Publications On Pedigree Horses

Publication/Creation

1883-1899

Persistent URL

https://wellcomecollection.org/works/mmegywfj

License and attribution

You have permission to make copies of this work under a Creative Commons, Attribution, Non-commercial license.

Non-commercial use includes private study, academic research, teaching, and other activities that are not primarily intended for, or directed towards, commercial advantage or private monetary compensation. See the Legal Code for further information.

Image source should be attributed as specified in the full catalogue record. If no source is given the image should be attributed to Wellcome Collection.



Francis Galton

HUNTERS' IMPROVEMENT SOCIETY



FIFTEENTH ANNUAL SHOW

OF

THOROUGHBREDS

HUNTERS & CHARGERS

HELD IN CONTUNCTION WITH THE

ROYAL COMMISSION ON HORSE-BREEDING

ROYAL AGRICULTURAL HALL, LONDON

MARCH 7th, 8th & 9th, 1899.

PRICE SIXPENCE.

Spens

Mossur Sho

Mossra.

O. Seymour B. Barcley H

ALI)

List of Apr

THE NATIONAL BENEVOLEUT INSTITU-Poter Hered. Established 1812. Incorporated by Royal Charter. This institution grants annuties to distressed members of the upper and middle classes of society who have attained the age of the

THE SURGIOAL AID SOCIETY.

I tresident—The Hight Hon. the EARL of ABERDKEN, Q.O.M.G.
This Society supplies every descrip ion of mechanical support to
the poor, without innit as to locative or disease.

Water Beda, invalid Chairs and Couches are lent to the afficient
apon the recommendation of subscribers.

Silest appliances given during the year ending Sept. 30, 1839.

Sulest appliances given during the year ending Sept. 30, 1839.

Sulest appliances given during the year ending Sept. 30, 1839.

Sulest appliances given during the year ending Sept. 30, 1839.

Sulest appliances given during the Secretary, at the calcular and Co.,
will be thenkfully received by the Bankurs, Messra Barclay and Co.,

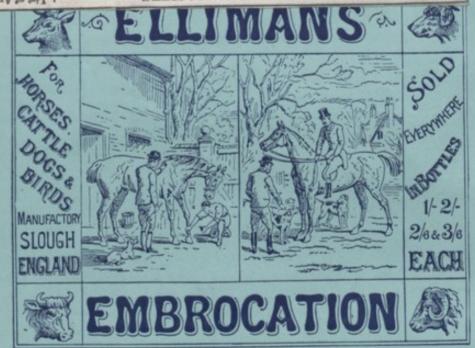
Sulest appliances given during the Secretary, at the calcular and Co.,

Sulest appliances given during the Secretary.

Sulest appliances given during the Secretary.

LIUNGIDOG " rabing and direction of the series of the series of doing bough of the series of the s

burgh will, on ON of a PRO-

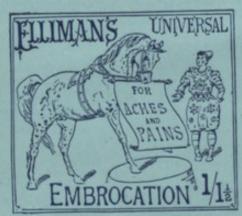


For Sprains, Curbs, Splints, when forming. For Overreaches, Chapped Heels, Wind Galls. For Rheumatism in Horses.

For Broken Knees, Bruises, Wounds, Capped Hocks.

For Sore Throat and Influenza. For Sore Shoulders, Sore Backs.
For Sore Mouths in Sheep and Lambs.
For Sprains, Cuts, and Bruises in Dogs. For Cramp in Birds.

ELLIMAN'S EMBROCATION, Bottles, 1/-, 2/-, 2/6, 3/6; Jars, 10/6, 20/-



RHEUMATISM, Sore Throat from Cold, Cold at the Chest, Neuralgia from Cold, Tooth-Ache from Cold, Sprains, Bruises, Fresh Cuts and Surface Wounds, Corns when painful, Cramp Stiffness and Soreness of the Limbs after Cycling, etc.,

Are pains all relieved by a prompt and free use of

ELLIMAN'S UNIVERSAL EMBROCATION,

Bottles, 81d., 1/11, 2/9, 4/-

Prepared only by ELLIMAN, SONS & CO., Slough, Eng.

THE TIMES, WEDNESDAY, 1
The Qual For the descript past in summains this Neyel Commission on Merco-Breeding has hald its past 160; past 160;
able for golding, bending, and other half-bred Regions and the Research Emperors and the Research Regions of AT THE most bending, and it will be sent that the entries and bending, and it will be sent that the entries and the sent that the sent that the sent tent to the property of Region of the sent that the sent that the sent tent to the sent tent tent tent tent tent tent ten
Ay 1935 although the throughbout sites are removed. Conserve the conserver as a small — 100 per removal and the first flow in 1920 per removal and the 1920 pe
Surregular - 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
The same order to describe as in protein me in it. The same order to describe as in protein parts. the first day heing described to the throughbook state of the same of the
journe of empetations in proposed by the Boyel as Yuan Commissions—of when the Posts of Portland, Bit John Ginner, Sir Jack Wilson, and Jin. Harmann and Commissions of the Commissions
to poins in House-Section waves present throughout to make every— the Batt that the section of t
of et m. Probaser James McCall, Mr. John Fremmen, and Mr. Clement Brephomene. The duties of them of Correct of Correct of State, and State, were conting the so authors as were them. Jind, and
the Sinth as the smaller periods of the slow, in the constitutes formillates brandletery unconstitutes for its first barness are mind to been used to please that faw becomes are mind to been used to please that faw becomes are mind to been used to be the factor and out of about 61 and the state of the factor are being more formillates.
Black, he sufficies for several words are not to be proved the particular of the state of the st
Incommed their completes pression, the passed standard taxolors of quality assend to be good. The judging consecuted at an early hear and was promoted with content gooding. By
To Junchem hear all the II cannot present to Engineer to Topical and Wales with II soften and II present II amount and I present II amount II amou
judges, and a solution of the least mose to the least of
the the Agricultural Hall just at that how, alone, of if we are monographic by Frince Atmendies of Teck and attended by the Hen. Devil Keppel, The distribution of the Dopling they be witness the specific of the Content of the Doplings they be witness the specific of the Content of the Doplings they be witness the specific of the Doplings they be witness the specific of
the the throughout stress was a form of the through the thin being to of fire Walter Gripey, by H. N. Krigments, Wr. Antalaser East East, Pathan Pathan Count Kinsipy, the best See Stress.
Tester's Imagination of Production Generateral. The Duke of Tock estuated aposade of an Lineary Lineary.
day being the Earl of Technology, Lord Leon-
field, Leeb and Jardy Michinston, Leeb Youngary. M. Singer Chambellathin to the King of brisden, Mills Side Wittens, Mr. Wither and Leely December Long, Colmed Van die Neger, Mr. Mertha, Mr. Stanen, Mr. J. F. Tow, and the Sov. Could Lagued. Mr. J. F. Tow, and the Sov. Could Lagued. The multiple to terms or of the classes seem at what they might have been, this being cotably the case they might have been, this being cotably the course of the country of the country.
ED. In the freetrisch continues, view varie, we de la face of it is a reported, have only one presument each, and it is a reported, and all vessels anishments; and is the continues anishment of its least anishment of the language of the language or the language of the
There has been a promises a final data on the first term of the fi
UMES, there did not happen to please the polygon, who the same thousand out of the right and enteriority filled anoth them to lot of the right and enteriority filled another them to the remaining and the second of the second o
have been the color element, it they be send then seeing the aniset, the a limit, the a limit, the self-see with the see which there with the see which there were measured on using previous consistent, they been measured in the persons and as Mr. Chairy Mantonic, who has not thread as the chair of the see o
PACHYSIA. Not shall be followed as pressions for enverse particles. Prock has followed as pressions for enverye continuous process, Manoy enthers have were stir, enverye continuous and process and p
TH OPENER distriction. As Quant's possitions were availed as undertoon Enotice Chee A Conditionable. Earth, Constitute the Enot, Error, Estern, Middless, Smith, Orthological date, and reduction. It agrees.—Then previous of the grade of the College, House, English, Condition, of the condition. (10) earther So. C. Criter, Moran Son, Constitute, of the condition of the conditi
S S Managine 11 (Part of the Control
25'A LOW metrors the to the first form, by arrange the relative to the property of the Rev. The first former, by arrange the relative to the first former, by the first former, because disput to property for the first former, because it is being the first former, because it is being the first former fo
24 Section Section and Section 2 Section 1 Section 2 Sec
This photon from the large of your period or good of the period of the p
45 Security Landson, to the Security Landson and Security Landson, the Landson Landson and Landson and Landson Landson and Landson Landson and Landso
Theoret Since & Garden C. G. Committee Number of the control of th
Science State of Section 1 and
A Commercial Commercia
To the Company of Lindburg and Company of the Company of Company of Company of the Company of the Company of Company of Company of the Compan
Color Charle Color Charles
I solved Chan K Chraftscher, Westerdeiter, and North Control of Co
1 (mg large line) is associal, 11 for the Channel. [For one



The state of the s

BAILWAY THAIN SERVICES.

PRINTENDE OF THE PRINTENDE OF ASSOCIATION OF THE PRINTENDE OF THE PRINTEND

The state of the s The same of the sa

Sept Sept

製。ELLIMANS。 (機

PATRONS

HER MAJESTY THE QUEEN. H.R.H. THE PRINCE OF WALES, K.G. THE DUKE OF CONNAUGHT, K.G.

PRESIDENT

LORD WENLOCK, Escrick Park, Yorkshire.

VICE-PRESIDENT

LIEUT-COL. GERALD C. RICARDO, Donnington, Newbury.

PAST-PRESIDENTS

PAST-PRESIDENTS

1886—EARL OF COVENTRY, Croome Court, Severn Stoke, Worcs.
1887—COLONEL SIR NIGEL KINGSCOTE, K.C.B., 19, South Audley Street, W.
1888—DUKE OF PORTLAND, Welbeck Abbey, Worksop, Notts.
1889—SIR WALTER GILBEY, Bart., Elsenham Hall, Essex.
1890—LORD TREDEGAR, M.F.H., Tredegar Park, Newport, Mon.
1891—LORD MIDDLETON, M.F.H., Birdsall House, York.
1892—The late HON. T. W. FITZWILLIAM.
1893—CAPTAIN W. H. FIFE, Langton Hall, Northallerton.
1894—COLONEL J. F. HORNBY, Sandhoe, Hexham, Northumberland.
1895—J. P. CROSS, Catthorpe Towers, Rugby.
1896—LIEUT.-COL. HON. W. H. ALLSOPP, Junior Carlton Club, S.W.
1897—EARL OF YARBOROUGH, M.F.H., Brocklesby Park, Lincolnshire.

Elected 1896 Retire 1899

COUNCIL

Dalton, R. H., Conservative Club, S.W.

Dent, Major H. F., Menethorpe, Malton.

Dunn, W. H., M.F.H., Wallingtons, Hungerford.

Fraser, Donald, Tickford Park, Newport Pagnell.

Hopetoun, Earl of, Hopetoun House, South Queensferry, N.B.

Legard, Rev. Cecil, Cottesbrooke Rectory, Northampton.

Smith, Hon. W. F. D., M.P., Greenlands, Henley-on-Thames.

Spicer, Captain, Spye Park, Chippenham.

Wallis, Owen C., West Haddon Hall, Rugby.

Williams, Romer, Park Lodge, Park Place, Albert Gate, S.W.

Elected 1897 Retire 1200

BASSETT, R. T., Crossways, Cowbridge, Glam.
FENWICK, G. A., Hillmorton, Rugby.
GILBEY, TRESHAM, The Grange, Bishop's Stortford.
GREENALL, SIR GILBERT, BT., M.F.H., Woolsthorpe, Grantham.
HARDY, GERALD H., M.F.H., Merevale, Atherstone,
JAY, TOM SIMPSON, Holmwood, Putney Hill, S.W.
JOICEY, JAMES, Poulton Priory, Fairford, Glos.
KINGSCOTE, J. B., Stratton Audley, Bicester.
SIMPSON, SIR HENRY, Gordon House, Windsor.
VAN DE WEYER, COL. V. B., New Lodge, Windsor Forest.

Elected 1898 Retire 1901

Annaly, Lord, Holdenby House, Northants.

Barclay, E. E., M.F.H., Brent Pelham Hall, Buntingford.

Barlow, E. H., Sigsworth, Pateley Bridge, Yorks.

Fenwick, E. Guy, North Luffenham Hall, Stamford.

Harrington, Earl of, M.F.H., Elvaston Castle, Derby.

Helme, E. T., M.F.H., Gatwick, Billericay, Essex.

Hornby, Captain G. S. Phipps, Sandley, Gillingham, Dorset.

Loder, Reginald B., Maidwell Hall, Northants.

Rawnsley, E. Preston, M.F.H., Girsby Manor, Market Rasen.

Tindall, C. W., Wainfleet, Lincs.

TREASURER

E. SOMERVILLE TATTERSALL, Albert Gate, S.W.

HON. SECRETARY

Hon. E. PRESTON, Errwood Hall, Buxton.

STEWARDS OF LONDON SHOW

LIEUT.-COL. GERALD C. RICARDO, Donnington, Newbury. JOHN COOPER, Brook Hill, East Haddon, Northampton. HON. ALEXANDER PARKER, Culford, Bury St. Edmunds.

AUDITOR

JAMES HARRIS, F.C.A., 8, Old Jewry, E.C.

Communications to be addressed to the SECRETARY,

A. B. CHARLTON,

12 Hanover Square, London, W.

A

HORSE SHOW COMMITTEE

Chairman:

SIR WALTER GILBEY, BART., Elsenham Hall, Essex.

Vice-Chairman :

LIEUT.-COL. GERALD C. RICARDO, Donnington, Newbury.

E. H. BARLOW, Sigsworth, Pateley Bridge, Yorks.

R. H. DALTON, Conservative Club, S.W.

W. H. DUNN, M.F.H., Wallingtons, Hungerford.

CAPT. W. H. FIFE, Langton Hall, Northallerton.

CAPT. G. PHIPPS HORNBY, Sandley House, Gillingham, Dorset.

TOM SIMPSON JAY, Holmwood, Putney Hill, S.W.

JAMES JOICEY, Poulton Priory, Fairford, Glos.

REV. CECIL LEGARD, Cottesbrooke Rectory, Northampton.

Hon. E. PRESTON, Errwood Hall, Buxton.

SIR HENRY SIMPSON, Gordon House, Windsor.

E. SOMERVILLE TATTERSALL, Albert Gate, S.W.

OWEN C. WALLIS, West Haddon Hall, Rugby.

LORD WENLOCK, Escrick Park, Yorkshire.

EARL OF YARBOROUGH, M.F.H., Brocklesby Park, Lincolnshire.

THE STEWARDS (see previous page).

JUDGES OF YOUNG STOCK

(Classes 2 to 8).

E. H. BARLOW, Sigsworth, Pateley Bridge, Yorks. REV. CECIL LEGARD, Cottesbrooke Rectory, Northampton.

JUDGES OF HUNTERS

(Classes 1, 9 to 14).

GERALD H. HARDY, M.F.H., Merevale, Atherstone. EARL OF ORKNEY, Wing Lodge, Leighton Buzzard.

JUDGE OF CHARGERS

(Class 15).

COLONEL T. DEANE, C.B. (late Director, Army Remount Department India).

VETERINARY INSPECTORS

PROFESSOR JAMES McCALL, Principal, Veterinary College, Glasgow. JOHN FREEMAN, F.R.C.V.S., Dublin. CLEMENT STEPHENSON, F.R.C.V.S., Newcastle on-Tyne.

SUMMARY OF MONEY VALUE IN CUPS AND PRIZE	ZES	5.
HUNTER STALLIONS—	s.	d.
CLASS 1. First Prize of £15 and Silver Medal Second Prize of £10 and Silver Medal Silver	0	0 -
HUNTER COLTS and GELDINGS-		
Special Prize for best Colt in Classes 2, 3, and 4, calculated to make	0	0
a Hunter Sire 10	0	0
Breeder	0	0 0 0
PRODUCE CLASS— Pre- mium. Pre- mium. Pre- mium. mium.		
CLASS 8. Groups of Three Silver Medal for \\ \Delta 10 \\	0	0
HUNTER MARES and GELDINGS, 4 years old—		
HUNTER MARES and GELDINGS, 5 years old-	0 0	0 0 0
(TO BE RIDDEN) 1st 2nd 3rd 4th Prize. Prize. Prize. Prize. Prize. Prize. CLASS 11. Not exceeding 13 st. 7 lbs	0	0
CLASS 14. 5 years old and upwards £20 £10 £5 85 Special Prize for the Best Mare or Gelding in Classes 11 to 14 10 Society's Challenge Cup, for the Best Animal in Classes 9 to 14 105 Gold Medal to accompany Cup	0 0	0
CHARGERS— 1st 2nd 3rd Prize, Prize, Prize.		
CLASS 15. 3 and 4 years old (suitable to make) £20 £10 £5 38	_	-
ROYAL COMMISSION ON HORSE BREEDING—	. 0	0
Classes A to L. 29 Queen's Premiums of £150 4350	_	0
£542	, 0	

DECORATION OF WINNERS.

ROSETTES.

THOROT	GHBRED	S-Classes A	to L.
THE STREET CO. LEWIS CO. L.		ormana r	A UU AII

THOUGH CHIDINEDS—Classes A to L.
Red, White, and Blue Premium Stallions (Equal)
Red 1st Reserve Stallion
Blue 2nd " "
Yellow 3rd ,, ,,
HUNTERS AND CHARGERS-Classes 1 to 15.
1. Red, White, and Blue, Challenge Cups.
2. Pink and White, Gold Centre Reserves for Challenge Cups.
3. Dark Blue and Yellow Special Prize for the best Colt in Classes 2, 3, and 4, likely to make a Hunter Sire.
4. Red and White { Special Prize for the best Gelding in Classes 2, 3 and 4.
5. Blue and White { Special Prize for the best Filly in Classes 5, 6 and 7.
6. Green and Red Special Prize for the best Mare or Gelding in Classes 9 and 10.
7. Black and Orange or Gelding in Classes 11 to 14.
RED First Prize and Premiums (Class 8).
BLUE Second Prize and Premiums—Classes 3-7.
ORANGE Third Prize.
GREEN Fourth Prize.
BROWN Fifth Prize.
PINK Reserve Number.
WHITE { Highly Commended. Commended.

PROGRAMME OF ARRANGEMENTS

(Subject to Alteration by the Stewards).

TUESDAY, MARCH 7th, 1899.

Show opens at 8.30 a.m. Closes at 6 p.m.

Judging of Thoroughbred Stallions entered for the Queen's Premiums.

12.30 p.m.—Fourteenth Annual General Meeting of Members.

WEDNESDAY, MARCH 8th.

Show opens at 9 a.m. Closes at 6 p.m. 9 a.m. to 1.30 p.m.: Judging of Young Stock.

2 p.m.: Judging of Riding Classes, followed by a parade of Premium Stallions.

THURSDAY, MARCH 9th.

Show opens at 10 a.m. Closes at 6 p.m.

10 a.m.: Judging of any Young Stock or Riding Classes left over.

11 a.m.: Challenge Cups.

12 noon: Judging of Chargers.
2 p.m.: Parade of all Animals.

4 p.m. ; SALE BY AUCTION, CONDUCTED BY MESSRS. TATTERSALL

IN THE LARGE RING.

COMPARATIVE STATEMENT OF ENTRIES.

The Entries for Eleven Shows are given below :-

	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899
THOROUGHBRED	94	103	110	123	108	103	127	112	120	116	104
HUNTER SIRES	-	_	-	11	29	31	36	31	36	34	28
HUNTER GELDINGS	-	-	-	20	22	62	99	90	111	84	107
HUNTER MARES }	71	109	93	75	66	79	78	61	78	74	79
CHARGERS	-	-	-	-	-	-	-	12	47	15	21
	165	212	203	229	225	275	340	306	392	323	339

INDEX OF EXHIBITORS.

Abbot, G. L., 38, 83 Andrew, W. V., 35, 282 Arnold, Hugh, 15 Atkinson, Thomas, 221

Badger, W. D., 166, 200, 249, 294
Baldwin, Philip, 144
Ballantyne, Arthur H., 175
Barling, F. W., 76
Barlow, Eustace H., 13, 272
Barnard, Edmund B., 14
Baxter, E. & A., 273
Beatty, Philip V., 292
Bell, John, 7, 80
Bickell, Thomas K., 42
Blofeld, Frank, 322
Blount, Sir Edward, K.C.B., 220
Bradley, Thomas, 179, 180, 250, 251, 296
Brammall, Humphrey E., 184, 284, 302
Brockton, William R., 36
Bromhead, Harry, 37, 133, 134, 135, 209
Brown, A. J., 157, 158, 224, 237, 253, 274
Browne, Philip M., 156, 245, 326

Carter, William, 233, 234
Chaplin, Rt. Hon. Henry, 28
Cheney, W. J., 155
Christy, David, jun., 150
Christy, James, 226
Clarke, Richard, 34
Clayhills-Henderson, Capt., R.N., 197
Codling, John, 138
Compton Stud, 45, 88, 92
Cook, Alexander, 99
Cooper, John, 125, 196, 317
Cornthwaite, Thomas A., 205, 206
Cory, Herbert B., 214
Courage, Edward, 53
Cox, Alfred, 49
Crisp, Fred, 9
Cross, James, 255
Crowhurst, E. G., 46, 78, 159

Danby, Philip S., 198
Darrell, James S., 52, 86, 136, 173, 246, 268, 283, 329
Dawson, Stopham, 183
Day, John, 280
de Trafford, C. E., 142
Deerhurst, Viscount, 109
Dent, William, 216
Diggle, Thomas, 222
Dillon, Hon. Miss E., 30, 92, 153
Dixon, R. E., 146, 186
Dodgson, William, 26
Downe, Viscount, 230
Drage, John, 39, 287, 307
Du Cros, George H., 25a
Dugdale, J. Lionel, 60
Dykes, Wyrill, 58

Elsey, William E., 32

Farrell, William, 254, 323, 324 Fife, Capt. W. H., 59 Foster, Col. W. H., M.P., 23, 288 Fountain, William A., 41 Fraser, Donald, 41 Fry, F. R., 256, 305

Gates, B. J., 327 Gee, B. G. H., 126 Gibson, John, 64 Godson, Frank, 231 Goldfinch, G. H., 119 Gorham, A., 127 Greswolde-Williams, F. W. G., 239

Haines, Frank G., 310 Haslewood, A. O., 24, 29, 55, 72, 87, 95 Hawes, E. Ashby, 244 Hawkes, Edwin, 10 Hayr, W. T., 129, 130
Henshaw, Guy B. Grant, 260
Heywood-Lonsdale, Capt., M.F.H., 79, 128
Hodder, Abraham, 47
Hoddinott, Richard, 107
Hodgson, Edward, 108, 167, 236, 263, 264
Hogg, W. H. J., 82
Hollington, A. J., 17
Holt-Needham, O. N., 116, 182, 208
Hutchison, John, 94, 97, 161

Iliffe, Walter, F.R.C.S., 21 Ingledew, James, 170, 195, 213

Jackson, Edward S., M.B., 229 Jeffery, George & Son, 44 Jesson, Thomas, 33 Jillings, Edwin, 228, 271 John, T. D., 162, 266, 303 Johnson, G. W. & H. T., 225, 238 Joscelyn, George, 262, 276

Kendall, Charles L., 147, 285 Keynsham Stud Co., 31, 103 Kidd, John, 151 King, J. R., 8, 300 King, J. W., 199 King, Thomas P., 74 Knowles, Arthur, 91

Laity, Angrove, 48
Langdale-Kelham, Mrs., 137, 185, 314
Lawton, James, 165
Lay, B. H., 169, 252, 311
Leng, William, 57
Lett, John, 243
Linnell, George, 27
Littledale, St. George, 218
Llangattock, Lord, 65
Long, Ernest, 248, 306, 319
Long, William E., 320

Marshall, Samuel, 132
Martin, Harold, 40, 171, 217
Marton, George, 131
Mason & Brown, 298, 301
Maughan, Frank, 141
Middleton, Lord, M.F.H., 54, 181, 204, 219
Miles, Charles, 118

Milling, James, 240, 241, 242 Moore, Henry, 172 Mosley, Sir Oswald, Bart., 163 Mugleston, R. H., 328 Mumford, Stephen, 61 Mundy, Mrs. Basil, 321

Newman, G. A., 1787 Newman, Mrs. E., 275

O'Brien, Commander F.H.S., 201, 202 Oliver, Robert, 20

Pease, Alfred E., M.P., 123
Perkins, Miss A. C., 194, 207, 227
Petchel, William, 124, 168
Philipps, J. Wynford, M.P., 69, 113, 140
Pledger, Joseph A., 177, 267
Pope, J. Pearce, 191, 192, 277
Power, William S., 67
Pratt & Sons, 18
Prior, C. M., 232, 270, 316
Provis, C. H. R., 278
Purcell, Mrs. M. A., 102

Rainey, Hugh, 279, 299, 308 Raley, John R., 210 Ramsden, John C. F., 261 Rees, John F., 71 Rice, W. H., 257, 258, 259 Rimmer, Ralph, 19 Robson, Robert I., 56 Rucker, Martin D., 193, 211, 212

Schwabe, C., 164
Scrimgeour, John A., 121, 139
Sedgley, J. H., 106
Sheldon, W. J., 154
Shepherd, Richard, 90
Shirley, Lewis J., 6, 62
Showell, H., 265
Smith, S. Lee, 149, 189, 190, 215
Sneyd, Ralph, 247
Stalker, John, 176
Steel, G. & P., 22
Stock, Ernest S., 2
Stokes, J. H., 281, 289, 290, 309, 315
Stops, W. H., 291
Strickland-Constable, H., 51
Swinfen-Broun, Col. M.A., 66

INDEX OF EXHIBITORS.

Tabor, J. E., 1
Taylor, William, 100
Taylor, W. G. & Sons, 25, 89.
Thomson, John, 11
Tredegar, Lord, 73
Turner, J. Harling, 115
Tyler, W. R. H., 160

Voase, Alfred, 145 Vyner, Robert C. de Grey, 50

Ward, David, 117, 148 Ward, T. & H., 235, 269, 295 Wardle, Edwin, 313 Warren, T. H., 112 Wells, Charles, 174
Wheeler, Joseph H., 63, 84
White, William H., 16
Whiteman, William, 77
Whitton, Corbett, 297
Wilkes, G. W., 122, 143, 188
Wilkinson, Frank B., 286, 318
Williams-Wynn, Sir Watkin, Bart., 85
Wilson, William, 43, 96, 101, 104
Winans, Walter, 293, 304, 312
Wood, Samuel H., 75
Woodiwiss, S., 3

Yerburgh, Robert A., M.P., 81, 110, 111, 187, 203 Young, John, 12 Young, Solomon, 5, 98, 114, 325

INDEX OF EXHIBITS.

Acorn, 106
Active Hampton, 19
Actor (Hoddinott's), 107
Actor (Marton's), 131
Aërolite, 61
Alarm, 249
Albert Moore, 41
Alvin, 62
Amin, 153
Annoyance, 250
Aristides, 273
Aristocrat, 300
Artaxerxes, 252
Ayr, 63

Ballinasloe, 301 Ballymote, 274 Barney, 108 Barnum, 109 Bellarmine, 1 Belle of the Ball, 232 Bellringer, 275 Belville, 42 Benburb, 25 Bertha, 233 Bertie, 319 Betty, 219 Birdcatcher, 132 Black Admiral, 110 Black Bread (1309), 320 Black Pearl, 203 Blakelaw, 20 Blue Eagle, 2 Boatman, 276 Bold Hermit, 3 Bonspiel, 64 Braggadocio, 4 Bredon Hill, 154 Briardale, 65 Bright Hampton, 98 Briton, 289 Brockhampton, 66 Brunette, 179 Bucephalus, 67 Bulrush, 112 Busybody, 181

Camelia, 220 Captain Kidd, 113 Captain Lowery, 302 Carouse, 92

Button Park, 25a

Chase Gold, 130 Chibiabos, 43 Clanranald, 94 Clarence, 114 Clonmel, 253 Commander, 303 Conqueror, 321 Cork, 277 Cornmint, 50 Countess, 221 Crance, 290 Crême-de-la-Crême, 99 Crest Hampton, 26 Cribbage, 155 Crossburn, 115 Crusher, 133 Cuba, 312 -Curley, 5 Cyclops, 51

Dan, 278
Dan Leno, 116
Dancing Girl, 182
Dandy (Darrell's), 136
Dandy (Langdale-Kelham's), 137
Dandy Dick, 138
Danetree, 291
Diamint, 139
Diamond King, 117
Discord, 156
Dissenter, 80
Doneraile, 157
Dorothy, 234
Dry Toast, 44

Eclipse, 27
Emperor, 118
Empress, 235
Erskine, 28
Ethel, 279
Evil Eye, 95
Ewerby Rosebud (1370), 222
Excelsior, 280

Fabulous Fortune, 254
Firefly, 140
First Consul, 52
First Flight II. or Loughboro, 21
First Lord, 111
Flordon, 255
Florismart, 97
Flower Girl, 224

INDEX OF EXHIBITS.

Four Poster, 29 Freda, 183 Freemason, 281 Funny Boat, 53

Galopian, 69 Galopin Hampton, 159 Galtee More, 256 Gaylad, 119 Gay Lass (1391), 313 Glenboy, 257 Glitter, 160 Gold Dust (1397), 282 Gold Fox, 292 Goldemar, 161 Golden Dream, 304 Golden King, 283 Golden Queen, 236 Golden Bay, 293 Goldfinder, 260 Goschen, 81 Gossoon, 141 Grammont, 6 Grand National, 45

Hail, 30 Hale, 22 Hatcham Green, 7 Himyar, 93

Hindley, 54
Hollyhock, 204
Homely, 82
Huntress II., 205
Huntsman (Fry's), 305
Huntsman (John's), 162
Hyacinthus, 8

- Imprévu, 55 Irish Secretary, 56
- Jamahine, 207 Just in Time, 46

Keel Row, 163 Kendor, 47 Kibris, 57 Killarney, 208 King Ebor, 48 King of the Ridge, 100 Kismet (769), 314 Klondyke, 261 Kudos, 322

Lady Athol, 237 Lady Day, 184 Lady Eleanor, 209 Lady Grace (1446), 225 Lady Maud, 238 Lady Maroon, 185 Lady Meta, 186 Lady Stanley, 187 Liscombe, 164 Little Johnny, 262 Longtail, 134 Lord Draco, 284 Lord Francis, 135 Lovat Mixture, 142 Lulsley (1479), 239

Macaroni, 188 Mahra, 121 Maid of Ross, 240 Mainsail (1485), 226 Manila, 165 Manxman, 263 March Night, 122 -Marioni, 9 Marjorie, 241 Marmalade, 243 Masterman Ready, 83 Matron, 315 Maxwell, 84 May Flower (1499), 244 May Queen, 210 Melody (1505), 245 Mermaid, 189 Merry Lass, 191 Merry One, 193 Merry Princess, 211 Mintrock, 23 Minute Gun, 323 Mornington, 143 Moss Rose, 192 Mountain Dew, 31 Mrs. Lindsay (1535), 227

Nancy, 206 Newcourt, 85 Nightline, 166 Nulma, 194

Oatlands, 96
Octavian, 123
Old Boots, 101
Old Cloggs, 306
Old Coin, 10
Old Sam, 11
Oldbury Hero, 144
Olive (1551), 228
Omdurman, 285
Oubrough, 145
Oxeye, 12

Paddy, 167 Palaver, 18 Paleface, 265 Pantaloon, 71

INDEX OF EXHIBITS.

Par-ci-par-là, 72
Parlington, 32
Peppermill, 86
Pilot (Jesson's), 33
Pilot (Wilkinson's), 286
Pirate II., 58
Playfair, 124
Prattler, 168
Primrose, 229
Prince, 307
Prince George, 146
Prince Rupert, 325
Pumpernickel, 14

Q.C., 15 Queen Mary (1182), 246 Queen's Counsel, 59 Queen's Jester, 34 Queen's Jubilee, 16 Quod, 169

Raby, 266
Rachael, 213

Radius, 87
Rakeaway, 170
Randolph, 308
Rathkeale, 267
Red Eagle, 24

Red Hat, 73
Ringoal, 35
Rockingham, 268
Rockville, 269
Romance, 294
Romany King, 171
Ronald, 295
Royal Harkaway, 172
Ruby, 195

St. Crispin, 326
St. Cyr, 60
St. Nicholas, 74
Sandow, 309
Satisfaction, 214
Saucy Poll, 196
Scamperdale, 270
Scandal, 316
Scotch Hazel, 88
Sea Shell, 190
Seafoam, 147
Sequel, 251
Sequent, 296
Shannon View, 178
Sherbrooke, 89
Silent Hermit, 17
Sir Richard, 327
Sirdar, 297

Sky Pilot, 36 Snap Shot, 174 Snapshot, 328 Spahi, 75 Spinning Girl, 197 Sportsman, 298 Spot Stroke, 18 Starlight, 175 Statesman, 264 Stella, 215 Sultan, 176 Sunbeam, 242 Sunstroke, 198 Swallowfield, 76 Sweetheart, 199

Tarquin, 148
Telegraph, 149
Temple Griffin, 37
The Bosun, 102
The Classic, 177
The Colonel, 258
The Governor, 90
The Gunner, 310
The Knight, 271
The Major, 259
The Tinman, 91
The Witch, 212
Tigris (1655), 247
Toboggan, 38
Topsy, 216
Trap, 39

Upsilon, 40

Valesman, 150 Vibration, 77 Vic, 248 Victor, 324 Victory, 299

Wainfleet Queen, 217 War Eagle II., 151 Warrenton, 49 Wentworth, 104 Whitehall, 103 Wild Fire, 78 Wild Night, 129 Windlass, 218 Withernam, 79

Xerxes, 311

Yardmaker, 125 Yorick, 126 Young Ben, 158



ROYAL COMMISSION ON HORSE-BREEDING.

ROYAL COMMISSIONERS:

- The Duke of Portland (Master of the Horse), Welbeck Abbey, Worksop, Notts.
- The Earl of Coventry (Master of the Buckhounds), Croome Court, Severn Stoke, Worcestershire.
- The LORD RIBBLESDALE, Gisburne Park, Clitheroe, Yorkshire.
- The RIGHT HON. HENRY CHAPLIN, M.P., Stafford House, St. James', S.W.
- Sir Jacob Wilson, Chillingham Barns, Belford, Northumberland. (Representing the Royal Agricultural Society of England.)
- Sir John Gilmour, Bart., Montrave, Leven, Fifeshire, N.B.

(Representing the Highland and Agricultural Society of Scotland.)

Mr. J. Bowen-Jones, Ensdon House, Montford Bridge, Salop.

(Representing the Central Chamber of Agriculture.)

Mr. Alfred E. Pease, M.P., Pinchinthorpe House, Guisborough, Yorks.

SECRETARY:

Mr. J. Herbert Taylor, 39, Victoria Street, Westminster, S.W.

QUEEN'S PREMIUMS.

TWENTY-NINE "QUEEN'S PREMIUMS" of £150 each are offered for Thorough-bred Stallions, between 4 years old and not exceeding 20 years old.

It shall be a condition that each Stallion winning a Premium shall serve not less than fifty half-bred mares, if required, during the season of 1899, and shall stand or travel as the Commissioners may direct in the district for which he is exhibited, at a fee not exceeding forty shillings for each mare, and two shillings and sixpence to the groom.

The Season of Service will commence

On April 3rd, and terminate on July 31st.

It shall be a condition that no Queen's Premium Stallion shall be allowed to be exhibited for Competition during the season of service.

It shall be a condition that a Stallion which has won four Queen's Premiums in the same District Class shall be ineligible for entry again in the same class, but shall be eligible for any other District Class.

For the purposes of this Exhibition, each district will constitute a separate class, to be styled "District Class."

Stallions shall compete in the "District Class" only for which they are entered, and Exhibitors may not enter more than one Stallion in each class.

The Commissioners reserve power to award to a Stallion unsuccessful in the District Class for which he is entered a premium in the Class for any other District provided the Exhibitor enters the Stallion on these terms. Should a premium be awarded in such other Class, the obligations as to location and service shall apply to the District for which the premium is awarded, instead of the District for which the Stallion is exhibited.

If any Stallion winning a premium should not serve at least 30 half-bred mares during the season, the Commissioners reserve the power to reduce the premium as provided by the Rules and Regulations on Page 7, No. 32 of the Schedule.

The Royal Commission on Horse-Breeding.

LIST OF OFFICIALS.

STEWARDS:

THE DUKE OF PORTLAND, Welbeck Abbey, Worksop, Notts.

SIR JACOB WILSON, Chillingham Barns, Belford, Northumberland.

Sir John Gilmour, Bart., Montrave, Leven, Fife, N.B.

Mr. J. Bowen-Jones, Ensdon House, Montford Bridge, Salop.

JUDGES:

Captain J. H. Greer, Crotanstown, Newbridge, Co. Kildare. Mr. Reginald Chandos-Pole, Radburne Hall, Derby. Mr. Owen J. Williams, Plas-yn-Cefn, St. Asaph, N. Wales.

VETERINARY INSPECTORS:

SIR HENRY SIMPSON, F.R.C.V.S., Gordon House, Windsor.

Mr. W. Bower, M.R.C.V.S., East Rudham, Swaffham, Norfolk.

Mr. G. Craik, M.R.C.V.S., Alnwick, Northumberland.

SECRETARY:

Mr. J. HERBERT TAYLOR, 39, Victoria Street, Westminster, S.W.

Mea	ning 1 t	11_	Example	f.85			
vertical	keight joithen	he	Shi back	beight of troops		16-1/4 15.	1/16/2
horizontal	Leught of Body	1	Brista believes	ace cyls	9	62/2	7
Sirth	of book at salte place		1 forele	knees		781/2	83/4
he horses mea remining wir	ROUGI	tone g	the first			MS.	the Zg

LONDON SHOW, 1899.

-: 0:----

The Pedigrees and Descriptions in this Catalogue are furnished by the Exhibitors, and the Royal Commission on Horse-Breeding and the Hunters' Improvement Society do not hold themselves responsible for any inaccuracies.

Class A .- THOROUGHBRED STALLIONS.

-: 0:-

VISITORS' NOTES.

DISTRICT CLASS A.

[BEDFORDSHIRE, BUCKINGHAMSHIRE, CAMBRIDGE-SHIRE, ESSEX, HERTFORDSHIRE, HUNTINGDONSHIRE, MIDDLESEX, NORFOLK, OXFORDSHIRE & SUFFOLK.]

THREE QUEEN'S PREMIUMS OF £150 EACH.

18 ENTRIES.

Awards.

Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

1 BELLARMINE, brown (16 hands), foaled in 1890.

Sire—Hampton.

Dam—Belle of Bury, by Caterer. g.d.—Brown Bess, by Blight.

Exhibitor-John English Tabor, Bovingdon Hall,

Braintree, Essex.

Breeder-Earl of Ellesmere, Worsley Hall, Lancs.

CLASS A .- Thoroughbred Stallions (continued).

2 BLUE EAGLE, chestnut (15-21), foaled in 1893.

Sire-Blue Grass.

Dam-Miss Hawk, by Blue Grass or Moss Hawk.

g.d.—Lady Motley, by Motley.

Exmoitor—Ernest S. Stock, Nether Hall Stud Farm, Bradfield, Manningtree, Essex.

Breeders-Steel Bros., Camerton.

3 BOLD HERMIT, chestnut (16-01), foaled in 1889.

Sire-Bold Dayrell.

Dam—Vision, by Hermit. g.d.—Faith, by Old Calabar.

Exhibitor—Sam Woodiwiss, Slowlands Stud Farm, Ashley Green, Berkhampstead, Herts.

Breeder-late R. Wright, Richmond, Yorks.

4 BRAGGADOCIO, brown (16-1), foaled in 1889.

Sire—Brag.

Dam—Headlong, by Pell Mell. g.d.—Misfortune, by The Ranger.

Exhibitor-Donald Fraser, Tickford Park, Newport

Pagnell, Buckinghamshire.

Breeder-T. Smith, Campsfield, Woodstock.

5 CURLEY, bay (16 hands), foaled in 1892.

Sire-Royal Hampton.

Dam—Ringlet, by Ringleader.

g.d.—Duchess Marie, by King John.

Exhibitor—Solomon Young, Roxwell, Chelmsford.

Breeder—Sir J. Blundell Maple, Bart.

6 GRAMMONT, brown (16-1), foaled in 1888.

Sire-St. Simon.

Dam-Margarita, by The Duke.

g.d.—Tasmania, by Melbourne.

Exhibitor-Lewis James Shirley, Red House, Ely,

Glamorgan.

Breeder-Marquis of Zetland.

7 HATCHAM GREEN, bay (16 hands), foaled in 1892.

Sire—Royal Hampton.

Dam—Favourite, by Beauclerc.

g.d.—Madame-du-Barry, by Favonius.

Exhibitor—John Bell, Green Stud, Ousden, near

Newmarket, Suffolk.

Breeder—Sir J. Blundell Maple, Bart.

VISITORS' NOTES.

bog meetines

to wearne

8 HYACINTHUS, dark bay (16 hands), foaled in 1884.

Sire-Hampton.

Dam-Lady Lavender, by Master Fenton.

g.d.—Perfume, by Dulcimer.

Exhibitor—James Russell King, Bozedown, Whitchurch, Oxfordshire.

Breeder—R. M. Biddulph.

9 MARIONI, chestnut (16 hands), foaled in 1885.

Sire-Macaroni.

Dam—Queen Marion, by King Tom.

g.d.—Maid Marian, by North Lincoln.

Exhibitor—Fred Crisp, Girton Stud Farm, Cambridge.

Breeder-Earl of Rosebery, K.G.

10 OLD COIN, bay (16 hands), foaled in 1887.

Sire—The Miser.

Dam-Margery Daw, by Galopin.

g.d.—Lady Margaret, by Marsyas.

Exhibitor—Edwin Hawkes, Brampton, Huntingdon.

Breeder—late W. Smith.

11 OLD SAM, brown (16 hands), foaled in 1885.

Sire—Sir Bevys.

Dam—Emblematical, by Knowsley.

g.d.—Makeshift, by Voltigeur.

Exhibitor-John Thomson, Woodperry, Oxford.

Breeder—late E. Weever.

12 OXEYE, chestnut (15-3), foaled in 1887.

Sire-Oxlip.

Dam-Lady Raglan, by The Earl of Derby.

g.d.—Gaylass, by Teddington.

Exhibitor—John Young, Braintree, Essex.

Breeder-A. Young.

13 PALAVER, bay (15-3), foaled in 1894.

Sire—Wisdom.

Dam—Queen Joanna, by Lord Lyon.

g.d.—Rambla, by Knight of the Garter. Exhibitor-Eustace Barlow, Hasketon, Wood-

bridge, Suffolk.

Breeder-late A. Hoole.

14 PUMPERNICKEL, brown (16 hands), foaled in 1889.

Sire-Bread Knife.

Dam—Emmeline, by Kisber. g.d.—Evelina, by King Tom.

Exhibitor—Edmund Broughton Barnard, Grove Lodge, Sawbridgeworth, Herts.

Breeder-Lord De Lisle.

15 Q.C., brown (15-3), foaled in 1883.

Sire-Wisdom.

Dam—Brenta, by Parmesan. g.d.—Black Lily, by Longbow.

Exhibitor—Hugh Arnold, Crews Hill, Enfield, Middlesex.

Breeder-late A. Hoole.

16 QUEEN'S JUBILEE, chestnut (15-3), foaled in 1895.

Sire-Queen's Birthday.

Dam—Queen of the Florin, by Esterling.

g.d.—Queen of the Isles, by Exminster.

Exhibitor—William Henry White, Kilsmore, Cheshunt, Herts.

Breeder-J. McIntire.

17 SILENT HERMIT, brown (16-1), foaled in 1892.

Sire-Tacitus.

Dam-Morning Light, by Sunstroke.

g.d.—La Marchesa, by Canary.

Exhibitor—Alfred Jordan Hollington, Forty Hill, Enfield, Middlesex.

Breeder-P. Griffin.

18 SPOT STROKE, brown (15-3), foaled in 1887.

Sire—Edward the Confessor.

Dam-Ground Bait, by Paul Jones.

g.d.—Madame Walton, by Fisherman.

Exhibitors—Pratt & Sons, Chillesford, Wickham Market, Suffolk.

Breeder-Thomas Golby.

DISTRICT CLASS

[CUMBERLAND, DURHAM, NORTHUMBERLAND AND WESTMORELAND.]

THREE QUEEN'S PREMIUMS OF £150 EACH.

6 ENTRIES.

Awards.

Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

19 ACTIVE HAMPTON, brown (15-31), foaled in 1893.

Sire-Merry Hampton.

Dam—Acceleration, by Reverberation.

g.d.—The Baroness, by Saunterer.

Exhibitor—Ralph Rimmer, 52, Stramongate, Kendal, Westmoreland.

Breeder-Sir James Miller, Bart.

20 BLAKELAW, chestnut (16 hands), foaled in 1888.

Sire—King Harold.

Dam—Bounding Lass, by Hercules.

g.d.—Mare, by Russborough.

Exhibitor and Breeder—Robert Oliver, Lochside, Kelso, Roxburghshire.

21 FIRST FLIGHT II. or LOUGHBORO', bay (15-3), foaled in 1887. Sire—Tally Ho.

Dam-Wings, by Goodfellow.

g.d.—Blossom, by Blair Athol.

Exhibitor-Walter Iliffe, Helme Chace, Kendal, Westmoreland.

Breeder-T. Harrison.

22 HALE, brown (16 hands), foaled in 1890.

Sire-Bendigo.

Dam—Wandering Nun, by Hermit. g.d.—Vaga, by Stockwell.

Exhibitors—George and Philip Steel, Camerton Stud Farm, Workington, Cumberland. .

23 MINTROCK, bay (16 hands), foaled in 1891.

Sire—Peppermint.

Dam—Amicia, by Hollywood.

g.d.—Madeline, by Plum Pudding.

Exhibitor-Colonel William Henry Foster, M.P., Hornby Castle, Lancaster.

Breeder—James Joicey, Poulton Priory, Fairford, Glos.

24 RED EAGLE, chestnut (16 hands), foaled in 1887.

Sire-Thurio.

Dam—Rouge Gagne, by Deerfoot. g.d.—Redstart, by Blair Athol.

Exhibitor—Albert Octavius Haslewood, Fairfield Stud, Buxton, Derbyshire.

Breeder-F. Percival.

DISTRICT CLASS

[DERBYSHIRE, LEICESTERSHIRE, LINCOLNSHIRE, NORTHAMPTONSHIRE, NOTTINGHAMSHIRE & RUTLANDSHIRE.]

FOUR QUEEN'S PREMIUMS OF £150 EACH.

17 ENTRIES.

Awards.

Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

Premium to No.

25 BENBURB, black (16 hands), foaled in 1885.

Sire—Ben Battle.

Dam—Ermeline, by Kingcraft. g.d.—Ermine, by Lord Lyon.

Exhibitors-William Galloway Taylor and Sons, Bentwell Stud Farm, Arnold, Notts.

Breeder—The Duke of Beaufort.

25a BUTTON PARK, chestnut (15-3\frac{1}{2}), foaled in 1883. Sire—Avontes.

Dam—Make Sure, by General Peel.

g.d.—Makeshift, by Voltigeur. Exhibitor—George Herbert Du Cros, Coundon

Hall, Coventry, Warwickshire.

Breeder—late Alec. Taylor.

26 CREST HAMPTON, chestnut (15-31), foaled in

Sire-Southampton.

Dam—Silver Crest, by Silvester. g.d.—Osprey, by Caractacus.

Exhibitor and Breeder-William Dodgson, Spring Beck House, Bracebridge, Lincoln.

27 ECLIPSE, dark chestnut (16 hands), foaled in 1883.

Sire—Ethas, or Van Amburgh.

Dam—Tormenter, by King Tom.

g.d.—Torment, by Alarm.

Exhibitor—George Linnell, Sulby, Rugby, Northamptonshire.

Breeder-B. Ellam.

28 ERSKINE, chestnut (15-3), foaled in 1890.

Sire—Enterprise.

Dam-Veronica II., by George Frederick.

g.d.—Chieftain's Daughter, by Chanticleer or Lord of the Isles.

Exhibitor-The Rt. Hon. Henry Chaplin, M.P., Stafford House, St. James', S.W.

Breeder—W. Gardner.

Exhibitor-Albert Octavius Haslewood, Fairfield Stud, Buxton, Derbyshire.

Breeder—Lord Alington.

30 HAIL, bay (15-3), fooled in 1892.

Sire-Jamrobd.

Dam—Hagar, by a Kehîlet Ajuz Arab.

g.d.—see G. Stud Book, Vol. xvii., page 808.

Exhibitor and Breeder-Hon. Etheldred Dillon, Pudlicote House, Charlbury, Oxfordshire.

31 MOUNTAIN DEW, chestnut (16 hands), foaled in 1882.

Sire-Blair Athol.

Dam-Claret Wine, by Windham.

g.d.—Nectarine, by Claret.

Exhibitors-The Keynsham Stud Co., The Lodge Stud Farm, Keynsham, Somerset.

Breeders—The Pound Stud Co.

VISITORS' NOTES.



29 FOUR POSTER, brown (16 hands), foaled in 15-3, 14-3, 15-2/2
1887.

Sire—Isonomy.

Dam—Cosy, by Sealskin.

g.d.—Cos, by D'Estournel.

73, 8/2

VISITORS' NOTES. 32 PARLINGTON, brown (15-3), foaled in 1887. Sire-Highborn. Dam-Nancy Lee, by Brown Bread. g.d.—Alice Lee, by Arthur Wellesley. Exhibitor-William Edward Elsey, Baumber House, Horncastle, Lincolnshire. Breeder-Mrs. Eyke, 33 PILOT, brown (16-1), foaled in 1889. Sire-Pell Mell. Dam-Amondell, by Scottish Chief. g.d.—Paraffin, by Blair Athol. Exhibitor-Thomas Jesson, Ashby-de-la-Zouch, Leicestershire. Breeder-G. W. Broderick-Cloete. 34 QUEEN'S JESTER, bay (16-1), foaled in 1892. my premin Sire—Sycophant. Dam-Poem, by Exminster. g.d.-Odyssey, by Knight of Kars. Hotel. Exhibitor—Richard Clarke, Crown Uppingham, Rutland. Breeder-Mrs. Eyke. 16-0, 15-0/4, 160 35 RINGOAL, brown (16-1), foaled in 1889. Sire-Ringleader. Dam-Duchess Marie, by King John. a.d.—Calot, by Touchstone. Exhibitor-William Vellacott Andrew, Oldbury, Southend-on-Sea, Essex. Breeder-Sir T. B. Lennard, Bart. 36 SKY PILOT, chestnut (16 hands), foaled in 1893. Sire—The Wizard. Dam-Parachute, by Victor Chief. g.d.—Lady Farndon, by Leybourne. Exhibitor and Breeder-William Rippon Brockton, Farndon, Newark-on-Trent, Nottinghamshire. 37 TEMPLE GRIFFIN, brown (16-1), foaled in 1895. Sire-Venture Dam-Lady Francis Drummond, by Drummond. g.d.—Countess Georgina, by Prince George.

Exhibitor and Breeder-Harry Bromhead, Border-

ville, Stamford, Lincolnshire.

38 TOBOGGAN, chestnut (16 hands), foaled in 1892.

Sire-Marioni.

Dam—Tom-Tom, by Kettledrum.

g.d.—Disguise, by Thormanby.

Exhibitor and Breeder-Gilbert Leigh Abbot, The Priory, Abbots Leigh, Somersetshire.

39 TRAP, bay (16-1), foaled in 1880.

Sire-Macgregor.

Dam—Ambuscade, by Rataplan. g.d.—Lioness, by Ballinkeele.

Exhibitor—John Drage, Chapel Brampton Grange, Northampton.

Breeder-W. Brown.

40 UPSILON brown (16 hands), foaled in 1890.

Sire-Black Bryony.

Dam-Tau, by Cathedral.

g.d. Lambda, by Umbriel.

Exhibitor-Harold Martin, Ivy House, Wainfleet, Dincolnshire.

Breeder+G. W. Dixon.

DISTRICT CLASS

[BERKSHIRE, CORNWALL, DEVONSHIRE, DORSETSHIRE, HAMPSHIRE, KENT, SOMERSETSHIRE, SURREY, SUSSEX AND WILTSHIRE.]

FOUR QUEEN'S PREMIUMS OF £150 EACH.

9 ENTRIES.

Awards.

160 150, 16 Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

Premium to No.

41 ALBERT MOORE, bay (15-3), foaled in 1889.

Sire—Canadian.

Dam—Mare, by Albert Victor.

g.d.—Nelly Moore, by Voltigeur.

Exhibitor-William Arthur Fountain, 55 and 56. Peascod Street, Windsor, Berks.

Breeder—T. Mace.

VISITORS' NOTES.

hot presiden 16-0, 15-0,

16-1, 15-1, 16-1

CLASS D .- Thoroughbred Stallions (continued).

in class 15

42 BELVILLE, brown (16 hands), foaled in 1887.

Sire—Hampton.

Dam—Belle of Bury, by Caterer. g.d.—Brown Bess, by Blight.

Exhibitor—Thomas Kinsman Bickell, St. John's Stud Farm, Lamerton, Tavistock, Devon.

Breeder-Earl of Ellesmere.

43 CHIBIABOS, chestnut (16 hands), foaled in 1892. Sire—Chitabob.

Dam—True Love, by Sterling. g.d.—Carine, by Stockwell.

Exhibitor—William Wilson, The Borough, Sanderstead, Croydon, Surrey.

Breeder-H. Waring.

44 DRY TOAST, chestnut (16 hands), foaled in 1887.

Sire—George Frederick.

Dam—Tartine, by Monseigneur. g.d.—Slice, by Brown Bread.

Exhibitors—George Jeffery & Son, Manor Hotel, Dowsland, Yelverton, Devonshire.

Breeder—late Hume-Webster, Marden Deer Park,

Caterham, Surrey.

45 GRAND NATIONAL, chestnut (16-1), foaled in 16-2, 15-2,

Sire-Isobar.

Dam-Lethargy, by General Peel.

g.d.—Sloth, by Idle Boy.

Exhibitors—The Compton Stud, Gillingham, Dorset.

Breeder-E. Nicholls.

46 JUST IN TIME, chestnut (16 hands), foaled in

Sire-Thunderer.

Dam-Reveillée, by Abergeldie.

g.d.—Alarum, by Alarm.

Exhibitor—Eusebius Gustavus Crowhurst, Chesham House, Leamington, Warwickshire.

Breeder—late Thomas Stevens.

47 KENDOR, bay (16 hands), foaled in 1895.

Sire-Kendal.

Dam-Sandal, by Kisber.

g.d.—Shoestring, by Knight of the Garter.

Exhibitor—Abraham Hodder, Crown Farm, Portland, Dorset.

Breeder-S. Platt.

VISITORS' NOTES.

16-12, 15-14, 16 0 68, 692

18-3, 15-14, 15-37.

15-3/2, 15-0, 15-3/4 66 78

16-2, 15-2/4, 16-1/4, 67 7/4 18 9/4

60, 150, 16-1/2. 64 7 71 81/4

Thos prenouse, med

CLASS D .- Thoroughbred Stallions (continued).

48 KING EBOR, brown (16 hands), foaled in 1885. Sire—Kingcraft.

Dam-Miss York, by Cardinal York.

g.d.—Lady Geraldine, by The Marquis.

Exhibitor-Angrove Laity, Townshend, Hayle, Cornwall.

Breeder-Captain Haworth.

49 WARRENTON, bay (15-3), foaled in 1885.

Sire—Martyrdom.

Dam—Pomposity, by Marsyas.

g.d.—Polly, by Pompey.

Exhibitor-Alfred Cox, Station Street, Lewes, Sussex.

Breeder-H. D. Brocklehurst.

1900 18-14 10 M

DISTRICT CLASS E.

[YORKSHIRE.]

THREE QUEEN'S PREMIUMS OF £150 EACH.

11 ENTRIES.

Awards.

Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

50 CORNMINT, bay $(16.0\frac{1}{2})$, foaled in 1894.

Sire-Crowberry.

Dam-Mint Sauce by Young Melbourne.

g.d.—Sycee by Marsyas.

Exhibitor and Breeder-Robert Charles de Grey Vyner, Fairfield, York.

51 CYCLOPS, bay (16 hands), foaled in 1890.

Sire—Southampton.

Dam—Brunette, by Angelus.

g.d.—Brunetta by Codrington.

Exhibitor and Breeder—Henry Strickland Constable, Wassand, Hull, Yorks.

-14, 14-3, 15-3/4 660 6/2 84

VISITORS' NOTES. 52 FIRST CONSUL, chestnut (16 hands), foaled in 1887. Sire-Charibert. Dam-Procella, by Macaroni. g.d.—White Squall, by Buccaneer. Exhibitor-James S. Darrell, West Ayton, York. Breeder—The Rt. Hon. James Lowther, M.P. 53 FUNNY BOAT, chestnut (16 hands), foaled in Sire-Fernandez. Dam-Canoe, by Hermit. g.d.—Barchettina, by Pelion. Exhibitor—Edward Courage, Shenfield, Brentwood, Essex. Breeder-Capt. W. H. Fife. 54 HINDLEY, bay (16 hands), foaled in 1893. Sire-Minting. Dam-Enchantress, by Sterling. g.d.—Charmer, by Tim Whiffler. Exhibitor-The Lord Middleton, Birdsall House, York. Breeder-J. Hutton. 55 IMPRÉVU, chestnut (16 hands), foaled in 1890. 16-0, 15-0, 16-0 66 , 7/2 Sire-Archiduc. Dam-Iris, by Mortimer. 73,8 g.d.—Isoline, by Ethelbert. Exhibitor-Albert Octavius Haslewood, Fairfield Stud. Buxton, Derbyshire. Breeder-late C. J. Lefevre. 56 IRISH SECRETARY, brown (16-01), foaled in 1890. Sire-Tertius. Dam—Lady Castlereagh, by Castlereagh. g.d.—Lady Millicent, by The Palmer. Exhibitor-Robert Inchboard Robson, The Warren, Farnham, Knaresborough, Yorks. Breeder-W. Winn, Bedale, Yorks. 57 KIBRIS, bay (16 hands), foaled in 1892. Sire-Trapèze. Dam-Queen of Cyprus, by King Tom. g.d.—Cypriana, by Epirus. Exhibitor-William Leng, Paddocks, Copmanthorpe, York.

Breeder-T. Jennings, Newmarket.

58 PIRATE II. bay (16 hands), foaled in 1891.

Sire-Petrarch.

Dam—Thuringian Queen, by Thuringian Prince. g.d.—Mirth, by Lord Clifden.

Exhibitor-Wyrill Dykes, Copmanthorpe, York.

Breeder-late Colonel North.

59 QUEEN'S COUNSEL, chestnut (16 hands), foaled in 1885.

Sire-Isonomy.

Dam-Silk, by Plum Pudding.

g.d.-Judy Go, by Crosier or Dey of Algiers.

Exhibitor—Capt. William Henry Fife, Langton Hall, Northallerton, Yorks.

Breeder-Lord Hastings.

60 ST. CYR, chestnut (15-3), foaled in 1888.

Sire—Trappist.

Dam—Agneta, by Macaroni. g.d.—Fair Agnes, by Dollar.

Exhibitor—James Lione gdale, Crathorne Hall, Yarm, Yorkshire.

Breeder-late Duchess of Montrose.

DISTRICT CLASS F.

[GLOUCESTERSHIRE, HEREFORDSHIRE, MONMOUTH-SHIRE, SHROPSHIRE, STAFFORDSHIRE, WARWICK-SHIRE, WORCESTERSHIRE & SOUTH WALES.]

FOUR QUEEN'S PREMIUMS OF £150 EACH.

19 ENTRIES.

Awards.

Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

Premium to No.

61 AEROLITE, chestnut (16-3), foaled in 1893.

Sire—Rosebery Dam—Hailstorm, by Hampton.

g.d. Hurricane, by Lifeboat.

Exhibitor—Stephen Mumford, Moreton Morrell, Warwickshire.

Breeder-late H. W. Freeman.

62 ALVIN, chestnut (16 hands), foaled in 1890.

Sire-Master Kildare.

Dam—Nightgear, by King Alfred. g.d.—Bedgown, by Bedminster.

Exhibitor and Breeder—Lewis James Shirley, Red House, Ely, Glamorganshire.

16-1/2 15/4, 16-1/4 Red 60 7

VISITORS' NOTES.

63 AYR, brown (16 hands), foaled in 1891.

Sire-Ayrshire.

Dam—Lucy Glitters, by Speculum. g.d.—Bicycle, by Blair Athol.

Exhibitor—Joseph Henry Wheeler, Shakespeare Stud Farm, Ipsley, Studley, Warwick.

Breeder-Matthew Dawson.

64 BONSPIEL, brown (16-1), foaled in 1892.

Sire-Hawkeye.

Dam—Fair Game, by Wisdom. g.d.—Reciprocity, by See Saw.

Exhibitor—John Gibson, Wigginton Tamworth, Staffordshire.

Breeder-late A. Hoole.

65 BRIARDALE, dark brown (16 hands), foaled in 1892.

Sire-Riversdale

Dam-Briony, by Adventurer.

g.d.-Maid of the Glen, by Kingston.

Exhibitor—The Lord Llangattock, The Hendre, Monmouth.

Breeder-Sir Robert Jardine, Bart.

66 BROCKHAMPTON, brown (16-2), foaled in 1894.

Sire—Wildfire.

Dam-Mare, by Van Amburgh.

g.d.—Bonnie Doon, by Blair Athol.

Exhibitor—Colonel M. A. Swinfen-Broun, Swinfen Hall, Lichfield, Staffordshire.

Breeder-late Captain G. Stanley Williams.

67 BUCEPHALUS, bay (16-2), foaled in 1893.

Sire-Surefoot.

Dam-Breakfast, by Kisber.

g.d.—Fasting Girl, by Broomilaw.

Exhibitor-William Sayer Power, Tutbury, Staf-

fordshire.

Breeder-Lady Meax.

CLASS F.—Thoroughbred Stallions (continued). VISITORS' NOTES. 68 Withdrawn. 69 GALOPIAN, brown (16-0½), foaled in 1892. Sire—Galopin. Dam-Brose, by Scottish Chief. g.d.—Tit Bit, by Weatherbit. Exhibitor - John Wynford Philipps, M.P., Lydstep Haven, Manorbier R.S.O., Pembrokeshire. Breeder-late Colonel North. 70 Withdrawn. 71 PANTALOON, chestnut (16-1), foaled in 1887. 16-0, 15-14, 15-3/4, Sire—Zealot.

Dam—Frivolity, by Macaroni.

g.d.—Miss Agnes, by Birdcatcher.

77/2 Exhibitor-John Forsyth Rees, Lianboidy, Whitland R.S.O., Carmarthenshire. Breeder-G. F. Lynden. 72 PAR-CI-PAR-LA, chestnut (16 hands), foaled in Sire-Le Destrier. Dam-Preface, by Young Monarque. g.d.—Princesse de la Paix, by Gladiator. Exhibitor-Albert Octavius Haslewood, Fairfield Stud, Buxton, Derbyshire. Breeder-M. P. Donon. 73 RED HAT, bay (16 hands), foaled in 1892. Sire_St. Honorat. Dam-Red Rag, by Lord Lyon. g.d.—Rouge Rose, by Thormanby. Exhibitor-The Lord Tredegar, Tredegar Park,

Newport, Monmouthshire.

Breeder-late Hume Webster.

74 ST. NICHOLAS, dark bay (16 hands), foaled in 1894.

Sire-St. Serf.

Dam-Fortuna, by Scottish Chief.

g.d.—Chance, by Thunderbolt.

Exhibitor-Thomas P. King, Newark Park, Wotton-under-Edge, Gloucestershire.

Breeder-H.R.H. the Prince of Wales.

75 SPAHI, chestnut (15-23), foaled in 1881.

Sire-Ben Battle.

Dam-Minette, by Solon.

g.d.—Qui va là, by Idle Boy.

Exhibitor—Samuel Hill Wood, Ashfield, Leominster, Herefordshire.

Breeder-Marquis of Drogheda.

76 SWALLOWFIELD, dark brown (15-3), foaled in

Sire Wenlock.

Dam-Hirondelle, by Adventurer.

g.d.—Lady Langden, by Kettledrum.

Exhibitor-Frederick William Barling, The New House, Ross, Herefordshire.

Breeder-Lord Abingdon.

77 VIBRATION, chestnut (16-01), foaled in 1879.

Sire—Reverberation.

Dam-Lady Macaroni, by Macaroni.

g.d.—Stockings, by Stockwell.

Exhibitor-William Whiteman, Castle Grounds, Leominster, Herefordshire.

Breeder—D. Q'Connor.

78 WILD FIRE, bay (16 hands), foaled in 1887.

Sire-Galopin.

Dam-Lightning, by Thunderbolt.

g.d. -May Queen, by Newminster.

Exhibitor-Eusebius Gustavus Crowhurst, Chesham

House, Leamington, Warwickshire. Breeder-The Right Hon. Henry Chaplin, M.P.

79 WITHERNAM, bay (15-3), foaled in 1886.

Sire—Wisdom. Dam-Reciprocity, by See Saw.

g.d.—Wild Cherry, by Surplice.

Exhibitor-Captain Henry Heywood-Lonsdale, Shavington, Market Drayton, Salop. Breeder-late A. Hoole, Wetherby, Yorks.

30

DISTRICT CLASS G.

[CHESHIRE, LANCASHIRE & NORTH WALES.]

THREE QUEEN'S PREMIUMS OF £150 EACH.

12 ENTRIES.

Awards.

Premium to No.

1st Reserve to No.

Premium to No.

2nd Reserve to No.

Premium to No.

3rd Reserve to No.

80 DISSENTER, bay (15-3), foaled in 1888.

Sire-Chapel Royal.

Dam—Harriet Laws, by Lecturer.

g.d.—Rosary, by Eurplice.

Exhibitor-John Bell, Green Stud, Ousden, Newmarket, Suffolk.

Breeder-T. Holmes.

81 GOSCHEN, black (16 hands), foaled in 1886.

Sire-Xenophon.

Dam-Budget, by Exchequer.

g.d.—Mare, by The Little Known.

Exhibitor-Robert Armstrong Yerburgh, M.P., Woodfold Park, Blackburn, Lancashire.

Breeder—C. W. Fitzwilliam.

g.d.—Lady Mary, by Orlando.

Exhibitor-William Henry Jenner Hogg, Oakleigh, Pembury, Tunbridge Wells, Kent.

Breeder-late Duchess of Montrose.

83 MASTERMAN READY, chestnut (16 hands), foaled in 1895.

Sire-Yard Arm.

Dam-Papoose, by Huguenot.

g.d.—Tom-Tom, by Kettledrum.

Exhibitor and Breeder-Gilbert Leigh Abbot, The Priory, Abbots Leigh, Somerset.

82 HOMELY, chestnut (16 hands), foaled in 1886. 16-14, 15-0, 1h-0

Sire—Hermit.

Dam—Wifey, by Cremorne.

g.d.—Lady Mary, by Orlando.

CLASS G .- Thoroughbred Stallions (continued). Matheway

VISITORS' NOTES.

84 MAXWELL, brown (16 hands), foaled in 1889, 16-1, 15-/4, 16-/4 Sire-Valour. Dam+Miss Braddon, by Nuneham. g.d.—America, by Elland. Exhibitor-Joseph Wheeler, Shakespeare Stud,

Ipsley, Studley, Warwick.

Breeder-B. Ellam.

85 NEWCOURT, bay (15-3), foaled in 1888.

Sire-Highborn. Dam-Orange Blossom, by Honiton. g.d.—Confection, by Plum Pudding. Exhibitor-Sir Watkin Williams-Wynn, Bart., Wynnstay, Ruabon, Denbighshire.

Breeder-R. K. Mainwaring.

86 PEPPERMILL, bay (15-21), foaled in 1887.

Sire—Peppermint.

Dam—Lavinia, by Theobald. g.d.—Laura, by Volturno. Exhibitor-James S. Darrell, West Ayton, York. Breeder-The Lord Middleton.

87 RADIUS, bay (16 hands), foaled in 1882.

Sire-Hampton.

Dam-Ray, by Speculum.

Exhibitor—Albert Octavius Haslewood, Fairfield 73 g.d.—Moonbeam, by Wild Dayrell.

Breeder-S. C. Newton.

88 SCOTCH HAZEL, bay (16-1), foaled in 1892.

Sire-Hazelhatch.

Dam-Scotch Reel, by Tynedale.

g.d.—Glee, by Adventurer.

Exhibitors—The Compton Stud, Gillingham, Dorset.

Breeder-A. J. Johnstone.

89 SHERBROOKE, chestnut (15-3), foaled in 1884.

Sire-Dutch Skater.

Dam-Verdure, by King Tom.

g.d.-Maybloom, by Newminster.

Exhibitors + William Galloway Taylor & Sons, Bentwell Stud Farm, Arnold, Nottinghamshire

Breeder—Earl of Rosebery, K.G.

THE GOVERNOR, chestnut (15-3), foaled in not presum, our 90 1894. Sire-Crafton. Dam-Roulade, by Glendale. g.d.—Cadenza, by Costa.

Exhibitor—Richard Shepherd, 64, Wheelock Street, 75% Middlewich, Cheshire.

Breeder-A. B. Sadler, Newmarket.

VISITORS' NOTES.

91 THE TINMAN, bay (15-33), foaled in 1890. Ibo, 15-0, 16-0

Sire—Herald.

Dam—Noisette, by Bruce.

g.d.—Noisy, by Young Trumpeter.

Exhibitor—Arthur Knowles, Alveston Hell, Next Exhibitor—Arthur Knowles, Alvaston Hall, Nantwich, Cheshire.

DISTRICT CLASS

[ROXBURGHSHIRE, BERWICKSHIRE & DISTRICT.]

ONE QUEEN'S PREMIUM OF £150.

2 ENTRIES.

Awards.

Breeder-late E. Weever.

Premium to No.

Sire—Himyarite.

Dam—Jerud, by Pharoah.

Reserve to No.

92 CAROUSE, brown (16 hands), foaled in 1892. Sire—Merry Hampton. Dam—Caroline, by Musket. g.d.—Carine, by Stockwell. Exhibitors-The Compton Stud, Gillingham, Dorset. Breeder-late G. A. Baird.

HIMYAR, bay (15-2), foaled in 1894. g.d.—Jerboa, by a Managhieh Hedruj. Exhibitor and Breeder-Hon. Etheldred Dillon, Pudlicote House, Charlbury, Oxfordshire.

DISTRICT CLASS I.

[FIFESHIRE & DISTRICT.]

ONE QUEEN'S PREMIUM OF £150.

3 ENTRIES.

orl, orl Awards.

Premium to No.

Reserve to No.

- 94 CLANRANALD, chestnut (15-3), foaled in 1882.

 Sire—Lord Ronald.

 Dam—Golden Crest, by Pax.

 g.d.—The Wren, by Nutbourne.

 Exhibitor—John Hutchison, Newarkhill, Ayr, N.B.

 Breeder—J. Powney.
- 95 EVIL EYE, chestnut (15-2), foaled in 1888.

 Sire—Robert the Devil.

 Dam—Sideview, by Diophantus.

 g.d.—Baliverne, by Womersley.

 Exhibitor—Albert Octavius Haslewood, Fairfield

 Stud, Buxton, Derbyshire.

 Breeder—H. Waring.
- 96 OATLANDS, chestnut (16 hands), foaled in 1890. 16-0, 15-1/4, 15-3/2

 Sire—George Frederick.

 Dam—Hersham, by Claremont.

 g.d.—Princess Louise Victoria, by Hermit.

 Exhibitor—William Wilson, The Borough, Sanderstead, Croydon, Surrey.

 Breeder—Duke of Devonshire, K.G.

DISTRICT CLASS J.

[DUMFRIES, KIRKCUDBRIGHT SHIRES AND DISTRICT.] ONE QUEEN'S PREMIUM OF £150.

1 ENTRY.

Awards.

Premium to No.

Reserve to No.

97 FLORISMART, dark bay (15-3½), foaled in 1895. 15-3½, 14-3, 15-3½, Sire—Martagon.

Dam—Floranthe, by Muncaster.

a.d.—Palmflower, by Palmer. g.d.—Palmflower, by Palmer. Exhibitor-John Hutchison, Newarkhill, Ayr, N.B. Breeder—Douglas Baird.

DISTRICT CLASS

[MORAY, NAIRN & BANFF SHIRES.]

ONE QUEEN'S PREMIUM OF £150.

6 ENTRIES.

Awards.

Premium to No.

Reserve to No.

98 BRIGHT HAMPTON, brown (15-3), foaled in 15-3, 14-3, 15-2/4 1890.

Sire—Merry Hampton.

Dam—The Widow, by The Earl.

g.d.—Wee Lassie, by Scottish Chief.

Exhibitor-Solomon Young, Roxwell, Chelmsford, Essex.

Breeder-J. Hutton.

99 CRÉME-DE-LA-CRÊME, dark bay or brown 16-14, 15-12, 15-3 (16-1), foaled in 1894.

Sire—Balmoral.

Dam-Cream Laid, by Ollerton.

g.d.—Vellum, by Beauclerc.

Exhibitor and Breeder—Alexander Cook, The Birches, Milltimber Aberdeenshire.

100 KING OF THE RIDGE, dark brown (16-1), foaled in 1886.

Sire-Pellegrino.

Dam—Corinchan, by Cucumber. g.d.—Voyageuse, by Adventurer.

Exhibitor—William Taylor, Park Mains, Renfrew, N.B.

Breeder-W. G. Stevens.

101 OLD BOOTS, chestnut (16 hands), foaled in 1888. Sire—Wisdom.

Dam-Socks, by Sawcutter.

g.d. Stockings, by Stockwell.

Exhibitor—William Wilson, The Borough, Sanderstead, Croydon, Surrey.

Breeder-late A. Hoole.

102 THE BOSUN, bright bay(16 hands), foaled in 1893.

Sire—Beau Brummel.

Dam-Kate Glover, by Rosicrucian.

g.d.-Maid of Perth, by Scottish Chief.

Exhibitor—Mary Anne Purcell, Four Oaks Stud, Sutton Coldfield, Warwickshire.

Breeder-A. Heath, Moseley, Birmingham.

103 WHITEHALL, chestnut (15-3), foaled in 1886.

Sire-Hermit.

8-31 18-31

Dam-Lady Blanche, by Thunderbolt.

g.d.—Cordelia, by Vengeance.

Exhibitors—The Keynsham Stud Co., The Lodge Stud Farm, Keynsham, Somersetshire.

Breeder - Duke of Westminster, K.G.

DISTRICT CLASS L.

[ROSS-SHIRE.]

ONE QUEEN'S PREMIUM OF £150.

1 ENTRY.

Awards.

Premium to No.

Reserve to No.

104 WENTWORTH, brown (16-1), foaled in 1888. 15-3/2, 14-0, 15-3

Sire—Chester.

Dam—Trafalgar, by Blair Athol.

g.d.—Mosquito, by Toxophilite.

Exhibitor—William Wilson, The Borough, Sander
8/4 Dam—Trafalgar, by Blair Athol.

g.d.—Mosquito, by Toxophilite.

Exhibitor—William Wilson, The Borough, Sanderstead, Croydon, Surrey. Bred in Australia.

CHALLENGE CUPS

AND SPECIAL PRIZES.

OFFERED AT THE 1899 SHOW OF THE SOCIETY.

YOUNG STOCK.

CLASSES 2 TO 7.

CHALLENGE CUP, value FIFTY POUNDS, offered by Sir Walter Gilbey, Bart., for the best Filly, Colt or Gelding exhibited in Classes 2 to 7 (under Condition 31, page 17, prize list).

GOLD MEDAL to accompany Cup (under Condition 31).

SPECIAL PRIZE, value TEN POUNDS, for the best Colt in Classes 2, 3, and 4, calculated to make a Hunter Sire.

SPECIAL PRIZE, value TEN POUNDS, for the best Gelding in Classes 2, 3 and 4.

SPECIAL PRIZE, value TEN POUNDS, for the best Filly in Classes 5, 6 and 7.

HUNTERS.

CLASSES 9 TO 14.

SOCIETY'S CHALLENGE CUP, value ONE HUNDRED GUINEAS, for the best Mare or Gelding exhibited in Classes 9 to 14 (under Condition 31, page 17, prize list).

GOLD MEDAL to accompany Cup (under Condition 31).

SPECIAL PRIZE, value TEN POUNDS, for the best Mare or Gelding in Classes 9 and 10.

SPECIAL PRIZE, value TEN POUNDS, for the best Mare or Gelding in Classes 11 to 14.

HUNTERS' IMPROVEMENT SOCIETY.

LONDON SHOW, 1899.

The Pedigrees and Descriptions in this Catalogue are furnished by the Exhibitors, and the Society does not hold itself responsible for any inaccuracies.

To! the entries of Thoroughbred animals the letters "G. S. B." (General Stud Book) are attached; while their numbers follow the names of the Hunter Sires, Mares and Fillies registered in the Society's Record of Mares and Sires.

CLASS I.

REGISTERED HUNTER SIRES

1st PRIZE OF £15 AND SILVER MEDAL. 2nd PRIZE OF £10 AND SILVER MEDAL.

AND

SILVER MEDALS

For any of the other Stallions in this class that the Judges may select. Every Stallion sent for exhibition in this class must either have been registered in the Record of Mares and Sires, or entered under the following Rules for Vol. VIII.:—

- (1) That he has won races under Jockey Club rules, or open races under National Hunt rules; or
- (2) That his only half-bred strain is that of an ancestor which has won races under Jockey Club rules, or open races under National Hunt rules; or
- (3) That his only half-bred strain is that of a Stallion, which has sired, or that of a Mare which has bred, winners of races under Jockey Club rules, or open races under National Hunt rules; or
- (4) That he has four crosses of thoroughbred blood (any one of which may be that of a Hunter Sire registered under rules 1, 2, or 3 above), from his g.g.g. dam, she being a registered Mare.

1 ENTRY.

Award.

Prize to No.

105 Withdrawn.

VISITORS' NOTES

SPECIAL AWARDS IN CLASSES 2 to 7.

CHALLENGE CUP, VALUE £50, is offered by Sir Walter Gilbey, Bart., for the best Filly, Colt, or Gelding, exhibited in the one-, two- and three-year-old Classes (Classes II. to VII.).

OFFERED BY THE SOCIETY.

GOLD MEDAL to accompany Cup.

SPECIAL PRIZE, VALUE £10, for best Colt in Classes II., III. and IV., calculated to make a Hunter Sire.

SPECIAL PRIZE, VALUE £10, for the best Gelding in Classes II., III. and IV.

CLASS II.

YEARLING COLTS OR GELDINGS (foaled in 1898) UNDOCKED).

Prizes Offered.

£20 1st Prize £10 £10 Five Premiums ... £10 £10

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List).

24 Entries have been made in this Class, and therefore the 1st Prize and five Premiums will be awarded (Rule 25).

24 ENTRIES.

Awards.

Premium to No. 1st Prize to No. Premium to No. Premium to No. Premium to No. Premium to No.

Reserve to No.

106 ACORN, chestnut colt, 1 year old.

Sire-Blankney.

Breeder

Dam—Madge (1482), by Pedometer.

Exhibitor

Church Langton, Market Harborough, Leics.

VISITORS' NOTES.

£10

107 ACTOR, chestnut colt, 1 year old.

Sire-Pantomime.

Dam-Ruby (1601), by Marioni.

Exhibitor—Richard Hoddinott, Springfield House, Gillingham, Dorset.

Breeder—J. W. Shute, Lox Lane Farm, Motcombe, Shaftesbury, Dorset.

108 BARNEY, bay colt, 1 year old.

Sire-Rout.

- Dam-by Blackthorn.

Exhibitor—Edward Hodgson, The Hollows, Bridlington, Yorks.

Breeder—George Robinson, Wolsingham, co.

109 BARNUM, bay colt, 1 year old.

Sire-Ringleader.

Dam-Jubilee, by Prosper.

g.d.—Victory, by Victor.

Exhibitor | Viscount Deerhurst, Birlingham, Breeder | Pershore, Worcs.

110 BLACK ADMIRAL, black colt, 1 year old.

Sire-Goschen.

Dam-Lady Scarlett, by Will Scarlett.

Exhibitor Breeder Park, Blackburn, Lancs.

111 FIRST LORD, brown colt, 1 year old.

Sire-Goschen.

Dam—by Prince George.

Exhibitor Breeder Bark, Blackburn, Lancs.

112 BULRUSH, brown colt, 1 year old.

Sire-Trap.

Dam—Kathleen (entered for Vol. viii.)

Exhibitor Breeder } T. H. Warren, Boughton, Northampton.

113 CAPTAIN KIDD, bay gelding, 1 year old.

Sire-Pirate II.

Dam—Fly (entered for Vol. viii.), by Chichester.

Exhibitor John Wynford Philipps, M.P., 5,

Breeder J South Eaton Place, S.W.

114 CLARENCE, bay colt, 1 year old.

Sire-Curley.

Dam-by Challenger.

Exhibitor Breeder Solomon Young, Roxwell, Chelmsford.

115 CROSSBURN, chestnut gelding, 1 year old.

Sire-Child of the Mist.

Dam—Hay Fever (entered for Vol. viii.), by Haymaker.

Exhibitor—J. Harling Turner, Cessnock, Galston,

Breeder-David Stevenson, Crossburn, Troon, N.B.

116 DAN LENO, chestnut gelding, 1 year old.

Sire-Pantomime.

Dam-Lady Grey (778).

Exhibitor Breeder O. N. Holt-Needham, Castle Cray, Somerset.

117 DIAMOND KING (G.S.B.), bay colt, 1 year old.

Sire—Deuce of Clubs.

Dam—Modesty (entered for Vol. viii.), by Mogador. g.d.—Maid of the Valley, by Scottish Chief.

Exhibitor Breeder } David Ward, Nailstone, Nuneaton.

118 EMPEROR, black-chestnut or dark brown colt, 1

year old. Sire—Cheemaunan.

Dam-Princess (247), by Pero Gomez.

g.d.—Lavinia (74).

Exhibitor Breeder Charles Miles, Tatenhill, Burton-on-Trent, Staffs.

119 GAYLAD, brown colt, 1 year old.

Sire-Galopian.

Dam—by Delight.

Exhibitor—G. H. Goldfinch, Easton, Wickham Market, Suffolk.

Breeder—Leonard Smith Hasketon, Woodbridge, Suffolk.

120 Withdrawn.

121 MAHRA, brown colt, 1 year old.

Sire—Black Duck.

Dam—Humpty (1053).

A. Scrimgeour, Wispers, Exhibitor 7 John Midhurst, Sussex. Breeder

122 MARCH NIGHT, chestnut gelding, 1 year old.

Sire-Spahi.

Dam-May Morn (399), by Theologian.

g.d.—Prudence (630), by Mars.

Exhibitor G. W. Wilkes, Lyston Court, Tram Inn R.S.O., Herefordshire. Breeder 5

123 OCTAVIAN (G.S.B.), bay colt, 1 year old.

Sire—First Consul.

Dam—Omicron, by Sykes or Omega.

g.d.—Slack Back, by Gladiateur.

Exhibitor \ Alfred E. Pease, M.P., Pinchinthorpe House, Guisborough, Yorkshire. Breeder 5

124 PLAYFAIR, bay colt, 1 year old.

Sire-Four Poster.

Dam—Paleface (1158).

William Petchel, Park Farm, East Exhibitor \

Kirkby, Spilsby. Breeder

125 YARDMAKER, bay colt, 1 year old.

Sire-Yard Arm.

Dam—Dressmaker (920), by New Oswestry (13).

g.d.—Girl of the Period, by Gemma Junior.

Exhibitor John Cooper, Brook Hill, East

Haddon, Northants. Breeder

126 YORICK, chestnut colt, 1 year old.

Sire-Yard Arm.

Dam-Zoe (1274), by Zeal.

g.d.—Malago Maid (1108), by Soucar.

Exhibitor B. G. H. Gee, Locks Mills House,

Bristol. Breeder

127 COLT, bay, 1 year old. Sire—Elopement.

Dam—Sally Brass (entered for Vol. viii.).

Exhibitor A. Gorham, Queen's Hotel, Brighton. Breeder

CLASS II .- Yearling Colts or Geldings (continued).

128 COLT, chestnut, 1 year old.

Sire—Withernam.

Dam—Miss Steel (1523), by Lord Berkeley.

g.d.—by Tom Steele.

Exhibitor

Captain H. Heywood-Lonsdale,

Breeder

Shavington, Market Drayton.

nsdale.

129 WILD NIGHT, bay colt, 1 year old.

Sire—Barbarian.

Dam—Lady Jane (1450).

Exhibitor
Breeder

W. T. Hayr, The Manor, Tur
Breeder

Langton, Kibworth, Leics.

CLASS III.

TWO-YEAR-OLD COLTS OR GELDINGS (foaled in 1897).

Prizes Offered.

1st Prize		 	£20
			(£10
			£10
Five Premiun	ns	 	£10
			£10
			£10

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List).

23 Entries have been made in this class, and therefore the 1st Prize and five Premiums will be awarded (Rule 25).

23 ENTRIES.

Awards.

1st Prize to No. Premium to No. Premium to No.

Breeder

Premium to No. Premium to No.

Premium to No.

Reserve to No.

130 CHASE GOLD, chestnut gelding, 2 years old. Sire—Just in Time. Dam-Lady Jane (1450). Exhibitor }

W. T. Hayr, The Manor, Tur Langton, Kibworth, Leics.

131 ACTOR, chestnut gelding, 2 years old.

Sire—Spendthrift. Dam-Dauntless (992), by Conductor.

g.d.—Black Bess, by Wenlock.

Exhibitor Breeder George Marton, Muscoates, Kirby-moorside, Yorks. moorside, Yorks.

VISITORS' NOTES.

132 BIRDCATCHER, red-roan gelding, 2 years old.

Sire-Marioni.

Dam—Orphan (835), by Ethelred.

Samuel Marshall, Manor House, Exhibitor \ Hickling, Melton Mowbray, Leics. Breeder 5

133 CRUSHER (G.S.B.), chestnut gelding, 2 years old.

Sire-Cylinder.

Dam—World's Fair, by Astrologer or Chicago.

g.d.—Première Duchesse, by Barbillon.

Exhibitor \ Harry Bromhead, Borderville, Stamford, Lines. Breeder

For SALE by AUCTION on THURSDAY.

134 LONGTAIL, bay gelding, 2 years old.

Sire—Riversdale.

Dam—Lady Gordon, by Tomtit.

Exhibitor 1 Harry Bromhead, Borderville, Breeder Stamford, Lines.

For SALE by AUCTION on THURSDAY.

135 LORD FRANCIS (G.S.B.), brown gelding, 2 years old.

Sire-Riversdale.

Dam—Lady Francis Drummond, by Drummond.

g.d.—Countess Georgina, by Prince George.

Exhibitor | Harry Bromhead, Borderville, Breeder Stamford, Lines.

FOR SALE by AUCTION on THURSDAY.

136 DANDY, chestnut gelding, 2 years old.

Sire—Dermod.

Dam-Mayflower, by Motley.

Exhibitor-James S. Darrell, West Ayton, Yorks.

Breeder - Sayers, Guisborough, Yorks.

137 DANDY, brown colt, 2 years old.

Sire-Colonial.

Dam—Kismet (769), by Carthusian.

Exhibitor-Mrs. C. Langdale - Kelham, Bourne Lodge, Boxmoor, Herts.

Breeder—Edward S.Jackson, M.B., Carnforth, Lancs.

FOR SALE by AUCTION on THURSDAY.

138 DANDY DICK, chestnut colt, 2 years old.

Sire—Dan Dancer.

Exhibitor—John Codling, Low Fields Farm,

Seamer, Yarm, Yorks.

Breeder—— Rowley, Ambleside, Westmoreland.

139 DIAMINT, brown colt, 2 years old.

Sire—Black Duck.

Dam—Humpty (1053).

Exhibitor

Breeder

Midhurst, Sussex.

Wispers,

140 FIREFLY, chestnut gelding, 2 years old.

Sire—Glory Smitten.

Dam—Fly (entered for Vol. viii.), by Chichester.

Exhibitor

Breeder

John Wynford Philipps, M.P., 5,

Breeder

South Eaton Place, S.W.

141 GOSSOON, brown gelding, 2 years old.

Sire—Irish Secretary.

Dam—Maid of Branton, by Sir Garnet.

Exhibitor—Frank Maughan, Deighton Grange,

Wetherby, Yorks.

Breeder—R. J. Robson, The Warren, Farnham,

Knaresborough.

142 LOVAT MIXTURE, bay gelding, 2 years old.

Sire—The Weaver.

Dam—Perfection (105), by Outcast.

g.d.—Judy, by Harkaway.

Exhibitor

Breeder

C. E. de Trafford, Hothorpe,

Breeder

143 MORNINGTON, chestnut gelding, 2 years old.

Sire—Rowington.

