 |
| Total | 20 | 10 | 13 | 10 |

Bulls

| in B | Subsequent in A 3rd 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 6 | 5 | 1 | 1 |
| 2 | 3 | 4 | 4 | 1 |
| 3 | | | | 2 |
| 4 | | | 2 | 2 |
| | | Cows | | |
| 1 | 4 | 1 | 4 | |
| 2 | 1 | 2 | 2 | 5 |
| 3 | 1 | 2 | 2 | |
| 4 | | 1 | 2 | |
| Total | 15 | 15 | 17 | 11 |

Bulls

| in C | subsequent in B 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 8 | 1 | | 2 |
| 2 | 6 | 1 | | |
| 3 | 1 | 5 | 3 | |
| 4 | 2 | 2 | 2 | 2 |
| | | Cows | | |
| 1 | 9 | 2 | 3 | 2 |
| 2 | 5 | 4 | 3 | 0 |
| 3 | 1 | 3 | 0 | 2 |
| 4 | 2 | 1 | 2 | 0 |
| Total | 34 | 19 | 13 | 8 |

Bulls

| in A 3rd | Subsequent in A 4th 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 1 | 3 | 1 | 1 |
| 2 | 4 | 2 | 2 | 1 |
| 3 | 1 | | 2 | |
| 4 | | 1 | 3 | 1 |
| | | Cows | | |
| 1 | 6 | 1 | | |
| 2 | | 3 | 2 | |
| 3 | 2 | 2 | | 2 |
| 4 | 2 | 2 | 1 | 1 |
| Total | 16 | 14 | 11 | 6 |

## Value of forecast for the subsequent year

| Places | Subsequent Places | 1st | 2nd | 3rd | Total winnings on the £15 £10 £5 scale 1st | 2nd | 3rd | Total | ÷180 for Average per head |
|---|---|---|---|---|---|---|---|---|---|
| in D | in C | 19 | 9 | 11 | £ 285 | £ 90 | £ 55 | *[546] | 3.03 |
| in C | in B | 30 | 16 | 9 | 450 | 160 | 45 | 655 | 3.64 |
| in B | in A 3rd | 15 | 14 | 13 | 225 | 140 | 65 | 430 | 2.39 |
| in A 3rd | in A 4th | 14 | 11 | 7 | 210 | 110 | 35 | 355 | 1.97 |

* The actual total is 430, ~~this~~ is multiplied by 1.27 in order to correct for paucity of numbers in D

mean 2.76

from p. 11 changing order & combining

| holders of first second & third places | subsequent places first | second | third | winnings at £15, 10, 5 each | Total |
|---|---|---|---|---|---|
| | | | | £ | £ |
| in A 3d year | 14 | 11 | 8 | 210 + 110 + 40 = | 360 |
| B | 27 | 21 | 18 | 405 + 210 + 90 = | 705 |
| C | 45 | 29 | 19 | 675 + 290 + 95 = | 1060 |
| D | 37 | 21 | 19 | 555 + 210 + 95 = | 860 |

if winnings of C = n times those of B, $n = \frac{1060}{705} = 1.5$ NO

then those of D ought to = $n^2$ those of B or 2.25 × 705 = 1586

but it is only 860 or (1.84 or) little more than 1/2

1.5
1.5
1.5

1.5 × 360 = 540 but A 3d is exceptional

winnings if D sh^d be as much larger than those of C diff^e = 355

as those of C are larger than those of B 1060 + 355 = 1415

whereas it is only 860 or 0.6 as much

little more than 1/2

1415 : 860 :: 1 : 2

B's winnings exceed those of A 3d yr by 345

C's ... B ... 355

D ought to exceed ... C by 350 or be 1410

but they are 860 = 0.6 of what was expected

Therefore a D guarantee of future success is hardly half as good as that of a C or of an A 3d year

but it is good for one year see (17).

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f.20

~~Class A~~

| Bulls 3rd year place | Bulls 4th year place | Cows 3rd year place | Cows 4th year place |
|---|---|---|---|
| 4 | ③ | 1 | 1 |
| 2 | 2 | 3 | 2 |
| 2 | 2 | 4 | ③ |
| 2 | 1 | 1 | 1 |
| 3 | 1 | 1 | 2 |
| 1 | 2 | 3 | 1 |
| 1 | 2 | 2 | 2 |
| 4 | ③ | 4 | ① |
| 2 | 1 | 3 | 1 |
| 1 | 3 | 2 | 4 |
| 3 | 3 | 4 | ① |
| 2 | 1 | 3 | 3 |
| 2 | 4 | 2 | 2 |
| 1 | 4 | 1 | 1 |
| 1 | 1 | 2 | 3 |
| 4 | ④ | 3 | 4 |
| 2 | 3 | 4 | ② |
| 1 | 2 | 2 | 3 |
| 4 | ③ | 3 | 2 |
| 2 | 3 | 1 | 1 |
| 3 | 3 | 2 | 2 |
| 4 | ② | 1 | 1 |
| 2 | 1 | 4 | ② |
|  |  | 3 | 1 |
|  |  | 4 | ④ |
| 23 |  | 25 |  |

Winnings

| Bulls In 4th place | Cows 4th pla |
|---|---|
| 5 | 5 |
| 5 | 15 |
| — | 15 |
| 5 | 10 |
| 10 | 10 |
|  | — |
| 25 | 55 |

55
25
80

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average subsequent winning per head in the 4th year by the 1st 2nd & 3 placemen of the 3rd year in Class A

| 3rd year place | £ |
|---|---|
| 1 | 135/66 = 2.05 |
| 2 | 130/66 = 1.97 |
| 3 | 95/63 = 1.51 |
| In general | 360/195 = 1.85 |

| 3rd year place | 4th year place I | II | III | IV | I | II | III | IV |  |
|---|---|---|---|---|---|---|---|---|---|
| 1 | \| | \|\|\| | \| | \| | 𝍸 | \| |  |  | 12 |
| 2 | \|\|\|\| | \|\| | \|\| | \| |  | \|\|\| | \|\| | \| | 15 |
| 3 | \| |  | \|\| |  | \|\|\| | \|\| | \| | \| | 10 |
| 4 |  | \| | \|\|\| | \| | \|\| | \|\| | \| | \| | 11 |
|  |  |  |  |  |  |  |  |  | 48 |

Cows and Bulls

| 3rd year place | No of 4th year places I | II | III | Values of prizes £15, 10, 5 each £ |  |  | Total £ | Total Places |
|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 4 | 1 | 90 | 40 | 5 | 135 | 66 |
| 2 | 4 | 5 | 4 | 60 | 50 | 20 | 130 | 66 |
| 3 | 4 | 2 | 3 | 60 | 20 | 15 | 95 | 63 |
|  |  |  |  |  |  |  | 360 | 195 |
| 4 |  |  |  |  |  |  | 80 |  |

f.21 (2

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# Bulls Class B

| B | Subsequent places in A | | Subsequent winnings in A | | | | |
|---|---|---|---|---|---|---|---|
| place | 3d year place | 4th year place | Total £15, 10, 15 values won £ | 1st place £ | 2d place £ | 3d place £ | 4th place |
| 1 ✓ | 1 | - | 15 | 15 | | | |
| 3 ✓ | 4 | - | — | | | - | |
| 1 ✓ | 2 | 2 | 20 | 20 | | | |
| 2 ✓ | 1 | - | 15 | | 15 | | |
| 2 ✓ | 3 | - | 5 | | 5 | | |
| 1 ✓ | 3 | 1 | 20 | 20 | | | |
| 1 ✓ | 1 | 2 | 25 | 25 | | | |
| 2 ✓ | 3 | - | 5 | | 5 | | |
| 2 ✓ | 2 | - | 10 | | 10 | | |
| 4 − | 3 | - | ⑤ | | | | 5 |
| 2 ✓ | 2 | - | 10 | | 10 | | |
| 1 ✓ | 2 | 1 | 25 | 25 | | | |
| 2 ✓ | 3 | 3 | 10 | | 10 | | |
| 1 ✓ | 1 | - | 15 | 15 | | | |
| 2 ✓ | 3 | - | 5 | | 5 | | |
| 2 ✓ | 4 | - | — | | — | | |
| 1 ✓ | 2 | - | 10 | 10 | | | |
| 4 − | 4 | - | — | | | | — |
| 1 ✓ | 2 | 4 | 10 | 10 | — | | |
| 1 ✓ | 1 | - | 15 | 15 | | | |
| 2 ✓ | 2 | - | 10 | | 10 | | |
| 2 ✓ | 3 | - | 5 | | 5 | | |
| 1 ✓ | 1 | - | 15 | 15 | | | |
| 2 ✓ | 1 | 2 | 25 | | 25 | | |
| 1 ✓ | 4 | 3 | 5 | 5 | | | |
| 1 ✓ | 1 | - | 15 | 15 | | | |
| 2 ✓ | 4 | - | - | | - | | |
| 2 ✓ | 1 | - | 15 | | 15 | | |
| 3 ✓ | 4 | 2 | 10 | | | 10 | |
| 2 ✓ | 1 | - | 15 | | 15 | | |
| 3 ✓ | 1 | - | 15 | | | 15 | |
| 4 − | 4 | - | - | | | | — |
| Total winnings | | | 345 | 190 | 130 | 25 | 5 |