Dam—May Morn (399), by Theologian.

g.d.—Prudence (630), by Mars.

Exhibitor

Breeder

G. W. Wilkes, Lyston Court, Tram

Breeder

Inn, R.S.O., Herefordshire.

144 OLDBURY HERO, dark brown gelding, 2
years old.

Sire—Master MacGrath.

Dam—Satanella (1606).

Exhibitor
Breeder

Lower Broadheath, Worcester.

145 OUBROUGH, bay gelding, 2 years old.

Sire-Otterburn.

Dam—Haymaker, by Haymaker.

Exhibitor Breeder Alfred Voase, Oubrough, Skirlaugh, Hull.

146 PRINCE GEORGE, chestnut gelding, 2 years old.

Sire-Otterburn.

Dam-Lady Dora (1075), by Gallant.

g.d.—by Tally Ho.

Exhibitor \ R. E. Dixon, Benningholme Hall,

Breeder } Skirlaugh, Hull.

147 SEAFOAM, dark bay gelding, 2 years old.

Sire-Maxwell.

Dam—Florence (entered for Vol. viii.), by Carthusian.

g.d.—by Best Returns.

Exhibitor—Charles L. Kendall, Snitterfield, Stratford-on-Avon.

Breeder—H. C. Bacchus, Nuthurst, Hockley Heath, Birmingham.

148 TARQUIN (G.S.B.), bay colt, 2 years old.

Sire-Cohort.

Dam—Modesty (entered for Vol. viii.), by Mogador.

g.d.—Maid of the Valley, by Scottish Chief.

Breeder } David Ward, Nailstone, Nuneaton.

149 TELEGRAPH, black gelding, 2 years old.

Sire-Eglamore.

Dam-Miss Woodruff.

Exhibitor 2 2 7

Breeder }

S. Lee Smith, Larkfield, Maidstone.

150 VALESMAN, bay gelding, 2 years old.

Sire-Master Ned.

Dam-Western Lass (1257).

Exhibitor-David Christy Junr., Margaretting Hall,

Ingatestone, Essex.

Breeder—J. Benett Stanford, Pyt House, Tisbury, Wilts.

151 WAR EAGLE II, black brown gelding, 2 years old.

VISITORS' NOTES.

Sire-Carthusian.

Dam-by Black Prince.

g.d.—by Best Returns.

Exhibitor—John Kidd, Haverflatts Farm, Milnthorpe, Westmoreland.

Breeder-Robert Cannon, Hay Fell Side, Kendal.

152 Withdrawn.

CLASS IV.

THREE-YEAR-OLD COLTS OR GELDINGS (foaled in 1896).

Prizes Offered.

1st Prize	 		£20
		1	£10
			£10
Five Premiums	 		£10
			£10
		-	£10

To the Breeder of 1st Prize Animal, £5 (under Rule 23 of Prize List).

26 Entries have been made in this class, and therefore the 1st Prize and five Premiums will be awarded. (Rule 25),

26 ENTRIES.

Awards.

1st Prize to No.

Premium to No.

Reserve to No.

153 AMIN (G.S.B.), dark brown colt, 3 years old.

ld. VISITORS' NOTES.

Sire—Imam.

Dam-Harik, by Kars.

g.d.—Hagar.

Exhibitor >

Hon. Miss E. Dillon, Pudlicote House, Charlbury, Oxon.

Breeder

154 BREDON HILL, bay gelding, 3 years old.

Sire—Crom-a-boo.

Dam—May-day, by Fire-away.

Exhibitor William J. Sheldon, Avonside, Birlingham, Pershore, Worcs. Breeder

155 CRIBBAGE, bay gelding, 3 years old.

Sire-King of Trumps.

Dam-Lady May.

Exhibitor W. J. Cheney, Gidding Grove,

Breeder Peterborough.

156 DISCORD, brown gelding, 3 years old.

Sire—Cobbler.

Dam-Piano (1559).

Exhibitor Philip M. Browne, The Hall, Forn-Breeder 5 ham All Saints, Bury St. Edmunds.

157 DONERAILE, chestnut gelding, 3 years old.

Sire—Republican.

Dam—by Speculation.

g.d.—by Old Victor.

Exhibitor—A. J. Brown, Marr Grange, Doncaster. Breeder-J. O'Connor, near Doneraile, co. Cork.

158 YOUNG BEN, chestnut gelding, 3 years old.

Sire—Ben.

Dam—by Speculation.

g.d.—by Old Victor.

Exhibitor—A. J. Brown, Marr Grange, Doncaster. Breeder—Rev. Father Burdon, Buttevant, co. Cork.

159 GALOPIN HAMPTON (G.S.B.), brown colt,

3 years old.

Sire—Young Galliard.

Dam—Placentia, by Parmesan.

g.d.—Lady Coventry, by Thormanby.

Exhibitor E. G. Crowhurst, F.R.C.V.S., Breeder Chesham House, Leamington Spa.

160 GLITTER, chestnut gelding, 3 years old.

Sire-Glimmering.

Dam—The Witch (1653), by The Ghost.

g.d.—Ida, by Marsh Heron.

Exhibitor) W. R. H. Tyler, Rodhuish, Taunton,

Breeder Somerset.

161 GOLDEMAR (G.S.B.), dark bay colt, 3 years old.

Sire-Galopin.

Dam—Fleur de Marie, by Hermit.

g.d.—Princess Marie II., by Toxophilite.

Exhibitor-John Hutchison, Newarkhill, Ayr, N.B. Breeder-Douglas Baird, Woodlands, Newmarket.

162 HUNTSMAN (late Red Robin), chestnut gelding, 3 years old.

Sire-Roscius.

Dam-Black Bess (entered for Vol. viii.), by Camelot.

Exhibitor-T. D. John, Chaldeans Stud Farm, St. Fagans, Cardiff.

Breeder-John R. Raley, Cayton, Scarborough.

163 KEEL ROW, bay gelding, 3 years old.

Sire—Waveney.

Dam—Francis.

Exhibitor-Sir Oswald Mosley, Bart., Rolleston Hall, Burton-on-Trent.

Breeder-Ralph Sneyd, Keele Hall, Newcastle, Staffs.

164 LISCOMBE, bay gelding, 3 years old.

Sire-Sam Kheen.

Exhibitor-C. Schwabe, Arden, Altrincham, Cheshire.

Breeder-P. C. E. Lovett, Soulbury, Leighton Buzzard.

165 MANILA, chestnut gelding, 3 years old.

Sire—Republican.

Dam—by Old Speculation.

g.d.-by York.

Exhibitor-James Lawton, Rockville, Carrigtwohill, co. Cork.

Breeder-Arthur O'Keeffe, Shanballymore, Castletown Roche, co. Cork.

Also entered in Class 15.

166 NIGHTLINE, brown gelding, 3 years old.

Sire—Punjaub.

Dam-Bess (941).

Exhibitor 7 W. D. Badger, Clipston, Market Breeder Harborough.

Also entered in Class 15.

167 PADDY, bay gelding, 3 years old.

Sire-Home Rule.

Dam—by Royal Charter.

Exhibitor-Edward Hodgson, The Hollows, Bridlington, Yorks.

Breeder-Michael Hicks, Marske-by-the-Sea, Yorks.

168 PRATTLER, bay gelding, 3 years old.

Sire-Salvation.

Dam—Paleface (1158).

Exhibitor > William Petchel, Park Farm, East Breeder Kirkby, Spilsby, Lines.

169 QUOD, brown gelding, 3 years old.

Sire-Voltaire.

Exhibitor-B. H. Lay, Manor Farm, Harwell, Steventon.

Breeder-Sir Edward Lawson, Bart., Hall Barn, Beaconsfield, Bucks.

170 RAKEAWAY, bay gelding, 3 years old. Sire—Knight of Ruby.

Dam-Jess (1421).

Exhibitor James Ingledew, Lowfields, Fencote, Breeder Bedale, Yorks.

171 ROMANY KING, chestnut gelding, 3 years old.

Sire—The Romany King.

Exhibitor-Harold Martin, Stud Farm, Wainfleet,

Breeder-James Atkin, Friskney, Lincs.

172 ROYAL HARKAWAY, chestnut colt, 3 years old.

Sire-Harkaway.

Dam-Royal Lady, by Sam Chifney.

Exhibitor Breeder Belfast.

Henry Moore, Donegall Quay,

173 SHANNON VIEW, chestnut gelding, 3 years old.

Sire-Sir Hugh.

Dam-by Rhidorrock.

g.d.—by Shelmartin.

Exhibitor-James S. Darrell, West Ayton, Yorks. Breeder-Michael O'Brien, Shannon View House, Limerick.

CLASS IV .- Three-year-old Colts or Geldings (continued).

174 SNAP SHOT, brown gelding, 3 years old.

Sire-Chari.

Dam-Lady Betty, by Young Barnaby.

g.d.—by Voltigeur.

Exhibitor Charles Wells, Birkby Nab, Ripon,

Breeder Yorks.

175 STARLIGHT, chestnut gelding, 3 years old.

Sire-Sequah.

Dam-Fanny, by Laughing Stock.

Exhibitor-Arthur H. Ballantyne, Bankfield,

Poulton-le-Fylde, Lanc.

Breeder—Nicholas Jolly, Hardhorn, Poulton-le-Fylde.

176 SULTAN, brown gelding, 3 years old.

Sire-Royalist.

Dam-Dora (736), by Gladstone.

Exhibitor John Stalker, Low Blaithwaite,

Breeder J Wigton.

Also entered in Class 15.

177 THE CLASSIC, chestnut gelding, 3 years old.

Sire-Tacitus.

Dam—(entered for Vol. viii.), by The Wraith.

Exhibitor—Joseph A. Pledger, The Cedars, Spring-field, Chelmsford.

Breeder—Denis Batters, Ballyvistea, Emley, Tipperary.

178 GELDING, bay, 3 years old.

Sire-Young Marden.

Dam—(Hunter).

Exhibitor—George A. Newman, Panfield Hall,

Braintree, Essex.

Breeder - Moroney, Clonmel.

VISITORS' NOTES.



SPECIAL AWARDS IN CLASSES 5 to 7.

CHALLENGE CUP, VALUE £50, is offered by Sir Walter Gilbey, Bart., for the best Filly, Colt, or Gelding, exhibited in the one-, two- and three-year-old Classes (Classes II. to VII.).

OFFERED BY THE SOCIETY.

GOLD MEDAL to accompany Cup.

SPECIAL PRIZE, VALUE £10, for the best Filly in Classes V., VI. and VII.

CLASS V.

YEARLING FILLIES (foaled in 1898)

(UNDOCKED).
Prizes Offered.

1st Prize	 	 £20 £10
Five Premiums	 	 £10 £10 £10 £10

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List).

24 Entries have been made in this Class, and therefore the 1st Prize and five Premiums will be awarded (Rule 25).

24 ENTRIES.

Awards.

1st Prize to No.	Premium to	No.
Premium to No.	Premium to	No.
Premium to No.	Premium to	No.

Reserve to No.

179 BRUNETTE, brown, 1 year old. Sire—Circassian.	VISITORS' NOTES
Dam—Dolly Varden. Exhibitor Thomas Bradley, Uffington, Sta	m-

180 FILLY, bay, 1 year old.

Sire-Circassian.

Dam—Duchess (entered for Vol. viii.)

Exhibitor Breeder Thomas Bradley, Uffington, Stamford, Lines.

181 BUSY-BODY, brown, 1 year old.

Sire-Gordon.

Dam-Busy Bee, by Peppermint.

Exhibitor-Lord Middleton, Birdsall, York.

Breeder-S. Hall, Kennythorpe, Malton, Yorks.

182 DANCING GIRL, chestnut, 1 year old.

Sire-Pantomime.

Dam-Clonsilla (1333).

Somerset.

Exhibitor—O. N. Holt-Needham, Castle Cary,

Somerset.

Breeder—C. W. Francis, Horsington, Templecombe,

183 FREDA (entered for Vol. viii.), black, 1 year old. Sire—Galomit.

Dam-Onyx (1552).

Exhibitor \ Stopham Dawson, Ashfield House,

Breeder J Otley, Yorks.

184 LADY DAY, dark-grey, 1 year old.

Sire-Grey Leg.

Dam-Nannie Peel.

Exhibitor—Humphrey E. Brammall, Beech Hill, Chelsham, Warlingham Station, Surrey.

Breeder— — Brown, Banksfield Farm, Eastham, Cheshire.

185 LADY MAROON, brown, 1 year old.

Sire-Colonial.

Dam-Kismet (769), by Carthusian.

Exhibitor Mrs. C. Langdale-Kelham, Bourne

Breeder | Lodge, Boxmoor, Herts.

186 LADY META (entered for Vol. viii.), chestnut, 1 year old.

Sire—Otterburn.

Dam-Lady Dora (1075), by Gallant.

g.d .- by Tally Ho.

Exhibitor R. E. Dixon, Benningholme Hall,

Breeder | Skirlaugh, Hull.

187 LADY STANLEY, brown, 1 year old.

Sire-Goschen.

Exhibitor—Robert Yerburgh, M.P., Woodfold Park, Blackburn, Lanc.

Breeder— — Becconsall, Stanley House, Mellor, Blackburn.

188 MACARONI (entered for Vol. viii.), roan chestnut, 1 year old.

Sire-Rowington.

Dam-Matron (1498).

Exhibitor Breeder } G. W. Wilkes, Lyston Court, Tram Inn, R.S.O., Herefordshire.

189 MERMAID, bay, 1 year old.

Sire-King's Beadsman.

Dam-Dolly Varden.

Exhibitor Breeder } S. Lee Smith, Larkfield, Maidstone.

190 SEA SHELL, brown, 1 year old.

Sire-King's Beadsman.

Dam-Miss Woodruff.

 $\frac{Exhibitor}{Breeder}$ } S. Lee Smith, Larkfield, Maidstone.

191 MERRY LASS (entered for Vol. viii.), brown, 1 year old.

Sire-L'Abbé Morin.

Dam—Martha (1494), by Munchausen.

g.d.—Restless (1588), by Fox Hunter.

Exhibitor J. Pearce Pope, Lulsley Court, Worcestershire.

192 MOSS ROSE (entered for Vol. viii.), bay, 1 year old.

Sire-L'Abbé Morin.

Dam-Restless (1588), by Foxhunter.

g.d.—Hunter.

Exhibitor Breeder } J. Pearce Pope, Lulsley Court, Worcestershire.

193 MERRY ONE, brown, 1 year old.

Sire-Loved One.

Dam-Merryvale (1508).

Exhibitor Martin D. Rucker, Woodlands Park, Leatherhead, Surrey.

194 NULMA, bay, 1 year old.

Sire-Kaikoura.

Dam—Rosie (1598), by Torpedo.

g.d.—Lady Louisa, by Aëronaut.

Exhibitor Breeder Miss A. Carlos Perkins, Oak Dene, Holmwood, Surrey. Breeder Holmwood, Surrey.

195 RUBY, chestnut, 1 year old.

Sire-Knight of Ruby.

Dam-Jess (1421).

Exhibitor James Ingledew, Lowfields, Fencote,

Breeder Bedale, Yorks.

196 SAUCY POLL, dark bay, 1 year old.

Sire—Cabin Boy.

Dam-Saucy Nell (1204), by the Bold Marshal.

g.d.—Our Nell.

Exhibitor J John Cooper, Brook Hill, East

Breeder Haddon, Northampton.

197 SPINNING GIRL, brown, 1 year old.

Sire—The Weaver.

Dam-Princess Charlotte (1574), by Connaught.

g.d.—Princess (H.B.)

Exhibitor Breeder Captain G. D. Clayhills-Henderson, R.N., Invergowrie, Dundee.

198 SUNSTROKE, chestnut, 1 year old.

Sire-Master Maurice.

Dam—Dorothy, by Castlereagh.

Exhibitor P. S. Danby, Church Farm, Off-

Breeder church, Leamington.

199 SWEETHEART, bay, 1 year old.

Sire—Phosphorescence.

Dam-Lament (entered for Vol. viii.), by Cymbal.

Exhibitor

J. W. King, Whitesfield, Aylesbury. Breeder

200 FILLY, chestnut, 1 year old.

Sire-Trap.

Dam—Jessie, by Punjaub.

Exhibitor W. D. Badger, Clipston, Market Harborough.

201 FILLY, chestnut, 1 year old.

Sire—Succés.

Dam—Venom, by Ambergate.

Exhibitor—Commander F. H. S. O'Brien, Cratloe

Woods, Cratloe, co. Clare.

Breeder—James O'Grady Delmege, Castle Park,

Limerick.

202 FILLY, chestnut, 1 year old.

Sire—Walmsgate.

Dam—Olive, by Pine Tree.

Exhibitor

Commander F.H.S. O'Brien, Cratloe

Breeder

Woods, Cratloe, co. Clare.

CLASS VI.

TWO-YEAR-OLD FILLIES (foaled in 1897).

Prizes Offered.

1st Prize		 	 £20 £10
Five Premiur	ns	 	 £10 £10
2110 210			£10 £10

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List.

16 Entries have been made in this Class, and therefore the First Prize and four Premiums will be awarded. (Rule 25).

16 ENTRIES.

Awards.

1st Prize to No.

Premium to No.

Premium to No.

Premium to No.

Reserve to No.

203 BLACK PEARL (G.S.B.), black, 2 years old.

VISITORS' NOTES

Sire—Goschen.

Dam—Minho, by Herculean Chief.

g.d.—Espana, by Ñunham.

Exhibitor Robert Yerburgh, M.P., Woodfold

Breeder 5

Park, Blackburn.

204 HOLLYHOCK, bay, 2 years old.

Sire—Gordon.

Dam-Hollow Back (1048), by Spectre Lord.

g.d.—Verbena (477), by Morocco.

Exhibitor Lord Middleton, Birdsall, York. Breeder

205 HUNTRESS II. (entered for Vol. viii.), brown, 2 years old.

Sire—Carthusian.

Dam—Countess, by Harkaway.

Exhibitor 7 Thomas A. Cornthwaite, Clawthorpe Breeder Hall, Burton, Westmoreland.

206 NANCY (entered for Vol. viii.), brown, 2 years old. Sire-Carthusian.

Dam—Fanny.

Exhibitor 7 Thomas A. Cornthwaite, Clawthorpe Breeder ' } Hall, Burton, Westmoreland.

207 JAMAHINE, chestnut, 2 years old.

Sire-Kaikoura.

Dam—Rosie (1598), by Torpedo.

g.d.—Lady Louisa, by Aëronaut.

Exhibitor \ Miss A. Carlos Perkins, Oak Dene, Breeder Holmwood, Surrey.

208 KILLARNEY (entered for Vol. viii.), chestnut, 2 years old. Sire—Yard Arm.

Dam-Lady Ryan (1461), by Colonel Ryan.

g.d—by Glenmore.

Exhibitor-O. N. Holt-Needham, Castle Cary, Somerset.

Breeder-J. C. Taylor, High Street, Milborne Port, Somerset.

209 LADY ELEANOR, bay, 2 years old.

Sire—Riversdale.

Dam-Red Duchess, by Rougemont.

Exhibitor \ Harry Bromhead, Borderville, Stam-Breeder ford, Lines.

For SALE by AUCTION on THURSDAY.

210 MAY QUEEN, black, 2 years old.

Sire-Roscius.

Dam—Black Bess (entered for Vol. viii.), by Camelot.

 $\frac{Exhibitor}{Breeder}$ } John R. Raley, Cayton, Scarborough.

211 MERRY PRINCESS, chestnut, 2 years old.

Sire-Prince Rudolph.

Dam-Merryvale (1508).

Exhibitor Breeder Martin D. Rucker, Woodlands Park,
Leatherhead, Surrey.

212 THE WITCH, brown, 2 years old.

Sire-Sorcerer.

Dam-Dolly.

Exhibitor Breeder Martin D. Rucker, Woodlands Park, Leatherhead, Surrey.

213 RACHAEL (entered for Vol. viii.), grey, 2 years old.

Sire-Knight of Ruby.

Dam -- Jess (1421).

Exhibitor Breeder Bedale, Yorks.

214 SATISFACTION (entered for Vol. viii.), brown, 2 years old.

Sire-Red Eagle.

Dam-Clitha (1332).

Exhibitor—Herbert B. Cory, Druidstone, Castleton, Cardiff.

Breeder-John Homes, Ledbury, Herefordshire.

215 STELLA, bay, 2 years old.

Sire-Eglamore.

Dam-Sally Brass (871), by Queenborough.

g.d.—Princess.

Exhibitor Breeder S. Lee Smith, Larkfield, Maidstone.

216 TOPSY (entered for Vol. viii.), brown, 2 years old.

Sire-Capucin.

Dam—Polly (entered for Vol. viii.), by Coldstream.

Exhibitor
Breeder

William Dent, High Goosepool,
Fighting Cocks, Co. Durham.

217 WAINFLEET QUEEN, brown, 2 years old.

Sire—Upsilon.

Dam-Mrs. Duckering, by Newminster.

Exhibitor 1 Harold Martin, Stud Farm, Wain-Breeder fleet, Lincs.

218 WINDLASS, chestnut, 2 years old.

Sire-Yard Arm.

Dam-Spindrift (1621), by Ocean Wave.

g.d.—Aëlla (438), by Aërides.

Exhibitor St. George Littledale, Wick Hill Breeder House, Bracknell, Berks.

House, Bracknell, Berks.

VISITORS' NOTES.

CLASS VII.

THREE-YEAR-OLD FILLIES (foaled in 1896).

Prizes Offered.

1st Prize		 	£20 (£10
Five Premiu	ıms	 	£10 £10
			£10 £10

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List).

13 Entries have been made in this class, and therefore the 1st Prize and three Premiums will be awarded (Rule 25).

13 ENTRIES.

Awards.

1st Prize to No.

Premium to No.

Premium to No. Premium to No.

Reserve to No.

219 BETTY, black, 3 years old.

Sire-Gordon.

Dam-Betsy, by Dalby.

Exhibitor ? Breeder

Lord Middleton, Birdsall, York,

VISITORS' NOTES.

220 CAMELIA (entered for Vol. viii.), chestnut, 3 years old.

Sire-Bartizan.

Dam—Angelica (entered for Vol. viii.).

Exhibitor Breeder Sir Edward Blount, K.C.B., Imber-horne, East Grinstead, Sussex.

221 COUNTESS, bay, 3 years old.

Sire-Kimbo.

Dam-Bonnet.

Exhibitor Breeder Thomas Atkinson, Woodhouse Farm, Milnthorpe, Westmoreland.

For SALE by AUCTION on THURSDAY.

222 EWERBY ROSEBUD (1370), bay, 3 years old.

Sire-Belville.

Dam-Ewerby Rose (1021), by Advance.

Exhibitor Breeder } Thomas Diggle, Ewerby, Sleaford, Lines.

223 Withdrawn.

224 FLOWER GIRL, bay, 3 years old.

Sire-Macaulay.

Dam-Flower, by Will Scarlet.

g.d.—by Audubon.

Exhibitor Breeder A. J. Brown, Marr Grange, Don-caster.

225 LADY GRACE (1446), grey, 3 years old.

Sire-Andrassy.

Dam-Lady Jane (1450).

Exhibitors—G. W. and H. T. Johnson, Tur Langton, Leicestershire.

Breeder-W. T. Hayr, Tur Langton, Leicestershire.

226 MAINSAIL (1485), chestnut, 3 years old.

Sire-Yard Arm.

Dam-Sweetmeat (1642), by Sweetheart.

Exhibitor Breeder

James Christy, Writtle, Chelmsford.

CLASS VII .- Three-year-old Fillies (continued).

VISITORS' NOTES.

227 MRS. LINDSAY (1535), chestnut, 3 years old.

Sire-Cleator.

Dam-Rosie (1598), by Torpedo. g.d.—Lady Louisa, by Aëronaut.

Exhibitor Miss A. Carlos Perkins, Oak Dene,

Breeder Holmwood, Surrey.

228 OLIVE (1551), chestnut, 3 years old.

Sire-Poplar.

Dam-Hunting Mare. g.d.—Potatoes (1565).

Exhibitor > Edwin Jillings, Wyken Hall,

Breeder Bardwell, Suffolk.

229 PRIMROSE, bay, 3 years old.

Sire-Button Park.

Dam-Bess (entered for Vol. viii.), by Star of the Garter.

Exhibitor-Edward S. Jackson, M.B., Carnforth,

Breeder-William Tomlinson, Hagg, Hutton, Kendal.

230 FILLY, chestnut, 3 years old.

Sire-Blue Back.

Dam—by Highthorn.

Exhibitor-Viscount Downe, Dingley, Market Harborough.

Breeder-Christopher Jordison, Stockton-on-Tees.

231 FILLY, brown, 3 years old. Sire—Belville.

Dam—by Snowstorm (17).

23.87 Exhibitor | Frank Godson, Temple Bruer,

Breeder Lincoln. K*C"

SPECIAL PRIZES and CHALLENGE CUP.

CLASSES II.,-VII.

AWARDS.

SPECIAL PRIZE, value TEN POUNDS, for the best Colt in Classes 2, 3, and 4, calculated to make a Hunter Sire.

To No.....

SPECIAL PRIZE, value TEN POUNDS, for the best Gelding in Classes 2, 3, and 4.

To No.....

SPECIAL PRIZE, value TEN POUNDS, for the best Filly in Classes 5, 6, and 7.

To No.....

CHALLENGE CUP, value FIFTY POUNDS, offered by SIR WALTER GILBEY, BART., for the best Filly, Colt, or Gelding, exhibited in Classes 2 to 7 (Condition 31, page 17, prize list).

GOLD MEDAL to accompany Cup (under Condition 31). .

To No.....

Reserve to No......

This Cup has previously been in Competition 5 years, and has been awarded as follows:—

YE	AR.	ANIM	AL.		OWNER.
1894		 Rothervale		 	F. B. Wilkinson
895		 Sultan		 	T. Bradley
1896		 Faultless		 	E. Hodgson
1897		 Goldfinder		 	T. D. John
1898		 Ruby		 **	James Ingledew

PRODUCE CLASS. CLASS VIII.

For the Best Group of three young Animals (ONE, TWO, OR THREE YEARS OLD) by the same Premium, Medal, or Registered Hunter Sire, selected from entries in the Show.

Three	Premiums	 	 £10 £10
			£10

and

A Silver Medal for the Sire of the Winning Group.

CONDITIONS OF ENTRY.

1. The produce of all qualified sires will be catalogued from the preceding six classes provided there are three or more of their produce entered for the Show.

2. Not less than three animals by the same sire must enter the

judging ring to qualify them for competition in this class.

3. Such sire must be a stallion awarded a Queen's Premium offered by the Royal Commission on Horse-Breeding, or a Service Premium of the Royal Agricultural Society of England, the Royal Dublin Society, or the Hunters' Improvement Society (including the stallions awarded Silver Medals at the Spring Shows) or be a registered Hunter Sire.

4. The sire must be alive at the time of entry.

JUDGING ARRANGEMENTS.

- 5. All animals entered in this class will be catalogued under the names of their respective sires, which will be arranged in alphabetical order.
- 6. The first group (of not less than three representatives by the same sire) will enter the ring, and the Judges will select from them the three animals which they consider to be the best, and likewise deal with the groups by the other sires.

7. The selected groups will then compete, and the three premiums will be awarded to the owners of the three animals in the best group.

3 GROUPS.

SIRED BY GOSCHEN.

- (110) BLACK ADMIRAL, black colt, 1 year old. Dam—Lady Scarlett, by Will Scarlett.
- (111) FIRST LORD, brown colt, 1 year old.

 Dam—by Prince George.
- (187) LADY STANLEY, brown filly, 1 year old.
- (203) BLACK PEARL (G.S.B.), black filly, 2 years old.

 Dam—Minho, by Herculean Chief.

 Exhibitor of the four Animals—Robert Yerburgh,
 M.P., Woodfold Park, Blackburn.

SIRED BY RIVERSDALE.

- (134) LONGTAIL, bay gelding, 2 years old.]

 Dam—Lady Gordon, by Tomtit.
- (135) LORD FRANCIS (G.S.B.), brown gelding, 2 years old.

 Dam—Lady Francis Drummond, by Drummond.
- (209) LADY ELEANOR, bay filly, 2 years old.

 Dam—Red Duchess, by Rougemont.

 Exhibitor of the three Animals—Harry Bromhead,
 Borderville, Stamford, Lincs.

SIRED BY YARD ARM.

- (125) YARDMAKER, bay colt, 1 year old.

 Dam—Dressmaker (920), by New Oswestry (13).

 Exhibitor—John Cooper, Brook Hill, East Haddon,

 Northampton.
- (126) YORICK, chestnut colt, 1 year old.

 Dam—Zoe (1274), by Zeal.

 Exhibitor—B. G. H. Gee, Locks Mills House,

 Bristol.

CLASS VIII .- Produce Class (continued).

(208) KILLARNEY (Vol. viii.), chestnut filly, 2 years old.

Dam—Lady Ryan (1461), by Colonel Ryan.

Exhibitor—O. N. Holt-Needham, Castle Cary,

Somerset.

VISITORS' NOTES.

(218) WINDLASS, chestnut filly, 2 years old.

Dam—Spindrift (1621), by Ocean Wave.

Exhibitor—St. George Littledale, Wick Hill

House, Bracknell, Berks.

(226) MAINSAIL (1485), chestnut filly, 3 years old.

Dam—Sweetmeat (1642), by Sweetheart.

Exhibitor—James Christy, Writtle, Chelmsford.

Awards

To the best Group by

No.....

No.

RIDING CLASSES.

SPECIAL AWARDS IN CLASSES 9 AND 10.

OFFERED BY THE SOCIETY.

CHALLENGE CUP, VALUE 100 GUINEAS, for the best Mare or Gelding exhibited in Classes IX. to XIV.

GOLD MEDAL to accompany Cup.

SPECIAL PRIZE, VALUE £10, is offered by the Society, for the best Mare or Gelding in Classes IX. and X.

CLASS IX.

FOUR-YEAR-OLD MARES (foaled in 1895).

	Pi	izes Off	ered.	
1st Prize				 £20
2nd Prize				 £15
3rd Prize				 £10
4th Prize				 £7
5th Prize				 £5

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List).

17 Entries have been made in this Class, and therefore four Prizes will be awarded. (Rule 25).

17 ENTRIES.

Awards.

1st	Prize to	No.	1	3rd	Prize	to	No.
2nd	Prize to	No.	1	4th	Prize	to	No.

Reserve to No.

232 BELLE OF THE BALL, chestnut, 4 years old.

Sire—Ballinafad.

Dam—Norah (dam of Chasers), by Barrabas.

Exhibitor—C. M. Prior, Adstock Manor, Winslow,

Bucks.

Breeder— —. Craig, Ochilmore, co. Galway.

Also entered in Class 15.

VISITORS' NOTES.

233 BERTHA (entered for Vol. viii.), bay, 4 years old. Sire—Havoc.

Dam-Lady Betsy (559), by Outfit.

g.d.—by Rivet.

Exhibitor Breeder } William Carter, Ailesworth, Peterborough,

234 DOROTHY, chestnut, 4 years old.

Sire-The Romany King.

Exhibitor Breeder } William Carter, Ailesworth, Peterbreeder }

235 EMPRESS, bay, 4 years old.

Sire—Traverser.

Dam-by Newton-le-Willows.

Exhibitors—T. & H. Ward, Pinchinthorpe, Great Ayton, Yorks.

Breeder-Michael Slattery, Rathkeale, co. Limerick.

236 GOLDEN QUEEN, chestnut, 4 years old.

Sire-Theologian.

Exhibitor—Edward Hodgson, The Hollows, Bridlington.

Breeder—late A. Pease, M.P., Cliffe Hall, Marskeby-the-Sea, Yorks.

237 LADY ATHOL, chestnut, 4 years old.

Sire—Bog of Allen.

Dam-by Lord Athol.

Exhibitor—A. J. Brown, Marr Grange, Doncaster. Breeder—J. S. Mulcahy, Caherduggan, Middleton, Co. Cork.

238 LADY MAUD (entered for Vol. viii.), bay, 4 years old.

Sire-Seamore.

Dam-Irish Hunting Mare.

Exhibitors—G. W. & J. T. Johnson, Tur Langton, Leicestershire.

Breeder-late Loxley Firth, Hope, via Sheffield.

239 LULSLEY (1479), bay, 4 years old.

Sire-Munchausen.

Dam-Restless (1588), by Fox-Hunter.

Exhibitor—F. W. G. Greswolde-Williams, Strensham Court, Worcester.

Breeder—J. Pearce Pope, Lulsley Court, Worcestershire.

240 MAID OF ROSS, bay, 4 years old.

Sire—Lord George.

Dam—by Roman Bee.

Exhibitor—James Milling, The Square, Comber, co. Down.

Breeder — Dooley, New Ross, co. Wexford.

Also entered in Class 15.

241 MARJORIE, grey, 4 years old.

Sire-Paddy.

Dam—by Old Arthur.

Exhibitor—James Milling, The Square, Comber, co. Down.

Breeder - Butler, Thurles, co. Tipperary.

242 SUNBEAM, brown, 4 years old.

Sire-Greenfield.

Dam-by Cimarron.

Exhibitor—James Milling, The Square, Comber, co. Down.

Breeder—T. Coates, Enniscorthy, co. Wexford.

243 MARMALADE, chestnut, 4 years old.

Sire-Ringleader.

Dam—by Merrymack.

Exhibitor—John Lett, Cleveland Stud Farm, Rillington, York.

Breeder-R. Philype, Clains, Worcester.

244 MAY FLOWER (1499), bay, 4 years old.

Sire-Bumptious.

Dam—The Lass (1648).

Exhibitor—E. Ashby Haws, Abbots Mead, Elstree, Herts.

Breeder—John Saunders, Fleet-Marston, Aylesbury, Bucks.

245 MELODY (1505), bay, 4 years old.

Sire-Cobbler.

Dam—Piano (1559).

Exhibitor Philip M. Browne, The Hall, Fornbam All Saints, Bury St. Edmunds

246 QUEEN MARY (1182), bay, 4 years old.

Sire—Bonaparte.

Dam-Castaway (711), by Raby.

Exhibitor—James S. Darrell, West Ayton, Yorks.

Breeder—R. W. Stevenson, Trout Hall, Skelton-inCleveland, Yorks.

247 TIGRIS (1655), dark chestnut, 4 years old.

Sire-Ruddigore.

Dam-Anabasis, by Xenophon.

Exhibitor Ralph Sneyd, Keele Hall, Newcastle, Staffordshire.

248 VIC (entered for Vol. viii.), bay, 4 years old.

Sire-Victor Chief.

Exhibitor—Ernest Long, Cannycourt, Brannoxtown, Co. Kildare.

Breeder—Frank Gillard, Red House, Knipton, Grantham.

Also entered in Class 15.

CLASS X.

FOUR-YEAR-OLD GELDINGS (foaled in 1895).

Prizes Offered.

1st Prize	 	 	£20
2nd Prize	 	 	£15
3rd Prize	 	 	£10
4th Prize	 	 	£7
5th Prize	 	 	£5

To the Breeder of 1st Prize Animal, £5 (under Rule 24 of Prize List).

24 Entries have been made in this Class, and therefore five Prizes will be awarded. (Rule 25).

24 ENTRIES.

Awards.

1st Prize to No.

2nd Prize to No.

3rd Prize to No.

4th Prize to No.

5th Prize to No.

Reserve to No.

249 ALARM, bay, 4 years old.

Sire-Havoc.

Exhibitor—W. D. Badger, Clipston, Market Harborough.

Breeder - . Ryley, Stamford.

250 ANNOYANCE, chestnut, 4 years old.

Sire—The Romany King.

Dam—by St. Liz.
Exhibitor—Thomas Bradley, Uffington, Stamford,

Breeder-F.Percival, Thornhaugh, Northampton.

251 SEQUEL,, brown, 4 years old.

Sire-Havoc.

Dam—Sally.

Exhibitor Breeder

Thomas Bradley, Uffington, Stamford, Lincs.

VISITORS' NOTES.

252 ARTAXERXES, bay, 4 years old.

Sire-Voltaire.

Exhibitor—B. H. Lay, Manor Farm, Harwell, Steventon.

Breeder—Sir Edward Lawson, Bart., Hall Barn, Beaconsfield.

253 CLONMEL, chestnut, 4 years old.

Sire-Bacchus.

Dam-by Discretion.

Exhibitor—A. J. Brown, Marr Grange, Doncaster. Breeder—P. Quinlan, Manganstown, Kilshelan, co. Tipperary.

254 FABULOUS FORTUNE, bay, 4 years old.

Sire-Sam Chifney.

Dam-Flossy, by Elector.

Exhibitor William Farrell, Mervue Cottage, Breeder Killyleagh, co. Down

255 FLORDON, bay, 4 years old.

Sire-Innisfail.

Dam-Measles (entered for Vol. viii.)

Exhibitor | James Cross, Lower Earlham, Breeder | Norwich.

256 GALTEE MORE, chestnut, 4 years old. Exhibitor—F. R. Fry, Rockhill, Keynsham, Bristol. Purchased from—Lawton & Sons, Carrigtwohill, co. Cork.

257 GLENBOY, bay, 4 years old.

Sire-Glenvannon

Dam—by Sheldrake.

Exhibitor—W. H. Rice, Lucyville, Whitehouse, Belfast.

Breeder-F. Burke, Bradford, co. Clare.

258 THE COLONEL, chestnut, 4 years old.

Sire—Campinula.

Dam-by Ascetic.

Exhibitor—W. H. Rice, Lucyville, Whitehouse, Belfast.

Breeder—John Masterson, Courtown House, Kells, co. Meath.

Also entered in class 15.

259 THE MAJOR, black or brown, 4 years old.

Sire—Campinula. Dam—by Ascetic.

Exhibitor-W. H. Rice, Lucyville, Whitehouse,

Breeder—John Masterson, Courtown House, Kells, co. Meath.

260 GOLDFINDER, black-brown, 4 years old.

Sire-Strathmore.

Exhibitor—Guy B. G. Henshaw, The Coppice House, Henstridge, Blandford.

Breeder—T. A. Bagnall, Westwell, Burford, Oxon.
Also entered in class 15.

261 KLONDYKE, chestnut, 4 years old.

Sire-Hidden Treasure.

Exhibitor Breeder John C. F. Ramsden, Willinghurst, Guildford, Surrey.

Also entered in class 15.

262 LITTLE JOHNNY, bay, 4 years old.

Exhibitor—George Joscelyn, 37 Farm Street, Berkeley Square, W.

Purchased from—M. O'Brien, Shannon View House, Limerick.

Also entered in class 15.

263 MANXMAN, bay, 4 years old.

Sire-First King.

Dam—by Bay President.

Exhibitor—Edward Hodgson, The Hollows, Bridlington, Yorks.

Breeder—William Dobson, Ugthorpe, Whitby.

264 STATESMAN, brown, 4 years old.

Sire-Link Boy.

Dam-by King Otto.

Exhibitor—Edward Hodgson, The Hollows, Bridlington, Yorks.

Breeder—Stephen Preston, Winter Field Farm, Wharsall, Yarm, Yorks.

265 PALEFACE, chestnut, 4 years old.

Sire-Persistive.

Exhibitor—H. Showell, Hasketon, Woodbridge, Suffolk.

Breeder—W. O. Wilson, 10 Fenchurch Avenue, E.C.

266 RABY, chestnut, 4 years old.

Sire-Knight of Ruby.

Dam-Jess (1421).

Exhibitor—T. D. John, Chaldeans Stud Farm, St. Fagans, Cardiff.

Breeder—James Ingledew, Lowfields, Fencote, Bedale, Yorks.

267 RATHKEALE, brown, 4 years old.

Sire-Mackintosh.

Dam-by Turco.

Exhibitor—Joseph A. Pledger, The Cedars, Spring-field, Chelmsford.

Breeder - McDonnell, Broadford, co. Clare.

268 ROCKINGHAM, brown, 4 years old.

Sire-Bahadur.

Dam-Pursebearer, by Comet.

Exhibitor—James S. Darrell, West Ayton, Yorks. Breeder—W. Harrison, Knayton, Thirsk, Yorks.

269 ROCKVILLE, bay, 4 years old.

Sire-Roscius.

Exhibitors—T. & H. Ward, Pinchinthorpe, Great Ayton, Yorks.

Breeder-J. Webster, Lythe, Whitby.

270 SCAMPERDALE, chestnut, 4 years old.

Sire-Helter Skelter.

Exhibitor—C. M. Prior, Adstock Manor, Winslow, Bucks.

Breeder—Martin O'Meara, Cullenwaine, King's Co. Ireland.

271 THE KNIGHT, bay, 4 years old.

Sire—Ricotto.

Dam-Potatoes (1565).

Exhibitor Bardwell, Suffolk.

Edwin Jillings, Wyken Hall, Bardwell, Suffolk.

272 GELDING, 4 years old.

Sire—Mount Gifford.

Dam—Carmen (entered for Vol. viii.), by Pellegrino. g.d.—Miss Flash, by Flash-in-the-Pan.

Exhibitor Breeder Burlow, Hasketon, Woodbridge, Suffolk.

SPECIAL AWARDS IN CLASSES 11 TO 14. OFFERED BY THE SOCIETY.

CHALLENGE CUP, VALUE ONE HUNDRED GUINEAS, for the best Mare or Gelding in Classes IX. to XIV.

GOLD MEDAL to accompany Cup.

SPECIAL PRIZE, VALUE £10, is offered by the Society, for the best Mare or Gelding in Classes XI. to XIV.

CLASS XI.

FIVE-YEAR-OLD MARES OR GELDINGS (foaled in 1894). Not exceeding 13 stone 7 lbs.

Prizes Offered.

1st Prize	 	 	£20
2nd Prize	 	 	£15
3rd Prize	 	 	£10
4th Prize	 	 	£5

16 Entries have been made in this Class, and therefore four Prizes will be awarded (Rule 25).

16 ENTRIES.

Awards.

1st Prize to No.	1	3rd	Prize	to	No.
2nd Prize to No.		4th	Prize	to	No.

Reserve to No.

273 ARISTIDES, bay gelding, 5 years old. Sire—Ringoal.

Dam-Irish Mare.

Exhibitors—E. & A. Baxter, Hutton Stud, Brentwood, Essex.

Breeder—Capt. A. T. Digby Neave, Hutton Hall, Brentwood. VISITORS' NOTES.

274 BALLYMOTE, brown gelding, 5 years old.

Sire—Sir George.

Dam—by Will Scarlet.

Exhibitor-A. J. Brown, Marr Grange, Doncaster. Breeder-late Charles Gilmore, Ballymote, co. Sligo.

275 BELLRINGER, dark chestnut gelding, 5 years old.

Sire—Belgrave.

Dam—by Black Jack.

Exhibitor-Mrs. E. Newman, The Slade, Gravelly Hill, Birmingham.

Breeder-Major Palmer, Ballinlough, Roscrea, Ireland.

276 BOATMAN, chestnut gelding, 5 years old.

Exhibitor—George Joscelyn, 37, Farm Street, Berkeley Square, W.

Purchased from-M. J. Purcell, Castleville, Kilmurry, co. Limerick.

277 CORK, chestnut gelding, 5 years old. Exhibitor-J. Pearce Pope, Lulsley Court, Worcs. Purchased from— —. Spittle, Banbury, Oxon.

278 DAN, brown gelding, 5 years old. Exhibitor-C. H. R. Provis, Union Stables, Market Harborough.

Purchased from-James S. Darrell, West Ayton, Yorks.

279 ETHEL, chestnut mare, 5 years old.

Exhibitor-Hugh Rainey, Rainsford, Ballymena, co. Antrim.

Purchased from-William Donaldson, Keady, Armagh.

280 EXCELSIOR, chestnut gelding, 5 years old.

Sire—Marioni.

Dam—Chestnut (306).

Exhibitor J John Day, Huxham, East Pennard, Shepton Mallet. Breeder 5

281 FREEMASON, brown gelding, 5 years old.

Sire-Silver Cannon.

Dam—Gay Lady, by St. Liz. Exhibitor—J. H. Stokes, Nether House, Great Bowden, Market Harborough.

Breeder - . Mason, Barrowden, Stamford, Lines.

293 GOLDEN RAY, chestnut gelding, 5 years old. Sire—Connaught.

Dam—by Will Scarlet.

Exhibitor-Walter Winans, VII., Chichester Terrace, Brighton, Sussex.

Breeder—Dominic Owens, Strokestown, co. Roscommon.

294 ROMANCE, bay-brown gelding, 5 years old. Exhibitor—W. D. Badger, Clipston, Market Harborough. Purchased from—J. H. Stokes, Nether House, Great

Bowden, Market Harborough.

295 RONALD, chestnut gelding, 5 years old.

Sire—Belgrave.

Dam—by Lydston.

Exhibitors-T. and H. Ward, Pinchinthorpe, Great Ayton, Yorks.

Breeder — . Abbott, Ballytarsna, Mountrath, Ireland.

296 SEQUENT, bay gelding, 5 years old.

Sire-Havoc.

Dam-Sally.

 $\begin{bmatrix} Dam & \\ Exhibitor \\ \end{bmatrix}$ Thomas Bradley, Uffington, Stamford, Lines.

297 SIRDAR, bay gelding, 5 years old.

Exhibitor—Corbett Whitton, Greens Norton, Towcester.

Purchased from-J. H. Stokes, Nether House, Great Bowden, Market Harborough.

298 SPORTSMAN, bay gelding, 5 years old.

Sire—Sir George.

Dam—by The Jew.

Exhibitors—Mason & Brown, Ravenscroft, Hendon,

Breeder - . Porteous, Ballymote, co. Sligo.

299 VICTORY, bay gelding, 5 years old.

Exhibitor—Hugh Rainey, Rainsford, Ballymena, Co. Antrim.

Purchased from—William Campbell, Armagh.

CLASS XIII.

FIVE-YEAR-OLD MARES OR GELDINGS (foaled in 1894). Over 15 stone.

Prizes Offered.

1st Prize	 	 	£20
2nd Prize	 	 	£15
3rd Prize	 	 	£10
4th Prize	 	 	£5

12 Entries have been made in this Class, and therefore three Prizes will be awarded. (Rule 25.)

12 ENTRIES.

Awards.

1st Prize to No. 2nd Prize to No. 3rd Prize to No. Reserve to No.

300 ARISTOCRAT, black chestnut gelding, 5 years old.

Exhibitor—J. R. King, Bozedown, Whitchurch, Oxon.

Purchased from-W. C. Keeping, Reading.

301 BALLINASLOE, bay gelding, 5 years old.

Exhibitors—Mason and Brown, Ravenscroft,

Hendon, N.W.

Purchased from—H. Rich, Wembley.

302 CAPTAIN LOWERY, bay gelding, 5 years old. Exhibitor—Humphrey E. Brammall, Beech Hill, Chelsham, Warlingham Station, Surrey. Breeder——. Lowery, King's County.

303 COMMANDER, chestnut gelding, 5 years old.

Sire—Theologian.

Exhibitor—T. D. John, Chaldeans Stud Farm, St.

Fagans, Cardiff.

Breeder—late A. Pease, M.P., Darlington.

VISITORS' NOTES,



304 GOLDEN DREAM (formerly Scene Painter), bay gelding, 5 years old.

Exhibitor—Walter Winans, VII., Chichester Terrace, Brighton, Sussex.

Purchased from—C. J. Taylor, Old Manor House, Kilsby, Rugby.

305 HUNTSMAN, bay gelding, 5 years old.

Sire-Speculation.

Dam-by King of Prussia.

Exhibitor—F. R. Fry, Rockhill, Keynsham, Bristol. Breeders—Lawton and Sons, Carrigtwohill, co. Cork.

306 OLD CLOGGS, brown gelding, 5 years old.

Sire—Piercefield.

Dam—by Old Babbler.

Exhibitor—Ernest Long, Cannycourt, Brannoxtown, Co. Kildare.

Breeder-John Hare, Clonmoney, co. Clare.

307 PRINCE, bay gelding, 5 years old.

Sire-Apollo.

Exhibitor-John Drage, Chapel Brampton, Northampton.

Breeder-William Prince, Doveridge, Derby.

308 RANDOLPH, bay gelding, 5 years old.

Exhibitor—Hugh Rainey, Rainsford, Ballymena, Co. Antrim.

Purchased from— —. Wilson, Lough Shore, co. Antrim.

309 SANDOW, chestnut gelding, 5 years old.

Sire-Poplar.

Exhibitor—J. H. Stokes, Nether House, Great Bowden, Market Harborough.

Breeder—D. W. Taylor, Bardwell, Bury St. Edmunds.

310 THE GUNNER, brown gelding, 5 years old.

Exhibitor—Frank G. Haines, 70, Seymour Place, Bryanston Square, W.

Purchased from—Mr. Charles Nanford, New Cross Gate.

For SALE by AUCTION on THURSDAY.

311 XERXES, bay gelding, 5 years old.

Sire-Voltaire.

Exhibitor—B. H. Lay, Manor Farm, Harwell, Steventon.

Breeder—Sir Edward Lawson, Bart., Hall Barn, Beaconsfield.

CLASS XIV.

FIVE-YEAR-OLD MARES and upwards (foaled previous to 1895).

Prizes Offered.

1st Pri	ze	 	 £20
2nd Pri	ze	 	 £10
3rd Pri	ze		£5

7 Entries have been made in this Class, and therefore two Prizes will be awarded (Rule 25).

7 ENTRIES.

Awards.

1st Prize to No.

2nd Prize to No.

Reserve to No.

312 CUBA, chestnut, aged (about 7 years old).

Exhibitor—Walter Winans, VII., Chichester
Terrace, Brighton, Sussex.

Purchased from—T. Greenway, 48, Bolsover Street,
Portland Place, W.

VISITORS' NOTES.

313 GAY LASS (1391), chestnut, 5 years old. Sire—Bahadur.

Dam—Ribston (1589), by Dart.

g.d.-by Windhound.

Exhibitor Breeder Bedwin Wardle, Linton Spring, Wetherby, Yorks.

314 KISMET (769), brown, 11 years old.

Sire-Carthusian.

Exhibitor—Mrs. C. Langdale-Kelham, Bourne Lodge, Boxmoor, Herts.

Breeder—Thomas Thwaites, Coltstones, Walton, Carnforth, Lancs.

315 MATRON, chestnut, 7 years old.

Exhibitor—J. H. Stokes, Nether House, Great Bowden, Market Harborough.

Purchased from—S. Yearsley, Wyndham Mews, Bryanston Square, W.

316 SCANDAL, grey, 6 years old.

Sire—Tattler.

Dam-by Emigrant.

Exhibitor-C. M. Prior, Adstock Manor, Winslow, Bucks.

Breeder—C. Hogan, Carrigaholt, Kilkee, co. Clare.

317 MARE, bay, 6 years old.

Exhibitor-John Cooper, Brook Hill, East Haddon, Northampton.

Purchased from J. H. Stokes, Nether House, Great Bowden, Market Harborough.

318 MARE, bay, 5 years old.

Exhibitor—F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark.

Purchased from-Major Lo be, Edwinstowe Hall, Newark.

SPECIAL PRIZES

AND

CHALLENGE CUP.

CLASSES IX.-XIV.

AWARDS.

SPECIAL PRIZE, value TEN POUNDS, for the best Mare or Gelding in Classes 9 and 10.

To No.....

SPECIAL PRIZE, value TEN POUNDS, for the best Mare or Gelding in Classes 11 to 14.

To No.....

SOCIETY'S CHALLENGE CUP, value ONE HUNDRED GUINEAS, for the best Mare or Gelding exhibited in Classes 9 to 14 (See Condition 31, page 17 Prize List).

GOLD MEDAL to accompany Cup (under Condition 31, Prize List).

To No.....

Reserve to No.....

The £50 CHALLENGE CUP, offered by SIR WALTER GILBEY in 1894, was in competition 5 years, becoming the absolute property of Mr. T. D. John in 1898 by virtue of his second win.

YEAR.		Animal.					OWNER.	
1894 1895 1896 1897			Gendarme					S. and H. Gale T. Bradley A. J. Brown T. D. John

CHARGERS.

THREE OR FOUR-YEAR-OLD MARES OR GELDINGS (Undocked), suitable to make Officers' Chargers (foaled in the year 1895 or 1896.)

Prizes Offered.

1st Prize	 	 	£20
2nd Prize	 	 	£10
3rd Prize	 	 	£5

21 Entries have been made in this Class, and therefore three Prizes will be awarded (Rule 25).

21 ENTRIES.

Awards.

1st Prize to No. 3rd Prize to No. 2nd Prize to No. Reserve to No.

VISITORS' NOTES.

[232] BELLE OF THE BALL, chestnut mare, 4 years old.

Sire—Ballinafad.

Dam-Norah (dam of Chasers), by Barrabas.

Exhibitor—C. M. Prior, Adstock Manor, Winslow, Bucks.

Breeder— —. Craig, Ochilmore, co. Galway.

Also entered and stands in Class 9.

319 BERTIE, black mare, 4 years old.

Exhibitor—Ernest Long, Cannycourt, Brannoxtown, Co. Kildare.

Purchased from-Mr. Hartigan, Waterford.

[248] VIC (entered for Vol. viii.), bay mare, 4 years old. Sire—Victor Chief.

Exhibitor—Ernest Long, Cannycourt, Brannoxtown, Co. Kildare.

Breeder-Frank Gillard, George Hotel, Oxford.

Also entered and stands in Class 9.

320 BLACK BREAD (1309), brown mare, 3 years old. Sire—Hanover Jack.

Dam-Black Bess (1308).

Exhibitor Breeder William E. Long, Hurts Hall, Saxmundham, Suffolk.

For SALE by AUCTION on THURSDAY.

321 CONQUEROR, brown gelding, 4 years old. Sire—Somerton.

Dam-Victory, by Young Victor.

Exhibitor Mrs. Basil Mundy, Thornbury Breeder House, Thornbury, Glos.

[260] GOLDFINDER, black-brown gelding, 4 years old. Sire—Strathmore.

Exhibitor—Guy B. G. Henshaw, The Coppice House, Henstridge, Blandford.

Breeder—T. A. Bagnall, Westwell, Burford, Oxon.
Also entered and stands in class 10.

[261] **KLONDYKE**, chestnut gelding, 4 years old. Sire—Hidden Treasure.

Exhibitor Breeder John C. F. Ramsden, Willinghurst, Guildford, Surrey.

Also entered and stands in class 10.

322 KUDOS, black or brown gelding, 4 years old. Sire—Piræus.

Dam—Emily (1011).

Exhibitor—Frank Blofeld, 13 Cornwall Terrace, N.W.

Breeder—George Symondson, Upshire Hall, Waltham Abbey, Essex.

[262] LITTLE JOHNNY, bay gelding, 4 years old. Exhibitor—George Joscelyn, 37, Farm Street, Berkeley Square, W.

Purchased from—M. O'Brien, Shannon View House, Limerick.

Also entered and stands in Class 10.

[240] MAID OF ROSS, bay mare, 4 years old.

Sire—Lord George.

Dam—by Roman Bee.

Exhibitor—James Milling, The Square, Comber, Co. Down.

Breeder— —. Dooley, New Ross, co. Wexford.

Also entered and stands in Class 9.

[165] MANILA, chestnut gelding, 3 years old.

Sire-Republican.

Dam-by Old Speculation.

g.d.—by York.

Exhibitor—James Lawton, Rockville, Carrigtwohill, Co. Cork.

Breeder—Arthur O'Keeffe, Shanballymore, Castletown Roche, Co. Cork.

Also entered and stands in Class 4.

323 MINUTE GUN, bay gelding, 4 years old.

Sire-by Hermit.

Exhibitor—William Farrell, Mervue Cottage, Killyleagh, Co. Down.

Breeder-James McCausland, Portaferry, co. Down.

324 VICTOR, chestnut gelding, 4 years old.

Sire-Sam Chifney.

Exhibitor Breeder William Farrell, Mervue Cottage, Killyleagh, Co. Down.

[166] NIGHTLINE, brown gelding, 3 years old.

Sire-Punjaub.

Dam-Bess (941).

Exhibitor Breeder W. D. Badger, Clipston, Market Harborough.

Also entered and stands in Class 4.

325 PRINCE RUPERT, chestnut gelding, 4 years old.

oid.

Sire—Colin.

Exhibitor—Solomon Young, Roxwell, Chelmsford.

Breeder— —. Halfyard, Great Easton, Dunmow,

Essex.

326 ST. CRISPIN, brown gelding, 4 years old.

Sire—Cobbler.

Dam—Duchess (1003).

Exhibitor
Breeder

Philip M. Browne, The Hall,
Fornham All Saints, Bury St.
Edmund's.

327 SIR RICHARD, black gelding, 4 years old.

Exhibitor—B. J. Gates, Aston Abbotts, Aylesbury, Bucks.

Purchased from—Richard Harper, Launton, Bicester.

For SALE by AUCTION on THURSDAY.

328 SNAPSHOT, dark roan gelding, 3 years old.

Sire—Athol Brose.

Dam-Daisy, by Marlborough.

g.d.—Grater, by Pyrrhus.

Exhibitor
R. H. Mugleston, Claydon's, East
Breeder

Hanningfield, Chelmsford.

[176] SULTAN, brown gelding, 3 years old.

Sire—Royalist.

Dam—Dora (736), by Gladstone.

John Stalker, Low Blaithwaite, Exhibitor 7

Breeder Wigton.

Also entered and stands in class 4.

THE COLONEL, chestnut gelding, 4 years [258] old.

Sire-Campinula.

Dam-by Ascetic. Exhibitor-W. H. Rice, Lucyville, Whitehouse,

Belfast.

Breeder-John Masterson, Courtown House, Kells, Ireland.

Also entered and stands in class 10.

329 GELDING, black, 4 years old.

Sire—Mackintosh. Dam—by Babbler.

Exhibitor-James S. Darrell, West Ayton, Yorks.

Breeder-M. O'Brien, Limerick.

HUNTERS' IMPROVEMENT SOCIETY, 1899.

LIST OF EXHIBITORS.

NAME.	Address.	EXHIBIT.
ARNOLD & Sons	West Smithfield, E.C	Veterinary Instruments and Appliances. Harness, &c.
ASTLEY, JOHN & SONS, LTD	4, Broad Gate, Coventry	
BARCLAY, D. BARKER, JOHN & CO., LTD. BABTON BROS. BLIGH BROS. BOVINE, LIMITED	2. Charterhouse Street, E.C. Kensington, W	Bitless Bridles. Horse Clothing. Horse Clipping Machines. Carriages. Horse and Cattle Foods.
BRITISH MOSS LITTER CO., LTD.	36, Mark Lane, E.C	Moss Litter.
Cæsar, H. & J	Knutsford, Cheshire Lansdown Works, Stroud	Summer-houses, &c. Poultry Appliances, Dairy
CIRCLE CURB SYNDICATE, LTD.	4, Newgate Street, E.C	Utensils, &c. Circle Curb Hooks for Bridle Bits.
CORTLAND WAGON CO	31 and 33, Henrietta Street, Covent Garden, W.C Diss, Norfolk	Carriages. Constitution Balls.
CUPISS, MESSRS		Veterinary Medicines and
DAY & SONS		Appliances.
DAY, SON, & HEWITT ECKLEY H EMPLOYERS' ACCIDENT AND LIVE	22, Dorset Street, Baker Street, W	Horse, Cattle, and Sheep Medicines. Patent Gate Catch. Live Stock Insurance.
STOCK INSURANCE CO	E.C. Victoria Mills, Sunderland	Horse and Cattle Spice, &c.
FLEMING'S OIL & CHEMICAL Co.,	101, Leadenhall Street	Disinfectants.
FORD'S FOODS, LTD	Bendon Valley, Wandsworth Attleboro'	Horse Spice, &c. Cider Samples, &c. Horse Rugs.
GENERAL ACCIDENT ASSURANCE	E.C	General Accident Insurance.
CORPORATION LTD	17, King Street, W.C Diss, Norfolk	Harness. Horse and Cattle Medicines.
HARRIS, S. & H HOPE, W. A. & SONS	57-59, Mansell Street, E Oak Lane, Limehouse, E.	Harness, Blacking, and Paste Condiments, Calf Meals, &c. Horse and Cattle Insurance.
Horse Insurance Co., Limited	17, Queen Victoria St., E.C.	Horse and Cattle Insurance.
IMPERIAL LIVE STOCK INSUR- ANCE ASSOCIATION, LIMITED	Pall Mall East, S.W	
JEYES' SANITARY COMPOUNDS Co., LIMITED	64, Cannon Street, E.C	Disinfectants, Fluid, Powder, and Soaps.
LANE & FITTE LAWTON & CO	331, Kennington Road, S.E. 14, Baker Street, W	Nugget Polishes. Carriages.
MARTIN HORSE SHOE Co., LID	30-31, Oldbury Place, High	Martin's Patent Horse Shoes
MILLS, HALFORD L	Street, Marylebone, W. Cambridge Place, Padding-	Carriages.
Мотт, Т	Littleport, Ely	Horse Powders.
NICKOLLS & BAKER	1, Oxford Market, W	Compressed Hay.
PALMER, T. W. & Co PETTIFER & Co	5, Victoria Street, S.W Eydon, Banbury	Iron Fencing, &c. Horse and Cattle Medicines.
SUTTON & SONS	Reading, Berks	Seeds, &c.
THORN, W. & F	19, Gt. Portland Street, W.	Carriages.
Unite, John	291-293, Edgware Road, W.	Horse Clothing, &c.
VINTON & Co., LIMITED	9, New Bridge Street, E.C.	
WATKINS POMONA CIDER CO.,LTD WEBB, E. & SONS	Wordsley, Stourbridge	Horse Clothing.
ZACHARIAS & Co		Waterproof Goods.



By Royal Warrants.

Dated 27th December, 1865, and 10th February, 1866.



Climate Good for any Keep



or Railway to any Station.

PRICES COMPLETE, £1 10s.; £2 17s. 6d.; and £5 5s.

The Chemical Extract, for Kicks, Cuts, Wounds, Strains, Bruises, Saddle Galls, &c.
The Gaseous Fluid, for Fret, Colic, or Gripes in Horses, Debility, Diarrhoea, &c.
The Red Paste Balls, for Grease, Hide Bound, Off Appetite, and Loss of Appetite.
The Red Condition Powders, for Colds, Staring Coat, Swollen Legs, &c.
The Black Physic Balls, for Costiveness of the Bowels, and checking Feverish Symptoms.
The Diuretic Balls, for cases of difficult staling, thick water, and Edema.
The Blister Ointment, for Old Strains, Tumours, Curbs, Sidebones, Splints, Spavins, &c.
The Gaseodyne, for Parturition, and severe cases of Diarrhoea and Dysentery.
The Alcoholic Ether, for Chills, Shivering Fits, and exciting Perspiration.
The Worm Balls or Powders for effectively expelling all Intestinal Worms.
The Balsamic Castor Oil, a mild and non-irritating laxative for Foals.



THE CREAT BLOOD SPECIALITY

HUNTERS, HACKS, BROOD MARES. SHIRE and CARRIAGE HORSES.

It Purifies and Enriches the Blood,

and is invaluable in any Stable for off Appetite, Ill-condition, Surfeits, Skin Affections, Unthriftiness, Sluggishness, Indigestion, &c. Of immense value for

preparing Horses for Show or Sale,

and for cases of Sterility or Barrenness.

PRICES 10s. 6d. and 20s. PER TIN. Sold also in Packets, 5s. 6d. per doz.; 3 doz. box, 15s.

ILLUSTRATED PRICE LISTS AND FULL PARTICULARS ON APPLICATION.

22, DORSET ST., LONDON, W.

ESTABLISHED 1851.

BIRKBECK BANK,

SOUTHAMPTON BUILDINGS, CHANCERY LANE, LONDON, W.C.

INVESTED FUNDS ... £10,000,000.

Number of Accounts, 85,094.

TWO-AND-A-HALF per CENT. INTEREST allowed on DEPOSITS, repayable on demand.

TWO per CENT. on CURRENT ACCOUNTS, on the minimum monthly balances, when not drawn below £100.

STOCKS, SHARES, and ANNUITIES purchased and sold for customers.

Sabings Department.

Small Deposits received, and Interest allowed monthly on each completed £1.

The BIRKBECK ALMANACK, with full particulars, post free. Telephone No. 5, Holborn. Telegraphic Address: "BIRKBECK, LONDON." FRANCIS RAVENSCROFT, Manager.

THE HORSE, CARRIAGE AND GENERAL INSURANCE Co., LTD.,

Head Offices-17, QUEEN VICTORIA STREET, LONDON, E.C.

The Oldest and Largest Office of its kind.

DIRECTORS.

LIEUTENANT-COLONEL G. A. ELLIOT, J.P., Dullatur, Camberley.
ARTHUR KIMBER, Esq., 3, Roland Gardens, London, S.W.
THE HON. RANDOLPH H. STEWART, 74, Eccleston Square, London, S.W.
ARTHUR WATERS, Esq., Coopersale Lodge, Epping.

BANKERS.

THE LONDON JOINT STOCK BANK, LIMITED. THE COMMERCIAL BANK OF SCOTLAND, LIMITED.

STALLIONS for the Year or Season,

IN-FOAL MARES AND FOALS,

COLTS against Castration Risks,

And all Classes of FARM LIVE STOCK.

HUNTERS for the Year or Season.

VEHICLE ACCIDENT INSURANCE. INDEMNITY OR DRIVERS' ACCIDENT INSURANCE. Special New Feature: COMBINED OR DOUBLE RISK VEHICLE and INDEMNITY POLICY.

CHIEF OFFICE-17, QUEEN VICTORIA STREET, LONDON, E.C. R. R. WILSON, Secretary. A. WATERS, Managing Director.

CLAIMS PAID EXCEED £250,000.

This Office is honoured by the Patronage of Her Majesty the Queen. STAND UNDER THE RESERVED SEATS.

S. & H. HARRIS'S

WATERPROOF

RNESS COMPOSITION

SADDLE PASTE.

POLISHING PASTE,

FOR CLEANING METALS AND GLASS.

HARNESS LIQUID.

JET BLACK OIL FOR HARNESS.

SADDLE SOAP, FOR CLEANING SADDLES, BROWN HARNESS, BOOTS, &c.

PLATE POWDER.

BLACK DYE FOR STAINING HARNESS

AND ALL KINDS OF LEATHER.



EBONITE WATERPROOF BLACKING,

For Boots & Shoes. Requires no Brushing and docs not injure the Leather.

MANUFACTORY-

57. MANSELL STREET, ALDGATE, E.;

And Sold by all Saddlers and Ironmongers.

INSURE YOUR HORSES AND CARRIAGES

Imperial Accident, Live Stock & General Insurance Company, ESTABLISHED 1878. Limited.

Head Offices: 17. PALL MALL EAST, LONDON, S.W.

CARRIAGE, SADDLE, FARM, and TRADE HORSES, HUNTERS, STALLIONS, IN-FOAL MARES and CATTLE INSURED against DEATH from ACCIDENT or DISEASE.

CARRIAGES INSURED AGAINST ACCIDENTS. DRIVERS' ACCIDENTS to Third Persons INSURED AGAINST.

Claims Paid, exceed £150,000.

ROYAL PATRONAGE.—This office numbers among its insurers:—Her Majesty the Queen, H.R.H. the Prince of Wales, H.R.H. the Duckess of Albany, also the Duke of Fife, the Duke of Portland, the Duke of Westminster, Lord Belper, &c.

INCREASED BENEFITS WITHOUT EXTRA COST. Prospectuses, Proposal Forms, and all information post free.

AGENTS WANTED.

B. S. ESSEX, Manager.

OUR STAND AT THE SHOW IS UNDER THE ROYAL BOX.

THE STALLION OWNERS' SERVICE REGISTER & GROOMS' CHECK BOOK

3rd Edition, much Improved. Nomination Forms. GROOMS' MEMORANDA, INDEX, ETC., FOR 100 MARES. With separate Counterfoil Checks and Service Notices (Numbered or not, as ordered).

Handy Pocket Size, 2s. 6d., Five Copies, 10s. Post Free, on Receipt of Postal Order or Cash from

T. CHETTLE, M.R.A.S.E., Manor Farm, Reading.

"I think your book an excellent one, and of great benefit to Owners of Studs."

—F. Wilson Horsfall, Esq., Secretary of Cleveland Bay Horse Society.

"I consider it supplies a long-feit want and is most valuable to Horse Owners and Grooms."—Fred Smith, Esq., Secretary Suffolk Horse Society.

"Contains several Improvements. The flattering opinions expressed by Owners of Studs afford the best evidence of the value of the book and its more extended use would save a great deal of trouble and probably also prevent many disputes."—Live

Stock Journal.

"Stallion Owners will find in the use of this excellently arranged register a simple, convenient, and most effective method of keeping a record of the work of their Sires during the season. Is so admirably compiled as to render it a complete check on the groom while affording the greatest ease of access as reference to the Mares served from time to time. It admits of being used for any breed of Horses, and has already earned golden opinions among Stud Owners and Grooms in all parts of Great Britain."—The Farmers' Gazette.

Goldsmiths & Silversmiths Co.,

Show 112, REGENT STREET, W.

Supply the Public direct at Manufacturers' Cash Prices, saving Purchasers from 25 to 50 per cent.

Prize Cups. Bowls. Medals and Cropbies for all Sports.

INSPECTION INVITED.

AWARDED NINE

> GOLD MEDALS.

Special Designs and Estimates. free of charge, for Committees and others.

A Large Selection of Prize Cups in Stock from £2 upwards.

New Illustrated Catalogue Post Free.



THE GOLDSMITHS COMPANY hold a stock far superior in point of,
QUALITY, PINISH,
ORIGINALITY and MAGNITUDE
to any that can be seen in LONDON, and
the PRICES will be found much
more moderate.

INSPECTION INVITED.

Prize Cups. Bowls. Medals and Cropbies for all sports.

INSPECTION INVITED

AWARDED THE CROSS OF THE LEGION OF HONOUR.

Special Designs and Estimates. free of charge, for Committees and others.

A Large Selection of Prize Bowls in Stock from£5 upwards.

Goods Forwarded on Approval.

GOLDSMITHS GOMPANY, LTD., SILVERSMITHS

The Goldsmiths Alliance (A. B. Savory & Sons), late of Cornhill, is transferred to the Company.

Show Rooms: 112, REGENT ST., LONDON, W.

(Adjoining Stereoscopic Company).

STALLIONS

AT

KENTFORD STUD FARM, NEWMARKET,

Station, Kenneth, Tel., Kentford.

RAVENSBURY (1890),

By Isonomy-Penitent, by Hermit.-Full for 1899.

THE DEEMSTER,

By Arbitrator—Rookery (Flyaway's dam), Hampton—Hippodrome, by Oxford.

This horse only ran five times, and was never beaten by more than half a length in any of his races except the Derby, when he was not half fit. In his last race as a three-year-old he was beaten a neck by Reverend, beating Orvieto, Mimi, Simonian, and others.

The Deemster is sire of Manxman, Manstone, &c.

At £24; 18s. Groom. Dams of Winners, Half-price.

SON OF A GUN,

By Petronel out of Ithona, by Beadsman out of Europa, by Trumpeter, Winner of the Liverpool Spring and Autumn Cups and other races. His stock is very promising.

At 10 Guineas: 1 Guinea Groom's Fee.

MILFORD,

(Ch h), by Saraband out of Colleen Bawn II., by Salvator out of Lassie, by Blair Athol out of Cestus, by Newminster out of Ayacanora, by Birdcatcher. He is one of the handsomest horses at the stud; a winner of many races (as a two-year-old he won over 8,000 sovereigns in stakes).

At 10 Guineas; 1 Guinea Groom's Fee. Dams of Winners Free

FOR ALL PARTICULARS APPLY TO

CAPTAIN MACHELL, Newmarket,

H. W. ADAMSON, Kentford Stud Farm, NEWMARKET.

W. & F. THORN.

Coach Builders & Harness Makers,

19, Great Portland Street, Regent Circus, W., and RANELAGH HOUSE, LOWER GROSVENOR PLACE, S.W.,

LONDON (ONLY).



THE

"STATION BROUGHAM," Price 90 Guineas Nett Cash.

FINISHED TO CHOICE OF COLOURS.

As built for H.R.H. The PRINCE OF WALES, H.G.



REGISTERED 333462.

(By kind permission of Lord Marcus Beresford.)

On View in the Entrance Arcade.

W. & F. THORN.





YARD ARM.

He is not exhibited as there is no extra stock class this year for Horses serving at any higher fee than 2 guineas.

THE COMPTON STUD

Sandley, Gillingham (S.W.R.), Dorset.

Telegrams-"Compton Stud, Sandley."

YARD ARM, by Privateer (sire of Buccaneer) out of Conviction, is the most powerful thoroughbred horse at the stud in England. As a two-year-old he won the Halnaker Stakes (Goodwood), ran second in the Windsor Castle Stakes (Ascot), and second to Amphion in the Great Kingston two-year-old race (Sandown). As a three-year-old he won four races, carrying top weight against big fields at Newmarket and Doncaster. As a four-year-old he won the Corinthian Plate (Goodwood), and seven other engagements, carrying top-weight each time. As a five-year-old he won four races, carrying top-weight, and beating, among others, Lady Rosebery, giving her 5 lb., Le Nord, 12 lb., Martenhurst, 15 lb., and Laureate II. (winner of that year's Royal Hunt Cup, Ascot), 8 lb. Owing to his immense power, weight seemed to make no difference to him. Yard Arm was awarded the Hunters' Improvement Society's Silver Medals, also 1st Prize at Bath, in 1895 and 1896. His foals yearlings, and two-year-olds, have won £989 in prizes in four years, beating classes of 40, 38, and 30, and scoring several champions.

FEE-Thoroughbred Mares, 15 Gns.; Half-breds, £10.

PANTOMIME, by Play Actor (son of Sterling) out of the mare (winner of 1st prize for thoroughbred mares at the Royal Dublin Show), by Coward, out of Dangerous, by Artillery. He stands over 16 h.h., has 9 inches of bone below the knee, and is without doubt one of the finest Hunter sires it is possible to find, while his pedigree includes some of the best Irish blood of the day. He is a winner of steeplechases, and in 1896 was placed second to Yard Arm at Bath Horse Show.

FEE-Thoroughbred Mares, 15 gns; Half-breds, £10.

SCOTCH HAZEL, by Hazelhatch out of Scotch Reel (own sister to Border Minstrel) by Tynedale, is a bay horse with black points, standing 16 hands 1 in., with great bone and substance, in this respect resembling his sire Hazlehatch. He stands on short legs for so big a borse, and he is evenly balanced and symmetrical, having good knee and hock action. SCOTCH HAZEL was trained to jump a steeplechase course, and proved himself a magnificent fencer, following after the Hermit family. His dam was a splendid stamp of a broad mare, looking more like a 14-stone hunter than a thorough-bred. She was also a grand mare across a country, having won several good steeplechases, and having regularly carried a M.F.H. to hounds, so that both as to conformation and performances of his parents as well as his own, SCOTCH HAZEL is sure to sire fashionable hunters and good performers, with size as well as good looks.

FEE-Thoroughbred Mares, 10 gns.; Half-breds, 5 gns.

GRAND NATIONAL, by Isobar (son of Isonomy), out of Lethargy, by General Peel, out of Sloth, by Idle Boy. He is a chestnut, standing over 16 hands, with great bone and substance, also exceptional action.

FEE-Thoroughbred Mares, 10 gns.; Half-breds. 5 gns.

LIFEBOAT, by ZEAL, out of Felucca, by Brown Bread. He won a Queen's Premium £200 in 1892, and the Hunters' Improvement Society's Silver Medal, and was second to Yard Arm at Bath in 1895, and third to Yard Arm and Pantomine in 1896. His stock are big and good looking, and prize winners.

FEE-Thoroughbred Mares, 10 gns.; Half-breds, 5 gns.

CAROUSE, by Merry Hampton, out of Caroline (dam of Fullerton), by Musket, combines through his sire the staying blood of Hampton with that of the Australian Celebrity.

FEE-Thoroughbred Mares, 10 gns.; Half-breds, 57gns.

SCOT GUARD, by Strathconan, out of Reveillée, by Rataplan. Winner of Kempton Park Handicap, also Sandown Handicap Hurdle Race, and other races. He was awarded the Hunters' Improvement Society's Gold Medal in 1886, and Silver Medals in 1893 and 1894; 1st prize, Royal Show, at Norwich, and 1st prize at Bath, in 1894.

FEE-Thoroughbred Mares, 10 gns.; Half-breds, 5 gns.

THE COMPTON STUD SHOW AND SALE BY MESSRS. TATTERSALL AT TEMPLECOMBE, SEPTEMBER 12 & 13, 1899.

Apply to Manager, Compton Stud, Gillingham, Dorset.

STALLIONS

AT THE

Keele Stud Paddocks.

BLUE GREEN

(Half-brother to Orme), by Cœruleus, out of Angelica (own sister to St. Simon). He ran nineteen times and won five, viz. Criterion Stakes, Houghton Stakes (dead heat), Triennial Stakes, Lowther Stakes, and the Alexandra Plate; was second in seven (including the Leger), and third in four (including the Two Thousand Guineas). He is sire of Bluewater, Blue Smoke, Hydrangea, True Blue, and many other winners. His yearlings reached a high average at Doncaster Sales this year.

He will serve a limited number of approved Mares, besides his owner's, at £48, and £1 the groom.

DOG ROSE

(Sire of Hips and Haws, Rosy Kate, and other winners, and also some good winners in Ireland), by See Saw out of Hedge Rose, by Neptunus out of Woodbine, by Stockwell, and winner of many important handicaps (carrying top weight), including the Stewards' Cup, Chichester Stakes, and Arundel Cup at Goodwood, and the Croxteth Plate and Molyneux Cup at Liverpool. He ran forty-five times, winning in eleven, second in eleven, and third in four. A yearling by him was sold at last Doncaster Sales for 760 guineas.

Fee-£14, including the Groom's Fee. Special Terms to dams of good winners.

BLACK BRYONY

(Own brother to Glamour), by Rosicrucian out of Kingcup, by King Tom out of Stephanotis, by Macaroni (sire of Half-and-Half and other winners, with the poorest of chances).

Fee-£9, including the Groom's Fee. Special Terms to dams of good winners.

BEAULIEU

By Beauclerc out of Lady Annie, by Trumpeter (by Orlando) out of Chiffoniere, by Wild Dayrell. He ran twenty-seven times, winning eight (including the Queen's Cup at Kempton Park), second in two, and third in four (including the Molyneux Stakes at Liverpool, won by The Bard).

Fee-£5, including the Groom's Fee. Dams of good winners, Free.

ALL APPLICATIONS TO

H. V. BOOTHBY,

Estate Office, KEELE, NEWCASTLE-UNDER-LYME, STAFFS.

Blankney Stud Company, Ltd.

BLANKNEY STATION IS ONE MILE FROM THE STUD FARM, ON THE GREAT NORTHERN AND GREAT EASTERN JOINT LINE.

GALOPIN. A limited number of Mares only. Terms at 200 Gns. a Mare. If no foal, half the fee will be returned.

N.B.—If after fair trials a mare breaks to Galopin, she can, if desired, be served by Friar's Balsam, or The Weaver. In this case the half fee (100 gns.) will be the total fee.

FRIAR'S BALSAM (1885), by Hermit, out of Flower of Dorset, by Breadalbane, her dam, Impératrice, by Orlando, at 100 Gns, a mare.

N.B.—Friar's Balsam was never beaten as a two-year-old; as a three-year-old he won the Champion Stakes at Newmarket, beating Minting. He is the Sire of many winners, amongst others, The Quack, Pomade Divine, Clipstone, &c.

N.B.—On mares proving barren to Friar's Balsam, half the fee will be returned.

THE WEAVER, by Galopin, out of Spinaway (winner of the One Thousand and Oaks), by Macaroni, out of Queen Bertha, by Kingston, at 19 gns. a mare; a few approved mares, gratis. The Weaver is a horse of great power and quality.

Groom's fee, 1 guinea each Mare; Barren Mares, 21s. per week; Foaling Mares, 25s.

Apply—THE MANAGER, Blankney Stud Company Office, Blankney, Lincoln.



VESICO SUDORIFIO is the most famous Remedy for Horses in the World. No Blemish! No fixing the head! No rest needed! For curing Splint, Spavin, Ringbone, Sidebone, Capped Hock and Elbow, Curb, Windgall, Tumours, Strained Sinews, and for strengthening the Legs of Horses.

Price 2/6 or 5/-, of chemists, or post free of GREGORY & CO.,
TEMPLE, BRISTOL.

PEDICURA Registered HOOF DRESSING

CURES

Thrush, Canker, Seedy, Brittle, Shelly Hoof, Sandcrack, Corns, Cracked, Greasy Heels, Foul Smell of Feet, and Produces a polished dressy look on turnout, Sold in tins, 2/6 post free. 1-pallon tin, 10/6 post free.



GREGORY'S FEBRIFUCE.

Is a Medicated Powder to be given in water to drink (one packet in 10 quarts) to Horses, Cattle, Pigs, Poultry, &c. Recommended for Colds, Fever, Urinary Ailments, Skin Disorders, and General Unthriftiness.

12 Packets for 2s. 6d., 30 for 5s., 144 for 20s., of Chemists, or post free.

PROPRIETORS: GREGORY & CO., TEMPLE, BRISTOL.

Tickford Park Stud,

Moulsoe, Newport Pagnell, Bucks.

3 miles from Newport Pagnell Station. $4\frac{1}{2}$,, , Woburn Sands, L. & N. W.

BRAGGADOCIO,

A whole-coloured brown horse, by Brag out of Headlong, by Pell Mell, her dam Misfortune, by The Ranger, out of Miss Dayrell, by Wild Dayrell.

Braggapocio is a magnificent thoroughbred horse, standing 16-1 h.h., measuring nearly nine inches below the knee, of good quality, on short legs; he has great power, with excellent back, shoulders, limbs and feet. He is up to 15 stone with hounds, his action is good and true, and he is as active as a polo pony.

AMMONITE.

Winner of Queen's Premium, 1896.

Black horse by Paradox out of St. Hilda, by Hermit, her dam Adelaide by Young Melbourne, g.dam by Teddington, out of Maid of Masham (g.dam of Peter, Timothy, &c.), by Don John.

Ammonite is 16 h.h. full, with very good back and shoulders, large strong limbs, knees and hocks close to the ground. He is symmetrical, good looking and powerful enough in every respect to carry 14 stone to hounds.

Ammonite won many races, and with his breeding, power, and quality should get both race horses and jumpers. His stock are good and have won prizes.

CLEVELAND BAYS.

GEORGE SCOBY.

Beadlam Grange Stud Farm,

NAWTON, YORKS.

Breeder of CLEVELAND BAYS and YORKSHIRE COACH HORSES.

Stallions and Mares, all ages, of purest blood for sale. This Stud won more Prizes at Yorks. and Royal than any Stud in England.

PRICES REASONABLE.

Telegrams—" Scoby, Helmsley." Farm 24 miles from York, and 1 mile from Helmsley, N.E.R.

Stud and Herd

Registers

[The page corresponds in size with a page in this Catalogue.]

VIZ.

A Stud Register for Mares and their Produce,

AND

A Herd Register for Cattle and their Produce.

Each of the Registers has 100 Pages, which are numbered; there is an ample Index; and the back of each page is ruled for Memoranda of Service, Sales, &c.

Price (Strongly Bound in Cloth) 2s. 6d. each Register; Post Free 2s. 9d., of

HENRY F. EUREN,

Secretary of Hackney Horse Society, 12, Hanover Square, London, W.

A TYPEWRITER

Is far speedier than the pen.

Its work is far more legible.

Typewritten Letters are more easily checked, filed, and looked up than Handwritten Documents.

The Typewriter

IS THE

Remington Typewriter.

It is simple in construction, and embodies the best devices applicable to the typewriter.

Hence it is thoroughly reliable.

Unpractical devices, however fascinating in appearance, are rigidly excluded from the Remington.

It is made of the best materials, under the closest supervision, and thus each individual machine is up to the high standard of excellence established by the manufacturers.

Explanatory Pamphlet, with full illustrations, post free from-

WYCKOFF, SEAMANS & BENEDICT,

Head Office: 100, GRACECHURCH STREET, E.C. West End Branch: 263, OXFORD STREET, W.

AND ALL LARGE TOWNS,

SAVE MONEY



AND

BUY YOUR



The

Latest Cut

and

Designs

in

QUARTER

SHEETS.

RACE

SHEETS,

GALLOPING

SHEETS.

HOUND CLOTHING, Etc., Etc.

*





The Celebrated

WESTMERIA'

(REGD.).

Natural

Homespun.

Specially

adapted for both Ladies

and Gents.

Cannot be

beaten

for all kinds of Outdoor

Wear.

-

Waterproofed to

Order.



See Stand at Clock-end of Horse Ring for Types of

HORSE CLOTHING, TWEEDS, ETC.

All Departments are in the hands of experienced workmen, and all work turned out is guaranteed of the best Style and Finish.

WRITE FOR PATTERNS, POST FREE.

Carriage Paid to any Station in Great Britain or Ireland.

HORSES and **CATTLE**

INSURED BY

THE LANGASHIRE AND YORKSHIRE ACCIDENT INSURANCE COMPY., LTD.

The largest and wealthiest Office in the Kingdom transacting Live Stock Insurance.

CAPITAL, SUBSCRIBED £100,000. CAPITAL, PAID UP .. £30,000. INVESTED FUNDS £67,472.

CLAIMS PAID EXCEED £295,000.

Head Office—37, Princess Street, MANCHESTER.

R. KENNEDY MITCHELL, Manager.

London Office-78, King William Street, E.C.

Prospectuses, with full information, on application to Head or District Office, or Local Agent.

DOGS-RACKHAM'S DISTEMPER BALLS. The only cure known. Price 1s., 2s. 6d., and 5s., 10s. and 20s., free 2d. extra.

DOGS RACKHAM'S DOGS—RACKHAM'S JAPANESE WORM BALLS AND POWDERS.
One dose sufficient. Price 1s., 2s. 6d., and 5s.,

free 2d. extra.

DOCS—RACKHAM'S TONIC CONDITION BALLS are Invaluable for Greyhounds. Price 1s., 2s. 6d., and 5s., free 2d. extra.

DOGS-RACKHAM'S KATALEPRA. Cures Red Mange, Eczema, and all Skin Diseases. Price 1s., 2s. 6d., 5s., 10s., and 20s., free 2d. extra.

DOGS-RACKHAM'S JAPAN SOAP for Washing Dogs. Prevents Skin Diseases. Tablets, 5d. and 1s., post free

HORSES — RACKHAM'S CON-DITION BALLS, ALSO POWDERS

Produce Condition, Glossy Coat, &c. Price 2/6 and 5/- per box, free 2d. extra.

HORSES — RACKHAM'S COUCH BALLS, ALSO POWDERS. Price 2/6 and 5/- per box, free 2d. extra.

HORSES — RACKHAM'S WORM BALLS, ALSO POWDERS.
Price 2/6 and 5/- per box, free 2d. extra.

HORSES—RACKHAM'S DIURETIC BALLS Price 2/6 and 5/- per box, free 2d, extra.

DOCS — RACKHAM'S NORFOLK HOUND MEAL is the best food for hound meal all Dogs. Supplied in small or large grades. Price 16s. per cwt.

HORSES—RACKHAM'S GREASE BALLS. Legs, Humours, and Surfeit. They will speedily cure the worst cases. Price 2/6 and 5/- per box, free 2d. extra.

SOLD BY ALL CHEMISTS.

RACKHAM & CO., ST. PETER'S, NORWICH.

ADVICE GRATIS IN ALL DISEASES.

"EBBERZINE

(REGISTERED).

THE CELEBRATED ABSORBENT DRESSING

CURBS, SPLINTS, SPAVINS, RINGBONE, THICKENED TENDONS AND LICAMENTS, SORE SHINS, &C.

This Preparation has the advantage that horses' work need not be stopped; also that it leaves no blemish.

IN BOTTLES-4/3, 8/3, 12/3, Carriage Paid.

PASS-CORA

(REGISTERED).

The FAMOUS ASTRINGENT POWDERS for Bracing Weak Tendons, Ligaments, Windgalls, and especially good for Sore Backs.

Price: 126 Per Doz., Carriage Paid.

From J. Mark Cazenove, Esq., Belmoredean, West Grinstead.

"I enclose Postal Order for 8/3 for the bottle of 'Ebberzine' that Thirlwell asked you to send me. I find it most excellent, and has quite removed the Splint, which was a very bad one."

From W. Major, Esq., Manor Cottage, Old Windson. "July 27th, 1898.

"Please send me, at the above address, some 'Ebberzine.' I have been recommended to try it on a horse splint by J. G. Bulteel, Esq."

"I enclose Postal Order for 8/3. Pleased to say I have used it for a Splint and Curb on a Two-year-old with great success. Shall recommend it to my friends."

From Dr. Jolliffe, Yafford House, Shorwell, Isle of Wight.

"The Blistering Fluid you kindly sent us for our young horse seems to be answering very nicely; it is certainly a very effectual blister, and cheap. Will you please send another bottle, as I should like to keep some by me, as having so many young horses we are frequently wanting blisters."