# Cows, Class B

| B | Subsequent places in A | | Subsequent winnings in A on the £15, 10, 5 scale | | | | |
|---|---|---|---|---|---|---|---|
| Place | 3rd year Place | 4th year Place | Total £ | by 1st place £ | by 2nd place £ | by 3rd place £ | by 4th place £ |
| 3 | 3 | - | 5 | | | 5 | |
| 4 | 3 | - | ⑤ | | | | 5 |
| 4 | 2 | - | ⑩ | | | | 10 |
| 1 | 3 | - | 5 | 5 | | | |
| 3 | 2 | - | 10 | | | 10 | |
| 1 | 1 | - | 15 | 15 | | | |
| 2 | 2 | 2 | 20 | | 20 | | |
| 2 | 4 | 1 | 15 | | 15 | | |
| 1 | 3 | 1 | 20 | 20 | | | |
| 2 | 4 | - | — | | — | | |
| 1 | 3 | 4 | 5 | 5 | | | |
| 1 | 1 | - | 15 | 15 | | | |
| 4 | 3 | - | ⑤ | | | | 5 |
| 2 | 3 | - | 5 | | 5 | | |
| 2 | 2 | - | 10 | | 10 | | |
| 1 | 1 | 1 | 30 | 30 | | | |
| 1 | 2 | 3 | 15 | 15 | | | |
| 2 | 4 | 2 | 10 | | 10 | | |
| 3 | 2 | 3 | 15 | | | 15 | |
| 1 | 1 | - | 15 | 15 | | | |
| 2 | 4 | - | — | | — | | |
| 2 | 3 | - | 5 | | 5 | | |
| 2 | 1 | 1 | 30 | | 30 | | |
| 3 | 3 | - | 5 | | | 5 | |
| 2 | 4 | - | — | | — | | |
| 1 | 1 | 1 | 30 | 30 | | | |
| 3 | 2 | — | 10 | | | 10 | |
| 2 | 4 | 2 | 10 | | 10 | | |
| 1 | 3 | - | 5 | 5 | | | |
| | | £ | 305<br>(+20 omitted) in Class A | 155<br>3 | 105<br>1 | 45 | 20 |
| | Bulls | £ | 345 | 190 | 130 | 25 | 5 |
| Bulls and Cows | | £ | 650 | 345 | 235 | 70 | 25 |

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# Bulls Class C

| C | Subsequent places in A | | in B | Subsequent winnings in $B_3$ $A_4$ and B by prize Bulls in C | | by Several prize bulls in C | | | |
|---|---|---|---|---|---|---|---|---|---|
| place | 3rd year place | 4th year place | place | £ £ £ | Total £ | 1 | 2 | 3 | 4th |
| 1 | 1 | | 1 | 15 15 | 30 | 30 | | | |
| – 4 | – | – | 2 | ⑩ | – | | | | 10 |
| 1 | – | – | 4 | – | – | | | | |
| 2 | 2 | 2 | 1 | 10 10 15 | 35 | | 35 | | |
| 3 | – | – | 1 | – – 15 | 15 | | | 15 | |
| 4 | – | – | 3 | ⑤ | – | | | | 5 |
| 2 | 3 | 1 | 1 | 5 15 15 | 35 | | 35 | | |
| 1 | 1 | 2 | 1 | 15 10 15 | 40 | 40 | | | |
| 3 | – | – | 2 | – – 10 | 10 | | | 10 | |
| 2 | 4 | – | – | – – – | – | | | | |
| 1 | – | – | 1 | – – 15 | 15 | 15 | | | |
| 4 | – | – | 4 | – – | – | | | | – |
| 1 | 3 | – | 4 | 5 – – | 5 | 5 | | | |
| 2 | | | 1 | – – 15 | 15 | | 15 | | |
| 2 | | | 1 | – – 15 | 15 | | 15 | | |
| – 4 | – | 4 | – | – – – | – | | | | – – |
| 1 | 2 | 1 | 1 | 10 15 15 | 40 | 40 | | | |
| 3 | – | – | 2 | – – 10 | 10 | | | 10 | |
| 1 | 3 | 3 | 2 | 5 5 10 | 20 | 20 | | | |
| 3 | – | – | 3 | – – 5 | 5 | | | 5 | |
| 2 | 2 | 1 | – | 10 15 – | 25 | | 25 | | |
| 3 | – | 4 | 2 | – – 10 | 10 | | | 10 | |
| 1 | 2 | – | 1 | 10 – 15 | 25 | 25 | | | |
| 4 | 4 | – | 4 | – – – | – | | | | – |
| 1 | 2 | 4 | 1 | 10 – 15 | 25 | 25 | | | |
| 2 | – | – | 2 | – – 10 | 10 | | 10 | | |
| 1 | 1 | – | 1 | 15 – 15 | 30 | 30 | | | |
| 3 | 2 | – | 2 | 10 – 10 | 20 | | | 20 | |
| 4 | – | – | 1 | – – 15 | – | | | | 15 |
| 3 | – | – | 3 | – – 5 | 5 | | | 5 | |
| 4 | 3 | – | 2 | 5 – 10 | – | | | | 15 |
| 1 | 2 | 3 | – | 10 5 – | 15 | 15 | | | |
| 1 | 1 | – | 1 | 15 – 15 | 30 | 30 | | | |
| – 4 | – | – | 3 | – – ⑤ | | | | | 5 |
| 2 | – | – | 1 | – – 15 | 15 | | 15 | | |
| 2 | 2 | – | 1 | 10 – 15 | 25 | | 25 | | |
| 3 | – | – | 3 | – – 5 | 5 | | | 5 | |
| 3 | 1 | – | 2 | 15 – 10 | 25 | | | 25 | |
| 4 | – | – | ① | – – ⑮ | | | | | 15 |
| | | | | | 555 | 275 | 175 | 105 | 50 |

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Cows Class C continued in page 6

| | Subsequent places | | | Subsequent winnings in $A_3$ $A_4$ and B by prize cows in C | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | in A | | in B | | | | | by the several cows in C | | | |
| Place | 3rd year place | 4th year place | place | £ | £ | £ | Total | 1st | 2nd | 3rd | 4th |
| 1 | 3 | – | 3 | 5 | – | 5 | 10 | 10 | | | |
| 2 | – | – | 1 | | | 15 | 15 | | 15 | | |
| 3 | – | – | 2 | | | 10 | 10 | | | 10 | |
| 3 | – | – | 2 | | | 10 | 10 | | | 10 | |
| 1 | – | – | 3 | | | 5 | 5 | 5 | | | |
| 2 | – | 3 | – | | 5 | | 5 | | 5 | | |
| 3 | – | – | 1 | | | 15 | 15 | | | 15 | |
| ④ | 1 | – | – | ⑮ | | | – | | | | 15 |
| 3 | – | – | 4 | | | – | – | | | – | |
| 1 | 1 | – | 1 | 15 | | 15 | 30 | 30 | | | |
| 2 | – | – | 3 | | | 5 | 5 | | 5 | | |
| 1 | 4 | – | – | – | | | – | – | | | |
| 1 | – | – | 1 | | | 15 | 15 | 15 | | | |
| 1 | – | – | 1 | | | 15 | 15 | 15 | | | |
| 2 | – | – | 2 | | | 10 | 10 | | 10 | | |
| ④ | 4 | – | – | – | | – | – | | | | – |
| 1 | – | – | 4 | | | – | – | – | | | |
| 1 | 3 | 1 | 1 | 5 | 15 | 15 | 35 | 35 | | | |
| ④ | – | – | 3 | | | ⑤ | – | | | | |
| 1 | – | – | 2 | | | 10 | 10 | 10 | | | |
| 3 | 2 | – | – | 10 | | | 10 | | | 10 | |
| 1 | – | 4 | 2 | | – | 10 | 10 | 10 | | | |
| 3 | – | – | 4 | | | – | – | | | – | |
| 2 | – | – | 1 | | | 15 | 15 | | 15 | | |
| 1 | – | – | 1 | | | 15 | 15 | 15 | | | |
| 1 | – | 1 | 1 | | 15 | 15 | 30 | 30 | | | |
| 2 | – | – | 3 | | | 5 | 5 | | 5 | | |
| 2 | 2 | – | 2 | 10 | – | 10 | 20 | | 20 | | |
| 1 | – | – | 4 | | | – | – | – | | | |
| ④ | 1 | 1 | 1 | ⑮ | ⑮ | ⑮ | – | | | | 45 |
| 2 | 2 | 3 | 1 | 10 | 5 | 15 | 30 | | 30 | | |
| | | | | | | | 325 | 175 | 105 | 45 | 60 |
| | | | | | | | 5 | | | | |