From D. THIRLWELL, Esq., NEPCOTE LODGE, FINDON, SUSSEX.

"I have used your 'Ebberzine,' and consider it the very best Absorbent I have ever used. I have also used your 'Pass-Cora' Astringent Powders with great success. No stable should be without them. I have recommended both to my friends."

"February 9th, 1899.

"EBBERZINE."

From Mr. J. Goode, Job Master and Dealer, Brook's Mews, Davies Street, W.

"Mr. Herbert Rymill, of the Barbican Repository, gave me a bottle of your 'Ebberzine' to try, and I am very pleased with it. Will you kindly send me two bottles of it at your earliest convenience, together with price, and I will forward money per return."

From W. H. Moore, Esq., Weyhill, Andover. "April 30th, 1898.

"Having used your 'Pass-Cora' Powders and the 'Ebberzine' dressing for a considerable time, I have great pleasure in recommending both with every confidence. I may add as an example that I used 'Ebberzine' on 'Prince Albert's' knees within three weeks of his winning the Sefton Steeplechase, in November, 1897.

From Mr. J. Cannon, NEWMARKET.

"I have pleasure in attesting to the merits of your 'Pass-Cora' Powders which I find a very fine astringent.

From Mr. A DAY, ABUNDEL.

"Will you kindly send me another bottle of your incomparable Curb and Splint Dressing ('Ebberzine.') I use it for everything, even for dressing throats when the young ones cough."

From E. C. CLAYTON, ESQ., COTTESMORE GRANGE, OAKHAM.

"You will remember the astringent powders ('Pass-Cora') to make into lotion which you sent my trainer, Mr. Cole, for Simonburn. We find it a most valuable preparation, and it has done wonders, not only with our race horses, but also in my hunting stable here. Please send 2nd March, 1897.

"Kindly send another box of your 'Pass-Cora' astringent powders to Mr. F. Cole. We find them invaluable for various purposes, sore backs, wind galls, etc.

19th July, 1897.

From E. C. CLAYTON, ESQ., "EMPRESS" PRIVATE HOTEL, HARROGATE.

"I have had your note sent on to me from Cottesmore. I have great pleasure in allowing you to make any use you please of my name and letters, for I can, indeed, most conscientiously recommend your 'Pass-Cora' astringent powders."

From Mr. W. Halsey, Private Trainer to J. A. Miller, Esq.

"I have used your Curb and Splint Dressing, 'Ebberzine,' for the last five years and find it the best absorbent Dressing I have ever used, especially as it can be used without stopping the horse's work."

From Mr. J. Jewitt, Newmarket.

"Kindly send me two or three bottles of your Splint Dressing ('Ebberzine'). I really think it is the best I have ever used."

From G. Moore, Esq., Lambourne, Berks.

"Please send me another bottle of 'Ebberzine,' your Curb and Splint Dressing. best I have ever tried, as it leaves no blemish, and work need not be stopped."

From Mr. W. Halsey, Private Trainer to J. A. Miller, Esq.

"I have used your 'Pass-Cora' Astringent Powders, and I know of nothing better for bracing up horses' legs, and it is also a good Dressing for Sore Backs."

From C. Waller, Esq., Royston.

"I have used your 'Pass-Cora' Powders and I think them a fine astringent and they have certainly done some of my horses a lot of good."

From W. E. Jennings, Esq., Grosvenor Chambers, 395, Oxford Street, W.

"I enclose Postal Order for the bottle of 'Ebberzine' you sent. It has fined down the legs of an old horse and I will recommend it to my friends."

From Mr G. H. Goldfinch, The Kennels, Easton, Wickham Market, Suffolk.

"Please send me another bottle of 'Ebberzine,' also one dozen 'Pass-Cora' Powders. I used the 'Ebberzine' dressing on a hunter, that came up very lame with a curb in January, so lame that I was afraid he would be of no good for the rest of the season, but on using your dressing every other day for a week and keeping him walking about, he was sound in a fortnight and though worked hard kept so till the end of the season. I have also used it on a steeplechase horse that broke down this spring, and it has got his leg wonderfully straight and hard and it looks like standing."

ADDRESS-

E. COOPER-SMITH, M.R.C.V.S... HOLLISH, MIDHURST, SUSSEX. FIFTY YEARS SUCCESS!



TO ALL HORSEMEN. IMPORTANT

Dr. Vicchi, Chief Veterinarian to H.M. the King of Italy, writes: "I have used Stevens' Ointment for the last 16 years, for all diseases of horses' legs and throats, and have always had splendid results from its employment."

Dr. W. Blatting. Veterinary Surgeon-in-Chief, 6th Uhlan Regiment, in Galicia, writes December, 1895: "Send me 20 boxes more of your excellent ointment; I have most successfully applied it."

STEVENS' OINTMENT.—"The only substitute for firing horses."—Is without doubt the only really reliable remedy for splints, spavin, curb, ringbone, ruptured tendons, coughs, both recent and chronic, and glandular enlargements in the horse.

Sold in boxes, with a Treatise on Lameness and full directions, 2s.|6d. and 5s. each, of all characteristics or Post Free from the Proprietor.

chemists, or Post Free from the Proprietor-

LONDON, W. PARK LANE,

A. W. RICHMAN'S Horse AND Cattle **Powders**

THESE POWDERS, which have been in regular use during the past thirty years, are now for the first time offered to the public in response to numerous and increasing inquiries. There is nothing like them in the market. The ingredients are the finest obtainable, free from anything injurious. Suitable for Entire Horses, Breeding Mares, and Horses and Cattle generally. Give tone to the stomach, sharpen the appetite, purge the blood from all humours, and bring the animals quickly into condition. Cost for full-grown Horse, 31d. per week.

Sold in Tins, with full directions, at 1s. 6d. each, or 17s. per dozen Tins, Cash with order.

None Genuine unless enclosed in PINK COVERS with A. W. Richman's name in full.

TO BE OBTAINED OF THE PROPRIETOR,

A. W. RICHMAN.

Shire Horse Stud Farm, SHAFFORD, ST. ALBANS, HERTS. Telegrams: "NICKOLLS BAKER, LONDON." Telephone No. 5504 Gerrard,

TO SHIPPERS OF HORSES.

PRIMEST UPLAND

MEADOW HAY

IN HYDRAULIC-PRESSED BALES,

Always ready for Immediate Shipment.

PRICES AND PARTICULARS OF

NICKOLLS & BAKER,

CORN MERCHANTS AND HAY COMPRESSORS,

1, Oxford Market, Oxford Street, W.

Wharf: -37, Cumberland Hay Market, N.W.

Forage Contractors to the Shire Horse, Hackney Horse, and Hunters' Improvement Societies, 1888 to 1899.

UNITE.

289 to 293, EDGWARE ROAD, LONDON, W.

By Warrants of Appointment to H.M. the Queen and H.R.H. the Prince of Wales.



Pavilions, Tents, and Flags for Royal Ceremonies, Public Rejoicings, Balls, Weddings, Bazaars, Flower Shows, Fêtes, & Garden Parties.

JOHN UNITE, 289 to 293, Edgware Road, LONDON. Telegrams—"UNITENT, LONDON."

HUMANE.

SAFE.

SIMPLE.

CURB

PATENTED

Secures the Chain safely in its proper position.

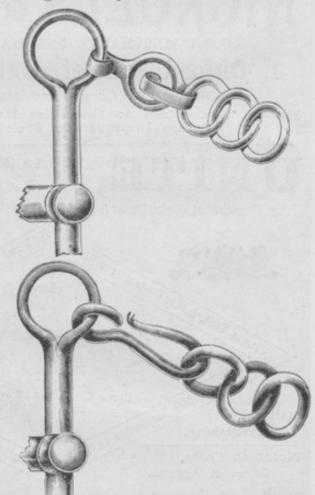
The Curb Chain can be instantly attached or released without the slightest pressure or force.

CIRCLE "CURB" HOOK

presents a SMOOTH
and EVEN
surface to the SIDES
of the MOUTH,
PREVENTING the
IRRITATION caused
by the Hooks
hitherto in use.

ORDINARY "CURB" HOOK

with IRREGULAR
Angles and SHARP
POINTS. A source of
annoyance and ofttimes
the primary causes of
fretfulness, bad temper
and vice in the horse.



A SAMPLE PAIR, POST FREE, 2/-

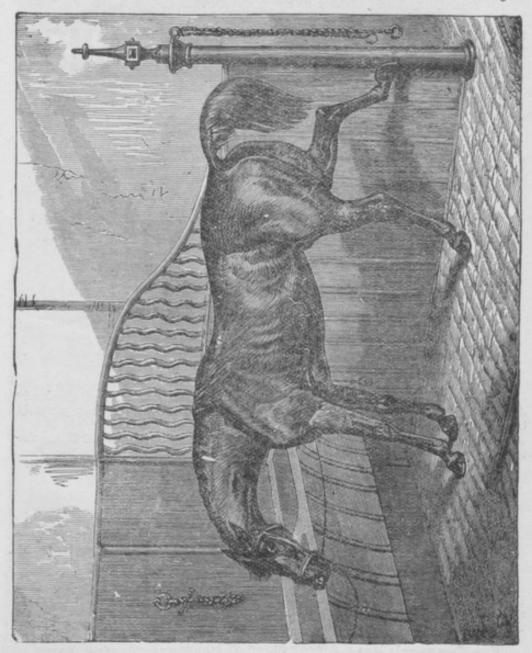
CIRCLE HOOK SYNDICATE, LTD.

4, Newgate Street, LONDON, E.C.

THE ST. PANCRAS IRONWORK Co., LTD.,

ST. PANCRAS ROAD, LONDON, N.W.,

Engineers and Ironfounders, Manufacturers of Patent Stable Fittings.



Inventors, Patentees and Manufacturers of Improvements in

STALLS AND LOOSE BOXES, FEEDING ARRANGEMENTS, WATER SUPPLY, PAVING, COW HOUSE AND PIGGERY FITTINGS,

VENTILATION, LIGHTING, DRAINAGE, HARNESS FITTINGS, COVERED WAYS FOR STABLE YARDS.

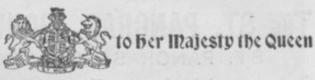
Iron Staircases, Iron Roofs, Verandahs, Gates, Railings, and Ironwork in general.

ILLUSTRATED CATALOGUES ON APPLICATION.

Large Showrooms, where Latest Improvements may be seen, at

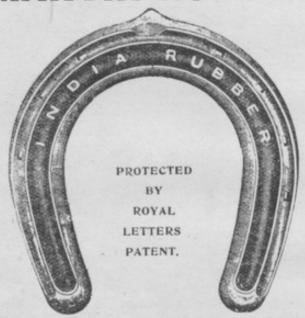
ST. PANCRAS IRON WORKS, ST. PANCRAS ROAD, LONDON, N.W.

By Special Appointment



"THE GREATEST BOON EVER CONFERRED UPON A HORSE."

THE MARTIN HORSE-SHOE



THE MARTIN HORSE-SHOE is NON-SLIPPING, and absolutely does away with the necessity for pads or screws and leaves the foot perfectly open and free to allow of its natural growth.

Among the many advantages of the MARTIN HORSE-SHOE are the following:-

1. Prevents slipping in all weathers.

2. Prevents jarring or concussion of the horse's legs,

No roughing required in frosty weather.
 Is as light as, and wears longer than, the ordinary shoe.

5. Gives a horse confidence and greater freedom of action, and a firm grip of the road.

6. Is hand-made, of wrought steel, and can be fitted and put on to any foot by any farrier.

7. Is far less expensive than shoes with pads.

THE MARTIN HORSE-SHOE is in use in Her Majesty's Stables, the Royal Mews, Buckingham Palace, and have been for more than three years past; and amongst many testimonials which the Company have received, is one from Sir Henry Ewart, K.C.B., K.V.O., Crown Equerry.

The Company's Head Office, Chief Factory and Shoeing Forge is at 30 & 31, Oldbury Place, High Street, Marylebone. They have also a forge at Rectory Mews, Church Street, Chelsea, and are acquiring other premises in various parts of London. For prices and further particulars apply to

The Manager, The Martin Horse-Shoe Company Ltd., 30 & 31, OLDBURY PLACE, HIGH ST., MARYLEBONE, W.



TESTIMONIALS.

"You can use nothing better than the Saddle Soap made by Brecknell & Co., Haymarket, London. Do not be led into the mistake of constantly oiling Harness with the view of keeping it supple. If your groom treats it properly, and uses the Soap according to directions, the Harness will always look well."—The Field, February 8th, 1890.

"Your Soap is the best I have seen, and keeps Leather in excellent condition."—Richard Owen, Captain, A.D.C. to H.E. the Commander-in-Chief in India.

The Spirit of the Times, New York, says—"Brecknell's is unquestionably the best Soap ever manufactured for cleaning Saddles or Harness."

SOLD ONLY IN TINS READY FOR USE.

BRECKNELL, TURNER & SONS, LTD.,

Purveyors to Her Majesty, H.R.H. The Prince of Wales, &c., &c.

The "BEEHIVE," 31 and 32, HAYMARKET, LONDON, S.W. ESTABLISHED 1760.

E. F. BLAKELEY & Co.,

VAUXHALL IRON WORKS & BANASTRE STREET,



LIVERPOOL.

GALVANIZED CORRUGATED PITCHED ROOF

IRON



RIDING SCHOOLS,

STABLES AND COACH HOUSES, HAY, CORN AND CATTLE SHEDS.

Schools, Churches, Pavilions, &c. IRON ROOFS AND BUILDINGS OF EVERY DESCRIPTION.

ESTIMATES ON APPLICATION FREE.

Telephone 2325.

Telegraphic Address-"CORRUGATED."

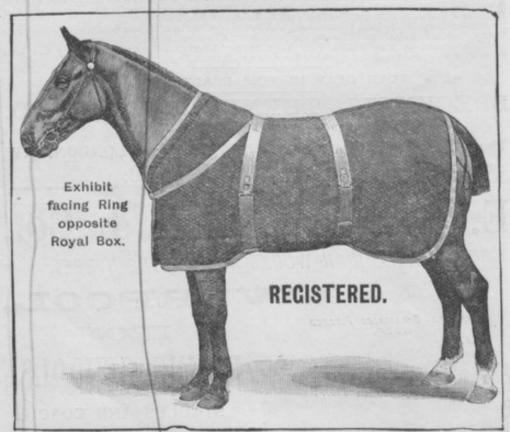
CHASE'S ADJUSTABLE HORSE RUGS.

Fits a Large or Small Horse like a Glove.

Saves the cost of a roller, cannot be got off in the stable by the horse, will wear 50 per cent. longer, and is 50 per cent. cheaper than any other rug.

DAY RUGS, in various patterns and qualities, from 16/6 to 30/-.

NIGHT RUGS, assorted, from 8/- to 16/-.



The trainer of the famous winner of the Oaks, 1898, "Airs and Graces," uses these rugs in his excellent training quarters in Newmarket, and is very highly pleased with them.

All communications should be addressed to

THE GEDDES MANUFACTURING Co.,

16 to 20, Farringdon Avenue, London, E.C.

Telephone 1032, Holborn,

Telegraphic Address-"EDUCIBLE, LONDON."

THE PROPRIETORS OF

HARVEY'S GREAT REMEDIES FOR HORSE

OFFER TO HORSE OWNERS

Three Excellent Things,

1. Harvey's Embrocation, or Curb Bottle,

Prices:-3/9, 7/-, and 21/- per Bottle.

The most absolute Specific known for Curbs, Spavins, Splints, Deep-seated Lameness, &c.

The late LORD COMBERMERE said of it :- "For Side Bones it is the most wonderful thing I

ever saw."

LADY MARGARET JENKINS says that it has rendered her horse "perfectly sound after one application, though he was so hopelessly lame that several very eminent Veterinary Surgeons gave him up, and advised that he be destroyed."

Col. Stewart Sandeman "completely reduced an ossification on a pastern joint, rendering his mare sound without leaving any mark, after one of the best Vets. in Scotland failed."

THESE ARE SAMPLE CASES OF HUNDREDS.

HARVEY'S ACONITE

(Taken with Ordinary Food and without interfering with work.)

Boxes of 6 Powders, 2/3; Quartos (for Chronic Cases) 10/6.

A perfectly safe and thoroughly effectual Remedy for Cough, and Chronic Cough, and producing extraordinary effects upon Broken Wind Touched Wind, Roaring, and other affections of the Organs of Respiration

The Field constantly recommends them.

MAJOR GENERAL SHERMAN SAYS—"They are wonderful."

MR. J. V. HORNYOLD, D.L., J.P., says—"They have had wonderful effects upon my mare, with broken wind."

MR. F. PLATT, D.L., J.P., says—"They have done wonders for a horse who used to roat like a bull."

THESE ARE SAMPLE CASES OF HUNDREDS.

3. Harvey's Worm & Gondition Powders

(Taken in Ordinary Food, and without interfering with work,)

Boxes of 15 Powders & Physic Ball, 3/9; or without Ball, 3/-

The following is taken from an article on Stable matters in Sporting Life of the 16th January, 1896, a paper in which we never previously advertised:—"W.G. Stevens, the famous trainer, with the reputation, too, of being very deeply skilled in the Veterinary Science, tells us that the best Worm Powders for horses, in existence, are those procured at Messrs. HARVEY & Co.'s, Dublin, and this is his conviction after repeated trials with other remedies."

These three excellent things (with others) are fully described, with hundreds of Unsolicited Testimonials, in "The Horse Owners' Handy Note Book," 136 pages, posted free on application.

Harvey's Remedies may be had of Barclay & Sons, Ltd., 95, Farringdon Street, London, E.C., of most Chemists, or Posted Free for Remittance, by the Proprietors,

HARVEY & Co., New Offices: 49, Lower Gardiner Street, Dublin.

THE BARTON-GILLETTE HORSE CLIPPING AND SHEEP SHEARING MACHINES.

HORSE CLIPPING MACHINES.

Model "B"

Finishes its work

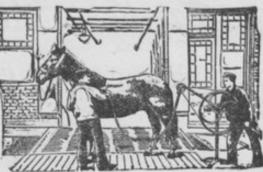
beautifully.

No Singeing.

Requires

no previous

knowledge.



Suitable for large or small Studs,

Cannot get out of order.

Price,

Model "B" is the Machine that won its way into the Queen's Stables, and from there to those of the Duke of Portland, Lord Lonsdale, and many noblemen and gentlemen whose superior judgment in all matters pertaining to the Horse is common knowledge.

TESTIMONIALS.

Royal Mews, Buckingham Palace, March 21st, 1896. Sir-You are at liberty to make known that your Clipping Machines are used in Her Majesty's Stables.—Faithfully yours (signed), HENRY EWART.

Gentlemen—The Horse Clipper supplied by you is very satisfactory. I myself clipped 11 horses easily in one day, average time 35 minutes per horse. There is no doubt the machine clips more evenly than the hand clippers. A good many officers have seen the machine and like it.—(Signed), CAPTAIN COWIE.

SHEEP SHEARING MACHINES.

BARTON-GILLETTE
IMPROVED
PATENT
COMBINATION
CLIPPER

AND

SHEARER.



Operates 2 KNIVES, and can be used for Horse Clipping and Sheep Shearing at the same time it required.

Prices From £8 0 0 to £12 0 0.

The first and only Machine that can be satisfactorily applied to Clipping and Shearing.

Please Note Address, and send for fully Illustrated Catalogue. Proprietors.

THE BARTON-GILLETTE HORSE CLIPPING AND SHEEP SHEARING Co., Ltd.

Offices and Showrooms: -97 & 103, NEW OXFORD STREET, LONDON, W.C.

Factory :- High Street, Camden Town.

POLO PONY SOCIETY.

12, HANOYER SQUARE, LONDON, W.

PROGRAMME OF ARRANGEMENTS FOR 1899.

Polo Pony Classes at the Royal Show.

THE Council have arranged with the Royal Agricultural Society of England for Classes for Polo Ponies at their 1899 Show to be held at Maidstone on June 19th to 23rd inclusive, towards which the Polo Pony Society is contributing the sum of Two Hundred and Ten Pounds.

GOLD & SILVER MEDALS.

In addition to these prizes the Council have decided to offer Gold and Silver Medals for Polo Pony Stallions, Mares and Geldings exhibited at shows giving a specified amount in prizes for Polo Ponies, judged by gentlemen approved by the Council. A list of shows taking the Society's Medals will be sent at the end of March to all Members and to anyone interested who makes application to the Secretary.

STUD BOOK, VOL. V.

The entries for the 5th volume of the Stud-Book close on MARCH, 30th, 1899.

In addition to the section for Polo Ponies, the Council have decided to open separate sections for Ponies of the Mountain and Moorland type. Committees of inspection are being formed to whom will be relegated the task of approving Ponies for these sections.

OFFICE IN SHOW, UNDER THE ROYAL BOX.

SHIRE HORSE SOCIETY.

This Society is endeavouring to improve the Old English Breed of Cart Horses, and to promote the distribution of sound and healthy Sires throughout the country.

STUD BOOKS.

As regards the first Thirteen Volumes of the Stud Book, all essential details respecting every animal registered in those volumes will be found in the Index to Vols. I—XIII. This Index forms a volume of nearly 1,000 pages, containing the names, arranged in alphabetical order, of the 13,809 Stallions and 13,889 Mares registered in the Thirteen Volumes. It gives the following details, as recorded in the Stud Book, respecting every animal, viz.:—Age, colour, owner's name, breeder's name, name and number of sire and dam's sire, and name of dam and volume in which entered.

This single volume, which was prepared specially to meet the requirements of Members who were not desirous of purchasing thirteen separate volumes, is priced to Members at the sum of One Guinea.

The Index, then, contains a record of the Society's registration work up to 1892, since which time a volume has been published yearly, the price of each volume to Members being 10s. 6d. New Members, therefore, can obtain what is practically a complete set of Stud Books by purchasing the Index to Vols. I.—XIII. and each volume issued since, up to the year in which they joined the Society.

Thus, a member elected in 1898 would require the Index (£1 1s.), and Vols. 14, 15, 16, 17 and 18 (£2 12s. 6d.), whilst a Member elected in 1899 would require the Index (£1 1s.) and Vols. 14, 15, 16, 17, 18 and 19 (£3 3s.), and so on with Members elected later.

MEMBERSHIP.

Members incur no liability except the Annual Subscription. Six months' notice is required before retiring, to be given to the Secretary on or before the 1st July.

Members receive a free copy of the Stud Book issued annually by the Society, and may purchase previous volumes at half-price.

Members are entitled to make entries for the Stud Book at half the fees charged to non-members.

Members have the privilege of making entries for the London Shire Horse Show at half the fees charged to non-members, and they receive a Season Ticket, available for each day of the show, and admitting to the Grand Stand.

Annual Members £1 1 0 Life Members £10 10 0

Offices-12, HANOVER SQUARE, LONDON, W.

Mappin & Webb's

PRESENTATION GOLD

AND SILVER PLATE.

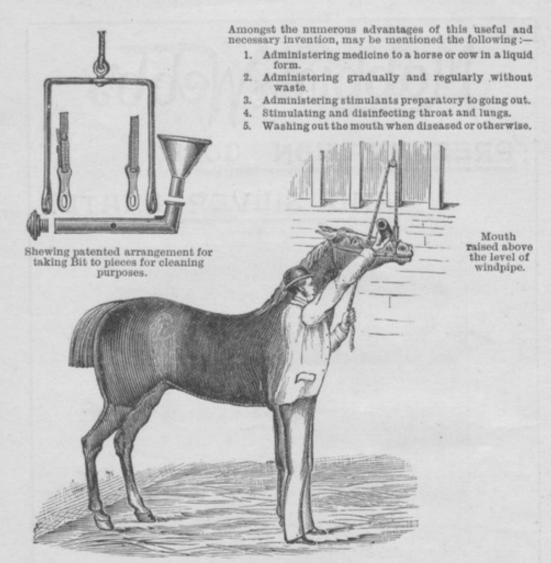


Sterling Silver Replica of the famous "Warwick Vase," The Treasurer's Plate for 1896. Inner Temple.

Special Designs and Estimates for all requirements Post Free.

MAPPIN & WEBB, Ltd., 158 TO 162, OXFORD ST., W., AND 2, QUEEN VICTORIA ST., E.C.

Manufactory-The Royal Works, Norfolk Street, SHEFFIELD.



Patent No. 18647.

"MEDICINE DRENCHING" BIT

For Horses and Cattle. A necessity and luxury in every Stable.

Thoroughly well-made, the Rope and Head-Strap being STOUT and RE-LIABLE, and all metal parts are heavily nickel-plated (or tinned), preventing rust. Useful and necessary in every Stable, and certainly no Veterinary Surgeon's Establishment is complete without one.

The bit can be taken to pieces in a few seconds, by anyone, simply by unscrewing the nut and drawing out the tube, for cleaning purposes.

Telegraphic Address—"INSTRUMENTS, LONDON." Telephone No. 518 HOLBORN. ESTABLISHED 1819.

ARNOLD & SONS, Veterinary Instrument Manufacturers,

BylAppointment to Her Majesty's Government, The Honourable Council of India, Foreign Governments, Royal Veterinary College, &c., &c.

26, 30 and 31, West Smithfield, and 1, 2, and 3, Giltspur St., LONDON, E.C.

SUTTON'S

MIXTURE OF

GRASSES & CLOVERS

FOR

BREEDING PADDOCKS & RACECOURSES

&c.

Messrs. SUTTON have made special study of Grasses suitable for paddocks for grazing brood-mares and thoroughbred Stock, also for racecourses, training grounds, &c., &c., and mixtures specially prepared by S. & S. have been successfully sown on the grounds of the leading breeders and trainers in this country.

All Information may be obtained

AT

MESSRS. SUTTON'S OFFICE

IN THE SHOW.

SUTTON'S SEEDS

NO AGENTS.

ONLY ONE ADDRESS:

Day & Sons, Grewe. HORSE, CATTLE SHEEP & DOG MEDICINES.

Largest Veterinary Providers in the World.

"Breeders and Owners of Stock can rely on the Preparations supplied by Messrs. DAY & SONS, of Crewe."—Live Stock Journal.



DAY'S "BLACK DRINK"

(Often called the "Magic Drink") cures like a charm Colic or Gripes and Chills in Horses and Cattle; instantly relieves Hoven or Blown Cattle and Sheep; stops Scour in, and is the best general Stimulant and Tonic for Calves and Lambs.

Matchless as a Restorative and Painkiller after Lambing and Calving; for Fatigue in Hunters and overworked Horses, and in all cases where nature flags.

Price 5/- per Quarter Dozen, post paid, or 19/- per Dozen Bottles in Boxes. Carriage paid.

DAY & SONS' "ORIGINAL" MEDICINE CHESTS.

Refuse Imitations.



Refuse Imitations.

THE "ORIGINAL"

Universal Medicine Chest,

For Disorders of Horses, Cattle & SheepPrices—£1 4s., £2 4s., £5 and £10 10s.

With Guide—"Everyday Farriery."

THE "ORIGINAL"

Horsekeepers' Medicine Chest,

Arranged specially for Disorders in Horses.

Prices—£1 4s., £2 14s., £5 and £10 10s.

With Guide—" Everyday Farriery."

ONLY ONE ADDRESS

DAY & SONS, CREWE.



A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

"To the solid ground

Of Nature trusts the mind which builds for aye."—WORDSWORTH.

No. 1471, Vol. 57]

THURSDAY, JANUARY 6, 1898.

[PRICE SIXPENCE.

Registered as a Newspaper at the General Post Office.]

[All Rights are Reserved.

WIRELESS TELEGRAPHY

The "APPS-NEWTON" INDUCTION COILS have proved so superior in telegraphing long distances without wires, that they are now being used for this purpose for experimental work by the Post Office, the Navy, the Army, Signor Marconi, the Wireless Telegraph Co., &c.

These Instruments were used also in the Government experiments at Dover and at Penarth, where the telegrams were successfully read at nine miles distance.

PRICES ON APPLICATION.

SOLE MAKERS:

NEWTON & CO.,

Scientific Instrument Makers to H.M. the Queen and the Government.

3 FLEET STREET, LONDON, E.C.

New Pattern Wimshurst Machines

THE CLASS PLATES ARE WITHOUT BRASS SECTORS.



The Spark is much improved in length and power.

By using discharging balls of a new pattern, the reversing of the current is prevented, and the Machine, which has been simplified and reduced in price, is the Best and Cheapest in the Market.

A .- College Form, polished mahogany base, with two 16-inch Plates, and four Leyden Jars, £5.

Iron Frame Form, with two 16-inch Plates and two

Levden Jars, £3 10s. N.B.—This Instrument is the strongest, neatest, and most powerful ever offered at the price.

C.—School Form, with two 16-inch Plates and two Leyden Jars, £2 10s.

JOHN J. GRIFFIN & SONS, 12 22 GARRICK STREET, COVENT GARDEN, W.C.

THE DAVIES MOTOR CO., LYD., SUCCESSORS TO

NALDER BROS. & CO.

16 RED LION STREET, LONDON, E.C.

THE N.C.S. NEW PATTERN HORIZONTAL DETECTOR.

Size:

3 in. by 11 in.

Resistance:

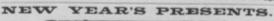
1700 ohms.

Sensitiveness: Will show one millionth

of an ampere.

Price £3 3 0.

WRITE FOR CATALOGUE. Cable Address, "SECORM, LONDON. No Agents, U.S.A. This Instrument delivered anywhere in U.S.A. for 820.





NEGRETTI & ZAMBRA'S TRAVELLER'S SCIENTIFIC COMPANION.

meter with Altitude Scale, Compass with Patent Dial and for Air Temperatures (or a Clinical Thermometer may be)). An excellent Present for Officers on Foreign Service.

PRICE £4 10s. to £7 10s.

Can also be had Mounted in either Gold or Silver Cases.

"Special" Illustrated Price List of Instruments suitable for Presents free by Post to all parts of the World.

NEGRETTI & ZAMBRA,

SCIENTIFIC INSTRUMENT MAKERS TO THE QUEEN,

38 HOLBORN VIADUCT, E.C.

Branches-45 CORNHILL, and 122 REGENT STREET.

BIRKBECK INSTITUTION.

BREAM'S BUILDINGS, CHANCERY LANE, E.C. Principal-G. Armitage-Smith, M.A. DAY AND EVENING CLASSES.

New Term commenced JANUARY 3, 1893.

DAY CLASSES, with Practical Work in Chemistry, Experimental Physics, Biology, Physiology, Mathematics.

University of London.—Day Courses in Subjects for the Science, Arts, and Law

Science Classes in every Branch with Practical Work. Excellently equipped Laboratories for Chemistry, Experimental Physics, Biology and Bogany.

University Extension; Lectures on Political Economy and Commercial Geography.

LANGUAGES, Commercial and English Subjects, Common Law, Banksruptcy, Equity and Conveyancing, Logic and Psychology, School. Of Ast (Day and Evening): Drawing, Painting, Designing, Modelling, Wood Carving, Life Classes, &c.

CIVIL SERVICE: Assistant Surveyors of Taxes, &c., Second Division, &c. Prospectus, &c , on application to the SECRETARY.

BATTERSEA POLYTECHNIC,

LONDON, S.W.

DAY COURSES IN APPLIED CHEMISTRY FOR TECHNICAL STUDENTS.

Head of Chemical Department : WILLIAM A. BONE, D.Sc., Ph.D. SPECIAL DAY COURSES OF INSTRUCTION FOR STUDENTS TRAINING FOR POSITIONS IN CONNECTION WITH

TRAINING FOR POSITIONS IN CONNECTION WITH

CHEMICAL INDUSTRIES.

The object of these Courses is to impart a thoroughly Scientific Training in special branches of Organic Chemistry, and the Chemistry of Gases, and will be adapted to the special requirements of each Student. Instruction in general Analytical Chemistry, including Gas Analysis, will also be given. Facilities for Research Work. Term commences January 10, 1898. A NEW TECHNICAL DAY SCHOOL for Boys preparing for the Building, Mechanical or Electrical Engineering Trades, will be opened Monday, January 10. Fee, £1 per Term. For Particulars and Prospectuses of other Schools and Classes apply to the SECRETARY.

BEDFORD COLLEGE, LONDON (FOR WOMEN).

YORK PLACE, BAKER STREET, W.

SESSION 1897-98-

The Lent Term will begin on Thursday, January 20.

Classes in Elementary Greek and Trigonometry will be held for Students who will have Matriculated in January 1898. Special Classes in preparation for Matriculation (January 1899) will be formed on the entry of a sufficient number of names.

LUCY J. RUSSELL, Honorary Secretary.

BEDFORD COLLEGE FOR WOMEN,

YORK PLACE, BAKER STREET, W.

The Council invite Applications for the Post of Principal of Bedford

College.
Testimonials (not exceeding Four in number) and Names of References to be sent in on or before January 15, 1895. Twenty Copies of the Testimonials to be forwarded to, and all inquiries to be made of,

LUCY J. RUSSELL, Honorary Secretary, 9 Pelham Place, South Kensington, S.W.

VICTORIA UNIVERSITY.

THE YORKSHIRE COLLEGE, LEEDS.

DEPARTMENT OF SCIENCE, TECHNOLOGY AND ARTS.

The next Term begins Tuesday, January 11. Prospectus (post free) from the RECISTRAE.

UNIVERSITY OF OTAGO, NEW ZEALAND.

PROFESSORSHIP OF BIOLOGY.

PROFESSORSHIP OF BIOLOGY.

The Council invite Applications to fill the Vacancy caused by the death of Prof. T. Jeffer Parker, D.Sc., F.R.S. Salary, £600 a Year and half the Class Fees.

Applications with Testimonials to be sent to the Agent-General for New Zealand, by January 19, 1898.

Circulars, containing full Particulars, and Application Forms can be obtained from the Office of the Agent-General, 13 Victoria Street, London, S.W. A. HAMILTON, Registrar.

Dunedin, Otago, New Zealand.

ELECTRICAL ENGINEERING.

The ELECTRICAL STANDARDIZING, TESTING, and TRAINING INSTITUTION, & CHARING CROSS ROAD, LONDON.

(Proprietors-Syndicate of Electrical Engineers, Ltd.)

BOARD OF CONTROL

The Rt. Hon. the Earl of CRAWFORD, K.T., F.R.S., Chairman.

The Rt. Hon. Lord Castletown.
The Hon. R. Brougham.
Robert Hammond.
Hugh Erat Harrison.
Francis Ince.
William O. Smith.

Robert Hammond. | William O. Smith.

Affords a Theoretical and Practical Training, and qualifies the Sons of Gentlessen for Appointments in Mechanical and Electrical Engineering. After the Preliminary Training in Theory at the Institution, Students go through a Practical Course, first in the Mechanical Engineering Works and subsequently the Electrical Works, the Institution being associated with over so leading Firms and Engineers for this purpose. They are thus brought directly into association with prominent Companies and Firms, and secure an introduction to the Profession under the most favourable auspices. APPOINTMENTS HAVE BEEN SECURED FOR OVER 80 PER CENT. OF THE STUDENTS who have completed their Course since the foundation of the Institution, and applications continue to be received for competent men. Prospectus on application. Next Term begins January 12.

THE ELECTRICAL

GENERAL ENGINEERING COLLEGE.

EXPERIMENTAL ENGINEERING WORKS.

2 and 4 PENYWERN ROAD EARL'S COURT, LONDON, S.W.,

Trains Students for Electrical, Mechanical and Mining Engineering.
Develops Electrical and Mechanical Patents.
Constructs Experimental and Special Machinery and Models to
Specification.

MATRICULATION, B.A. & B.Sc.

PREPARATION BY CORRESPONDENCE AND ORAL TUITION, on a thoroughly Individual System which ensures to each Student
the closest care and attention. Weak Subjects receive special help.
SINGLE SUBJECTS MAY BE TAKEN UP:—Latin, Greek,
Modern Languages, Mathematics, Sciences, Logic, Psychology, &c.
TUTORS.—The Staff includes a number of Graduates of Oxford, Cambridge, London and Royal Universities.
For Terms, Testimonials, &c., address Mr. J. Charleston, B.A.,
Honours Lond. and Oxon.), Burlington College, 27 Chancery Lane, London.

SCIENCE LABORATORIES.

SKERRY'S COLLEGE, 27 CHANCERY LANE, W.C.

Thorough instruction in Biology, Botany, Chemistry (Practical), Geology, Materia Medica, Practical Microscopy, Practical Pharmacy, Physics, &c. Most experienced Professors. Private Students admitted.

Highest successes at all recent Exams. Call or write. Mr. G. E. SKERRY, M.A., F.R.G.S., 27 Chancery Lane.

LONDON MATRIC. INTER. SC. AND B.Sc. CLASSES AND TUITION, Practical and Theoretical Work. Special HONOURS CLASS IN BOTANY for the Inter. Sc. and B.Sc.—Apply, R. Kerin, B.A. London (First First-Class Hons. Classics), Carlyon College, 55 and 56 Chancery Lane, W.C.

UNIVERSITY COLLEGE, LONDON.

QUAIN PROFESSORSHIP OF PHYSICS.

This Chair will be Vacant by the resignation of Prof Carey Foster at the close of the present Session.

Applications, accompanied by such Testimonials as Candidates may wish to submit, should reach the Secretary by Tuesday, March 1, 1295.

Further information will be sent on application. The new Professor will enter on his duties next October.

J. M. HORSBURGH, M.A., Secretary.

CITY AND GUILDS OF LONDON INSTITUTE.

CENTRAL TECHNICAL COLLEGE, EXHIBITION ROAD, LONDON, S.W.

WANTED, a LECTURE ASSISTANT in the Physics Department, Salary £100 per annum. Apply in the first instance to Prof. Averon, F.R.S., at the College.

JOHN WATNEY, Hom rary S- cretary, City and Guilds Institute.

GOVERNMENT GRANT OF £4000 TO

DEFRAY THE EXPENSES OF SCIENTIFIC INVESTIGA-TION.—JANUARY 31 is the last day for receiving Applications. Forms may be obtained from the CLERK to the Government Grant Committee, Royal Society, Burlington House, London.

FOR SALE-Copies of "Nature," complete from January 3, 1895, to date. What offers?-W. P. BARLI Evering Road, Stoke Newington, London, N.



W. G. PYE.

SCIENTIFIC INSTRUMENT MAKER. 30 ST. ANDREW'S STREET, CAMBRIDGE.

Apparatus especially adapted for Teaching Purposes at Moderate Prices.

> PRICE LISTS FREE ON APPLICATION.

CHORNTON-DICKARD

THORNTON-PICKARD, LTD. ALTRINCHAM.

THORNTON-DICKARD CAMERAS.

> 'AMBER' 'RUBY.'

For HAND or STAND With Time and n-

SHUTTER.

X-RAY TUBES. CATHODE

67 FARRINGDON ROAD, E.C. MERCURY PUMPS.

EXPERIMENTAL AND SCIENTIFIC GLASS-BLOWING.

TO SCIENCE LECTURERS.

HUGHES' MOTO-PHOTOSCOPE FOR LIVING PICTURES.

THE MOST PERFECT.

THE MOST PERFECT.

No Shutter, therefore no Flickering. Superb Mechanism.

The Moto-Photo Camera for taking the Picturez. Illustrated Lists, 2d.

See Mr. Hughes' PATENT COMBINATION OPTICAL LANTERN, &c. Miniature Triple Lantern constructed for B. J. Malden, Esq.; great success. New Oxyhydrogen Microscope. Science Lanterns for Class Demonstration. Magnificent Results. Docwra Triple, Prize Medal, Highest Award. Supplied to the Royal Pelytechnic Institution, Dr. H. Grattan Guinness, Madame Adelina Patti, &c., &c. Patent Pampbengos Science Lanterns. The Universal Lantern 4-inch Condensers, 4-wick Lamp, Portrait Combination front Lenses, 18s. 6d., Marvellous value. Science Lecture Sets. Novelties. The Lantern Kaleidoscope. Cheapest Lantern Outflis in the World. Grandly Illustrated Catalogue, over 150 choice Engravings, 6d.; Postage, 3d. List of 300 Lecture Sets, Science Subjects, Views, &c., 6d.; Postage, 2d. Pamphlets Free.—W. C. HUGHES, Specialist, Brewster House, 8s Mortimer Road, Kingsland, N.

OPTICAL & SCIENTIFIC INSTRUMENTS.

Spectrometers, Spectroscopes, Goniometers, Cathetometers, Optical Benches, &c., &c. Instruments for special purposes constructed to Clients' own designs. Price List on application.

W. WILSON (formerly Foreman at Messrs, Elliott Bros.), 56 Crogsland Road, Chalk Farm, London, N.W. CONTRACTOR TO H.M. GOVERNMENT.

THE GEOGRAPHICAL JOURNAL.

Price 2E. CONTENTS—JANUARY.

THE FIELD OF GEOGRAPHY. By Sir Clements R. Markham, K.C.B., F.R.S., President R.G.S.

Two RECENT JOURNEYS IN NORTHERN SOMALILAND. I. By F. B. Parkinson and Lieut. Brander-Dunbar, 2nd Cameron Highlanders. II. By G. Percy V. Aylmer.

ROCKALL.

By G. Percy V. Aylmer.
Rockall.
The Funafuti Coral Boring Expedition.
Geographical Research in the United States. By Marcus Baker,
U.S. Geological Survey.
The Indian Survey Report for 1893-96.
Areas of African and Asiatic River-Basins.
Russian Explorations in Manchurla.
The Monthly Record.
Obitoany—Justin Winsor. By the President. Ernest Giles.
Correspondence.—The Discoveny of Australia. By R. S. Whiteway.
Meetings of the Royal Geographical Society, Session 1897-92.
Geographical Literature of the Month.
Numerous Maps and Illustrations.
EDWARD STANFORD, 26 and 27 Cockspur Street, Charing Cross.

NEW PATENT (1897)

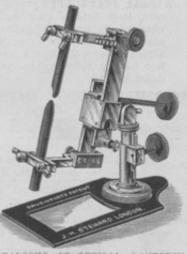
DAVENPORT-STEWARD UNIVERSAL

ARC LAMP

FOR HIGH-CLASS OPTICAL PROJECTIONS.

£5 5s.

For either Direct or Alternating Currents



ILLUSTRATED CATALOGUE OF OPTICAL LANTERNS

APPARATUS. X-RAY

J. H. STEWARD,

406 STRAND; 457 WEST STRAND, W.C.; 7 GRACECHURCH STREET, E.C., LONDON.

BLISHED 185 BIRKBECK BANK.

Southampton Buildings, Chancery Lane, London. TWO-AND-A-HALF per CENT. INTEREST allowed on DEPOSITS,

epayable on demand.

TWO per CENT. on CURRENT ACCOUNTS, on the Minimum monthly balances, when not drawn below £100.

STOCKS and SHARES purchased and sold.

The BIRKBECK ALMANACK, with full particulars, post free.
FRANCIS RAVENSCROFT Manager.

GEOLOGY AND PHYSIOGRAPHY.

COLLECTIONS AND MICROSCOPIC SLIDES.

New Catalogues of Minerals, &c., now ready.

Collections of Specimens—Minerals, Fossils, and Rocks.

Minerals for Chemical Work, &c.

Physiography Collections.

Geological Apparatus and Appliances.

New Supplementary List of Microscopic Sections.

List of Rock Specimens.

Geological Hammers.

Geological Hammers.

Meteorites.

Meteorites.
of Minerals for selecting single Specimens, Price ad.

JAMES R. GREGORY & CO. 1 KELSO PLACE, KENSINGTON, W.

VOIGTLANDER & SOHN,

ORIGINAL MAKERS OF

PETZVAL PORTRAIT LENSES

BINOCULAR FIELD GLASSES

MAKERS OF

ASTRO-PHOTOGRAPHIC LENSES.—Full Aperture F 1'8. Extremely Sharp Definition combined with the utmost rapidity.

COLLINEAR PHOTOGRAPHIC LENSES .- Four Series. New complete Catalogue, post free.

FIELD GLASSES. - Twelve Lens and PORRO Forms.

PORTABLE TELESCOPES.—Constructed with great care, large field of view, and brilliant images obtained by special Eyepieces which pass the maximum amount of light. Triple or Double Object Glasses, the former giving better correction for the Secondary Spectrum. Very sharp definition.

ACHROMATIC POCKET MAGNIFIERS. — Large working distance. Sharp definition.

Our Instruments can be ordered through any Optician.

WORKS AND HEAD OFFICE-BRUNSWICK. BRANCHES (LONDON: 92 HATTON GARDEN, E.C. BOSTON (MASS.): 319 WASHINGTON ST.

A NEW STEREOSCOPIC BINOCULAR

FIELD GLASS

Of NEW FORM and CONSTRUCTION.



(English Patents, Nos. 3639 and 7942, 1894.)

Of handy size, with large field, brilliant definition, perfect achromatism, and very decided STEREOSCOPIC effect, and which, when once adjusted, are always ready for use.

Prices: £6 10s. to £8, For NAVAL MEN and DEERSTALKERS, &c. (we have made arger sizes for NIGHT and DAY USE, admitting more light, but f somewhat greater weight). Prices: Night, £10; Day, £11, Illustrated Descriptive Price List free.

CARL ZEISS,

29 MARGARET STREET, REGENT STREET, LONDON, W.

DENT'S WATCHES.

Highest Quality. Moderate Price.

COLD KEYLESS LEVER WATCHES. GENTLEMEN'S, from 10 to 60 Guineas. LADIES', from 6 to 40 Guineas.

Catalogues Free by Post on application.

E. DENT & CO.



Ltd., Makers to the Queen, ROYAL EXCHANGE, E.C., and 61 STRAND, W.C.

LONDON.

ROSS New Petrological

A thoroughly reliable instrument at a very moderate price.

Microscopes.

Supplied to leading Universities and Science Schools in Great Britain and America.



ROSS' NEW Bacteriological Microscope,

WITH PATENT FOOT.

Very strong serviceable Stands, with superior Fine Adjustment, & every detail carefully considered. Inspection Invited.

Anglo-Continental Microscopes. New Series Objectives,

ROSS, Ltd. 111 New Bond Street.

LONDON, W. ESTABLISHED 1830.

THE

CAMBRIDGE SCIENTIFIC INSTRUMENT COMPANY, LIMITED, CARLYLE ROAD, CAMBRIDGE.

Makers of Callendar & Griffiths' Patent Electrical Pyrometer for High Temperature Work. Electrical Thermometers for Investigating Earth Tempera-tures, as supplied to several of the leading Observatories. Callendar & Griffiths' Improved Patent Wire Bridges. Standard Resistance Coils constructed on Messrs, Griffiths and Burstall's Method.

PARTICULARS AND PRICES ON APPLICATION.

QUARTZ FIBRES on Frames, about 6½, 11½, and 16 inches long, at 5s., 7s. 6d., and 10s. per Frame respectively; now ready for distribution.

Physiological and Physical Apparatus of the best quality

Section Cutting Appliances, including a new form of Rocking Microtome for Cutting Flat Sections.

Latest Improved Pattern "Cambridge" Rocking Microtome, price £4 4s.

Illustrated Catalogue of Apparatus sent Post Free on receipt of 1s. 6d. Address all Communications:

"Instrument Company, Ltd., Cambridge."

PHŒNIX FIRE OFFICE,

9 LOMBARD ST., E.C., and 57 CHARING CROSS, S.W. ESTABLISHED 1782.

MODERATE RATES. ABSOLUTE SECURITY. ELECTRIC LIGHTING RULES SUPPLIED. SILIBERAL LOSS SETTLEMENTS. PROMPT PAYMENT OF CLAIMS.

SECRETARIES-W. C. MACDONALD and F. B. MACDONALD.

LOSSES PAID OVER £20,000,000.

THURSDAY, JANUARY 6, 1898.

CAYLEY'S PAPERS.

The Collected Mathematical Papers of Arthur Cayley, Sc.D., F.R.S. Vols. viii., ix. Pp. liv + 570, xvi + 622. (Cambridge: at the University Press, 1895, 1896.)

THESE two volumes form the first of those published after Cayley's death in 1895. The first thirtyeight sheets of Vol. viii. were revised by the author, who added a note on one paper (No. 518); the duty of editing the rest of the papers was entrusted to Prof. Forsyth, who has very faithfully carried out the plan and arrangements which, in the absence of definite instructions, he was able to infer from the previous volumes.

Perhaps the reader's first impression after surveying these 144 papers, mostly published in the years 1871-77, is that they are very miscellaneous, and that comparatively few are of paramount importance. The fact is that Cayley is, as it were, brought into unfavourable comparison with himself; short notes on special problems of geometry and analysis, and solutions of Smith's Prize papers cannot rank with the immortal "Memoirs on Quantics," or some of the earlier geometrical papers, such as that upon plane cubic curves. But it is unreasonable to expect an artist to produce an uninterrupted succession of masterpieces; and it is to be remembered that Cayley seldom, if ever, wrote upon any subject without developing some instructive point or giving an example of his own characteristic elegance.

In trying to give some account of the more important of these memoirs it will be convenient to take the geometry and the analysis separately. Not that the boundary line is very easy to fix: Cayley was never a geometrician in the sense in which the word may be applied to Apollonius or Steiner. But some of the papers have an interest mainly geometrical, although the methods used are almost wholly algebraic; and with them we will begin.

Perhaps the most important are those which deal with transformation, correspondence, and the singularities of algebraical curves and surfaces. With these difficult theories Cayley dealt in a masterly way: he avoided, as if by instinct, the many opportunities of mistake which present themselves in a method which is largely enumerative, and he had the gift of predicting general results from the consideration of special cases.

Coming next to what may be called the metrical geometry of surfaces, which has developed so greatly in recent years, we have papers on curves of curvature, on geodesics on quadrics, and on orthogonal surfaces. To this group may perhaps be added a paper on evolutes and parallel curves, though this is rather meant to illustrate the non-Euclidian geometry.

There are three monographs, on Steiner's surface, on the centro-surface of an ellipsoid, and on the configuration of the twenty-seven lines of a cubic surface, which are in various ways highly characteristic. As models of analytical skill they are admirable; and as helps to the understanding of the geometrical figures with which they deal, they are of great service. But it is

trative diagrams. There are, indeed, two figures in the paper on the surface of centres; but why, we ask, did Cayley not give a series of contour lines of the surface? or again, with still more reason, in the case of Steiner's surface? Then the paper on the twenty-seven lines of a cubic surface is so quaint in its topsy-turveydom as almost to suggest Mr. W. S. Gilbert as joint author. Here we have a projective configuration which may be realised with the help of a bundle of sticks and without any measurement whatever. What Cayley did was to take a model by Dr. Wiener, measure approximately the coordinates of a number of points upon it, thence find the approximate equations of the lines, and finally adjust the equations so as to satisfy the geometrical conditions! Of course there is reason in this seeming perversity: by the projective method it is not easy to get a convenient arrangement of the sticks, whereas Cayley's equations make it possible to construct a string model on a cardboard frame without a tiresome series of preliminary experiments.

The poristic polygons of Poncelet appear to have had for Cayley a perennial charm : we have here two papers suggested by Poncelet's results; one "On the porism of the in-and-circumscribed polygon, &c.," which treats of the original problem, and the other "On the problem of the in-and-circumscribed triangle," which really deals with a rather different and more general theory. Cayley, like many others, does not seem to have been aware (at least in 1871) that the complete algebraical solution of the Poncelet problem was published in 1863 in a paper by M. Moutard, which formed part of the appendix to Poncelet's "Applications d'Analyse à la Géométrie." Not only is this so, but, as Halphen pointed out, this paper contains the first fully satisfactory treatment of the multiplication of the argument in elliptic functions.

Before passing on from the geometrical papers, attention should be called to the very interesting series of notes on the mechanical description of curves. This is a promising field of research, and the results could hardly fail to be of interest, especially to those who like to see the deductions of theory embodied in an actual geometrical figure. There is an æsthetic satisfaction in this contemplation: and, moreover, a really correct figure often suggests geometrical truths that would otherwise be overlooked.

Of the analytical papers the one which has been most appreciated in this country is, beyond question, the short paper "On the theory of the singular solutions of differential equations of the first order" (Messenger, vol. ii. (1873) pp. 6-12). Here Cayley's power of giving to analysis a geometrical interpretation appears to the best advantage. If we have an algebraical relation f(x, y, p) = 0 in which p enters to the degree s, then this associates with any point (x, y) a series of s (real or imaginary) directions corresponding to the different values of p: in other words, the differential equation really expresses that the plane of reference is covered with ∞^2 tiny s-rayed stars. The primitive $\phi(x, y, c) = 0$ gives a family of ∞1 curves each made up of ∞1 selected rays. Now if we eliminate p from f(x, y, p) = 0, $\partial f/\partial p = 0$, we obtain a locus of points (x, y) at each of which two rays coincide in direction; where this happens curious to see how chary the author is in giving illuseither two consecutive curves $\phi(x, y, c) = 0$ touch, or

two non-consecutive curves touch, or (x, y) is a cusp or point of self-contact of one particular curve $\phi(x, y, \varepsilon) = 0$. Thus we may have the envelope of the family of curves, a tac-locus, or a locus of cusps or of points of self-contact. On the other hand if we eliminate ε from $\phi(x, y, \varepsilon) = 0$ and $\partial \phi/\partial \varepsilon = 0$, we get the locus of intersection of consecutive curves ϕ : this may include besides the envelope proper, a locus of nodes, of cusps, or of multiple points of higher order (as, for instance, points of self-contact or triple points). The only outstanding difficulty is the degree of multiplicity in which the singular loci, distinct from the envelope, are involved in the two discriminants.

There are six papers on the transformation of elliptic functions, the most important being No. 578. This contains an exposition of the Jacobian theory, Sohnke's modular equations with additions, and a discussion of the singularities of some of the modular curves. It is remarkable that Cayley, like Kronecker, adhered firmly to Jacobian methods, and never seems to have worked with the Weierstrassian forms. Perhaps just now there is a rather exaggerated tendency in the other direction: as Prof. Klein has pointed out, both theories are self-consistent and form, in a sense, the first and second stages in a complete discussion of periodic functions.

There is not very much about invariants and covariants; No. 525 is an interesting example of a quadratic transformation, and the papers on "trees," although ostensibly intended for application to chemistry, were suggested by the invariant calculus.

In arithmetic there is a table of reduced binary cubics with their Hessians, which is a development of Arndt's results. Cayley gives the composition tables for the Hessians.

Volume ix. contains eleven papers dealing more or less with astronomy and dynamics; and it may be worth while to notice that this volume also contains a reprint of the British Association "Report on Mathematical Tables."

Many interesting special points suggest themselves to the reader: thus, to mention only three, very different in character, the very simple and pretty proof of Vandermonde's theorem (viii. p. 465) might very well find a place in an elementary text-book of algebra; we are told (ibid., p. 188) how a theoretical error was detected by a numerical calculation; and (ibid., p. 397) there is an unverified conjecture that every surface of negative deficiency may be derived by a rational transformation from a cone whose deficiency is equal to that of the surface with its sign changed.

G. B. M.

EXPERIMENTAL PHYSICS.

The Outlines of Physics. By Prof. E. L. Nichols. Pp. xi + 452. (London: Macmillan and Co., Ltd., 1897.)

Lessons in Elementary Practical Physics. Vol. iii. Part i. Practical Acoustics. By C. L. Barnes. Pp. x + 214. (London: Macmillan and Co., Ltd., 1897.)

THE first of these books, as the author explains in his preface, is an attempt to "outline a short course in physics which shall be a fair equivalent for the year of advanced mathematics now required for entrance to many

colleges"; and he proceeds to point out that if physics is to possess much disciplinary value, it must be taught by laboratory methods. Experimental work thus finds a prominent place in his book, which may, in fact, be roughly described as a series of experiments, mostly suitable for repetition by young students, connected by short discussions of a theoretical character.

With the author's object we imagine that most teachers of physics will cordially sympathise. That experiment is the means whereby a knowledge of physics should be acquired by beginners, is as clear now-a-days as it is that the means itself is open to improvement—at any rate, in its early stages. Whether the author has made the most of his opportunity is, however, less certain. Much of his work is excellent: the experiments are, for the most part, well chosen and clearly described; but after a careful perusal of his book, one's prevailing impression is that he has attempted to include too much.

A book of this kind is, of course, largely taken up with description of experimental procedure; but the space is often further occupied with matter which might, in our opinion, be left until a later stage in the student's career. Such questions as X-rays, tests for and theory of colourblindness, interference and polarisation of light, are too large for more than the briefest notice, and might therefore just as well have been omitted altogether; especially when, to mention one instance out of many, curved mirrors are dismissed with a far too scanty discussion, and no special experimental illustrations at all. It would, in our opinion, have been better to develop further the experimental treatment of the simpler parts of physics at the expense of these more elaborate phenomena. It is only in places, however, that the work is affected by this fault; and the same may be said of an occasional laxness of expression which will probably lead to mistakes on the part of young readers where it occurs. Taken as a whole, the book forms a useful addition to the elementary text-books on practical physics.

We have noticed a few points that rather need alteration. In the figure of the apparatus for determining the heat of vapourisation of water (p. 172), the long tube connecting flask and calorimeter should be provided with a trap for the steam condensed in it. The statement in italics on p. 213, that "various bodies can be brought by friction (i.e. by doing work upon them) into a condition such that they attract and are attracted," is rather misleading. It is, of course, the work done in pulling the rubber and rubbed object apart which should be emphasised. On p. 337, in the figure illustrating the motions of the air in sound waves, the arrows want altering; on pp. 308 and 310, misprints of iron for ion, and ammonium for ammonia, respectively, occur; and on p. 99, in the last column the decimal point has gone astray.

The general get-up of the book is, as one would expect, excellent; and the diagrams, which are mostly by Mrs. Nichols, are very clear and well executed. We may add that the work is almost wholly non-mathematical.

The second of the two books named at the head of this notice, forms the first part of vol. iii. of the "Elementary Practical Physics" series begun in 1885 by Prof. Balfour Stewart and Mr. W. W. Haldane Gee.

With the rapid development of the teaching of physics by laboratory methods, now in progress, has arisen the growing need of a good practical and elementary course on sound. The present work admirably supplies this need, and constitutes a worthy companion to the wellknown volumes already published in the Stewart and Gee series. The author is, moreover, thoroughly familiar with the experimental side of his subject; besides being clearly and concisely written, his work is thus rendered very interesting to read.

Starting with chapters on the nature of sound and wave motion, he discusses in the following order the sonometer, resonance, determination of frequency, rods and plates, tuning forks, pipes, harmonic motion, reflection and refraction of sound, velocity of sound, Döppler's principle, musical scale, analysis of sounds, interference, beats, differential and summational tones, &c. The book ends with a useful list of workers in theoretical and experimental acoustics, with dates of birth and death.

Sound is a subject which lends itself to pretty experiments, and there is no lack of such here. To choose one instance out of many, we may refer to Expt. xc., in which the refraction of air waves in the Sondhauss experiment is imitated in water by making ripples pass over a shallow circular patch in a deeper sheet of water, and thus retarding them as the air-waves are retarded by the CO₂.

More might perhaps be made of the india-rubber cord as an illustration of the properties of stretched strings. By causing a metronome to beat at the same rate as a horizontally stretched cord, it is easy to obtain good quantitative results, while the slowness of the vibrations is a great help to unimaginative students in subsequently understanding the behaviour of stretched wires.

There is a mistake in the diagram on p. 22, where, of the two quantities plotted, one should be replaced by its reciprocal if the result is to be a straight line. On p. 105 there is a 2 omitted from the equation for t.

These are, however, trifling slips in a work for which teachers of physics cannot fail to be grateful to the author.

A. P. C.

AMERICAN GAME BIRDS.

The Gallinaceous Game Birds of North America. By D. G. Elliot. 8vo, pp. xviii + 220, illustrated. (London: Suckling and Co., 1897.)

THE author of this little volume is already so well known to naturalists from his splendid illustrated folio monographs of various groups of mammals and birds, that any work from his pen needs but little in the way of commendation. Among his monographs are two respectively devoted to the grouse and pheasants, and it is the American representatives of these groups that he now describes in a less elaborate form, and with the advantage of all the observations recorded since the publication of his larger works. The present volume is indeed the companion to the author's "North American Shore Birds," which has already been well received; and since a large number of British sportsmen now visit the States, the demand for the work ought to be considerable. Although not so good as some we have seen, the photogravures with which the work is illustrated are for the most part of a fair grade of excellence, and afford every facility for the identification of any specimen with which the naturalist or sportsman may meet-

NO 1471, VOL 57]

The work commences with a general dissertation on game birds and their affinities, written in such a popular, and at the same time such exact, style, that it should prove acceptable to readers of every class. Following this is a description of the habits and characteristics of the various North American representatives of the group, which, inclusive of subspecies, total up to forty-four. A feature of the work is that the main portion of the text devoted to each form is headed solely by the popular name of the particular species or race; the technical name and detailed description coming at the end of each section. In view of the general shuffling of scientific names now taking place in all classes of animals, their relegation to a subordinate position in a popular work is by no means inadvisable; and those readers who so desire, can easily skip the technical portions altogether.

Apart from these technical descriptions, the work is written in a bright and attractive manner, the habits of the different species being noted in considerable detail, and their geographical distribution most carefully worked out. It will be a matter of satisfaction to many to learn that while certain kinds of game birds are dying out from the effects of persecution in the more settled districts, some others are gradually making their way to the wilder districts of the west, where they will meet with better chances of survival.

As many of our readers are aware, with the exception of the grouse and ptarmigan, which have a circumpolar distribution, the game birds of North America are totally distinct from those of the Old World; the pheasants, quails, and partridges of the latter being quite unknown in the former area, where their place is taken by the so-called American partridges. The author might have explained that this difference is doubtless due to the inability of either of these groups to withstand the cold of high northern latitudes which apparently prevailed at the time of a land bridge viá Bering Strait. A parallel instance is afforded by the absence of hyænas and civets from America.

As regards classification, the author departs considerably from the view usually adopted in Europe. Instead of restricting the *Tetraonida* to the grouse and ptarmigan, he includes in that family the Old World *Perdicina* and the American *Odontophorina*, both of which are usually placed in the *Phasianida*. Apart from all other considerations, the circumpolar distribution of the grouse and ptarmigan renders it in the highest degree desirable that they should be kept as the sole representatives of a family differing by its distribution from all the other groups of the order.

A series of coloured papers illustrating the colourterms employed in the text concludes this well-written and useful compendium of North American game birds.

R. L.

OUR BOOK SHELF.

L'Éclairage à l'Acétylène. Par G. Pellissier. Pp. 237. (Paris : Carré et Naud, 1897.)

In England the discovery of calcic carbide, and the ease with which acetylene may be prepared from it, has attracted a large amount of attention; but the literature of the subject is practically restricted to a few papers read before various societies and to the returns of the

Patent Office, whereas in France the subject has been considered of sufficient importance to justify the com-

pilation of several fairly bulky works.

Well illustrated and clearly written, M. Pellissier's volume on "L'Éclairage à l'Acétylène" will be found both useful and interesting to the large number of persons who are now taking a lively interest in the future of this new illuminant.

The work opens with a chapter on the physical and chemical properties of acetylene, and a description of the methods by which it has been made since its discovery by Edmund Davy in 1836, a valuable portion of the chapter being devoted to the dangers attributed to its use under low pressures, a consideration of which leads to the conclusion that under these conditions it is

no more dangerous than coal-gas.

The question of electric furnaces is then discussed, and illustrations of the forms in use and proposed are given; and this is naturally followed by a chapter on the carbide itself and the various data obtainable as to its cost, the results obtained by the Committee of Investigation appointed by the editor of the Progressive Age in America being largely quoted. Such discussions, however, are of but little use, as the cost of the carbide must vary largely with the cost of the power needed to generate the electricity and the facilities for cheap

carriage.

It may be taken as proved that under the conditions at present existing the carbide cannot be made at less than from 7/. to 10/. per ton in France or in England; whilst the selling price is entirely in the hands of the manufacturer, and amounts to from 16/ to 20/, per ton. In treating of the methods by which acetylene can be generated from the carbide and the generators used or suggested for that purpose, the author very conveniently divides the generators into three classes : those in which acetylene is generated by allowing water to drip on carbide, those in which water is brought in contact with carbide by change of level, and finally, those in which the carbide is dropped into water.

There is not the least doubt that the last is by far the best method to employ, as the gas evolved is far purer, and dangerous rise of temperature is avoided.

The question of portable lamps, acetylene in a lique-fied and compressed condition, and its solution in acetone are all dealt with, and no attempt is made to gloss over the dangers incurred directly ordinary pressures are far exceeded. The last three chapters of this little work are devoted to the subject of the conditions existing in the acetylene flame, the forms of burners for its consumption, the relative price of acetylene as an illuminant, and practical directions for its use.

The weakest part of this capital work is that in which the author, with true patriotism, attempts to prove the priority of M. Moissan in discovering the possibility of manufacturing calcic carbide in the electric furnace;

whilst facts show that the Canadian, Willson, had made crystalline calcic carbide in the electric furnace, and had privately sent specimens of it to scientific friends, several months before Moissan first mentioned its accidental

formation.

Atlas der Himmelskunde auf Grundlage der Ergebnisse der coelestischen Photographie. By A. v. Schweiger-Lerchenfeld. (Vienna: A. Hartleben, 1897.)

HERR VON SCHWEIGER-LERCHENFELD set himself no light task when he undertook the work of selecting and publishing the material gathered together in this beautiful atlas. A glance through the first few parts shows that no pains have been spared, either in the selection and reproduction of the photographs or in the text, to make the volume, when completed, of most absorbing interest to any one who wishes to know something outside this little earth of ours.

The aim of the compiler has been to fully illustrate by the best processes available, and to explain by accompanying appropriate text, the wonders of the universe as they have been revealed to us by means of that most valuable aid to science—photography. Herr v. Ler-chenfeld has been fortunate enough, not only in obtain-taining the aid of most of the chief astronomers con-nected with observatories in which photography is employed, but in receiving valuable information from the most skilled instrument-makers of to-day. result is that the atlas is full of beautiful reproductions of many of the finest photographs ever taken of celestial bodies, and the instrumental equipment of modern

observatories is fully included.

It would be impossible to enumerate the many and various subjects which are here dealt with, so it must suffice to give a brief summary of the more prominent features. It may, however, be first remarked that the atlas in a completed state will contain over 50 large plates and about 135 single reproductions, the text being accompanied by no less than 500 additional illustrations. Nearly one third of the latter is devoted to a description of the various astronomical instruments now at work in the chief observatories of the world. This section is of great interest, and will be found useful, as a great amount of information is here brought together. The fine reproductions of the best brought together. productions of the best lunar landscapes will be found invaluable to selenographers, as particular care has been bestowed on these to a selenographers. bestowed on these to render them accurate. Stellar photography is richly and beautifully illustrated, and one really revels among the best illustrations that have yet been brought together in one volume. The plates illus-trate the results of employing lenses varying from one to thirty-six inches, with periods of exposures varying from minutes to several hours.

Cometary, solar, spectroscopic and planetary photo-graphy all fall within the compiler's reach, so that a reader's desire for a good astronomical picture book is

here fully satisfied.

In conclusion we may say that this atlas is well worth obtaining, if only for the illustrations themselves, and it will be found serviceable not only in observatories, but in schools and teaching centres. W. J. S. L.

Knowledge. Vol. xx. January to December 1897. Pp. xii + 304. (London: Knowledge Office.)

THIS well-known popular magazine of science is as good to-day as ever it was. The illustrations, especially the full-page plates, are excellent, and the articles cover a variety of scientific subjects. Special characteristics of the volume are a series of articles on the science of the Queen's Reign, and the prominence given to ornithological notes.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions ex-pressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Physiology and the Royal Institution.

ALL interested in physiology must notice with regret the retirement of the late Fullerian Professor of Physiology from his appointment at the Royal Institution, after expiration of only one year's tenure. His resignation leaves a valuable and only one year's tenure. His resignation leaves a valuable and notable course of lectures incomplete, to the disappointment of many whom they keenly interested. His withdrawal removes in mid-career a teacher of recognised ability from a chair to which he was devoting himself with conspicuous success. Matter for regret this it seems cannot, however, be taken as matter for surprise, if I judge rightly in connecting with his resignation a letter appearing last July in your columns: there the Fullerian Professor pointed out that the practical circum-

stances attaching to the chair almost preclude possibility to treat its subject as a province of experimental science. Physi-ology, inseparable from chemistry and physics, could, one might have imagined, at an Institution so famous for the character of its lectures on those subjects, have been advantageously placed. That, from Prof. Waller's letter, is evidently the reverse of its present case at the Royal Institution. Not a workroom, even of the smallest size, could be obtain for conduction or preparation of his experiments. This must be a revelation to many who know the Institution as connected with the names of men, such as Davy and Faraday, who contributed by research to physiology—who, in other words, considered the chemistry and physics of living material as well as that of dead to lie within the scope of study and inquiry supported by the Institution. It is true that the Fullerian chair of Chemistry has proved fruitful in measure exceeding the productiveness of the Fullerian chair of Physiology. The latter has been declared comparatively sterile. This is regrettable; but its reason does not seem far to seek. Both chairs have been held by men of high distinction; but the former has rested upon a laboratory, while the latter—so far from resting upon a laboratory—"does not possess even one small room in which to keep itself alive." Is this condition in the condition i one small room in which to keep itself alive." Is this condition irremediable? I ask although by circumstance outside the Institution; and ask simply as one interested in the welfare of physiological science, and as a unit of a public who esteem the Institution as a place of instruction for the educated masses of a great city where at present such opportunities as the Institution offers are lamentably few.

Liverpool, December 21, 1807. Cut S. Supportunities.

CH. S. SHERRINGTON. Liverpool, December 31, 1897.

A Mechanical Theory of the Divining Rod.

THE review in NATURE (October 14, 1897, pp. 568, 569) of a publication relating to the "divining rod," recalls to my mind a purely mechanical theory of that rod, which was given

mind a purely mechanism.

me years ago by a friend.

This theory has been repeatedly tested by me and shown to

The process is ex-This theory has been repeatedly tested by me and shown to be correct in the presence of my classes. The process is exceedingly simple. Take any forked twig of a reasonably tough fibre in the clenched hands with the palms upward. The ends of the limbs forming the twig fork should enter the closed fists on the exterior side of each fist, i.e. on the two sides of the clenched hands furthest from each other.

When a twig is grasped in this position it will remain stationary if held loosely, or with only a moderately firm grasp; but the moment the grasp is tightened, the pressure on the branches will force the end of the twig to bend downwards.

The harder the grip the more it must curve.

The curvature of the twig is mechanically caused by the pressure of the hands forcing the limbs to assume a bent and twisted position; or the force that causes the forked limb to turn downwards is furnished by muscles of the hands, and not from any other cause.

The whole secret of the "divining rod" seems to reside in its position in the hands of the operator, and in his voluntarily or involuntarily increasing the closeness of his grasp on the two ends of the branches forming the fork.

If the above conditions are fulfilled the twig will always bend

downwards—water or no water, mineral or no mineral; any one can be an operator, and any material can be used for the instrument, provided the limbs forming the fork are sufficiently tough and flexible.

It can be easily understood how an ignorant operator may de-ceive himself, and be perfectly honest in supposing that some occult force, and not his hands, causes the fork to curve downwards.

M. E. WADSWORTH.

Michigan College of Mines, Houghton, Michigan, December 8, 1897.

Growth of the Tubercle Bacillus at a Low Temperature.

A BROTH culture of the tubercle bacillus a month old was filtered through a sterilised Berkfeld filter; the filtrate was ascertained to be sterile; it was then sown with a trace of B.

ascertained to be sterile; it was then sown with a trace of B. tuberculosis and incubated at a temperature varying slightly between 18"-20" C., but never higher than 20".

The bacillus developed well, but not so rapidly as at the customary temperature, i.e. 37'8" C.; the growth had not the usual flocculent appearance, but was granular.

Microscopically the organism was unchanged.

London, December 20, 1897.

F. J. REID.

NO. 1471, VOL 57]

THE STORY OF GLOUCESTER.

1979 cases of small-pox, 434 deaths; or a mortality of 21'9 recent, during a period of thirteen months.

		Cases.	Deaths.	Percentage mortality.
Previously vaccinated Unvaccinated	***	768	120 314	9.8 40.8
		1979	434	

SUCH, in brief, is the story told by Dr. Sidney Coupland in his Report to the Royal Commission on Vaccination on the outbreak of small-pox in the city of Gloucester in 1895-96.

These figures, in all their baldness, convey a lesson such as no long garnished account can accentuate or emphasise; but in Dr. Coupland's Report a number of most interesting facts and statistics have been brought together, which will form the basis of many future reports and arguments.

One of the most interesting points brought out, apart from the mortality, was the proportion of severe and mild cases in vaccinated and unvaccinated patients. Of those vaccinated in infancy, there suffered from-

	small pox	Per cent. 2'4 of t	he whole of	those	attacked.
Confluent	***	19.1	17	77	
Coherent		9.6	- 11	99	
Discrete	**	28.7	11	9.9	
Mild		40'0	**	- 22	

When we come to those who are said to have been vaccinated, but of which there is no very strong evidence, we find :

Malignant	small-pox	Per cent. 17'5 of the	whole of	those attacke	ed.
Confluent	***	52'5	**	**	
Coherent	***	10'0	33	***	
Discrete	**	12.2	11	**	
Mild	**	7.5	**	**	

Being a marked rise in malignant and a great fall in

Amongst the unvaccinated the proportion of severity of attacks at all ages was:

					1	Per cent.
	small-pox	122	100	***	100	5.0
Confluent	**	***	***	***	444	72'3
Coherent	11	110	-	***	100	10.3
Discrete	**	100	111	+++		8.7
1941 1141						4 0

Showing a very high percentage, indeed, of the severe

These figures are given in full because they afford evidence, quite apart from the mortality, of the enormous influence that vaccination exerts on the course of an attack of small-pox,

The Gloucester epidemic appears to have differed from almost every other recent outbreak of small-pox in the fact that its incidence was especially heavy on infants and young children. Below one year the proportion of deaths was no fewer than 14 per cent. of the whole, whilst at ages from 1 to 10 years it was exceedingly heavy—504 per cent. This, of course, was accompanied by a corresponding diminution in the proportion of deaths at later years; and from 10 to 30 years the proportion had fallen to 12'6 per cent., though from 30 years and upwards (the effect of early vaccination having orn off to some extent) it had again risen to 22'7 When these figures are compared with the earlier outbreak of 1873-75 in Gloucester and with the Dewsbury and Leicester outbreaks, it is found that the proportion of deaths amongst children is exceptionally high. It was noticed, too, that the disease spread amongst these children with enormous rapidity, and that it occurred amongst them in an exceptionally severe type, both as regards the proportion of malignant cases and the height of the mortality.

stances attaching to the chair almost preclude possibility to treat its subject as a province of experimental science. Physiology, inseparable from chemistry and physics, could, one might have imagined, at an Institution so famous for the character of have imagined, at an institution so famous for the character of its lectures on those subjects, have been advantageously placed. That, from Prof. Waller's letter, is evidently the reverse of its present case at the Royal Institution. Not a workroom, even of the smallest size, could he obtain for conduction or preparation of his experiments. This must be a revelation to many who know the Institution as connected with the names of men, such as Davy and Faraday, who contributed by research to physiology—who, in other words, considered the chemistry and physics of living material as well as that of dead to lie within the scope of study and inquiry supported by the Institution. It is true that the Fullerian chair of Chemistry has proved fruitful in measure exceeding the productiveness of the Fullerian chair of Physiology. The latter has been declared comparatively chair of Physiology. The latter has been declared comparatively sterile. This is regrettable; but its reason does not seem far to seek. Both chairs have been held by men of high distinction; but the former has rested upon a laboratory, while the latter—so far from resting upon a laboratory—"does not possess even one small room in which to keep itself alive." Is this condition irremediable? I ask although by circumstance outside the Institution; and ask simply as one interested in the welfare of physiological science, and as a unit of a public who esteem the Institution as a place of instruction for the educated masses of a creat city where at present such opportunities as the of a great city where at present such opportunities as the Institution offers are lamentably few. CH. S. SHERRINGTON. Liverpool, December 31, 1897.

A Mechanical Theory of the Divining Rod.

THE review in NATURE (October 14, 1897, pp. 568, 569) of a publication relating to the "divining rod," recalls to my mind a purely mechanical theory of that rod, which was given me years ago by a friend.

me years ago by a friend.

This theory has been repeatedly tested by me and shown to be correct in the presence of my classes. The process is exceedingly simple. Take any forked twig of a reasonably tough fibre in the clenched hands with the palms upward. The ends of the limbs forming the twig fork should enter the closed fists on the exterior side of each fist, i.e. on the two sides of the clenched hands furthest from each other.

When a twig is grasped in this position it will remain stationary if held loosely, or with only a moderately firm grasp; but the moment the grasp is tightened, the pressure on the branches will force the end of the twig to bend downwards. The harder the grip the more it must curve.

The harder the grip the more it must curve.

The curvature of the twig is mechanically caused by the pressure of the hands forcing the limbs to assume a bent and twisted position; or the force that causes the forked limb to turn downwards is furnished by muscles of the hands, and not from any other cause.

The whole secret of the "divining rod" seems to reside in its position in the hands of the operator, and in his voluntarily or involuntarily increasing the closeness of his grasp on the two ends of the branches forming the fork.

If the above conditions are fulfilled the twig will always bend downwards-water or no water, mineral or no mineral; any one can be an operator, and any material can be used for the instrument, provided the limbs forming the fork are sufficiently tough and flexible.

It can be easily understood how an ignorant operator may de-ceive himself, and be perfectly honest in supposing that some occult force, and not his hands, causes the fork to curve downwards.

M. E. WADSWORTH.

Michigan College of Mines, Houghton, Michigan, December 8, 1897.

Growth of the Tubercle Bacillus at a Low Temperature.

A EROTH culture of the tubercle bacillus a month old was filtered through a sterilised Berkfeld filter; the filtrate was ascertained to be sterile; it was then sown with a trace of B.

ascertained to be sterile; it was then sown with a trace of B. tuberculosis and incubated at a temperature varying slightly between 18"-20" C., but never higher than 20".

The bacillus developed well, but not so rapidly as at the customary temperature, i.e. 37'8" C.; the growth had not the usual flocculent appearance, but was granular.

Microscopically the organism was unchanged.

London, December 20, 1897.

F. J. Reid.

NO. 1471, VOL 57]

THE STORY OF GLOUCESTER.

1979 cases of small-pox, 434 deaths; or a mortality of 21 9 per cent, during a period of thirteen months.

		Cases.	Deaths.	Percentage mortality.
Previously vaccinated Unvaccinated	***	768	120 314	9.8
		1979	434	

SUCH, in brief, is the story told by Dr. Sidney Coup-land in his Report to the Royal Commission on Vaccination on the outbreak of small-pox in the city of Gloucester in 1895-96.

These figures, in all their baldness, convey a lesson such as no long garnished account can accentuate or emphasise; but in Dr. Coupland's Report a number of most interesting facts and statistics have been brought together, which will form the basis of many future reports and arguments.

One of the most interesting points brought out, apart from the mortality, was the proportion of severe and mild cases in vaccinated and unvaccinated patients. Of those vaccinated in infancy, there suffered from-

Malignant	small pox	Per cent. 2'4 of the	whole of	those	attacked.
Confluent	**	19.1	"	**	
Coherent	***	9.6		11	
Discrete	**	28.7	35	22	
Mild		40'0	**	**	

When we come to those who are said to have been vaccinated, but of which there is no very strong evidence,

Malignant	small-pox	Per cent. 17'5 of the	whole	of those	attacked.
Confluent	**	52'5	**	**	
Coherent	**	10.0	**	11	
Discrete	**	12'5	33	11	
Mild		7.5	11	**	

Being a marked rise in malignant and a great fall in mild cases

Amongst the unvaccinated the proportion of severity of attacks at all ages was :

						Per cent
	small-pox	***	***	***	***	5'0
Confluent	**	***	***	***	***	72'3
Coherent	11	100		***	111	10.3
Discrete	**		***	200		8.7
Mild	**	400	411	411		3.0

Showing a very high percentage, indeed, of the severe

type of case.

These figures are given in full because they afford evidence, quite apart from the mortality, of the enormous influence that vaccination exerts on the course of an attack of small-pox,

The Gloucester epidemic appears to have differed from almost every other recent outbreak of small-pox in the fact that its incidence was especially heavy on infants and young children. Below one year the proportion of deaths was no fewer than 14 per cent. of the whole, whilst at ages from 1 to 10 years it was exceedingly heavy—50'4 per cent. This, of course, was accompanied a corresponding diminution in the proportion of deaths at later years; and from 10 to 30 years the proportion had fallen to 12'6 per cent., though from 30 years and upwards (the effect of early vaccination having worn off to some extent) it had again risen to 22.7. When these figures are compared with the earlier outbreak of 1873-75 in Gloucester and with the Dewsbury and Leicester outbreaks, it is found that the proportion of deaths amongst children is exceptionally high. It was noticed, too, that the disease spread amongst these children with enormous rapidity, and that it occurred amongst them in an exceptionally severe type, both as regards the proportion of malignant cases and the height of the mortality.

It is certainly not going beyond the facts of the case to state that the above-mentioned characteristics of this epidemic must in great measure be attributed to the large number of unvaccinated children who were in attendance at school, and who were thus not only extremely susceptible to the attacks of small-pox, but were in a position to disseminate the disease, though in a milder form, amongst those who had been vaccinated. That is, the neglect to have the children vaccinated left them in a condition in which they would readily take small-pox just at the time when their surroundings were of such a nature that everything was favourable to their taking the disease from one another, and in turn passing it on to those with whom they daily came in contact; with the result, as Dr. Coupland points out, that one in twenty of the whole population of Gloucester were struck down with small-pox. Indeed, he goes so far as to say that, "viewing the subject with as impartial a mind as I can, the conviction is forced upon me that Gloucester would not have suffered as it did had its child population been vaccinated." It was this want of vaccination, and the impossibility of maintaining effective isolation of the attacked, that allowed of the abnormally rapid spread of the disease after it has once obtained a firm hold in

If there was one more important feature than the rapidity of the outbreak, it was that the epidemic faded away—for that is the only term that can be applied—so abruptly. Numerous explanations have been put forward to account for this, but the only factor that appears to have had any real determining influence in bringing about this abrupt cessation of the disease, was the universal adoption of re-vaccination after small-pox had

already obtained its firm foothold in the city

That Dr. Coupland is not going beyond his brief when he holds that this high child mortality was due to the unvaccinated condition of many of the children, is evident from certain statistics which he gives concerning 3546 cases. Of these only 85, or 2'5 per cent., were in vaccinated children below the age of ten years; and amongst these 85 cases there was only a single death.

These were all cases recorded in papers and reports which had come directly under Dr. Coupland's personal observation during his investigations into the outbreaks of small-pox in Dewsbury, Manchester, Oldham, Leeds, Halifax, Bradford and Leicester. In the Dewsbury, Leicester, and Gloucester outbreaks the number of children that had not been vaccinated was very high indeed. Now, taking Dewsbury, where the proportion was lowest, the number of deaths to attacks was as one to nine; in Leicester, as one to seventeen; and in Gloucester-where the proportion of unvaccinated was highest of all-the proportion of deaths to attacks was as one to four and a half, although the attacks in Gloucester were nearly 2000 (1979), in Leicester 357, and in Dewsbury 1029.

Comparing these three outbreaks, and bearing in mind the proportion of unvaccinated as above, we find that the proportion of the whole number attacked under ten years was in Dewsbury 21'7 per cent., in Leicester 30'5 per cent., and in Gloucester 35'6 per cent.; the fatality of this class in the three cases being Dewsbury 25'4 per cent., Leicester 13'7 per cent., and Gloucester 30'6 per

As affording evidence of the disproportionate incidence of the disease upon young children, to which reference has already been made, it may be stated that 706 of the whole number attacked, or 35'7 per cent., were under ten years of age; whilst of the 434 fatal cases 280, or 64'5 per cent., occurred in this age period. Of these 706 only 26 had been vaccinated before the epidemic broke out, whilst of the remainder, 80 were undergoing vaccination when attacked with small-pox, the operation having been performed

within fourteen days of the onset of the disease. thus be seen that only 4 per cent, of those attacked at this age period had been vaccinated, although a much larger proportion of vaccinated had been exposed to infection. It is found that of those exposed to infection, in households invaded by small-pox, of the vaccinated class 3386, and of the unvaccinated class 1475, there were attacked with small-pox-of the vaccinated class 1028, or 30'3 per cent.; whilst of the unvaccinated class 689, or 46'6 per cent., became infected.

It has already been indicated that amongst the unvaccinated at Gloucester the type of the disease was much more severe than in the vaccinated class. For purposes of comparison it may be shown that in Gloucester, where, as we have already seen, the number of unvaccinated children was very high—much higher than in Dewsbury or Leicester—the type of the disease over all was much more severe than at either Dewsbury or Leicester, and still more so than in many of the other recent outbreaks. Taking the severe type as including malignant and confluent cases, and the milder type as including coherent, discrete and mild cases, we find that in Dewsbury 26'5 per cent. of all attacks were of a more severe type, in Leicester 26'8 per cent., and in Gloucester 43'1 per cent.; whilst the mild type accounted for 27'5 per cent in Dewsbury, 35'5 in Leicester, and only 25'5 in Gloucester.

If we now take out Dr. Coupland's figures as regards attacks of small-pox affecting vaccinated and unvaccin-ated patients, we find that in Dewsbury 64'3 per cent. of the whole number, with a mortality of 2.7 per cent., were vaccinated; in Leicester 55.8 per cent., with a mortality of 1 per cent.; in Gloucester 61'2 per cent., with a mortality of 9'8 per cent. These figures compare very favourably with the cases of deaths in the unvaccinated class. There were 35'7 per cent. of the whole cases that had not been vaccinated in the Dewsbury Union, and amongst these there was a fatality of 25 per cent.; in Leicester 44'3 per cent. of the cases were unvaccinated, with a death-rate of 12 per cent; whilst in Gloucester 38'8 per cent. of the cases had not been vaccinated, and amongst these there was a death-rate of 40'8 per cent. It will thus be seen that the lowest death-rate in the unvaccinated class (12 per cent. at Leicester) was considerably higher than the highest death-rate in the vaccinated class (Gloucester, 9'8 per cent). It must be borne in mind, of course, that even in the worst vaccinated districts the proportion of unvaccinated to vaccinated persons is very much lower than the proportion of vaccinated small-pox cases to non-vaccinated cases, so that we not only have an enormously greater mortality amongst those attacked, but the percentage of attacks is also considerably higher.

Any one who goes carefully and with unbiassed mind into the statistics collected by Dr. Coupland must inevitably come to the conclusion that, although the disease was spread in schools owing to the simultaneous infection of school hall the feet of the conclusion of the collection o infection of school children from cases unrecognised by, or unknown to, the authorities until the area of infection had been considerably widened; although after the sudden outbreak of small-pox it became, first, a difficult -and eventually an impossible-task to isolate the patients attacked, and to treat even a small proportion in hospital; and although insanitary surroundings and a certain amount of overcrowding may have played some part in spreading the disease, we must ultimately fall back upon the neglect of a large number of parents to see to the vaccination of their children for an adequate ex-planation of the extent of the epidemic and the rapidity of its extension. The utter futility of all ordinary measures recommended for the limitation of the spread of small-pox, apart from vaccination, is only too clearly

brought out.

Hospital accommodation and isolation are usually insisted upon, by those who do not believe in vaccination, as being sufficient to prevent any outbreak of small-pox assuming serious epidemic proportions. Now, what did Dr. Coupland find at Gloucester? That a few slight or mild cases in 1895 were followed by a severe epidemic extending from February to April 1896, in which not only was there an increase in the numbers attacked, but there w s also an undue proportion of cases of a severe type accompanied by a high rate of mortality. As showing how in a community with a large proportion of unvaccinated children the disease may spread rapidly, we have the fact that there was an "almost simultaneous invasion of many homes through children who were infected whilst attending certain of the public elementary As a result of this sudden outbreak it became impossible to provide hospital accommodation, and, ultimately, all attempts at isolation, of even a modified form, had to be abandoned as utterly impracticable. As a result of the crowding of the hospitals, and of the removal of the most severe cases to them, the hospital mortality was comparatively high, and the friends of the patients would soon not permit of the removal of these patients to hospitals; this, of course, resulting in an utter break-down of the system of isolation.

Dr. Coupland sums up in the following exceedingly striking passages. He says: "There is no escape from the conclusion that the heightened mortality

striking passages. He says: "There is no et the conclusion that the heightened mortality and the severity of the epidemic were greatly due to so large a proportion of unvaccinated children being attacked; for (a) the case mortality under ten years of age was 39'6 per cent., whilst amongst the vaccinated it was only 3'9 per cent., leaving a mortality amongst the unvaccinated of 41 per cent. . . . (b) The disparity is quite as marked when the type of the attack is contrasted, for of 507 cases of severe attacks [malignant, confluent, indeterminate] there actually occur only three amongst the vaccinated." From these and other considerations it follows that in the Gloucester epidemic "the severity of the disease, its high mortality, and its propagation were influenced and promoted by the unduly large proportion of unvaccinated children who were exposed to infection and who were infected."