Cows Class C continued from p5

|  | Subsequent places in A |  | B | Subsequent winnings by C |  | by the several in C |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| C | 3rd | 4th | B |  | Total | 1 | 2nd | 3rd | 4th |
|  | Carried over |  |  | 325 | 325 | 175 | 105 | 45 | 60 |
| 1 – | – | – | 1 | 15 | 15 | 15 |  |  |  |
| 2 – | 1 | – | – | 15 | 15 |  | 15 |  |  |
| 2 – | – | – | 3 | 5 | 5 |  | 5 |  |  |
| 1 – | 1 | – | 1 | 15 15 | 30 | 30 |  |  |  |
| 4 ✓ | 4 | – | 2 | – ⑩ | — |  |  |  | 10 |
| 2 – | – | – | 1 | 15 | 15 |  | 15 |  |  |
| 2 – | 1 | 1 | 2 | 15 15 10 | 40 |  | 40 |  |  |
| 4 ✓ | – | – | 1 | (15) | — |  |  |  | 15 |
| 2 – | – | – | 1 | 15 | 15 |  | 15 |  |  |
| 1 – | – | – | 3 | 5 | 5 | 5 |  |  |  |
| 4 ✓ | – | – | 3 | ⑤ | — |  |  |  | 5 |
| 3 – | – | – | 2 | 10 | 10 |  |  | 10 |  |
| 1 – | – | – | 1 | 15 | 15 | 15 |  |  |  |
| 3 – | 3 | – | – | 5 | 5 |  |  | 5 |  |
| 2 – | – | – | 2 | 10 | 10 |  | 10 |  |  |
|  |  |  |  |  | 180 | 65 | 100 | 15 | [illegible] |
|  |  |  |  |  | 505 | 240 | 205 | 60 | 90 |
| Bulls |  |  |  |  | 555 | 275 | 175 | 105 | 50 |
| Bulls and Cows |  |  |  |  | 1060 | 515 | 380 | 165 | 140 |

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Bull Calves Class D

|  | Subsequent places in A |  | B | C |  | Total | 1st | 2d | 3d | 4th |
|---|---|---|---|---|---|---|---|---|---|---|
| D Place | 3d Place | 4th Place | Place | Place |  |  |  |  |  |  |
| 1 | – | – | – | 1 | 15 | 15 | 15 |  |  |  |
| 2 | – | – | 4 | – | – |  |  |  |  |  |
| 2 | – | – | – | 1 | 15 | 15 |  | 15 |  |  |
| 1 | – | – | – | 1 | 15 | 15 | 15 |  |  |  |
| 3 | – | – | 3 | – | 5 | 5 |  |  | 5 |  |
| 4 | – | – | 2 | 3 | 10 5 |  |  |  |  | 15 |
| 2 | 4 | – | – | 2 | – 10 | 10 |  | 10 |  |  |
| 1 | – | – | – | 1 | 15 | 15 | 15 |  |  |  |
| 1 | 2 | 1 | 1 | 1 | 10 15 15 15 | 55 | 55 |  |  |  |
| 4 | – | – | – | 4 | – | – |  |  |  | – |
| 1 | 1 | – | 1 | 1 | 15 15 15 | 45 | 45 |  |  |  |
| 2 | – | – | – | 1 | 15 | 15 |  | 15 |  |  |
| 4 | – | – | – | 3 | 5 |  |  |  |  | 5 |
| 3 | – | – | 3 | 3 | 5 5 | 10 |  |  | 10 |  |
| 4 | – | – | – | 1 | 15 |  |  |  |  | 15 |
| 2 | – | – | – | 1 | 15 | 15 |  | 15 |  |  |
| 4 | – | – | – | 4 | – |  |  |  |  | – |
| 1 | – | – | 1 | – | 15 | 15 | 15 |  |  |  |
| – | – | – | – | – |  |  |  |  |  |  |
|  |  |  |  |  |  | 230 | 160 | 55 | 15 | 35 |

Cow Calves D continued from page 8

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| Carried over |  |  |  |  |  | 400 | 255 | 75 | 70 | 40 |
| 3 | – | – | – | 2 | 10 | 10 |  |  | 10 |  |
| 1 | – | – | 2 | 2 | 10 10 | 20 | 20 |  |  |  |
| 2 | – | – | – | 3 | 5 | 5 |  | 5 |  |  |
| 3 | – | – | – | 4 | – | – |  |  |  |  |
|  |  |  |  |  |  | 435 | 275 | 80 | 80 | 40 |
| add Bulls from above |  |  |  |  |  | 230 | 160 | 55 | 15 | 35 |
| Bulls & Cow Calves |  |  |  |  |  | 665 | 435 | 135 | 95 | 75 |

f.27 8

Cow Calves Class D
Concluded in page 7.

| | Subsequent places in | | | | Subsequent winnings on the £15, 10, 5 scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D place | A3 place | A4 place | B place | C place | | | | | Total £ | By the second class places in D 1st | 2d | 3d | |
| ✓2 | – | – | – | 4 | | | | – | – | | – | | |
| ✓1 | – | – | – | 4 | | | | – | – | – | | | |
| ✓1 | – | – | 2 | 3 | | | 10 | 5 | 15 | 15 | | | |
| ✓1 | – | – | 4 | 3 | | | – | 5 | 5 | 5 | | | |
| ✓2 | – | – | – | 2 | | | | 10 | 10 | | 10 | | |
| ✓3 | – | – | 1 | 1 | | | 15 | 15 | 30 | | | 30 | |
| ✓1 | – | – | 4 | 1 | | | – | 15 | 15 | 15 | | | |
| ✓3 | – | 1 | – | – | | 15 | | | 15 | | | 15 | |
| ✓1 | – | – | – | 2 | | | | 10 | 10 | 10 | | | |
| ✓2 | – | – | – | 3 | | | | 5 | 5 | | 5 | | |
| ✓1 | – | – | 2 | 1 | | | 10 | 15 | 25 | 25 | | | |
| ✓1 | – | 4 | 2 | 1 | | – | 10 | 15 | 25 | 25 | | | |
| ✓2 | – | – | 4 | 3 | | | – | 5 | 5 | | 5 | | |
| ✓4 | – | – | – | 2 | | | | (10) | – | | | | 10 |
| ✓1 | – | 1 | 1 | 1 | | 15 | 15 | 15 | 45 | 45 | | | |
| ✓2 | – | – | – | 3 | | | | 5 | 5 | | 5 | | |
| ✓4 | – | – | – | 4 | | | | – | – | | | | |
| ✓2 | – | – | – | 2 | | | | 10 | 10 | | 10 | | |
| ✓4 | 3 | – | 2 | – | (5 | | 10) | | – | | | | 15 |
| ✓1 | – | – | – | 1 | | | | 15 | 15 | 15 | | | |
| ✓1 | 2 | – | 2 | 2 | 10 | | 10 | 10 | 30 | 30 | | | |
| ✓3 | – | – | – | 3 | | | | 5 | 5 | | | 5 | |
| ✓1 | – | – | – | 1 | | | | 15 | 15 | 15 | | | |
| = ✓2 | – | – | – | 1 | | | | 15 | 15 | | 15 | | |
| ✓1 | – | – | 3 | 2 | | | 5 | 10 | 15 | 15 | | | |
| ✓1 | – | – | – | 2 | | | | 10 | 10 | 10 | | | |
| ✓2 | – | – | – | 4 | | | | – | – | | – | | |
| ✓3 | – | – | – | 3 | | | | 5 | 5 | | | 5 | |
| ✓2 | 4 | – | 2 | 4 | | | 10 | – | 10 | | 10 | | |
| ✓2 | – | – | – | 1 | | | | 15 | 15 | | 15 | | |
| ✓1 | – | – | – | 1 | | | | 15 | 15 | 15 | | | |
| ✓1 | – | – | – | 3 | | | | 5 | 5 | 5 | | | |
| ✓4 | – | – | – | (4) | | | | – | – | | | | – |
| ✓4 | – | – | – | 1 | | | | (15) | – | | | | 15 |
| ✓1 | – | – | – | 3 | | | | 5 | 5 | 5 | | | |
| ✓1 | – | – | 3 | 4 | | | 5 | – | 5 | 5 | | | |
| ✓2 | – | – | 4 | – | | | – | | | | – | | |
| ✓3 | – | – | – | 1 | | | | 15 | 15 | | | 15 | |
| | | Continued on page 7 | | | | | | | 400 | 255 | 75 | 70 | 40 |