To whatever figures or tables we turn, the effect of them is always the same. They tell the same story - vaccination

They tell the same story — vaccination protects; unvaccinated children are left susceptible to the attacks of the disease, and they not only take the disease more readily, but they take it in a more dangerous and fatal form, and, in most cases at any rate, are a source of greater danger to those with whom they may come, directly or indirectly, in contact. Isolation, good hospital accommodation, and favourable sanitary conditions are useful in the treatment of small-pox in a vaccinated community; but once let small-pox find its way into an unvaccinated community, the inefficiency of these "accessory" measures, when used alone, are demonstrated with the most absolute clearness; and if Gloucester has one lesson more than another to teach, it is that Jenner, by his advocacy of vaccination, did more to limit the spread of small-pox than have all the sanitarians of the century. Small-pox undoubtedly does not come under the class of diseases that can be held in check by ordinary sanitary measures; these, no doubt, are contributory, but without vaccination they can never be depended upon as being fully effective.

CANADIAN GEOGRAPHY.

THE reissue of "Stanford's Compendium" now includes Australia and the Pacific Islands in two volumes by separate authors, Asia in two volumes and

Africa in two volumes by the same author, and vol. i. of North America.¹ The new issue is in many ways vastly superior to the old; the cramping influence of the foreign original has disappeared, the illustrations have greatly improved, and, linked by the general title, each of the volumes forms a separate and original work of distinct value. So good, indeed, has "Stanford's Compendium" become, that it may now be allowable to subject one of its volumes to criticism of a more searching kind than would have been justified formerly. Then any attempt to form a library of solid geographical works in the English language was worthy of commendation; now it is possible to set up a higher standard, and it is reasonable to look for those excellencies of grasp and arrangement which one naturally expects in, let us say, a German work of similar scope.

a German work of similar scope.

The morphological unity of the continent is one of the fundamental facts of modern geography. The continent is the natural unit which must be considered in its entirety, with parts subordinated to the whole, and with functional activities of a distinctive kind. It is capable of subdivision, either naturally into regions or artificially into countries, and of aggregation with other continents to form the whole land-surface. The dominant lines of the continent—its axial mountain systems—determine



Fig. z.—The Bore, Petitcodiak River, Moncton, New Brunswick, August 8, 1892 Height, 5 feet 4 inches.

the primitive slopes of the land, and the development of the river systems, subject to the continuous workings of secular uplift or depression and the accumulation of sediment. The resulting configuration modifies the climate as dependent on latitude, and leads to the formation of areas of moderate and of extreme temperature, of high rainfall and of aridity. Climate reacts on vegetation, and vegetation and climate together influence the distribution of animals; and all these varieties of feature and function are framed in the continent. Thus up to the appearance of man a geographical description must be based on the continent as a unit if it is to be really simple and comprehensible. With the advent of man complications arise, but the guiding influence of the main features of continental relief and surface-covering is still to be traced. The deep inlets tempt the adventurous stranger to penetrate the continent, the easy waterways lure him into the interior, where products of forest and plain supply an adequate inducement to remain or to return. In time groups of people settle down in habitats more or less distinctly defined by natural features—different tribes frequent the river, the lake, the forest, the plain, the mountain valley, the indented ocean shore.

1 "Stanford's Compendium of Geography and Travel" (new issue). North America. By S. E. Dawson. Vol. i. Canada and Newfoundland. Maps and illustrations. (London: Edward Stanford, 1897.)

Consequent pressure of population or change in the availability of resources sets up migratory movements along natural lines dictated by land-form, water-flow, and soil-covering; conquest and delimitation ensue, and the straight boundary lines of the map, which come last, are, after all, natural relations to geographical facts associated with the whole body of the earth itself and its rotation. The grouping of dwelling-places around certain centres leading to the origin of towns may also, as a rule, be explained by geographical considerations.

Of the six continents which are usually recognised two stand out from the rest, distinguished by the simplicity of their great features and the clearness of the interdepen-dence of the various relationships. These are North and South America, either of which forms an ideal subject

for a geographical monograph.

We have mentioned the superiority of the new issue of "Stanford's Compendium" over the old; but there is one point of distinct inferiority. The old issue retained some traces of the original design, giving it a certain unity; the new is not so much a compendium as a series of

ing of the provinces of the Dominion. Unexpected comparisons and contrasts of the aptest kind with the course of history in other lands and other times con-tinually delight the reader's mind and illuminate the story. But when from history the author enters geo-graphy the wheels seem to drop from his chariot, and he drives heavily. One could imagine that he wrote with effort, perhaps even with distaste. His comparisons lose point, and are sometimes inaccurate. Canada is not, as stated on p. 29, "above all others the land of abundance of waters." Finland or Sweden would, we believe correspond better-certainly as well-to the definition, If any great river is to be celebrated for the length of its tributaries it should surely be the Amazon, the Congo, the Mississippi, rather than the St. Lawrence (p. 34). As to climate, we dispute the suggestion that tobacco cannot be grown in England (p. 47), and we must remember the success of Lord Bute's wine-making from grapes grown in the open air at Cardiff. The treatment of climate is otherwise not fully satisfactory. While no attempt is made to deny that the Canadian winter is



Fig. 2.—The Prairie, Manitoba.

separate works. Dr. S. E. Dawson's "North America, Vol. i," is not, strictly speaking, the first part of a geographical description of North America. It is the description of the Dominion of Canada and Newfoundland, written not from the standpoint of a geographer, but from that of an imperialist British subject and patriotic Canadian. The author infuses warm colour into his narrative, which, gratifying as it must be to the senti-ments of the people of the British Empire, does not enhance the value of the work as a scientific treatise. Dr. S. E. Dawson is obviously not himself a geographer -his strength lies in his treatment of history. expressed our view as to what a geographical treatise on a continent should be, we need only add that "North America, Vol. i.," is written without regard to the guiding principles of geographical science.

We have seldom, if ever, read more satisfying or more

graceful renderings of history than the chapters of this book dealing with the discovery, exploration and occupy-

cold, the author seems more concerned to combat what he believes to be the average Englishman's exaggerated ideas on the subject than to describe the actual conditions. With regard to the French of Quebec (p. 295), which some people seem to have called a patois, the author observes: "English is not spoken in the same way over all the United Kingdom, but no one speaks of a Dublin or an Aberdeen palois, or for that matter of a London palois." We can assure him that some people London patois." do speak of the dialect (a word as displeasing as patois) of these parts, and many authors, with an eye to popularity, delight to exaggerate rather than minimise such differences. The tunnel at Sarnia, 6025 feet long (p. 391), cannot be termed "one of the greatest in the world," unless the standard of greatness is put very low, and the number of great tunnels made very large.

These are instances which do not seriously detract from the value of the book to the general reader; but Canada is so great, and its natural resources are so vast,

that comparisons of the kind would be quite unnecessary even if they were sound. A somewhat serious defect is the occasional imperfect revision, giving rise in the non-historical sections to repetition and to vague or even in-accurate phrases, such as the description of a boundary as a "perpendicular line" (p. 453) when a meridian is meant. We note a few omissions: nothing appears to be said of the extreme danger of the Magdalen Islands, in the Gulf of St. Lawrence, to shipping: of the devastation of Gulf of St. Lawrence, to shipping; of the devastation of the forests in many parts of the country by fire; or of the high "benches" or river-terraces of British Columbia, which to a geographer form, perhaps, the most striking

feature of that wonderful province.

We must, however, make it perfectly distinct that so far as the matter in this book is concerned the omissions are trifling, and the selection of facts most judicious. E. Dawson handles themes regarding which a Canadian might justly be excused if he were to indulge in a little exaggeration; and if the writer of this notice had never seen Canada, he would have supposed that there was some exaggeration here. But a journey from Quebec to Nanaimo, with visits to various points in the Kootenay and on the shores of the Great Lakes, has convinced the critic that in every estimate of natural wealth, and in every appreciation of the law-abiding enterprise of the Canadian people, the author has under-stated rather than overstated the facts. If a passing tourist of no very imperial-istic tendencies felt the pride of a citizen of the British Empire rising within him with each mile of the magnificent railway which is the benefactor of every province in the Dominion, he cannot but be surprised at the moderation of tone adopted by an heir of that fair heritage in writing an account of its actual and potential greatness.

Yet the book is not planned in harmony with the principles of geography, and that, after all, is the aspect to which attention must be called in the pages of a scientific journal. The illustrations are good, and characteristic, as the specimens here reproduced show, and the maps very fair, although not so numerous or so well selected as we could wish. There are practically no physical maps, for the sketch of the Archæan nucleus on p. 24 is a mere diagram, and the "Meteorological Map" shows only mean annual isotherms, which give no clue to the climate, and rainfall areas, which are difficult to grasp as a whole. There is certainly no lack of carto-graphic material in Ottawa, as the beautiful physical maps in the "Handbook of Canada," issued in connec-tion with the recent meeting of the British Association, HUGH ROBERT MILL.

THOMAS JEFFERY PARKER, F.R.S.

THOMAS JEFFERY PARKER, whose death on November 7 last we chronicled on December 23, was the eldest son of the late William Kitchen Parker, F.R.S., the world-renowned comparative osteologist. He was born at 124 Tachbrook Street, London, S.W., on October 17, 1850, and received his elementary education at Clarendon House School in the Kennington Road, under Pinches. In 1868 he entered the Royal School of Mines as a student, taking the Associateship in Geology in 1871, together with the Edward Forbes medal and prize of books for distinction in biology. Thus qualified, he became for a short period science Thus qualified, he became for a short period science master at Bramham College, Yorkshire; but in 1872, on a special invitation by Huxley, he returned to London to fill the office of demonstrator under him at South Kensington, and that he held until his appointment in 1880 to the chair of Biology in the University of Otago, Dunedin, N.Z. During his period of demonstratorship he also held the office of Lecturer in Biology in Bedford College, London, and officiated as examiner in Zoology and Botany to the University of Aberdeen and as an

assistant examiner in Physiology to the Science and Art Department. Parker was of a distinctly artistic temperament, aesthetic, musical, well-read, and possessed of marked literary ability, which asserted itself to a conspicuous degree in his little book upon his father, published in 1893, an altogether ideal filial biography—a good work by a good man. He early cultivated the critical faculty, as a direct result of the study of Matthew Arnold, whose writings he knew by heart; and with the great power of application and strength of character which he displayed during active work, there can be little doubt that he would have succeeded in any of the higher walks of life. He would have made a mark in literature, and as a caricaturist draughtsman would have achieved renown; and there is little doubt that his choice of biology for his life's calling was largely due to the charm and influence of his father's career and to his early association with Huxley, who knew him from childhood and became the object of his veneration. Both as a teacher and investigator Parker was untiring and thoroughly trustworthy. Though easily roused to enthusiasm he rarely became excited, and his cool deliberation came welcomely to the aid of the troubled student, to whom if in earnest his attention knew no bounds. His published papers exceed forty in number, and though mostly zoological they embody important work and observations in botany. Parker was the first appointed of the little band of biological professors sent out from home in the '80's, who now fill the Australian and Novozelandian chairs, and his second paper published in New Zealand dealt with a new species of Holothurian (Chirodota Dunediensis), as it were in anticipation of the later determination by himself and his contemporaries at the Antipodes to devote their attention to the indigenous fauna, rather than to refinements in histology and the like which could be better studied at home. The work already achieved by this body of investigators, with Parker at their head, is now monumental, and none of it more so than Parker's monographs "On the Structure and Development of Apteryx" and "On the Cranial Osteology, Classification, and Phylogeny of the Dinornithidæ," in themselves sufficient to have established his reputation. His lesser writings, although they deal with a wide range of subjects, show interesting signs of continuity of ideas, as for example in the association of his early observations on the stridulating organ of *Palinurus*, made in London in 1878, with those upon the structure of the head in certain species of the genus (one of the most charming of his shorter papers), made on the voyage to New Zealand, and upon the myology of *P. Edwardsii*, which, in co-operation with his pupil Miss Josephine Gordon Rich (now Mrs. W. A. Haswell), he in 1893 contributed to the Macleay Memorial volume. And the same may be said of his work on the blood-vascular system of the Plagiostomi. Soon after his arrival at the Antipodes, Parker instituted a series of "Studies in Biology for New Zealand Students," and chiefly with the aid of his pupils, these have been continued, either in their original form or in that of theses for the higher degrees of the University of New Zealand, as contributions to the publications of the Museum and Geological Survey Department of that colony. Botanical as well as zoological topics were thus taken in hand, the series, like that of a companion set of "Notes from the Otago University Museum," which he from time to time contributed to the pages of NATURE, containing important observations of general biological interest. Of Parker's books, it is sufficient to recall his "Lessons in Elementary Biology," now in its third edition and recently translated into German, undoubtedly the most important and trustworthy work for the elementary student which has appeared since Huxley and Martin's epoch-marking "Practical Instruction in Elementary Biology," published in 1875. Parker's book, in sharp contrast to his previous "Zootomy," which is

a severely didactic and somewhat uneven laboratory treatise, is a book for the study, beautifully balanced and It has a charm peculiarly its own, and to ponder over it is to appreciate to the full the honest, loving, sympathetic temperament of its author, and the conviction which he was prone to express that in the progress of scientific education there lies the panacea for most human ills, mental and corporeal. Great though the merits of these books, Parker five years ago essayed a more formidable task, in the resolve to prepare in conjunction with his friend Prof. W. A. Haswell, F.R.S., of the Sydney University, a general text-book of zoology. This work of 1400 pages, in two volumes, as recently announced in NATURE, will be noteworthy for the large number and excellence of its original illustrations; and from a passing knowledge of its contents, I am of opinion that it will do much towards relieving English text-book writers of the opprobrium begotten of a too frequent content with mere translation and continental methods. And when we consider that Parker was not spared to see this great work in cir-culation, it is heartrending to relate that, though ailing and weak, he had since arranged with his co-author and publishers for the production of a shorter text-book to be based upon it, and had prepared the preliminary pages of yet another elementary treatise to have been entitled "Biology for Beginners," while as a next subject of research he had begun to work out, in conjunction with Mr. J. P. Hill, Demonstrator of Biology in the Sydney University, a series of Emeu chicks, including those collected by Prof. R. Semon during his expedition into the Australian Bush. The thoroughness of Parker's best work was its most distinctive character, The thoroughness and when tempted to generalise he always did so with extreme caution and consideration for others, fairly presenting all sides of an argument. As he remarked of himself with characteristic modesty, in a letter written in 1894 commenting upon his chances of securing a chair of Zoology at home then vacant, "I don't profess to be brilliant, but I am vain enough to think that I have the wift of execution and conductation." the gift of exposition and can do a straightforward research so long as it does not involve anything about the inheritance of acquired characters." Far-reaching generalisation and random rhetoric had no charm for him, nor was he tempted into over-ambition and haste so oft productive of slip-shod and ill-conditioned results. As a writer and lecturer he was always logical, cautious, temperate, content could he but spread, extend, and help systematise our knowledge of observed facts, convinced that if this be done properly their ultimate teachings become self-evident. His work is of that order which marks the growth of real knowledge and the consequent bettering of mankind; and the thought that there has thus early passed from the ranks one so good and earnest, so well fitted by nature for the responsible task of training

the young and susceptible, fills us with sorrow.

Parker matriculated at the London University in June 1868, and passed the Intermediate Science Examination in 1877 and the final B.Sc. in 1878, while the D.Sc. was but a matter of formal application in absentia in 1892. He was in 1888 elected a Fellow of the Royal Society, and in 1880 an Associate of the Linnean Society of London, resigning the Associateship for the Fellowship of the latter but a short time before his death. He was an active member of the New Zealand Institute, to which he communicated several papers, and he became in turn Secretary and President of its Otago branch. Before these bodies and elsewhere in New Zealand he delivered addresses which will linger in the memory of his hearers and those who have read them. There may be especially mentioned an address delivered before the Otago University Debating Society on September 17, 1892, upon "the weak point in our university system," in reality an eloquent appeal for post-graduate study. Proceeding

to classify an average assemblage of students into "the able, the mediocre, and the stupid," he remarked that "the only duty of members of the university towards the third class appeared to be that of imposing a sufficiently severe entrance examination to keep them from wasting their own time and their parents' money, in the vain attempt to train to purely intellectual pursuits an organism which nature intended to make its way by virtue of muscle and mother wit." A more ingenious defence of an examination system could hardly be imagined. It is preceded by the shrewd remark that "the republic of science and letters is an aristocratic, not a democratic republic." Parker was evidently of opinion that what the world terms breeding and feeding count for a great deal in the end, and the whole context of his address is apposite to the share he took in the work of organisation of the University of New Zealand, which led at least to a humanising of its syllabus in biology. for any one desirous of a knowledge of Parker at his best in a popular function, a speech delivered on the occasion of the prize-giving at the Otago Boys High School on December 13, 1894, may be recommended, as a perfect example of the kind of thing appropriate to such an occasion, so oft provocative of the mere "airy nothing." Parker was, further, a Corresponding Member of the Zoological Society of London and of the Linnean Society New South Wales, a Member of the Imperial Society of Naturalists of Moscow, and we believe he was President-elect of the Biological Section of the Australasian Association for the Advancement of Science for the present year. He was also a Fellow of the Royal Microscopical Society; and, ever ready to help in a good work, he became one of the original assistant editors who, under the generous leadership of Frank Crisp, in 1879 elevated the Society's Journal to its present important status.

The key-note of Parker's life-work is his connection with Huxley, and in testimony to his devotion to his great chief ("the General," as he loved to call him) there remains the delightful dedication of his "Lessons in Elementary Biology." Parker entered Huxley's service as Demonstrator in Biology at South Kensington in 1872, immediately after the conclusion of the memorable course immediately after the conclusion of the memorable course of instruction there given, now historical as having marked the introduction of rational methods into the teaching of natural science. In the conduct of that course Huxley, as is well known, secured the aid of leading British biologists of the time. It was, however, reserved for Parker to fill the more important rôle of lieutenant in the development of the Huxleian system and to assist in carrying it beyond the experimental stage. At the time of his appointment laboratory appliances were lacking, and a practical teaching museum based on the type-system was a desideratum. Under instructions to supply these needs, Parker in due course entered upon the task with a will, his only materials a free-hand and an early set of proofs of Huxley and Martin's "Elementary Biology" (with the final revision of which he was largely entrusted, since the junior author was leaving for Baltimore), and in carrying the task to a successful issue he founded the first practical biological museum or teaching-collection on the now generally adopted type-system, the prototype of all those subsequently established at home and abroad, in some cases even to the measurements of the furniture. The Huxleian method of laboratory instruction in the course of its development at headquarters has witnessed no change on the zoological side at all comparable to the inversion in the order of the work originally prescribed-i.e. the substitution of the anatomy of a vertebrate for the microscopic examination of a unicellular organism as the opening study, and this we owe entirely to Parker. As one privileged at the time to play a minor part, I well recall the determination in Parker's mind that the change

1.85

was desirable, and in Huxley's that it was not. Again and again did Parker appeal in vain, until at last, on the morning of October 2, 1878, he triumphed. Dyer and Vines were Parker's more immediate associates in the early work of development of the Huxleian laboratorysystem; and among the persons who studied under him as system; and among the persons who studied under him as it progressed now occupying prominent positions in the biological world, may be named F. E. Beddard, A. G. Bourne, G. C. Crick, J. J. Fletcher, Patrick Geddes, Angelo Heilprin, C. H. Hurst, C. Lloyd-Morgan, Daniel Morris, R. D. Oldham, H. F. Osborn, W. B. Scott, T. W. Shore, Oldfield Thomas, and H. Marshall Ward. Parker's first paper ("On the Stomach of the Fresh-Water Crayfish "), and his first book ("Zostomy.") were alibe a Crayfish") and his first book ("Zootomy") were alike a direct outcome of the undertaking, and the scheme for "Lessons in Elementary Biology," formulated while still he was in London, was similarly begotten of his experience during its development, which oft formed the topic of conversation as he and I in the late '70's sat working side by side. Nor must it be forgotten that Parker rendered Huxley commendable aid in the production of his wonderful book on "The Crayfish." I venture to think that in recognition of all this Parker has established a claim to distinction in connection with the educational work of his great master second to that of none other; and when it is remembered that the unparalleled activity among botanists and zoologists during the last two decades has rendered it impossible for one man to efficiently teach the two subjects from a professorial chair, in the manner originally laid down under the Hux-leian dispensation, Parker's name will occupy a unique position in the history of this, as that of the only man prominently associated with its inception who taught

both subjects to the end of his career.

To the task of founding the Huxleian teachingcollection, moreover, is due Parker's interest in the work
of the preparator, which led to his being the first person to successfully prepare and mount in a condition fit for prolonged display cartilaginous skeletons in a dry state. Under Parker's curatorship the Otago University Museum advanced by leaps and bounds, and while to his reputation as a teacher and investigator he thus added distinction as a conservator and administrator in zoology, he attained also a reputation in botany both as a manipulator and discoverer. He came upon the botanical platform at the time when Alfred Bennett and Dyer were at work upon the English translation of the third edition of Sachs's monumental "Lehrbuch der Botanik," and when the methods of that great man, already introduced into Britain by McNab, were by these botanists and their associates becoming established. For Parker, however, carrot-drill had little charm, while to his testhetic nature glycerine and gold-size were messy and distasteful. He was at the time repeating the work of Nicholas Kleinenberg on Hydra, busy with osmic acid and cocoa-butter, and the well-known results of his labours led him to apply the method to the treatment of plant tissues, with the result that through a short paper communicated to the Royal Microscopical Society in March 1879, he ranks as one of the first to apply the modern dry methods of micro-chemical technique to vegetable histo-As a discoverer in botany he will remain memorable for having first directed attention to the existence of sieve-tubes in the marine algæ (Macrocystis) in a short communication to the Transactions of the New Zealand Institute for 1881.

Truly is his a great record, worthy his noble character and his association with a Huxley! but while the world will cherish his memory for that which he achieved, those who knew him feel that by his death something more than a link with the historic past has gone, and that they have lost a true friend, a noble man, an example. In the autumn of 1892 Parker came home on a visit. Soon after his return his wife died, and this event probably helped

to bring on an illness which showed itself formidably about two years ago. Recurrent attacks of influenza, the last of which rendered him prostrate for three months, told severely upon his health and strength; but despite all, following the example of his beloved father, he worked on whenever he could, patient under suffering and affliction the like of which has killed many a man, beautiful in his unselfishness and lack of ostentation, loving, and sympathetic. On October 26 last, he had recovered sufficiently to start on a journey of some forty miles to visit a friend at Shag Valley, in company with his eldest sister, who for several years had lovingly shared his anxieties and administered to the needs of his three boys. While half-way onwards he became so prostrate that a halt was necessary, his friends deeming it advisable to take him towards home again. He reached only as far as Warrington, where he became weaker and comatose, and passed peaceable away on Sunday, November 7, at one a.m. He was buried there two days later, in the presence of sorrowing friends, a few among the many by whom he was universally beloved.

G. B. Howes.

NOTES.

FEW men of science appear in the list of New Year honours. The honour of Knighthood has been conferred upon Prof. George Brown, C.B., Consulting Veterinary Surgeon to the Board of Agriculture; Mr. Ernest Clarke, Secretary to the Royal Agricultural Society; Dr. John Struthers, late President of the Royal College of Surgeons of Edinburgh; and Dr. John-Hatty Tuke, President of the Royal College of Physicians of Edinburgh. Prof. Gardiner, Dean of the Faculty of Medicine, Glasgow University, has been promoted to be Knight Commander of the Order of the Bath (K.C.B.), and Prof. D'Arcy Thompson, British delegate at the recent Conference on the Bering Sea Fisheries, has been appointed a Companion of the same Order (C.B.). Mr. James Dredge, one of the editors of Engineering, has been made a Companion of the Order of St. Michael and St. George (C.M.G.), for services in connection with the Brussels Exhibition; and Major R. H. Brown, of the Egyptian Irrigation Department, has been given the same

MR. ALEXANDER AGASSIZ, as we learn from his recently issued report on the Museum of Comparative Zoology at Harvard College, U.S.A., for the past year, has planned to pass the greater part of the present winter in studying the coral reefs of the Fiji Islands. He will be accompanied by Dr. Woodworth and Dr. Mayer as assistants. The steamer Yaralla has been chartered in Sydney for the expedition. In addition to the usual apparatus, for photographic purposes, for sounding and dredging, and for pelagic work, Prof. Agassiz takes with him a complete diamond-drill outfit, and hopes to find a suitable locality for boring on the rim of one of the atolls of the Fijis. The boring machinery will be in charge of an expert sent by the Sullivan Machine Company, from whom the machinery is obtained. The Directors of the Bache Fund have made a large grant towards the expenses of this boring experiment.

THE Sydney meeting of the Australasian Association for the Advancement of Science opens to day, under the presidency of Prof. A. Liversidge, F.R.S. A large number of papers are down for reading before the various sections, and we hope to give some account of them later. The evening lectures are by Prof. W. Baldwin Spencer, on "The Centre of Australia"; Sir James Hector, K.C.M.G., F.R.S., on "Antarctica and the Islands of the Far South"; and Prof. R. Threlfall and Mr. J. A. Pollock, on "Electric Signalling without Wires."

We regret to announce the death of Major-General Edward Mounier Boxer, F.R.S., for many years Superintendent of the Royal Laboratory at Woolwich. General Boxer was elected a Fellow of the Royal Society so long ago as 1858.

The deaths are announced of Mr. Arthur Kammermann, astronomer at the Geneva Observatory; Dr. Eugen Zintgraff, African explorer; and Dr. Max Graf von Zeppelin, zoologist at Stuttgart.

A LIFE of Pasteur, written by Prof. and Mrs. Percy Frankland, will very shortly be published by Messrs. Cassell and Co. The volume will form the latest addition to the Century Science Series.

PRINCE ROLAND BONAPARTE has been elected a Correspondant of the Lisbon Academy of Sciences and of the Bologna Academy of Sciences.

THE new number of the invaluable Minerva Jahrbuch der gelehrten Well has for the frontispiece a fine reproduction of a portrait of Dr. Nansen.

THE Paris correspondent of the *Times* states that the statue of Jules Simon, to be executed by M. Fremiet, will probably be erected in the Place de la Madeleine, near which he lived, and will supersede the fountain now standing there.

WE learn from Science that a resolution has been introduced in the House of Representatives appropriating 20,000 dollars for the representation of the United States at the International Fisheries Exposition to be held at Bergen, Norway, from May to September of next year.

THE British Institute of Public Health will be styled in future the Royal Institute of Public Health, and Her Majesty the Queen has accepted the office of patron. The Council of the Institute has conferred the Harben Gold Medal for 1898 upon Lord Playfair, and has appointed Prof. W. R. Smith the Harben Lecturer for the year 1899.

Invitations are being sent out for the forthcoming International Congress of Zoology. A Committee of Reception has been formed in Cambridge, where the Congress will meet on August 23, 1898. An International Congress of Physiologists will be held at the same time in Cambridge. It is proposed at a later date to distribute further information on the more important subjects which will be brought forward for the consideration of the Congress.

THE personal estate of the late Mr. Alfred Nobel has been valued at 434,093%, of which amount 216,901% is in England. After a number of personal bequests have been made, Mr. Nobel's will stipulates that the capital of the whole of the remaining realisable property is to form a fund, the interest from which is to be annually divided in five prizes to those who during the preceding year have done most for the benefit of humanity. The interest is to be divided into five equal parts, which are to be awarded in prizes as follows: (1) To him who within the department of natural philosophy has made the most important discovery or invention; (2) to him who has made the most important discovery or improvement in chemistry; (3) to him who has made the most important discovery within the department of physiology or medicine; (4) to him who in literature has produced the most excellent work in an idealistic direction; and (5) to him who has worked most or best for the fraternisation of the nations and for the abolition or diminution of standing armies, as also for the promotion and propagation of peace. The prizes in physics and chemistry are to be awarded by the Swedish Academy of Sciences, for physiotogical or chemical work by the Carolinian Institution in Stockholm, for literature by the Academy in Stockholm, and for the propagation of peace by a committee of five persons to be elected by the Norwegian Parliament. The will continues:-

"It is my express will that at the distribution of prizes no regard is to be paid to any kind of nationality, so that the most worthy competitor may receive the prize whether he is a Scandinavian or not."

THE Russian Institute of Experimental Medicine, at St. Petersburg, held its seventh annual meeting on December 20, 1897. The Institute consists of six scientific sections and one practical section, and during the past year no less than 120 persons took part in its regular work, which is carried on in the departments of biological chemistry, physiology, bacteriology, pathological anatomy, general pathology, and epizootic diseases. Sixty-five papers—some of them of high scientific value-were published by the scientific staff of the Institute. In addition to this, no less than 25,000 bottles of diphtheria serum, 800 bottles of anti-streptococcus serum, and 300 bottles of anti-staphylococcus serum were sent out from the Institute during 1897-making a total of 138,000 bottles of antidiphtheria serum, and 15,000 bottles of malleine and tuberculine that were distributed within the last three years. Of persons bitten by rabid animals, 277 were under treatment, the percentage of deaths having been only 0.7. The serum treat-ment of the bubonic plague, the prophylactic measures against it, and the preparation of anti-plague serum were the subject of special work during the year, and its results were summed up in a paper which was read at the annual meeting by Prof. A. A. Vladimiroff,

The following are the arrangements for lectures during January at the Imperial Institute. These lectures will be open free to the public, without tickets, seats being reserved for Fellows of the Imperial Institute and persons introduced by them. Monday, January 10, "Western Australia: its growth and possibilities," by Mr. H. C. Richards, M.P.; Monday, January 17, "South Africa, from the Cape to Ngamiland," by Mr. H. A. Bryden; Monday, January 24, "New Brunswick—Past and Pressent," by Mr. C. A. Duff-Miller; Monday, January 31, "Through the Gold Fields of Alaska to Bering Straits," by Mr. Harry de Windt.

At the recent annual meeting of the Paris Academy of Medicine (says the Lancet) a report was presented upon the prizes awarded in 1897. The François Joseph Audiffred prize, which consists of 24,000 francs to be awarded to him who shall have, in the opinion of the Academy, discovered a really curative or preventive remedy against tuberculosis, has not been awarded. The offer holds good for twenty-five years, starting from April 2, 1896. Another prize not awarded was the Chevillon prize of 1500 francs offered to the writer of the best work upon cancerous affections—but a consolation prize of 500 francs was given to Dr. Livet for his work on the subject.

Mr. John W. Barbour, writing from Bangor, Co. Down, Ireland, informs us that an albino lark—believed to be a skylark—was shot in that district on December 27, 1897.

Mr. B. WOODD-SMITH calls our attention to the following paragraph, which appeared in the Whitby Gazette of December 17:—"A splendid meteoric display was witnessed in the eastern heavens on Sunday night [December 12], shortly before eight o'clock. The meteors, which appeared of various colours, were of great brilliance, and illumined the sky with an effulgence greatly surpassing that of the clear and almost full moon shining at the time. About the time of the display, a sound like that of thunder was heard." Further information with reference to these observations would be of interest.

Dr. R. F. Scharff records, in the *Irish Naturalist*, the discovery of some remains of the wild horse (*Equus caballus*) in Ireland. The remains consist of the occipital part of a skull

and the posterior part of another. Both of these were forwarded to Dr. Scharff, who decided that they evidently belonged to horses, but to specimens of very small dimensions—certainly not larger than an ass. The skulls were discovered, when making a drain in Major Moore's property near Naas (Co. Kildare), resting on the gravel beneath the bog. The remains therefore probably belong to wild horses, which are known to have inhabited Ireland as contemporaries of the Irish Elk. Dr. Scharff points out that all the remains of the wild horse hitherto discovered in Ireland, viz. in Shandon Cave and many Pleistocene deposits, point to the fact that it was of small stature.

An interesting glimpse of Huxley's home-life is given in the Century Magazine, by his son Mr. Leonard Huxley, and it reveals another aspect of his gentle and loving character. After his retirement in 1885, the extra leisure permitted his affection for children to have full play. Of one of his grandsons, Julian, he was very fond, and the following incident shows how he would give rein to his humour and wisdom to please a child. Julian had been reading the "Water Babies," wherein fun is poked at his grandfather's name among the authorities upon water babies and water beasts of every description. The book is illustrated by a picture showing Huxley and Owen examining a bottled water baby under big magnifying glasses, so Julian thought he would consult his grandfather upon the matter. He therefore wrote: "Dear Grandpater-Have you seen a water baby? Did you put it in a bottle? Did it wonder if it could get out? Can I see it some day?" Julian's interrogations are worthy of a Huxley, and this is the reply they received: "My dear Julian, I never could make sure about that water baby. I have seen babies in water and babies in bottles; but the baby in the water was not in a bottle, and the baby in the bottle was not in Other stories are told to illustrate Huxley's sympathies with, and tenderness to, the little ones. As is well known, cats were great favourites with him. Like Mahommed who, rather than disturb his cat, cut off the sleeve of his robe on which it had gone to sleep, Huxley would not turn a cat out of his study chair, but would himself sit in a less comfortable seat and leave the cat in peace. At Eastbourne he gave most of his time to gardening, and all through the last years of his life the garden and the flowers were his greatest source of pleasure.

WE learn from the Annual Report of the Director of the Royal Alfred Observatory at Mauritius, for the year 1896, that a new series of publications has been commenced; a separate volume, entitled "Mauritius Magnetical and Meteorological Observations," will contain the daily, monthly and annual values of the principal elements, and will be substituted for the various tables which have hitherto appeared in the Mauritius Blue Book. The rainfall was 18.58 inches above the average for the last twenty-two years. After heavy floods in February (25'94 inches in four days), followed by excessive rain during a severe thunderstorm on May 7, severe droughts were experienced between September and December. An examination of the diurnal variation of rainfall for 1888-96 shows a double oscillation, the maxima occurring at 4h. a.m. and 3h. p.m., and the minima at 10h. a.m. and 8h. p.m., these hours corresponding nearly to the epochs of minimum and maximum barometric pressure. The mean temperature was nearly normal, being only 0"3 below the average. As usual the logs of ships arriving at the island were copied, so far as the observations related to the Indian Ocean. Photographs of the sun were also taken daily, when the weather permitted, and these have been forwarded to the Solar Physics

A USEFUL series of records of the Hereford earthquake of December 17, 1896, as it affected the county of Hertford, is contained in a paper by Mr. H. G. Fordham (Hertfordshire Nat. Hist. Soc. Trans., vol. ix., 1897, pp. 183-208). In his summary of the observations, Mr. Fordham notes that the earthquake was felt more or less distinctly over the whole county, though it was naturally more marked on the west side than on the east. There is no clear difference in its recorded effects at places situated at different altitudes and on different rock-formations. While there is a general agreement as to the swaying or rolling character of the movement, there is a conflict of evidence as to accompanying sound. In a large number or cases, a rumbling sound is recorded; but, on the other hand, some very competent observers speak positively as to the absence of noise. There is the usual diversity in the personal impressions with regard to the direction of the movement, with a balance of numbers, however, in favour of a movement along a west and east line.

THE lately issued sixteenth volume of the Bulletin of the United States Fish Commission contains an excellent report on the Russian Fur Seal Islands, prepared by Mr. Leonhard Stejneger, of the U.S. National Museum, which should be studied by every one interested in the question. Mr. Stejneger, who has visited the Commander Islands twice-first in 1882-83 in the palmy days of the fur seal industry, and again in 1895 during its decline and fall, and who is a well-known expert on the subject, comes to the conclusion that the only measures likely to stop the ultimate destruction of the fur seals of these islands is the "total and absolute prohibition" of pelagic sealing in the North Pacific for at least six years, and, after that period, the total prohibition of pelagic sealing within a zone of 150 miles from the islands. These measures would, no doubt, be effectual if they could be carried out, and would be much for the benefit of the Russian Seal-skin Company, which holds the lease of the islands; but Mr. Stejneger does not explain how it is proposed to stop seal-catching in the free and open ocean, nor whether the Russian Company, to which the benefit would accrue, is prepared to pay for it.

Mr. J. Cosmo Melvill. has reprinted from the Journal of Conchology his presidential address upon the principles of nomenclature and their application to the genera of recent Mollusca. It contains an historical sketch of the subject as regards pre-Linnaean authors which will be useful, if, as we understand, nomenclature is to be one of the subjects for discussion at the meeting of the International Zoological Congress at Cambridge in August next. Mr. Melvill gives also a useful list of genera of marine Gastropods about the names of which some differences of opinion have existed, and indicates those which he thinks ought to be adopted.

IT is well known to psychologists that some persons experience a sensation of colour in association with certain sounds, the colour seen being definite and invariable for the same sound. Dr. W. S. Colman describes a number of these cases of colourhearing in the Lancet (January 1). Cases of this kind usually fall into two groups. In the first there is a crude colour sensation, often very beautiful, associated with certain sounds such as each of the vowel sounds, musical notes, or particular musical instruments. The appearance is usually that of a transparent coloured film similar to a rainbow in front of the observer, but not obscuring objects. In the second group there are colour sensations whenever letters or written words (symbols of sound) were spoken or thought of, so that when a word is uttered the subject visualises the letters, each having a distinctive tint. A study of the subject leads Dr. Colman to regard the phenomena. as "associated sensations" analogous to the cutaneous sensation of shivering in certain parts of the body, varying in different individuals, which is experienced at the sight or thought of an accident, or at the sound of the squeak of a slate-pencil. The tints excited are very definite and characteristic, each for its own

[ANUARY 6, 1898

sound. They do not vary as time goes on. The colours are scarcely ever the same in two individuals. This is very clearly shown in two coloured diagrams which accompany Dr. Colman's paper. The first diagram shows the tint excited by the spoken vowel sounds in twenty-one individuals, while the second shows the tints of the colour sensations excited by the letters of the alphabet in seven individuals. Dr. Colman does not, however, give the colour sensations excited by numbers. The writer has tested a boy at intervals within the past four years, and has found that each numeral is associated with a colour as follows :- 1, black; 2, white; 3, yellow; 4, red; 5, green; 6, grey; 7, mauve; 8, light grey; 9, brown; 0, black. These associated colours have remained the same throughout the period,

A NEW monthly journal of mechanics and electricity for amateurs and students has just made its appearance under the title of The Model Engineer. The periodical is intended particularly for amateurs who take up mechanical or electrical work as a hobby.

THE additions to the Zoological Society's Gardens during the past week include a Sooty Mangabey (Cercocobus fuliginosus) from West Africa, presented by Mrs. R. H. Padbury; a Suricate (Suricata tetradactyla) from South Africa, presented by Mrs. Soames; a Spectacled Bear (Ursus ornatus, 8) from Colombia, a Spotted Cavy (Calaganys paca) from South America, presented by Mr. William Crosley; three Brown Capuchins (Cebus fatuellus), a Blue and Vellow Macaw (Ara ararauna), a Red and Yellow Macaw (Ara chloroptera) from South America, deposited; a Naked-throated Bell-Bird (Chasmorhynchus nudicollis) from Brazil, two Noisy Pittas (Pitta strepitans) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

WINNECKE'S COMET .- As announced in this column a fortwinnecke's comer.—As announced in this column a fort-night ago, Winnecke's periodic comet is shortly due at peri-helion, and therefore might be expected to be picked up at any time. Such has been the case, for Prof. Perrine telegraphs from the Lick Observatory that it was found on January 1, being only feebly visible. Its position then was R.A. 15h. 19m. 42'5s., Decl. -3° 58' 34" S.

ARRIVAL OF ECLIPSE PARTIES AT BOMBAY.—Reuter's correspondent at Bombay states that Mr. E. W. Maunder, Mr. C. Thwaites, and the Rev. J. M. Bacon, with the parties under their direction sent by the British Astronomical Association for the observation of the total solar eclipse on the 22nd inst., have arrived there. The different observing stations will be as follows:—Mr. Maunder and Mr. Thwaites will be stationed at loves:—Mr. Maunder and Mr. Thwates will be stationed at Talni, on the Great Indian Peninsula Railway, between Amraoti and Nagpur; the Rev. J. M. Bacon at Baxar. The Astronomer Royal and Prof. H. H. Turner, forming one of the official parties sent out by the joint committee of the Royal Society and the Royal Astronomical Society, will be stationed at Sahdol, between Katni and Bilaspur. The observing party from the Government Observatory at Madras, under the direction of Prof. Michie Smith, will be at Indapur.

MONT BLANC OBSERVATORY, -The closing of the year brings to hand the reports from many observatories, and not the least interesting is that by M. J. Janssen, in Comptes rendus No. 24, "On the work done in 1897 at the Mont Blanc Observatory."

During 1897 the principal work has been the determination of the quantity of heat received by the earth from the sun, or the solar-constant, as it is called.

The meteorological conditions have a conditional conditions.

The meteorological conditions have not been very favourable, and M. Janssen was compelled to direct observations and able, and M. Janssen was competed to the contract and expeditions from Chamonix, only reaching there with difficulty, having seriously injured his left leg, which made an ascent of Mont Blanc quite impossible for him. The observations were, therefore, made by M. Hansky—first at Brévent, again at the Grands Mulets, and finally at the summit of Mont Blanc, at the observatory.

From these observations a solar-constant of nearly 3'4 calories has been deduced; that is to say, a value notably higher than

This, M. Janssen thinks, will be still that obtained before. that obtained before. This, M. Janssen thinks, will be still further increased, for the more deeply the question is studied the more one ascertains the complexity of the elements which enter into it. For instance, of the radiations which strike the earth, it is those having wave-lengths of large and small periods that undergo the greatest absorption in the atmosphere; those with a mean wave-length corresponding to the most luminous part of the spectrum are propagated with the least relative loss. As a result of this, if the transmission of heat in a zenithal direction be deduced from observations made through a great thickness of the atmosphere it will give a value much too bigh. direction be deduced from observations made through a great thickness of the atmosphere, it will give a value much too high, and hence one much too small for the solar radiations outside the limits of our atmosphere, which value is the solar-constant. Again, the presence of water vapour and dust particles, whether of snow or other matter, all give rise to disturbing effects which influence the results. To obtain precise indications of water vapour the spectroscope has been used, and for the dust particles and snow clouds M. Cornu's form of polariscope has been employed with success. been employed with success.

From these results it can be seen that it is desirable the observations should be made with as little atmosphere intervening as possible; that is, at high altitudes—in balloons even, if sufficiently precise instruments could be used in these regions of the atmosphere. Nevertheless, if stations such as that of Mont Blanc do not offer comparable altitudes with those which balloons can reach, in return they permit the use of instruments more delicate and precise, giving trustworthy results.

PHOTOGRAPHY OF UNSEEN MOVING CELESTIAL BODIES. Quite recently Prof. Barnard showed in Astr. Nach., 3453, how it might be possible to photograph an "unseen moving but known celestial body," as, for example, unseen comets, or the swarm of meteorites giving rise to the November shower. The method, it may be remembered, was to watch with a guiding telescope and keep an adjacent star on cross wires moving in the correct position angle at the proper rate, the movement to be produced by an arrangement of watch-work. In Astr. Nach., 3467, Herr Josef Jan Fric, of Prague, gives an account of a somewhat similar method in which the photographic plate or object glass is moved in the requisite direction. The holder is object glass is moved in the requisite direction. The holder is driven by a fine screw, which derives its motion from the inter-mittent action of a ratchet wheel moved by a "powel," which in turn is actuated at will by an electro-magnet. The length of stroke can easily be altered so as to give any varying motion which may be necessary, but of course, in consequence of the discontinuity of the movement produced in this way, the change in the position of the plate must be so small as not to interfere with the perfectness of the image photographed.

ASTRONOMICAL ANNUALS.—Perhaps the most useful annuals for use, either in a well-established observatory or by amateurs, are: the Companion to the Observatory and the Annuaire Astronomique et Meteorologique; and if these two could be compounded together, they would form a most desirable and complete compendium of astronomical data. The former confines itself chiefly to tabular matter giving data for finding the planets and their catellites with their respective phenomena, occultations, and satellites with their respective phenomena, occultations, and eclipses. In addition to these, and perhaps the most important section, as it is not readily found elsewhere, is the ephemeris for physical observations of the sun, mean places, and maxima and minima of variable stars of all periods, and also the radiant points of the principal meteor showers of the year.

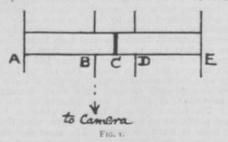
The latter publication, by M. Camille Flammarion, is in its thirty-fourth year, and while treating of astronomical events in a

popular way, it gives numerous diagrams, and has many interesting features. The calendar, detailing observations to be made for each day, has proved itself most useful, as also have the charts of the positions of the planets.

PHOTOGRAPHIC MEASUREMENT OF HORSES AND OTHER ANIMALS.

VALUABLE horses are habitually photographed by professionals and amateurs, and beautiful portraits of them appear in newspapers; notably in Racing, in the Horseman of the U.S.A., in Le Sport Illustré, and in other similar periodicals. I am informed that in shows of pedigree stock it is frequently required that the prize-winners should be photographed, it being of obvious importance that the appearance of the progenitors of animals should be known before selections are made for pairing. It seems, then, that if photo-

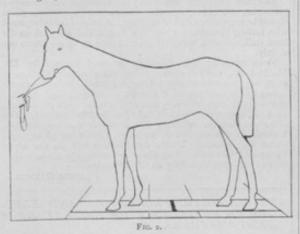
graphs of horses and other pedigree stock could be rendered available for strict scientific studies in heredity, the material is copious, and as it would in time extend through many generations, should far exceed in value anything that is now procurable for those purposes. But all depends on that "if." The basis of science is exact measurement, for which the existing photographs are unsuitable. My present object is to show that by paying strict regard to conditions of a simple kind, an ordinary photograph will be transformed from a mere picture into a record of real scientific value; so that if photographs should hereafter be habitually made of pedigree stock (not only of horses) under those conditions, and he afterwards published, a mass of material would quickly accumulate, sufficient to advance the science of breeding far beyond the point at which it now stands. Artistic photographs



are not to be discouraged. Their object is to exhibit animals in their more attractive positions, as by inclining the fore part of their bodies to the camera when it is desired to make the shoulders look larger than they are. What I desire is that other and inexpensive photographs should be procurable, which

shall be suitable for exact measurement.

All that is asked for is a strip of hard level ground, on which a rectangle is laid out of some 8 or 9 feet (say 100 inches) long and 20 inches wide, and otherwise marked, and that the camera shall be directed squarely towards a certain point in it, as shown by the diagram (Fig. 1). The horse is to be led to the rectangle, and kept in it, taking care that all his feet stand within its margins, that the cross-line at c lies clear of his front and



hind legs, and that the tip of every hoof and each corner of the rectangle is visible from the camera. The appearance of the horse standing upon the rectangle, as seen in the photograph, would be this (Fig. 2), but the lines should be much more delicate. The camera should be placed on a line strictly at right angles to the side A E of the rectangle. When the horse's head, as in Fig. 2, is on the side of A, the perpendicular in question should be drawn from B, a point about a foot distant from C, and on the same side as A. Then the image of the horse fits, laterally, well into the field of the camera. When the horse's head is intended to be on the side of B, a symmetrically situated point D must be selected for the foot of the perpendicular on which the camera is to stand. The distance of the latter from the rectangle should be fully 20 feet.

NO. 1471, VOL. 57]

The camera having an adjustable back, must be slightly tilted downwards in order to get a good view of the feet, but its back must be kept *strictly vertical*. It would be a decided gain if the installation were so arranged, that the photograph gain if the installation were so arranged, that the photograph should contain means of judging whether the plate in the camera had really been adjusted aright—that is, parallel to the vertical planes passing through the long sides of the rectangle. This can be accomplished by laying out the rectangle near the base of a wall, with its long sides parallel to it; then, driving two nails into the wall in the same horizontal line, hang a long string with weighted ends over them, the ends nearly touching the ground. If the two nails are well placed, the line will appear in the photograph, as running along the top and down the two sides of it, close to the margin. Then, if the plate has been rightly adjusted, the upper line in the picture will remain parallel to the long sides of the rectangle, and the two weighted ends will remain parallel to one another. Otherwise there will be convergence in one or both respects. The camera must be high, in order to show well the position of the horse's feet; 5 feet is perhaps the best height for it at a distance of 20 feet, then the perspective foreshortening of the width of the rectangle is such that its scale is one-quarter of that of its length. such that its scale is one-quarter of that of its length.

Relative measurements can be made with accuracy on photographs taken under these conditions, between any visible points that are situated on the median plane, such as between the withers and the lower part of the chest below them, between the front and the back of the profile, and so on, but absolute measurements cannot be made because the distance between the camera and the median plane is not yet accurately determined. Much less can heights above the ground be measured, for in order to do so it is necessary first to determine the mined. Much less can heights above the ground be measured, for in order to do so it is necessary first to determine the line at which the median plane of the horse intersects the ground, because it is to this line that the vertical measurements must be made. What is meant by "median plane," is the imaginary plane which passes lengthways and vertically through the spine of the animal, and which serves generally as a plane of reference. It cuts the ground half-way between the tips of the fore boofs be called s. and position between the tips of the fore hoofs be called s, and that between those of the hind hoofs be T, then the intersection of the median plane with the ground lies along the line s T. For its accurate determination the animal should stand on hard ground, and the hoofs be so disposed that at least the tips of all four shall be visible from the camera, which must be well elevated so as to look down on them, as already described.

elevated so as to look down on them, as already described.

Beginning with the simplest case, namely that in which the median plane of the horse is parallel to the long sides of the rectangle, and also parallel to the plate in the camera, we are at once in a position to measure the height of the horse, its depth of body wherever desired, and its length. For by prolonging s T in the photograph until it cuts the ends of the rectangle in s' and T', a length equal to that of the line s' T' drawn on the median plane in any direction will correspond to the length of 100 inches objectively. We begin by measuring the lengths of s' T', and those of any other, say two, dimensions on the photograph. Call their several measurements s', a, and b, reckoning them according to the scale used throughout for that purpose, whatever the value of the units of that scale may be. Let x and y be the objective values of a and b, which have to be found; be found;

then
$$s'$$
: 100 :: a : x and :: b : y

$$x = \frac{100}{s'}a \qquad y = \frac{100}{s'}b,$$

so the [coefficient 100] being determined, serves to convert these

and all other measurements in this same median plane into their objective values. Those persons who possess Crelle's Multiplication Tables, can perform these little sums without effort and with great rapidity. In Fig. 2 the real length of the rectangle there represented happens to be only 80 inches. The measurements on the diagram are as follow:—(1) s' = 21 6 mm.; (2) height of withers, 15 7; (3) height of lower side of chest, vertically below, 8 9; (4) height of rump, 16 2; (5) extreme length of body, 15 5. Whence the coefficient = $\frac{80}{216} = 3.7$, and the objective values are (2), 58'1 inch, (2-3) 25'1; (4)

Before considering the effect of obliquity the following objection must be disposed of. It may be said that the protuberan sides of the mimal will prevent its true outline being visible

from the camera, for the reasons indicated by Fig. 3, which is

an extreme case in which the camera, or eye, R is supposed to be very near to the side of an animal, so fat that his cross section has to be represented by a circle.

The summit of the outline as seen from R is H, giving the idea that the spine of the animal is as high as L, whereas it is really at K. The ratio of LO to KO is of course the same as that really at K. The ratio of LO to KO is of course the same as that of LO/OR to KO/OR, that is to HO/OR; in other words as the tangent of LRO to the sine of the same angle. The values to be dealt with in reality, are very different from those in the diagram. OR is 240 inches and KO may be taken as 15 inches. It results that LRO is only 3° 35′. Now the tangent and sine of such a small angle are so nearly alike that LO: KO: 100 oo; 199°85, which corresponds to a difference of less than 1/8th inch in a horse of 15 hands high, and is quite negligeable.

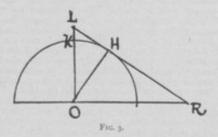
In some fat stock, however, the backs are flat like tables. Here some artifice would be necessary to obtain the true height, such as by fixing a stud of say 2 inches in height to a surcingle. The top of the stud would then be the point of measurement, and 2 inches would be subtracted from the result.

We now come to the effect of obliquity of the median plane

and 2 inches would be subtracted from the result.

We now come to the effect of obliquity of the median plane
of the horse to the long sides of the rectangle. The
hoofs of a thoroughbred horse are some 4 inches wide,
and 4 inches apart, so that the closest distance between
either s or T, and the nearest side of the rectangle, is
6 inches; therefore the utmost cross distance between s
and T is (20-12) or 8 inches, and the length of sT in a
horse of 15 hands in height may be taken as 60 inches. Therefore the maximum obliquity within the strip is as 8 to 60, or fore the maximum obliquity within the strip is as 8 to 60, or 0°1333, which corresponds to an angle of 7° 39′.

The foreshortening of the length s T (= 60 inches) is such that its foreshortened value must be multiplied by the secant of 7° 39′.



to obtain the unforeshortened value, that is by 1 009, which makes it nearly 1 per cent. longer. This is the greatest error to makes it nearly 1 per cent. longer. This is the greatest error to be feared under the conditions, and it is further much diminished by determining the actual obliquity. We can do this easily by measuring the distance lengthways between the points where s T measuring the distance lengthways between the points where s't produced cuts the opposite sides (not ends) of the rectangle. The further side of the rectangle affords the scale for reckoning distances from c along that line when produced; similarly the nearer side affords the scale for distances from c measured along and beyond itself. The cross distance between those points is known to be 20 inches, so the obliquity is easily found. The accompanying table may be found convenient. It applies with resistance only to objects visited from a great distance, but it strictness only to objects viewed from a great distance, but is practically correct for much smaller ones.

Obliquity.		Multiplier to convert fore- shortened values.	Corrections to be added to foreshortened measurements of				
			10 ins.	30 ins.	50 ins. 70 ins		
	4.7		in.	in.	in.	in.	
I in 7	8 12	1.0103	0.100	0.30	0.20	0.70	
,, IO	5 43	1,0020	'050	15	'25	*35	
, IS	3 49	1'0022	'022	'07	11	.11	
,, 20	2 52	1'0012	'012	'04	'06	'00	
11 25	2 18	1,0008	1008	'02	104	*06	
,, 30	1 55	1,0009	'006	'02	. '03	'0	

The mean scale for the slightly oblique median plane is the perspective length of the rectangle at the point where a line drawn through the middle of s T cuts the perspectively viewed ends of the strip. It is unnecessary to attempt greater

minuteness, as by determining the vanishing point (the position of which is given by prolonging two or more of the cross-lines upon the ground to their points of common intersection in the photograph), and then employing the further methods known to draughtsmen in perspective. Much could methods known to draughtsmen in perspective. Much could be written of which it is unnecessary to speak here, because it is a condition that the obliquity shall never be great. A strict attention to the elementary requirements laid down above, makes the problem of measurement extremely simple; otherwise

it becomes complex and troublesome

The next point to be considered is the method of measuring between points situated on the side of the horse, such as from the haunch bone to the shoulder. I shall speak of these in general terms only, because the most suitable points for measurement have yet to be determined. Whatever they be, it is a great assistance, before photographing the horse, to mark the points to be measured either by chalk, or more neatly by a disc of gummed paper, the size of a shilling, wetted and stuck on. Veterinary-Captain F. Smith has used both these plans. It is also an excellent plan to prick through these points in the photograph, and through a piece of paper laid below, and to measure between the prick holes. The general principle of dealing with these measurements is to find a mean correction suitable to each distance, when those distances have been calculated as if they were situated on the median The next point to be considered is the method of measuring tion suitable to each distance, when those distances have been calculated as if they were situated on the median plane. The lateral deviation from that plane of each one of these points, ranges within narrow limits, when the height of the horse is taken as unity. The mean deviation even of either protuberant haunch bone from the median plane between them, is much under 20 inches in a horse of 60 inches (15 hands in height). The mean range of this deviation in different horses of that height, judging from what occurs in anthropometric measurements, is probably very much under an inch, and its extreme range in ordinary cases would be under 2 inches. Extraordinary cases of massive or slender build would be betrayed by the photograph itself, and could be allowed for. It seems, then, that after the desirable points had been determined, between which measurements might be wanted, it would be a straightforward piece of work to make numerous measurements between them in different horses, and to draw up the suggested table of corrections for 2 or 3 different positions in the rectangle. positions in the rectangle.

The head and neck can hardly be measured on the above principles, as it is very difficult to ensure that their median plane should be the same as that of the body. A strip of card chequered with inches, alternately white and black, and fastened to the head stall, affords a serviceable scale, and is by no means un-

sightly.

From measurements obligingly procured for me by Dr. MacFadyean, the Principal of the Royal Veterinary College at Holloway, the measurements being repeatedly made of the same horses by different pupils, I learnt two things. One was that horses of the same class vary among themselves as much as men. In short, they could be identified by a Bertillon method. The other was that the fallibility of a measurer was considerable. I think that measurements made on a half-plate photograph, under the conditions I have described, would on the whole the more trustworthy than direct measurements made with a tape or callipers, especially on fidgety horses.

Francis Galton.

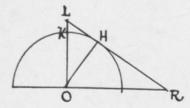
THE MAGNETIC PROPERTIES AND ELEC-TRICAL RESISTANCE OF IRON AT HIGH TEMPERATURES.

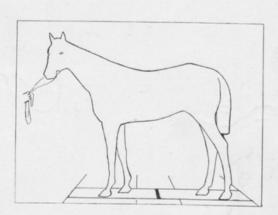
THE magnetic properties of iron and, to a lesser extent, of the associated metals, nickel and cobalt, have always been a fascinating subject of study. Possessed by these three metals alone, these properties, so peculiar and so different from any of the other known properties of matter, have imparted to the study of these so-called magnetic metals a special charm and interest, apart from that excited by the vast industrial importance of at least one of them.

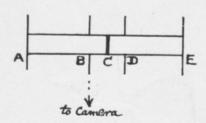
Among the very early inquiries into the nature of magnetism

Among the very early inquiries into the nature of magnetism Among the very early inquiries into the nature of magnetism there were not neglected experiments on the effect produced by change of temperature. Three centuries ago, Gilbert recorded the observation that a piece of iron or steel, if heated more strongly than up to a full red heat, ceased to be attracted by a magnet, though it regained its previous magnetic qualities on cooling below that temperature.

PROOF FOR CORRECTION
PLEASE RETURN IMMEDIATELY TO
RICHARD CLAY AND SONS, LTD
BREAD STREET HILL.
WATERET
LONDON, E.C.







Until comparatively recently, however, accurate magnetic measurements, even at ordinary temperatures, could alone be made on permanent magnets and the forces acting on their poles. The capability of acquiring temporary or induced magnetism when near a magnet, which is the characteristic property of soft when near a magnet, which is the characteristic property of soft iron, could not be subject to strict measurement until it was shown, firstly, how a given specimen of iron could be uniformly magnetised in a uniform magnetic field; and secondly, how both the magnetising force of that field, and the consequent magnetisation of the iron could be measured. We know of only one way of completely satisfying the first condition: namely, by covering a ring-formed specimen (whose outer diameter but slightly exceeds the inner) with a uniform layer of insulated wire carrying an electric current, thus forming a ring-magnet with no disturbing poles. And Faraday's researches on electro-mag-netic induction have furnished us with a method, at once accurate and convenient, of determining the magnetisation of the apparently unmagnetised ring magnet, i.e. by the use of a "secondary winding" or outer layer of insulated wire, connected with a "ballistic" galvanometer. Knowing then the intensity of magnetisation called up by a given magnetising force, we can, from their ratio, express the facility with which the iron takes up magnetic induction, or, in other words, its magnetic perme-

To apply this method to the measurement of permeability at high temperatures, both the magnetising and the secondary high temperatures, both the magnetising and the secondary winding must be so insulated as to be uninjured by the heating; and further, the thermometer or pyrometer, which measures the temperature, must be placed inside the ring, so as to measure the actual temperature of the iron.

Among the earlier important researches on magnetic properties at high temperatures, that of Baur of Zürich, in 1879, should be

He experimented simply on an iron bar heated in a furnace, and thence rapidly transferred to the interior of a straight magnetising coil. Not, however, till 1889 was it shown by Dr. Hopkinson, in his classical researches, that the ring-magnet method could be successfully applied to the measurement of permeability at high temperatures. The windings of the ring-magnets were in this case of copper wire insulated with asbestos; the heating was carried out in a gas furnace; and the rise of temperature of the iron core was deduced from the increase of the electrical resistance of the duced from the increase of the electrical resistance of the secondary winding.

Of the more recent researches, the most remarkable is that of Of the more recent researches, the most remarkable is that of M. Curie, published in 1895, describing experiments on the magnetic behaviour of a great variety of substances, at temperatures ranging up to a white heat. The method he adopted—that of finding how strongly the specimens were attracted, when placed near a powerful magnet, was well adapted to determine permeability in intense magnetic fields, but it is much inferior to the ring-magnet method, where the permeability varies much with the magnetising force, as is the case whenever the magnetic field is not intense.

whenever the magnetic field is not intense.

whenever the magnetic field is not intense.

In the course of some experiments on the subject of this article, the results of which have been recently published, I have endeavoured to approximate, where possible, more closely than previous experimenters to the ideal method which would be the outcome of the principles laid down above. The ring-magnet, whose core was the iron specimen to be tested at high temperatures, was made very small, measuring about one inch across. The temperature of this core was determined by means of an electrical thermometer *embedded in it*, consisting of a wire of pure platinum whose electrical resistance at any temperature had been previously determined, and whose resistance, therefore, if subsequently measured, gave its temperature, and hence also that of the iron core in which it was laid. Asbestos paper insulation, as had been used by former experimenters, was found to be very imperfect at high temperatures, owing largely to carbon deposited from the materials used in its manufacture. This difficulty was, after some trouble, overcome; but wherever a high degree of insulation was wanted, as in the case of the thermometer wire and secondary winding, it was found necessary to employ mica, though, as may well be imagined, the use of such an untractable material for such a purpose is beset with considerable mechanical difficulties.

Now, to find the magnetic condition of a sample of iron at a given temperature with any completeness, it is not sufficient merely to measure its permeability in various magnetic fields; the behaviour of the iron when subjected to what is called a "cyclic" process of magnetisation must be studied—the

"hysteresis," or energy, absorbed in one double reversal of the magnetisation of each cubic centimetre of the iron, must be measured

But the taking of so many observations requires time; and if, during this time, the temperature of the iron be not perfectly constant, all efforts at refinement in the magnetic measurements are thrown away. The heating of the ring must, then, be thoroughly under control. The method I adopted was an electrical one. The ring-magnet was furnished with an extra winding of asbestos-insulated platinum wire, so wound as to have no magnetising influence; and by passing through this wire a suitable electric current, heat could be generated in the wire a suitable electric current, heat could be generated in the ring at any desired rate. This method, however (the principle of which was adopted as long ago as 1888 by M. Ledeboer) is not used to full advantage unless combined with an effort to thermally isolate the body to be heated. Each ring-magnet was therefore thickly wrapped with asbestos, and supported in the centre of a closed and partially exhausted glass vessel (oxidation of the iron core was also in this way avoided). of the iron core was also in this way avoided).

This method of heating proved most satisfactory.

of heat by radiation and conduction being slight, the ring-magnet could not rapidly alter its temperature; and there is probably no way in which we can supply heat-energy to a body, which can compete with the electrical resistance method, either as can compete with the electrical resistance method, either as regards constancy or control. For obtaining temperatures up to 1300° or 1400° C.—a white heat—this method, combined as far as possible with "thermal isolation," and an electrical method of measuring the temperature, should in the future prove of the greatest value in all cases where the physical properties of bodies at high temperatures require careful invastigation.

investigation.

The original intention of my experiments was to ascertain The original intention of my experiments was to ascertain exactly in what way the specific electrical resistance of iron changes at and about the "critical temperature" at which the magnetic properties of iron so nearly disappear, so as to throw light if possible on the molecular state which we characterise by the term "magnetic." With this object the iron core of the ring-magnet was formed of a long insulated iron strip, among the turns of which the platinum thermometer wire was buried; and with this piece of apparatus simultaneous measurements of the magnetic qualities and electrical resistance of a sample of iron could be made with accuracy alike at low and high temperatures.

Let us now consider the magnetic changes which occur in soft iron when heated. At ordinary temperatures iron shows a kind of unwillingness, so to speak, to become *slightly* magnetised—its permeability under small forces is not great. Beyond a certain limit, however, it exhibits the greatest readiness to become further magnetised, and continues to have a high permeability until magnetised very strongly. But from this point it begins to show signs of magnetic saturation, and ultimately refuses to be further magnetised without the application of very great

Now, as the temperature of the iron is gradually raised, it is found that practical magnetic saturation takes place sooner and sooner. Iron refuses to become so strongly magnetised at higher sooner. From refuses to become as strong magnetic fields falls off as the temperature rises—very slowly at first, then more rapidly, till, near the "critical temperature," the permeability

rapidly drops to quite a low value.

On the other hand, in weak magnetic fields, the behaviour of iron up to within a few degrees of the "critical temperature" is precisely opposite. The permeability rises with the temperature
—at first slowly, then above 500° C. with ever increasing rapidity, until at last that lack of susceptibility to small forces disappears, and iron shows itself just as amenable to magnetic influence in small magnetic fields, as in the larger ones, where the maximum

permeability occurs.

At this temperature say 15° below the critical temperature (about 750° C.—a red heat), iron possesses all those qualities at once which are sought after by the transformer maker:—Practical absence both of hysteresis and of eddy currents (the latter owing to the greatly increased electrical resistance), and a permeability nearly four times as great as that attainable in commercial trans former iron. So magnetic, indeed, is the iron, that even the earth's magnetic field, in the direction of its greatest intensity, is enough to induce strong magnetisation (B = 5000), in fact almost saturate the iron (for which at this temperature a relatively low induction suffices). The behaviour of a compass needle near a slowly cooling ingot of cast steel, should be rather interesting.

[JANUARY 6, 1898

for just below the critical temperature the vertical ingot must

ave as a very powerful magnet indeed.

For all the lesser magnetic fields, there is a temperature of maximum permeability which is nearer to the critical tem-perature the smaller the magnetic field. But at that temperature the magnetic qualities in almost all fields practically vanish. Hence, when the magnetising force is very small, the change from enormously magnetic to almost non-magnetic takes place with extreme suddenness.

Above the critical temperature, iron is but feebly magnetic; yet it is still much more readily affected by a magnet than most other feebly magnetic bodies. Not till a white heat is reached, do the magnetic qualities of iron become imperceptible.

It is not easy in an article like the present to deal with the changes which occur in the electrical resistance of iron, but the

The experiments of Dewar and Fleming have shown that at a temperature of - 200° C, the specific electrical resistance of iron is extremely low. Throughout the range of temperature included between that extreme of cold and the critical temperature, about + 780°C., the resistance rises at a steadily increasing rate, so that at the latter temperature it is over 150 times as great as at the former: far in excess of that of any known alloy at ordinary temperatures (crystalline metals and their alloys excepted), and about equalling liquid mercury for high specific resistance. On still further raising the temperature of the iron, it is found that the rate of rise of resistance, instead of further increasing, very rapidly falls off till, at a white heat, the resistance of iron increases only slowly with the temperature.

It has long been known that this increasing rate of rise of

resistance with temperature is a characteristic possessed by the magnetic metals alone. Here now we see that no sooner does the iron cease to be strongly magnetic than this quality disappears, and becomes exchanged for an opposite one, namely, a decreasing rate of rise of resistance with temperature. In some hitherto unpublished experiments on Hadfield's manganese steel (a non-magnetic steel which can be rendered magnetic by appealing). It has a characteristic possesses of the magnetic steel which can be rendered magnetic by appealing. annealing), I have observed a precisely similar change of the resistance-temperature function to take place during the annealing of this steel, thus furnishing a second case of this obscure resistance-change accompanying the change from magnetic to non-magnetic, in one and the same sample.

The connection between magnetic and electrical properties is evidently not a very simple one, but in the face of these facts it is hard about the same sample.

is hard to deny that there is one; and it is only by trying to find out how the various physical properties depend upon magnetism that we may hope to arrive at a comprehensive explanation of that obscure but most interesting condition of matter.

DAVID K. MORRIS.

EARLY MAN IN SCOTLAND.1

I N Scotland, as in other countries, man existed before the time of written history. The conditions under which his remains 1 of written history. The conditions under which his remains are found, and the works which he has left behind him, provide the data for determining their age, not absolutely or capable of being expressed in numbers of years, but relatively to each

Marked differences existed in the physical conditions of Scotland, and indeed in the northern parts of England also, as com-pared with the southern districts of England and the adjoining parts of France and Belgium at the first appearance of primeval man in those countries. It is the more necessary, therefore, that the conditions then prevailing in Scotland should not be

No evidence sufficient to satisfy geologists has been advanced to prove that man existed in Britain during the period called Tertiary. So far, indeed, as Scotland is concerned, even if it were Tertiary. So far, indeed, as Scotland is concerned, even if it were admitted that in other parts of the globe man had been on the earth during Tertiary times, there is little likelihood that his remains could have been preserved; for in that country the Tertiary is represented chiefly by volcanic rocks, and a few resches of sand and gravel with rolled sea shells belonging to

patches of sand and gravel with rolled sea shells belonging to the closing stages of that period.

From the careful study which geologists have given to the surface of Scotland, it is evident that at the commencement of the period termed Quaternary or Pleistocene, immediately suc-

A discourse delivered at the Royal Institution, London, by Sir William Turner, F.R.S.

ceeding the Tertiary, the whole of the country was covered with ice which formed a great sheet 3000 or 4000 feet thick in the low grounds, of which the lower boulder clay, or Till, as it is termed, was the ground-moraine.

As an upper boulder clay also occurs, which is often separated

from the lower boulder clay by stratified deposits, some of which contained marine, and others fresh water and terrestrial organic remains, it is obvious that the Ice Age was not one uninterrupted period of continuous cold.¹ The lower and upper tills rupted period of continuous cold. The lower and upper tills are the ground-moraines of independent ice sheets, each indicating a distinct epoch, separated by an interglacial period. The earlier epoch was that of maximum glaciation, and the ice sheet extended over the north and middle of England, as far south as the Thames Valley and the foot of the Cotswold Hills; but the high moors in Derbyshire and Vorkshire and the tops of the highest mountains in Wales and Scotland rose above its surface. The great Mer de Glace stretched westward over Ireland into the Atlantic, whilst on the east it was continuous across the North Sea with a similar ice sheet which covered Scandinavia and the region of the Baltic, and extended south to the foot of the hills of central Europe, and overspread much of the great central plain. In the extreme south of England, therefore, the conditions differed from those that obtained in the country conditions differed from those that obtained in the country further north. Although not actually covered with a sheet of ice, yet the more southern counties had been of necessity under the influence of cold, and must have been subjected to the effects produced by rain and snow, by freezing and thawing.

During the succeeding interplacial epoch the climate eventually became temperate and genial, and vegetable and animal life abounded. It is to this stage that most of the Pleistocene river

alluvia and cave deposits of England and the adjacent parts of the continent are assigned. The British Islands appear at that time to have been joined to the continent, and the same mammalian fauna then occupied Britain, France and Belgium, which implied similar climatic conditions. As examples of these, it may be sufficient to name the larger mammals, as the cave and grizzly bear, the hyæna, lion, Irish deer, reindeer, hippopotamus

woolly rhinoceros, straight-tusked elephant and mainmoth, all of which are now either locally or wholly extinct.

Abundant evidence exists that man was contemporaneous with Abundant evidence exists that man was contemporaneous with these mammals in western Europe, as is shown by the presence of his bones alongside of theirs, and of numerous works of his hands, more especially the implements and tools which he had manufactured and employed. To a large extent these consisted of flint, rudely chipped and fashiomed. To these implements, and to the men who made them, the well-known term "Paleolithic" is applied. But along with these, other implements have been discovered, made from the bones, horns and teeth of the larger mammals, on some of which animal forms and incidents of the chase have been sculptured both with taste and skill. Up to now, however, no trace of pottery which can skill. Up to now, however, no trace of pottery which can without question be referred to Palæolithic men has been found, and no habitations, except the caves and rock shelters which nature provided for them.

One may now consider how har northwards in Britain Pateo-lithic man and the large mammals, with which he was contem-poraneous, have been traced. The exploration of caverns, made by Prof. Boyd Dawkins and other geologists associated with him, has proved that bones of certain of the mammals of this epoch were present in caves in Derbyshire, Yorkshire and North Wales, and that human remains and implements of Pakeolithic One may now consider how far northwards in Britain Palæo type have been found along with them in the Robin Hood cave the Cresswell Crags, and in caverns in North and South

When Scotland is considered, evidence of the existence of the when Socialin is considered, evidence of the existence of the mammals of this epoch is not so abundant, yet the interglacial beds of that country have yielded remains of mammoth, reindeer, Irish elk, urus, and horse. But notwithstanding the keen scrutiny to which the superficial deposits in Scotland have been subjected by the members of the Geological Survey and others, no traces either of the bones of Palscolithic man or of the work house been discovered in North Britain. This of his hands have been discovered in North Britain. This, indeed, is not much a matter of surprise, for it must be remembered that, subsequent to the genial interglacial epoch, another ice sheet, that of the upper boulder clay, made its appearance, grinding over the surface of the land, wearing away alluvia, and largely obliterating the relics of interglacial times. Hence inter-

1 For the evidence on which these statements are based, consult the "Great Ice Age," by Prof. James Geikie, edition 1894, also his "Classifica-tion of European Glacial Deposits," in Journal of Geology, vol. iii., A May 1895.

glacial beds occur only at intervals and are very fragmentary. Nor in Scotland are there any caves similar in dimensions to those which in England and elsewhere have yielded such abundant traces of Palæolithic man and his mammalian congeners. If Palæolithic man ever did exist in Scotland, and there is no reason why he might not have migrated northward from Yorkshire and Wales, yet one could hardly expect to discover traces of his former presence. In Scotland there are no massive limestones, with extensive caverns, in which man could have sheltered, and in which his relics and remains could have been secure from destruction during the advance of the second ice sheet. It is only in the alluvial deposits of interglacial times that such traces have been preserved, but these deposits, as we have seen, were ploughed out and to a great extent demolished by the later sheet of ice. The shreds that remain, however, are of extreme interest, from the fact that they contain relics of the Pleistocene mammals, with which Paleolithic man was con-temporaneous; and there is a bare chance that some day traces of man himself may be encountered in the same deposits.

Geologists have shown that in the regions which were over-flowed by the second or minor ice sheet no traces of Palæolithic man, or of the southern mammals with which he was associated, have ever been met with in British superficial alluvia. When found in those regions out of Scotland, they occurred in caves chiefly, and sometimes in the stratified deposits which here and there underlie the upper boulder clay and its accompanying

So far as Scotland is concerned, one must look for a period subsequent to the melting of the second great ice sheet for evidence of the existence of early man. After its disappearance important fluctuations in temperature and in the relative level of land and sea took place from time to time, so that the climate and the area of land in Scotland differed in some measure from and the area of land in Scotland differed in some measure from what is known at the present day. Eventually a period of cold again occurred, not so severe, undoubtedly, as in the two preceding glacial epochs, but sufficient to bring into existence considerable district ice sheets and extensive valley-glaciers in the Highlands and Southern Uplands. Scotland at this stage was partially submerged, and many of the Highland glaciers reached the sea and gave origin to icebergs. The submergence slightly exceeded 100 feet, and the marine deposits formed at the time are charged with arctic shells and many erratic blocks and debris of rocks. On a subsequent elevation of the land, the and debris of rocks. On a subsequent elevation of the land, the beach formed at this level constituted a terrace, well marked on the coast line in many districts, and now known as the 100-foot

There is good reason to believe that the elevation referred to was of sufficient extent to join Britain again to the continent. It is to this stage that the great timber trees which underlie the old peat bogs of Scotland are referred. The peat with its underlying forest bed passes out to sea, and is overlaid in the Carse lands of the Tay and the Forth by marine deposits, which form another well-marked terrace, the 45 to 50 foot raised beach of

Thus the elevation of the land that followed after the formation of the 100-foot beach coincided with an amelioration of climate and with the presence of an abundant vegetation, and large mammals, such as the red-deer, the elk, and the Bos primigenus roamed through the woods. While these conditions obtained roamed through the woods. While these conditions obtained partial submergence again ensued, and the sea rose to fifty feet, or thereabouts, above its present level. Within recent years it has been shown that during this period of partial submergence glaciers reached the sea in certain Highland firths, which would seem to show that the climate was hardly so genial as during the preceding continental condition of the British area, when that region was clothed with great forests. Ere long, however, elevation once more supervened, and the sea retreated to a lower level. Here it paused for some time, and so another well-marked terrace was formed, which is known as the 25 to 30 foot beach.

There is not any evidence of the presence of man in Scotland during the formation of the 100-foot beach or terrace, but one can speak with certainty of his presence there during the period of formation of the later beaches. If one could put oneself into the position of an observer who, at the time of the 40-50 foot submergence, had stood on the rock on which Stirling Castle is now built, instead of the present carse lands growing abundant grass and grain, and studded with towns, villages, and farm-houses, one would have seen a great arm of the sea extending almost if not quite across the country from east to west, and

separating the land south of the Forth from that to the north. In this sea great whales and other marine animals disported themselves, and sought for their food. Abundant evidence, that this was the condition at that time in the Carse of Stirling, is furnished by the discovery during the present century of no fewer than twelve skeletons of whalebone whales belonging to the genus Balenoptera or Finner whales, imbedded in the deposit of mud, blue silt and clay which formed the bed of the estuary. This Carse clay, as it is called, is now in places from 45 to 50 feet above the present high-water mark, and is extensively used for the manufacture of bricks and tiles. At a still lower level lies the carse clay of the 25-30 foot terrace. Until the beginning of the present century the clay had been covered by an extensive peat moss, which the proprietors of the land have removed. The question which has now to be considered is-Did man exist in Scotland at the period of the formation of the carse clays and of the two lower sea beaches? There is undoubted evidence

Along the margin of the 45-50 foot terrace in the neighbour-ood of Falkirk one comes upon the shall margin the hood of Falkirk one comes upon the shell-mounds and kitchen-middens of Neolithic man. All these occur on or at the base of the bluffs which overlook the carse lands—or, in other words, upon the old sea-coast. Again, in the Carse of Gowrie, a dug-out canoe was seen at the very base of the deposits, and immediately above the buried forest-bed of the Tay Valley. The 25-30 foot beach has been excavated out of the 40-50 foot terrace; it is largely a plain of erosion rather than of accumulation. It is probable, therefore, that many of the relics of man and his contemporaries which have been obtained at certain depths in the 25-30 foot beach may really belong to the period of the 40-50 foot beach. Some of these finds will now

be referred to.

In 1819 the bones of a great Fin-whale, estimated about 72 feet long, were exposed in the carse land adjoining the gate leading into the grounds of Airthrey Castle, near Bridge of Allan, about 25 feet above the level of high water of spring tides. Two pieces of stag's horn, through one of which a hole about an inch in diameter had been bored, were found close to the skeleton. In 1824, on the estate of Blair Drummond, in the district of Menteith, a whale's skeleton was exposed, and along with it a fragment of a stag's horn which was said to have a hole in it and to have been like that found along with the Airthrey whale. Mr. Home Drummond also states that a small piece of wood was present in the hole, which fitted it, but on drying, shrunk considerably. Unfortunately these specimens have been lost, and no drawings or more detailed descriptions were ever apparently published, though in some geological and archeological works they have been stated, without any authority, to have been lances or harpoons. Twenty years ago the skeleton of another whale was exposed at Meiklewood, Gargunnock, a few miles to the west of Stirling, and resting upon the front of its skull was a portion of the beam of the antler of a red deer, fashioned into an implement eleven inches long, and six and a half inches in greatest girth; a hole had been bored through the beam, in which was a piece of wood one inch and three-quarters long, apparently the remains of a handle. The implement was truncated at one end, and shaped so that it could have been used truncated at one end, and shaped so that it could have been used as a hammer, whilst the opposite end was smooth and bevelled to a chisel or axe-shaped edge formed by the hard external part of the antler. There can be no doubt that this implement resembled those found alongside of the Airthrey and Blair Drummond whales earlier in the century, and it effectually disposes of the statement that they were lances or harpoons. Dug-out canoes have indeed been found imbedded in the Carse clays at a similar level, so that the people of that day hed disclays at a similar level, so that the people of that day had dis-covered a means of chasing the whale in the water; one can, however, scarcely conceive it possible to manufacture a horn implement sufficent to penetrate the tough skin and blubber of one of these huge animals, and to hold it in its efforts to escape. one or these nage animals, and to hold it in its efforts to escape. It is much more probable that the whale had been stranded at the ebb of the tide in the shallower water near the shore, and that the people had descended from the neighbouring heights, and had used their horn implements, with their chisel-like edges, to flense the carcass of its load of flesh and blubber, and had carried the small to their recognition had been straightform. had carried the spoil to their respective habitations. There can

1 See more particularly Mr. Milne Home's "Ancient Water Lines" (Edin-urgh, 1880), and "The Raised Beaches of the Forth Valley," by D. B.

burgh, 1882), and "The Raised Beaches of the Forth Valley," by D. B. Morris (Stirling, 1892).

2 I described this implement in Reports of British Association, 1889, p. 790. It has subsequently been figured in a Report by Dr. Munro in the Proceedings of the Society of Antiquaries, 1896.

[]ANUARY 6, 1898

be little doubt that these implements rank, along with the dug-out canoes, as the oldest relics made with human hands which have up to this time been found in Scotland, and that they

belong to the earliest period of occupation by Neolithic man.

After the oscillations in the relative level of land and sea had ceased, and the beach found at the present day had been formed, evidence of the presence of Neolithic man and of mammals, both wild and domesticated, such as now exist in Scotland, becomes

greatly multiplied.

Shallow caves or rock shelters situated in the cliff which Shallow caves or rock shelters situated in the cliff which bounds the esplanade at Oban Bay, which, after being closed for centuries by a landslide from the adjacent height, had recently been quarried into in obtaining stone for building parposes, were described by the lecturer.\(^1\) The caves were as a rule 100 yards inland, and about 30 feet or more above the present highwater mark. They had, no doubt, been formed by the action of the waves at the period of formation of the 25-30 foot beach, for the floor of one of the caves was covered by a layer of gravel and pebbles, which had obviously been washed there when the sea had had access to it. had had access to it.

In these caves, bones representing fifteen human skeletons, men, women, and children were found; also bones of the Ros longifrons, red and roe deer, pig, dog, goat, badger, and otter, shells of edible molluscs, bones of fish, and claws of crabs; shells of edible molluses, bones of fish, and claws of crabs; flint scrapers, hammer stones, implements of bone and horn fashioned into the form of pins, borers and chisel-shaped instruments. In one cave several harpoons or fish spears made of the horns of deer were obtained; similar in form to those found in the Victoria Cave, Settle, in Kent's Cavern, and in the grotto of La Madelaine, France, which in some of these instances have been associated with Paleolithic objects.

An account was then given of the construction and contents of the chambered horned cairns in Caithness and the north-west of Scotland, which have been so carefully investigated and described by Dr. Joseph Anderson ("Scotland in Pagan Times," Edinburgh, 1886). The presence of incinerated bones and of unburnt skeletons showed the cairns to have been places of interment, whilst flint flakes and scrapers, bone and polished stone implements, and shallow vessels of coarse clay, associated them with Neolithic man, obviously the same race as the builders of

the English long barrows.

Stone abounds in Scotland, and the polished stone implements stone abounds in Scotland, and the poissen stone implements which have been found in every county, in the soil and near the surface of the ground, are often of large size, and beautifully ground and polished. Flint, on the other hand, is confined to a few localities, as the island of Mull and limited areas in the counties of Banff and Aberdeen. The nodules are as a rule small in size, and though adapted for the manufacture of arrowheads and scrapers, flint does not seem to have attained the same importance in Scotland as the raw material provided by nature for the manufacture of articles used by Neolithic man, as was the case in England and Ireland.

Although there is ample evidence of the nature of the implements and weapons manufactured by Neolithic man, and of his methods of interment in rock shelters and chambered cairns, no traces of built dwellings which can be ascribed to the people of this period have been discovered. Doubtless their habitations this period have been discovered. Doubtless their habitations were constructed of loose stones and turf, and sun-dried clay, or of the skins of animals killed in the chase spread over the branches of trees, which, from their fragile and destructible character, have not been preserved.

In the course of time stone and bone, readily procurable, and which are directly provided by nature for the use of man, gave have to materials which require for their manufacture considers.

place to materials which require for their manufacture consider-able skill and knowledge. The introduction of bronze as a subable skill and knowledge. The introduction of bronze as a sub-stance out of which useful articles could be made, marked an important step in human development, and could only take place after men had learnt by observation the ores of copper and tin, and by experiment the methods of extracting the metals from them, and the proportions in which they should be combined in the alloy in order to secure the necessary hardness. So far as Scotland is concerned, bronze must have been introduced from without; its manufacture could not have been of indigenous development, as the ores of tin and copper do not occur in North Britain. Doubtless it came from the southern part of our island, and was extensively employed in South Britain long before it became substituted in the north for the more primitive materials.

¹ For a detailed description, see papers by Dr. Joseph Anderson and the author in Proc. Scot. Soc. Antiquaries, 1895.

There is abundant information that Scotland had a Bronze There is abundant information that Scotland had a Bronze Age. Swords, spears, bucklers, bracelets, rings, fish hooks, axes, chisels, sickles and other implements made of this metal have been found in considerable numbers. These objects occur sometimes singly, at others in collections or hoards in peat mosses, or even at the bottom of lochs and rivers, or buried in the soil as if they had been placed there with a view to concealment, and then, through the death or removal of their owners, had been lost sight of. In many instances these weapons and implements are elegant in design, show great mechanical ability in their construction, and are ornamented with much taste and in their construction, and are ornamented with much taste and skill. Instances also are not uncommon in which objects of

In the study of the Bronze Age in Scotland a want is ex-perienced similar to that felt in a review of the Neolithic period.

There are no buildings which can be distinctly regarded as dwelling places for the men of this time. With them, however, as in the Polished Stone Age, there is evidence of the mode in which they disposed of their dead friends and relatives. Interments which there are good grounds for associating with these people, have been exposed in the formation of roads and rail-ways, and in agricultural operations. Where the surface of the ground has not been cultivated or otherwise disturbed, in almost every county tumuli, mounds, hillocks and cairns occur, the ex-ploration of which has in many cases yielded interesting results. In no instance, however, have chambered cairns, divided into compartments, and possessing an entrance passage, been found associated with articles made of bronze. The sepulchral arrangements of the period possessed a greater simplicity than is shown in the chambered cairn.

The interments in the Bronze Age were sometimes that of a single individual in a knoll or mound, or under a cairn artificially constructed, and now overgrown with grass, heather and whin bushes, or, as is not uncommon, in a collection of sand or gravel near the sea shore, or on a river bank, or in the moraine of some long-vanished glacier. At other times, in similar localities, two to six interments had been made as if in a family burying At others the interments were much more numerous, and represented doubtless the cemetery of a tribe or clan; one of the best known of these was observed some years ago at Law Park, near St. Andrews, in which about twenty interments were recognised. In another at Alloa, twenty-two separate interments were exposed. Quite recently, immediately to the east of Edin-burgh, in the districts now known as Inveresk and Musselburgh, not less than fifty interments of this period have been brought to light, in connection with building operations, which implies that then, as now, this part of the country was settled and had considerable population.

a considerable population.

Two very distinct types of interment prevailed, viz. Cremation, with or without cinerary urns; and Inhumation, the unburnt body being enclosed in a stone cist or coffin. From an analysis of 144 localities in Scotland of burials which may be associated with the Bronze Age, and which included about 400 distinct interments, it would appear that in fifty-one of these localities the localities the bodies had all been cremated; in sixty they had been buried in some cists; in fifteen the same mound or cemetery furnished examples of both kinds of sepulchre, and in the rest the kind of interment was not precisely recorded. These diversities did not express tribal differences, but seemed to have prevailed generally throughout Scotland. Both cremation and inhumation are found in counties so remote from each other as Sutherland in the north and Wigton in the south, in Fife and the Lothians on the east, and in Argyll and the distant Hebrides in the west, as well

as in the intermediate districts,

The cremation had been effected by wood fires, for in many localities charcoal has been found in considerable quantity at the place of interment. The heat generated was sufficient to reduce the body to ashes, and to burn the organic matter out of the the body to ashes, and to burn the organic matter out of the bones, which fell into greyish-white fragments, often curiously cracked and contorted, which were not very friable. They were then collected and usually placed in an urn of a form and size which we now call Cinerary. When a bank of sand or gravel was convenient, a hole three or four feet deep was made and the urn lodged in it. Sometimes the urn stood erect, and a flat stone was placed across the mouth before the hole was filled in with send and are death at the store had a flat stone was placed across the mouth before the hole was filled in with sand and earth; at others a bed of compacted earth, or of

¹ Most of these are recorded in the "Archaeologica Scotica," the Proceedings of the Scottish Society of Antiquaries, and Dr. Joseph Anderson's "Scotland in Pagan Times"; whilst others, in the author's note books, have not yet been published.

small stones, or of a flat stone, was made at the bottom of the hole, and the urn, with its contents, was inverted. In some cases the urn was protected by loose stones arranged around it. In obviously exceptional instances, it may be perhaps of a tribal chieftain, a small stone cist was built to enclose the urn, and even a cairn of stones was piled above and around to protect it and to mark the spot.

Cremated interments not contained in urns have been recorded in a few instances, and in them the surrounding sand or gravel has usually been discoloured, from the blackened remains and charcoal having to some extent become diffused through it.

The largest examples of cinerary urns were from 12 to 16 inches in height, with a flat narrow bottom, and 10 to 12 inches methes in height, with a flat narrow bottom, and to to 12 inches wide at the mouth. About one-third the distance below the mouth the urn swelled out to its widest diameter, and was surrounded by one or two mouldings, between which and the mouth the outer surface was often decorated with lines which ran horizontally, or vertically, or obliquely; sometimes they intersected, and formed a chevron or a diamond-shaped pattern. Below the mouldings, the surface was without pattern, though sometimes raised into an additional simple circular moulding.

When the inhumation of an unburnt body was decided on, a rude cist or cofin, formed of undressed flattened stores were

rude cist or coffin, formed of undressed flattened stones, was built for its reception. As a rule, the sides and ends of the cist were formed each of a single slab of sandstone, schist, gneiss, granite or other stones provided by the rock in the neighbourhood; but in some instances of a stone of a different character from the adjoining rocks, and obviously brought from a distance. The stones were set on edge and supported a great slab, which, being laid horizontally, formed the lid or cover of the cist, and which was much thicker and heavier than the side and end stones; sometimes, as if for additional protection, a second massive slab was placed on the top of the proper cover. The floor of the cist was formed, when the earth was shallow, of the native rock, and at other times of compacted earth, or a layer of pebbles, or of flat stones. Usually the stone walls and the cover of the cist were simply in apposition, but sometimes they were cemented together with clay. In some cists, exposed a few years ago on the farm of Cousland, near Dalkeith, the peculiarity was observed of the cist being divided in its long direction into two compartments by a stone slab down the middle.

The cists were oblong, the length exceeding the breadth, and although they varied in size, those for adults being larger than for children, they were always shorter than would have been required for a body to be extended at full length. As the end stones were usually set within the extremities of the side stones, the internal measurement of length was some inches less than the external. The average dimensions may be given for the interior about 4 feet in length, 2 feet in breadth, and 2 feet in depth. The cover slab was much larger both in length and breadth, as it overlapped both the sides and ends.

These cists remind one, in their general form and plan, but on a much smaller scale, both as regards the size of the enclosed space and the magnitude of the stones, of the dolmens so frequent in Brittany. As survivals in modern times, we may point to the empty stone boxes, on the cover stone of which an inscription is incised, to be seen in so many country churchyards, bailt on the ground superficial to the pit in which the body in its wooden coffin has been inhumed.

Cothin has been innumed.

Owing to the shortness of the cist the body could not be extended at full length, but was laid upon its side, with the elbows bent, so that the hands were close to the face; the hips and knee joints were also bent so that the knees were in front of the

body.

Usually only a single skeleton has been found in a cist, either a man or a woman as the case may be. Sometimes two skeletons have been seen, at times a man's and a woman's, doubtless husband and wife; in others the second skeleton has been that of a child. Sometimes the cist was below the average in size, and contained only the skeleton of a child or young person. Such examples throw light upon the family relations of the people of this period. They show that they desired to preserve the associations of kinsfolk even after death; and when the cist contained the remains only of a child it was constructed with the same care as if it had been the tomb of a chief.

When cremated bodies are found associated with stone cists in When cremated bonies are load associated with stone cists in the same cemetery, the cinerary urns in which the ashes were customarily deposited lie outside the cists, and in quite inde-pendent excavations in the soil, but in such close proximity as to show that they belonged to the same period. In two instances

short cists have been opened, in which, alongside of the skeleton of an unburnt body, were cremated human bones, not contained in a cinerary urn, but scattered on the floor of the cist, which conclusively prove that both cremation and inhumation were sometimes in practice at the same interment.

(To be continued.)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Mr. CHARLES E. GREEN, President of the Board of Trustees of Princeton University, died suddenly on December 24.

LAFAYETTE COLLEGE, at Easton, Pennsylvania, suffered serious loss by fire a few days ago for the second time in its history. Pardee Hall, with its valuable collections, was nearly destroyed, and the library was much injured.

Science states that bills have been again introduced into both Houses of Congress to establish the University of the United Such a bill was introduced by Senator Edmunds in 1890 and referred to a select committee, which reported unanimously in its favour. The standing committee since appointed has also reported unanimously in its favour, and it is said that the bill will probably be passed during the present

Among recent appointments are: -Dr. S. Fuchs to be associate professor of physiology at the University at Jenz; Prof. Waldemar Lindgren, of the U.S. Geological Survey, to be professor of metallurgy and mining engineering in Stanford University; Mr. Edgar R. Cumings, of Cornell University, to-be instructor in geology in the University of Indiana; Dr. W. Ophuls to be professor of pathological anatomy in the University of Missouri.

An additional chair of Chemistry has been founded and endowed in the McGill University, Montreal, by Mr. W. C. McDonald, who recently erected a new chemical building at a cost of 240,000 dols. The same donor has provided an additional endowment of 50,000 dols. for the faculty of Law, to the deanship of which faculty, with the chair of Roman Law, Mr. F. P. Walton, of the Scotch Bar, was recently appointed. Mr. McDonald has, moreover, supplemented the existing endowments associated with his name by a further gift of 200,000 dols, to provide for any deficiency in income that may result from the fall in the rate of interest on investments.

SCIENTIFIC SERIALS.

Symons's Monthly Meteorological Magazine, December, 1897. —A wet day in a wet district. A remarkably heavy rainfall oc-curred in the Lake district on November 12. At Skelwith Fold (Lancashire) it amounted to 6 '03 inches, or 7 '5 per cent. of the annual mean; at Skelwith Bridge (Westmoreland) 6 '35 inches were measured, or 7 '8 per cent., and at Leathwaite (Cumberland) 8 '03 inches, or 6 '1 per cent. of the annual mean. There was no thunderstorm, but a continuous pelting rain nearly throughout the twenty-four hours. Naturally, much damage was caused by floods.—Temperature variations in November. An observer at Cheltenham draws attention to some remarkable changes during November 14 to 20, the greatest of which was a fall of 21°4 between the 18th and 19th. In the neighbourhood of London the greatest difference between any two consecutive readings during November was 19° 6. Mr. Symons points out that nearly similar differences also occurred in 1866 and 1893.— The same number also contains some useful particulars, illustrations, respecting Richard's instruments for use with kites or balloons. Pressure, humidity, and temperature are simultaneously recorded on a single sheet of paper; the total weight of the instrument is only 36 ounces.

Wiedemann's Annalen der Physik und Chemie, No. 12 .-Origin of contact electricity, by C. Christiansen. The gas-surrounding a jet of zinc, lead, or tin, amalgam has a marked influence upon its uninterrupted length. Air, oxygen, and sulphurous acid have the effect of retarding the breaking up of the jet, owing to contact electrification. The author measures the length of the continuous jet by making it part of a circuit containing a galvanometer, the steadiness of the needle denoting the continuity of the jet. He finds that air or oxygen have no effect when quite dry.—Temperature of the electrodes of mercury arc lamps, by L. Arons. In the arc lamp with mercury electrodes, devised by Arons, the anode is the hotter, and gradually distils over into the kathode, which is flickering and turbulent. Mercury is condensed on the walls of the vacuum tube, which are easily obscured.—Deflection of kathode rays, by W. Kaufmann and E. Aschkinass. The authors deter-mined the deflection produced in kathode rays by a narrow field due to condenser plates mounted in a tube crossing the vacuum tube at right angles. They found that the amount of deflection observed is strictly in accordance with the projection hypothesis of kathode rays as against the German wave hypothesis.—Magnetic deflection of kathode rays, by W. Kaufmann. hypothesis of kathode rays as against the German wave hypothesis.—Magnetic deflection of kathode rays, by W. Kaufmann. The above result led the author to redetermine the ratio e/m of the charge of the projected particles to its mass, by a close study of the magnetic field deflecting the ray. It was found to be 1.77 × 107 instead of 107.—Kathode rays, by E. Wiedemann and G. C. Schmidt. There are two distinct kinds of kathode rays, which proceed from a point in the form of a solid cone and of a hollow cone respectively, producing on the wall of the tube a patch or a ring. The authors studied these two species under the simplest conditions. They placed a knob, forming the terminal of a Lecher secondary wire, against an exhausted glass sphere without electrodes. A hollow cone proceeded from a point in the sphere next to the knob, whose angle varied with the exhaustion, the size of the sphere, and the curvature of the electrode, increasing as they increased.—Electric observations by balloon, by R. Börnstein. The balloon offers the best means of determining the true potential at any point in the atmosphere, but the charge of the balloon itself is a source of error. This may be eliminated by employing three collectors for three successive points below the balloon, and only about 2 m. distant from each other. If the decrease of potential is uniform, the charge of the balloon is zero. Otherwise, the charge is easily calculated from the observed decrements.—Thermodynamics of luminescence, by K. Wesendonck. A luminescent body is capable of imparting heat to a body warmer than itself. This does not contradict the second law of thermodynamics, as luminescence is not ordinary thermal radiation. dynamics, as luminescence is not ordinary thermal radiation.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 16, 1897,—"The Comparative Chemistry of the Suprarenal Capsules." By B. Moore, M.A., and Swale Vincent, M.B.

In this paper it is shown that the " paired bodies" of Elasmo-In this paper it is shown that the "paired bodies" of Elasmo-branch fishes contain the same chromogen as the medulla of the suprarenal capsules of mammals. In previous papers Vincent had shown not only that the "paired bodies" bear a close resemblance histologically to mammalian medulla, but that they contain a substance which constricts arterioles and raises blood pressure in a similar manner to mammalian medulla.

From the chemical point of view Moore had further shown that this active substance is closely associated with a chromogen also found only in the suprarenal medulla. The active material and chromogen are not, however, identical, for the activity may be destroyed without destroying the chromogen by allowing the material to stand for seven to ten days in strong alcohol. Moore hence supposes that the active material has a complex molecule which is decomposed by the alcohol, and that the chromogenic properties are attached to a group in this molecule which is unattacked in the decomposition.

which is unattacked in the decomposition.

The colour reactions of the chromogen show that it contains an ortho-dihydroxy-benzene nucleus; thus, it gives a deep green coloration with ferric chloride, and reduces silver nitrate in the cold. Besides these tests, it gives a rose-red colour with alkalis and free halogens and other reactions, which show that it is a strong reducing agent.

Using these colour reactions as tests the chromogen was sought for in extracts of the paired bodies of Elasmobranchs (Scyllium canicula), and was found to be present in abundance.

(Scyttium canticula), and was found to be present in abundance. It was also shown that no chromogen is present in the inter-renal of Elasmobranchs, which, according to Vincent, corresponds to the cortex of the suprarenal of mammals.

Thus, additional evidence is furnished that the paired bodies correspond to mammalian medulla, while the inter-renal does not resemble medulla and is probably cortex, as suggested by Vincent.

"On a Method of determining the Keactions at the Points of Support of Continuous Beams." By George Wilson, M.Sc., Demonstrator in Engineering in the Whitworth Laboratory of the Owens College, Manchester.

[ANUARY 6, 1898

the Owens College, Manchester.

The solution given in this paper differs from those of Bresse, Clapeyron, and Heppel, insomuch that the reactions at the points of support are considered as the unknown quantities to be determined, instead of the bending moments over the piers.

It is shown that by considering the continuous beam as a beam supported at each end and under the action of the given tealing outputs the strong downwards and the intermediate supports.

beam supported at each end and under the action of the given loading acting downwards, and the intermediate supports considered as unknown concentrated loads acting upwards, and equating the deflection at any intermediate point of support caused by the former loading to that caused by the several intermediate reactions treated as concentrated loads, the following series of equations is obtained, viz.:—

$$\begin{array}{l} \mathbf{N_1} = \mathbf{R_1}{n_1}' + \mathbf{R_2}{n_1}'' + \mathbf{R_3}{n_3}''' + \dots \\ \mathbf{N_2} = \mathbf{R_1}{n_2}' + \mathbf{R_2}{n_2}'' + \mathbf{R_2}{n_2}''' + \dots \\ & \qquad \qquad \&c. \end{array}$$

Where R with the correct suffix is the reaction at any inter-mediate point of support, and N and n with their suffixes are quantities depending on the dimensions of the beam and the

The quantities n are constant and need only be determined once, whilst the value of N changes with the position and magnitude of the live load. A method of determining these constants when the cross section of the beam is variable, is given; when the cross section is uniform, the equations can be written down at once.

The elevation or depression of the supports from any cause affects the values of R, the alterations in which can be deter-mined by means of the above equations when the amount of the elevation or depression is known.

An example is appended to show the application of the

Geological Society, December 15, 1897. - Dr. Henry Hicks, Geological Society, December 15, 1897.—Dr. Henry Filess, F.R.S., President, in the chair.—On the Pyromerides of Boulay Bay, Jersey, by John Parkinson. After briefly noticing the literature of the subject, the author described the altered rhyolites of Boulay Bay. One variety, the commonest, is of a dark red colour, showing flow-structure; another is porphyritic; a third, near the centre of the Bay, has a pale greenish matrix enclosing fragments, which, however, are due to flow-brecciation. tion. Large pyromerides occur in two localities: in the more interesting, that north of the jetty, the structure of the rock indicates either a very peculiar magmatic differentiation in situ or (more probably) the mixture of two magmas differing in their stage of consolidation. From study of a series of specimens of the pyromeridal rock, the author arrived at the following con-clusions: (1) The rock shows marked flow-structure and at times bands which indicate a slight difference in its composition, clusions: (1) The rock shows marked how-steated and actimes bands which indicate a slight difference in its composition, the latter tending to assume a moniliform outline. In such the microscopic structure corresponds with that of the pyromerides, and exhibits traces of radial crystallisation. (2) These afford a passage into somewhat oval pyromerides, with rather tapering ends and irregularly mammillated surfaces. (3) From these sometimes a single one seems to be thrown off, while lines of pyromerides or little lumps of similar material are scattered about the matrix. (4) Many of the pyromerides are solid throughout; others have a central cavity filled with quartz.—On the exploration of Ty Newydd Cave near Tremeirchion, North Wales, by the Rev. G. C. H. Pollen. In November 1896 a Committee was formed, consisting of Dr. H. Hicks, Dr. H. Woodward, and the author, for the purpose of exploring this cavern, which is situated in the same ravine on the east side of the Vale of Clwyd as the well-known caverns of Ffynnon Beuno and Cae Gwyn, explored about twelve years ago by Dr. H. Hicks and Mr. E. B. Luxmoore. Grants have been made by the Koyal Society and by the Government Grant Committee by the Royal Society and by the Government Grant Committee for the purpose of carrying on the explorations; and though a considerable time must elapse before the work is completed, the considerable time must elapse before the work is completed, the results already obtained are of importance. The cavern had been in part broken into by quarrying operations, but the chambers and tunnels were completely filled up with more or less stratified deposits, and had remained entirely untouched. Although the ground above the cavern is strewn over with drift and erratics from the north and from the central area of Wales. and erratics from the north and from the central areas of Wales, not a fragment of anything but immediately local material has

been discovered in the cavern itself, showing clearly that the deposits in the cavern had been carried in by water before the northern and western ice had reached this area. The work has been carried on almost continuously throughout the year, and most of the material has been removed for a distance of over 60 feet from the entrance. The height of the cavern above sealevel is 420 feet, or about 20 feet above the floor of the Cae Gwyn Cave. The following points appear to the author to be now fully established: (1) The material in the Ty Newydd Cave, as in the lower parts of those of Ffynnon Beuno and Cae Gwyn, is of purely local origin. Of this he can speak with confidence, as the question was before him from the beginning and the gravels were examined with minute care for erratics. (2) This local deposit is of earlier date than the boulder clay with western and northern drift. This was proved by the finding of granite- and felsite-boulders abundantly at higher levels and over the cave, and in one case filling the upper part of one of the fissares communicating from above with the cavern. (3) The occurrence of the tooth of a large mammal (Rhinocerus) in the lower part of the cave shows that the animal was contemporary with, or of earlier date than the infilling of the cavern by the local drift.

Chemical Society, December 15, 1897.—Prof. Dewar, President, in the chair.—Prof. F. R. Japp delivered the Kekulé Memorial Lecture (see p. 180)—December 16, 1897.—Prof. Dewar, President, in the chair.—The following papers were read:—Stereochemistry of unsaturated compounds. Part i, Esterification of substituted acrylic acids, by J. J. Sudborough and L. L. Iloyd. The authors have made experiments on the esterification of many cinnamic acids and other derivatives of acrylic acid; the acids were boiled under fixed conditions with methylic alcohol solutions of hydrogen chloride, and the quantity of methylic salt formed was subsequently determined. Several rules governing the speed and course of esterification are formulated.—Formation and hydrolysis of esters, by J. J. Sudborough and M. E. Feilmann. The authors conclude that in the conversion of an acid into its ester by the action of an alcohol, either with or without hydrogen chloride, the rate of esterification is determined by two factors, namely (1) the configuration of the acid or the close proximity of substituting groups to the carboxyl group, and (2) the strength of the acid as determined by its affinity constant. The same two factors operate in determining the rate of hydrolysis of the ester.—A new method of determining freezing points in very dilute solution, by M. Wildermann.—A possible basis of generalisation of isomeric changes in organic compounds, by A. Lapworth. The author points out that many isomeric changes, hitherto regarded as of dissimilar types, may be formulated as special cases of a general form, expressible by the reversible equation R_aM. R_a: R_x: R_a: R_a. R_b, M; a labile group M moves from an α to α γ position, the necessary rearrangement of single and double bindings taking place between the three atoms, R_a, R_b and R_b. By the aid of this general formula and its extended forms the author is able to explain a large number of cases of desmotropy, tautomerism and isomeric changes.

Royal Dublin Society, December 22, 1897.—Prof. G. F. Fitzgerald, F.R.S., in the chair.—Prof. Thomas Preston read a paper on the radiation of light in a magnetic field. The author described how he had been led to apply photography to the study of the effect (recently discovered by Prof. Zeeman) produced by a strong magnetic field on the radiation from a source of light placed in it. The photographs were projected on a screen, and they rendered all the effects described by Prof. Zeeman clearly visible to a large audience (see p. 173).—Prof. J. Joly, F.R.S., then read a note on a theory of sun-spots. If at some level in the photosphere the temperature falls below the critical temperature of the elements present, and the pressure is sufficient, a precipitation of liquid will result; and it is suggested such a precipitated flood of liquid matter, supported on gaseous matter of higher density, would give rise to the appearances presented by a sun-spot. If the liquid is opaque, it will look darker than the surrounding photosphere. The reflection of the photosphere at the edge and the inrush of gaseous matter over the cooler area will, it is believed, explain the appearance of the penumbra. The re-evaporation of the liquid constitutes the disappearance of the spot. On this view the sun-spot constitutes the first beginning of a change of state in the sun visible to us.

PARIS.

Academy of Sciences, December 20, 1897 .- M. A. Chatin in the chair.—The Secretary informed the Academy of the loss it had sustained through the recent death of M. Brioschi, of Milan.—Observations relative to the coffins of Voltaire and of Rousseau, opened December 18, 1897, by M. Berthelot .-Determination of the absolute coordinates of the stars, and also of the latitude, by means of meridian instruments. General method for the solution of these problems, by M. Lœwy.—On the periods of double integrals of algebraic functions, by M. Emile Picard.—Comparison of the thermogenetic or dynamo-genetic power of simple food-stuffs with their nutritive value, by M. A. Chauveau. A considerable difference exists between the isoenergetic and isotrophic weights of sugar and fat in the case of a working subject. The isoglycogenetic and isotrophic powers are practically identical.—On those cases of the problem of three bodies (and of n bodies) in which two of them collide at the end of a finite time, by M. Painlevé.-On a special method of circumzenithal observations, by M. Ch. Rouget. further study of the method described in a previous note.—On a particular conjugate net of certain surfaces derived from surfaces of the second order, by M. S. Mangeot.—On Taylor's series, by M. Eug. Fabry.—On the isothermal and adiabatic transformations of true gases; determination of the ratio of the two specific heats, by M. A. Leduc.—On an apparatus permitting of the separation of simple radiations in close proximity, by M. Maurice Hamy. The method is based upon the principle of interference.—Ebullioscopy of some salts in ethereal solution, by M. R. Lespicau. Results are given for uranyl nitrate and The method is based upon the principle of the chlorides of mercury, iron, zinc, and antimony.—On cerium, by M. Boudouard. A reply to criticisms on a former paper by the author.-On the duration of the phosphorescent power of the author.—On the duration of the phosphoreseent power of sulphide of strontium, by M. José Rodriguez Mourelo. Experiments on sulphide of strontium prepared by different methods show that those specimens which exhibit the greatest intensity of phosphorescence are also those in which the property is most quickly developed and is preserved for the longest time.—Volumetric estimation of antimony, by M. H. Causse. The new method proposed is an iodometric one, depending upon the liberation of incline from iodic acid, by artimonious exists. liberation of iodine from iodic acid by antimonious oxide.— Difference between nitroso-substitution derivatives according as Difference between introso-substitution derivatives according as the NO group is directly connected with carbon or with nitrogen, by MM. Camille Matignon and Deligny. A thermo-chemical paper.—A colour reaction of ordinary aldehyde, by M. Louis Simon. A blue colour is produced on the addition of solutions of trimethylamine and of nitro-prussiate of sodium. The reaction is not given by other aldehydes.—Action of privariding upon carbonic ethers of phenols; formation of piperidine upon carbonic ethers of phenols; formation of aromatic urethanes, by MM. Cazeneuve and Moreau.—On two Lepidoptera destructive to the sugar-cane in the Mascarene Isles, by M. Edmond Bordage. The author endeavours to clear up the confusion which has arisen as to the history and nomenclature of two species, the larve of which are known as "borers."—On the nuclear value of the central body of bacteria, by MM. Kunstler and P. Busquet.—On extra-liberian cribriform tissue and extra-ligneous vascular tissue, by M. E. Perrot.—On potato rot, by M. E. Roze. An account of the nature and causes of the various changes to which the tubers are liable after gathering.—The composition of oat, wheat, and rye straw, by M. Balland. The results of analyses show no difference between the three varieties of straw, which contain only trifling quantities of nutritive material. Short and leafy straw is to be preferred for the food of horses, and long straw for their litter.—On the presence of beds containing Planordis pseudo-ammenius and Bulimus Hopei in the neighbourhood of Sabarrat and Mirepoix (Ariège), by M. G. Vasseur.—Influence of sub-nitrate of bismuth upon the "hardening" of cider, by MM. Leon Dufour and Daniel. The presence of the salt greatly retards the development of acidity. Its addition is recommended in the proportion of 10 grams per hectolitre (o or per cent.).—On the estimation of the acidity of urine, by M. H. Joulie. Advantages are claimed for the use of a standard. M. H. Joulie. Advantages are claimed for the use of a standard solution of succharate of lime. No indicator is required, the end-point being shown by the production of a precipitate of phosphate of calcium when the free acid and acid phosphate of sodium have been neutralised.—On the fermentation of cellulose, by M. V. Omelianski. A quantitative study of the action of the ferment described in a previous communication. The products of the decompositions are hydrogen, carbon dioxide, and a large proportion of fatty acids.—Muscular atrophy

experimentally produced by pyocyanic intoxination, by MM. Charrin and H. Claude, —On tubercular sclerosis of the

Charrin and H. Claude, —On tubercular scierosis of the pancreas, by M. Paul Carnot.

December 27, —M. A. Chatin in the chair.—In an obituary notice of M. F. Brioschi, whose recent death was announced at the previous meeting, M. Hermite gave a brief account of the work of that distinguished mathematician. —A special method for the abelian determination of declinations and of latitude. for the absolute determination of declinations and of latitude, by M. Lœwy. A further development of the subject of the author's previous communication.—The centrosomes in vegetable cells, by M. L. Guignard.—On phthalic green. Constitution, by MM. A. Haller and A. Guyot. The colouring matter previously described is to be considered as a substitution derivative by MM. A. Haller and A. Guyot. The colouring matter previously described is to be considered as a substitution derivative of malachite green. The results obtained by Fischer are explained by the presence of impurities in the materials used by him.—Observation of the shower of Orionids, December 12–14, at Athens, by M. D. Eginitis.—On the existence of integrals in orthoic systems, by M. Riquier.—On surfaces applicable to a surface of revolution, by M. A. Pellet.—On linear functional equations, by M. Lémeray.—On a spring ergograph, by MM. A. Binet and N. Vaschilde. Several advantages are claimed for the use of a spring, instead of a weight, in this instrument.—Conductivity of radio-conductors or discontinued electrical conductivity. Resemblance to nervous conductivity, by M. Edouard Branly.—Magnetic properties of tempered steels, by Mme. Sklodowska Curie.—On the polarisation of the light emitted by a sodium flame placed in a magnetic field, by M. A. Cotton.—On the preparation of alloys of beryllium. Alloys of beryllium and copper, by M. P. Lebeau. The alloys are obtained by heating, in an electric furnace, an intimate mixture of oxide of beryllium, oxide of copper, and charcoal.—On the impurities of aluminium and of its alloys, by M. Ed. Defacoz. The author seeks to determine the form in which the foreign elements (silicon, iron, and copper) exist in the metal.—On a double carbonate of sodium and protoxide of chromium, by M. G. Bangé. The new salt results from the action of a solution of sodium carbonate upon chromous accepte, in an atmosphere of carbonate of carbonate upon chromous accepte, in an atmosphere of carbonate of sodium carbonate upon chromous accepte, in an atmosphere of carbonate of sodium carbonate upon chromous accepte, in an atmosphere of carbonate of sodium carbonate upon chromous accepte. Baugé. The new salt results from the action of a solution of sodium carbonate upon chromous acetate in an atmosphere of carbon dioxide. It crystallises with either one or ten molecules of dioxide. It crystallises with either one or ten molecules of water and is a powerful reducing agent, decomposing water at 100° C. with evolution of hydrogen.—On the atomic weight of cerium, by MM. Wyrouboff and A. Verneuil. A rejoinder to M. Boudouard's criticism.—On the use of carbide of calcium in the preparation of absolute alcohol, by M. P. Yvon. Pure alcohol is without action upon calcium carbide, but the presence of even traces of water leads to the evolution of acetylene and formation of calcium hydrate. It is therefore possible by one, of even traces of water leads to the evolution of acetylene and formation of calcium hydrate. It is therefore possible by one, or at most two, distillations to prepare absolute alcohol from spirit of 90 per cent. strength.—On the aromatic diurethanes of piperazine, by MM. P. Cazeneuve and Moreau.—On α-acetyllurfurane and its presence in wood-tar, by M. L. Bouveault.—
On the behaviour, on distillation, of a mixture of pyridine with propionic, acetic, and formic acids. The author has studied the progress of fractionation in the case of mixtures of a volatile acid with a feeble base. In the case of pyridine and formic acid the former begins to distil over in a nearly pure state, although its boiling point is 14° higher than that of formic acid.—On crystalline minerals formed under the influence of volatile agents crystalline minerals formed under the influence of volatile agents at the expense of the andesites of the island of Thera (Santorin), by M. A. Lacroix.—The theory of the sense of orientation in animals, by M. G. Reynaud.—On the generation of leucocytes in the peritoneum, by M. J. J. Andeer.

DIARY OF SOCIETIES.

THURSDAY, JANUARY 6.

ROYAL INSTITUTION, at 2.—The Principles of the Electric Telegraph:

Prof. Oliver Lodge, F.R.S.

FRIDAY, JANUARY 7.

GEOLOGISTS' ASSOCIATION, at 8.—A Brief Account of the Excursions in the Urals, down the Volga, in the Cancasus, &c., made in connection with the International Geological Congress held in Russia, August-September, 1897: 1. L. Belinfante.

SATURDAY, JANUARY 8.

ROYAL INSTITUTION, at 3.—The Principles of the Electric Telegraph:

Prof. Oliver Lodge, F.R.S.

TUESDAY, JANUARY II.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Machinery used in the Manufacture of Cordice; E. W. Anderson.

ANTHROPOLOGICAL INSTITUTE, at 8.30.

RÖNTGEN SOCIETY, at 8.30.—Practical Work with the X-Rays; W. Webster.

ROYAL VICTORIA HALL, at 8.30.-Diamonds: Prof H. A. Miers, F.R.S.

NO. 1471, VOL. 57]

THURSDAY, JANUARY 13.

MATHEMATICAL SOCIETY, at 8.—Note on a Property of Pfaffians: H. F. Baker.—On the Stationary Motion of a System of Equal Elastic Spheres of Finite Diameter (continuation): S. H. Burbury, F.R.S.—On Discontinuous Fluid Motion: B. Hopkinson.—On the Intersections of Two Conics of a given Type, and on the Intersections of Two Cubics: H. M. Taylor.—On the Continuous Group defined by any given Group of Finite Order: Prof. W. Burnside, F.R.S.
INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Presentation of Premiums.—Inaugural Address of the President, Joseph W. Swan, F.R.S.

FRIDAY, JANUARY 14.

ROYAL ASTRONOMICAL SOCIETY, at 8.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Mechanical Draught: R.
Gordon Mackay.

MALACOLOGICAL SOCIETY, at 8.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Books.—The Span of Gestation and the Cause of Birth: Dr. J. Beard (Jena, Fischer).—Die Farnkräuter der Erde: Dr. H. Christ (Jena, Fischer).—Ehrbuchl der Vergleichenden Mikroskopischen Anatomie der Wirbeltiere: Dr. A. Oppel, Zweiter Teil, Schlund und Darm (Jena, Fischer).—Aunuaire de l'Observatoire Municipal de Montsouris, 1808 (Paris, Gauthier-Villars).—Alembic Club Reprints, Nos. 13 and 14 (Edinburgh, Clay).—Imperial University of Japan, Calendar for 1896–97 (Tükyő).—Sixteenth Annual Report of the Bureau of American Ethnology (Washington).—Knewledge, Vol. xx. (Witherby).—Tables of Parabolic Curves: G. T. Allen (Spon).—Gesammelte Kleine Schriften: L. Rütimeyer, 2 Vols. (Basel, Georg).

PAMPSILETS.—National Association for the Promotion of Technical and Secondary Education, Tenth Annual Report (London).—A New Theory of the Stars: Prof. A. W. Beicerton (Christchurch, N.Z., Whitcombe).—La Planète Vehnus: C. Flammarion (Paris, Gauthier-Villars).—Periodic Orbits: Prof. G. H. Darwin.

SERIALS.—Bulletin of the Illinois State Laboratory of Natural History, Vol. 5, Article 3 (Urbana, Ill.).—Humasitarian, January (Hutchinson).—Contemporary Review, January (Isbister).—Maori Art, Part 2: A. Hamilton (Wellington, N.Z.).—Proceedings of the Academy of Natural Sciences of Philadelphia, 1897, Part 2 (Philadelphia).—Fortnightly Review, January (Tohapman).—Journal of the Royal Hortcultural Society, December (117 Victoria Street).—Journal of the Royal Agricultural Society, Ol. 8, Part 4 (Murray).—Plankton Studies on Lake Mendota, II.: Prof. E. A. Birge (Wisconsin).—National Review, January (Arnold).—Reliquary and Illustrated Archaeologist, January (Bemrose).—American Journal of Mathematics, January (Bemrose).—American Journal of Mathem

CONTENTS. P.	AGE
Cayley's Papers. By G. B. M Experimental Physics. By A. P. C	217 218
American Game Birds. By R. L Our Book Shelf:-	219
Pellissier: "L'Éclairage à l'Acétylène" Schweiger-Lerchenfeld: "Atlas der Himmelskunde auf Grundlage der Ergebnisse der coelestischen	219
Photographie."—W. J. S. L	220
Letters to the Editor:-	
Physiology and the Royal Institution.—Prof. Ch. S. Sherrington, F.R.S	220
M. E. Wadsworth Growth of the Tubercle Bacillus at a Low Tempera-	221
tureF. J. Reid	221
The Story of Gloucester	221
Robert Mill Thomas Jeffery Parker, F.R.S. By Prof. G. B.	223
Howes, F.R.S.	225
Notes Our Astronomical Column:—	227
Winnecke's Comet	230
Arrival of Eclipse Parties at Bombay	230
Mont Blanc Observatory Photography of Unseen Moving Celestial Bodies	230
Astronomical Annuals	230
Photographic Measurement of Horses and other	230
Animals. (Illustrated.) By Francis Galton, F.R.S. The Magnetic Properties and Electrical Resistance of Iron at High Temperatures. By Dr.	230
David K. Morris	232
F.R.S	234
University and Educational Intelligence	237
Scientific Serials	237
Societies and Academies	238
Diary of Societies	240
Books, Pamphlets, and Serials Received	240

DINES' PATENT PRESSURE PORTABLE ANEMOM



For many years the want has been felt of a PORTABLE ANEMOMETER, by means o, which the actual Velocity and Pressure of the Wind could be quickly ascertained. This want Mr. W. DINES, who is well known for his anemometrical experiments, has met by his PATENT PRESSURE PORTABLE ANEMOMETER.

One scale of the instrument shows directly the actual velocity of the wind; the other (not shown in the woodcut) the pressure exerted in pounds per square foot. The instrument is used vertically, with the nozzle pointing towards the wind.

FULL PARTICULARS SENT ON APPLICATION.

PRICE

SCIENTIFIC INSTRUMENT MAKER TO THE ADMIRALTY AND ORDNANCE, 147 HOLBORN BARS, LONDON, E.C. Telegraphic Address. "ESCUTCHEON, LONDON."

CLARENDON PRESS PUBLICATIONS.

LIST CLOSES ON JANUARY 15 THE FLORA OF BERKSHIRE: being a

Topographical and Historical Account of the Flowering Plants and Ferns found in the County, with short Biographical Notices of the Botanists who have contributed to Berkshire Botany during the last three centuries. By George Clarifica Druce, Hon. M.A. Oxon., Sheriff of the City of Oxford, Curator of the Fielding Herbarium.

Demy Sro, Paper Covers, 148.

THE ANNALS OF BOTANY. Vol. XI.

No. XLIV. With 3 Plates, 5 Woodcuts, and full-page Portrait of Miles Joseph Berkeley. Edited by Isaac Bayley Balfock, M.A., M.D., F.R.S.; SIDNEY HOWARD VINES, M.A., D.Sc., F.R.S.; D. H. Scoff, M.A., Ph.D., F.R.S.; and WILLIAM GILSON FARLOW, M.D., assisted by other Botanists.

London: HENRY FROWDE.

A MECHANICAL CAUSE OF HOMOGENEITY OF STRUCTURE AND SYMMETRY GEOMETRICALLY INVESTIGATED, WITH SPECIAL APPLICATION TO CRYSTALS AND TO CHEMICAL COMBINATION.

By WILLIAM BARLOW.

Being the Scientific Proceedings of the Royal Dublin Society, Volume VIII. (New Series), Part VI., No. 62. 164 pp. Price Five Shillings.

London: WILLIAMS & NORGATE, 14 Henrietta St., W.C.

Alembic Club Reprints of Historical Works relating to Chemistry. Not. 13 and 14 Just Published, price 1s. 3d. each, Post free.

Nos. 13 and 14 Just Published, price 12. Sd. ench. Post free.

EARLY HISTORY OF CHLORINE (The).
12 by Carl Wilhelm Scheele (1774), C. L. Berthelollet (1785), G.

PASTEUR (Louis), MOLECULAR ASYMMETRY: Researches on (1860). Cr. 8vo, Cl., uniform with Series.

"." Nos. 1-12, uniform with above, 12, 5d. each, post free, excepting Nos. 9
and 19, 22, ad. each, post free. Detailed List post free.

New List (No. 8o) of Standard Reference Books for Chemists, post free.

NATURE. omplete Set from commencement, 1869 to 1854, 50 Vols. Cloth £12 126.
WILLIAM F. CLAY, Publisher, 18 Teviot Place, Edinburgh.

SCIENCE PROGRESS.

A QUARTERLY REVIEW OF CURRENT SCIENTIFIC INVESTIGATION.

Edited by J. BRETLAND FARMER, M.A.

With the co-operation of a powerful Editorial Committee.

With the co-operation of a powerful Education Communication

Contents of JANUARY Number.

WHY WE MEASURE PEOPLE. By A. C. Handon, M.A., Professor of Zoology in the Royal College of Science, Dublin.

THE INFLUENCE OF OXFORD ON THE HISTORY OF GEO-LOGY. By W. J. SOLLAS, F.R.S., Professor of Geology in the University of Oxford.

ON PROGRESS IN THE STUDY OF VARIATION. By W. BATHSON, F.R.S., Fellow of St. John's College, Cambridge.

PREHISTORIC MAN IN THE EASTERN MEDITERRANEAN (PART IL). By J. L. MYRES, M.A., Senior Student of Christ Church, Oxford.

Oxford.

METAMORPHOSIS IN PLANTS. By S. H. Vines, F.R.S., Sherardian Professor of Botany in the University of Oxford.

THE BACILLUS OF PLAGUE. By G. A. BUCKMASTER, M.D., Lecturer on Physiology at St. George's Hospital, London.

SECRETION AND ABSORPTION OF GAS IN THE SWIMMING-BLADDER AND LUNGS. By J. S. HALDANE, F.R.S. APPENDIX.—REVIEWS OF BOOKS.

Price 3s., or 3s. 3d. post free. Subscription price, sos. 6d. per Annum Post free.

Now Ready, Vol. VI. (Vol. I. of New Series), in handsome Cloth Binding, gilt lettered. Price rus. 6sf.

London: THE SCIENTIFIC PRESS, LTD., 28 and 29 Southampton Street, Strand, W.C.

Just Published, with 87 Illustrations, Royal Svo, 12s. net.

A TEXT-BOOK OF CENERAL BOTANY

CARLTON C. CURTIS, A.M., Ph.D.,

Tutor in Botany in Columbia University,

London: LONGMANS, GREEN, & CO.

"STRONGEST AND BEST."-Health.

PURE CONCENTRATED

200 GOLD MEDALS AND DIPLOMAS.

"The Richest in flesh-forming and energy-producing constituents."—Dr. ANDREW WILSON, F.R.S.E.

WATKINS & DONCASTER,

1

ATURALISTS, AND MANUFACTURERS OF ENTOMOLOGICAL AND OTHER SCIENTIFIC APPLIANCES AND CABINETS.

Plain Ring Nets, wire or cane, including Stick, 12, 3d., 22, 32, 6d. Folding Nets, 3s. 6d., 4s. Pocket Boxes, 6d., 9d., 1s., 1s. 6d. Zinc relaxing Boxes, 9d., 1s., 1s. 6d., 2s. Store Boxes, 2s. 6d., 4s., 5s., 6s. Setting Boxes, 9d., 1s., 1s. 6d., 2s. Store Boxes, 2s. 6d., 4s., 5s., 6s. Setting Boxes, 9d., 1s., 1s. 6d., 2s. Store Boxes, 2s. 6d., 4s., 5s., 6s. Setting Boxes, 1s. 6d., 1s. 6d., 1s. 6d., 1s. 6d., 4s. 5s., 7s. 6d. Botanical Cases, japanned double tin, 1s. 6d., 2s., 9d., 3s. 6d., 4s. 6d., 7s. 6d. Botanical Paper, from 1s. 1s. 0s. 2s. 2d. per quire. Insect Cases, 2s. 6d. to 1s. Forceps for removing Insects, 1s. 6d., 2s., 9s. 6d. per pair. Cabinet Cork, 7 by 3s., 1s., 1s. 4d. per dos. Nested Willow-chip Boxes, 4 dos. 3d.—Our new Label List of British Micro-lepidoptera, with English and Latin names, 1s. 6d. Improved Pocket Papa-Digger in leather sheath, 1s. 9d. Taxidermists' Companion, containing most necessary implements for skinning, 1os. 6d.; Scalpels, with ebony handles, 1s. 3d.; Fine Pointed Scissors, 2s. per pair; Egg Drills 2d., 3d., 1s.; Brass Blowpipes, 4d., 6d. A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds Eggs—Entomological Pins of every kind.—Benzoline and Oil Lanterns for sugaring, &c. (new and mproved pattern), 2s. 6d. and 4s. each.

A LARGE STOCK OF INSECTS AND BIRDS EGGS.

Cabinets.—Special Show Room. For Particulars and Measurements see our Catalogue (66 pp.), which will be sent post free on application.

Birds, Mammals, &c., Preserved and Mounted by First-class Workmen

36 STRAND, LONDON, W.C. (Five doors from Charing Cross.)

ZOOLOGICAL SPECIMENS FOR DISSECTION.

MAII types required for Science Courses, perfect condition guaranteed' The following are some of the chief forms, with prices:

Scyllium, 10d. each; 8s. dos. Amphioxus, 9d. each. Assacus, 9d. each. Anodon, 9d. each. Rana, 6d. each.

Noctiluca, 12. 3d. per tube.
Grantia, 12. 3d. per tube
Sycon, 13. 3d. per tube.
Medusoids, 12. 3d. per tube.
Aurelia, 10d. each.
Coryne, 12. per tube.
Obelia, 12. per tube.
Ascaris (large), 8d. each.
Cerebratulus, 13. 6d. each.
Arenicola, 6d. each.
Arenicola, 6d. each.
Sagitta, 21. per tube

Sipunculus, 3s. to 4s. doz Echinus (large), 10s. doz. Cucumaria (large), 1s. 4d. each. Cucamaria (large), 1s. 4d. es Apus. 1s. each.
Nebalia, 1s. per tube.
Gammarus, 1s. per tube.
Scorpio, 1s. 1o 1s. 6d. each.
Scolopendra, 1s. 6d. each.
Aplysia, 3d. to 1od. each.
Haliotis, 8d. each.
Loligo media, 1od. each.
Mya, 1od. each.
Mya, 1od. each.
Salpa, 1s. 6d. per tube.
Salpa, 1s. 6d. per tube.
Raia, 1s. to 2s. 6d. each.
Lacerta, 1od. each.

REDUCTION ON LARGER QUANTITIES

JAMES HORNELL, BIOLOGICAL STATION, JERSEY.

LIVING SPECIMENS FOR THE MICROSCOPE.

Volvox, Spirogyra, Desmids, Diatoms, Amorba, Arcella, Actinosphærium, Vorticella, Stentor, Hydra, Floscularia, Stephanoceros, Melicerta, and many other Specimens of Pond Life. Price 12. per Tube, Post Free. Helix pomatia, Astacus, Amphioxus, Rana, Anodon, &c., for Dissection purposes

THOMAS BOLTON,

25 BALSALL HEATH ROAD, BIRMINGHAM.

MARINE BIOLOGICAL ASSOCIATION OF THE UNITED KINGDOM.

THE LABORATORY, PLYMOUTH.

The following animals can always be supplied, either living or preserved by the best methods :-

Sycon; Clava, Obelia, Sertularia; Actinia, Tealia, Caryophyllia, Alcyonium; Hormiphora (preserved); Leptoplana; Lineus, Amphiporus; Nereis, Aphrodite, Arenicols, Lanice, Terebella; Lepas, Balanus, Gammarus, Ligia Mysis, Nebalia, Carcinus; Patella, Buccinum, Eledone, Pectens, Bugula, Crisia, Pedicellina; Holothuria, Asterias, Echinus; Ascidia, Salpa (preserved), Scyllium, Raia, &c., &c.
For prices and more detailed lists apply to Biological Laboratory, Plymouth.

ALBERT EDWARD JAMRACH (Late CHARLES JAMRACH), NATURALIST.

180 ST. GEORGE STREET EAST.

Implements of Savage Warfare, Idols, Sacred Masks, Peruvian Pottery, Netsukis China, Lacquers, Gongs, Shells, and other Curios.

MINERALS, FOSSILS, ROCKS.

COLLECTIONS OF THIN SLICES FOR PRACTICAL MICRO-SCOPIC PETROGRAPHICAL STUDY.

These Collections contain thin Slices of all the more important Types of Rocks, as mentioned in the latest edition of the "Microscopic Physiography of Rocks," by H. Rosenbusch (Stuttgart, 1896).

To each one will be added a printed short description of all the Specimens and Slices, in order that the student himself might beable to recognise and determine the constituents of the Rock.

Collections of 120, 180, and 250 Thin Slices.

Elegant Cases, £7 10s., £11 5s., £16 5s., respectively.
The same Collections, inclusive of the Specimens (size, 31 × 41 inches), £12 10s., £19 10s., £28 15s., respectively.

As all thin Slices will be microscopically examined before being delivered, we can guarantee their perfect reliability, and that they exhibit all the characteristics of the Rocks, as mentioned in the above-named description.

Dr. F. KRANTZ,

BONN ON RHINE. RHENISH MINERAL OFFICE. ESTABLISHED 1833.

(Represented by Messrs. Harrington Bros., Oliver's Yard, 53a City Road, London, E.C.; and Cork, Ireland.)

For Educational and Scientific purposes.

Schools and Colleges supplied.

ollectors can obtain of us, New and Rare Minerals from all parts of the world. The following splendidly illustrated Catalogues are free:

Collections; Cabinet Specimens; Gems, &c.

DR. A. E. FOOTE,
1817 ARCH STREET,
PHILADELPHIA, PA., U.S.A. FOOTE

MINERALOGY.

SAMUEL HENSON

Has just received some beautifully Crystallised GOLD SPECI-MENS and NUGGETS. Choice Dioptase, Wulfenites and Emeralds on Matrix. Very fine Mocha Stones. Gem Stones for Mounting.

Collections for Student, Teacher, or Prospector. Lessons given.

SAMUEL HENSON, 97 RECENT STREET, LONDON, W. ESTABLISHED 1840.

COLLECTIONS OF

MINERALS, ROCKS, FOSSILS, AND MICROSCOPIC SLIDES

TO ILLUSTRAT

GEOLOGY & PHYSIOGRAPHY,

As set forth in the Science and Art Directory.

- - DESCRIPTIVE CIRCULAR, POST FREE.

THOMAS D. RUSSELL, Mineralogist, 78 NEWGATE STREET, LONDON, E.C.

F. H. BUTLER, M.A. Oxon., Assoc. R. S. Mines. NATURAL HISTORY AGENCY,

158 BROMPTON ROAD, LONDON. Dealer in Rocks, Minerals, Fossils, and other Objects of Scientific Interest.

Among Specimens of Rocks recently collected by Mr. BUTLER are
Ophitic Olivine-Dolerite with Labradorite Phemocrysts and Mica-Basalt
from dykes, Aros, and Olivine-Basalt. Tobermory, Mull; Basalt, fresh and
altered, Calve Is.; White Marble with Salite and Pink ditto with Hornblende and Coccolite and at contact with Gneiss, Tiree; Hornblendie
and coarse and fine-grained Gneiss, Coll; Olivine-Dolerite Dyke and Scuir
porphyritic Rhyolite-Pitchstone, Eigg; Plagioclastic Granite with included
Gneiss fragments, Quartaite, and the recently described Olivine-Monzonite,
from near Ballachulish. Micro-Sections of the above can be furnished.

MACMILLAN & CO.'S NEW SCIENTIFIC WORKS.

NEW BOOK BY SIR NORMAN LOCKYER.

Svo. 125.

IN NATURE THE SUN'S PLACE

By Sir NORMAN LOCKYER, K.C.B., F.R.S., &c.

NEW EDITION OF VOLUME II. NOW READY.

EMISTRY

By H. E. ROSCOE, F.R.S., and C. SCHORLEMMER, F.R.S.

Volume I .- THE NON-METALLIC ELEMENTS. 8vo, 21s. Volume II .- THE METALS. New Edition. Completely Revised by Sir H. E. ROSCOE. Assisted by Drs. H. G. COLMAN and A. HARDEN. 8vo, 31s. 6d.

* It is believed that the two volumes as they now stand form not only the best but the only complete work, up to date, on INORGANIC CHEMISTRY in the English Language.

MACMILLAN AND CO., LIMITED, LONDON.

THE MOST NUTRITIOUS.

GRATEFUL-COMFORTING

BREAKFAST AND SUPPER.

PILLS HOLLOWAY'S

Biliousness, Sick Headache, Indigestion and all Internal Complaints.

CAN BE TAKEN BY THE MOST DELICATE.

Holloway's Pills and Ointment may be obtained of all Medicine Vendors.

"OPTIMUS" MAGIC LANTERNS SUITED FOR DRAWING ROOM AND LECTURE HALL.

Each Magic Lantern is efficient for Exhibitions The Lens gives crisp definition, being a superior Achromatic Photographic Combination with rack and ion. It is fitted to a telescopic lengthening tube, so gaining increased focal accommodation. The Condenser is composed of two plano-convex lens of ches diameter. The refulgent lamp has 3 wicks, yielding a brilliantly illuminated picture. Each is complete in Box.



Quarterly



Student's LANTERN (to take demonstrat-ing tank) with Brass Sliding Tubes.





Perforated Russian Iron Body, Brass Sliding Tubes.



Plain, 1/-Coloured, 1/6.

All Accessories at reasonable prices.





99 HATTON CARDEN, PERKEN, SON-& RAYMENT, 99 HATTON CARDEN ONDON.

NOTICE. - Advertisements and business letters for NATURE should be addressed to the Publishers; Editorial communications to the Editor. The telegraphic address of NATURE is "PHUSIS," LONDON.

SUBSCRIPTIONS TO "NATURE." Half-yearly 0 14 Quarterly TO ALL PLACES ABROAD :-Yearly 1 10 6
Half-yearly 0 15 6 0 15 6

CHARGES FOR ADVERTISEMENTS. Three Lines in Column 0 0 9 Per Line after One Eighth Page, or Quarter Column . 0 18 6 Quarter Page, or Half a Column . . . I 15 0 Half a Page, or a Column 3 Whole Page 6 6 0

Cheques and Money Orders payable to MACMILLAN & CO. Limited. MACMILLAN AND CO., LIMITED, LONDON.

The "N. & G." CAMERAS and KINEMATOGRAPHS

FOR SCIENTIFIC WORK.

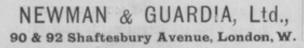
High-class Instruments of best workmanship. Used by the Leading Experts at Home and Abroad.

COMPLETE PHOTOGRAPHIC OUTFITS

Supplied for Scientific Expeditions or Special Investigations.

Catalogues and Estimates free on application.

(When writing, please reter to NATURE.)



HOWARD

ELECTRICIANS, 18 KENNINGTON ROAD, LAMBETH, S.E. IMPROVED PORTABLE COILS,



Suitable for Scientific, Medical, and Surgical Purposes.

Makers of Complete Apparatus and Separate Parts for Radiography of the highest standard of merit. Code, Cells, Accumulators, Transformers, Crookes' Tubes, Fluorescent Screens, &c.
PATENTEES AND MAKERS OF THE
"Ringing" Bells, Bell Sets, and Improved

"Ringing" Medical Coils.

MANUFACTURERS OF CALVANOMETERS, SWITCHES, TERMINALS, &c. Special attention given to the I Construction of small Motors AN SEND FOR NEW ILLUSTRATED CATALOGUE. TA

THE ... YOST

IS TO

The Finest Writing Machine in the Market.

BUT -

Belfast: 13 Rosemary Street. Birmingham: 73 Temple Row. Cardiff: 77 St. Mary Street. Dublin: 17 Nassau Street. Edinburgh: 12 North St. Andrew Glasgow: 112 St. Vincent Street. Leeds: 15 Briggate. Liverpool: 22a North John Street. Manchester: 3 Deansgate. Newcastle-on-Tyne: 50 Dean Street. Bordeaux : 14 Allées de Tourny. Lille: 116 Rue Nationale. Lyons: 2 Rue Lafont. Marseilles: 25 Rue Paradis. Paris: 36 Boulevard des Italiens.



You need not accept our word for it. Let us send it to you for

SEVEN DAYS FREE TRIAL.



Catalogues post free on application to

YOST TYPEWRITER Co., Ltd.,

50 Holborn Viaduct, London, E.C.

AND THEN

Give us your opinion of it. We court competition. Test it against other instruments, as it gives us an opportunity to demonstrate that our Machine is superior to any other Typewriter.

Printed by Richard Clay and Sons, Limited, at 7 & 8 Bread Street Hill, Queen Victoria Street, in the City of London, and published by Machillan and Co., Limited, at St. Martin's Street, London, W.C., and The Machillan Company, 66 Fifth Avenue, New York.—Thursday, Jan. 6, 1898.

Some diameter on Source

Queen's Premiums.

SHOW

OF

THOROUGH-BRED STALLIONS

SUITABLE FOR GETTING

HALF-BRED HORSES,

TO BE HELD AT

THE ROYAL AGRICULTURAL HALL,

ISLINGTON,

IN CONJUNCTION WITH THE

HUNTERS' IMPROVEMENT SOCIETY,

GALTON LONG PAPERS ON LANGE PAPERS ON LANGE PAPERS ON LANGE PAPERS ON LANGE PAPERS OF LANGE PA

ON

MARCH the 7th, 8th and 9th,

Queen's Premiums.

TWENTY-NINE "QUEEN'S PREMIUMS" of £150 each are offered for Thorough-bred Stallions, between 4 years old and not exceeding 20 years old.

It shall be a condition that each Stallion winning a Premium shall serve not less than fifty half bred mares, if required, during the season of 1899, and shall stand or travel as the Commissioners may direct in the district for which he is exhibited, at a fee not exceeding forty shillings for each mare, and two shillings and sixpence to the groom.

The Season of Service will commence,

On April 3rd, and terminate on July 31st.

It shall be a condition that no Queen's Premium Stallion shall be allowed to be exhibited for Competition during the season of service.

It shall be a condition that a Stallion which has won four Queen's Premiums in the same District Class shall be ineligible for entry again in the same class, but shall be eligible for any other District Class.

For the purposes of this Exhibition, each district will constitute a separate class to be styled "District Class."

Stallions shall compete in the "District Class" only for which they are entered, and Exhibitors may not enter more than one Stallion in each class.

The Commissioners reserve power to award to a Stallion unsuccessful in the District Class for which he is entered a premium in the Class for any other District provided the Exhibitor enters the Stallion on these terms. Should a premium be awarded in such other Class, the obligations as to location and service shall apply to the District for which the premium is awarded, instead of the District for which the Stallion is exhibited.

The Commissioners are of opinion that the following diseases shall disqualify a Thorough-bred Stallion for the purposes of this Commission, viz:—

Roaring — Whistling. Ringbone. Unsound Feet. Navicular Disease. Spavin. Cataract.

If any Stallion winning a premium should not serve at least 30 half-bred mares during the season, the Commissioners reserve the power to reduce the premium as provided by the Rules and Regulations on Page 7, No. 32.

The District Classes for England, Wales and Scotland, will be as follows:-

CLASS.	COUNTIES.
	BEDFORDSHIRE BUCKINGHAMSHIRE CAMBRIDGESHIRE ESSEX
A.	HERTFORDSHIRE Three Stallions at £150 each.
	MIDDLESEX
	OXFORDSHIRE SUFFOLK
-	Ourham Three Stallions at £150 each.
В.	Westmoreland
	DERBYSHIRE LEICESTERSHIRE
C.	LINCOLNSHIRE Four Stallions at £150 each.
	RUTLANDSHIRE
	BERKSHIRE
	Devonshire Dorsetshire
D.	HAMPSHIRE Four Stallions at £150 each.
	SURREY SUSSEX
	WILTSHIRE
E.	YORKSHIRE Three Stallions at £150 each.
	GLOUCESTERSHIRE HEREFORDSHIRE MONMOUTHSHIRE
F.	SHROPSHIRE Four Stallions at £150 each. WARWICKSHIRE
	WORCESTERSHIRE SOUTH WALES
G.	CHESHIRE LANCASHIRE Three Stallions at £150 each NORTH WALES
H.	ROXBURGHSHIRE, BER- WICKSHIRE and District One Stallion at £150.
I.	FIFESHIRE and District One Stallion at £150.
J.	DUMFRIES, KIRKCUD- BRIGHT, SHIRES and District One Stallion at £150.
K.	MORAY, NAIRN and BANFF One Stallion at £150.
L.	ROSSHIRE One Stallion at £150.

RULES AND REGULATIONS.

Entries.

1. The necessary printed Forms of Certificates of Entry may be Formsof Certificates obtained from the Secretary, at No. 39, Victoria Street, cate of Entry. Westminster, London, S.W., by persons desirous of exhibiting, who are requested to state how many forms of Certificate they wish to have sent to them, as only one entry can be made on each Certificate.

cate of Entry.

- 2. No Stallion will be admitted for exhibition unless the necessary Last day Certificate, properly filled in, upon the printed form prescribed. and signed by the exhibitor (or his agent) in the manner directed, and accompanied by the necessary fees, shall have been delivered to the Secretary, or sent (postage free) directed to him so as to reach No. 39, Victoria Street, Westminster, London, S.W., on or before Monday, January 30th, 1899, or as a Post Entry before Monday, February 6th, 1899. No entries can be received after the latter date under any circumstances.
- 3. The entry fee for each Stallion is £3, or Post Entry £4.

Entrance Fee.

of Entry.

Conditions of Entry.

- Each District shall constitute a separate class.
- No Stallion shall be entered in more than one class.
- 6. No Exhibitor may enter more than one Stallion in each class.
- 7. The Commissioners reserve power to award to a Stallion unsuccessful in the District Class for which he is entered a premium in the Class for any other District provided the Exhibitor enters the Stallion on these terms.
- 8. Every Stallion must either be entered, or certified as eligible to be entered in the General Stud Book.
- 9. The Exhibitor of every Stallion must be the bona fide owner or lessee (whether individual, Society or Company) both at the time of entry and on the day of exhibition.
- 10. No Stallion which is under any other engagement will be eligible to compete.
- 11. No Stallion which has won 4 Queen's Premiums in the same class will be eligible for entry again in the same class.
- 12. No Stallion under 4 or over 20 years old will be eligible to compete.
- 13. No Stallion whose percentage of foals, taken on the average Percentage of over two seasons of service as a premium-winning Stallion, under Foals. these rules regulations and conditions, does not exceed 40 per cent., shall be eligible for entry again.
- 14. The Commissioners also generally reserve the power to refuse an Entry of any Stallion which, from his antecedents, they are of opinion has not produced a satisfactory percentage of foals.
- 15. The Name and Residence of the Breeder of each Stallion entered for exhibition must be stated when known; or when not known sufficient explanation must be given why this information cannot be afforded.

Conditions of Entry



7 16

- 16. The year of birth of each Stallion must be stated in the Certificate.
- Contract to fulfil 17. Every Exhibitor by signing his Certificate of entry makes a contract with the Commissioners to conform to these rules and regulations and conditions, and in particular those relating to location and service of Premium-winning Stallions, and not to commit or knowingly permit any breach of any of these rules, regulations and conditions.
 - 18. In the event of any Exhibitor committing or knowingly permitting any breach of any of these rules and regulations or conditions he will become liable to the forfeiture of any Premium which may have been awarded to him, and this condition is without prejudice to the enforcement of the said contract and of these rules and regulations and conditions, by way of injunction or otherwise.

Correctness of Certificate. 19. Every Exhibitor shall prove the correctness of his Certificate to the satisfaction of the Commissioners, if and when called upon by them to do so, or failing to furnish the required proof, he may be prohibited from exhibiting, and any Premium, if awarded, may be withheld, and the award cancelled.

Fine for Non-

20. A fine of £2 must be paid to the Commission if a Stallion entered for Exhibition is not sent to the Show, unless a Certificate from the Exhibitor, or his Agent, be lodged with the Secretary of the Commission, before the opening of the Show, certifying that such non-exhibition is caused either by (1) the death of the Stallion; or (2) contagious or infectious disease or an injury of such a nature as to render him unfit for exhibition (confirmed by the explanatory Certificate of a veterinary surgeon); or (3) by its becoming ineligible for the Class in which it has been entered.

Contagious or Infectious Disease, 21. Every Exhibitor shall forfeit and pay to the Commission the sum of £20 as and for liquidated damages, if any Stallion which he exhibits is, to his knowledge, suffering from any contagious or infectious disease, and for each and every such Stallion, if more than one.

Disqualification. 22. In the event of any Thorough-bred Stallion being disqualified by the Veterinary Inspectors, any Exhibitor of such Stallion may ascertain, on application to the Secretary, the cause for such disqualification.

Non-responsibility of Commissioners.

23. Neither the Commissioners nor any of their Officers or Servants shall be in any way responsible or accountable for anything that may happen (from any cause or circumstance whatever) to Exhibitors or their Servants, or to any Stallion exhibited, or property brought into the Hall, or otherwise for anything else in connection with, or arising out of, or attributable to this Show, or these or any other Conditions or Regulations prescribed by the Commission in relation thereto.

Interpretation of Conditions to be vested in Commissioners.

24. The Commissioners reserve to themselves the sole and absolute right to interpret these Conditions and Regulations, and to arbitrarily settle and determine all matters, questions, or differences in regard thereto, or otherwise arising out of or connected with, or incident to, this Show, or during the subsequent season of service. Also to refuse and to cancel any entries, disqualify Exhibitors, prohibit exhibition of entries, and cancel awards of Premiums, as the Commissioners may deem expedient.

Protests.

25. Any person or persons wishing to lodge a protest having reference to any of the Stallions exhibited, must obtain from the Secretary and properly fill up and sign a form for the purpose, and deposit with him the sum of £5. If on

investigation the protest is not sustained to the satisfaction of the Stewards, the sum thus deposited shall, at the discretion of the Commissioners, be forfeited to the funds of the Commission. All protests must be delivered to the Stewards, at the Secretary's Office in connection with this Show, not later than ten o'clock on the morning of Wednesday, March 8th, 1899, and no protest will be subsequently received, unless a satisfactory reason be assigned for the delay.

Location and Service of Stallions.

- 26. It shall be a condition that each Stallion winning a Premium shall serve not less than 50 half-bred Mares, if required, during the season of 1899, and shall stand or travel as the Commissioners may direct from time to time for the purpose in the district for which he is exhibited, or if the owner consents to locate the Stallion in another district, to be selected by the Commissioners, on being awarded a premium in the Class for such other district, in the event of failing to obtain a premium in the Class for which he is exhibited, then in such other district at a fee not exceeding 40/- for each Mare and 2/6 to the Groom.
- 27. The location of all Premium-winning Stallions to be subject to Location of the approval of the Commissioners, and the owners are to communicate the location desired by them to the Commissioners for their approval, as soon as possible after the awards have been made, and such approval may from time to time be revoked and the owners will obey any directions from time to time to be given by the Commissioners with reference to the location or travelling in the district.

28. Without prejudice to rule 27, and subject to any exceptions to be made by the Commissioners in any special cases no two Stallions shall be located at a less distance than twenty miles of each other, and where the wishes of respective owners clash as to location of the Stallions, the Commissioners shall decide.

- 29. Stallions to be placed, if required, within a fortnight of the date of the Show in the location approved by the Commissioners for such time as may be required.
- 30. The season of service commences on April 3rd, and terminates on July 31st.
- 31. The Premiums will be withheld until the 15th August, 1899, with the exception of £20 which will be paid on award subject to the approval of the Stewards, and signature of a bond by each successful Exhibitor embodying the conditions of competition and of service. Such bond is to be without prejudice to the enforcement of the said contract and these rules and regulations and conditions by way of injunction.
- 32. In case any Stallion winning a Premium should not be required to and should not in fact serve the full number of 50 half-bred Mares during the season, the Commissioners may in their absolute discretion reduce the Premium to such sum as they may think fit so nevertheless that it be not reduced under the present clause to less than the aggregate amount of £5 for each such Mare actually served during the season. Service in this rule, and in rule 26 above, means service in the district in which the Stallion is required to serve.
- 33. A nomination form will be sent to owners of Marcs who wish to Nominations send them to a Stallion. After the nomination form is accepted the owners will be liable for the fees, but in case of illness or inability of the Stallion to finish his service season, the owners of Mares must abide by the decision of the Commissioners as to the amount of fees to be paid.

Premium Stallions

for Mares.

34. The rules and regulations are to be binding not only on the Exhibitor and his representatives, but also on any other owner or lessee or possessor of a Stallion to which a Premium may be awarded. The successful Exhibitor, or his executors, administrators or assigns, will not at any time before the expiration of the season of service, sell, let. or part with the possession of the Stallion without giving notice to the purchaser, lessee, or other person with whom he is dealing, of these rules and regulations and conditions, and procuring from him (free of cost to the Commissioners) the execution of a bond in such amount and in such form as the Commissioners may require for securing the observance by him of these rules and regulations and conditions.

District Committees.

- 35. A local Committee will be appointed in each of the districts, to whom all questions connected with the respective Stallions during the season of service may be referred, a Member of which Committee will act as correspondent, as between the district and the Commission.
- Commissioners may themselves select. Stallions.
- 36. In the event of a sufficient number of Stallions not being exhibited in any one District Class, or in the event of such Stallions not being of sufficient merit, in the opinion of the Judges, to justify an Award of a Premium or Premiums in such class, the Commissioners shall hold themselves at liberty to select and locate a Stallion or Stallions to meet the case.

Instructions to Judges and Stewards.

Veterinary Examination.

- No Premium will be awarded until the Stallion has been certified to be free from Hereditary Disease by the Veterinary Inspection appointed under the authority of the Commission. Unsoundness from accidental injury shall not necessarily disqualify.
- 38. The attention of the Judges will be directed to "conformation," especially in reference to hocks, feet, &c.

Want of Merit. 39. The Judges will withhold any Premium or Premiums, if they are of opinion that sufficient merit in the Stallions exhibited for such Premium or Premiums does not exist to justify an award, and their attention is to be specially directed to the age and constitution of the Stallions.

40. The Judges will give in three "RESERVED NUMBERS" in each class in order of merit, indicating the Stallion which in their opinion possesses sufficient merit for the Premium, if the Stallion to which a Premium has been awarded should become disqualified.

41. The Judges will deliver to the Stewards, before they leave the Show, their awards in each class, signed, stating the numbers to which the Premiums are adjudged, and noting all disqualifications. They are to transmit, under cover to the Secretary, immediately after the Show, their report on the Stallions upon which they have adjudicated.

Rules and Regulations applicable to the whole Show.

 The Admission Order must be delivered to the Gatekeeper at the Hall by the person who brings the Stallion for admission. A number to be attached to each Horse's head-stall will be forwarded shortly after the close of the entries, and this number must correspond with that on the Admission Order sent by the Secretary. Another label will be provided at the Secretary's Office in the Hall, which must be worn on the breast of the

Reserved Numbers.

> Awards of Judges.

Admission

Orders.

- 2. All Stallions must arrive at the place of Exhibition before Ten Date of Arrival. o'clock on the night of Monday, March 6th, from which 3 Joys time they will be subject to the conditions of the Show, till its termination on Thursday evening, March 9th, 1899.
- 3. No animal will be allowed to leave the Hall at the close of the Delivery Orders. Show without the production of a Delivery Order, which must have been previously signed by the Exhibitor, or his authorised
- 4. Any Exhibitor wishing to remove his horse for the night will be Removal of allowed to do so on depositing £5 with A. B. Charlton, Secretary, Hunters' Improvement Society, at his Office, and receiving from him a Special Delivery Order. This money will be forfeited, with any Premium which the Horse may win, if the animal is not returned to the Hall by Eight o'clock each morning of the Show. A special form of receipt will be given for this deposit, on return of which receipt, duly endorsed by the Exhibitor, the deposit will be refunded The time of leaving each night and that of returning each morning must be inserted thereon.
- 5. The hours for parade on Wednesday and Thursday, will Parade, be announced by placard in the Hall. Grooms must be in attendance at all times after 8 o'clock in the morning, ready to appear in the ring, and must obey all orders of the Stewards.
- 6. All grooms in charge of Stallions must be subject to the orders Grooms in of the Stewards, and must be in attendance at their boxes and stalls from 10 AM to 12 noon, and from 2 PM. to 4 P.M. each day, to afford visitors an opportunity of more closely seeing the horses.

- 7. No canvas shall be placed in front of the boxes during the time that the Show is open, except by the written permission of the
- 8. Each Exhibitor shall be solely responsible for any consequential Loss or or other loss, injury or damage done to, or occasioned by, or arising from any Stallion exhibited by him, at the Royal Agricultural Hall, London, and for the description as given in the Catalogue; and shall indemnify and hold harmless the Royal Commission and the Hunters' Improvement Society against all legal or other proceedings in regard thereto, and shall repair any injury which may be so occasioned.
- 9. No Stallion will be allowed to leave his box unless it be for the purpose of judging or parading in the ring, and at the express direction of the Stewards. Should any Exhibitor wish to show his Stallion at any other time, a special order for this purpose must be obtained from one of the Stewards; and the Exhibitor will be held responsible for any damage or loss incurred thereby or arising therefrom.
- 10. No Horse may be decorated with medals or ribbons until after it Decoration has been judged.
- 11. Hay and Straw will be found free of expense, but Corn must be Hay and Corn. provided by the Exhibitors, and may be purchased inside the Building at fair Market Prices.
- 12. No litter may be thrown out after 7 o'clock in the morning.

Litter

Horse Boxes.

13. The Boxes will be so arranged that the Stallions can remain during the three days of the Show; and Horses will not be allowed to be removed from the Hall before the hour fixed by the Stewardson I hursday evening, March 9th, upon any pretence whatever, without the authority of A. B. Charlon, Secretary, Hunters' Improvement Society, given in writing on a "Special Delivery Order," countersigned by a Steward.

Misconduct.

14. The Stewards shall have the power to order the expulsion from the Building of any Servant misconducting himself in the Royal Agricultural Hall.

Regulations.

Infringement of 15. Any infringement of any of these Regulations or Conditions will subject the Exhibitor to a fine of £1 by the Stewards, and to the forfeiture of any Premium to which he may be entitled, in addition to all other consequences attaching to such infringement.

Question or Dispute.

16. Should any question or dispute arise, not provided for in the foregoing "Rules and Regulations," the decision of the Stewards shall be final.

By Order,

J. HERBERT TAYLOR,

39, VICTORIA STREET,

Secretary.

WESTMINSTER, S.W.

LAST DAY OF ENTRY, JAN. 30th: POST ENTRIES, FEB. 6th, 1899.





THE HORSEMAN.

VOL. XVII.-NO. 82.

Copyright 1897 by

The Chicago Horseman Newspaper Company, Publishers.

DANIEL J CAMPAU. Pres and Treas

Published weekly and entered as the Post-office in Chicago III., as second-class matter.

YEARLY SUBSCRIPTION, \$3 IN ADVANCE.

OUR MAIL.—All postoffice orders and remittaness should be made payable and directed to the Chicago Horsenan Newspaper Company, 28 and 28 Destroors street, Chicago, Subscribers win of not receive THE HOUSEMAN regularly will please neitly us at once. When unable to secure THE HOUSEMAN on news-stands, subscribers win oblige this other by giving us the name and location of the dealer of the California of the

Communications must be accompanied by the writer's ame and address, not for publication, but as a guarantee of good faith; copy must be in our office not later than 18 h. m. of Meeday of each week; no notice will be taken of morprosous better or articless. are Il additional, or I morprosous more than a postage of the po

yearly, because of extra post-sam.

POREIGN OFFICES.—THE HORSEMAN is for sale at

Prontano's news-stand, London, and in Paris at 17 Avenue Brentano's news-stand, Lobson,
de l'Opera,
ADVERTISING RATES furnished upon application.

CHICAGO, TUESDAY, DECEMBER 28, 1897.

GALTON'S LAW OF HEREDITY.

A NEW METHOD OF DETERMINING THE AVERAGE INPLUENCE OF ANY ANCHOUSE.

A NEW METHOD OF DETERMINING THE AVERGE. INFLUENCE OF ANY ANCIBITOR.

THE influence of an ancester is popularly known as a certain percentage of blood. Because the foal is the joint product of sire and dam. benders, are in the habs of saying that it inherits is per evol. of the blood of its sire and if per earl. of the blood of its sire and if we never concern ourselves with any influence back of the sire and dam, the statement may be considered, so far as it goes, a correct method of expressing an apparent truth. But the feal has four grandparents,—two grandelres and two grandsars,—and we ask. What is their average influence? The answer has always been, "25 per cent. of blood" from each,—because there are four progenitors in the second generation,—and so cash has given a fourth. But in this second answer we must either excited an parental influence,—treat the sire and dam as pen-existent,—or we have accounted for more then one inheritance. In a similar manner, when we proceed to the third generation of a pedigree, and find eight ancestors.—four great grandslave and four great grandslave and four great grandslave and four so on, at inflation, as far as one may care to pursue the calculation after the same manner. In every accepting generation, the remains of a locations is doubled, and hence the re-called percentional, in the fifth generation, 25 ancestors give 61, per cent. cach, in the fifth generation, 25 ancestors give 61, per cent. cach, in the fifth generation, 25 ancestors give 61, per cent. cach, in the fifth generation, 25 ancestors give 62, per cent. and A very little reflection will convince one that this method

each, its the fifth generation, if ancestors give S₃ per cont. each, sic.

A very little reflection will convince one that this method of computation, though on its surface having an appearance of truth, must be erroneous. If the sire contributes half and the dam helf, then the entire inheritance is accounted for, and there is no room for any further ancestral contributions. Every breeder known, however, that the "blood" hack of both sire and dam does exect an influence, and this influence is often readily recognizable by the striking recombinate to a grandsire, for instance, or by total absence of recombinate to other sire or dam. Hence a method of calculating percentages of blood which begins by excluding all influences beyond the sire and dam, or, the proceed a step further, then excludes all influence of sire and dam, is manifestly contradictory and must be wrong. To more fully illustrate, let us calculate the ancestral contributions according to this time-honored custom to the fifth generation, viz.:

Pitth generation, is great-great great-grandiers and its great-great-grandiers and its great-great-grandiers. In 19 506, so that instead of accounting for one inheritance, there are five on our hands, and the more generations back we go, the worse off we are. The method is crude to the point of absurdity—and still it is the only method in use—nothing better having ever been brought forward to take its place; and for the further reason that is actual practice breeders Probably concern themselves every inthe with percentages of blood. The rule, being founded on error, can be of no practical use, and save as an aid to an argument, it never has been, probably, of any benefit whatever.

Tet us a matter of fart, the experience and observation of every broeder, as well as the teachings and discoveries of science, units in teatifying to the infinience on offspring of ancestors belt near and remote. In the formation and in the keeping up of a breed after it is formed, there is no doubt but what the near crosses exert the most infinience, and that the influence, as a general thing, of each generation of ancestors breedens bees and less. On the other hand, it is well known that even a very remote ancestor may trasmit some one peculiarity, appet from all the other. It is also certain that in dealing with breads, varieties and families, there must be an average contribution from the various ancestors to the heritage of the offspring. Individual inheritances will vary widely as the individuals de themselves, but taking the members of a whole breed or family, of tretters and pacers, for instance—as there is an average height, an average speed, so

THE HORSEMAN.

there must be an average inheritance, and an average ancestral influence. A general law or rule which expresses accurately this average assessival contribution, is a valuable addition to our knowledge of heredity. Such a law has lately been put forward by Francis Gatton, the ablest and most experienced investigator of problems of this scort, and it affords me pleasure to present it to the readers of TIES HORSESMAN. Before doing so, however, I will tax their patience by attempting to get ride of one or two popular notions on the subject of fransenission which appear to be misleading.

The word "blood" in constantly used by horse breeders to similarly what passes from one generation of horses to another. It is presumed that no one takes the word at its 21-cral significance, and yet its excessive, almost exclusive use is unfortunate, and upt to mislead. The "blood" of a horse is cit transmitted to the foal, any more than the actual tissue, bone, muscles, skin, coat, hoods or any other physical part of the sire or dam. With regard to the dam, as there appears to be a widespread misapprehension, excluding up of the conclusions reached by Dr. William G. Priestley (see lectures published by Churchull, London, 180), pp. 0, 32, 3, 9, and 40, viz.

"Moreover, it must be recollected that the consection between the imborn child and the mother is hardly more intensis than that between some parasites and the animals on whice they live. Not a single nerve has been traced between them, not a drop of blood has been found to pass from the mother to the child. The unborn child, together with the growth to which it is attached and which is afterwards thrown off, have their own vascular system to thermovers entirely independent of that of the mother. If in an anatomical preparation, the veins of the child are injected with a colored fluid, none of it enters the veins of the child are injected with a colored fluid, none of the mother. Again, not only is the unborn child as sparate asimal from its mother, that obtains

Generation— First		No. of Ancestors in Generation.	tribution by Each Separate Assestor. .005 .009655 .009655
To which add			
Total *Influence of all as *Influence of all a **The entire berit	scentors to fift noestors beyon	h generation. d lifth gener	atlon.

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	regarded as the real source of life, sgy referred most diseases to 'reo Binliarly the blood plyin the most be revealing objects of the plant the most be revealing objects of life to be shood, pure blood, etc., etc., are yet to switely believed that the transmis- efinite morphological and physiologica warrest to the child "lies in the blood. are not not be entirely false, is easily hat, neither in the act of procreated screents directly transmitted to the ; cost the embryo acquire blood at an save aircady seen, not easy the sepan- molary germ layers, but also the be sportant organs, takes place, in the rates, before the rudiment of the vas- eart and blood, is formed." Instead, therefore, of "percentage rammission of blood, it will teed to	rrupt. Mood-mixture.' mportant part in the redity. Just at malf-centro phrases, so it sien, by heredity, of al characters from the "That this custom-reen from the fact in it the blood of the procreated germ, nor early period. As we also no the four secginatings of the most embryos of all vertecular systems, of the so of blood." or the	The Gallon is trad constributed by trade constributed by the survey to the survey contributed by the survey of t	aw of heredity dealings aw of heredity dealings declares that the grandparents 25 per reent, to the total h, expressed in declare generations, and a los from each ancests. Total Average Industries of Generation (50 515 515 515 515 515 515 515	ng with any of parents of cent. The property of the second in the second	contribute grant-grant so on. To he influence rage hered cral genera Average con tribution by Each Separate Ascestor. 50 6056 6056 60560 60600
100	occurate conception of the pro-	0.				
1	eires to consider ancestral contri- utions as "particulate inherit- nces." This phrase is so lucidly	- Diagram	of the Salto	m Law of Here	dity	
9	nces." This phrase is so lucidly appained by Mr. Galton in his book w	Representing the re	entive averous	instructor or each a	ncestor to t	n's Seven
1 1	rom which I have already quoted, and the paragraph sheds such a		3,			
	ight on the subject in hand, that				N	15 35 16 35
	cannot refrain from copying the samenge in full, viz.:					16 30
	"PARTICULATE INHERIT- INCEAll living beings are indi-			3	-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
13	bluals in one aspect and compos-				8	71 39 5
3	te in another. They are stable fab- tes of an inconceivably large num-	4		10000000	0	18 37 2
	ser of cells, each of which has in some sense a separate life of its	1			-	
33	own, and which have been com-				9	19 40
13	he subjects of much speculation,			1	0	20 1
	out are as yet little understood. We seem to inherit, hit by hit, this ele-			4	1000	-
10	ment from one progenitor, that from another, under conditions			10000	10	A3 W 3
	hat will be more clearly expressed	HOUSE STREET			1 - 1 - 1	22 13
1	as we proceed, while the several bits are themselves liable to some			a comparation	1 132 1	93 0 3
	small change during the process of transmission. Inheritance may				11	1000
10	therefore be described as largely,			5	100	77 33
100	if not wholly, 'particulate,' and as such it will be treated in these			e	100	25 50
	pages. Though this word is good English and accurately expresses			No. of the last of	12	01 10 8
	its own meaning, the application	0			-	26
	now made of it will be better un- derstood through an illustration.	n		1	10	27 5
	Thus, many of the modern build- ings in Italy are historically	Marie Control		1	13	28 2
10	known to have been built out of the pillaged structures of older days.		6	6		100
13	Here we may observe a column or			0	14.	29
1	a lintel serving the same purpose for a second time, and perhaps				Lite	30 11
	bearing an inscription that testifies					1 164
	to its origin, while as to the other stones, though the mason may					
	have chipped them here and there, as little, few, if any, came direct fr	nd altered their shape om the quarry. This	with the popu	ng this table with the	blood," It	will be se
	simile gives a rude, though true, idea ance, namely, that each piece of the	of Particulate Inherit-	how much the	y differ-and how w	idely they :	rary to the

The diagram represents the whole inheritance, and is divisied according to scale showing the relative influence of the first five generations by vertical lines, beginning in the centies. These vertical spaces are again divised by horizontal lines, each compariment representing an encentral contribution carried out as far as the fifth generation. These compariments are numbered connecturity to the fourth generation, from 1 to 20, inclusive, the odd numbers in this arrangement representing female ancestors for sireay and the even numbers representing female ancestors for sireay and the even numbers representing female ancestors (or dams). Thus the spaces marked 1, 2, represent the relative average influence of sire and dam. Spaces 2, 4, represent the relative average influence of sire and dam. Spaces 3, 4, represent the relative average influence of the sire's sire and the dams and the dams of the sire's sire and the dams and the dams of the sire's sire and the dams and the dams of the sire's sire and the dams and the dams and the dams of the sire's sire and the dams and the dams of the sire's sire and the dam's sire and the dams dam is entitle length the total average, sire and the dams dam is entitle length the total average, sire and the dams for the whole heritage. I think the law well now be plain to all, and its workings may be studied at belone by those interested—and I believe ti will repay careful study. For instance, from this we see that the influence of a sine or a dams is equal to the combined insurance of the four grandpurents; that the influence exerted by the four great-grandpurents; that the influence exerted by the sine size of the size of th

GOVERNOR HOLTON'S BOAD MARE.

P EW of the many admirers of Robert J., 2781s, know that his dam, Geraldine, was bred and raised by Governor B. B. Holton, of Baltimore. Governor Rolton awmed Nancy Claggett, the grandsim of Robert J., and for a long time used her as a readstee. She could trot about a 2:00 gail, but never showed enough speed to Justify training her. Finally Governor Holton sent her to Pashion farm and mated her with the then famous stallon, Jay Gould, the Billy Geraldine, that afterwards became the dam of Robert J., being the result. Geraldine was used by Governor Holton as a saddle and road mare. She was not as fast as her dam, never being able to go better than about 2:50. Geraldine was finally sold to Robert J. C. Walker, of Williamsport, Pa., who here her to Bantford, and the result of that mailing was Robert J., the first horse actually to show that a two-mirute pace was a possibility.

THE BENEFIT OF HORSE SHOWS.

THE BENEFIT OF HORSE SHOWS.

THE readers of THE HOSEEMAN have been kept well posted during the last two or three months in regard to the several horse shows given in different parts of the country. Many of them have had the opportunity of attending one or more of these exhibitions in person, and have been able to study for themselves the offects and results these events have had upon the animals of our country. Large numbers, however, are situated so far distant that it has been impossible for them to take sdvantage of this personal observation. For many years we have had fairs throughout the country, both state and country. These probably date back fifty years. They have been following a beaten path in regard to the classification of their principles and have been more of low restricted in the class of animals shown.

The breeders of America, until within the last down years, have been following mainly, three lines. The thoroughbred breeders of the pourt and west have developed and produced running horses, shall the American thoroughbred horse today stands the peer of any animal of similar breed in the world in regard to speed. The same is true of the trotting horse breeders. The other principal line which has been followed has been in the production of draft horses. Of course there have been store ker kinds of horses beed spassnotically in particular localities, but not generally. In producing the three classes named, attention has been given only to the purposes for which they were intended. Very little consideration or care have have not extend to the confirmation and style of these animals.

A dozen years are the first of the horse shown as we know them follow, was organized in the city of New York, and the first exhibition given in the old Masilson Squarg garden. After several of these scholows, as we know them follow the first of the horse shown, as we know them follows the first of the horse shown as largely to these shows will be general in America. The idea is an old one in England. They have been loo

almost entirely by the equestrians of our great cities. Many specimens of this animal now in use are strictly trai-

almost entirely by the equestrians of our great cities. Many specimens of this animal now in use are strictly fracting bred, or have a large percentage of trotting blood mixed possibly with a little thoroughbred.

The horse show is not only a practical object lesson to the breeder, but it also ables direct value to what he produces. It increase the demand, and distributes large sums of money to the borse owners of the country. In addition to this, one clue, by observation, learn the correct and greatest method of viding and driving, and it brings to pethor exhibitions and spectators from all parts of the country, where by intervourse with each other their views are broadcasted, ideas are exchanged, indeed, the horse show acts in a way as a higher college or university for the horse interests of the country. Not only can beceder and spectators profit in this manner from attending the horse shows, but the agricultural societies of our country could benefit greatly by a careful perusal of the prime lists as issued by our best horse shows. The methods of classification, adopted by most of the agricultural societies to-day, are obsolete. One finds at our fairs, for instance, a class called "pates of courch horses," and you will see shown in this class probably a dosen pairs of horses shown in this class probably a dosen pairs of horses of all sizes and descriptions; a class so complex that no lodge on earth could make his awards with any kind of autionship, The word "coach" is very misleading, and in the way employed here is now obsolete. Vehicles today are classified, and horses of different sizes and conformation are suitable for particular vehicles. One also finds a classified particular purpose, the province in really good for no particular purpose, there is a "general purpose horse," There is no such thing as a general purpose horse." There is no such thing as a general purpose horse, and mixelligently correlation of the horse subter st, and intelligently formulated and seccessfully carried out will do more for JOHN A. LOGAN.

Chicago, III.

STOCK FARM AND TRACK

The ordinary character of the private turnouts kept by many owners of large farms on which there is the material for a high-grade team has been frequently commented upon, P. C. Wisson, owner of Grassland farm, Menomonoe, Wis., evidently believes in enjoying the use of a good pair



intervals. A comparison of the animals as they stand in the ring is the best guide to the breeder. He readily learns to distinguish the deficiencies of particular animals as compared with others, and from the conclusion, rightly formed, has a foundation upon which to base his future operations.

In regard to the fast growing demand for what is known as "the heavy harness horse," or a horse suitable for use upon the streeds to various vehicles, the breeder, who of secondary lives at a distance from the cities, has an opportunity at the horse show of seeing these horses shown attached to the proper traps for which they are intended, and gets a clearer and better idea of what the demand is there is a farmen why so few American trettiens that have not developed speed sufficient for the race track, are not generally suited for heavy harness work; and if is, that is developing extreme speed in the trotting horse, little attention has been pabl to conformation, style and size. If there had bees in the past, as there is at the present time, sufficient demand for horses of this character, and an opportunity of competing with these horses in a show ring as well as upon the race track, there would now is no horse beed better entited to this particular work that the American trotter, as is instanced by the masty prime won annually in harness classes during the last three or four years by trotting been which it is fast there would now is no horse bred better entited to this particular work that the American trotter, as is instanced by the masty prime won annually in harness classes during the last three or four years by trotting been which it is fast becoming very rears by trotting been which it is fast becoming very predicted to produce is what is known as the "walk, trot and canter saidle horse," as he saddle horse or as he is sometimes called, the Kestucky gait horse, as the saddle horse or as he is sometimes called, the Kestucky gait horse, as the saddle horse or as he is sometimes called, the Kestucky gait horse, as th

a handsome and fast pair of trotters, which Mr. Wilson uses for his pleasure on the road.

An eastern paper continues to berate Willis O. Foote because, forecoth, he drove Rilma one poor race the past season. It would not require any great research to discover several acure of drivers who are reputed experts who drove good horses a great many poor races this year.

The track at Meestina Springs, N. Y., has been leased for 196 by J. W. Ranzier, Byracuse, N. Y.

The past season was a successful one for the association at McKee's Rocks, Pa. Treasurer Zinkman states that the track at the driving park is to be considerably improved, although II was regarded by horsenen the past season as one of the best half-mile tracks in the country. It is probable also that the association will give larger purses, as its officials consider the outlook for trotting in the vicinity of Pittsburg to be better than for many years.

The annual meeting of the Saranac Lake driving association will be held at Saranac Lake, N. Y., January B. B and 28. The mile kite track on Lawer Saranac fake is conceded by experienced horsenen to be one of the finest for courses ever troatted over. There are seven events on the program and \$1.26 in pursess are offered. All races are open to troaters and pacers, and a previous percent make on the law is now owned by Charles Robinson, is eleven years old and is now owned the first owned the seventy many shows the second. La Resulett, East Oakland, Cal., was her breveder and she was owned at one time by Monroe Salisbury.

Horse show matters are in a very satisfactory condition in the neighborhood of Philadelphia per contra Boston. This fact was evidenced at the annual meeting of the Philadelphia Horse show association, which was held Decompler II. The report of the operations for the past year was presented, showing that the number of classes offered at the last show, which was held at Wissahickon Heights hast the last show, which was held at Wissahickon Heights has the last show, which was held at Wissahickon Heights has the last show, which was held at Wissahickon Heights has the last show, as a compared with 20 for 180: the number of exhibitions 184, as compared with 428 hast year, and the number of earlies in the various classes aggregated 132, as compared with 77 for 189. In point of attendance the report makes a satisfactory showing, the increase being about 5,000 more than for the previous year. The following officers and directors were elected for the ensuing year: President, A. J. Cassatt; vice presidents, Budulph Ellis, J. C. Strawbeling and E. Morrell; treasurer, Richard M. Cadwaleder; secretary, John C. Groome, It was decided to hold the next show on May 21 to 81, 189.