Subsequent winnings of 1st 2d & 3d prize cattle

(p 13 of Copy Book) The small figures are the no. of places in each category

| Page | Prizes 15 10 5 Scale<br>Subsequent winnings of prize cattle | Total winnings 1st 2d & 3d places | 1st place £ | 2d place £ | 3d place £ | 4th place £ |
|---|---|---|---|---|---|---|
| 1 | A 5th prize & A 4th prize | 360<br>195 | 135<br>66 | 130<br>66 | 95<br>63 | 80<br>66 |
| 3 | B & A 3d and A 4d | 650<br>190 | 345<br>65 | 235<br>65 | 70<br>60 | 25<br>64 |
| 6 | C & A3d A4 & B | 1060<br>189 | 515<br>63 | 380<br>60 | 165<br>66 | 140<br>42 |
| 7 | D & A3, A4, B & C | 665<br>196 | 435<br>66 | 135<br>64 | 95<br>66 | 75<br>54 |
| Total | | 2735<br>770 | 1430<br>260 | 880<br>255 | 425<br>255 | 320<br>[illegible] |
| reduced proportionately | | 30 | 15.7 | 9.7 | 4.7 | [illegible] |

2735 : 30 :: a : x     x = $\frac{30}{2735}a$     110

| | | | | | |
|---|---|---|---|---|---|
| D from above | 665 | 435 | 135 | 95 | 75 |
| augmented in ratio of 260 : 206 = x'ed by 1.26 | [837] | [548] | [170] | [119] | [94] |
| diffce addition | 172 | 113 | 35 | 24 | 19 |
| from above | 2735 | 1430 | 880 | 425 | 320 |
| | 2907 | 1543 | 915 | 449 | 339 |
| reduced proportly x'd 1.03 x $\frac{1}{10000}$ | 30.0 | 15.9 | 9.4 | 4.6 | 3.5 |

29.9

360
650
1060
6)2070
345

to get unit of 1, 2, 3 which are the No of competitions

| | | obs? |
|---|---|---|
| ×1 | 345 | 360 |
| 2 | 690 | 650 |
| 3 | 1035 | 1060 |
| 4 | 1380. | [837] |

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from p 9

Subsequent winnings per head of prize cattle 1st 2nd & 3rd in A third year, B, C and D respectively

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The winnings under each category are divided by the number of places in that category. The prizes are on the £15, 10, 5 scale

| Subsequent winnings of prize cattle of classes | Place in Class |  |  |  |  |  |  |  | Total |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 1st |  | 2nd |  | 3rd |  | 4th |  |  |  |
| A of third year, in A of fourth year | 135/66 | 2.05 ✓ | 130/66 | 1.97 ✓ | 95/63 | 1.51 ✓ | 80/66 | 1.21 | 360/195 | 1.85 ✓ |
| B, in A of third & fourth years | 345/65 | 5.31 ✓ | 235/65 | 3.62 ✓ | 70/60 | 1.17 ✓ | 25/64 | 0.39 ✓ | 650/190 | 3.42 ✓ |
| C, in B, and A of 3rd & 4th years | 515/63 | 8.17 ✓ | 380/60 | 6.33 ✓ | 165/66 | 2.50 ✓ | 140/42 | 3.33 ✓ | 1060/189 | 5.61 ✓ |
| D, in C, and B, and A of 3rd & 4th years | 435/66 | 6.60 ✓ | 135/64 | 2.10 ✓ | 95/66 | 1.44 ✓ | 75/54 | 1.39 ✓ | 665/196 | 3.39 ✓ |
| Total | 1430/260 | 5.50 ✓ | 880/255 | 3.45 ✓ | 425/255 | 1.67 ✓ | 320/250 | 1.28 ✓ | 2735/774 | 3.55 ✓ |