A. P. Laushlin, Ashtabula, Ohio, will campaign his fast

A. P. Laughlin, Ashtabula, Ohio, will campaign his fast pooer, Miss Manage, by Manager, 2:09%—Neet, by New York. She will be handled by Frank Ruggles in his string with Octavia, 2:11%, and will probably be sent down through

the big circuit.

The Central Canada turf club, of Ottawa, Can, has been organized, with Alex. McLaren, owner of Larabie, 2:25%, as president; Colonel Turner, United States consul, as vice-president; T. C. State as trescurer, and R. C. W. McCraig as secretary. The club will hold its first meeting January E to E. Inclusive, and offers purses of 200 and spwards for the 2:37, 2:37, two-mile-heats; 2:34, 2:22 and free-for-all classes, with a Sive-mile dash thrown its, all open to irotters and pacers. The races will be over the Lansdowne park half-mile track, and special premiums are offered for the defeat of the track record (to sleigh), that how stands at 1:3%. Entries close January E.

If Chicago has an annual here show, it will be due largely to the efforts of Arthur J. Caton, the owner of Caton shock farm, Jollet, El. Mr. Caton is a thorough horseman and finds as much of his pleasure in park and boulevard

Will Carbton, 2554, by Pilot Medhem, has taken his places t the great table, although but ten years of age. Ills per ormer is Glenalton, 230, a record taken September 30 al edarville, Mich.

comer is Giensiton, 220, a record taken September 20 at Coslavrille, Mich.

The late Lord Giangow used to give his horses most outlandish names, and it was in answer to derisive comments made upon his actions that he ence started a horse at Newmarket on which he bestowed the sarcastic title of Give Illim a Name, says a writer in the London Telegraph. We find in the old calendars colts and fillies named after monarchs and merry-makers, heroes and highwaymen, warriors and wayfarers, duchesses and dancers, patricians and pickpeckets, many of these absolutely fixing the periods of English history during which they squared. At the same time we have for the most part got rid of some of the idiotic and cumbrous titles bestowed upon horses, so that the existing generation of todegraph clerks have something to be grateful for. What would be thought now of horses named fillers I do. With My Eye Out, Church and King, Let's Be Jogging, Jenny Come Tie Me, Stop Awhile Said Stow, Eng of Bones, Sore Heels, Slow and Easy, It Is Never Too Late to Mend, or Devil Take the Hisdmost? The French names, such as Beau Garcon, Jene Sais Quoi and Double Entender were, of course, intended to terture the unhappy betting man, and it was for this purpose probably that Vergies-Mein-Nicht was invended. The great Charles James Fox was responsible for some of the most custandish names given to horses in the time when he took a part in the affairs of the turf. At the beginning of the century, in addition to one or two thies which cannot be decently quested, we find such as i Am Little, Ply My Condition, Why Do You Slight Me? Watch Then And Catch Them, Turn About Toemny, Kick Me Jenny, Admiral Wilp Me Well, Pegry Grieves Me, Kins Me In The Corner, Look About Toe, Fear Not Victoricus, A Laughing Woman With Two Black Kyes, Whistie And I Will Come to You My Lad, Run New Or Fass Poverey, Petitional Tick Round Ankles, Look Out My Lads, The Last Time Of Asking, Kitty Cut a Dash, Poxhuntieribus and Bounce About Boniface.



driving as in watching contests over the race course. A fa-vortic turnout owned by him is shown in an illustration given on this page. The establishing of a permanent or-ganization for giving an annual horse show has reached the stage of incorporation. The capital stock is 100,000, and the incorporators are Arthur J. Caton, C. Fred Kimbail, Joseph Leiter, John Dupse and John A. Legan. These gen-tiones were all identified with the recent horse show in Chicago, and better names could not be secured for the starting of the new organization.

ctarting of the new organization.

Temple Biar, 2:17%, has been lensed by Dr. M. S. Sale, Lexington, Ky., to Newman & Talmage, Mt. Gilead, O., and will be kept in the buckeye state the consing season. Temples Biar was one of the greatest race horses and is proving as strong in the stud as even the most sanguine may have hoped. With two such campaigners as Farker S. 1995, and Iron Bar, 2:195, his services will never go beging. It was a pity that his track carrier should have been unded as it was, when he was capable of so much greater bices.

choice as it was, when he was capable of no much greater things.

E. R. Wells, proprieter of the Glemmoore stod, in New Jersey, writes, under a recent date: "Nonteing the comments in the horse papers and the public press generally upon the improved prices for horses, and the prospective, if not immediate, famine in young treating-level stock. I met Mr. C. W. Williams at the recent Pasig & Co. sale, in New York. When I told him I had it living weanlings, he said I had more than any breeder in the weet. A large breeder from Kansas told me that seven years ago there were 6 breeders in trotting lines in that state, and now only three, and they had but few youngsters. If this scarcity holds good south, east and on the Pacific sleep, then surely the pinch is upon us. I have not afvertised my stallions, nor my farm, nor made any pretense to be a breeder of any prominence, but, if it reasspires that I have more youngsters than the supposed large breeders, it would seem that the shortage in weanlings, yearlings and two-year-olds now. I have 8i mares in feal to Red Lake, ISB, Cherryeroft, ISB, Provident, a two-year-old son, of Sable Wilkes, out of Annie G., dam of s, by Le Grande; second dam Hannah Price, dam of s, by Arthurton."

Milwaukee has had but a couple of weeks' sleighing thus far this winter, but even that little has wheeted the appetities of the owners for more. The Evening Wisconsis has this to say of driving matters in that city: "There was a time when Twenty-second avenue, from National avenue to Greenfield avenue, was set apart for the exclusive use of the owners of fast horses. The gentlemen interested in the sport at that lime had the avenue locd, thus making one of the timest speed drives in the west. Grand avenue has shways been a great place for speeding during the afternoons and on many occasions there could be witnessed some interesting brushes between the cracks. Of late this sport has been interfered with on account of fearns driving across the streets and thus preventing the horses from speeding. There are more good horses to be seen on the streets in this city now than ever before and some of the fastest in the state are to be found here. A few years ago a three-minute horse was considered very good on the Bay road or for the same, and you are more good during the surreased tenfold and the same and go in about 220 or betier. Many of the horses here have been campaigned during the summer. Pedowing is a list of the owners of fast horses in this city, who take pleasure in speeding along the avenues at times: Bourbon Sneak, owned by John Calishan, 225%, can do a mile in 215; Kingston, owned by George Schlag, 225%, T. R. Weisman, Lilis Sprague, 525%, and Esther W. 216%; A. A. L. Brotth, pole team, Dan H. 226, and mat, 226, P. N. Pinney, pole team, Maggie and Mabel, 226; Dr. R. A. Bliggies, Dr. H. (226), can do 212; Walter Schreeder, Lucy Laddes, 126; "White-Bat" Ellis, Mac, 226; George Gelzer, Billy N. 226, Coppe dadden, Butcher Boy, 230; C. C. Peldworth, Queen Brether, 230; L. Dearboit, Roy, 230; C. C. Peldworth, Queen Brether, 230; L. Dearboit, Roy, 230; C. C. Peldworth, Queen Brether, 230; L. Dearboit, Roy, 230; C. C. Peldworth, Queen Brether, 230; L. Dearboit, Roy, 230; C. C. Peldworth, Queen Brether, 230; L. Dea

OWNER AND DRIVER.

A. E. Cornell, Syracuse, N. Y., has purchased of parties in Connecticut, a two-year-ood cost by Director, 2:17-Mam-briso Maid, 2:19k to high wheeled sulky. He is a splendid individual and is a pure gailed trotter, with plenty of ac-tion, and as he is in good hands it is safe to say he will be

John Splan has decided not to mix in any B

R. W. Miles, Ashtabula, Ohio, the well-known passenger conductor on the Lake Shore railroad, has sold his speedy golding, King Orry, by Twilight, to Girard, Pa., parties, King Orry was one of the fastest yearlings in this section, winning his first half-mile race easily in 1:6, which was not his speed limit.

his speed limit.

Pollitt Brox., Martin, Mich., have purchased of U. S. Wood,
Plalowell. Mich., the great broodmare, Gipsy, dam of
Charles R., 212, and Zelia W., 222. They took also Gipsy's
cult by Strongwood, 2128.

R. W. Davis, W. Williamsfield, Ohio, has purchased
a very fine Gold Leaf mare, dam by Brown Wilkes, from
Harry Hewlett, Conneaut, Obio. Nr. Davis will campaign
her anyther season, as she promises to be very speedy.

An intermediate was unshably covered at Dalla. Twenty

her another season, as she promises to be very speedy.

An interceting race probably occurred at Dallas, Texas, last Saturday, the details of which have not as yet reached this office. It appears that early in the present month Charles Mangood, of Dallas, owner of the trotting stalline Peritand, 2:18%, issued a challenge for a free-for-all sweepstake race, for 10,00 a side, to be trucked over the track of the Texas estate fair in that city during the Christ-seas boldays, to determine which is the speediest trotter in Texas. W. M. C. Hill, the owner of Lens Hill, 2:19%, ancepted Mangold's challenge and the three men each deposited 250 with President Knoptly, of the Texas state fair, to bind the match. The three-cornered oven was to be decided on Christmas day.

There are occusional harmess races at the Directorses.

There are occasional harmens races at the Brightwood half-mile track, Washington, D. C. December 10 a match race for 180 a 36th between David Southeimer's Philadelphia Boy, and John Simmons' Brown George. The latter won all but the first heat, the best time being 2.5%, Volunteer Medium, 2.18%, will be Charles F. Dumbur's maintany on the Buffalo snowpath.

mainstay on the Buffalo snowpath.

John Glackner, New York, has purchased at a recorted long price the four-year-old gelding Sixteen, 23%, by Cassidy, Sixteen seast have been named before he secured his growth for he is new a 16% hands horse, but he is as fast as a bullet and looks like a coming good racing proposition. His record was made September 15 over the half-mile track of the Gerdinessen's driving club, Baltimore.

E. K. Meyers, Lebanco, Pa., who owns several trotters, has had his horses and outlit at the track levied on by a constable. The execution was issued at the instance of Meyers' employee on a claim for labor.

Mal Quintin expects to train at Bethlebem next season it was on this track be gave Kate McCracken, 2:15%, her early education.

A. A. Woodering will have a number of good ones in

A. A. Woodering will have a number of good ones in training at the half-mile track at Bethieben, Pa. In his string are Silver Bell, 2:294, and Halsted, 2:294. The lat-ter took his record on a third of a mile track.

ter took his record on a third of a mile track.

The Lamson Brothers were well-known Maine trainers.
Allie Lamson has driven Vict, Haroldson, Arthur B. and
Maud Pitcher, while W. B. Lamson drove Starling and other
well known ones. The latter has been for some two years
outside the state, having charge of the horses of Colosel
isanc Goff, of Providence, R. I. Mr. L. writes the Turf,
Farm and Homs that he has Bright Regent, 2905, recently
of the Hamiln string; Lady Geradine CD, 220% the sweet
little filly by Constantine, 2129, out of Alaska; a boy,
by Aleyese Willach, by Wilton, 2129, out of Alaska; a how,
out by Locksway, sire of Nowaday (D, 2129), etc. There
are others, but Mr. Lamson is basing his hopes on these,
and expects to have good racting material in 1208.

J. F. Ransher, Syrauway, N. Y., has beased the Medica re-

and especia to have good racting material in 1993.

J. F. Rannier, Byracuse, N. Y., has leased the Mestina racing property, and will take possession immediately. We wish him success in his new undertaking.

Mr. Tift, Syracuse, N. Y., has purchased a three-year-eld with a mark of 2.22, and he will ride in front on the snow path this winder.

Pred Wilson, Buffalo, who bought S. R., 2:00, at the Spian-Newgans sale, will drive the golding on the snow this winter. S. E. was formerly owned by Phil Grobes, of the snee city, and his road qualities are known and appreciated there.

there.

From 2 to 4 o'cleck each Tuesday, Thursday and Saturday, Richmond avenue, which is the speedway of Buffalo, N. Y., is alive with the fastest kind of goets.

Dr. F. E. Williams, Pope, Ya., has a black yearling colt by Simmons, cut of the dam of Weighman, 7:20%, the sensational Willion two-year-old of the past senson.

George M. Hardin, Durham, N. C., is driving Lady May, 2:2%, on the road. This mare has trotted halves in Lill and is a large and handseme individual.

Dr. F. H. Pisk, Albany, N. Y., is now the owner of Dick Wills, 2:20% trotting, 2:16% pacing. Jay Reefer, Meabuille, Pa., the former owner, campaigned this gelding the past season, and on one occasion he chance Emma Offuti out in 2:11%.

Ben Rennick, the former Glens Palls driver, will try Alabama climate this winter, having decided to train stable at Belma.

stable at Selma.

Some twenty head of trotters will be shipped from Danville, Ky, to the Exposition track at Toledo, Ohio, thefirst of the coming month. These horses comprise the
stable of J. H. Farley, the Danville trainer, who has leased
the Toledo track and will make the neethern city his headquarters for 18%. Most of the trotters and pacers in this
string are by Gambeita Wilkes and C. F. Clay, and are
owned by T. J. Gladwell, Toledo. Two of the C. F. Clay
yearlings have shown remarkable speed, and both are expected to beat 2:10 the coming summer.

E. A. Lord, Chicago, has purchased of Dolan & Buros,
Jerssyville, Ill., the black mare Jerssy Llass, by Cicerone,
2:13%, dam by Monon, sire of Monette, 2:14%, Mangie Lass
resembles the latter mare in many respects and will be
trained the coming season by George West, who gave
Monette her record before she went abroad.

THE HORSEMAN.

CHICAGO, TUESDAY, DECEMBER 28, 1897.

HE SEASON JUST PASSING Into history has not been one of unmixed joy and prosperity to the horsemen of the United States, but they have the satisfaction of knowing that with the later months of the year, 1897, equine values have been steadily trending upward, and that the prospects are now brighter than they have been for many long, long, weary months. That times are still hard, that every stud farm is not a bonanza Klondyke claim, we know all too well; but we also know that the tide has fairly turned at last and before long the horse breeders of the United States will be among its most prosperous classes. It is not with horses as it is with wheat. Ten thousand men cannot go into their stables and sweep together a mil-lion horses as they can go into their dusty granaries and aweep together a million bushels of musty wheat, run them through the fanning mill and in a moment swell the visible supply to an extent not dreamed of. Horses stand in plain sight and can be counted—and we know that there are not now enough horses in this great country to meet the demands of the next five of six years. While pertinent statistics are hardly available at this time, that grand fact is patent to all, and fortunate indeed is the breeder whose farm is well supplied with colts and fillies. In short, the horse breeders of the United States are to-day in a better position than the men of any other stock industry and of the mercantile industries that can be named this year it writes its belief that an era of very high prices for good horses is close upon us, next year it will record the payment of these high prices, and a corresponding degree of prosperity existent among the breeders. For some kinds of horses prices high enough to suit the most exacting are already being paid; for all good horses, within the next few years, prices yet matched will rule. Congratulating the breeders and owners on the advent of this long wished for change and on the splendid achievements of the past season THE HORSEMAN wishes its readers and its friends A HAPPY NEW YEAR.

JUST RULING.—In 1894 the District agricultural association No. 40, Woodland, California, opened a district futurity purses for trotting colts and fillies, foaled that year, the race to be trotted in 1897. The entrance fee was fixed at \$75, payable in the following installments: March 15, 1894, \$7.50; October, 1, 1894, \$7.50; April 1, 1895, \$7.50; October 1, 1895, \$7.50; Octoser 1, 1896, \$7.50; April 1, 1897, \$7.50; and July 1, 1897, \$22.50. The stake was closed in accordance with the conditions, thirty-four nominations being made. These were gradually reduced, as owners let them lapse, until only about five final payments were made, the total amount paid in by nominators being, July 1, 1897, \$810. July 15, 1897, or fifteen days after the date on which the final payments had been made, the directors of the association declared the stake off, giving as the reason that to trot the race would entail their suffering a loss, which would prevent their giving any meeting at all. and mailing to each of the nominators that had main-tained their entries in force a check for seventy-five dollars, the amount each had paid in. Four of the five owners who had made final payments accepted the return of the entrance fees, but the fifth, Messrs. Buck man & Carragher, proprietors of the River View stock farm, near Sacramento, California, declined to be a party to any such arrangement. This firm deuled the right of the Woodland association to make any such disposition of stake funds, notified the directors that it would hold them responsible for the full amount kept on preparing their entry, Fraulein Dexter, for the event and informed the association that the filly would be on hand ready to start for the money on the advertised date. At the Woodland meeting and on the date specified, this firm sent its filly Fraulein Dexter on-to the track, notified the judges that she was ready to start in the futurity stake, and her driver was weighed in, in accordance with the rules, witnesses being present while that formality was observed. The judges replied that there was to be no such race, abandoned the stand forthwith, and the filly was driven over the course. A demand was then promptly made by her owners for the amount of the stake and when this was as promptly refused, steps were at once taken to lay the whole matter before the board of review through its Pacific coast branch. September 21 that body met and took action on the protest and claim, supporting the contention of Messra. Buckman & Carragber, but modifying it to the extent of holding that, as the secretary of the Woodland district agricultural association had not notified the other four nominators who made final payments of the intention of Messrs. Buckman & Carragher to present their entry and demand a on the day of the race, and of the fact that that firm had declined to accept the return of its entry fee, each

share of the purse. In other words, the Pacific board of review of the National trotting association decided that the total amount paid in by the n tors in this futurity stake should be equally divided into five portions and so distributed to the five nominators who made final payments, in strict accordance with the published conditions of the stake. The Woodland association then appealed to the board of review from the decision of the Pacific coast branch, but, subsequent to the session of that branch last September, some sort tween the parties belligerent. Messrs. Buckman at first claimed the entire control of the fifteen hundred dollar stake, but later agreed to accept their entry fee of sev enty-five dollars and three hundred dollars market the case had been decided against clation, it sent its check for seventy-five dollars to Messry. Buckman & Carragher and thereafter unded the order by notifying the bank not to pay the check. Something interfered, however, to p the carrying out of this order, for the check was cashed by the firm to whom it was drawn. On the hearing of the appeal made to the full board of review in New York, three weeks ago, the action of the Pacific coast branch was fully sustained and the Woodland association ordered suspended until the funds had been dis-

FFECT OF THE RULING.—The strangest thing in L connection with the entire incident related above is that the Woodland association should have been so bold as to adopt any such high handed way of dealing with stake funds. The board of review has from the very beginning held that associations opening stakes are merely temporary custodians acting in a fiduciary capacity for the nominators making entries and paying entrance fees. The board has also held that no part of a stake fund belongs to an association, and hence, how the Woodland association could have thought that its plan would receive the endorsement of the authorities is more than can be divined. If the board of review should have endorsed such procedure, it would have uncovered the earliest possible method by which associations could make money. When the five nominators made their final payments, it was evident that if all of their entries came up to the score for the word, the association would have received in return for its outlay a genuine race in which the public would take much interest. It voluntarily fixed the value of the stake at fifteen hundred dollars and received in entry fees eight hundred and ten dollars, leaving it with six hundred and ninety dollars of the total amount to make d of taking this sum from its treasury adding it to the sum paid in by nominators, it declared off the event, and attempted to settle with the five makers of full payments for three hundred and seventy-five dollars. It is specifically stated that the directors of the association set up the claim that the bal ance of four hundred and thirty-five dollars rightfully clonged to them, which, under the repeated rulings of the board that stake funds are trust funds, was manifeetly absurd. The action of these directors, while greatly to be deplored, is, however, a mere nothing compared to the decisive ruling, handed down by the board of review, to the effect that the five nominators who made full payments were entitled to the entire amount paid in. It is not quite clear why the board amount paid in. It is not quite clear why the board did not call on the association to make good its obli-gation to pay out fifteen hundred dollars, and while the decision probably does not go far enough, it sets at rest funds collected, but not contested for, must be distrib-This decision obviously applies only to insta when final payments have been made. When a stake entrance to which is distributed over many payments, is declared off soon after it has been closed, the chance of winning is too remote to warrant a similar distribu tion of the stake funds. That, however, is not mat rial to this case. The board has now laid down a preat which is certainly founded on coand honor. The five nominators who made final pay ments went to considerable expense to train and get their colts ready to start in the race in question. Manifestly it would have been wrong to merely hand then back the amount of their entrance money, for they had already paid that out in cash. Hence to merely reim burse them for their actual outlay in entry fees would be to force them to suffer a distinct financial loss, equal to the entire amount of expense incurred in fitting their three-year-olds to take part in the futurity event de-

This precedent must now be followed in every instance in which an association finds that it cannot force to a conclusion any stake it may have opened, and which stake has been persevered with up to the making of final payments. Surely, no horseman would elect to drive an association into bankruptcy by compelling it to produce a sum of money beyond its means to control; but at the same time no one wants to keep funds not rightfully belonging to it. The board's rulling is in our uncersuit terms. Associations cannot re-

tain stake funds paid to them by nominators, but must distribute them to those duly entitled to receive them. Had the board ruled otherwise there is no telling to what lengths unscrupulous managers might not have gone in an effort to thoroughly protect themselves and their pockets. For instance, if the board had ruled that the Woodland association need only return the entrance fees to the five nominators who had made full payments, what would there be to prevent an ass tion carrying a stake right up to the very day of the keep careful count of the receipts at the gate and figuring thus: "Well, we've five thousand to add then figuring thus: "Well, we've five thousand to add to this stake, and only three thousand have been paid at the gate. This means a loss to us of two thousand dollars, so we'll declare off the stake, refund entrance fees to the owners of the horses here ready to start and bug the difference." This is an extreme case, to be sure, but not very far removed from one in which prior to the day set for the race, had taken place. board is to be congratulated on the vigor and justice of its ruling, but the credit does not attach to the board alone, Messrs. Buckman & Carragher are to be commended for their persistence in maintaining their rights and in carrying the case before the turf courts. It is easier often to accept what seems to be an indemnity than to fight; but, if that principle should be followed on all occasions, valuable precedents would never be established. In this instance the gentlemen comprising the firm named have rendered the entire interest a distinct service for which they are richly entitled to that interest's thanks.

AMPTON IS DEAD .- For some seasons past the I grand, old thoroughbred stallion, Hampton, owned in England by Lord Elleamere, has suffered inpain caused by fever in his feet and acute rheu-us. So great did his suffering become that on the 8th inst. he was quietly put out of his misery, and a most extraordinarily successful turf career came to an emd. The old horse died a painless death—it was much hinder to have it so than to permit him to linger along wracked with pain and feeling his very life a burden to him. Hampton was a son of Lord Clifton and Lady Langden, by Kettledrum, she being also the dam of Sir Bevys, by Favonius, the winner of the Derby in 1878. Eir Bevys was probably the worst horse that ever won the great English classic, but it was his day—and George Fordham's— and his big soup-plate feet carried him on top of the slushy going to victory at the winning post. Notwithstanding that he seemed, on form, to have no earthly chance to win the Derby, Sir Bevys had not a few friends who landed big bets at all orts of odds, the shortest of which were at twenty-five to one, and the entire sum paid out by the bookmakers would average thirty-three to one. Hampton aboved little form as a two-year-old, so little indeed was thought of him that he was, at that age, entered in a selling race at Hampton Court, from which place he got his name. He improved, though slowly, as he got older and performed over the sticks, but as a four-year old he began to show form of the highest class, winning the Goodwood stakes, and the following year he was the best distance horse in England. He won the Northumberland plate, carrying one hundred and twenty-four pounds, the Goodwood cup and the Doncaster cup-all over long distances of ground and under heavy im-He displayed great stamina coupled with a fine turn of speed, and he fought out his races like Lord Elleamere bought him after his victory in the Doncaster cup and sent him to the stud, where he made a great name for himself, siring many bread winners and not a few good cracks. Up to the close of 1896, to which time only the English returns are oplete, Hampton's get had to the number of one hund and thirty-three been returned the winners of four hundred and twenty-nine races valued at \$1,129, 855. To this must be added about \$60,000 for 1897, which brings his total up to \$1,189,855 won by his get in races since 1881, his first colts being foaled in 1879. Possibly 1887 may be called his best year. That eason twenty-eight winners of sixty-seven races claimed his paternity, their total gains footing up \$163,880. That year his first Derby winner appeared in Merry Hampton, and Reve d'Or took both the One Thousand Guineas and the Oaks. His second Derby winner came the next season, in 1888, in Ayrshire, that colt winning also the Two Thousand Guineas. In 1889, Hampton's get again won money enough to land him at the top of the list among the sires. Ayrshire won two races worth ten thousand pounds each, at Kemp-ton and Sandown, and in that season Hampton had fourteen winners of \$186,750, won in twenty-five races. Hampion's third Derby winner came in Lord Rose-berry's Ladas, who like Ayrshire also won the Two Thousand Guineas, but failed to land the St. Leger, the latter race never yet falling to the share of a colt or filly by the son of Lord Clifton and Lady Langden Royal Hampton, who ran third to Melton and Mr. Broderick Cloete's Paradox in the Derby of 1885 did much for his sire's name not only on the turf but in the stud, where he begot that really good horse, Marc Sheep, another of his sons, now very popular in the

1281

sted in England, proved himself a grand stayer by winning the Cesarewitch handleap, carrying a lot of weight, and the Hampton marce hid fair to be able to perpetuate their sire's greatness. Perdita II, dam of Persimmon, is one of Hampton's daughters, and there are several others that promise to othain great prominence in the harem. Taken altogether, Hampton was a great horse, one of the greatest, certainly, seen by the present generation of turfmen.

C ONCERNING THE BARRING OF HOPPLES. At a meeting of the directors of the Kentucky trotting horse breeders' association, held last week in Lexington, the following resolution was presented by Major McDowell, and adopted: "Resolved, by the board of directors of the Kentucky horse breeders" association, that the use of hoppies in races is dangerod to the life and limb of every driver and horse particito the life and limb of every driver and horse partici-pating therein; that it mars the enjoyment of the pub-lic in witnessing such races and that it works great injustice to those who race horses without hoppies, forcing them to place their lives and property in jeog-ardy without any compensating advantage whatever. We therefore respectfully request the National and American tretting associations to pass a rule prohibit-ing the use of hoppies on horses participating in races over the tracks of their respective members, attaching a specific pensity of such severity for its violation as will insure full obedience from each track so governed." This resolution—full text of which appears on another This resolution—full text of which appears on another page of this issue of THE HORSEMAN, was signed by Measurs, P. P. Johnston, R. P. Stoll, Shelby Harbison, H. W. Wilson, H. C. McDowell, M. Bowerman, G. M. Asher and H. L. Asher, the full representation of offi-cers and directors. Notwithstanding the tremendous amount of argument that has been indulged in anent the use of hoppies in races and the equally immensa measure of condemnation that has been heaped on that device, the men that use it and the horses that require its assistance, the fact re-mains that all the associations which have done anything looking to the discontinuance of its use in races may yet be counted on the fingers of one human hand. The Queen's county agri-cultural association, which holds its annual meetings at Minrola, Long Island, is the only association which may be said to have any fixed policy relating to the use of hoppies, save, of course, the general one of let-ting men race their horses rigged with them or not Just as they see fit. The society named has for the past two seasons specifically, in its published conditions, barred the use of hopples in its races, and so far no one has been able to discover that any financial loss was occasioned by the insertion of that special provise This carries the more weight when it is considered that there are more hoppied horses raced in the far east than there are in the west. Proof, therefore, is offered that nesee are in the west. Proof, therefore, is offered that an association can but the hopple and still secure a sufficiency of entries. Being a strictly representative breeders association, it is eminently right and proper that the Kentucky society should be the first of all the great associations to make a move in this matter, but it an open question whether or not the right course has been decided on to bring about the desired reform

The BEST METHOD.—To begin with, it is not at all absolutely necessary that any rule shoold be passed by the parent organisations prohibiting the use of hoppies in races, for the reason that individual associations may do so if they desire, by simply inserting a clause to that effect in the published announcements of their meetings. Again, granting that the parent organisations did pass a law prohibiting the use of the hoppie, we know from experience with the distance rule, that individual societies need not live up to the requirements of the law, seeing that special conditions supersede the rules. Hence even if such a law should be added to the harness code, any association that desired the competition of hoppied horses in its races might merely state in its announcements, "Rule so and so will not be enforced," and all the hoppied horses in the country might participate in the eacing conducted by that society. The question is now, do the associations of the country generally desire the meral backing furnished by a rule regularly added to the code to aid them in a fight against the deadly hoppie? If they do, then the passage of such a turf law would be a good thing in that it would give every association a good and sufficient reason for barring the straps. The association which believes that the hoppie is not a legitimate ald can, under present conditions, as we have seen, so shead and keep the hoppied horses from its frack on race days. Considering the immense number of horses that are capable of showing their highest rate of speed only when hoppied, one can readily understand that many associations would be timid about barring the hoppie for fear that such action might result in their receiving too few entries to permit its use, the owners of hoppied horses and the trainers of hoppied horses would naturally patronize the meetings at which they could get races for their entire strings and which they could get races for their entire strings and

not only for those that race without the straps. Now, while this is easily enough seen, what change would there be if the parent bodies should pass the law referred to? All such individual associations as desired the presence of the hoppied horses, their owners and their drivers, could merely provide by special condition for their participation in the racing conducted by them, and the effect of the law, as far as their meetings would be concerned, would be entirely nullified. The situation, indeed, would be entirely nullified. The situation, indeed, would not differ materially from that now complained of. Arguing thus, however, we can only reach the conclusion that the passage of a rule barring the use of hoppies in races, by the National and American trotting associations, would be a step in the right direction; but it will not be enough, for the reasons given above. The rule cannot be added to the turf code until the next meeting of the parent associations in blennial congress, and between then and now the associations themselves should not be fille. Granting that the passage of the rule would prove an ald in the adoption of the reform, it is evident that if the associations would in some way get together and agree among themselves not, under any circumstances, to permit hoppied horses to start in races at their meetings, the object sought would be obtained at once. Let the individual associations get together and enter into an agreement of this sort, then let the parent associations, in blennial congress assembled, pass the prohibitory laws, attaching for their infraction a penalty sufficiently severe to be avoided at all hazards, and the results would be as desirable as the effect would be instantaneous. The co-operation of the individual with the parent associations is necessary to secure the abolition of the use of the hopple in races—the former need not look solely to the latter for the inauguration of the reform, they must turn in and do something for themselves.

G REAT REGRET IS FELT in all turf circles that financial misfortune should have overtaken William M. Singerly, the Philadelphia journalist and pro prietor of the Becord, the leading democratic paper in the city of brotherly love. As president of the Chest-nut Street national bank he has been deeply involved in the failure of that financial institution, but it remains to be seen how greatly his private fortune has been impaired. He loved the horse and raced for sport, not for money. When his horses turned to start, they turned to win if they could, and he has owned not a fer good winners in his time. He liked the trotter as well as the thoroughbred and, though unostentationally, has been a great power for good on the American turf. He is just past sixty-five years of age, has been for many years counted a millionaire several times over, and in journalism, banking, political and turf circles enjoys very prominent position. His career reads almost lik a romance in some respects. Born of well to do par ents, Mr. Singerly came west at an early age and en gaged in the produce commission business in Chicag Later his father sent for him to return to Philadelphia placed him in charge of a street car line. He soo put that concern on a paying basis, and when the con trolling interest was disposed of some years afterwards more than a million was added to the Singerly posses ions. In 1877 he bought the Record, which had ther circulation of about five thousand copies. Not verlong afterwards it had, and still has, a circulation of one hundred and seventy-fire thousand copies, and had become a great power in Keystone politics. In connection with a demand for the rehabilitation of s of the Chestnut Street bank's affairs, demanded by the comptroller of the currency, the fact was elicited that the profits of the Philadelphia Record amounted, in 1896, to four hundred and twenty thousand dollars, which shows what a truly magnificent property Mr. Singerly has made of the insignificant plant he purchased but (wenty years ago. He is one of the typical American business men, men that are found in no other nation, and the hope of his legion of friends is that the reports of his embarrassment are exaggerated that he may yet be able to win out, as he has won out before many times during his business career.

A N EXTRAORDINARY CASE.—Telegraphic information received from San Francisco, December 22, is to the effect that some very peculiar facts have come to light concerning the imported Australian mare. Trance. In accordance with the rulings of the stewards of the Ingleside course, J. D. Lewis, owner of that mare, now stands ruled off the American turf. The evening of December 21, a meeting of the stewards of the Ingleside track was held, and J. D. Lewis, Dan Halliday and others were closely questioned concerning the mare named. The answers returned were far from satisfactory and the stewards were unanimous in upholding the verdict of the Ingleside judges declaring Lewis and Halliday ruled off the turf. It transpired that the mare Trance had been ruled off in Australia on account of some crooked work at Brisbane, Queensland, and that thereafter Lewis, who startled Australian turfmen by winning the Melbourne cup of 1896 with Tarcoots, had bought her and shipped her to the United States. The mare standing ruled

off by a recognised turf club was not eligible to race on associated American tracks, and for starting her, her owners brought themselves under the ban. This is the first instance of the kind that has come up for consideration in the United States, and the Ingleside stewards are to be congratulated on their prompt detection of the fraud and their severe handling of the persons connected with it.

C HICAGO HORSE SHOW.—It looks now very much as though Chicago would hereafterannually enjoy a horse show of her own, utterly distinct from any other exhibition that may be held in the city, and managed by an independent corporation, organised solely for the purpose of maintaining the exhibiti holding it at such intervals as it may see fit. holding it at such intervals as it may see fit. Last week the secretary of state of Illinois, at Springfield, licensed the Chicago Horse Show association, capital stock one hundred thousand dollars, to do business. Arthur J. Caton, John A. Logan, Joseph Leiter and one other resident of Chicago being named as the incorporators. Enquiry of these gentlemen elicits the information that the organisation will be perfected in a few days, officers elected and definite plans laid out. In the meantime it is stated that the object of the society is to proceed at once to the shaping of affairs so that Chicago may have a horse show each autumn hereafter, such location as may be found most desirable. after, such location as may be found most desirable being chosen from time to time until the great city by the lake shall have been supplied with a down-town building large enough for the holding of a horse show within its walls. One of the main objects now held in view by the gentlemen named as the incorporators is never to rest until the location and construction of a never to rest until the location and construction of a great crystal palace on the lake front is achieved. The lake front park extends between Michigan avenue and the Illinois Central tracks from Randolph to Twelfth street, a distance of something over a mile, for according to the section lines it is a mile from the corner of Madisson street and Michigan avenue to the intersection of the latter and Twelfth street. Just at present this park is being increased materially in size and eventually will streeth 'far out into the lake, giving ample room for the construction of a handsome exposition building quite large enough for the holding of even a horse show that will satisfy Chicagoans when they become thoroughly interested in the project. Such a building is a sheer necessity in Chicago. Owing to the peculiar geographical situation of that city and the fact that it has only three sides, it is split up in three well known sections. It is not hard to reach the business center from almost any spot in any one of these sections, but from almost any spot in any one of these sections, but Chicago is a city of magnificent distances, and when it ses to traveling from one section far into the heart, or beyond it, of another, the journey is too long to be comfortably compassed. Hence a great building right in the very heart of Chicago is an absolute necessity, and it will be the aim of the officers and members of the new association to keep up agitation of the subject until success is finally achieved or becomes an im-tensibility. We are the subject of the su possibility. We understand that the stock of the new corporation has all been taken and an abundance of financial aid tendered. The gentlemen associated with the venture proved conclusively not long ago that they thoroughly understand the art of getting the people of Chicago out to an exhibition of equine beauty and utility, and, with a down-town building, there cannot be any question of their making the Chicago show the foremost in the world. As Mr. Logan points out in his letter, presented on another page of this issue, the National shows have done untold good in raising the quality of the horses owned and driven in New York, and there is not the slightest room for doubt that simi-lar shows would do the same for Chicago—in which city be it said rejuctantly, there is much need for im-provement in the class of horses driven in many handsome carriages. Owing to the many unfortunate inci-dents arising out of the conflict of authority precipi-tated at the last show held in Chicago, jealousies and enmities have been engendered that will live and rankle for years. Knives, long and keen, are ready to jump for years. Knives, long and keen, are ready to jump from their sheaths whenever an attempt shall be made from their success whenever an attempt shall be made to hold another show in Chicago; but it is surely to be thought that before next fall the edge of enmity will have been dulled and that those, who at this moment feel that they have not been fairly treated, will sink their private feeling and join hands with the others who are seeking to make the show a success, promoting in that manner the general welfare of the horse breeding, horse owning interest at large. Better to do that than to gain the puny satisfaction of "getting even" at the expense of that great interest.

THE NATIONAL STOCK GROWERS' convention, to be held at Denver, Colorado, January 25, 26 and 27, if carried through upon the broad lines proposed, will be a most important gathering. Secretary of Agriculture James Wilson has signified his intention of being present and it is probable that a paper will be read by it. R. Baron Herman, agricultural expert of the German government upon our export trade with Germany.

CURRENT ITEMS.

The record of Bill of Expense is 1:274.

More snow is needed to make the sleighing right in this city.

The Rhode Island state fair for 1888 will be held September I to S.

The Philadelphia Turf club will keep open house on New Year's day.

Point Breeze, Philadelphia, is to have a matinee New Year's day.

A. W. Johnson, Hubbard, Ohio, has purchased the fast mars, Queen Pointer, by Star Pointer.

Dulsy Dean, the dam of John Tilden's fast mare, Edu T. died recently in Vancouver, Washington.

The fastest pacer bred in the provinces is Hello, 2.11, by Molbourne King, now owned in California.

Thomas Gimbert, Adrian, Mich., has purchased Peter Swift, 2:304, a bay gelding by Middlebown.

Albert Fogg. Camden, N. J., has purchased a green passet of Scott Quintin, which is said to have trialed in 1:14%.

Electrits has three double performers this year-that is, three which took standard records at both the trot and the pace.

Gus Macey will have a couple of young Star Pointers to handle next year. They are owned, of course, in Pennsylvania.

There were two harness races of half-mile heats at the old Exposition grounds' track, Richmond, Va., on Christman day.

Abbot Wilkes, 2:11, and Chimes E., 2:15, are respectively the fastest trotter and pacer by the records owned in the provinces.

Bright Regent, 200%, will be the fastest one over driven on the road at Providence, H. L. or, for that matter, ever owned there.

It would indeed be the irony of fate it Drextell, for whom Bindd Doble paid \$6,000, should finally take it into his head to do something.

C. Carlton Smith, aged G years, and one of the best known breeders in former years about Newark, N. J., died in that city December 16.

The twenty-sixth annual Avon fair for 1888 will be held at Avon, III., August 23 to 26. D. R. Bowton is president and Julian Churchill secretary of this association.

Dave McCleary, the driver of Star Pointer, is now an owner as well, having recently purchased the pacer Donnough, a green one reported to have trialed in 2:13%.

The first appearance of Jasper Ayres, 2:11%, against the old champions of the Roston speedways will be watched with interest. His present owner is John V. N. Stulta.

2:194 is the fastest mile over trotted on a track in the Mastime provinces. Minota, a bay mare, by He Nutwood, made the record the past season at Charlottetowa, F. E. I.

Dr. J. H. Cobb, Binghamton, recently lost a three-year-old pacing mare which ran away and fell into a catch basin. The injuries were so serious as to necessitate her being shot.

The troiter Herry R., 2:17%, a winner of twenty-two races, that C. A. Buras sent from Canada to England for sale, brought 29c guineas under Douglas Grand's hammer at Liverpool.

Over one hundred borses are being wintered at Belmont park, Philadelphia, and yet the lessees of the Narbeth track and club house always appear to be at the small end of the assurceois.

Tobias Libby, the Bostonian who purchased Guinnette, 1:6, in Kentucky as a four-year-old, won the golding out several times ever, and finally sold him for nearly twice the original price.

Lelah W., 2005, the former Detroit mare which flashed out like a meteor on one or two occasions, but could never live up to her speed, is being driven on the road by Alile Trout, the Boaton reinsman.

It was not until he was five years old that Vegs, 2:105, was started in his first race. He took a record that year of Zillis. Not a very promising beginning, but he has developed slowly but surely into a great horse.

The Terre Haute track is covered with a smooth cost of ice and is proving a paradise for skaters. It is a poor place for "skates," as a rule, only the gill-edged ones having been able to win at most of its race meetings.

Budd Dobte, 2:BM, is being driven on the road at Mentreal, and Gil Curry, 2:99%, is wintering in James Golden's stable at Medford, Mass. The drivers after whom these pacers were named are both sait of the sudky.

Picetwing, the dam of Stamboul, 2-87%, is also the second dam of Oakland Baron, 2-99%, and is the only mare that has produced a 2-28 trotter and a daughter that has produced one in the 2-38 list.

Four stallions by Hambletonian, out of marcs by American Star, have sired 2.33 trotters. They are: Aberdeen, sire of Kentucky Union, 2874; Jay Gonid, sire of Fixley, 2884; Squire Talmage, sire of Strader H., 1884; and Diotato, sire of Jay-Eye-See, 213.

The Biennial Turf congress, which meets in New York, in February, will have several things of importance to discuss, and in turn will be discussed by several things of little importance—notably small bore reporters.

Joe Coverdale, Elik Point, South Dakota, has received £50 from the Northwestern railway company for damages which his trotter Trople received while being shipped over that line hast summer. Trople was in Bob Kneebs' stable.

There was some racing at Selma, Ala., the second week in December. S. A. Paddeck's Alice Hal and Maximilian were the winners in 21% and 21%. The former is a twoyear-old by Hal Parker, 2:13%. Both were driven by Ed Geers.

E. H. Greely and E. L. Fisher have closed their Hawthorne farm at Pittsfield, Me., for the winter. The former states that the coit Leavilt, by Moquetta, 210, which was off hast summer, is solid as a rock now and sure to be heard from in 1982.

J. G. Phillips, who has leased the stables and track of the Chatasqua Lake farm, near Jamestown, N. T., will campaign Coralwood, 225k, again zest season. This habisome son of the California pacer Rikwood, 23f, is owned at Bradford, P.

Silent Brook, 2:16%, by Dark Night, is to be the stable companion of Ashland Wilkes, 2:7%, at Brook Curry's Ashland Wilkes stock farm, Lexington, Ky. Mr. Curry considers the outlook bright for a good breeding business with the new year.

N. W. Hubinger has sold the third member of his last summer's racing stable. Pearl Onward now belongs to J. M. Welch and will be raced by him in the big circuit next year. The price paid by Mr. Hubinger for the mare is not known, but it must have been a fair one.

It appears that Francis R, 2.20, the chestmit gelding, by Harry O'Rell, is a two-year-old and not a three-year-old as has been hitherto reported. This youngster is owned by A. J. Putsear, a traveling man who makes Proopert. Ill., his home. Francis R. was foaled May IS, 186, and is a poor of much promise.

Diligent, 228%, should be numbered among Dictator's producing sires for this year as his daughter Jean W. took a record of 22 in a second heat of a five-heat race at Lansdale, Pa., July 3. The Lansdale track is a new one and Jean W. was the first tretter to obtain a standard record over it. She is owned by C. X. Webster, Morristows, Pa.

8. M. Tuthill, New York, is the new owner of Lottle Localine, 7:663; EL500 is the price reported to have been paid for her. Honors are now even between Chicago and New York is so far as fast pacers are concerned. The former has Star Peinter, Joe Patchen and Beaste, Bonehill, while the latter has John R. Goviry, Robert J. and Lottle Localine.

Exira Maid, the Iowa mare which by pacing into the list this year gives Mambeino Fatchen a new producing son in Copper Glance, has a record of 20%, made in a winning race at Avoca, Iowa, September 24. She won the 135 pace in straight heats in 20%, 21% and 22%. Copper Glance was thirteen years old when he mude his first how as a sire.

Another horse has been carefully provided for by his considerate owner. Thomas W. Evans, a Philadelphia liveryman, died a couple of weeks since, and in his will stipulated that: "My horse Harry is not to be sold, and it is my desire that my executors shall have him properly taken care of as long as he may live, and that he shall not be worked."

Three stallions by George Wilkes out of marse by Massibrino Patchen, have sired 2:36 trotters: They are: Alcyone, sire of Martha Wilkes, 2:36, Bosh, 2:39, and Harrietta, 2:09; Gur Wilkes, sire of Hubbs, 2:39, and Leea Wilkes, 2:07; Barco, Wilkes, sire of Oakland Baron, 2:39, and Baron Rogers, 2:09,

Pilet, Jr., sired the dams of more stallions that have sired 210 treaters than any other horse, his daughters having to their credit Lord Russell, sire of Kremlis, 210%; Nutwood, sire of Lockheart, 210%; Pilet Medium, sire of Pilot Boy, 210%, and B. B. P., 210%; Meander, sire of Pamilco, 218, and Nutbourne, sire of Cheyenne, 220%.

Paimyrs Boy, 2:01%, will be one of the Selma contingent for which it may be well to keep an eye open. This son of Gratian, 2:15, took his record last September as a fouryear-old, and is liable to be among the very select few next searon. Theodore Alben, who trained a Missouri stable last year, has him at the Southern track, and will begin his campalgn in the west.

There were a good many aged campaigners out this year and several took good records which are well up in the teens. Endicott, 7:5%, is one of these. He is now fifteen years old and is a son of Milwaukee, dam Nobby, by Swigert. Endicott was feeled in 182 and was therefore fifteen pears old when he took his record at Durland, Wis., October I. Endicott is owned by G. A. Goss, Durland.

There are seventeen provincial tracks over which miles have been trotted or paced below 2:20. When it is stated that no herse bred in the provinces had been able to trot is better than 2:30 up to six years ago it will be seen how major have been the strides of improvement. Charlottewn holds the best record and the only one below 2:20 but Amberst, 8t. John, 8t. Stephen, Hallika and Predericton tracks have all had miles below 2:22 trotted or paced over them.

Granville and C. P. Cecil have decided to retain Gambetta Wilkes, 2:184, and about twenty brood mares, and will not make an absolute dispersal of their stock, as was at first intended. Cecilian park has acquired a prestige within the past few pears such as few breeding establishments possess. That Gambetta Wilkes has been the rock upon which the Cecilie success was grounded there can be Bittle question. THE BORSEMAN rejectes, as will its friends generally, that operations are be continue at Cecilian park as in the past, though possibly along more conservative lines.

It seems a pity that what is probably the fastest horse of Canadian breeding that has yet appeared, Charley B. 2019, should have been mixed up in a ringing scrape his first season out. He was a green one of Grand Circuit capability, and yet he was raced under different names. The National will have this case to consider at its next session, and it is to be hoped there are mitigating circumstances.

The Nashua, N. H., fair association is figuring on the purchase of the city farm, and the discussion has alarmed some of the over-realous residents, who fear the association less deadworing to get a good thing too cheadyn. If the ground is bought for exposition purposes, it is likely full price will be be paid, however. There is a prospect of the driving club and the fair association coming together on a deal looking toward consolidation.

One of the crack-n-jacks of the Philiadelphia road brigade is The Wisard, Jill, bred by Captain Ed Pyle, Nebrasks, and now owned by Jacob Justice. This golding is by Charles Caffrey and his dam is the dam of Dan Tucker. 228js. He has paced halves in 1:32 and can speint at a 2-minute clip. Even that speed will not give him anything to spare against such ones as Bright Light, 2:89s. Claus Forester, 2:11b. Marendes, 2:17s. Jocko, 2:20s. and Wheeler F., 2:17s. all owned in the same city.

A sire which did not appear in the great table, aithough deserving a place there is Birtus did, son of Hambletonian Transley and whose dam was a daughter of Hambletonian B. At Bwanton, Ohle, September 2, the six-year-oid chestnat gelding Branden, by Birtus, trotted to a record of 25%, His dam is Widow Enricotal, therosignhered, by Cilverston. R. Macauley, Detroit, Mich., was the owner of Brandon at the time he took his record, but has since sold the gelding to W. H. Snyder, Broeklys, N. Y.

George Wilkes, Henry Clay and Jay Goold have each sired the dams of two sires of 210 trotters, daughters of George Wilkes having produced Keeler, sire of Onoqua, 250%, and Hummer, sire of Bouncer, 210. Daughters of Harry Clay produced Electioneer, sire of Arico, 134%, 8und, 230%, and Falo Albo, 250%, and daughters of Jay Goold preduced Edgardo, sire of Tomah, 238, and Boodle, sire of Ethel Downs, 210. No other stalllen sired the dam of more than one sire of 210 trotters.

A week ago Monday last, at Elkwood park, Long Branch, there was a race for a purse of \$60 that attracted a large number of speciators. There were three entries from Lakewood, namely, La Compte's King, Higgins' Percy H. and McCue's Ruskin Wilkes. King captured the first and second heats bandily in \$23% and \$2.3% with Percy H. second and Ruskin Wilkes third. The next three heats were won by Ruskin Wilkes with King second and Porcy H. third. Time, \$25%, \$2.20, \$2.204. Prank Board was the starter and sodge.

Imac J. Blisworth, who drove the mare fissic S., at some of the Michigan circuit races last fall, appears to have got into hot water and is now under arrest at Toledo, Ohio. The Jackson (Mich.) Press states that Elisworth was in that place a short time ago pretending to be looking for trotting stock to be shipped to Europe. The paper adds: "He is wanted in St. Johns for stealing a team from a livery stable. He is said to have already served two or three terms in prison for beres stealing. He is also wanted here for jumping a board bill during the races."

The Mansfeld (O.) News emphasizes the importance of the horse breeding industry to any community when it says:
"It would surprise the average business man to figure up what an enormous amount of money comes to Richland county through the horse business. No other industry heaves so much ready money with the farmers. The amount of money required to handle the horse business of Richland county is near the half a million mark, to say nothing of hay, oats and core, which are all accessories to the horse inferests."

The scheme by which those Boston betting men sought to get around the anti-pool-selling law by selling pictures of horses and which has just been declared illegal by the courts, is not a new one. It has been tried several times, according to the Baffalo Express, at Bradford, Pa., where the racing men were arrad the authorities might interfere to steep pool-selling. In the Pennsylvania, town no one has over attempted to prove the picture selling to be betting, and consequently it has come to be looked upon as a sure way of evaling the law. With the decision regarding the Boston case, perhaps the scheme may come to grief in Pennsylvania if again attempted.

Pennsylvania if again attempted.

The late Dr. Herr always claimed that Betty Brown. Timethy Angilln's great mare, was an accident. He stated to the writer that Mr. Angiln sent him over a mare with the word to breed her to his best berse. Dr. Herr considered Mambeino Patchen such, and Pickles, for she is proved to be, was accordingly bred to a son of her own sire. Whether or not Mr. Angiln would have as bred the mare had he been present is a matter of conjecture. Today it would not be far out of line, but the sweet of Mambrido Patchen stated often before his death, and that in the finee of Betty Brown's great success in the harem, that he would never have thought of making such a combination had be known that both were by Mambrido Chief.

had be known that both were by Mambriso Chief.

There is a horse entered in the Derby of 189 called Neurasthenhyposokelesteries, and it is just possible, says the London Telegraph, that some of the unsamed colis which have been put into the same race may previous to the day of running receive titles of equal bength and magnitude. It would be extremely interesting if we were to find a Rencheslathon or a Sedigitus Volcatilue, an Argentiexterebronides, or a Heautontimorunesse attracting the attention of the judger; and no doubt the entire theatrical profession would be found 'baving a but on' for the sake of "audi lang syne," if some soble owner could be induced to call his berse Chromoshotonthologes or Cryptoconhotoryphonostessata. In fact, if herees with such names as these were to take the "places" in the mesonosials struggle, the increase of linacy among the English-speaking population, especiality among the newsboys, would be past description.

AFFAIRS IN THE EAST.

AFFAIRS IN THE EAST.

In spite of the uncertainty which clouds the future of the Driving club of New York, it is now all but certaining that the metropolis will have at loast one new trotting track worthy of its need in time for the Grand Circuit meeting of 1898, while projects are on foot for three other new harmon racing plants within the limits of the big city. James Butler is at the back, or rather at the front, of one of these movements, which is almost equivalent to saying it will be carried forward to consummation without delay. Mr. Butler is a man of action, and when he takes bold of any project it succeeds. That has been the history of the man for affects years; ever since he cut loose from a salaried position in the Windsor hotel on. Fifth avenue and started a small grecery store in this city. Within that period he has made the one little store grow into seventy odd stores scattered all over the metropolitan district, until he now ranks as the most extensive retail grocer in the world. Before Fischwood park was condemned he went to work to find a suitable location for a new track, and as THES HOUSEINEAN announced last week such a location has at last been found about seves mides north of McCemb's dass bridge, on the line of Jerome avenue, This is somewhat further from the city than horsennen generally would like to see the new track located, but a thorough search for available property has revealed the fact that nothing move convenient can be secured at this late day. And when the truth is told, the new track will be quite as accessible as Florewood park. It is five or six mides further from the city than horsennen generally would like to see the new track will be quite as accessible as Florewood park. It is seen even the subject of the most beautiful spots to be found anywhere shout New York, and as there is a soft during which a receive and Firty-fifth street. The route lies along Jerome avenue and through Van Coctinant park, one of the most beautiful spots to be found anywhere shout was subject to

matter of a few years when the new course will be right in the best readlessee portion of the second largest city in the world.

Mr. Butler has gone so far as to get a price on the property and to have a map made showing all the details of the location and its means of access. He has also obtained estimates on the cost of buildings and equipments for the plant, which, by the way, will probably be substantially a duplication of the Detroit Driving club's plant. Mr. Butler was captivated by the convenient arrangement and handsome appearance of the Grosse Points grand stand and stables during the Grand Curcuit meeting last July, and it is has notion that New York could not de better than to copy them is detail. On showing the maps and plans of the proposed new track to THE HORSERMAN'S representative least week, Mr. Butler said:

"The plant equipped and ready for racing will cost about 1200,00. The land can be bought for \$180,00, and I estimate that 80,000 will construct the track and the buildings. From what I have seen and learned through my experience with the old Driving cish at Fleetewood I believe that this new track with the right kind of management will earn a good dividend, not a fair dividend, but a good one, and a mighty good one at that, on the investment. As for the land, I know there in no safer, better place to put money in all the wide world. The city is growing in that direction right along, and with the improvements that are going to be made up there in the near future, this property will rise in what I say, and to show that I believe it I will be one of eight men to put up 25,000 apices to buy the land and build the track. If we can't find eight men with that much money to invest, I will put in \$6,000 with three others. Yes, you can say that if the right man comes forward with half the money for the whole thing, I will put up the other half, In fact, the fewer the better, so long as they are the right second.

THE HORSEMAN'S representative has no authority to say it, but it is nevertheless his belief that Mr. Butler would do the whole thing single-handed before he would see the project fail of realization. That is the kind of man New York has for a leader in harness racing affairs. Who will be the other mest to co-operate in the undertaking is as yet a matter of pure conjecture. James W. Daly, the owner of Delmarch, 2(1)(g) James McChemahan and John H. Butla, all of whom have breeding farms not far from the site of the proposed new track, are likely, however, to be among the number.

the proposed new track, are nacey, sowever, to be among the number. It is Mr. Butler's opinion that harness racing on the new track ought to be controlled directly by the owners of the property and not by any club. He would engage as up-to-date manager to handle the trotting meetings held there, on the same basis that a theater, baseball grounds or any other place of amusement would be conducted. "Pay him a good salary and give him a free hand within certain limits laid down by the owners of the property to accomplish results in his own way," said Mr. Butler. "Then held him responsible for results. This thing of ten or a dosen inexperienced members of an executive committee, assisted by three hundred more cloth members, trying to run a trotting meeting won't do. It's a case of too many cooks spoiling the broth. No successful businesse that I know anything about was ever carried on in that way, and I don't believe a trotting meeting is any exception to the rule.

Tule."
While James Butler is working on this project for a new mile track Frederick Gerken, one of the best sportamen and most sagacious business men of the whole trotting fraternity in New York, has another scheme in view which contemplate two tracks and a horsemen's social club besides. One part of Mr. Gerken's pian has long been advocated by

the writer as at once the simplest and most economical, if not the most satisfactory, solution of the problem now confronting the metropolitan followers of harness racing. It is to utilize Morris park by constructing a trotting track Just inside the circular course now used by the running tracks and inside the circular course now used by the running of the park of the control of the park of the park

The election of E. H. Harriman to be president of the New York State Breeders' association has brought Goshen into the field as an supriant for the anmal trotting meeting held by that organization. Goshen is the strenghold of the vuccessful Orange country circuit, and the track there is one of the best and fastist half-side courses in the world is enough to represent the wrong direction to take the breeders' seeding from Poughkeepsie to Goshen. A meeting great enough to represent the breeding interests of the great state of New York never has been and never can be held on a half-mile track, no difference how perfect the track nor how enterprising and liberal the management. If Goshen is ambitious to be the harress racing capital of the Empire state, Goshen ought to build a mile track. But why think of leaving Poughkeepsie, if, in fact, anybody has scriously thought of doing so? With two or three days of rain last year the breeders' meeting at Hudson river driving park was by long odds the best ever held by the association. The entry list was the largest and best, the attendance and the racing dilto, and the paircess of the meeting had the pleasure of seeing the fastest mile ever gone in harness in the state of New York, a thing that would be out of the question on any half-nile track. There is a bright, if not a brilliant, future for the annual meeting of the breeders at Poughkeepsis now that New York city is about to strengthen the situation with one or more new mile tracks. At Goshen or any other half-nile track the breeders' meeting would drop at once to the level of a minor fature and no power or personality in the herse world is strong enough to avert the fall. evert the fail.

In two instances this month stallions have died and been given the prominence of long notices with display headings by the papers published in the localities in which they lived. At Augusta, Me, John R. Grant lost his stallion Cushnoc, by Victor, E.E. Charles Nelson ence gave Cushnoc credit for being the best stallion in Maine next to his own celebrated horse. Abram T. Woods, living near Wolf Pix Schoolhouse, N. J., lost his stallion Blackstone, by Sayre's Guy Miller. Blackstone's famous race with Nuscoast in October, 180, was one of the biggest turf events that ever occurred in the country and drew a large crowd of representative horsesson to Newties, where it occurred. Though Nutcoast wos, the friends of Cushnoc have always wanted to have the centest repeated.

In the Middleex Superior Court, at East Cambridge, Mass, December 17, Judge Wardell quashed the alleged pool-selling cases in which John T. Hicks, manager of Com-bination park, Medford, was defendant. These cases were

instituted during the summer by the Watch and Ward su-clety, and caused no little excitement at the time, as it was the first move that had been made in several years to stop pool-selling on race courses in the vicinity of Bos-ton. In the lower courts Mr. Hicks had been fixed EOs on each of two counts, but he appealed the case to the higher tribusal. Just what effect this may have upon racing about Beston during the counting season is not clearly under-stood. It will be remembered that the New England breed-ers' meeting was also interfered with by the members of this same society.

The immersus number of ringing cases disposed of by the board of review at its assation three weeks ago has, not assaturally, it must be admitted, caused a great amount of talk aneat the campaigning of herese out of their classes. All sorts of plans for the prevention of ringing have been suggested, but when they are sifted down to the bottom not one of them is as forceful or so likely to prove successful as that long ago suggested by TRIE HOUREMAN of requiring owners to register their horses before starting them is races, but as is required by the Jockey clob and the Western Turf congress in America and by the Jockey clob not be Rogland. If it was necessary to register a troiling or pacing colt or filly before it would be allowed to start in a race, there would be very little chance for any man to campaign a horse out of his class. Once in a great while a ringer does get in his week on the running turf, but the system devised to keep track of the horses is the one that will best keep the ringer in the beckground. The National trotting association ence had an opportunity to adopt this method, but declined. The Newark Call has the following to say on this subject, the fact that the writer of the matter quoted presented the receivation that was placed on file, lending it additional interest!

"There is one way—and a most effectual one—to stop ringing." Some years ago the Tretting Union of Great Britain, in order to put a step to the sharks who purchased out-classed trotters in this country and shipped them over the water for the purpose of ringing them as anxive-been horses, passed a rule providing that no American certificate. Under this provision it was absolutely impossible to ring a horse in England, nor could a mative-bere horse be paised off as as American-bred stallion. For some reason this rule was reached and during the existence of the Trotting union. Last very period chrisis the existence of the Trotting union. Last very period chrisis of certifinates for foreign-bred horses is compiliory.

period during the exiscence of the Trotting union. Last October the executive council re-emerted the rule, and now the production of certifinates for foreign-bred horses is compalsory.

The very protection demanded and cocceded to a foreign trotting organization is denied the honest owner in America, where, owing to the immense number of unknown trotters, the opportunity for committing fraud is endless. At the congress of the National association, which elected Major P. P. Johnston president, there was introduced a rule to prevent fraudulent entries. It was prepared by the writer, and was ecdered filed. It must be pretty smooth by this time. "The following is an exact copy:

"No horse shall be eligible to perform on any track governed by the National trotting association until the following conditions have been compiled with: The nominator or owner shall file in the office of said association, under coath, and in the presence of two witnesses, permanent read-oats of the place in which the oath is made, a full and accurate description, which shall embrace every feature of the horse-size, color, sex, distinguishing marks, and his record, when and where made. When such description shall have been filed, and upon the payment of one deliar, the nominator or owner shall be fursished with an official portification, made out and signed by the secretary or clerk designated to perform such duty. This certificate shall be removed each year, and shall contain the name of the horse and the full description as recorded, and be provided with blank apaces to be filled with the record of any was made, the place and date, and signed by an officer of the association or Judges of a race, on demand, with the view to catabilishing the identity of the horse. A failure to comply will disqualify the hoese. Any member found guilty of changing or forging a certificate is said be expedied.

"The argument made at the time in support of the adoption of this rule was to the effect that in requiring the certificate so he indoves to be indicat

NEWS NOTES AND COMMENTS.

Relmont's new vice president, James Elverson, Jr., is g eral manager of the Philadelphia Inquirer. He enjoys h ing a good driver, but has never before been identified w

James McNamara has been confined to the house with a hard cold, taken at the Machinon Square garden, at which time the Allerton stallion, Almerine, was purchased by Memrz, McNamara & Wells, Baldwineville, N. Y.

Twenty-five head are in John Reamer's stable at Belmon park, Philadelphia. Among the number are Dal Mason 123%, Gypsy, 128, Blue Grass Maid, 225, and Avena, 125%,

Charley Myers has fifteen horses in winter quarters at Belmont park, Philadelphia.

Charley Myers has fifteen bores in winter quarters at Belmont park, Philadelphia.

The Belmont driving club directors continue to fight shy of the responsibility of awarding the three silver cups which laive been won by somebody, but for which there are several claimants. The directors appreciate the fact that no matter how the case is decided some one will feel offended, and they are postponing the crit day.

George B. Inches, owner of Edgewood farm, Grafton, Mass, who psirchased the mare Juno Wilkes, 2:9, among others at the recent Parig sale, was offered an even thousand dollars for his purchase before reaching home. She is by Victor Wilkes, Profile Lambert, by Daniel Lambert, She will be inclinded among the broad mares at the farm. Nellis Lambert is the dam of Bisth Wilkes, 2:26, Enox Wilkes, 1:29, and Juno Wilkes, 2:28, Madge Wilkes, 2:28, Inox Wilkes, 1:29, and Juno Wilkes, 1:28, Andrew Chen, 2:115, Prose, 2:16, Stanna, 2:255, and Selma, 2:205, Both of these mares will be bred to Pediar, Mr. Inches' good Effectioneer stallion.

If required over three years' time to secure the mency.

be bred to Pediar, Mr. Inches' good Electioneer stallion.

If required over three years' time to secure the money, but Higgh B, Maggiro, of Philadelphia, has finally been awarded 56t by the New England Railroad company for the loss of his mare, Maneppa, in a railroad accident which occurred near Waterbury, Conn., in 1994.

Henry Conten' fast pacer, Baladin, 255%, is being wintered by Bennis O'Saillivan, at Berwyn, Ph. After a short stud season Saladin will again be on the circuits next year. Ed Baker, Buffalo, N. Y., owner of Bounte Boy, has a half interest in a wearling daughter of Lynne Bel, 2:3%, that is entered in stakes valued at \$21,000 to be trotted in 1990. He thinks she is a great prospect and his opision is shared by W. H. Covillic, who is a successful colt bandler.

Colonal A. Loudon Soorden made a fying trip to Ken-

thinks she is a great prespect and his opinion is shared by W. H. Coville, who is a successful colt handler.

Colonel A. Loudon Browden made a flying trip to Kentucky last week, says the Philadelphia Inquirer, and at Danville purchased the two-year-old trotter. The Dutchman, by Winks-Lady Pepper, by Ouward, for Elou. He has no record, but finished a close second in a race at Lexington in 2:14%. The Dutchman will be wintered in Kentucky, and in the spring he will be driven to the pole with B. L. C., 2:13%, by Norwood. On his way borne Colonel Rouwden stopped off at Lexington to see his old friend, John Madben, the well known broeder, trainer and driver. Now the colonel and John had met before in numerous horse trades, and once in particular the colonel had been hadly taken in. Therefore, after Madden had remarked: "I am giad to see that you have got a good one at last; just come out to the paddeck until I show you a Blacky one," the colonel was very wary. Anylows, he followed John out, and the latter pointed out to him a splendid looking piece of horsedesh that galloged away at their approach. She was a bright bay, well put together, and gave every evidence of bot bresidens that galloged away at their approach. She was a bright bay, well put together, and gave every evidence of both bresiding and speed. John gave her a pedigree as long as both his arms, and told of her performances, and then turning to the colonel, he said:

"Do you like her, ecdoes!"

"Why, nothing to you, colonel," came the unexpected re-

"Yes," replied Colonel Snowden, very cautiously, "What's her price?"

"Why, nothing to you, colonel," came the unexpected reply. "I want to make her a present to you."

The colonel could only gusp his thanks, and then remarked: "What's her name, John"
"Bhe has none," replied Madden.
"Then we will call her Restitution," said the colonel. Bestitution is very fast, but the colonel will not give out her figures. She is now in his stable in this city.

PROVINCIAL TURF RECORDS.

S OME weeks ago THE HORSEMAN published the list of 120 performers bred and owned is the Maritime power-incea. The showing made was a most resnarkable one, as it covered a period of only six years. Along the same line, but of possibly greater interest, is the following list of Provincial turf records compiled by the Acadian Recorder. The fact that there are seventeen tracks in the three provinces, with track records ranging from 2.19%, to 2.3, shows plainly the rapid advancement the trotter is making here, for but four of these records are beld by pacent. The records given are those made on provincial tracks, except when otherwise specified; the name of the arismal, color, sex, place and duts record was made, and name and residence of present owner. There should be much substraction to provincial breeders in the following table. It is only six years since Israel was the first force bred in the provinces to trot better than 2.30 over a provincial track.

Yearling—Parkhand b. c. be Deviced.

bred in the provinces to trot better than 236 over a provencial track.

TROTTERS.

TROTTERS.

TROTTERS.

Yearing—Parkhand, b. c., by Parkside; Charlottetown, 8ept. 29, 180; W. B. Bowness, Sammershie, 12.55
Trovo-year-old—Parkhand, b. c., by Parkside; Moncton, Aug. 39, 1981.

Three-year-old—Writinest, b. c., by Rrowe Wilkes; 81.

Hombon, N. B. Sept. 7, 1861; J. C. Mahon, Havelock, N. B.

Four-year-old—Brailian, b. c., by Brown Wilkes; 81.

Hombon, N. B. Sept. 7, 1861; J. C. Mahon, Havelock, N. B.

Sept. 29, 1861; H. C. Lavliard, Kentville 2194, Maro-Minota, h. m., by Str Nutwood; Charlottetown, 8ept. 2186; J. R. Laury, Amhest 1869; J.

Pastest trotting mare bred in Provinces—Jubilee, by
Maisbourne King; owned in Energy
Maisbourne Maisbourne
Maisbourne Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Maisbourne
Mai

m. by King Nutwood. John McCoy, Predefector. 229;

TRACK RECORDS.

(Names of owners given where not previously menthound.) Armbert4.—Special Blend 221;

St. Johns-Special Blend 221;

St. Stephen-Nominee Prince and Arc Light 221;

Mometon-Stranger 224;

Mometon-Stranger 224;

Mometon-Bernard 225;

Kentvillo-Special Blend 225;

Halflax (ridius grounder-Minota and Arc Light 225;

Tarmooth-Instal, b. h. by Blampart; A. C. Bolt, New Glasgow 226;

Glasgow 226;

Glasgow 226;

Roberts, St. John a. br. m. by Harry Wilkes; W. H. 225;

Port Bigin-Fred, b. g. by Dick Allan Pacer, Blaft 226;

Allen, Baydod, N. B. 226;

Anhend 226;

Halflax 226;

H Lunemburg

Bridgetown-Mand M., by Gübert; John Hall, Law
2-26,

THE BROOD MARE JACONET.

In this day of practical things, when the sarning capacity of the troiter is the great desideratum, breeders are looking more closely than ever into the breeding of the money whome in order to ascertain the why and wherefore. A. A. Austin writes entertainingly in the Boston Herald of Jacobet, the dams of Bilma, the winner of the Merchants' and Manufacturers' B0,000 stake at Detroit last Joly. Much has been written of this mare since her daughter proved to be the largest money winner of 189. The owners of Jacobian and Rilma are the Ventrues Broat, cotton planters, La Grange plantation. Woodville, Miss., and the breeding and racing of horses with them is only a little pleasurable side lasts.

DIRECTORS of the Kentucky Trotting Horse Breeders' association, at a meeting held at Lexington, Ky, December II, took most important action in relation to the barring of hoppies and the shortening of distance in research, by the board of directors of the Kentucky Trotting Horse Breeders' association, That the use of hoppies on horse in races is dangerous to the life and limb of every driver and herse participating therein; that it mars the enjoyment of the public in witnessing such races, and that it works great injustice to those who race horses without hoppies, forcing them to place their lives and property in jeopardy without any compensating advantage whatever.

"We therefore respectful!"

in jeopardy without any compensating advantage whatever.

"We therefore respectfully request the National and
American trotting associations to pass a rule prohibiting
the uss of bospies on horses participating in races over the
tracks of their respective members, attaching a specific pensity of such severity for its violation as will insure full
obedience from each track so governed. Be it further
"Reserved, That the rules sow in force against the practice of laying up heats are foeffectual, and that, as a bar
against fraud and the indefinite lengthesing of races, they
form no protection. The experience of all practical horsemess has shown that there is but one rule that will effectually prayide the safeguard desired, and that is to shorten
the distance.
"We therefore respectfully request the National and

the distance.

"We therefore respectfully request the National and American trotting associations to pass a rule fixing the distance in races of mile heats between six or less horses at thirty yards; between seven and twelve horses at fifty yards, and between thereon or more horses at fifty yards, and between thereon or more horses at seventy yards, and to affix a specific penalty for the violation of this rule by tracks in membership with said associations of such severity as will insure its strict observance."

The resolution is signed by the members of the securities board, viz.: P. P. Johnston, president; R. P. Stofl, vice president; Shelby Harbison, second vice president; H. W. Wilson, secretary; H. C. McDorrell, Mike Bowerman, G. M. Asher, H. L. Asher, directors.

see the largest money winner of 190. The owners of Jacobist and Rilms are the Ventreas Bron. control plastices, i.e., and the state of the largest money winner of them all to half from that feature.

Mississippl is outside the trotting heree belt, and we don't look for the greatest winner of them all to half from that the was due, the little gray paper that Gill. Curry marked in 100%; the other Echa Chief, 2215, who, a densen years ago, was swend and driven by a negre of Topoka, Kan, and Lat enough to trot and win in Grand Circuit company.

Jef Davis, Rilms, however, was breed in Kentucky.

In 1887 the Ventreas Bron. held correspondence with R. ft. Vecch. of Indian Hill was R. M. Mathews, K.V., relative to prevhasing a filty, which they designed to keep expressive the previous of the prevention of the preventio

1285

LOCOMOTION OF THE PAST.

Carroches, Cooches, Jadea and Planders mares
Do rob us of our shares, our wares, our fares;
Against the ground we stand and shock our heels.

While all our profit runs away on wheels.

It is not to the profit of the stand and shock our heels,
while all our profit runs away on wheels.

It is not to the stand of the stand of the stand of whiches of some description, but we can handerphers who taught us that the earth revolved on an anison of the stand of the definite extent, either Boating on the water, or redling on some immovable but unknown foundation. In this say of wheeled becomotion it is hard to determine where our whirt will end, but of a certainty, freed beath on the Pale Bower will sow only attempt to give a slight sketch from the anowy steed to a white bicycle.

However, we will sow only attempt to give a slight sketch from the anowy attend to a white bicycle.

However, we will sow only attempt to give a slight sketch from the anowy attend the carried of the interest of the promise. We, who are enjoying the single was the slow moving ox cart of the rudent build, in the single that there was once a time when the switces known recibed out transportations, save that of horselock riding, was the slow moving ox cart of the rudent build. In this car, the single was the slow moving ox cart of the rudent build, in General the standard of the "lake you waggons out of the land of Egypt for your little ones and for your views," but it is besided that both horses and charlots were introduced into Egypt by the slephed that took horses and charlots were introduced into Egypt by the shephed that to the same that the results of the country, snowing that to the same that the results of the charlot size in the south pole.

From this point we must desceed to the ancient representations of the magnificent carriages which, under the same the south pole.

From this point we must desceed to the kings, and Rawindson for their womes, which was a favo

Ing behind."

Reichtbonius of Athena, 188 B. C., possessed the first charlot of history, and to which four horses were attached. Virgil, in his "deorgic III.," thus relates of the act:

Bold Erichtbonius was the first who join'd Four borses for the rapid race designed. And o're the dusty whosels presiding state:

The following incident regarding the naïvent of wagous into Greece several centuries before Christ is told. At one time there was a great disturbance in Phrygia, and an oracle had informed the people, who were holding a public meeting. that a wagon would bring them a king, who should at the same time put an end to all their froubbe. Directly afterwards, Midas, the son of Gordins, a poor peasant, appeared, coming is his wagon to the assembly, with his father and mother. All present listantiny acknowledged him as their king, and Gordins, being very grateful, dedicated the wagon as a thank-offering to the god Zeus. The pole of this wagon was fastened to the yeke by a knot of borth and there was a prophecy, generally believed amongst the people, that whoever should until the knot would be lored of Asia. When Alexander came to Gordium, he took care to prave that the prophecy related to himself, for he drew his sword and cut the knot in two. And from this circumstance has arisen the suying of "cutting the Gordian knot." Homan and Grecian game chariots were enriched with gold and trovy, and the triumplai chariot of the Olympian games was usually made of twory and drawn by four while horses. These chariots were said to be altributes of the golds and goddesses of mythology.

From the age of chariots and rade wagons, to the age of coaches, there are many centuries. The inxurious and lany kings of France, "Les Bois Faineauts" of the sweath century, made their journeys from town to town in ox carts of the rodest description. These wagons were of the roughness of the rodest description. These wagons were of the roughness to believe the most huxiriant and gorge is mentioned, and in IBB one of the rower of knowledge



Coaches, from this period, and for about ten or twelve years following, became quite the fashion, and multiplied so rapidly that a satirist of the day complained that "the wife of every citizen must now be joited," and "joited" they must have been, as these vehicles were entirely without springs in the days when asphalt was a thing of the glorious future. For a long time after the introduction of coaches indo England they were considered effections, and were dedicated almost entirely to women, even queen fleas preferring to make her journeys on horseback until compelled to take to her coach on account of old age. Montaigne, in writing of this innovation of his age, says: "—ow I can not long endure dand when I was young much less endured) either coach or litter, and hate riding, except on horseback," and further on relates, apropos of coachriding, the following incidents. "As if their insignificance had not been sufficiently known by better proof, the last kings of our race traveled in a chariot drawn by four oxes. Mark Antony was the first at Rome that caused himself to be drawn in a coach by lices, and as singing weach with him. Heliogabalus did since, as much, calling himself Speles, the mother of the gods, and was also drawn by tigers, taking upon himself the person of the god Bacchos. He also sometimes harnessed two stags to his coach, another time four dogs, at another, four naked wenches, causing himself to be drawn by them is pomp, he being stark naked, too. The Emperor Firmus caused his

chariot to be drawn by ostriches of a prodigious size, so that it seemed rather to fly than red."

"In Sir Phillip Sydney's time," says Aubrey, the historian, "so famous for its dandies, it was held to be as assuing for a young gentleman to be seen on the street in a coach as dol he go abroad now in petitiont and waistcoat, so much has the fashion of the times alisred." The shop-keepers of this period were load in their complaint of the invasion of pleasure carriages, thinking that their trade was injured, and it is written of them that they sadd: "Formerly, when laddes and gentlemen walked shroad in the streets, there was a chance of obtaining customors to inspect and purchase our commodities; but now they whish past in the coaches before our apprentices have time to ery out 'What d'ye lack?" "Taylor, the water poet, declared that "housekeeping sever decayed 'illi coaches came into England."



ASSTRIAN CHARIOT—FROM BAS RELIEF.

Sir Walter Scott, in his "Old Mostality," gives us this admirable description of the clumay structures on wheels of that age: "The bord-lieutenant of the country, a personage of docal rank, alone pretended to the magnificence of a wheel-carriage, a thing covered with tarnished gidding and sculpture, in shape like the vulgar pictures of Noah's ark, dragged by eight long-tailed Flanders mares, carrying eight insides and six outsides. A coachman and three positions, who wore short swords and the-wire with three tails, had bounderbusses sings behind them, and pistoss at their middlebow, conducted the equipage." In 18it there was a law enacted in England, proteometring coaches too effectionate for the use of men, and was not repealed until 182. Up to twenty years ago the style of carriage used for the two previous centraries was still in use in the Englan royal state carriage, and in the London Lord Mayor's coach. These vehicles were elaborately gilt, and richty painted, with emblematic designs by eminent artists. The bodies, supported by a strong thoroughfarses, hung on straps, without springs, the supports in back and front belief and the supported by a strong thoroughfarses, hung on straps, without springs, the supports in back and front belief and the supported by a strong thoroughfarses, hung on straps, without springs, the supports in back and front belief and to the horse's side by shafts, and furnished, with verification and counterpolese that hung below the shafts. This vehicle was said to be very convenient for narrow rounds. Hankway coaches were introduced into England about 1816, and from this period the aversion of the people to this easy and convergedone that hung below the shafts. This vehicle was said to be very convenient for narrow rounds. Hankway coaches were introduced into England about 1816, and from this period the aversion of the people to this easy and convergedone that hung below the shafts.

overcome, and all manner of wheeled vehicles came into popular use.

There are many oddities and freaks in the manner of carriage decoration, even among people of usual good taste. One well-known family in Regiand has a taste for startling effects in their carriage coloring, which have royal private carriages were formerly of a bright enany color, with undoubtedly glaring appearance, but upon the advest of William IV, and Queen Adelaise, a dark checolate decoration was adopted, and has since been maintained. In closing, we will quote a channa from Hood's sonaet, "I had a Oke-Horse, and I called him Pleasure," in which he refers to the highly colored vehicles of his time:

I had a Chalee, and christened it Indjeyment,
With yellow body, and the wheels of red,
Because 'twas used for one employment,
Namely, to go wherever Pleasure led.

Ashtabula, Ohio.

PEEDING WORK HORSES AND COLTS.

PREDING WORK HORSES AND COLTS.

ATS a large stood owner in England: "Some years and we adopted a method that was in a measors new to us, but it has proved highly satisfactory and profitable, and notching would induce us to return to the old systems. We employ, say, forty horses about our mills here in the summer season. In the rear of our stales we have a feed room, where our cut straw for bedding and our cut hay, outs and ground feed are kept, and here we have two mislang-boxes, where the rations for the horses are mixed before feeding. The cut hay is put into those boxes and is thoroughly sousked with water twolve hours before it is fed. The ground feed is mixed dry, and before feeding is thoroughly mixed with the wet hay. The ration we started out with was it pounds cut hay, it pound from and so pounds and and harly to each horse night and morning, and it pounds dry eats only at noon. "Our horses are generally of large size, and are doing excessively hard work, and we found this ration too small for them and we gradually increased it until we have settled down to this: 5 pounds hay, it pounds ground grain and is pound of brain to each horse morning and night, and a pounds dry eats only at noon (so hay), and this we find ample for the largest class of horses doing the most excessive work.

"Our swing is at least its pounds hay nor day for each."

GREAT BROOD MARES.

GREAT BROOD MARES.

The following table includes members of the "Great Brood Mare List" that have bred on through three and four generations—that is, great brood mares having a daughter that is a member of the great brood mare table and that daughter being also the dam of another member of the great brood mare table. We believe this is the first list of the kind ever published, and it is possible that some mares may be omitted. The line of descent may saxily be traced, the arrangement of the various generations conducing thereto.

Abbess, by Albion, dam of

Steinway, sire, 2:28,

2. Note, 2:28,

2. Vivette, dam of

C. F. Clay, sire, 2:18,
Ambryon (p), 2:195,
Emisseon, 7:195, dam of
Emalineton, 7:195, dam of
Read Sire (p), 2:195,
Supermacy, 2:286,
Faunie Etticont, dam of
Read Sire, 2:195,
Brown Sirk, 2:194, dam of
China Silk, 2:194, dam of
China Silk, 2:194, dam of
China Silk, 2:195,
India Silk (p), 2:195,
Betty Brown, by Mambrino Patchen, dam of

Betty Brown, by Mambeino Patchen, dam of
1. Wilson Boy, sire, 2:20%.
2. Anglin, 2:27%.
3. Parnell, 2:29.
4. Kitty Patchen, dam of
Georgiana, 2:29%.
Admiration, dam of
Albton, 2:20%.
Mamie A., dam of
Kmiret B., 2:25%.
5. Butte Clay, dam of

5. Belle Clay, dam of
Amy King, 2:25%,
Socrathet, 2:36,
Macop, sira,
Macop, sira,
Wilkes, dam of
Wilkes, dam of
Wilkes, C. (dam of two), 2:25%,
Belle Shandon, dam of
Frank Logan (p), 2:25,
Frank Wilkes, dam of
Patron Wilkes, 2:25%,
Tom Steart, sira,
Helvetia, dam of
Hyannis (p), 2:15%,

8. Alleen, dam of
8. Vincent, sire, 2:23h.
Lydia Wilkes (p), 2:17h.
Ellersite Wilkes, sire, 1:22h.
L Kitty Tranby, dam of
Glen Wilkes, 2:2h.
Kincera, dam of
Constantine, sire, 2:12h.
Thorn, 2:14.
Kiewa, 2:30h.
Josie King, 2:28h.
Courier Journal (p), 2:88h.
Courier Journal (p), 2:88h. Midnight, by Pilet, Jr., dam of 1. Jay-Eye-See (p. 1994), 2:10. 2. Electricity, sire, 2:178, 2. Noontide, 2:296, dam of Midl (p), 2:184, Noonday, sire, 1:30. Ecormorn, dam of Electrost, 2:184, 4. December of the

Every Company Company

Eilawes.

Neil, dam of
Wilston, 2:3.
Delaney, sire.
Attic Belle, dam of
Gamboller (p), sire, 2:225,
Guerita (p), 2:354. Guerita (g), 2:384.

McGinnis Mare (Sally), by Tom Hale, dam of
L Billy Beyce (p), 2:13.
2 Lacty Gregory, dam of
Jereniah, 2:256,
Konantz, sirv, 2:28,
Bessie L., dam of
Antees Belle, 2:256.
Martha, dam of
Charley P. (p 2:11%), 2:256.
Charlemagne, 2:276.
Bessie V., dam of
Conson, 2:216.
Lady Haseltine, dam of
Brenan (p), 2:256.
Frince Karl, sire, 2:256.
Sarah C., dam of
Cecellan Prince, sire, 2:36.
College of Consons.

Cecellan Prince, sire, 2:31. Collinwood, 2:31%.

Minns, by Red Jacket, dam of 1. Kentucky Wilkes, stre, 2:214, 2. Madison Wilkes, stre, 2:284, 2. Minna Wilkes, dam of

Refina (p), 2:094.

m of
Lizzie Wilkes, 2:32%.
Laurabel, 2:22%.
Kitty Hooker, 2:29%.
McCullough, 2:30.
Sally Wilkes, dam of
Chastelard, sire, 2:29%.
Spain, 2:39%.

Spain,

5. Hamiettle, dam of Startler, 2.25.
Hylassie, dam of Vipania, 2.16%.
Mona Wilkes, dam of George Willis, sire, 2.29%.
Mont Russell, sire,
Lucky Cross, sire,
Dictatrix, dam of Princess Enfaile (p), 2:19%. Dictas.

5. Abutillen, dam of
Benediction, 2:27.
Combat, sire.
Sanbern, sire.
Sagnal, sire.
Abeus, dam of
Benegre, 2:20,
Loia, dam of
Coshor, 2:30,
Cashher, sire.
Belle Thorne, dam of
Circuit, 2:27.
Encentive, sire.
Enterprise, dam of
Nuthurst (p), sire, 2:12.
Edgerton, sire, 2:20,

ed, dam of

Phoebe, pedigree not traced, dam of
1. Eve (Lady Fleetfoot),2:27.
2. George B. McCleilan, sire.
2. Lady Dutchman, dam of
Windsor M., 2:20%,
Net, dam of
Breeze Medium, dam of
Alcantarus, 2:20%,
Net Medium, dam of
Alcantarus, 2:20%,
Net Medium, dam of
Alcantine, 2:20%,
Preeland, 2:17%,

Pocahontas (p),2:175, by Iron's Cadmus, dam of 1. Pocahontas, 2:285, 2. Tom Rolfe, sire, 2. Hurbdeaway, sire, 2. May Queen, dam of en, dam of
May Merning, 2:30, dam of
Revenue, sire, 2:205.
East End, 2:205.
Doily Varden, dam of
May Bloon, 2:225.
Doily Varden, dam of
Malach, 2:20.
May Day, dam of
Manpy, 2:205.
Blanch Jefferson, dam of
Mahhon, 2:125.
Arthur Cleveland, 2:325.

Arthur Cleveland, 2:204,
Arthur Cleveland, 2:204,
Poss Frail, 1298, dam of
Lottle Frail, 2:208, dam of
De Wayne, 2:30.

Lady Stout, 2:30, dam of
Cattridge,
Black Diamond, 2:204,
Black Diamond, 2:204,
Black Diamond, 2:204,
Black Cloud, stre.
Dube of Glen Lake, sire.
Jeb Stuart, sire.
Black Cloud, stre.
Buby, dam of
Laredo (p), 2:1094,
Garnel, 2:204,
B. Moily Stout, dam of
Eed Flag, 2:204,
B. Moily Stout, dam of
Chatterion, sire, 2:28,
Willie Willee, 2:28, dam of
Rachel (p), 2:2084,
Greath Heart (p), sire, 2:124,
Bowery Belle, 2:22,
Woodsprite, sire.
Crystal, dam
Cut Glass, 2:1294,
Spanish Boy (p), 2:2044,
THREE GENERATIONS. THREE GENERATIONS.
Abdallah Mald, by Abdallah Chief, dam of

Abdallah Ma.

1. Felix, 2:18%.

2. Nengali, dam of Bucyrus, 2:2%.

Lord Harold, sire.

Souvenir, dam of Patrons, 2:2%.

Plympton, 2:2%.

Plympton, 2:2%.

Anticipation, by Clay Pilot St. dam of

Anticipation, by Clay Pilot R. dam J. Prosper Merimos, sire, 2:285, 2. Dv. Strong, sire. 2. Lottand, sire. 5. Athread, dam of Atmaid, 2:286, Yetcoe, dam of Prince dated, 2:286, Yetcoe, dam of Riskwood, 2:286, Hillwood, 2:286, Hillwood, 2,25%.

Belle, by Mambrino Chief II, dam of
L.Hambletonian (McCurdy's), sire, 2,28%.

2. Britts, sire.

3. Britts, sire.

5. Bernice, dam of
Birdle, 2,27%.

6. Bleans, dam of
Pancoast, sire, 2,25%.

Beanst, sire, 2,25%.

Motte Carlo, sire, 2,25%.

Motte Carlo, sire, 2,25%.

Cara Mia, 2,25%.

Pacifica, 2:35.
Huma, dam of
Cythera, 2:394.
Tricara, dam of
Tenquis, 2:38.
Biscari, dam of
Btambold, 2:38.
Mayenne, dam of
Crescondo, 2:28.
Boss Charles, 3:2

Boss Cuyler, 1:2%, Millard Sanders, 2:27%

Black Bess, by Stockbridge Chief, dam or

Black Bess, by Stockbridge Chief, dar
J. Gloster, 2:27.

2. Lady Grace, dam of
Daconie, 2:19%,
Graceful, 2:29%,
Mandarin, sire.

2. Princess Ethel, dam of
Lady Ethel, 2:29%,
Finantom, 2:29%,
Elfreda, dam of
Warelin, 2:29%,
Queen Ethel, dam of
Bumps (p), 2:39%,
Edward 0.(p), 2:39%,

Brignoll, by Brignoll 77, dam of 1. Henderson, 2:374, 2. Alla, dam of Bpartan, 2:264, Cresco, sire. Calypso, dam of Alle Soper, 2:38, Best Way, 2:394,

Bruna, by Pilot, Jr., II. dam of
1. Woodford Pilot, sire, 2-29a,
2 Sagerser, sire,
2 Jule B., dam of
Bennatellis, 2-29a,
Gladys, dam of
Chiquerits, 2:18b,
Arten, 2:18b,
Manipolator, 2-29a,
4. Borna, dam of

4. Homa, dam of
Farce, 2:294,
Guyen, 2:374,
Romanne, 2:294,
Romality, dam of
Comanche, 2:194,
Princes Clara, 2:294,
Fiction, 5am of
Fiction, 2:294,
Featonche, 2:294,
Featonche, 2:294,

Burch Mare, by Brown Pilot, dam of
L. Donald, 2:25%,
2: Rosalind, 2:25%,
3: Spring Bill, sire,
4: Burchwood, dam of
Kingwood, 3:17%,
Gleam, dam of
Rex Americus, sire, 2:11%,
Allethia, 2:28,
Amicus, 2:28%,

Cap, by Ward's Flying Cloud, dam of

Cap, by Ward's Flying Cloud, dam of

1. Regie, 2:29%.

2. Jessle Blackwood, dam of
Maupeat (p), 2:20.

2. Mary Cap, dam of
Bel Time (p), 2:20%.
Capt. Blamsons, 2:26.
Linnio, 2:25.

4. Nettle Time, dam of
Rebertine (p 2:10%, 2:13%,
Temple Bar, sire, 2:17%,
Shadeland Coward, sire, 2:20%,
Kentucky Dictator, sire, 2:20%,

Chars, by American Star 14, dam of
1. Dexter, 21794.
2. Alma, 21294, dam of
America, sire, 21795.
2. Astoria, 21994, dam of
Astorwood, sire,
4. Dictator, sire,
5. Kearsage, sire,
6. Aida, dam of
Aida de Clare, 2:204.
7. Hyacinth, dam of
Mecca, sire, 2:204.
Juniata, dam of
Cerryerott, 2:224.
Heins Victoria, dam of
Muccyte, sire, 2:254.
Princeton, sire, 2:254.
Russis, sire, 2:254.
Pandect, sire,

County House Mare, by American Star 14, dam of
1. Nettle, 218.
2. Susie, dam of
Allen Lowe (p), 2:12
De Barry, 2:195,
Auctioneer, sire,
Susan, dam of
Supremany, 2:29.
2. Odd Stockings, dam of
Happy Russell, (p), sire, 2:216,
Boniface, 2:296,
Barones, dam of
Red Caute, 2:276,
Fayette Russell, sire.

```
Crop, by Filot, Jr., 12, dam of
1. Counsellor, stre, 2:353,
2. Code, stre, 2:355,
3. Elanche Amory, 2:35, dam of
Norval Chief, 2:369,
4. Hrestwood, stre.
5. Horth, dam of
Boas, stre, 2:175,
Obed, 2:234,
Mahlen, stre.
6. Gauntlette, dam of
Hrown, 2:156,
Williams, 2:266,
Integrity, 2:266,
Madah, 2:279,
Madah, 2:279,
Easter, dam of
Grante (p), 2:16
Cornate (p), 2:17
                           Ornate (p), 2:19%.
7. Mary Mason, dam of
                                                                             Omar, 1:25%.
Mary Safford, dam of
                                                                                                                  Certsco, 2:22.
Melton, 2:30.
                       Melton, 2:30.

Dahlis, by Filot, Jr., 12, dam of
1. Daireen, 2:395, dam of
Axtelletia, 2:295,
2. Davenand, sire, 2:395,
2. Davenand, sire, 2:395,
3. Dacia, 2:395, dam of
Daciana, 2:275,
4. Doska, dam of
Monette, 2:295,
5. Dominica, dam of
Rostoko, 2:295,
6. Dolphine, dam of
Rostoko, 2:295,
6. Dolphine, dam of
Highwood, sire, 2:395,
Dalphia D, 2:395,
Dalphia D, 2:395,
Della, dam of
Maytell, 2:28.
7. Ducona, dam of
                       T. Duenna, dam of
Novia, 2:27% dam of
Miss Egbert, dam of
Checkmain, 2:27%,
Oddfellow (p), 2:27%.
                    S. Debutante, dam of
Disputant, sire, 2:18.
Dorotha, dam of
Damatist, 2:204.
Instructor H., sire, 2:204.
                       Delly Mills, by American Star 14, dam or
1. Orange Girl, 2:20, dam of
Arcturus (p), 2:25g,
Orangelander, 2:25g,
Orangewood, dam of
Nordica (p), 2:25g,
Wedding Belle, dam of
Helen K., 2:13g,
2. Artemas, sire.
3. Ajaz, sire.
4. Eir Walkill, sire.
5. Walkill Chief, sire.
6. Hrunehelide, dam of
Hudeburn, 238.
Avon, 230.
7. Augusta, dam of
Nutcoast, 218.
Anthem, dam of
Pangold, 234%,
Bpringtime, dam of
Elton, 231.

Bashaw 50, dam of
     Fanny Bashaw, by Bashaw 98, ...

1. Gipsey Boy, sire, 2:28.

2. Donnia, dam of Don Payne (p), 2:18.

2. Coru Jackson, dam of Fero, sire, 2:25.

4. Fanny Payne, dam of Bayant, 2:30, ...

5. Fanny Payne, dam of Bosarea, 2:20.

6. Fanny Jackson, dam of King Mack, 2:20.

Neily B., dam of Jolater, sire, 2:39, ...

Gracia, dam of Sir Adrian (p), 2:224, ...

Idola, dam of Yarkand, 2:27.

**Wkins, dam of
                              Fanny Pern, by Jack Hawkins, dam of
Halkan, 2:15.

Molly Drew, 2:25, dam of
Alamash (p), 2:15.

Laura Drew, dam of
Freedom (1 year), 2:295,

Libbie B., dam of
                      5 Libbie B., dam of
Etta Wilkes, 2:35%
                   Franny Mapes, by Alexander's Abdallah 16, dam of
1. Jerome Eddy, sire, 2:10%.
2. Edmore, 2:20%.
2. Joe Gavia, sire.
4. Larry W., sire.
5. Regulator, sire.
6. Frank Noble, sire.
7. George Milo, sire.
8. Hattle Mapes, dam of
Judge Wootsey (p), 2:20%.
Nora Mapes, dam of
Bearchlight (p), 2:20%.
Liore (p), 2:20%.
Liore (p), 2:20%.
Major Mapes, 2:20%.

Elone by Manballan (p), 2:20%.
```

Fiors, by Mambrino Chief, Jr., 214, dam of 1. Western Pathfinder, 2:28, 2. Lucy Lincoln, dam of

```
8t. Elmo, 2:10%.
Cerime, 2:20%.
Lady Gerster, dam of
Helmaman, 2:20%.
Lady Epicure, dam of
Medio, 2:14%.
Gilba.

J. Miss Wilkes.

Z. Kitty Wilkes.

Glenville, 23-

Z. Henry Gilbert, sire.

4. Anna B. dam of
Lady Gilbert, 2:254,
Jussie McGregor, 2:285,
Annie Wilten, dam of
Limerick, 2:285,
Arguros, 2:274,

UL dam of
                                                  Gilbert Mare, by Clifton Pilot, dam of
             Grace, by Pilot, Jr., 12, dam of
1. Pilot Wilkes (p), sire, 2:22.
2. Olive, dam of
                                                                                                             om of
Orangeman, 2:30.
Ethics, dam of
Mentor, 2:346.
Olio, dam of
Bracelet, 2:25.
                                                                                                                                                                                                Ignaro, sire, 2:25%.
Jubilee, 2:26.
Orton, sire.
          Green Mountain Mald, by Harry Clay 45, dam of

1. Elaine, 2:30, dam of

Palatine, 2:33,

Ivan Alto, sire, 2:19%,

Anselms, 2:39%, dam of
                                                                                                                                                                                                Anselor, 2:21%.
                                                                                                                   Elsie, dam of
                                                                                                                                                                                                   m of
Palita, 2:16.
Rio Alto, 2:16%,
Novellat, 2:27.
Mary Oeborne, 2:28%.
        2. Prospero, 2:20.
2. Elista, 2:20%.
4. Dame Trot, 2:21, dam of Premier Russell, 2:21.
5. Lancelot, sire, 2:22.
6. Mansfield, sire, 2:26.
7. Storm, 2:20%, dam of
                                                                                                                                                                                                                                                                                                                                                                                               20
12. dam of
Typhoen, 2:28.
5. Elma, 2:28.
9. Antonio, sire, 2:298,
10. Electioneer, sire,
11. Elite (dam of 2),
12. Elite (dam of 3),
     12. Elice (cam of 2).

Gretchen, by Mambrino Pilot 29, dam of
1. Romero, 2:194,
2. Del Sur, sire, 2:34,
2. Inca. sire, 2:25,
4. Nebuska, 2:294, dam of
Nebuska, 2:294, dam of
Nebuska, 2:294, dam of
Sable, dam of
Sable Wilken, sire, 2:28,
Evalingame, 2:28,
Evalingame, 2:28,
Leo Wilken, 2:28,
Leo Wilken, 2:28,
Leo Wilken, 3:28,
Leo Wilken, 3:28,
Sable Hayward, dam of
Rupse (2), 2:11,
Blva, 2:134,
     Grey Goose, by Norman 1777, dam of
1. Champagne, 1:30.
2. Virginis, dam of
Tremont, sire, 2:205.
3. Diana, dam of
Lady Relso, 2:20.
George A. Ayer, 2:30.
Mambrino Barker, sire,
Bessle Forrest, dam of
Geneva, 2:105.
Alley Bonner, 2:205.
6. Guava, dam of
                                                                                             Sam of
Germa, 2:20%
Gwendolen, dam of
Alpine, 2:20,
Mab, dam of
Dupignac (p), 2:20%.
        4. Guava, dam of
Hermona, 2:23%, by Edwin Forrest 49, dam of

1. Hermon, sire, 2:27%,

2. Heptagon, sire,

2. Horschel, sire,

4. Honda, dam of

Monita (p), 2:19%,

Poarlo, sire,

5. Wanatah, dam of

Hinaldo, 2:27%,

Hermin, dam of

Hermin Nutwood, 2:23%,
                                                                                                   Association of the control of the co
                                                                           dam of Morale, 2:11.

Merodock, sire, 2:225, Inlaid, 2:205, Moscova, 2:255, Mo
                                                                                                                                                                                           Willcome, 2:20%.
Mosella, dam of
Menadnock, 2:20%.
Jean Wood, by Melbourne, Jr., dam of
1. Clermont, 3:294,
2. Ravenna, dam of
Giyoera, 2:384,
```

```
1287
                    2. Bertha, dam of
Currer Bell, 2:29%,
Isabel, dam of
Ben Bramble, 2:29%,
Christabel, 2:29%,
                        Jenny Bryan, by John Dillard, dam of

1. McLeod, 2:21%

2. Ott, 2:25.

2. Eric, 2:28%

4. Stella O'Nell, dam of
                                                                                                                                                            Pearl A., 2:394.
Dictator Rex, 2:294.
                      Jenny Lind, pedigree not traced, dam of
1. Prince Allen, 2:27.
2. Panny Rose, dam of
George Washington, sire, 2:36%,
Columbus S., 2:36%,
Dairy S., dam of
Lattle Mac, 2:27%
Sweet Roole, 2:28%,
                    Jenny Lind, by Belifounder, dam of

1. Tackey, 2.38, dam of

Pilot Boy, 2120.

Nalad Green, 2.29%.
Classleader, 2.29%.
Pilot Medium, sire,

2. Dixle, 238, dam of

Dixle Sprague, 2.29%, dam of

Boonewall (p.2.29%, 2.27%,

Bay Dixle, dam of

Montor Chipple, 2.29,

Monocrat, 2.27%,

Bounter Lilly, 2.27%,

Sephyr, dam of

Graydon, 2.29%,

Why Not, 2.39%,

University, 2.29%,

My Not, 2.39%,

Haroness, 2.30.
                   Haroness, 2:30.

Jessie Pepper, by Mambrine Chief II, dam of
I. Jens, 2:175, dam of
Jessie Dhu, 2:235,
Z. Alpha, 2:235, dam of
Accolian, 2:30,
Accolian, 2:30,
Le Grand, sire,
d. Jela, dam of
Irone, 2:235,
Allectus, sire,
Ina. dam of
Pinck, 2:235,
E. Starling dam of
                        E Starling dam of
Estelle, 2:18.
Mesclo, sire, 2:294.
Starment, sire.
                        6. Omega, sire.
7. Gossip, dam of
Don Wilkes, sire, 2:28%.
                                                                                             Don Wilkes, sire, 2:28%.
Algeria Wilkes, sire.
Ashland Maid, dam of
Baron Rogers, 2:55%,
Baron H., 2:21,
Ashmore, 2:29%,
Speedmore, sire.
         Specific.

8. Annabel, dam of Delly Withers, 2:29%. Almont Wilkes, sire. Annabe Medium, dam of Princetta, 2:21.

Frances Medium, dam of Medium od 2:29%. Lady Nutwood, 2:29%. Lady Nutwood, 2:29%. Fraulet, dam of Ringing Bells (p), 2:13%. Ann of Medium of Me
                                                                                             Ringing Bells (p), 2:
Estabells, dam of
Hetr-at-Law (p 2:06%), sire, 2:12.
Prince Regent, sire, 2:16%.
Princess Royal, 2:20.
             9. Wenonsh, dam of Montesuma (p), sire, 2:20%.
Owence, dam of Ortolan, 2:20%.
Alaska, 2:27%, dam of Lady Geraldine, 2:20%.
Alklone, 2:22%.
           Alklone, 2:27%.

Lady Abdallah, by Alexander's Abdallah 15, dam of 1. Grarville, 2:28.

2. Don Carlon, sire, 2:22.

3. Argyje, sire, 2:22.

4. Armolet, dam of Ravoyard, 2:22.

5. Lady Ayres, dam of Oscar William, 2:22%.

Turner, 2:28%.

Byerly Abdallah, sire,
Clark Chieftain, sire,
Abdallah Thorn, sire,
Abdallah Thorn, sire,
Miss Bessie, dam of
Lings Bidge, sire, 2:26.
Linsie Bidge, dam of
Resse Croix, 2:18%.

6. Baleyon, dam of
                 6. Halcyon, dam of
Welcome, 2:28%
Lady Prankille
dam of
1. Cottage Girl, 2:29%
2. Lady Frank, dam of
Early Dawn, 2:21%
Lady Frank, dam of
Early Dawn, 2:21%
Monte Carlon, sire.
Alexandrine, dam of
Bay McGregor, 2:29%
Dewey Eve, dam of
Galliee Res (p), sire, 2:12%
McGregor Wilkes, 2:27%
ag Onelda, dam of
                                           Lady Franklin (Carrie), 2:29%, pedigree not traced,
```

```
2. Triton, sire.

3. Rasel, dam of
Latitude, 2:15.

4. Toto, dam of
Palkland, 2:13%,
Brocklins, 2:27%,
Brocklins, 2:7777
Charm, dam of
Parcination, 2:35%,
Bpreckles (p), 2:35%,
Bpreckles (p), 2:35%,
Alolly Woodnut, 2:35%,
Jewel Woodnut, 2:35%,
Tom Hal, dam of

Vec. 2:12%,
Sire, 2:
                                                                                                                                                                                                                                                                                                                                                                             5. Hambletonian Chief, sire,
5. Norah, dam of
Candidate, sire, 2:20%
Nadine, dam of
Betonica (p), 2:10%
Amigo, 2:30%
Miss Mande, 2:29%, dam of
Nordeau, 2:17%

**Cuneflo, F.H. dam of
      1288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DECEMBER 26, 1897.
      2. Jenny Klock, dam of
Kitick Klock (p), 2:10%.
Nerinsa, dam of
Time Piece (p), 2:30%.
Wilrins, 2:20%.
        Wilrim, 2:20%.

Lady Sanford, by American Star H, dam of
1. Jay Goold, sire, 2:20%.

2 Lady McMann, dam of
Bells, 2:22
Caba, dam of
Mambelon Thorn, 2:25%,
Jemny Daniel, dam of
Ruby Wilkes, 2:25%.

Emblem, dam of
Linzie K., 2:20%,
Namile K., 2:20%,
Playeld Homer, 2:20%,
Harveld, 2:25%,
Alley K., 2:25%,
Alley K., 2:25%,
Alley K., 2:25%,
Jeanwitt, dam of
Cheyenne, 2:8%,
Newbold, 2:25%,
Jean Wilkes, 2:25%,

                                                                                                                                                                                                                                                                                                                                                   Mary Elmore, by Ma.

1. Cheveland, 2:29%.

2. Elloora, dam of
Penelops, 2:12%.
Lord Elmore, 7:29%.

2. Delliah, dam of
Chementine, 2:29%.
Joninis C., 2:22, dam of
Cecilius, 5:29%.
Cecilius, 5:29%.
Cecilius, 5:29%.
Gillian, 5:29%.
Miss Cecil, 2:27%.
Gillian, 2:29%.
Della, dam of
Emma Offort, 2:13%.
Creditor, 2:29%.
Lonaia, sire, 2:3%.
by Mambrino Patchen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Polity, by Clark's Tom Hal, dam of

1. Novelty, 2:29%.

2. Ida T., dam of

Reller Thomas, sire, 2:13%.

New York Dictator, sire, 2:29%.

Folks Parine, dam of

Kida, 2:39%.

Revel, 2:29%.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Revel, 2:29%

Primrose, by Alexander's Abdallah II, dam of
1. Rurik, 2:21.
2. Redwald, stre, 2:29%
2. Shrous, 2:27%
3. Pagan, stre, 2:20%
3. Pagan, stre, 2:20%
5. Princeps, sire,
5. Abdalbrino, stre,
8. Abdalbrino, stre,
9. Maxim, stre.
10. Parmenus, stre.
11. Prescut, stre.
12. Pluto, stre.
12. Pluto, stre.
13. Hone-bush (dam of 1),
15. Moss Rose, dam of
Nutrose (p), 2:22.
Myrtic, dam of one.
Lord Wellington, stre.
Covingsion, sire.
Melrose, dam of
Gerville Beile, 2:20%
Ekgewood, stre.

Bally Chorister, by Mambrino Chorister, dam o
          Lady Verson, 2:28%, pedigree not truced, dam of
L Oakland Mald, 2:22, dam of
Princess, 2:39%,
2. Putchen Verson, dam of
Lady Sevents, 2:26%, dam of
Lady Sevents, 2:26%, dam of
Ellert, 2:18.
Lucy Verson, dam of
Verson, 2:28%,
San Matoo Belle, dam of
Verson, Maller, 2:11,
Mento Belle, 2:28%.
                                                                                                                                                                                                                                                                                                                                                                                  Localis, sire, 2.30.

Mary Mambrino, by Mambrino Patchen iš, dam of
1. Elvira, 2.39., dam of
Punce de Leon, sire, 2.13.
Queensware, 2.25.
2. Dunraven, sire,
2. Marcella, dam of
Marcus, 2.21.
4. Beatrie, dam of
Patron, sire, 2.10.
Patronage, sire,
Pangioss, sire,
Pangioss, sire,
Nathalie, dam of
Barondale (p), 2.134.
Grand Baron, 2.204.
          Lamott Mare, prosp.

1. Slater, dam of
Albert W., sire, 2:20.
Neily W., dam of
Vixen, dam of
Sabledale, 2:18%,
Vixen, dam of
Vixen, dam of
Sabledale, 2:18%,
Vida Wilkes, 2:18%,
Sheeney, 2:29%.
                                      Lamott Mare, pedigree not truced, dam of
                                                                                                                                                                                                                                                                                                                                                                                     May Fty, 2:30%, by St. Chair 100%, dam of
1. Benitz, 2:30%, dam of
2. Mecco, dam of
Fyr, 2:20%,
2. Gazelle, dam of
Whitpetile, 2:20%,
Fowler Boy, 2:20%,
Guess, dam of
Bentseneer, 2:20%,
Gem, dam of
Hills Gum, 2:27%.
                                                                 2:37, dam 6t
Arol, 2:38.
Hanel, 2:38.
Parkville, stre.
Aurelia, dam of
Greenlander Girl, 2:14),
Greenway, 2:38.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sally Chorister, by Mambrino Chorister, dam of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. Proteine, 2:18,
2. Houser, sire,
2. Admiration, dam of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2. Houser, ser.

2. Admiration, dam of Ada, 218%.

4. Belle Patchen, 22%, dam of Baron Wilkes, stre, 218.

5. Belle Brasfield, 220, dam of Hodstein, sire, 226.

Berkshire Belle, 220%, sam of Berkshire Belle, 220%, barn of Berkshire Meta, 228.
Lear Mare, by b.

1. Jim Irving, 2:25.

2. Young Jim, sire.

2. Sue Stoot, dam of
Alexis (p), 7:15.
Prince Charles, sire.
Emily, dam of
Portuna, 2:22.
Colonel Young, sire, 2:205.
Billy Thornfelli, sire, 2:205.
And Forrest O, dam of
                                                                                                                                                                                                                                                                                                                                                                                Gem, cam or
Bloc Gum, 227%.

Minnehaha, by Stevens' Bald Chief, dam of
I. Alongor, sire, 129%.
I. Barca Rone, sire, 729%.
I. Barca Rone, sire, 729%.
I. Sweetheart (dam of I), 2129%.
I. Sweetheart (dam of I), 2129%.
I. Sweetheart (dam of I), 2129%.
I. Pawren, sire, 129%.
I. Ban Gabriel, sire, 7129%.
I. Ban Gabriel, sire, 7129%.
I. California, sire,
I. Atlanta (dam of I),
II. Beautiful Relna, 229%, dam of
III. Beautiful Relna, 229%, dam of
III. Beautiful Relna, 229%,
III. Belli Boy, sire, 219%,
III. Belli Glave, 229%,
Abdell (I yr.), 212%,
III. Belli (dam of I),
III. Rosemont, dam of I),
III. Rosemont, dam of
Ment Rose, 218%,
Manuthan, 219%,
Nell, by Hambletonian II, dam of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Santa Maria, by Pilot, Jr., 12, dam of
1. Hylas, sire, 2:20j.
2. Bitly Hookins, 2:20j.
2. Pilot Mambrino, sire,
4. Josée Ralley, dam of
Macletoe, 2:26.
Santa Claus, dam of
Vatican, 2:18,
Emulatien, 2:21,
Position, 2:22j.
Magic Wilkon, 2:20j.
Bortie, sire,
            Hilly Thornshill, sire, 2.2
Little bis, by Ddwin Forcest 49, dam of
1, 8o So, 2.37%, dam of
All 8o, sire, 2.25%,
Reve 8o, 2.25%,
Ryra (p), 2.55%,
Syra (p), 2.55%,
2, Sonnet, dam of
Mambritonian, sire, 2.25%,
De Stot, sire,
Hun Mall, dam of
Stam, 2.25%,
Stellaria, 2.25%,
Stellaria, 2.25%,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sappho, by Jay Gould 291, dam of

1. Haraner, 2:21%,

2. Patience, 2:20%,

3. Myra, dam of

Meditede (p), 2:14%,

Myriod, 2:21%, dam of

Edited (p), 2:14%,

Halome, 2:28%,
            Lizzie Witherspoon, by Gough's Wagner, dam of I. Panny Witherspoon, BWij, dam of Practicel, 2.195, 2. Pirzgcrahf's Enterprise, sire.
2. Betty Mac, dam of Med Regent (pt. 2.185, Maid Horor, dam of Ed Easton (pt. 2.189, Beautiful Chimes, 2.225, Beautiful Chimes, 2.225,
                                                                                                                                                                                                                                                                                                                                                                                           Nell, by Hambletonian 10, dam of
1. Bateman, 2:204.
2. Gambetta, sire.
3. Florence, dam of
Juror, sire, 2:304.
Hebrow, 2:30.
Grenadine, dam of
Hustler Russell (p), 2:324.
Pantalette, dam of
Epaulet, sire, 2:38.
Hurglar, sire, 2:204.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Silverfoil, by F.,

1. Metai, 2:25%,

2. Halm, dam of
Bolarian (p), 2:25%,

2. Silverhair, dam of
Marsh Murdock, 2:25%,

Silver loige, dam of
Silver Wilkes, 2:25%,

Silverlake, dam of
Eussell Hardin (p), 2:25%,

Lake Wilkes (p), 2:25.
               Madam Buckner, said to be by Tom Hal, dam of

1. Acrobat (g), 2:3%,

2. Argent, 2:24%,

2. Viola, dam of

Bacramento Girl, 2:28,

Hultana, dam of

Thersites (g), 7:26%,

Mahratta (p), 2:29%,

Marcella, 2:28%,
                                                                                                                                                                                                                                                                                                                                                                                     O'Brien Mare, pedigres not traced, dam or 1. Byron, sire, 220%.
2. Bennie Lasste, dam of Corneto (p), 243%.
Titania, 225.
Rochester, sire.
2. Panny, dam of Annie Wilkes, 220%.
Margie Patchen, dam of Aberden, Wilkes, 2:26, Margie Patchen, dam of Piutone (p 2:3%), 2:23%.
Piuto Wilkes, 2:20%.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Silvertail, by ...

1. Driver, 2:37%

E. Priceless, dam of
Express Maltravers, 2:37%
Lady Star, dam of
Lady Richards, 2:37%
Garence, 2:30.
               Madam Temple, by Terry Horse, dam of
1. Piora Temple, 2:19%.
2. Pitot Temple, 2:3%.
3. Bland Temple, 3:4%.
Temple, 2:17, dam of
Temple, 2:17%.
Temple, 2:3%.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Lady Richards, 2:294,
Chremos, 2:20,
Princess, dam of
Neva, 2:27,
Enowherd, by Heele's Roswatorm, dam of
1. Mist, 2:295, dam of
Advance, sire, 2:295,
King Russell, 2:284,
Allertine, 2:275,
Penross, sire,
      Marshall Mare, b.

1. William H. (219)6.

2. William M. (219)6.

3. Patchen Mare, dam of Morocco, 2:20.

Mary R., dam of Galen Prince, 2:18.

Sanolo Boy (p), 2:36%.

Captain Walters, 2:20%.

Serican Star R. dam
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            King Rose Allertine, 2:27%, Penrose, sire, 2. Colonel Hambrick, sire, 2. Rmyrns, dam of Prince Edward, sire, 2:26. Mabel C., dam of Howard C., 2:28%, Marietta, dam of Hugh Gay (p), 2:22 Valcour, 2:28. Garnet, dam of Hi Noon (p), 2:21.
                                                                                                                                                                                                                                                                                                                                                                                         Old Jane, by Magnum Bosum, dam of
1. Charley B., sire, 215.
2. Myrtle, 2:25%, dam of
Myrtlewood, 2:25%,
Graham, 2:25%,
Myrtleton, sire,
Chara Dadley, dam of
Carlos, 2:25,
Carlotta, dam of
Edith Rowe Graham, 2:24.
                                                                                                                                                                                                                                                                            40
```

Ivy, dam of Ivy Wilkes, 2:35%.

Oulds, by Hambletonian 10, dam of L Trinket, 2:14.

4. Drift, dam of Mitchell Boy, 2:29%

Mary Hules, by American Star II, dam of I, Charley Champlin, 2 20%. I. Twilight, sire. I. King William, sire.

1289

Topsey Taylor, by Norman 25, dam of dam of Favorite, 2:25%, Demon, 2:25%, Almoneco, sire, Almonecer, sire, Rupert Medium, sire, Usurper, sire. Clayala, dam of

Trusty, by Mariborough, dam of John Love, 2:28%
 John Love, 2:28%
 Scotland Maid, 2:28%, dam of Sanborn, 2:26%

4 Lucia, dam of Day Dream, 2:20%. Chancewood, sire, 2:25%.

Planter, sire. Anna Belle, dam of Nydia Wilkes (p), 2:11%. Totsey, dam of Wyatt, 2:27.

Red Hot, 2:205. Rowland, 2:205.

Monte Vista, sire, 2:28% Stray Momenta, 2:28%

Vic, by Mambrino Chief II, dam of 1. Mattle Graham, 2:255, dam of Sally Graham, 2:256, dam of Sally Master, 2:256, Mattle Nutwood, dam of Barco Dellon, 2:12.

2. Dainty, 2:20%, dam of Dawn R., 2:20, 2. Ursula, dam of

dam of Etelka, 2:214, Ada, dam of King Protector (p), 2:18%, Endors, dam of Zenobia, 2:22,

Mambrino Egbert, sire

5. Molly Trussell, dam of

russell, dam of
Trosseas, 23%, dam of
Bridal Bells, 2:23%,
Dainty Bells, 2:23%,
Crescent, 2:13%,
La Handa (p), 2:13%,
Tassell, dam of
Twist, 2:26.

6. May Belle, dam of Maywood, 2:284

Widow Ramtoul, by Ulversion, dass of 1. Brandos, 2:28% 2. Elia G. dam of Delmarch, sire, 2:13%, Marca, 2:23, Wilkesbrino, 2:22%, Elegy, 2:20%, Aaroh Weight, sire. Asron Wrigot, Lorraine, sire, Amorita, dam of Fedalma (p), I-274, Kitty Stone, I-284,

Woodbine, by Woodford, dam of 1. Wodgowood, sire, 2:18. 2. Woodford Mambeino, sire, 2:215. 3. Monaco, sire, 4. Weishaden, sire, 5. Englowood, dam of Kurburn, 2:21. 6. Stience, dam of Proctor (n), 2:256.

dam of
Proctor (p), 2:35%,
Borden, 2:28,
Serene, dam of
Leonatus, 2:37%,
Bohhara, 2:38,
Heurtscase, dam of
Rubert, 2:29%,
Van Alstyne (p), 2:29%,
Silly, dam of

Silly, dam of Gabriella, 2:204. General Boyle, 2:204.

General Boyle, 2:344,

Young Portia, by Mambrino Chief II, dam of
1. Voltaire, stre, 2:354,
2. Portion, stre,
2. Censuela, dam of
Connaught, sire, 2:28,
4. Yolande, dam of
Russellmont, 2:378,
Yubat, 2:396, dam of
Yarmouth, 2:578,
Yano, 2:376,
Yubadee, 2:278,
Yuletide, 2:278,
5. Nora Lee, 2:396, dam of
Bright Heart, 2:28,
Gramplan, 2:396,
Nora Wilkes, dam of
Nowood (30, 2:376,
Dubuque, stre,

THE 1:55 TROTTER.

ONE man has been found who has faith in the future of 1:55 troiter. Not only has he the faith to believe, but the courage to discuss the breeding necessary to produce him. There is something to be admired in the nerve of the man who is willing to set his mark so far beyond the range of probability. He is a resident of a quiet, sequestered New Jersey town, and in writing to the Philadelphia In-

quirer velis his personality under the name of Equestrian. Here are his observations:

Any one observing the interest taken in strains and breeds of horses at our heres shows in New York and Philadelphia will be struck with the importance given to pedigrees above the qualities of the animals. It is reasonably expected, however, that the lineage of the horse procures his excellence. That is to say, that if it is a Morgan there will be strength with speed; if a Hambietsonian, candurance with speed; an Arabian, vivacity or sensitiveness with speed. The qualities peculiar to any particular breed will be transmitted, and in differing degrees, accordingly, as the currouts of generation may be free between size and dam. However, their constitutions and temperaments may be incompatible; and the coincidence of good qualities may not obtain.

On the other hand, the inferior conditions of the one may assimilate with the good qualities of the other, and result in each er both may become prominent in their "got" or foal, and evil consequences result.

And sometimes diverse diatheses in the progenitors produce a favorable effect on the offspring. These liabilities of the other hand between the strains of the set of sires and dams decidedly inferior to them.

The eccentricities goan named may suggest the inquiry as to bringing the strain of a mongred sire or dam with some excellent points into the finer breeds, especially in case that one or more of the same is likely to be transmitted. For example, an uncommon forearm, hock or pastern, and bung, not a past the progenitors and dams decidedly inferior to them.

The eccentricities goan named may suggest the inquiry as to bringing the strain of a mongred sire or dam with some excellent points into the finer breeds, especially in case that one or more of the same is likely to be transmitted. For example, an uncommon forearm, hock or pastern, and bung, so to speak, for trotting. And also a mental bent to trotting, past any many ladylyddan possesses an unusual quality, which might

MISS RUSSELL AND BEAU IFUL BELLS COMPARED.

WITHOUT making an accurate count—and is this matter the precise number is not important—it may tratificially be stated that Miss Russell has more descendants that have entered "standard" lists than any other mare over had during her lifetime. At the close of 186 they numbered 200 and there have probably been additions of over one household and there have probably been additions of over one household at 180. For this she is of course largely indebted to her son. Nutwood, though she has other descendants that have been very problet. Miss Russell is now verging on thirty-three years of age and her extraordinary longevity is still another element in producing this result. Mr. Wallace, in his late work, has attacked nearly everything else at Woodlawn—claiming that her dam Sally Russell is not a dangative of Boston. I do not care to discuss this question, as I know nothing about it and probably care as Bitle. Whether Sally Russell was stred by Boston or some other running horse is not a matter of very vital importance. Mr. Wallace also states that Boston, her reputed sire, was not theroughbred—his great-great-grand-aim being "a. t. b. of wild air blood. He says that the six crosses that have been added to this predictors are "untirely fetticleus and copied from an advertisement of a shallon descended from his maternal line that had neither indorsement nor name attached to it." He further says that Timoleon, the sire of Boston, cannot be traced beyond three crosses. It neither Timoleon nor Boston was thoroughbred, though doubtless in part running bred, it do not undertake to say that Mr. Wallace's statement is either correct or incorrect. If his statement is either correct or incor

he jirosector v. case, o case,

Bell, I am told, will easily go in the list. Electric Bell has trotted for Marvin in 2:24, and as to what has been done with the last three, one of which is by Electricity, and the other two by Advertisee, I am not informed. I know nothing to prevent Bedfire making a fast record whenever prepared for it. As he will stand at the head of the Miller & Bibley Kentucky stud, I suppose he will be trained next year after the stud season. We can only count, however, the performances that have actually been made for when we venture beyond them we get into the region of speculation.

we venture beyond them we get into the region of speculation.

Let us now see what Miss Russell has done. I began with
the statement that she has more simulard performers in
all the generations than have been credited to any other
mare while alive, but as she is seven years color than
Beautiful Bells, it is evident that she has in this respect a
very considerable advantage, as time is a mighty factor in
such comparisons. I have not gone beyond two generations
with Beautiful Bells and will confine myself to two with
Miss Russell. The following is a table of her produce:
1870—Newood, 1289; sire of Mi.
1871—Lady Nutwood.
1872—Core Belmont, 1289;
1873—Mand S., 2299;
1873—Mand S., 2299;
1874—Mand S., 2299;
1875—Russell, sire of M.
1875—Nutbourne; sire of M.
1875—Nutbourne; sire of M.
1875—Nutbourne; sire of M.
1875—Russell, sire of M.
18

There is, I think, no doubt that, judged by production, Miss Russell and Beautiful Bells are the two greatest living head mares. Miss Bussell trotted a three-pear-old trial of 2:44; Beautiful Bells as a record of 2:25%. Miss Bussell has seven in the 2:20 list, two of which are paceer; five sires of speed, and four producing daughters. Beautiful Bells has eight in the 3:20 list, all rectiers; five sires of speed; the five following the producing daughters. Seaturful Bells has eight in the 3:20 list, all rectiers; five sires of speed; two producing daughters. Two of the sires of the performers of the same age. The average time of the performers of Beautiful Bells solver than 2:26, including pearlings and two-year-olds, and all rectiers. Miss flussell is, as stated, searly thirty-three, and Beautiful Bells has had 17 foals; Miss Russell is, as stated, searly thirty-three, and Beautiful Bells has had 17 foals; Miss Russell, 3: I suppose that the foals of seither mape have lacked training.

Elsevan of Beautiful Bells' rotal were by Electioneer; one by Predmont, and this one is the dam of three, hackeding sweet Rose (1), 2:25%; Another of her foals, Day Bell, by Palo Alto, has not yet secured a record. One, Adbeel, by Advertizer, has the yearling record. Two others, foaled in 1864, are by Advertizer, and the remaining one up to 187, by Electricity. Seven of Miss Russell's foals were by Belmont; eight by Harold; one by Woodford Mambrino; two by: Electioneer, and the last federone, 2:35%, by Electricity. Seven of Miss Russell's foals were by Belmont; eight by Harold; one by Woodford Mambrino; two good horses, though in this respect, all things considered, Beautiful Bells has probably had the advantage.

While the California mare has never produced as high a raise of speed as Mand & possessed, it miss be admitted that she excels Miss Russell has borses descended from her than he early promise second to exceed that the produce of the not have received less subtention of the ways of the form of the same of the production

BREEDING CARRIAGE HORSES.

S IR WALTER GILBEY, Bart, than whom there is no one better qualified to write upon the subject, con-

SI IR WALTER GILLIEUT, Bart, than whom there is no one better qualified to write upon breeding carriage because it beginning, in the alborate supon breeding carriage because the product of the production of the

to those which are not. It is of no great moment to the British breeders whether they or their continental neighbors supply the British coster with his pony. Three most aiways to a demand for chesing grades of equine goods, and it does not matter much who supplies it: but these totals embrace a large and increasing proportion of a class of horse which, both from the national and concemic points of view, it is exceedingly desirable we should breed at heese, namely, horses of the best class for road work. Possessing, as we admittedly do, the raw material, and that of the very best kind, from which to breed horses for ill purposes, how is it that the foreigner produces better stock of this particular class? The question will be asked and must be answered, though it involve an admission which is not creditable to our national intelligence. The home demand for match pairs and good upstanding horses is great, and has been so for long past; the langish broader resolutely set his face against breeding this stamp of animal, ignoring his own interests for a prejudice; the foreigner, free from any prejudices of the kind, and being encouraged by his government to produce the class of animal required, was in a position to meet the demand; which he doing with increasing success, to his own very considerable profit.

It is well known among breeders, not only of the horse but of any animal, that successful endeavor to develope and perpetuate one particular quality, while it results in greater perfection of that sought characteristic, is always accompained by manifest deterioration in other attributes. Take the thoroughbred race horse, for example; the result of directing sitention exensively to speed and been the sacritice of such describe, any centerital, qualities as action and shape. For generations now we have bred for speed and speed only, and we have succeeded—at a price; more intrinsic virtues have been lost slight of or ignored, with the perfectly natural consequence that they have to a very great extent disappeared.

unity, and we have succeeded—at a proce; more intransic virtues have been local sight of or ignored, with the perfectly natural consequence that they have to a very great extent disappeared.

It goes without saying that horses can be bred as required to funfil the winnes and requirements of man. In this country the blood of the thoroughiered has been sought and used as though swift movement at the galoop on the turn and that alone were the only essential; in America the trottee has been carefully cultivated to insure the highest speed on the trotting itrack, other qualitications being ignored as completely as in Engiand for the development of the one remunerative quality. Nothing eise is to be expected; the great value of the stakes othered for facing an trotting naturally compels studious endeavor to breed one received as shall be intely to win money, without regard to other qualifications of whatsoever kind.

The thoroughbord sire is the only animal from which to breed race horses; his inherent ganopung action and speed are so implanted in him by inherening cursa finally two hundred years that he is in Empassa as unfit to beget symmetrical stock for general purposes as in an colatorial occession, the American trotting sire. Let it not be supposed for one moment that it is sought to disparage tempting have been produced with such ministic care; but it is mecessary to lay stress on the carriani point in view, manely that successive tenevalve in develops one and only one quality involves the desparage tempting the same and a natural consequence.

It is instructive to read in this connection words that were penned by William Cavendalid, duke of Newcastle, in a work published by Transas Michoburne to long ago as loss, his grace was a great authority on equies matters in his day, and we cannot do better than quote him on the subject. "On the perfect shape of a horse," he says, "in a work published by Transas Michoburne to long ago as loss, his grace was a great authority on equies matters in his day, and we cannot

Mention of these several organizations naturally leads us to inquire what can be done to enable Englishmen to breed sizable, good-leoking harness horses of the siamp required to meet the ever increasing demand. To answer this we must adopt the remark of the duke of Newcastle, before quoted, and sak (i) What is the proper shape and action of a carriage horse? (ii) How have we failed to produce him, and (i) How is he to be bred? We must consider these points secarstely.

and (i) How is he to be bred? We must consider those points separately. What is the proper shape and action of a carriage horse? To describe a perfect animal in writing is impossible; and the same may be said of pictorial illustration; the attributes which go to secure the essential qualifications of the horse for active road work are beyond the power of pen er brash to record, and can only be appreciated in the snoving animals by men conversant with these qualifications. To say that the breeder saim should be to produce the most valuable animal is to state a general proposition whose soundness no one will deny; and despite the unsatisfactoriness of verbal description it may be desirable to sketch the outline of the perfect carriage horse. He should be upstanding; his neck springing well from the shoulders, which should be deep and well set back into the loits; back not too short nor cob-like; ribs well arched; hind quarters broad and muscular; and tall set high. In harness he must bend, or, in other words, wear himself gaily, and be full of fire and animation; he must move with true, direct and plable shoulder and knee action in front, and with freedom behind.

How have we failed to produce the carriers here.

behind.

How have we failed to produce the carriage horse? It seems strange that this horse loving nation should not have succeeded in producing in marketable quantity the road hothere as a described above. In the other breeds we have achieved such success that continental buyers will pay almost any sum to possess themselves of our best; in producing, cattle, sheep and pigs English breeders stand preminent, and the nations of the world depend upon us for their foundation stock, and for the fresh blood needed to improve and raise the standard of their herds and fooks. Ever since the time of Robert Bakewell, who made so con-

spicuous a mark on the annals of stock breeding in the last century, Englishmen have displayed marked judgment in their excloavers to establish distinct varieties of cattle, sheep and pigs; and their successes remain to bear witness to the soundness of their methods. Among cattle we have now the Shorthorn, Hereford, Polled Angus, Devos, Sussox, Jersey, Gustney and others, each variety perfectly distinct in appearance; among sheep we find equally distinct bread developed to the same standard of perfection, and again the same exidence of judicious selection in the case of the pig. Among all our domestic anisals the carriage horse stands alone, a coatly reminder of neglected opportunity, and a reproach to a race of horsemen. For the high-class readster must we go to foreign countries, in the regrettable certainty of finding there what we cannot, or at all events do not, produce at home; and at the same time supply the competitors of the British breeder with the best blood in the world to use for the purpose of providing blue stood in the world to use for the purpose of providing best offered and us with this most valuable class of horse, Reference to this point invito examination of statistics. The official returns of the horse trade for the past five years shown first, in regard to the exports, that the number of horses we send abroad has been increasing with exch, recurring year; and secondly, that the value has been decreasing with equal certainty; inlowing that the class of animal we export is not what it was five years ago.

Ar regards the imports, it must be observed parenthetically that 180 was an exceptional year; with the exception of that twelvesmonth, the annual returns since 1806, when we received 11,427 horses from abroad, show a rapid and amont uniformy steady liscrease, until in 1804 was proposed to them.

The difference between the average price received for our

for them.

The difference between the average price received for our exports and that paid for imported horses would convey a more accurate impression of the state of affairs could we eliminate from the former the large summ paid by foreign governments for our best thoroughters stres. The occasional sale of such an animal as Ormeole for such a figure as 20,000 pounds must be taken into account when consecring the average price received for exports. In short, we are buying expensive horses from the foreigner and obtaining only low prices for those produced by our visious system of hereolity. These average prices will cain for further notice later on.

ing only low prices for those produced by our vicious system of breeding. These average prices will can for further notice later on.

This state of affairs is the more deplorable when we recollect that we possess in our several breeds of horses material that cannot be equated by any country in the world and yet our ignorance or prejusice is no deep routed that it minimes our enormous advantages, and condemns us to couty failure. The breeding grounds of the countries already named are not superior to ours; nor do those countries already named are not superior to ours; nor do those countries already named are not superior to ours; nor do those countries already named are not superior to ours; nor do those countries already named are not superior to ours; nor do those countries already named are not superior to ours; nor do those countries and the systematic advantagement of the foreign breeder, and the systematic encouragement given him by sing governments.

rese possess any great climate advantages over linghand, the whole secret lies in the better judgment of the foreign breeder, and the systematic encouragement given him by six governments.

These facts and figures should of themselves satisfy the most increations heree lover and the staunchest between increations heree lover and the staunchest between in the superiority of all things (and especially horses) pertaining to Invitan, that there is sometiming redically amiss in our system of breeding horses for general requirementa, in this connection the history of the thoroughbrod cannot be too often pressed home upon breeders of any class of forse. Descended in a direct line from enactern importations, Araba and liarbs brought to this constry in the early part of the eighteenite neutral not be two closing years of ins seventeents, he still possesses the strain of pure enastern booot, he has undergone remarkable changes of atature, and great authority, Anmiral ficus, writing many years ago on the size of thoroughtereds, says "the stature of race norse has increased an inch in every twenty-five years since 170," and that whereas the average size of horses then was ill hands I lockes, the average in 150 was 15 hands I inches. The system of racing has likewise changes; the nays of long distance events when horses ran in bour-sine heat, carrying from to 16 If stone, have long departed; but the out recorns show us winst the thoroughbrod of an earlier period was capatele of performing, and we require no other evidence to prove that in him the quasifications necessary to credit autitable horses for road work one cand, and at those rule. These quantity for speed, not speed and ability to stay a distance, consisted with weight carrying power; and, as prevously pointed out, it is impossible to succeed in developing and perpetuating one particular quanty without manufest determentation to others. For the tori and for speed across country uncer a light weight the linguism thoroughing a distance with the simulation of valuable

The way to breed carriage or road horses. These stu-ents of this important question who wish to realize for

1291

themselves what continental breeders are doing, should divest their minds of pregulics and make a tour through some of the breeding areas of Europe. The unbiased traveler who set about his swit-impaced task in a recognitive spirit would soon be convinced that the French achieve the ment marked success in breeding qualiful and valuable carriage bersen. The road horses in set about that in France we find the best. In many years past the government of the reliable to the country. Intrasmented by prejudice, the Prench authorities set themselves the task of ascertaining how the animal most serviceable for France as a nation could be produced; and, having settled this point, adopted and steadily pursued the policy which has resulted in giving the France and is settled; pursued the policy which has resulted in giving the France and is other countries has been developed by the introduction of the Hackney stallion.

In 1861, two years before the death of Mr. H. R. Phillips, of Wilson Croacest, Belgrave Square, the writer had an interview with that gentleman, who, the reader may be reminded, was for fifty years the largest and best known dealer in England. Mr. Phillips purchased from Mr. John Bond, of Cawston, Norfolk, the elebarated sire Frheenmenn for Mr. Robert Ramedale, of Market Weighton, Yerkshire. He then marked improvement in the quality of the stock subsequently got in Yorkshire by Phenomenon and other Hackney stallions obtained in Norfolk, that he was Induced to recommend his continental customers to purchase sires of this breed for use in their stude. His recommendations were adopted, and with what measure of success we may gather from the statement of Mr. Hetherington states that he has now purchased Hackney stallions obtained in Norfolk, that he was Induced to recommend his continental customers to purchase where such provides and with the statement of the Hackney when the effect of the merits of the Backney stallions is the pre-emission in the velocity of the native years. Departments were accepted, and uli

neicently alive to the merits of the Angio-Norman droves of our finest carriage herees are imported from the province.

Now, we know what prices carriage horses command in the Loodon market: and the difference between the minimum sum that will buy a harness horse of high stamp and the maximum average quoted—27 pounds 9 shiftings in 1800—18 so wide as to compel the reminder that a melety of the maximum average quoted—27 pounds 9 shiftings in 1800—18 so wide as to compel the reminder that a melety of our imported horses are of the chaptest sort, including many ponies, worth, at most from six to elash pounds, and also devowe of animals worth filtle more. On this factor in the statistical position whose effect is to bring down the average to a level which appears to constravene our argument we must again insist. It would be highly interesting and instructive if the statisticisms of the board of trade would instructive if the statisticisms of the board of trade would instructive if the statisticisms of the board of trade would instructive if the statisticisms of the board of trade would instructive if the statisticisms of the board of trade would instructive if the statisticism of the board of trade would instructive if the statisticism of the board of trade would instructive if the statisticism of the board of trade would instructive if the statisticism of the board of trade would instructive if the statisticism of his pounds and 30 pounds. 50 pounds, 50 pounds and 30 pounds 50 po

C. H. Nelson has two filles by Bingen, 2:13%, at his Water-ille farm. One of them, whose dam is by Nelson, 2:00, is

LUCY GILBERT, 2:25%, AND OTHERS.

WHEN George West put the toeweights on the twoyear-old filly. Lucy Gilbert, early in May of hast
season, booted her for a little work faster than a
jog and drove her a quarter as easy as he could get her
to go, she gave him a genuine surprise. She had been
trained as a yearling, had trotted a public half in 1:13, and,
in the third heat of a winning race, had gone that distance
in 1:50%. All winter she had been going slow, having had
an attack of catarrhal fever. In the spring Mr. West took
her to the Wheaton track, which is a slow one, and started
out very carefully with her. After she had been jogged
for some time he concluded to let her go along a little
faster for a quarter. He rigged her accordingly and got up
behind her. She was very ambitious and, though takes
back all the time, stepped it in 37% seconds.
None of the aged horses at the truck had gone one as good
as 0s seconds, but Lawy Gilbert simply would not be driven
slower, and as she did not even draw a short breath after
the performance, it was decided that she was an equise
miracle. After this she was jogged, and once in a while
brushed a half or quarter, until about June 1 she had gone
a quarter in 25 seconds. A little later in the meeth Mr.
West took her out to work with the pacer Sherman Clay,
2:80%. The pair went a mile in 2:80% last half in 1:06, and
the last quarter in 50% seconds. a record-breaking performance for a two-year-old so early in the season. Every
trainer at the track pronounced her the sensations of the
year.
The latter part of June she made her first start in a little

trainer at the track pronounced her the sensation of the year.

The latter part of June she made her first start in a little race at Hedrick, Ia., which she won in shew time, in the neighborhood of I minutes. The same afterneon she trotted an exhibition half in 1:11. She went to Peoria the second week of July and started in a race with the Kentucky Faturity winner, Janie T., 2:14, Twillino, 2:265, and three others. Janie T. had her speed, but Lasy could carry her to a break every time, and she won each heat in 2:21. Three weeks later, in a winning race at Hedrick, she got her best record of 2:255, While there. West drove her a mile in 2:255, the fastest she was ever asked to go. She was entered in a purse for two-year-edds at Lexington and would have met the Paturity winner in it, but she was destined never to start in that race. After leaving Hedrick she was thrown out of training for two weeks, and then went with West's stable to Indianapolis and Terre Haute, at which latter place she was so seriously ill that her starting again during the remainder of the season was out of the question.

therews out of training for two weeks, and then went with batter place she was so seriously III that her starting again during the remainder of the season was not of the question.

Dr. Hooker, 2:20%, by Vatican—Mary Ann, dam of Robin, 2:20%, by White's Hambletonian, sired Lucy Gilbert. Her dam, Margaret Boyle, is a good looking 13-hand gray mare, by Warlock, 2:30, son of Whips, 2:27%, sire of Asots, 2:30%, and her dam was Plevet, by Mansbrino Eric—Maid, by Rayle's saddle horse. Margaret Boyle was originally owned by David Doty, who sent the mare, then coming four years old, and one other, to the farms of his neighbour, R. P. Per, owner of Dr. Hooker, and they were bred to this horse on shares. One Sunday evening not a great while after, as Mr. Doty sat reading his bible, a noise from the barn attracted his attention, and, perhaps thinking that one of his horses had gotten into difficulty or mischlef, he went out to investigate. It happened that some mere desperadors, having stolen a quantity of whiskey from a distillery, wanted some means of carrying it away. They hit upon the plan of breaking into Doty's barn and appropriating one of his horses, and, energed at the interruption, they overpowered and moredered him. His wife did not long survive him. and after her death all the property passed to the nearost relative, Miss Lucy Gilbert. The marce being still at his farm, Mr. Fox purchased the other half-instrest in their foals, and when one of them began to show speed as a yearing, she was named for Miss Gilbert.

Lucy is a deer-like gray filly, with such an overflow of animal spirits that if takes two men to keep her within bounds when she is led out to grass. Around the stall, with those she known, she is very sociable, but she does not encourage familiarities from strangers. She has a mice mouth, does not pull an ounce and goose with a medium check, carrying her head naturally at the right angle. He were seven-ounce shoes and four-ounce towesleths in front, and shows as mach with a substance of "lim", and whe

three-year-old, would seem to be well invested in her. It had been the intention of her former owner, Mr. Hendrickson, before he decided to sell, to campaign her on mile tracks the coming year. She had been on one but a single lime in her life, and that at Fleetwood as a two-year-old in her race won by Preston. Hornella in a range; long-bodied chestest filly, built on the Benzetta model, standing 15.3 hands and growing all the time, without white, except fier the fringe of hair on the edge of her off hind hoof. She wears also-ounce shoes forward and four-ounce shoes behind. Toeweights were tired on her in the early part of last season, but they were found to be unnecessary. W. C. Hendrickson bred her at his Belle Mead, New Jersey, farm. Her sire, Hornell Wilkes, 2:2%, by Red Wilkes, passed from his hands into the possession of European fanctiers some time ago. Her dam, Juabella, by Wedgewood-Middletown Belle, by Duniel Lombard, is a great brood-mare, and is still at Belle Mead. Isabella gave Hornella her color, but had the daughter been like the mother as to temperament, the half-mile track changed on of the age would be named. Cresceus. The old mare was so highly-streng that it was beyond the power of man to properly break her to harness, and after several "scraps," in which she made kinding wood of the wagons, she was turned loose, and has not worn harness since. She was once gotten between the shafts and driven as far as the railroad crossing. Reachbagt his point, she boilted up the track, and when she was finally induced in return to the road, there was but little heart and less ambitton to coetime the lesson left in those boblind her. He was broken as a yearling and reced as a two and three-year-old. The first season she got a record of 120 and won all but two races. She was a very reliable mare, seldem made a mistake, and trotted without apparant effort. At the finish of her mile in 11Mg, she was pulled to a jog, after having made o losing break and registed to a jog, after having made o losing break and the next few years. New Bedford, Mass.

WHERE 2:10 SPEED COMES FROM.

New Bedford, Mana.

WHERE 2:10 SPEED COMES FROM.

ALIX, 2:8%, Nancy Hanks, 2:86, and Anote, 2:8%, the three fastest trotters, and the only ones that have been able to demonstrate their ability to trot in 2:86, are inbred to Hambletonian M. But this is not proof that an extremely fast trotter must be inbred to this great size, for Directions, 2:6%, who was equally great, considering he is a stallion, has but one cross to him, and that one as remote that he only carries 2:8% per cent, of the blood of the famous Hambletonian.

Alix has four crosses to Hambletonian, two through Harold and one through each Cuyler and Alexander's Abdallah, and notwithstanding she has twice the number of Hambletonian crosses that Nancy Hanks has to him, she only carries 1:8% per cent. of his blood, and Nancy Hanks has plut double the percentage of it (17% per cent.), because her crosses to him are so much closer. Alix gets 3% per cent. through each her sire and dam, and Nancy Hanks per dam.

Anote gets an equal amount of Hambletonian blood through sire and dam, 11% per cent. of each, giving him a total of 25 per cent. of it. He has one cross through his sire and two through his dam, but, being one generation more remote on the dam's side of the pedigree, it necessarily equals the amount he inherits through his sire. Horse inhered like Altoka, Sally Toler, Bert Gliver, Wilson, etc. (whose sire and dam are by the same horse), have just 59 per cent. alterion has 50 per cent. of the blood of Jay Hird, because he is by Jay Bird, and Atoka, by Jay Bird, must therefore have the same amount of their grand-sire, or the same percentage of it that their sire and dam for he gets 25 per cent. Or the blood of their grand-sire or the same percentage of 10 that, not of their grand-sire or the same percentage of 11 that their sire and dam for he gets 25 per cent, of the blood of the pedigree, it necessarily equals the emount of the percentage of the blood of the pedigree, it necessarily equals the same amount of 13p Bird blood as his sire and dam, for

when they obtained their records, and usefuly made he as seven. It seems rather remarkable that the world's record for pacers has always been held by a mare or gelding until John R, Gentry captured it in 1895, and a year later three stallions had records faster than Robert J., who was Gentry's predecessor for that honor, and neither a mare nor gelding approached the performance during the time. Online, 250, is the only pacer in the 246 list who obtained his record as young as four years.

Birathanor is the first to sire the dams of a 2:18 trotter and a 2:35 pacer. His daughter produced Dan Cupid, 2:394, and Bumps, 2:304. Diotator sired the dams of two faster

ones in Nancy Hanks, 2:04, and Lockheart, 2:00%, but they

ones in Nancy Hanks, 2.94, and Lockheart, 2.89%, but they are both trutters.

Manshrine Patchen is tied with American Star in this respect, and in addition to the three sires mentioned above by George Wilses, not of his daughters, Allandorf, whose dam is by Mambrine Patchen, sired Dick Hubbard, 2.99%, and no daughter of American Star produced a 270 sire excepting those by Hambletonian above meantoned.

Mambrine Chief and Hambletonian rank next. Daughters of the former produced Director, sire of Directon, 2.90%; and alanghters of the later produced Valtien, sire of Beusetta, 2.90%; and laughters of the later produced Valtien, sire of Belse Vars, 2.90%; wilton, sire of Elesset Wilton, 2.90%, and Mogaette, 2.90% and Evet Prince, sire of James L., 2.90%.

There are but seven stallions that have sired the dams of more than one 2.38 trotter, and they have each sired the dams of two, as follows: Filot, Jr., sire of dams of Mand S., 2.90%, and Jay-Rye-See, 2.90%; Harold, sire of the dams of Beusetts, 2.90%, and Barly Hird, 2.90%, and Benton M., 2.90%, and Benton M., 2.90% Daniel Lambert, sire of dams of Dandy Jim, 2.90%, and Ethel Downs, 2.90% Delator, sire of dams of Dandy Jim, 2.90%, and Ethel Downs, 2.90% Delator, sire of dams of Nandy Hanks, 2.94 and Lockheart, 2.85%. The two Harold gets credit for are out of the same mare, and Dictator gets credit for the highest average of speed.

HORSE SACRIFICE TO ANCIENT DEITIES.

If JOM time immemorial, when the history of the human race was shrouded in the mysteries of the deaky times of the past, the horse, as the valued compassion of mankind, carried the numberiess hosts of Aryans to the limina Thule of the then known world. It was through the the horse, as well as the man, that the early Aryan civilization was promulated to the world but, though the services of the horse alone, the great immigration of mankind into all countries rose as a fact into history.

These the earliest nections of history to this very day there.

into all countries rose as a fact into history.

From the earliest periods of history to this very day there have been numerous tribes of mankind whose lives have entirely depended on the horse, so much so that, if this useful animal was withdrawn from them by nature, many of these races would have not certain extinction. Many hattons of antiquity, like the Periana, Armeelans, Parthiana and Medians, tied their children on horses and taught them to ride before their tender logs were strong enough to enable them to walk. When grown up, these children ate, played, and even slept on horse-back, while their parents talked and transacted their business in the same manner. These children grew up with their horses and hows. They never put their quivers ande, nor did they dismount their horses, in that age of perpetual warfare.

Is it any wonder then that ever the horse had arisen to the dignity of being the most acceptable offering to powerful delica?

Settles? The Sun moved quickly across the cloudless skies of the toppes of Central Asia, therefore, the Sun-gods were not suby worshipped as powerful and mightly but as swift. Rivers swept swiftly with their flowing waters and gods of torms required incessant sacrifices from the helpless and two-struck humanity. Could there he any better and move acceptable sacrifice to the swiftest of all gods than the wiftest of all earthly creatures—the horse?

Mithras was the Sun-god of the ancient Persians, theorem was sacred to him. The Satrap of Armenia alone ent to the King of Persia every year twenty thousand roung herses for the festival of Mithras. The horse was westfe-footed," the Sun-had the egithet of "sever tred."

In the Hindeo Regreda we read about the horses of Surja, he Stan-god.

n line Himoto Regress we read about the horses of Shungodi. Shungodi. Shungodi. She Surja's blessed yellow coursers.
The praiseworthy and glittering in celors.
Else worshipping in heaven's aphere.
Blouds heav'n and earth they turn within a day.
This is the god-head of Surja, his greatness;
When all inaction, he doth loose the team.
And, when he from the charlot takes the yellow he surjained to the control of the state.

When all inaction, he doth loose the team.

And, when he from the charlot takes the yellow horses, Still night is covering everything with derkness.

And then, before the eyes of Mithras and Varumas, fluria assumes his form in heavenly regions, in endless train his red and dusky gleey. Is thus ted by his yellow coursers."

Medes, Alanes, Massagates and numerous other tribes consecrated the horse to their Bun-pods.

Cyrus could not cross the Emphrates on his march against liabyion, until he sacrificed four white horses to the maddened god of water, after his favorite wife was drowned. Zerzes with his chains and bridges could not subdue the angry foams of the river Strymen, until Magl, the high priest, sacrificed white horses to the genil of that river. Darius could not obtain the royal crown, had not his horse neighed first to the rising sun.

Some writers on horses, among them Mr. John H. Wallace, the founder of the American Troting Begister, have made the abourd olaim that there was in ancient times a distinct bred olaim that there was in ancient times a distinct bred of horses, called "White Horses." Such writers are evidently missed by the frequent mention of white horses and the great partiality shown to this color by the ancienta, a sentiment which has descended even to modern times.

Herods of hurses could never be designated by color. Undoubtedity, it was merely a fancy and an abourd refinement of philosophy with ancients, as well as moderns, to set agart the white colored horse and other animals as the most baustiful and worthy to be consecuted to the Kings of Jodea.

We read in the book of Kings that the Kings of Jodea.

Monattree beard proven. We read in the book of Kings that the Kings of Judea were in the habit of dedicating white horses to the Sun. According to Levy, white horses were, equality with purple robes, diadem, and armed body guards, usual insignis of

Tail.

Ancient Egyptians offered white cows, bulls, jacks, and
cats for sacrifice, but never horses.

In the expedition of ill-fated Zerzes, the chariot of Jupiter,
who, according to Presism mythology, was the meet supreme
of all gods, was drawn by eight snow-white horses of the
Nasson breed. The drivers were men with red hair and
blue eyes, symbolical of fire or sun and the firmament.

—'red hair follows the white hores.' By Jupiter, the Per-sians understood the expansion of the atmosphere, so they selected like white colered horse for mertifice as possessing the most proper has to represent th brightness and parity of that element. The trimphant car of Rossalus was drawn by four snow-white horses and from that three on Rossans invariably chose this color for grand and solt me occasions. Doodcus Riculus tells us that part of the great cavaloods, which attembed the coloquerer of Agrigentum, was made up of 300 white horses, which were afterwards offered for suc-rifices.

which attended the conquerer of Agrigentum, was made up of 300 white horses, which were atterwards offered for sucrifice.

Homer, in praising the horses of Rhefus, King of Thrace, says: "They surpassed the wind in swiftness and excelled the snow in the whiteness of their coats."

Among ancient Germann, according to Tacitus, the whitehorse was except from all other labors but that of drawing the sacred chariots of gods on occasions of religious solematics to the grounds of sacritice and then offered to the gods on the altars. German princes of note bore the emblem of a white horse upon their standards. It was the ensign of Heugist and Horsa, and among their librations descendants, the Dukes of Brunswick and the election of Hanover, hore on their shields the sacred white horse at full speed without saddle or bridle. We have all heard of the "good, old, white horse of Hanover."

8t. Louis is represented, in the antiquities of the French monarchy, mounted upon a sacred white horse.

The King of Naples, previous to the revolutions, actually paid the annual tribute of a pair of white horse to the Tope, is an acknowledgement that he still held his kingdom as a flat of the Holy See, for the Pope, having assumed this imperial color of the horse, took every opportunity of using it, also granting indulgences for its use to the Valtean dignitudes and bishops of high rank.

To Svatorit, the mighty Edavoisan god of light, the white horse and Politix, the Grecian gods of light, were always represented as riding on white horse or standing in chariots.

Partheran Mithredates propilitated the river god of the Euphraces by sacrificing horses and times crossed safely in his march against the army of Emperor Therias. It was a prevailing custom among the old Trojans to throw live horses into the waters of the river Saamandros, as the here waters of the proventing custom among the old Trojans to throw live horses into the waters of the river Saamandros, as the here wellines and the store of the river Saamandros, as the here we want t

herses into the waters of the river Saamandros, as the hero Achilities tells us how:—
"Ilving herses in his waters sink."
Argivious precipitated caparisoned horses into the Dine, a supposed well of fresh water, which sprang forth amid the salty waters of the sea, as sacrifice to Pasedson, the mighty god of the sea, and, in the Island of Rhodes, the inhabitants threw into the sea whole charlets with their teams beauti-fully adormed and harnessed, as offerings to the same power-run deity.

god of the sea, and, in the riman of according to the same beautifully adorned and harnessed, as offerings to the same powerful delty.

Eos, the rising sum, appears in the eastern sky, chasing the sombre night on a whith here, and the mighty lifelies, of the Lacedeamenians, demanded the sacrifice of white horses on the Mount of Topgetus. This great delty was always represented as drawn by magnificent white horses, beaming in silvery radiance.

The ferious herees, Flight and Terror, drow the charlot of Mars, the god of war, whose wastike spirit was only propiliated by the the offering up of horses upon his altar. Hereelse labored to destroy Diomodes, King of Thrace, who was in the habit of preparing his horses for sacrifice by feeding them on human blood, and fiesh.

Preceding the rise of the Bun, the Goldess Aurora was drawn in rose colored charlot and milk white horses.

In Ovid's beautiful fable of Phaeton, the horses, drawing the charlets of the Bun-gods, are fully destribed and which we find albided to by the immortal bard:

"Gallop apace, we first footed steeds,

To Phoebus' manifor; such a waggoner

As Phaeton will whip you to the West

And heing in cloudy night immediately."

Kolus, the mighty ruler of winds, was himself the son of Hippotos, the horseman. The freaks of this mighty and dangerous god were most effectively proplitated by the sacrifice of white horses.

Thus it will be seen that among all the early nations, who had and used horses, they offered them as acceptable sacrifices to their delties. Notable exceptions to this instance were Armenians and Egyptians. The latter offered upon the altars of their gods over domestic animal, except the horse.

In the mysterious twilight of Scandinavian and German mythology, we find the horse used as servants or sacrifices to various gods.

Odin, the god of the air and the sky, was represented on the standard the sacrifice.

mythology, we find the horse used as servants or sacrifices to various gods.

Odin, the god of the air and the sky, was represented on horselsuck and demanded this animal for sacrifice. Wue-dan, the mighty lord of the wild chase of the German feli-lore, whose name we still possess in Wedneeday, was the possessor of Sielpair, a glassi horse with eight feet and gray color. The Phoenician navigations never started on a voy-age, until they sacrificed a number of horses to the mighty Possidon.

Possidon.

In the peaceful pursuits of ancient life, the use of hor was unknown and, in the stages of early civilization, horse is always represented to us in the capacity of a wilke animal, which either drew the war chards, hore saddle, or was sacrificed to the gods, but was never graded to the piece of the cart; while, to us, its use as instrument of war is far cellipsed by its importance in tovery-day works of peace.

AN OLD STORY RETOLD.

0

O NE day in January, 1808, under a large chestaut tree, near Oyster Bay, Long Island, writes A. A. Austin in the Boston Herald, was buried an eld white horse whose name and fame will ever survive in the history of the American rousister and trotter.

Indeed, judging from the facts and records as we today diad them, had this old white, "fina-bitton" stallion, that with much ceremony was laid away that wintry day nearly a century ago, never lived the history of the trotting horse would be mighty insignificant and comparatively unimportant.

If this horse, Messenger, is not strictly the father of our rotting families, then he certainly in the original progen-

itor, founder, and their most famous and common ancestor. Had Messenger not lived, our list of world's treftling champiens would read very differently from what it new deen. We would not have had Lady Suffolk, the first 5:30 trotter of sill; so Highland Mald, who was the first 2:32 performer; no Flora Temple, the first to losd 2:30; there would have been no Dexter to set the horse world all agog with its electrical 2:174, in 1867; the periess Goldsmith Mald, mistress of campalgners, and Rarus, with his 2:134 record would have been unknown.

been unknown.

Wipe out Messengir, there would be no records to chronicle of a St. Julian, Mand S., Jay Eye See, Hunol, Nancy Hanks or an Alix. Why? Because all these turf celebrities were direct descendants of Mossenger. The above list only deals with the roil of champton trotters, and, removing Messenger, you sweep away all the trotting record-holders of the world save one, and the probability is that if the facts could be established that one, Pelham, would go with the real.

acts could be established that one, Pelham, would go with he rest.
Therefore, to Messenger are we indebted for practically ill our treating champions. How about the trotters and scores, some 26,60s, who have records of 2.50 or better? It is a safe estimate that at least 2 out of every 20 of these 16,500 arry the blood of Messenger. Reyond this it is a safe pre-liction that over 250,00 herees of this country have blood elationship, and crace in their predigree to Messenger. Messenger was fosled in England in 170s, bred by John 'rott of New Market. He was a running horse, therough-red, sired by Massbrine, dam by Turf and through eight tenerations traced to a Hard mare, daughter of Place's White Turk. In October, 120, when Messanger was 3 years 40, he began his racing career, which continued through is 4 and 5-year-old form. He started in 14 races, winning girt of them. He was imported to this country, according o Wallace, in 128 landing at the foot of Market street, 'Philadelphia, about the 26th of May. He was then a dapple ray horse, 8 years old, 15 hands 3 inches high, of ragged, nassive form, somewhat courser than the average tho-oughbred.

massive form, somewhat coarser than the average thoreoghbred.

The first public notice of the horse is said to have appeared in a Philadelphia paper, under date of May 27, 1286—an advertisement for the ensuing season. For 29 years Messenger was kept in the vicinity of New York and Philadelphia, being located at different times in New Jersey, on Long Island, and in Dutchess county, N. T.

On the 26th of January, 1991, he slod, in Townsend Cock's stable, of comething like colic.

The last eight or 39 years that Messenger lived he was farmed out for 1999 per annum, net.

No stone or wood marks the resting place of the grand old sire, who added millions of dollars to the horse values of this country, and through whose sons were established and perpetuated the various leading treiting families of the world.

THEY SAY.

The Faber sulky is the only 2:00 sulky.

8. W. Mackey's spiral spring hoof expander will cure all foot troubles.

Dent's stable case should be in the hands of every driver. Dent's remedies are known and known to be successful.

Does your horse waste his oats? Try one of the feed boxes made by the National Feed Box company, Detroit, Mich.

C. Underhill, Passule, N. J., will get you a catalog, for which you will have to make no excuses. Write him for estimate.

Jack Corry is at Rushville, Ind. If you have a fast one and want to campaign, get into correspondence with the old driver of Joe Patchen.

If you have a yearling of promise which you would like to sell, address Mobile, care THE HORSEMAN, with de-scription, pedigree and price.

The "Star Pointer" rubber quarter boot is the proper thing to be used when speeding on the snow. It is made by The J. H. Fenton Co., Chicago.

Caustic Baleam, the great French veterinary remody, is known the world over as a sure specific to remove all bunches or biemishes from horses or cattle.

The grandam of Allerton, 2:09%, is a daughter of George Wilkes. This mare not only produced the dam of the great-cst speed sire of his day, but she has a sen with a trotting record of 2:21, by Nutwood, which is offered for sale in this issue. This is the kind to buy.

If those friends you counted on falled to get you a horse timing watch for Christmas you will have to face the prep-osition of buying one for yourself. Spaulding & Co., corner State and Jackson streets, Chôcago, have then for \$8. And they are reliable—both the firm and the watch.

Sometimes you hear it stated that such or such a performer would be a great one if he only had size. But occasionally the little ones are in demand. An advartiser in this issue states that he will buy trotters standing 142 or less with records of 223 and better, and will pay a reasonable price. Address "Pony Tresters," care THE HORSEMAN.

Dr. Hutton's checking device has had its part to play in making accres of great campaigners. Speed without relia-bility is as worthless as a cigar without a match. You can berrow a match? Well, you can boy Dr. Hutton's device unless you are worse than bankrupt, and then your speed can be utilized.

There are seasons of the year when certain things should be bloked after, and others when certain things are to be avoided. Right now you may be able to keep your horses from catching a cold or cough or distemper by the use of a single bottle of Craft's distemper and cough cure. You can get a it bottle now for in cents.

A sixteen hand buy stallion, with a trotting record of 2:Bi₁ made as a three-year-old, is offered for sale in our business columns. He is by a son of Nutwood, dam by Happy Medium, grandam by George Wilkes. This here is but five years old, is sound, and wheever gets him will have a hores worthy of any havem of brood mares.

1293

B. J. Frizgerald, of Cortland, N. Y., will sell a handscene son of George Wilken, because he can not use him in his stud on account of inbreeding. This horse is of a rich mahogany color, ii.2 high, perfectly sound and gentle, and a fine readster. Breeders looking for a well bred stallion, would do well to investigate.

Here is a stallion with a record and whose sire, dam and sire's dam all had records and were producers. It is Nut Pan, 2:35i, by Nutwood, 2:35i—Isaqueens, 2:35i, by Pan-coast, 2:35i, Nut Pan is a seal brown, 16 hands horse, and a grand individual. He can puce is 2:32 and should be a good one for the 2:30 class the coming season. His present owner will sell Nut Pan and will take a good young mare or gelding with fast record in part payment.

The "Drawbar" driving bit looks to be the right thing at the right time. Collins and Morrison, general agents, Omaha, Neb, guarantee that no horse can obtain control of this bit, and this being true no end of runaways will be prevented if it comes into general use. Becurity without severity is the recommendation of the manufacturers, and the humanity of it will go far towards making it popular. It is as well the best bit on the market for breaking coits.

The immense reduction in the prices of elippers by the Gil-lette Clipping Machine company removes one of the main objections that owners have had to elipping their horses. When it requires 25 to 35 to get a clipper the average owner hesitated a long while. Now that the best have been reduced to Its and 25 there are few who have many horses but can well afford the outlay and will save mence in the transaction.

B. J. Fleming and son announce their first let of consignments to their annual sale at Terre Haute, Ind., March I to 5 next. The entires for this sale close January 2t, so that those having stock to sell will do well to make their consignments soon. Parker 8, 2:50h, and Josephine, 2:th are two of the stars of this sale. The great three-year-old, Indians, 2:10h, is another which will elicit some rapid bidding. Watch our business columns for future announcements for this sale.

Monroe Salisbury once said he would as soon "sit on a chunk of ice, with his feet in cold water, as to take a sleigh ride." That was a California view of the matter, and then probably the gentleman never owned a Raskatchewan robe and coat. Take these two articles and a ride over the "beautiful" on a clear, crisp merning is one of the rare enjoyments of life. Write to the American Buffalo Robe company, 3 to 7 Howell street, Buffalo, N. X., for libusirated catalog.

Messers. Woodard & Shanklin invite the attention of all parties who contemplate selling stock of superior merit to their display all and reading notice slawshers in this issue, and urge them to seed in their entries at once, as in a short time outside with the filled and in print. The superior class of stock entered warrants the assertion that no sale of 1988 will demand the attention of buyers as will this one and values for all good atock will be fixed by those who realize their full worth and are willing to pay for it.

The way the Willons trotted into the list this year has again brought that handsome and fast son of George Wilkes into especial preminence. D. J. Cameron, La Crescent, Minn., has for sale Wilkes G., a five-year-old black horse by Wilkes, dam by Manabrino Boy, grandam by Bonde Bootlaph. He is not a big horse, neither is his sire, but he has shown very fast at the treet, and his 16% hands may be all gold. Mr. Cameron will also sell two of the sons of Oh 8o, 210%, the handsome son of Nutwood, 218%—8o 8o, 217%.

The Concy Island Jockey club has reason to expect a splendid line of entries for the Puturity stake for E.50, with its E.70 added money, and there is slight chance of its being disappointed. The entries close January 4, and owners will appreciate the fact that there is little time to lose in making subscriptions. The conditions of this rich stake are most liberal and will be found in full in our business columns. This club announces as well a number of stakes for the June meeting and also for the autumn meeting of 1905, entries for which close January 1.

But another week remains before the closing of the Ma-tron ER/60 stake of the Westcheater racing association, to be run as two-year-olds in the autumn of EL/60. The win-ner of this rich stake will receive the tidy sum of His/60, and all mares to be bred in 18V are eligible. The feals of such scares will be enhanced in value to a considerable degree by reason of their dams having been nominated in The Ma-tron. Jännary i is the date of closing of estrics. There are five divisions of the money other than to the winner. It should be borne in miled that others than the owner may make a subscription for a mare at 180 each, or only 190 ff the money accompany the entrance, but the owner shall have the prior right. This stake is liable to furnish a surplus from subscriptions or entries over the advertised value, and such surplus, if it occur, will be divided 60 per cent, to the wisner, 30 per cent, to the second and 20 per cent, to the wisner, 30 per cent, to the second and 20 per cent, to the third. Send entries without delay to H. C. Crickmore, clork of the course, 12 Fifth avenue, New York, or to the office of THE HORSEMAN.

ef THE HORSEMAN.

R. C. Campbell the owner of that great sire and fast performer, Riley Medium, amounces his intention to sell the horse if he can obtain anywhere near his value. This should prove a golden opportunity for some stock farm, for among the sires of extreme speed Riley Medium has made a most creditable showing and that with the most meager opportunities. He is now but sixteen pears old and was campaigned constantly up to three years ago. His last campaign in 1844, whose thirteen years old, was a brilliant one. At Myatic park he defeated Prima Donna and Guisette in the free-all, going a third heat in 2:195, In his eight races that year over New England tracks Riley Medium won first or second money in all but one, when he was third. His fastest winning heat was in 1:115, For a thirteen-year-old horse, this was a remarkable showing, and is proof positive of his splendid individuality and stamins. With such performers to his credit as Bad Riley, 2:18, Kaen Medium, 1:20, Keen Cutter, 2:13, Nins Medium, 2:186, and Riley B. 2:144, be has achieved a reputation as a sire which would adgreat prestige to any stock farm. Mr. Campbell's address is Mishanaka, Ind.

Pew horses have broken into the great table with anything like the showing made by Manager, 250%, this year. Not only be the the fastest son of Notwood, but he books to be the making of the most successful sire among that horse's sons. W. W. Besson, secretary of Highland stock farm, Dubsque, Iowa, anneonous that Manager and several other prominent horses owned by that farm are to be sold. Manager was a rince horse is severy sense of the word from a colt up, and he has five performers this year, which are the first enes to his credit. Manager ought to be such five figures, but some one is liable to get a very cheap horse.

The famous Allen farm, of Pittefield, Massa, has for sale the magnificently beed young stallion Atawaif, sired by Lancebet, 2:35, his dam is Allanta Wilkes, 3 years, 2:35, Tais young stallion, which is entered in the Kestucky BK,000 feuturity, represents the blood of such well known horses as Gay Wilkes, 2:35k; Green Mountain Maid (dam of Electioneer), The Moor, George Wilkes, Hambotonian, etc. Atawaif is a pure gaited trotter, of a dark bay color, measuring 15 hands high in his yearling form. For catalog and price list application should be addressed to Wm. Russell Allen.

In this week's issue of THE HORSEMAN appears the second announcement of the R. J. Pienning & Son sale at Terre Haute, Ind., March 1, 2, 3, 5, 188. It has been but a short time, less than three weeks, since the first announcement appeared, and yet they already have more consignments and attractions than many sales will obtain after weeks of advertising. The broaders and horsesses of this section have learned to look forward to this sale and as soon as the first announcement appears they lose not time in consigning their stock. They are sure, they will receive fair treatment at the hands of this firm, and that they will also receive good prices for their herses. The commission charged by this firm is but 4 per cent, which is 4 per cent, less than that charged at most other sales, and as the other expenses are in accordance, the consignor is able to save quite an amount on a large consignment. The sale attracts the best of the foreign and eastern buyers; 6 out of 250 horses last year were bought for export, and 32 were bought by cautern buyers. The sale barn is all under one roof, is a handsone, well heated and lighted building, 55-foot speedway, 25-foot track, and 30 feet on either side, in main building. They have accommodations for 50 horses, all box stalls. Persons contromplating selling their horses in some sale should address S. J. Fleming & Son, Terre Haute, Ind.

Sen, Terre Haute, Ind.

On next Baturday, January I, a number of important stakes of the New Memphis Jockey club will closs. These include the Tennessee Derby, with \$1,00, to be run in 190, and the Tennessee Derby, with \$1,00, to be run in 190, and the Tennessee Oaks, with \$1,00, to be run the same year. The one is a sweepstakes for three-year-olds feals of 190, and the other a sweepstakes for three-year-old failes, feals of 180, the former one mile and one-eighth and the latter one mile. The second payment for the Tunessee Derby to be true at the coming spring meeting, which opens Saturday, April 9, 198, continuing nibeteen days, is dus January 15. There are nine other stakes for the 190 spring meeting, for which entries close January 1. These include the Gaston Hotel stakes, for two-year-old colts and giddings, 19,00 added, from furious; it he Memphis takes, for two-year-olds, \$1,00 added, five turious; New Gaycoo Hotel stakes, a selling sweepstakes for two-year-olds, \$2,00 guaranteed, one mile; Tensessee Brewing Company stakes, a selling sweepstakes for two-year-olds, \$2,00 guaranteed, one mile and one-eighth; the Montgomery handleap, for three-year-olds and upwards, \$2,00 added, seven furious; the Peabboty Hotel handleap, for three-year-olds and upwards, \$2,00 added, one and one-sixteenth miles, and the Colton steeplechase stakes, a settler and one-eighth; the Montgomery handleap, for three-year-olds and upwards, \$2,00 added, one and one-sixteenth miles, and the Colton steeplechase stakes, a steeplechase handleap, for three-year-olds and upwards, \$200 added, about two miles.

HERMITAGE STUD UNDER THE HAMMER.

HERMITAGE STUD UNDER THE HAMMER.

The amouncement of the dispersal of tamous old Hermitage stud, Nashville, Tenn., at the February sale at Madison Square, by Messra. W. B. Pasig & Co., is a matter of world-wide importance. Generations of noted breeders have lived and died since that great nursery of trotters have lived and died since that great nursery of trotters have lived and died since that great nursery of trotters have lived and of fermitage has been as widely known as the broad boundaries of the trotting world. It has always been its policy to use the best and most intrassically valuable stock that ample means and the shrewdest judgment when you have been the policy to use the best and most intrassically valuable stock that ample means and the shrewdest judgment when you have been the policy to use the best mode foundations and wise, progressive conduct.

The brief dispatch from Nashville announcing this important event gives but meaper details of the 50 or more famous animals to be sold next month. In a few days we shall be able to furnish the full particulars, which will be shall be able to furnish the full particulars, which will be shall be able to furnish the full particulars, which will be shall be able to furnish the full particulars, which will be thought the proper of the great process of the gr

Preston, by Pence de Leon, dun Tone, ny Enfeld, trested to a two-year-old record of 2:514 in 197, and last season reduced his mark to 2:134. He thus holds the champton-ship among geldings of his age. Bouquita, by Bow Belss, and out of the dam of Preston, took a fear-year-old tresting record of 2:175, in 1987. There will be lively bidding when these two come under the hammon.

Among the very famous producing marcs included in the consignment will be such as Belle Archer, 2:125, by Rend, dam Mary Dake, by Enfeld, dam of Preston (3), 2:194.

and Bouquita (6, 2,27%, and Rosy Morn, by Alcantara, dam of Boreal, 2,25%, and The Currew, 2,27%, Yet another prize from Hermitige will be the semantonal Yet another prize from Hermitige will be the semantonal record, Later details of this work will be found equally as interesting as those given above.

A GOLCONDA FOR BREEDERS.

A GOLCONDA FOR BREEDERS.

Mr. E. S. Wells, proprietor of the Glenmoore stock farm, Glenmoore, N. J., has been widely known in recent years as a liberal buyer at proseniest horse sales, but has appeared as a seller only in consection with comparatively small lots. He has thus accumulated a large number of mares by the very greatest sires known to the Trotting Register, and he bought many of them in foal to other famous sires. It results that Glesmoore is today the home of fice young representatives of all the most distinguished lines and possessen as much variety of gitt-odged breeding as could ordinarily be found in half a dozen big stock farms. Every man really interested in breeding has a preference for the products of his own establishment over those which a coquires by purchase, and which represent some one's she ideas or experiments. This is only natural, and dicas on breeding questions, has therefore determined to Mr. Wella, a gentleman of clear and strongly matural and bleast on breeding questions, has therefore determined to Memer. When the farm to the coming sale by Memer. When the continue with their produce, and supposarson as a large consignor. The stock he will sell, as above indicated, are royally bred mares with their produce, two and three years od, by stallions other than those at Glesmoore. They are the reverse of culin-they are, in the analysis of the products of the products of the will sell, as above indicated, are royally bred mares with their produce, two and three years od, by stallions other than those at Glesmoore. They are the reverse of culin-they are, in the analysis of the product of

DISPERSAL SALE FROM WINDRUSH FARM.

DISPERSAL SALE FROM WINDRUSH FARM.

Pive years ago, at Menio Park, California, the famous mare Beautiful Beils produced a shapely black colt, whose sire was Palo Alto, Prible. The youngster throve and developed nobly, and was christened Day Beil. He was at rotter and gave early indications of the speed to which his illustrious Baseage entitled him. As a two-year-old, and with little training, he trotted the farm track in 2:8, the performance timed by so reliable an authority as Mr. Joseph Cairn Bimpson. A little bater he was purchased by Mr. Edward A. Maurice, and was placed in the stud at that gentleman's Windrush farm, Pittabeld, Mass. The aristocratic newcomer at once attracted the consideration of the leading Massachusetts breeders, and Mr. William Bussed Allen and many cohere of promisence sent choice mares to the young grandson of Electionser, while Mr. Maurice, who had a few fine mare, of course beet them. Each season at Windrush farm Day Bell's book has filled to its limits, and many desirable mares have been refused. A reliable food-getter and a horse of uncommon finish and sysmetry, the progressy, though of course young, are of the high type of their sire, and are very lighty prised. That they will preve good race, hereen is beyond reasonable received and they will preve good race, hereen is beyond reasonable horses, carried that might have been list; therefore lamps and of the turt that might have been list; therefore lamps of the turt that might have been list; therefore lamps of the turt handled for speed until 186, when he was entered for the Nutneng stake, at Hartford, and was placen in training the stake was declared off and the horse, naving no other tasks and the returned to Windrush. In 189, to secretary the second of the state of the stake was declared off and the horse naving no other tasks, and the returned to Windrush Ian 189, to secretary the second of the state which the second of the horse handled for speed until 186, when he was entered for the Nutneng stake, at Hartford, and was plac

GREAT SONS OF GREAT SIRES AND THEIR PRODUCE.

GREAT SONS OF GREAT SIRES AND THEIR PRODUCE.

It is always a matter of interest to note with what success and to what extent the different prominent sires of trouting horses "breed oo," not only through their sons but daughters as well. Perhaps the family that is most famous in this particular respect is that of George Wilkes, Many of his most successful sons and daughters will be sold in the Woodard & Shanklin sale at Lexington, Ny., February, 7-12. Promisent among them are Jay Bird, Sire of Allering, 2-19%, is another most successful speed producing son of this greatest of all sires, having to his credit nearly half a hundred representatives in the 2-28 Ms. Young Jin, sire of Trevillian, 2-9%, Monte Christo, sire of Christo Queen, 213%, Betterton, sire of Prima Donna, 25%, and several others of equal promisence could be mentioned. Eagle Bird, son of Jay Rivel, stands greeninent in the second generation, as does also Hisder Wilkes, son of Hed Wilkes, Vasco, the very best son of Harold, is noted for the early speed and magnificent individually he imparts to his produce. All the above distinguished sires will be sold in this sale, and in addition are included some most successful daughters of eagle did not be successful daughters of eagle will be sold on the six of the sale, and in addition are included some most successful daughters of eagle that the sale, will be shade the grand tot of breeding stock above memblessed, it is clearly shown that it will attract boyers of all kinds, thus making it a most successful sale. We are safguine of a

most pronounced success from the very fact that we have the horses of all descriptions that are in demand, and in-tending seliers should communicate with us at once for station space, as it is filling rapidly and only a few more select animals can be accepted. Watch future issues of this paper for mention of individual consignments from the space prominent breeders in America and for detailed ac-count of the closing out sales mentioned in display ad on sucher page.

TO NEW YORK AND BOSTON.