The above results to one decimal place

| Subsequent winnings of Prize Cattle of classes as below |  | Places in their several Classes |  |  |  | General average per head |
|---|---|---|---|---|---|---|
|  |  | 1st | 2nd | 3rd | 4th |  |
| A of 3rd year | in A of 4th year | 2.1 | 2.0 | 1.5 | 1.2 | 1.9 |
| B | in A of 3rd & 4th years | 5.3 | 3.6 | 1.2 | 0.4 | 3.4 |
| C | in B and in A of 3rd & 4th years | 8.2 | 6.3 | 2.5 | 3.3 | 5.6 |
| D | in C, and in B and in A of 3rd & 4th years | 6.6 | 2.1 | 1.4 | 1.4 | 3.4 |
| General averages per head<br>These give the relative winnings of 1st 2nd & 3rd prize cattle |  | 5.5 | 3.5 | 1.7 | 1.3 | 3.6 |
| → x^d by 2.81 |  | 15.4 | 9.8 | 4.8 | 3.7 |  |
|  |  | (See p 11 of Copy book) |  |  |  |  |

5.5
3.5
1.7
6) 10.7
1.78 is the equivalent of £5 in the 15, 10, 5 scale
x^d by $\frac{5}{1.78}$ = 2.81

# Number of Cattle to whose names no asterisk * is attached 1869–1901

Bulls

| ~~Page.~~ Page | A | B | C | D |
|---|---|---|---|---|
| 1 | 10 | 13 | 14 | 19 |
| 2 | 8 | 13 | 13 | 24 |
| 3 | 7 | 10 | 14 | 17 |
| 4 | 11 | 17 | 16 | 3° |
| 5 | 11 | 15 | 21 | – |
| 6 | 2 | 4 | 4 | – |
| Total | 49 | 72 | 82 | 63 |

Cows

| Page | A | B | C | D |
|---|---|---|---|---|
| 1 | 13 | 13 | 16 | 18 |
| 2 | 8 | 14 | 11 | 16 |
| 3 | 6 | 13 | 11 | 17 |
| 4 | 4 | 9° | 8 | 12 |
| 5 | 5 | 10 | 11 | 16 |
| 6 | 1 | 3 | 4 | 4 |
| Total | 37 | 62 | 61 | 83 |

°shows that tables are not complete.

86
134
143
146
509

[80]

Bulls + Cows. 509
17 (with % revised)
526

revised for paucity
80

1.27
63
381
762
80.01
63
17

Bulls ~~and~~ Cows

| A | B | C | D |
|---|---|---|---|
| 86 | 134 | 143 | [163] |

D revised for paucity

~~Tot~~ Total 526

GALTON/2/5/11/3/6

The series extends from 1868 to 1901 inclusive = 34 years. Throughout there are 3 classes of bulls & of cows severally that may be described as mature, adult, and young animals & During the greater part of the series there is a fourth class of calves and prizes of successively decreasing value, such as £15, £10, & £5 are given for the first second & third animal in each class. There is absolute homogeneity nowhere but a very good approximation to a homogeneous series may be obtained by a small sacrifice of material

The limits ~~page~~ by which the several classes are defined is not identical; at the beginning they referred to the age of the animal subsequently to the year of birth, bearing in mind this ambiguity, the classes refer – A to animals of 3 years old and more B to over 2 & under 3, C to over 1 and under 2; D, calves, to under 1 year. There was a little overlap in the year 1882 when the change occurred so that some few animals were able to compete in the same class both for 1881 & 1882. I have ignored these overlaps. Again an upper limit for class A (of mature animals) has been latterly laid down, but not throughout in the same way. It has however always included the 3d & the 4th year, so in the series I shall use these will be the limits. The material that is here [illegible] serves usefully in another way. ~~I found~~ ~~There is no substantial difference in the statistical results derived from Bulls & Cows, as they were I found on working out them separately, so I give them in combination~~

The statistics were worked out separately for Bulls & Cows but the results were substantially the same so I give them in combination.