No. 4. North Shore Limited Train, leaving Chicago.
That's the number of the Michigan Central
2:00 p. m. and arriving New York 2:00 p. m. next day (24
hours), and Boaton 6:20 p. m. (26 hrs. 20 animutes). If you
want comfect on your Journey cast take this train. It has
read Chicago to New York and through alsoper to Hoston.
All meals are served in dining cars on route. City ol, oe, 119
Adams street, Chicago.

ANSWERS TO CORRESPONDENTS.

**Clustions for this department must be accompanied by the same and adjector of the sender, not accessivily for publication, but as promy of proof right. This must be distinctly written on one side of the paper only. Some but questions relating to equive topics will receive standard. So ancewer by must be of tolograph, cample to conductors of rose markings on questions requiring immediate action. Answers in ques-tions as to withithy horses one standard and registered refer to pub-lished volumes of the Repister only.

A Reader—Figure tell me the breeding on the dam's side of the famous old mare Waterwitch by Phot. Jr. (2) Also state if the sires of her dams have produced anything, state if the sires of her dams have produced anything. Ans.—Famy Fern, by Kinkend's Ht. Lawrence: grandam Srenda, by one of Major Hamuel Davenport's thoroughbred series, believed to be Oliver. (2) No.

Reader,—Will you please give me the breeding of the tallion Pete McGregor? (2) His record, if he has any, it is claimed this horse was raced at Burlingsme, Kansas, irred by Martin McGregor, dam Lady Goldmith, Ann.—to horse by this name is registered nor has such horse, to horse by this name is registered nor has such horse, who heldes, Burlingsme, Kansas, who might be able to give out the information.

B.—Why is Ottinger left out of your 1:18 list? (I) Has-nt Guy, 1:29t, also a just claim in the 2:38 list? Ans.— to Union out of Ottinger was an oversight on the part t the complex. Notice the tables in next bisse and you ill see that he is given his proper place. (2) Guy's per-ormance was held to be irregular by the American Trot-ing Register association. Tou will see by the tables in the se next issue, however, that he is given credit for his re-nected record.

C. G. 8.—Give breeding number, age and races of the ch. Volney; (D his last record made at the state fair at filwankso three years age in the 12st class, tretting; it give breeding and number of Minnle N. Ana.—Geldings and mares are not given numbers. Voltney is a chestract elding, fealed life, by Lakeside, sen of George O. 590; dan lity R. by Albambra, Jr., son of George O. 590; dan lity R. by Albambra, Jr., son of Albambra. (D 10Pk, standard record, either trotting or packet.)

W. P. P.—Have the following horses and mares any narks for speed; If so, state what they are and where sade: Algeria Wilker, said to have a mark better than 30; (2) Bettle Battle, by Jesse James, said to have a mark 120%; (3) Eva Wilkers, brown mare 15.2 hands high, by lacria Wilker; (4) Nut Star, by Nut Grove 600, registered Volume X; (5) Nut Grove 600, by Nutwood? Ans.—

2. R.—Will you please give me the pedigree in full of femile Wilkes 288; (2) member and names of his produce the 228 list? (3) would you consider his breeding fash-mable at the present time and him an excellent sire? He ran fould in 180. Ans.—Bay horse, foulds 183, by Housen Wilkes 285; dam Carrie Sharpe, by Alexander's Aballah 18; grandam unknown. (3) One pacer, Colonal Paradian theorem, Wilkes 284, and Townsown Chine, 237th, (3) Well level and to certain extent fashlonable, but not particularly successed, possibly owing to lack of opportunity.

B. G.—Will you kindly give me some information con-cerning the roan paccing mare Flora C. 2:174, feeled, I think in 1897 Give her breeding, G.D 5d she ever figure prominently as a race mare? (D Where and when did she take her mark. Ans.—Flora C. was feeled in 1986 roan mare, by Cadmus Hambietonian (Kirby's), dam not traced. (D Yes, she has been raced to a considerable extent. As a four-year-old she was twice distanced and won a second and third money out of fire starts. Since then she has never been beldind the money. (D Rhe took lev receded in a fourth heat at Concordia, Kannas, October 2, 1996.

W. R. G.—Give the breeding and history of Kincaid's organ. (B) Postedice of Douglas Thomas. (B) Same of cell Hole, (d) Kaine and address of the present owner of mass. Hotter, you will be be be been as the present owner of the control of the contr

H. T.—Please give breeding of Administrator's first, and and third dams. (2) Erceding of Monogram, the send dam of McMahon 1944, as far as known. (3) Breeding dams of Much Mare, dam of Rossial Laboration of Give breeding to the fourth generation of ska, the second dam of Omedo Wilkes, 2:5%, and anchors '804, Ann.—Dam Dody Halshead, by Mambrino Chief in Grandam by Arabian Turter; grandam by Arabian Turter; grandgam borto Monogram, by Mambrino Chief II, of the Mambrino Chief; pedigree not geowen, (5) Noton, but believed to be well bred. (6) Hasks is running d, by imported Hoston, see of Despot; dam Bet Travven, by mpire; great-grandam by Laurence's Diomed.

Ampires, great-grandam by Laurence's Diomed.

J. P.—Give breeding and description of the following serves: (1) King Roses: (2) Ebrillow; (3) Wikes Boy; (4) led Codar, by Red Wilkes—all to the fourth generation; (5) led Codar, by Red Wilkes—all to the fourth generation; (5) led Codar, by Red Wilkes—all to the fourth generation; (5) led Codar, by Red Wilkes—all to the fourth generation; (6) led Codar, by Red Wilkes—all to the fourth generation of the Codar Street, and Wilkes Boy and Kink Kenne is possibly still owns Eurilius; J. C. McCoy, Kirkwood, Del. was Hed Cedar.

VETERINARY DEPARTMENT.

e*...iii quantitate to be unswored in this depart ment must be un on a pass by Saturday morning, in order to receive attendion in the farm of the following work. We are always assurate to make our Teteriory Department as complete as possible, and hope our readers will sensel themselves of it who makes the most interesting and valuable features of the most interest any information, thus are to the following the sense of the most interesting and valuable features of The Beremman; and they should serve be written on the same about with experiment; and they should serve be written on the same about with quantities.

J. P. W.—What do you consider the best leg and body wash to be used on a race horse? (2) Does it do any good to do a home's begs up in cotton after a hard race and when body after a hard race and when body after a hard race? Is it proper? Ass.—There is nothing better than sal amanoniac and nitrate of potash of each one os., alcohol one quart, water three quarts. (2) Yes; a great deal. (3) An old horse that is about half broken down is beseifted by the treatment you mention, but it is susceedingly in a sound animal.

possion three times a day.

A. V. W.—I have a valuable little horse, seven years old, that had seisesthing like the gink eye about one year ago, slince then he has had bad eyes, the list's one being the worst, but they both clear up at times and the right looks all right, but the left looks weak the most of the time, and right had been putting one eye out to save the other? Or what me selected putting one eye out to save the other? Or what we are putting one eye out to save the other? Or what we are putting one eye out to save the other? Anne-Your horse has a case of periodic ophthalmia and sothing that can be done will improve his condition; the snore that are about a seven periodic ophthalmia and sothing that can be done will improve his condition; the snore that are taken as soon as the disease presents itself can be cured by an operation, but with your horse it is of too long standing.

every-day and given every care.

J. A.—I have a three-year-old filly that was kicked three mostles say on book and just above askie on outside of leg.

The property of the pr

F. H. S.—Piesass prescribe for my colt, just two years old. He is a pacer and is isedined to stand cock-ankled—a little score in the right than in the left. Is there anything that I can de for lift iff Can you tell me how to train her for left of Can you tell me how to train her for her got act, the control of the contr

J. I., W.—I. have a runniest horse, seven years old, and I sook him out down Oct. 2. 1885, and commenced training him in March. 1871; started him in a race the first of May and be putied so lates; I held him to for three weeks and started he putied so lates; I held him to for three weeks and started have not trained him since. His blood was very had when I out training him, but seemingth his blood is all right now. His large tendon was out clear in two, midway between book and ankin joint, and he run about three-distints of a hook and ankin joint, and he run about three-distints of a new hoof bas grown out. This ankle is almost twice its normal size and a seems to be the place in which he gives way first. His lost, from hock to aske, is meast twice to may first. His lost, from hock to aske, is measty twice as a way first. His lost, from hock to aske, is measty twice as a condition of the started when the started weeks and a new hoof box grown out. This ankle, is measty twice as a condition of the started was a very walmable horse, as he could run a mile in the was a very walmable horse, as he could run a mile in the case? He was a very walmable horse, as he could run a mile in the case of the started was a started and feeling root and runs any lates when turned and afterwards bilistered from his hock to his ankles; secure the services of the best vectorization in your vicinity to do it, and we think he will be able to run again.

SHOEING.

SHOEING.

WE invite our correspondents' careful attention to the following instructions:

1. Fill out the subjelined blank, giving facts and figures as concisely as possible. Refer to one herse only on each blank; we cannot undertake to answer questions relating to more than one horse for any one overspondent in any one week.

2. Give measurement of toes as accurately as possible, the depth of hoof in front from point where hern and fiscal join to surface at point of toe, and a like measurement at beel, to wit, from point where horn and fiscal join to point of contact between hoof and ground.

2. Questions relating to shoeing not asked on blanks printed each week in THE HORSEMAN will be returned to the sender unanswered. All questions of this nature must be asked on these blanks. There will be no exception to this rule.

4. Write plainly, giving full name and address (county and state, as well as postoffice). Anonymous questions, or those signed with initials, will not be recognized.

5. When instructed to reduce the hoof to a certain size, in all cases do so by ranging from the bottom; never under any circumstances use a knife. In reducing the depth of the foot, be sure to observe closely the thickness of the sole.

6. Never interfers with the bars in any way; they should only be touched when the whole foot is being leveled, and then with the ramp only.

7. He careful that the foot is absolutely level before nalling on the shoe; the bars and entire wall should contact the ground at the same instant.

8. Shoe in all cases with a plain, narrow webbed shoe, weighing the number of conces designated in the answer to your question; let the shoe follow and fit the wall of the foot closely; do not let the shoe follow and fit the wall at the heats, or in fact, at any point.

Whenever it yields even very slightly to the pressure of the thumbs, stop for the time and continue the reducing process at the next shoeing.

These general instructions are given to obviate the next shoeing.

These general instructions are given to obviate the next shoeing.

When writing about any question already answered, or when reporting results, always mention the date and page on which the answer was given.

If a.—Mare, trotter, I years, 975 pounds, 15 hands; front

H. S.—Mare, trotter, 3 years, 25 pounds, 15 hands: front toes 25 in.; hind toes 25 in.; front heels 15, in.; hind heels 25, in.; front shoes now worn weigh 5 cz.; hind shoes, 5 os. Strikes both hind ankle joints; has long hind stride; inclined to clinik when speeding; seems show in litting front less; sensettines puts hind toe down and turns over on it, months since 1 broke, her, Ana.—Your filly a feet are too large. True, level and reduce the feet until all of her toes measure 25; in. each and all of her heels 15; in. each and all of her heels 15; in. each and level, all the toes the same length, all the eight heels the very careful to get and keep the feet just exactly true and level, all the toes the same length, all the eight heels the now using, letting them all weigh, may, i. es. each. Report results to us, referring to this page and issue. Observe carefully instructions given at head of this department.

executily instructions given at head of this department.

It. It. St.—Mare, trotter 5 years, 1,655 lb., 152 hands: front toos, 3½ in.; hinds toos, 4 in.; front heels, 1½ in.; hind becas, 4 in.; front heels, 1½ in.; hind heels, 5 oz.; forpos, atrikines rose worm worm seeds 16 oz.; hind shoos, 5 oz.; forpos, atrikines rose worm seeds for the foot property of the foot travels in straight line with freet foot; has enough accion forward, but does not reach out; front shoe has a little too weight, Ann.—Led your marc's front toos remain action forward, but does not reach out; front shoe has a little too weight, Ann.—Led to 1½ in. each, and be the falled heels grow until they measure 1½ in. each. To overcome the declerory at present existing in the hind heels, turn up and the state of the hind shoes, the calkin projection of the second of the hind shoes weighting shoes of the other calkin hind shoes, and heels have grown to the required depth; the many the hind shoes weighting so as each.

SHOEING DEPARTMENT.

CORRESPONDENT'S STATEMENT

Fill one subjetted blank; giving facts and figures as conclusity as possible. Befor to only one horse on each blank, we cannot undertake its assume questions relating to more than one known for any corresponders in any one week. Questions relating to shooting out saided on the blanks printed each week in THE BURHSSMAN will be returned to the sander unanswered. ALL QUESTIONS OF THIS NATURE MUST BE ASKED ON THIS RANKS. THERE WILL HE NO EXCHAINOS TO THIS BULL. Give measurements of loss and beets as accurately as possible. Write plainty, giving full name and address (county and state as well as post-office). Anotymous questions will not be recognized.

Name
Post Office
County
State
Horse mare, or gelding
Trotter, or pacer
Age Years
WeighPounds
Height
General build and disposition
Measurement, front tota
Measurement, hind took
Measurement, front hoels
Measurement, bind heels
Pront shoes now wors weigh Oz.
Blind shoes now worn weigh
Paulte in galt to be corrected
Additions remarks.

1295

Caustic

H VETERINARY REMEDY A Safe, Speedy and



SUPERSEDES ALL CAUTERY OF FIRMO Instruments in readout any near or Norman. The Selfest heat \$0.15 TeV ever tend, 'Allen the cine of the Selfest heat \$0.15 TeV ever tend, 'Allen the cine of the selfest heat \$0.15 TeV ever tends. He moves all Hancher or Hierarchies from Harrace or Cattle.

As a HUMAN REMEDY for Heatmaillam, Sprains, Sacra Virenal, Eliza 18 HUMAN INC.

WE GUARANTEE CAUSTIC BALSAM

of Causello Balance sold is Warran-artered. Price \$ 1,50 per total. See accountly proved to the part of the control of proved to the part of the first terms.

Want Pony Trotters.

Owners of tretters standing 54.2 or less, we coords of 2:30 or better, willing to dispose of th PONY TROTTERS,

Care of The Horseman

FOR SALE. NUTPAN 7332, Race Record 2:19%

Not has be a home the post of the contract of

FOR SALE OR EXCHANGE.

handsome son of George Wilkes. 15 ds high facely muscled, perfectly sound and tile, and a fine roadster, of a rich mahoganate, white sails and white hind sakles. Offere ouse I cannot use him in my private stud o cont of inhreseding. L. Jr. FFTGERALD, (19)

Cortland, N. Y.

YEARLING WANTED.

This serting to advert

RILEY MEDIUM 2:101. A RACK BORNE himself.
He has bee performers, instituting such fast once as
Boo Billey. Exit Kate Medium. 2:104. Keen Catter, 2:10. Name Medium. 1:142. Riley S., 7:144, and
Blaggy Medium. He had a toge time the world's
race record. 2:114, over half-selfe tracks. Will be
add for much best than his worth. Per Information, priod, etc., address. B. C. CANETHELL.
(2003)

FOR SALE.

.. Bay Stallion ..

Five years, trotting record 2:19% as a three year-old. By a son of Nutwood, 2:19%, out of Rappy Medium mare: second dam by George Wilkes. Sound, it hands, and a good looker. Address (289) O., Care Horseman. When writing to advertisers mention The Horseman.

FOR SALE.

SON OF NUTWOOD.

Out of the pand dan of ALLERTON, by Goorge Wilkes Trotting record 22th, just black, it hands, south, ited, and right in every respect, and as handsome a heree as Nutroud over sired. For further par-ticulars address (1987) Care Horsesman. When ording to advertisers mention The Rovesman.

PUBLIC TRAINING STABLES

JACK CURRY and HARRIE JONES,

Riverside Park.

We will conduct a public training and racin stable, with headquariers in W. A. Jones & Bon calabons, at Riverside Park (regulation mile track RUSEVILLE, IND. We will guarantee to take the state of the sear of horses and ineit belongings, and to do what is right by the owners. FOr further particulars, when the state of the search of the

ATAWULF is a young stallion, remarkably well formed, impressive in appearance, now measuring 15 hands high in his yearling form, and weighing 926 lbs, sound, clean, and with the best of bone. He is a dark bay in color, is a pure gaited trotter and is fast. He is entered in the Kentucky \$16,000 Futurity, and is an excellent prospect for a fast trotter. He is sired by Lancelot, 2:23, and his dam is Atalanta Wilkes, 3 year, 2:29 1-2. In the second generation, he has the famous crosses of Guy Wilkes 2:15 1-4, Green Mountain Mad, (dam of Electioneer and of 9 in 2:30) and Atalanta, sister of Beautiful Bells 2:29 I-2. In the third remove, he has Hambletonian, George Wilkes, Lady Bunker, The Moor and Minnehaha. He is one of the great bargains of the Allen Farm Sale.

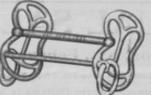
Send for CATALOG and PRICE LIST.

Wm. Russell Allen. ALLEN FARM, Pittsfield, Mass.

WITHOUT



DRAWBAR" DRIVING BIT



Prevents "Pailers," Runaways, nervous and beadstrong horses from grasping the bit between the teeth or laws.

WILL NOT INJURE THE TENDEREST MOUTH.

We Guarantee that No Horse Can Obtain Control of This Bit.

The animal is always under control of the driver. Strong and ornamental, and will give better satisfaction than any other bit on the market.

Price for Japanned or X. C. Plate 75 cts. Nickel Plate, \$1.25. By mail 15 cents extra-

Send for Circular -

COLLINS & MORRISON, General Agents, - OMAHA, NEB.

IF YOU INTEND TO ISSUE

A CATALOG ... is for the work complete. I have the facilities polities in style, at substitute prices.

of this paper and breeders for whom I have

Passaic, N. J. When writing to advertisers mention The Hore

MAPLEWOOD HACKNEY STUD.

The Property of F. C. Stevens,

Langton Performer 242.

First Price and Justor Championship Madison Equate 180. First price at the Great Verkshire and Malton, Eng., 1804.

MINT For and book and full particulars apply to Regulate Line.

First Price at the Royal England, 1895 First Price at Philadelphia 1895. Whener of the English Hackney Society's Medal, 1895. E T. GAY, Mgr., Attica, N. Y.

The Horseman Wants Agents Everywhere.



When scriting to advertisers mention The Horsem

FOR SALE.

Manager, 2:06%. By Nutwood, dam by George Willes. Can beat his mark and a coming sire of speed.

Robert Lee, 2-18%.
By Alcantars, dam by Electricity in races in 2:15.

fre weeks transport of the Rhoderick Dhu. 2:20.

Brood Mares in Foal.

Producers. By Natwood, Harold, George Wilkes, Hod Wilkes, Wilton, Guy Wilkes, Mam-briso Patches, etc.

Young Stock, Fillies and Colts. By Manager, 2:00g: Robert Lee, 2:189; Rhod-erick Dhu, 2:20, ecc.

W. W. BONSON, See'y, (100) Highland Stock Farm, Debuque, In.

When writing to advertisers mention The Horseman

A \$1.00 Bottle of CRAFT'S DISTEMPER and COCOS CURE for 28 Cents.

To more thoroughly horizone this wenderly specific for coincil, which is before you have a plan eye, against and Chandle, we have been been and Chandle we have be plan to be being good table Processey 1, 1991. "Upon receipt of 50 cents and Chandle we have been plan to be being good table Processey 1, 1991. "Upon receipt of 50 cents will be seen to be a second table processes and the second table processes and the second table processes and the second table plan to be a second table plan table pla

GOOD ONES

FOR SALE.

FOR SALE.

Off SO EASY, No. 24344. Black horse, by
Oh So, dam Sheer G, by Mambrino Boy, Inc.
dam Bonnie S. by Imp. Bonnie Scotland.
Weight 1900 Ets. Bts, hands high. This horse as
a three-year-old was handled three mouths and
trotteed a mile in 2:30g. He then took to
pacing and has shown very fast at the latter
gail. He is a perfect model.
WILTON G. Hinck horse, five years old, Highands, weight 600 Bis: No. 2550c, sired by
Wilton 2:19g, dam Slieter G., by Mambrino
Boy, Ind dam Bonnie S., by Bonnie Scotland.
Tale horse has shown very fast at the trot and
to good-gailed.

hs good-gailed.
LOCHIEL C. No. 19837. Buy himse, three
years old, by Oh So: 18.2 hands, weight 1986 lbs:
dans Dictarick, (falm of Princoss Etalaina 2:004)
by Dictarick This is a good individual,
and is good gatted.

r further particulars address
D. J. CAMERON,
La Crescent, Minn

THE FAVORITE

3 Trains Daily for Lafayette. 8:30 a. m.; 8:30 p. m. and 8:56 p. m. Ar. Lafayette, if 15 p. m., if:40 nt. & 7:40 p. m.

4 Trains Daily for Indianapolis and Cineta-

FRANK J. REED, C. P. A. Chicago SYDNEY B. JONES, City Ticket Agt. (2 00) 232 Clark Street

WANTS AGENTS EVERYWHERE



Sphinx,

At 14 years of age the sire of 54 in the list; as a sire the leading son of Electioneer.

This Great Sire of Trotters and Pacers heads the

DISPERSAL OF

Saginaw Stock Farm, Which includes everything from this famous establishment numbering many record horses, among them being BELLE, OF ASSCOTA, 2:201 VOCTORINE, 2:344; MURIEL, 2:384; JEANNETE, 2:274; ERITH, 2:274;1 LADY MERRILL, 7:30; BLONDIE, 1:274; etc.

Madison Square Garden, New York City,

February 14, 15, 16, 17, 1898.

(DAYS AND EVENINGS.)

SPHINX

Added 11 Standard Performers

TO HIS LIST.

His dam, SPHITE (by Belimont), in addition to SPHENN, has produced Egotist, STRE, (sire of 20 in the light); Electrist, TTRE, (sire of 21 new per-formers in 1907), and in the greatest unse-year-old sire, having to his credit-Si in the list. She has also produ-Slight, 2:281;, and Spry (4), 2:281;

SPHINX.

Judged by every test, is the most so county son of the greatest of all sires.

GLENNOORE STOCK FARM,

SENDS 50 HEAD OF THE BEST THAT EVER LEFT THIS WELL KNOWN ESTABLISHMENT.

High breeding, good individuals (many with records), together with the best lot of poungsters ever seen in a sale ring—alt of them engaged to the richest stakes.

ABSOLUTE

DISPERSAL OF

WINDRUSH STOCK FARM, PITTSFIELD, MASS, At the head of which is the "cracking bred" young statiles DAY BELL, trial (9), 2:1946, quarters Bells, together with 5 two-year-olds by him that show remarkable speed, and a few grandly bred man

THE PAMOUS HERMITAGE STUD, NASHVILLE, TENN.

ABSOLUTE DISPERSAL OF

Practically the Absolute

og stalliess BOW BELLS and PONCE DE LEON, also the famous 5-year-old treiting gelding PRENTON. - COL. S. E. BAILEY'S ENTIRE RACING STABLE, -

Readed by the phenomenal race horse PLANET. 2:04%, and including an Hattle T., 7.20, etc., etc., etc., etc. 0-115; Big Ike, 2:155; Kitty Van, 2:155;

Dispersal of ABSOLUTE DISPERSAL OF

THE ENTIRE RACING STABLE OF MR. JAMES HANLY, PROVIDENCE, R. I.,

BELLE MEAD STOCK FARM, Belle Mead, N. J. | Sends its usual consignment, including a number of HIGH CLASS RECORD HORSES, particulars of which will be

NEGOTIATIONS are now in progress for the ABSOLUTE DESPERSAL of so tock of the Very Highest Character will be Accepted for the Commode in their consecution trotting and paints stars of 189 tock of the Very Highest Character will be Accepted for this Event.

S. J. FLEMING & SON,

Third Annual Combination Sale,

MARCH 1, 2, 3, 4, 5, 1898.

TERRE HAUTE, IND.

Consignments Already Received from the Following Well Known Farms and Breeders: PARK FARM (Home of Axiol), EDGENOOD FARM, WILLOW RIDGE FARM, WALNUT GROVE FARM, BULL RUN FARM MUNICLAN PARM, FRANK MUKEEN, SAM'L MOKEEN, LEW GREEN, R. E. NEWMAN, G. A. MCKENZIE, P. J. KAFFMAN, CHAS. LAMB. DR. O. J. PHELPS, AND MANY OTHERS.

TERRE HAUTE.IND.

A FEW WITH RECORDS: 2:06% 2:10 2:15% 2:16% 2:20 2:20 2:23 PARKER S.
JOSEPHINE
WINNIE K.
JERSEY MAC
BLOSSOM ORIOLE CONSTANTINE CORONEL (3).... MAUD COSSACK.

CONSIGNMENTS OF HIGH CLASS STOCK SOLICITED.

> ENTRIES CLOSE JAN. 20. CATALOG READY FEB. I.

GEO. A. BAIN, Auctioneer.

A FEW WITH RECORDS: INDIANA (2) OLE HUTCH. DUTCHESS O' TIP TOP NORDICA. LANTER CUESIN JOE JAY R. SEMPER FANTASMA

For further information, entry blanks, etc, addre

S. J. FLEMING & SON, Terre Haute, Ind.

THE ANNUAL SALE EVENT

At Lexington, Ky., February 7-12, 1898.

This Sale will Undoubtedly Surpass Any, even the Great Success of the One of Last Year, Such

Consignments as the Following to be Sold:

W. L. SIMMONS,
Including the successful sires Jay Rind. Young
Jim. Wm. L., Eagle Bird. Betterion, etc.; a
wonderfully high beef old of producing mares and
with phenomenal speci.

J. R. BASCON & SON,
Including Vasco, the best son of Harold; such
mares as Chess (dam of B), Mary B, chan of Ed
Rosewater, 1100, to 1). Lois (out of the dam of
Haron Rogers, 1:00), to load a most superb tot

ABSOLUTE CLOSING-OUT OF

THESE RENOWNED ESTABLISHMENTS.

. Aftering,
The most popular stree, Wilkes Boy, 2.284, and
Sternberg, 2.184. Brood mares such as Kinsons
dam of Constactine, 2.295, and There, 2.10;
Lady Clay cham of Patchen Boy (2, 2.294). The
rouncaters include brothers and sisters to above poungsters include broad other great campal b. M'FERRAN, JR.,

Most Select Consignments Prop. Bowerman Bros. R. G. Krane, Jan Miller Most Select Consignments R. G. William Co. R. G. Krane, M. G. Krane, J. G. Kra WOODARD & SHANKLIN, Lexington, Kentucky.

EMERSON BINDER WANT TO BUY P

FOR THE HORSEMAN.

Preserve your files and ha

oo Emerson Binders, oo

Address

THE HORSEMAN, 318 Dearborn St., Chicago.

ONE OF THOSE "WANT ADS" IN THE HORSEMAN

Will Place You is Direct Communication with that Portion of the Horse World Which is Buying and Selling

TRY OUR \$3.00 ADVERTISEMENT.

Have You a Horse serente

Moreos are Svincing better prices than they were thirty days ago. If you have a horse that is good describe him to the readers of TEE House, MAN, name a reasonable price, and there is scarcely a doubt but what he will self. Our inch FOR SALE ADS, same size as this, cost but R. THY ONE SELT week. We give a nice reading notice free.



THE

AMERICAN TROTTING HORSE

filv

EVOLUTION OF THE AMERICAN TROTTING HORSE.

By Francis E. Nipher.

[Read before the St. Louis Acad. of Science, May 7, 1883.]

In the April number of this Journal, Professor Brewer gives a table of data for the number of horses capable of making or beating various speeds ranging from 2^m 30^s to 2^m 11^s, for the series of years from 1843 to 1882. The three variables determine a surface, having the equation

N = f(s, T)

where N represents the number of horses capable of trotting a mile in s-seconds or better, and T represents the year estimated from any origin in time. This surface was constructed from the values given by Professor Brewer, and it was at once observed that for the lower speeds 2^m 30^s and 2^m 27^s, the surface was not continuous with the other speeds. The surface changed abruptly between the speeds 2.27 and 2.25. This abrupt change is perhaps explained by the fact that when 2.30 was called a fast time, less general attention was paid to breeding trotters, so that N did not increase as rapidly as now. In later years when such animals are only considered valuable as roadsters and unfit for breeding for the turf, it is probable that an increasing number has been lost sight of, or remain undiscovered in private hands.

In plotting the values log. N and T, each of the speeds gave a straight line, the lines for the speeds 2.30 and 2.27 being represented by the equation

log. N = 0.075 T

while for all the higher speeds we have, very nearly at least, log. N=0.10 T

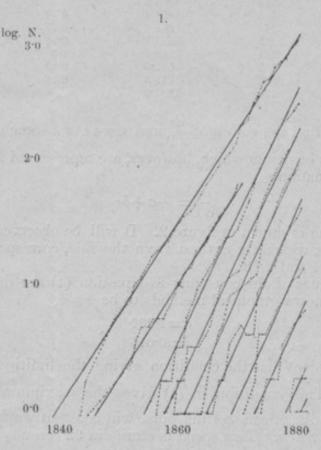
where for each line, T has its origin at the intersection of the line with the time axis. These lines are shown in figure 1.

It is evident by inspection that the values for 2.27 and 2.30 are incomplete, as the lines for 2.27 and 2.25 would cross at the year 1880, indicating that as many horses could make 2.25 or better as 2.27 or better. I have therefore thought it improper to use the data for the speeds 2.30 and 2.27 in the subsequent discussion.

Referring now to the lines which represent the other and higher speeds, it will be observed that the intersection of any line with the time axis, determines the date when for that speed, log N is zero or N is 1. In other words it gives us a calculated date when this speed may be supposed to have had its origin. To put the matter in language having no ref-

F. E. Nipher-Evolution of American Trotting Horse. 21

erence to real physical conditions, it determines the date when the amount of horseflesh capable of making this speed had



increased to one horse. It is clear that this date, based as it is upon all the succeeding values through a series of years, is much more reliable than the date when some accidentally occurring trotting match revealed the fact that the horse capable of making the speed had already come.

The dates for the origin of the 2:11 and 1:13 speeds cannot yet be determined very exactly, and in the following discussion this is to be borne in mind. The same holds true for speeds originating prior to 1840, and the additional consideration that the interest in breeding such animals was much less general then than now, the conditions of evolution being therefore different, has caused the rejection of such data for the present discussion.

The following table gives the calculated dates for the origin of the various speeds, where s represents the time required to trot a mile. In the third column the change in speed per annum is given, being calculated in a well known manner from alternate differences in the first two columns.

22 F. E. Nipher-Evolution of American Trotting Horse.

		as
8	date.	\overline{d} T
145	1854.0	
143	1857.4	0.57
141	1861.0	0.55
139	1864.7	0.50
137	1869.0	0.50
135	1872.6	0.43
133	1878.3	0.48
131	1881.0	

On plotting the values of $\frac{ds}{dT}$ and s, we get a somewhat irregular series of points which, however, are represented fairly well by the equation

$$\frac{ds}{dT} = -a + bs \tag{1}$$

This line is shown in figure 2. It will be observed that the two points, which are farthest from the line, correspond to the speeds 2:11 and 2:13.

The values of the constants in equation (1) are determined by well known graphical methods to be

It is evident that the condition giving the limiting speed is $\frac{ds}{dT}$ =0. This condition in (1) gives the maximum speed to which the American trotting horse will constantly approximate but never reach. This speed is a mile in 92 seconds or 1.32.

Equation (1) can be put into the form

$$\frac{ds}{s-L} = bdT \tag{2}$$

where L is the limiting speed or $\frac{a}{b}$.

This equation admits of direct integration as follows:

$$\int_{s}^{s} \frac{ds}{s - L} = \int_{T}^{T_{o}} dT$$

or performing the indicated operations

$$l(s-\mathbf{L}) = l(s_{\circ} - \mathbf{L}) + b\mathbf{T}_{\circ} - b\mathbf{T}$$

or putting the absolute term equal to A

$$l(s-L) = A - bT \tag{3}$$

or finally for the primitive function

$$s = L + e^{A - \delta T}$$
 (4)

where e is the Naperian base, and where A is the value of l(s-L) at any arbitrary zero in time, T being estimated in years from the same zero. The following table contains the common logarithms of s-L for the corresponding dates, and these two variables are also plotted in figure 2.

Year.	s-L	log (s-L)	T	(s-L) calc.	diff.	
1854.0	53	1.724	- 6.0	52.7	-0.3	
1857.4	51	1.706	- 2.6	50.8	-0.2	
1861.0	49	1.690	+ 1.0	48.9	-0.1	
1864.7	47	1.672	+ 4.7	47.0	0.0	
1869.0	45	1.653	+ 9.0	44.8	-0.1	
1872.6	43	1.633	+12.6	43.1	+0.1	
1878.3	41	1.613	+18.3	40.5	-0.5	
1881.0	39	1:591	+21.0	39.3	+0.3	
<u>ds</u> <u>dT</u>	_	7			log (S	-L)
0.6		1			1.70	
0.5		4	1		1.65	
				1		
133	135	137		141 143	S 1.60	

Estimating T from the year 1860 and taking common logarithms, we obtain, by graphical methods, from the plotted line

$$\log (s-L) = 1.694 - 0.0047T$$
 (5)

Substituting in this equation the values of T, and re-calculating the values of s—L as given in the fifth column of the table, it is seen that the greatest difference between the calculated and observed values of s, for any date of the table is half a second, which corresponds to an error of about a year in the date for a given speed. The differences in the final column show that a readjustment of the constants in eq. (5) would make the agreement better, but at present it is hardly worth the trouble, as the values would not be materially changed.

By making s-L=1 in (5) we have

or T=360 which is the number of years after 1860 when the

24 F. E. Nipher-Evolution of American Trotting Horse.

time of the trotting horse will be reduced to within one second

of the limiting value.

It will be understood of course that it is not claimed that the numerical values here determined are at all precise. In all probability the true value, L, is somewhat larger than 92 seconds, and may possibly be as great as 100. This value can probably be determined with considerable accuracy in the course of ten years. It is, however, quite clear that the limiting speeds of trotting and of running horses, can differ at most by only a very few seconds.

ART. X.—The Evolution of the American Trotting-Horse; by Francis E. Nipher.

SINCE my paper in the July number of this Journal was written, I have calculated the constants in the differential equation by mathematical methods, and have obtained a result differing slightly from that given in the July number. The most probable value for the minimum time of trotting a mile turns out to be 91 seconds, instead of 93 seconds as was obtained by graphical methods.

The final equation is.

$$\log (s-91) = 1.703 - 0.0046 \,\mathrm{T},$$

where s is the time (in seconds) of trotting a mile, and T is esti-

mated in years from 1860.

This equation does not give essentially different results from the former one, the only point of interest being in the new value for the limiting time. The probable error of this value is not over four seconds, and it is not likely that the running horse will beat his present record by five seconds, so that it is very probable that the trotter will finally surpass the running horse.

This conclusion does not rest solely on mathematical evidence. The trotter carries his body more steadily—with less of rise and fall—than the runner, and it seems very reasonable that this should result to the advantage of the trotter, when the process of developing and adjusting his muscles and chest shall have been sufficiently carried on, so that the contest between the two animals shall have been reduced to a matter of muscular capacity.

It is well known that some herds of wild horses on the Texas plains were natural pacers, and even when pushed to the utmost and for days together by the best running horses, they nearly all held their gait. One large white pacer became widely known and many attempts were made to capture him, but he proved more than a match for the best horses that could be

brought against him.

The record of the trotting-horse during the next ten years will enable us to determine the limiting speed with sufficient precision to settle the matter beyond question. It is even now evident that our good ancestors, who thought it wicked to run horses, builded more wisely than they knew when they began the evolution of the American trotting-horse.

THE AMERICAN TROTTING HORSE.

AFTERNOON SESSION.

The meeting was called to order at two o'clock, by Mr. Day.

The CHAIRMAN. I have been asked by several gentlemen, on looking over this programme with them, how a Professor in the Scientific School at New Haven could know anything about "the trotting horse." The gentleman is here to answer for himself, and when he gets through, you will know what he knows about the trotting horse.

THE AMERICAN TROTTING-HORSE; WHY HE IS AND WHAT HE IS.

By Professor Wm. H. Brewer, of Yale College.

The American trotting-horse is a very modern production. Our ancestors did not have the trotter, and what is more, did not want Why they did not want him and consequently did not have him, how it has come about that we do want him and consequently have produced him, why he has been made, how he has been made, and what he is made of, is my subject.

As my audience is a mixed one, and not one of professional breeders, I will say on the start that I do not purpose to discuss the special blood or pedigree of any particular trotter or strain of trotters; that is the subject of an abundant literature, and to be of any use needs closer study than is possible in a popular lecture. My aim is more especially to portray the influences which have led to our breeding the trotter and the rich results already attained. If I seem to ramble from the subject, remember that trotters themselves sometimes disappoint the spectators, and with lecturers as with trotters, they may start well, but break and fall behind on the course and win no record.

The horse has been an essential factor in our civilization. What kind of a civilization we might have attained without horses I cannot say, but this much is certain, it would not and could not have been anything like that we now have. Moreover, the higher the enlightenment of a people, the greater the variety of uses to which horses are applied, and the American trotting-horse is a special product of the highest civilization the world has yet seen.

The horse first appears in history in Egypt. Lenormant dates his introduction into that country at the time of the "Shepherd kings," about 2,200 B. C., say about 4,100 years ago. The ass and other domestic animals are figured on the monuments much earlier. Among the Assyrians he also appears after the other domestic animals, and it was some 500 years after Egyptian mention, and long after the ox, ass, sheep, and camel are spoken of that the first allusion to him occurs in the Old Testament scriptures, and the Hebrews probably did not use horses until Solomon's time. In Psalms the horse commonly appears only on the side of their enemies, and in a battle in the East, towards the Euphrates, where David captured the cavalry, he destroyed most of the horses, apparently because he could make no use of them (2 Saml. viii, 4). It was some three hundred years after Solomon's reign before the Greeks had cavalry; so historians tell us.

There are in existence a very large number of ancient representations of horses in statues, bas-reliefs, coins, engraved gems, and other works of art, so that we probably know pretty well what kind of an animal the horse of antiquity was. He was a small, strong, tough, muscular beast, but he was not a swift one in the modern sense. In a general way the relative fleetness and strength of different breeds of horses is indicated by their form, particularly by the angles which the bones of the legs form with those of the body. In those breeds noted for their fleetness the humerus forms a more acute angle with the shoulder-blade, and the femur with the pelvis and tibia than in those breeds more specially noted for their strength. This gives the latter heavier necks and shoulders, and more rounded buttocks than the swifter breeds have. This was the character of the horses of antiquity; this was the horse of ancient Greek art, and remains the horse of Art even to this day.

I have examined all the ancient representations of horses within my reach for many years, and they abundantly show that however fond the ancients may have been of racing, their horses would have stood no chance with the race-horses of to-day. There is a difference between these ancient horses and those of the modern course almost as great as the difference between an ancient Greek or Roman chariot and a modern trotting sulky. A large portion of the celebrated frieze of the Parthenon is in England (known better as the Elgin marbles), on which there are over two

hundred representations of horses. We have in the Art School of Yale College casts of the better portions of these bas-reliefs, and also other Greek representations of this animal. There are figures of twenty-eight horses, all date earlier than 300 B. C., and some are doubtless by Phydias himself, and represent the best days of Grecian art. They all represent small, tough, "wiry" breeds, all are dish-faced like the modern Oriental breeds, and all except one are roached. This is also essentially the character of the horses represented by ancient Egyptian, Assyrian, and Phœnician art. The art is often very rude, but the breeds represented are essen-

tially the same type.

Of more interest in this connection are the attitudes of these ancient animals. Of the more than 200 horses sculptured by Phidias on the famous frieze of the Parthenon, there is a great variety of attitudes, but not one is represented as trotting. Youatt, in speaking of these figures says (p. 211, Ed. 1831), "only four are represented trotting, and these are wrongly made in that both legs on the same side of the horse are raised at once." It seems to me much more probable that the old Greek sculptors were right; they studied their subjects faithfully and most probably intended to represent ambling (or as we say pacing) horses. The horses of ancient sculpture are almost universally in this attitude if not represented as rearing, galloping, or prancing. In the famous Cesnola collection in the Metropolitan Museum of Art in New York, the horses on the old sarcophagi, dating six or eight centuturies B. C., are all in pacing attitudes. In the Museum of Fine Arts in Boston, there are many Egyptian, Assyrian, Phœnician, Greek, and Roman representations of horses; none are trotting, but many are in ambling attitudes.

The same thing is shown on numerous coins and medallions to be found in collections. Modern artists have told us that this position which I have called the ambling attitude (the two legs of the same side moving together, or in the same relative position if at rest), was a mannerism of ancient art. In a sense this is doubtless true, because other animals are sometimes (not always) shown in the same attitude, but, it seems to me, that this very mannerism was founded on the fact that in those early times trotters were despised and ambling horses more or less used, and that the preferable animals were represented in art. When we remember that the ancients rode without stirrups, we need not wonder that they despised a trotter and preferred a well-rounded, broad-backed, galloping or ambling animal.

The horse of Art, from the earliest Egyptian and Assyrian sculptures down to the present century, was not a swift horse, like either the modern runner or trotter. However much the individual animals differed, or even the breeds differ, the most prized animals as a whole were strong rather than swift, heavy for their height, with heavy necks, broad chests, and the well-rounded buttocks we are all familiar with in the horses of art all down the ages, and which most artists still like to put in pictures or statues, but which we see in use chiefly hauling drays or express wagons. In that most popular of horse pictures, found in so many houses in the land, representing "Sheridan's Ride," doubtless made by an admirer of Greek Art, we see the gallant General mounted on the broadest of cart horses, going at a rate that would wind him in two miles, and leave him drooping before he was the half of the "twenty miles away."

The horse is especially susceptible to the influence of surrounding conditions. When horses become wild and live as wild animals do, they develop naturally into native breeds, as instance the wild horses of South America, the mustangs of Mexico, the wild ponies of the Falkland Islands, and numerous other examples that might be cited. In domestication, surrounded by the various conditions which the artificial life imposes, and in obedience to the varied wants, uses, fashions, and sentiments of society, new breeds are moulded into shape until there is a vast number of breeds in existence differing from each other more widely than do the breeds of any other domestic species except dogs. It is not uncommon to see draft-horses ten and sometimes even twenty times as heavy as some Shetland ponies, and they differ in their endurance, temper, and instincts as much as they do in size and shape. Nearly every region has breeds or at least strains of its own which have originated there, the special characteristics of which are in part owing to climate, soil, food, drink, or other natural conditions, and in part to man's directing care and his selection for particular qualities. Man's wants change, and what is of more importance in this connection, fashions change, and old breeds are modified or new ones made to meet the new wants or satisfy the new fashions. The breed of race-horses known as the English Thoroughbred was made in the last century in obedience to special conditions, part

natural and part social, and the trotter is another instance of this kind of evolution.

The American trotting-horse cannot yet be called a definite breed; it is rather a most instructive example of a breed in the process of formation, a new breed just being moulded into shape by a curious combination of influences. To trot fast has not heretcfore been natural to horses; we are in the act of making a breed in which it is the natural gait when at speed, and the next century will see a breed of trotters with two-minute horses as common as one minute fifty second runners now are. The breed is in process of evolution, in obedience to definite laws, to meet wants imposed by the new phases of our modern civilization.

Although applied to a great multitude of uses, down to a hundred years the horse has had its greatest value as an implement of war and of ceremony. All other uses were subordinate to these. For these he was doubtless brought into Egypt, for these Solomon imported horses, and Greece, and Spain, and England,—for these uses there are government establishments for breeding and improving horses in most European countries to day.

Until artillery and baggage-wagon trains accompanied armies, the war-horse was emphatically a horse for riding. Chariots were sometimes seen, but their use was but as a trifle compared with the great use of the horses, which was to carry a rider or to carry a burden—that is, riding horses and pack-horses. For this, the best animal is one not too large; it must have strength, endurance, intelligence, courage, and if for riding, a variety of gaits. This last is a most desirable quality, that the change of gait may be a relief to both horse and rider on long marches. Any one who has had to ride by the hundred leagues on a stretch knows what that is. With this, as well as with pack-horses, I have had a feeling, personal experience, having in one work ridden horse or mule over twelve thousand miles. This very week, an aged man, talking of his long business trips through the south sixty years ago, told me of an especially excellent horse "with four gaits."

The horse of war and the horse of ceremony remained for ages essentially a *riding-horse*. For this use certain Oriental breeds have been noted from ancient time—the Persian, Arabian, Turkish, and the Barb—and their blood is mingled in various modern breeds, still constituting the best riding horses in the world.

Besides their physical characters, their dispositions and instincts

especially fit them for companionship with man. Between the driver sitting in a wagon and the beast which hauls it along the road there can be no such companionship and sympathy as between the rider and his horse. Each feels the every motion of the other; each knows the other's thought; the two seem as but one creature, with a single brain and a single purpose. The centaur is a creature of the poet's imagination, but it comes very near a reality.

What an important role the riding-horse has played in the history of mankind can only be appreciated by a study of horses along with the nations. Take, for example, the history of Mohammedanism. Mohammed and his followers swept wherever the Arabian horse and his armed rider could tread, and no further. Other peoples had pushed their conquests by sea as well as by land; but by the horse and on the horse the Mohammedan conquests were made; the horse was the real standard-bearer of the crescent, and where the Oriental war-horse was stopped the spread of Mohammedanism was stayed.

The Moors went through Spain on their Barb horses, and when they were driven back, after several centuries of occupation, it was the men, not the horses, that went back. Their blood remained, and made the Spanish horse the most noted of Europe, and what part they played in the wars of the times is the theme of many a Spanish ballad. When the Spanish horse was at its best, then Spain was at her height among nations; and as her horses declined, her glory waned.

The Spanish adventurers brought their horses to America, and what part they played in the conquest of Peru and Mexico forms one of the most picturesque features of those cruel days. Those Spanish horses were the progenitors of the wild and half wild breeds which later spread from Patagonia and the plains of the Plata on the South to the West Indies on the east, and the valleys of California on the north. The native Californian horses to this day show traces of their Barb origin through all the changes of form and vicissitudes of fortune, and of their riding qualities I have a vivid recollection of some thousands of miles upon them.

From Mexico the Indians of the plains derived their horses. In earlier days dogs were the only beasts of burden with which the feeble tribes followed the buffalo in its migrations. The old Catholic Fathers have told us what the Indians then were.

Volney, an educated Frenchman, who made a trip in the far West in 1795 to 1798, has told us what they were even then. He compared those western plains to Tartary, which he had also visited, and says "the likeness would be completed could we see its natives metamorphosed into horsemen," and adds that "this transformation has begun to take place within the last twenty-five or thirty years" among the Sioux, who were beginning to be mounted on Spanish horses derived from Mexico, and he prophecies that "in half a century more these new Tartars will probably become formidable neighbors, and the settlers beyond the Mississippi will encounter difficulties totally unknown to their ancestors." (Volney's View, p. 24.) We know all too well how this prediction has been fulfilled. With only dogs and buffalo the tribes were feeble and little to be feared; but with horses they became a new people—the Arabs of America, and the most formidable foe that European civilization has met with in her western march.

The Spanish horses were carried to England to improve her breed of war-horses, and were an important element in the rise of British power. And they went to Holland, and France; and wherever they went they helped increase national power and national wealth.

But remember all this is about a horse to ride; a horse that would walk when in no hurry, or trot, amble, rack, or canter on the march to relieve his own or his rider's tired muscles, or on the run sweep down on the place of the enemy like a whirlwind, and then retreat as swiftly should that be necessary.

Only a running-horse is fit for such work. Try to imagine an Indian raid or an Arab foray on trotting-horses; the very idea strikes one as ludicrous.

Even in Europe the want was essentially the same. With the use of heavy armor in the Middle Ages a heavier animal was needed; yet he was a *charger*, a prancing, galloping steed. Imagine a crusader of old, clad in steel, rattling to the charge on a trotter; the suggestion provokes merriment.

Even in later times, when artillery and wagon-trains became a part of armies, the want was essentially the same; the heavy horse of the dragoon was fit for the gun-carriage or the baggage-wagon.

It was the war horse that stood as the representative of his species from the days when Job's horse snuffed the battle from afar down through the days of Greek, Persian, and Roman history,

1.40

down through the middle ages, down past the wars of Napoleon, and until the locomotive began to draw armies to the battle-field. The horse for war, the running horse, has remained in the lead in all those countries where the road to greatness has been by war. It needed a country wooing the arts of peace and seeking greatness by industry rather than by conquest to produce the trotter.

In times of peace heretofore he has figured in the ceremonies and as an index of rank, or with the rich as an implement of sport or an element of luxury.

In agriculture, and as a common beast of burden he played but a minor part until within the present century, and his little part there was a sorry one. A papyrus in the British Museum tells us what a miserable lot it was in Egypt a generation before Moses wrote, and it did not change much for the better for nearly thirtythree centuries. But with the improvement in roads and the use of wagons he had a growing importance as a beast of draught, yet this did not need fast trotters until new conditions should arise, which will be noticed further on.

Fashion and sentiments in society have always been an important factor in producing breeds of improved horses, and determining the direction the improvement should take.

From the time when an ordinary Roman citizen was forbidden to use white horses (and doubtless much earlier than this) there has been a social factor entering into every problem of horse raising. What colored horses might be used by persons of this rank and of that, who might hunt on horseback and who might do it only on foot, indeed who might ride at all, and who not, have been the subject of numerous laws during all the previous centuries, and exist still in some lands not enlightened by Christianity and not possessing the modern trotter.

In all ages the use or possession of the horse has been, in one way or another, an emblem of social position with pagan, Mohamedan, Jew, and Christian alike. Even now, and in this free country, a carriage and horses means more than the convenience of getting about, and many a carriage and span in front of our churches on Sundays means much more than the convenience of it in getting there. We are told that an enthusiast went to Mentor soon after the election of Mr. Garfield to the Presidency, to urge upon him to walk to church rather than to go in his carriage. The newspapers spoke of this social enthusiast and reformer as a bore; he

was more probably a philosopher. No, a carriage and horses mean much. I say **Rorses*, for I know people, good Christian people, in my own city, who can ride to the store or to market behind one horse on week days, but on Sundays they would rather go to church on foot, or even stay at home, than go with one horse. They have a traditional feeling that their social position requires that they worship with two horses. We see an evidence of this former sentiment regarding the dignity of a span, as contrasted with a single animal, in the use of the phrase "one-horse affair," applied to anything contemptibly small.

In many countries political and social rank has been related to the possession of horses, and it is still the case in some countries. Fashions, sentiments, the customs of the wealthy, or the aristocratic classes in society (where there is an aristocracy), are the really controlling influences as to what kinds of horses are the desirable and high-priced ones raised in times of peace, and as the relative value of the war horse has declined, new breeds have to be made, or old traits developed in new directions, to meet the new fashions. Fast trotters could never be developed until we had a class of influential people, with whom it was fashionable to drive one horse before a light carriage. That class arose in this country; it does not exist even yet in many countries.

Incidental to the riding habits in the middle ages, there were many fashionable sports that depended upon horses and skill in horsemanship, some of which still survive. For none of these was the trotter suited. Try to imagine gay cavaliers riding in the tournament, and plucking the ring on trotters. Such a thing would be indescribably comic.

In those days when horsemanship meant so much, and was so much interwoven with social usages and sentiments, when the equery of the king ranked with the prime minister, when princes and nobles vied with each other in the extent and magnificence of their riding schools, when the riding school and menage was the place of most fashionable resort, there arose an immense horse literature. Some of you know what a fancy I have for old horse literature, and have seen the large collection of old and curious books I have pertaining to horses, written long ago, the oldest printed more than 350 years ago; well, I have not read them all, I will admit, but I have read very much of this literature, and scarcely anywhere do I find a good word for a horse that trots.

Some writers, like the old Duke of Newcastle, prefer a natural trotter to a pacer, but merely because "A Trot is the foundation of a Gallop;" while "An Amble being a Shuffling Action, I would have it Banish't the Mennage" (A New Method, etc., p. 153, London, 1667): but nearly all the old writers dismissed the trot with a few words, but devoted much to the amble. In fact, the trot is usually spoken of with positive contempt. In an old French ballad, "Le lai du Trot," it is said that those ladies who are kind to their husbands in this world, in the next may ride on beautiful ambling palfreys, but those women who are wicked in this world, in the next will have to ride trotting nags. This but illustrates the esteem in which the trotter was held.

I will not here discuss the nature of the various gaits of the horse, further than to say that in the middle ages, and doubtless much earlier, in addition to those assumed by horses naturally, there were many artificial gaits taught. There is an enormous literature relating to this. But the fashion has all passed away. As ambling was then so much more valuable than trotting, it was bred to, and there is abundant evidence that natural pacers were common, but when not natural the gait was taught.

As the canter, gallop, run, and amble were the gaits for the saddle, so the trot is the gait for the carriage, and consequently the history of the trotter is also related to that of carriages.

Chariots and wheeled vehicles of some kind have been used to some extent from the day of the Pharaohs, but in the form and shape in which we know them, they are rather modern. Coaches came into use in England in the time of Queen Elizabeth (there had been whirlicotes and various vehicles in slight use, from time to time, earlier than that), but, until long after, most traveling was on horseback. The roads, compared with those of to-day, were bad, and coaches were heavy. When King George II died in 1760, the Lord Chamberlain, the Duke of Devonshire, arrived in town in three days, having traveled at the "prodigious rate of fifty miles a day," the historian tells us. What need for a fast roadster then, or for any time previous from the dawn of history? No, the fast trotter would have found no place then; if he had existed he would probably have been neglected and become extinct.

Four-wheeled vehicles are now so numerous and universally used that we are apt to forget how very modern their common use is. The first stage route between New York and Boston was not

established until considerably more than a century after the settlement of both colonies. Lady Murray introduced the first private coach into New York about 1745, but they were scarce until some time after the Revolutionary War, and were unpopular as signs of aristocracy, and carriages were taxed as luxuries in the early days of the Republic.

The roads were unfitted to fast traveling until long after the Revolution. The Declaration of Independence of July 4th, 1776, was received at Washington's head-quarters in New York city, and at the Provincial Assembly, at White Plains, on July 9th, five days on the way, and that not considered as long for the times as five hours would be now. It took about as long for the news of the battle of Lexington to reach New York city. What need then, with such roads, for fast trotters? Now that the distance is made in a few hours by steam, we need the trotters to carry us to the station.

The greatest use of trotters is for light wagons, but these in their present form are still more modern. I have made many inquiries about this matter both in this State and in New York, the regions where the trotter originated. Moreover, my present home, New Haven, is one celebrated the world over for its manufactures of light carriages, so I think my information pertaining to this is sound. Down to the present century one-horse vehicles were usually two-wheeled, and even these not abundant, and were heavy. The present buggy with steel springs began to be used between 1820 and 1830, but they were so scarce and rare until about 1840 as to attract notice when on the street. I well remember the first one I saw, and it was eyed with curiosity.

I have carefully examined the advertisements pertaining to wheeled vehicles in the Connecticut papers of the last quarter of the last and the first quarter of this century. Steel springs of some kind were used early. In the Connecticut Journal, October 28, 1798, Jonathan Mix of New Haven advertises a chaise with steel springs, and in 1807 coaches and chaises with steel springs, and a "steel spring sulky," but they were uncommon, and not of the form used now under buggies.

Among the many formal statements made to me pertaining to this matter, I will cite only a few. An aged citizen, born in the last century, says that in his early boyhood there was but one four-wheeled wagon in his neighborhood (in Ridgefield), that

£.6x

ox-carts were used for farm work, and chaises and gigs were used on the roads, but these were not abundant, very nearly all the travel being on horseback. About 1815 or 1820, wagons became somewhat common, and about 1830, light four-wheeled wagons ceased to be rare, but that they were usually without springs.

An aged citizen in Hartford county, a "teamster" in his boyhood, says that in his youth all the wagons were two or fourhorse, and used for teaming; they were rare on the farms; that there were two chaises in his town (Simsbury), one of which belonged to the doctor, but there were no one-horse wagons until later, and the first was without springs. He first saw a light onehorse wagon with steel springs about 1828 or 1830, and in 1840 he bought one. An aged citizen of Bridgeport says that buggies did not come into common use there until after 1840. Another aged citizen near Mount Carmel told me some years ago that the first one-horse wagon of any kind in his town was introduced by his father about 1825; it had the body down on the axle, and had wooden springs under the seat. This sort of wagon appears to have been very popular, and many were used between 1815 and 1830, both in Connecticut and in New York. In eastern New York, along the Hudson river, I have had many accounts of them.

An aged citizen in Branford told me that in 1808 there were but two chaises in that town (one with and the other without a top), and that the first buggy with steel springs was introduced about 1825 or 1826, and that his father got the second in 1830, but by 1840 there were several. A newspaper account says that the first spring wagon built in Branford was in 1835. A citizen of Ledyard told me that the first buggy was brought into that town in 1840 or 1841, but that six were brought in there within a year. A citizen of Groton tells me that the first buggy he saw in that town was in 1841, but that then they came in very rapidly. This very day, talking with an aged and well known citizen of this place (Rockville) on this matter, he told me that he went as apprentice to the wagon-making business sixty-one years ago; that then light wagons were not common, and what they had were with the bodies down upon the axles, with wooden springs under the seat; that he bought a pair of elliptic steel springs, in either 1827 or 1828, for a wagon he built; that it was ten years later before they came into common use. Several carriage builders of New Haven have told me that light buggies with springs only became common about 1840 to 1843.

I have been thus particular, perhaps tedious in these details, because of their close connection with trotting events. The introduction of light one-horse wagons with steel springs is coincident with the formation of the first organizations for the breeding, training, and speeding of trotters, and such wagons only began to be common just at the time when we had developed the first 2.30 trotters. Fast trotters had to develop in a country where there was a passion and taste for the animal, and something to make a trotting sulky of, and America is the native land of the hickory as it is of the trotter. Without hickory to make our wheels of, could we have trotters with such low records as we now have? The development of trotters and of vehicles have gone on together; we did not need the fast trotter for driving, until we had suitable wagons. Without springs, no roughness escaped the traveler. My father had one of these so-called light wagons, with the box down upon the axle, and he had a mare he thought would trot a mile in three minutes. One of the most vivid recollections of my childhood is of that mare before that wagon, and a bit of corduroy road near the old home. But that was the common experience of all, and as it had been from the beginning of carriages. How often I have looked and wondered at the pictures of the ancients in their chariots. A Roman Emperor in his triumphal chariot in all his pride and glory must have been riding about as comfortably as he would have been in a modern ox cart. There was some mitigation by cushions, but no one traveled for pleasure with light carriages until steel springs came, and until then there was no need and no place for fast trotters.

And yet trotting attracted attention much earlier than that in this part of the country. I am by no means clear as to why this fancy, for fancy it was, should spring up here, but from all I can learn, it had its origin in New England and in eastern New York.

The American horse, as he was the last part of the last century, sprung from a number of sources. Over the whole of South America, the West Indies, and Mexico, it was of Spanish origin. Sir Walter Raleigh, already in his time, said that the horses of the West Indies were as fine as any he had ever seen. But in the United States the origin was more composite. Horses had been brought mostly from England, France, and Holland, a few from Sweden and from Spain, and Frank Forester has argued, from the build of some, that there must have been importations from Ireland.

The French stock went mostly to Canada, and from that province their blood filtered down into New England and New York.

Blood from these various sources mingled and gave rise to local breeds or sorts, differing somewhat in different localities, partly because of differences of the imported blood, partly from the natural conditions of the region, and partly from the breeding. One type formed in Canada, another in Vermont, and in Rhode Island we had the famous Narragansett pacers, one of the few pacing breeds of which we have knowledge. We have had many pacing horses, but they have not been spoken of as breeds. This is reported to have sprung from horses imported by Governor Robinson from Andalusia, in Spain, crossed on the native stock of the State. There is frequent mention of it during the last century, but the breed (if indeed it can be called a breed) has long since run out by crossing; no one seems to have cared enough for it to keep it up and improve it. It died out as the taste for trotters grew. The breed ran out much as the Morgan breed did, by out-crossing.

It is only in recent times that the efforts to improve live stock have been chiefly by keeping the blood pure. Down to very lately the common method of improving the stock of a country has been by crossing it with something else.

The almost universal testimony of writers who visited this country before the present century, is that the horses degenerated in size. This is not the place to discuss all the reasons for this, but the fact is undoubted; but if they lost in size, the testimony is equally strong that they gained in hardiness and endurance.

After the War of Independence, under a better condition of things, pastures became better, roads better, there was more wealth, more travel, and with all this a demand for better horses. The English Thoroughbred, the best race horse in the world, was then more abundantly brought in, partly for racing purposes and partly for the general improvement of horse stock, and this blood, crossed on the hardy native stock spoken of, has been the source of nearly all the best roadsters of the country, and is emphatically the source, so far as blood is concerned, of nearly all the improvement of the last ninety years.

For some cause the trotting gait became popular in this State in the last century (a similar taste sprung up in a part of Russia about the same time, and the Orloff trotter is the result). A few years ago I looked through the files of the *Connecticut Journal* (published in New Haven), from the war of the Revolution down to 1817, column by column, advertisements and all, and noted every item pertaining to live stock. I tabulated certain facts pertaining to horses several different years between 1787 and 1802, height, colors, foot marking, gaits, etc., of all the stallions, horses for sale, strayed, stolen, etc. Some of the data may interest you.

Thus, in 1787-1789, of seventy-eight horses advertised (ten of them stallions), the height of forty were given; only two of them were above fifteen hands, and the average height of all was fourteen hands; bay was the most common color, black next. next two years, of twenty-nine horses, ten were black; the average height of the twelve whose height was given, was thirteen hands three inches, and so on. In describing horses, the gait was often given. In the four years, 1788 to 1791 inclusive, the gaits of seventy-five are stated. Of these we have "natural trotter," twenty-seven; "trots all," "natural to a trot," "trots well," "fast trotter," "trots and canters," and "square trotter," fifteen; total trotters, forty-two of the seventy-five. There are fourteen "natural pacers," six "trot and pace," or "trot, pace, and canter," the others have varied or mixed gaits. In 1796 and 1797, of thirty-five horses whose gaits were stated, twenty-six were described as trotters; two as pacers; and seven both trot and pace. In 1802-1804, of sixty-nine horses thus described, fifty-four were natural trotters; five were natural pacers, and ten both trot and pace. A writer in Wallace's Monthly, July, 1879, p. 425, has noted that in the Connecticut Courant, published at Hartford, various Dutch horses, 1765, 1798, etc., are described as trotters.

A stallion called "Game Leg" was advertised in the Connecticut Journal of April 30, 1788, by William Fowler of North Guilford, and described as seven years old, bright chestnut, and "supposed to be the swiftest trotter in Guilford." This is the earliest "trotting stallion" that I know of. There are many indications that as early as the close of the Revolutionary War, there was considerable attention paid to trotting-horses in Connecticut and New York, and perhaps also the other States north of Philadelphia.

Horses were extensively bought for shipment to the West Indies, New Haven being an important port of shipment. The animals were brought here from the interior of the State, and from the adjoining States. I now live in a house built by one of the horse-shippers of a previous generation, and the large barns

£.8x

and stables where the animals were stored before sailing disappeared before the march of city improvement but a very few years ago. Numerous advertisements show what kinds of horses were "A number of pacing horses wanted immediately." wanted. "Wanted, a few natural PACERS." "Cash will be paid for some pacing horses." "Wanted, a number of sprightly shipping horses, in good order, proper for the French market" (French market meaning the French West Indies). "Wanted, thirty likely young pacing horses." "Wanted, forty-five good shipping horses for the W. I.; pacers preferred," etc., etc. Such was the common run of advertisements during the last years of the last century; sometimes trotters were asked for, this want becoming more frequent after the beginning of the present century. Thus, in 1802, are advertisements: "Wanted, a number of pacing and trotting horses, for shipping." "Wanted, likely young horses, smooth pacers or single-footed trotters will suit best." "Wanted immediately! a number of likely young horses, for which cash will be paid. They must be from thirteen to fourteen hands high, stout, thickset, and all square trotters; bay, sorrel, chestnut, and grey colors, without any white feet." "Wanted, a number of trotting and pacing horses for the French market," etc., etc. While pacers are more often spoken of as wanted, yet from time to time there are wanted "trotters suitable for the French market." I have a strong suspicion that a sort of fancy for trotters had also sprung up in the French West Indies, and that our thrifty Connecticut Yankees were quick to see the profit in breeding them.

When trotting on the course began I do not know, but the first definite notice of such that I am acquainted with is the following, which I copy from the *Connecticut Journal*, New Haven, June 19th, 1806:

"Fast Trotting. — Yesterday Afternoon the Haerlem Race Course of one mile's distance, was trotted around in two minutes and fifty-nine seconds, by a Horse called Yankey, from New-Haven, a rate of Speed, it is believed, never before excelled in this Country.—N. Y. Spect."

This is twelve years earlier than the date given by Frank Forester as the beginning of trotting for money, and this brings me to a phase of the subject I have not before even alluded to, but which is by far the most interesting for scientific study.

It is as an instrument of gambling and of sport that the trotter

has most scientific interest, because here we have the fullest details, the most abundant records, and the most exact data. The interests involved are so large, so many of the best trotters are devoted to it, so many persons are interested, so many thousands, even millions, are staked, won, or spent upon it every year, the records of success and failure are kept with such careful labor and accuracy, and the pedigrees of the winners studied and investigated with such care, that it constitutes one of the most interesting studies in biology. To trot fast has not heretofore been natural to horses; we are making it so by training and heredity, demonstrating the heredity of education and acquired habits and characters, and the records of the turf are the chief data we have for an exact and scientific study of the history and progress of the work.

The English Thoroughbred is a running horse; for this he has been bred and developed. He is very rarely indeed, a fast trotter, and usually does not trot willingly. But he has the general form for a swift horse, and those mental qualities and instincts which specially fit him for the course, and the breed of trotters that is now forming is made out of a cross between this noted breed and the common stock of the country, said "common stock" being a mongrel mixture from various original sources, as has been already pointed out.

A new breed of animals is never made by crossing two, and only two, distinct breeds, and preserving the better qualities of both. I am not aware that there is any such case on record among all of the countless breeds of our domestic animals. But new breeds are often made of several original breeds by a selection from the mongrel progeny. Numerous examples of this can be cited. Also, by the use of one specially improved breed on the mongrel stock of several mingled breeds. We have several examples of this also (particularly among sheep), and the trotter belongs to this category, so far as he constitutes a breed.

Some thoroughbreds have shown a special aptitude to beget trotters when crossed on this common stock. Prominent among these stands *Messenger*, who was imported about 1788, and was the sire of a numerous progeny, and he is believed to have exerted a greater influence on the trotters of to-day than any other one animal, but this has been the subject of so much talk and writing, I will not follow it any further than to say that I have no doubt of the truth of the general fact.

There was little horse-racing in early times in the northern colonies. The colonists who settled along the coast from Delaware Bay to the Bay of Fundy were largely religious enthusiasts, who had little sympathy with this sport. In the Old World they had mostly belonged to the middle class of society, the producing class, the thrifty class. In the minds of English Puritan, French Huguenot, Dutch Walloon, and Scotch Presbyterian alike, horse-racing was associated with aristocratic privileges and unthrifty ways, if not with the worse objection of immorality. It was among this stock that the love of trotting began. The trotter could never have originated south of Mason and Dixon's line, where horse-racing was more popular, nor indeed in any country where horse-racing was a fashionable sport with the better class of society. The taste had to arise where running was under a cloud.

After the Revolutionary War, during the last years of the last century and the first years of this, a considerable number of English thoroughbreds were imported, both for running and for improving the horse stock of the country by crossing. Horse-racing rapidly grew in favor, particularly in the Middle States, as we had an increasing number of men who could afford to indulge in the luxury.

But old prejudices remained, a strong reaction took place, and the sentiment against horse-racing became so powerful that most, if not all, of the Northern States passed stringent laws against it, with heavy penalties of fines or imprisonment. As an illustration of the sweeping prohibition attempted, I will quote from the laws passed in Pennsylvania about 1820, which not only forbade horseracing itself, but also forbade even to "print, or cause to be printed, set up, or cause to be set up, any advertisement mentioning the time and place for the running, pacing, or trotting of any horses, mares, or geldings, or shall knowingly suffer any advertisement, as aforesaid, to be set up in or upon his or her or their dwelling-house," etc., etc. A law similar in character existed on the statute books of this State until three years ago, when it was repealed. The effect of these laws was to discourage the importation of thoroughbreds, and Frank Forester states that, as a consequence, there were fewer in the country in 1850 than in 1820.

There was some racing in most of the States (less in Connecticut, and consequently her horse interests declined) in spite of hostile laws, but the sport was under a cloud, and trotting apparently

came in to supply its place. I am inclined to believe that the desire to see a horse go at its best speed is an instinct with our race, and means will be found to indulge it, even under the most hostile laws.

Frank Forester says that trotting for money began in 1818, and grew out of a jockey-club dinner at which Maj. Jones, of Long Island bet Col. Bond, of Maryland, \$1,000 that "no horse could be produced that could trot a mile in three minutes." There was much side betting, and the odds against it were immense. But Boston Blue won handsomely, and Maj. Jones lost his thousand dollars. This trot made much talk at the time, and an account says that this wonderful horse, which could trot a mile in three minutes, was taken to England to exhibit there. This was a trot against time, but time had been taken earlier. I have alluded to the trot of Yankey in 1806, and the London Sporting Magazine of October, 1810, is cited as having a letter that tells of a trot in August of that year, in which "a chestnut horse from Boston" trotted to a sulky one mile in 2.481, for \$600. Doubtless there was occasional trotting, just as there were other queer races, just as we hear of a hog-race, and a goose-race; but trotting as a sport may be said to have fairly begun between 1815 and 1830, and they were frequent enough before 1820 to be specially mentioned in prohibitory statutes. Under the repression of hostile laws against races other means were taken to gratify the instinctive pleasure of seeing horses get over the ground swiftly. A race, as then understood, was a contest between two or more horses, to see which could run the fastest, as it is still in most countries. Men did not dream of a race being run by one of anything, be it in a horse-race, boat-race, or foot-race. Moreover, in those times horse-racing meant horses running. So when horse-racing was a crime punishable by fine and imprisonment, the good, law-abiding citizen who owned a good trotter and who instinctively yearned for the pleasure of seeing a spirited horse in action, would not run him, nor race him, he merely "trained" him, and had an occasional "trial of speed," in which he could hold his watch and see how long it took his horse to trot a given distance, and the "timing" of trots became common long before the system of records was established.

New York had passed "An Act to prevent Horse-racing," March 19, 1802, which was amended March 30, 1821, by which it

was enacted "that from and after the passage of this act, the training, pacing, trotting, and running of horses upon regulated courses and upon private property in the county of Queens, is hereby declared to be exempted and free for five years from the provisions and penalties of an Act entitled an Act to prevent Horse-racing," etc. (Revised Statutes, N. Y., Ed. 1836, III, p. 282.) The races were allowed only in the months of May and October, and Section III provided that the sheriff of the county should be on hand at these "trials of speed" (as the statute calls them) to see that all was conducted in a way conducive to good morality. When this amendment expired by limitation, it was re-enacted, April 3, 1826, extending the privilege for ten years, and until March 30, 1837 (ib., p. 283), and in 1834 another amendment allowed "the trials of speed authorized by law in the County of Queens" to take place between the first day of April and the fifteenth day of June, and between the first day of September and the fifteenth day of November of each year. It is only just to say that "trials of speed" were finally declared by statute to be horse-racing and liable to the penalties thereof unless exempted by special act.

I have been thus particular in giving these dates, because it marks an epoch in the history of trotting. It is the beginning of organizations for the special improvement of trotting-horses, although the provisions nominally extended to pacing and running also.

The New York Trotting Club was organized in 1825, with a view of improving the speed of road-horses, as the old racing-clubs and jockey-clubs had been to improve riding-horses. Their course was near Jamaica, L. I., about a mile from the old Union course, and was probably the first trotting-course in the world. The Hunting Park Association was formed at Philadelphia in February, 1828, and the next year measures were begun for a trotting club at Baltimore, and then organizations spread rapidly. The American Turf Register began in 1829, and recorded the trots, and by this time, or certainly by 1830, trotting may be said to have become an established sport, rapidly increasing in popularity. There was for a time a feeling with many that it was a sort of rustic sport, fit for the masses, as running had been for the wealthier classes. But that very thing, that it was adopted by the masses, was a great gain in the end.

By this time the names of a score or two of horses became well known to the public as trotters, many of the names as plebeian as the sport was held to be. We hear of Betsey Baker, Bowery Boy, Bull Calf, Burster, Ephriam Smooth, Jerry, Jersey Kate, Paul Pry, Rattler, Rob Roy, Sally Miller, Screwdriver, Top Gallant, Whalebone, and a score of others, now this one to the front and then that. Top Gallant (foaled about 1806) was perhaps the most popular horse of his day. He does not appear to have won much nor often, yet, like some politicians, he preserved his popularity for all of that, and his time, 2.40 (although beaten the same year by the Treadwell mare), was the slang phrase for speed for twenty years later. He lived to a good old age (as so many trotters have done), and it was claimed that when nineteen years old he could still trot in 2.45 with a man weighing 150 pounds on his back (Am. Turf Register, Nov., 1829, p. 122). In 1832 Burster trotted in 2.32, and then became affectionately known as "Old Buster." Next came Edwin Forrest, who lowered the time to 2.31 on the Centerville course, L. I., May 9, 1834. This track was too long; if allowance be made for this, the time for an actual mile was nearly a second better; but as it was it took nine years more to beat it, when Lady Suffolk lowered the record to below 2.30.

I have used, for convenience, only the mile records. Were we to consider all the performances, the best horses and the best records would not coincide with my list. In those early days most of the trots were for distances greater than one mile, usually for two, three, or four miles, often longer, and moreover, before 1840, most of the trotting was under saddle, while now it is mostly in harness. The time came to be more and more carefully kept, and thus "records" became an established feature.

As this is a distinctive American custom, and began with the trotters, I will notice it more fully. Records are not kept in England, and because they are not, we cannot study the development of the race-horse as we can that of the trotter. I have already shown how speed was noted by timing; later specific rules were established, and now a word of explanation to the innocent as to what a "record" at present means.

The laws of sporting are very exact, the code is planned with more care, deliberation, and wisdom than most of our national and state laws are, and in the racing code of this country any contest

for a purse, premium, prize, stake, or wager, on any course, and in the presence of a judge or judges, constitutes a public race. The time made by the winner is a "record." There is no record unless the horse wins, so a list of records does not tell how fast some of the horses may have trotted; they may have done better than their record, and not winning, get no credit for it. Or a horse may trot never so fast, and if there is no money or prize won that is no record. To illustrate-Dexter made his record of 2.17 at Buffalo, Aug. 14, 1867, by winning. But in June of the same year, with Ethan Allen as a running mate, he was timed a mile in 2.16. This is well authenticated, but is no "record." Again, Edwin Forrest in August, 1878, at Hartford (the day of a great feat by Rarus, and I dare say several of my hearers were present), trotted a mile in 2.141. There were many thousands of spectators, judges in position, the time as carefully noted as in any race in the world, another horse trotted with him to encourage him, yet his time made was no "record," because there was no "purse, premium, prize, stake, or wager" involved. It was a mere exhibition. Consequently, the story of the trotting horse is much better in fact than can be shown by any table of records. But as these are the only exact and well authenticated data we have. I use them, and because of the uncertainty of many alleged times which are not records, I must ignore all such in this discussion.

Records only dropped below 2.30 in 1843, in which year Lady Suffolk (and Beppo?) trotted in 2.28, but it had often been claimed to have been made before. It was claimed that Bull Calf did it when six years old (American Turf Register, Jan., 1830, p. 257), and several horses had trotted one mile of a longer race, in less than 2.30. Dutchman, in a match against time on the Beacon Course, Aug. 1st, 1839, made the second mile of a three mile race in 2.28. His record of 7.321 for the three miles, under saddle, made at that race, still remains the best of its kind. 3-mile heats under saddle having long since become very rare. But times, even when not records, were valued for driving purposes quite early. A note by the editor of the Am. Turf Register, June, 1830, p. 483, says that in New York or Philadelphia a horse is so commonly estimated by his performance at trotting, that "if you ask an ignorant stable boy 'what sort of a horse is that,' he will answer, 'well, I guess he's a three or a three and a half,' meaning so many minutes, and seconds for a mile." The American Turf Register was established in 1829, and with that, records in our present form may be said to have begun, although the "Trotting Record: containing a list of all published performances in which any heat was trotted in 2.40 or less from the earliest dates," in Wallace's American Trotting Register, I, p. 325 to 468, I think, cites no records earlier than 1830 as worthy a place there.

Just as records became an established fact, light steel-spring wagons began to be made, and between 1835 and 1845, driving to light carriages became exceedingly fashionable, particularly about New York. Several European travelers of that time speak of it as a curious fashion, and being unknown in England, they did not speak of it usually with admiration. The old prejudices against trotting lingered, and a writer in The London (New) Sporting Magazine for July, 1839, speaking of sporting in the United States, where "trotting is the order of the day," says "our cousins on the other side of the salt water are mad in the encouragement of that nasty, awkward, ugly, Chelsea-water-works-style of action which characterizes the fast trotter." He allows, however, that "there is method in the madness," and that the best trotters bring big prices.

Although I have brought the history down to the time when there was only one (or two?) record in the world of 2.30, the story is nearly told. A famous capitalist is reported to have said that it was easier to make a thousand dollars out of one than one out of nothing. It appears to have been just so with trotters. It took from 2200 B. C. to after A. D. 1800 to produce one three-minute trotter,—many thousands have been produced since.

I invite your attention now, specially to the two tables I have hanging on the wall. The first is a *Table of Best Records* (see p. 228), showing progress in the rate of speed, from Yankey in 1806, to Maud S. in 1881, the earlier ones on the list, it must be understood, not being authenticated records in the sense that term is now used.

238		BOA	RD OF	AGRIC	ULTURE.		[Jan.,
		Тав	LE OF	BEST I	RECORDS.		
1806.	Yankey,						2.59
1810.	A horse fr	om Bo	ston,				2.581
1818.	Boston Blu						3.00
1824.	Top Gallar	ıt,					2.40
1824.	The Tread	well M	are,				2.34
1830.	Burster,						2.32
1834.	Edwin For	rrest,	-				2.311
1843.	Lady Suffe	olk,					2.28
1844.	Lady Suffe	olk,	-				$2.26\frac{1}{2}$
1852.	Tacony,						2.26
1853.	Tacony,						2.251
1856.	Flora Tem	ple,					2.241
1859.	Flora Tem	ple,					2.193
1865.	Dexter,						2.181
1866.	Dexter,						2.18
1867.	Dexter,						2.171
1871.	Goldsmith	Maid,					2.17
1872.	Goldsmith	Maid,					2.163
1874.	Goldsmith	Maid,					2.14
1878.	Rarus,						2.131
1879.	St. Julien,						2.123
1880.	Maud S.,						2.103
1881.	Maud S.,						2.101

The following "Table; showing number of horses, with their records," (page 240) shows at a glance the number of fast trotters which have trotted with the several records since 1843, when we first began to have a 2.30 class. In explanation of this table, I will say that from 1873 on, I have used the figures given by others, only the arrangement and collation is mine. For the figures from 1843 to 1871 inclusive, I am responsible. The first list of 2.30 horses known to me, appeared in The Turf, Field, and Farm, vol. XVI, p. 117 (February 21, 1873). A writer over the signature of "Ajax" published a list of 323 names, with their best records, arranged in the order of the records. This list must have cost him much labor, but being the first of its kind, and from the intrinsic difficulties of the case, it was very imperfect, so much so that I do not here use the figures. But it was a beginning which "Ajax," and others later

improved, and from that time lists of 2.30 horses in some shape, have appeared each year, the lists of 2.25 horses being quite numerous and prepared with much care. For the figures up to 1871, I have gone over the printed records to that date, and made a card catalogue of the 2.30 horses year by year, with the records as published. To make the showing as good as possible I have included in my figures records under saddle, and records with running mate, except two which affect the best records of their respective dates. Moreover, I have not carefully weeded out all where the track was too short or for a few other technicalities. Hence my figures are larger in several cases than the strict records, according to the rules of to-day, would allow But as the table has been prepared as a study in the evolution of a breed, and the figures are for relative use and comparison, their value for this purpose is not impaired by this kind of inaccuracy. I can only say that they are approximately correct, that they have cost me in the aggregate some months of labor, and that absolute accuracy is now out of the question. The printed reports abound in so many errors, typographical and otherwise; there are so many irreconcilable statements, so many disputed points where experts differ, that no table will probably ever be made that will be accepted by all as entirely accurate. A better one can probably be made when Chester's forthcoming "Complete Trotting and Pacing Record" shall have been published, if any one will carefully collate all the "35,000 events," and I hope in the interest of science some one will have the time and inclination to do it. The following table is the only one of its kind I have yet seen, and inaccurate and imperfect as it may be, and must be from the very nature of the case, nevertheless it is the most interesting series of figures ever yet brought together, illustrating the evolution of a breed.

TABLE—Showing Number of Horses, with their Records.

		2:30 or better.	2:27 or better.	2:25 or better.	2:28 or better.	2:21 or better.	2:19 or better.	or better.	2:15 or better.	2:13 or better.	2:11 or better.
	1843 1844 1849 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870	1 2 7 10 14 16 19 24 26 30 32 40 48 54 59 66 84 101 124 146 171 194 233	1 2 3 5 6 6 7 7 7 9 11 14 17 19 22 29 32 42 52 63 72	1 2 2 2 4 4 7 9 12 15 17 21 28 34 35	1 2 2 4 4 4 5 6 9 13 15 16	1 1 1 1 1 1 2 8 5 6 10	1 1 2 2 4 5				
210.	1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879	233 376 506 794 836 1,025 1,142	99	40 74 98 134 165 214 270 325	28 40 61 *81 105 129 164	11 12 15 16 30 39 51 68 88	5 6 11 13 16 19 24 33	1 2 5 5 6 8 9	1 2 2 2 4 5 6 7 8	1	
532	1880 1881 1882	1,071		366 419 495	192 227 275	106 126 156	41 49 60	11 14 15 18	6 7 8	1 2 2 2	1 1 1

Let us now return to the subject of the best records, with the table before us: Lady Suffolk began the 2.30 list in 1843 (over 1,000 have since dropped into that class), and the next year lowered the record to 2.26½. It took eight years to better that, but in the thirty years that have elapsed since that record was lowered some 600 or 700 have done better, and many thousand heats have been trotted in less time. It has often been made with teams on the highway.

Then Tacony came and twice lowered the record, but he never

created the enthusiasm his successor Flora Temple did. She lowered the record to 2.24½ in 1856, and again to 2.19¾ in 1859. We began now to have a 2.20 class, and what an enthusiasm it created! Flora Temple became a household word—ladies wore Flora Temple bonnets, boys smoked Flora Temple cigars, politicians drank Flora Temple whisky. It is not probable that any one trotter will ever again create such enthusiasm. She died only five years ago, in her thirty-third year. I have seen several statements as to her winnings, which were large. Then came Dexter, lowering the record twice before retiring from the turf; then Goldsmith Maid, whose speed and fame are said to have brought her owners near a quarter of a million of dollars; then Rarus, St. Julien, and Maud S.

We have followed this evolution through. We have seen the sentiment starting, apparently in New England, which produced the earliest trotters, then spreading to the Middle States, where it had its greatest growth, and then it spread through those parts of the world where there are good roads and light carriages. It has been claimed that trotting was started first in Italy. Projects for trotting courses were advocated in France as early as 1834, and in Normandy in 1832, and there has been a slow development in various countries of Europe. But the real development has been here; although now there are trotting courses in most civilized countries of the world. I received last year trotting records in Norwegian.

We have traced its growth and seen what a combination of causes has been at work in society aiding in the development: sentiments against horse-running, and a taste for trotting taking its place; a few French West Indians wishing trotters rather than pacers (possibly because better broken to the gallop); improvement in wagons, and the invention of steel springs; a fashion arising of driving horses single; hickory to make light wagons of; the needs in our modern city business requiring quick road sters; changes in the methods of war; introduction and wide-spread use of railroads for quick travel and heavy transportation; the spirit of the age, etc., etc., have all been factors in this most interesting problem; factors, the separate value of which would be very differently estimated by different persons viewing the subject from different standpoints.

Professor Marsh has shown us how that the horse has developed

f. 140

in previous geologic ages from a small, weak, and awkward animal; how that growing in size, and strength, and fleetness, and beauty, the developed horse was on the planet ready for man when he came, I have tried to show how man has taken this and modeled it into something even better and higher; the trotter being the latest and best.

The horse of old was the horse of the warrior, and was bred for the battle-field or for ceremony, and his use and possession was for the wealthy. The trotter originated among the masses so soon as the masses were free; he developed for use as well as luxury, the horse for both business and pleasure, the horse alike for the bustle of the busy streets and for the quiet family carriage. The horse of old was the horse of war and of waste; the trotter is the horse of peace and of thrift, the highest equine product of the modern highly developed Christian civilization.



Brewer



[FROM THE AMERICAN JOURNAL OF SCIENCE, VOL. XXV. APRIL, 1883.]

THE EVOLUTION OF THE AMERICAN TROTTING-HORSE.

BY WM. H. BREWER.

The Evolution of the American Trotting-Horse; by Wm. H. Brewer.

THE American trotting-horse is an example of a new breed of animals in process of formation. As yet it can hardly be called a definite breed in which the special and distinctive character is either fully developed in quality or satisfactorily fixed by heredity. Great progress has, however, been made, many individual animals have attained great speed, and all the better ones have derived their trotting excellence in part, at

least, through heredity.

The origin of most breeds is involved in considerable obscurity, as to how much they are due to conscious and how much to unconscious selection, what motives led to this selection, how far the enhancement of the special qualities have been due to physical environment and how far to education, training, nourishment or cultivation. The formation of this new breed is so recent, the development of a special quality has been so marked, there is such an abundant literature pertaining to its history, the system of sporting "records" is so carefully planned and comprehensively conducted, and withal has become so extensive that we have the data for a reasonably accurate determination of the influences at work which led to this new breed being made, the materials of which it is made, and the rate of progress of the special evolution.

It is as an implement of gambling and sport that the trotter has his chief value to the biological student. Sporting events are published or recorded as the mere every day use of animals is not, and the records of races give numerical data by which to measure the rate of progress. Similar data do not exist for

the study of the evolution of any other breed.

Incidental to the preparation of a paper pertaining to this matter for farmers and breeders, I have compiled and collated certain data which have a scientific as well as economic value, the more interesting portion of which I condense for this paper.

The horse has several gaits which he uses naturally, that is, instinctively. And besides those which are natural he has been taught several artificial ones, some of which have been much used, particularly in the middle ages. But to trot fast was not natural to horses; when urged to speed they never assumed it, and until within a century the gait was neither cultivated nor wanted by any class of horsemen. A breed of fast trotters, had it been miraculously created, would doubtless soon have perished in that it would have had no use, satisfied no fancy and found no place in either the social or industrial world as it then was.

Before the present century the chief and almost sole uses of the horse were as an implement of war, an instrument of sport and ceremony, an index of rank and wealth and an

article of luxury.

For all these uses, as then pursued, a fast trotter was not suited, nor was he better adapted to the heavy coaches over rough roads, or the slow wagon trains of armies. The horse best adapted to all these, however much he may have varied as to size, strength and fleetness, was one whose fast gait was the gallop or run rather than the trot. For leisurely horseback traveling the ambling gait (or pacing gait as it came to be called in this country), was preferred. With increasing use of horses for draft, certain heavy but slow breeds were developed in the Old World, of which the Dutch, Clydesdale and Norman breeds are examples.

The causes which led to the cultivation of the trotting gait in this country, and the evolution of a breed with which it should be instinctively the fast gait were various, and the separate value of each as a factor in the problem would be very differently estimated by different persons studying the subject from different points of view. Now that he is so valuable and plays such a part as a horse of use, it is easy to see why a breed of trotting roadsters should be produced to meet certain important demands of our modern civilization. But this does

not explain how the process actually begun.

Reasoning a priori, the trotter, as a horse of use, should have originated in western Europe; as a matter of fact, he not only did not begin there, but he was unpopular there until well developed here. Locomotives began to draw armies to the battle-field, the war-horse declined in actual as well as relative importance, the modern, light, steel-spring, one-horse, convenient, business wagon as well as the modern buggy came into common use after trotting as a sport was established and after the gait had been extensively cultivated and bred to. The trotting-horse is specially adapted to various modern uses, but these uses followed his development, rather than led it, although in later days this factor has been an important one on the rate of progress.

The influences which originally led to the starting of the breed were more social than economical; a similar fact a century earlier marked the founding of that famous running breed, the English Thoroughbred. The origin of the trotter, however, was not so simple as that and several diverse social factors were

involved, only the chief of which will here be noticed.

From early colonial times horses have been more generally owned by the masses of the people here than in any country of western Europe. They have had a more general use in agri-

PAPERS

culture and in business, their ownership or possession has had less social significance, and they have had less importance as instruments of gambling. The colonists who settled north of Delaware Bay, although of various nationalities, were largely those whose religious prejudices and social education was opposed to horse-racing. With the great majority of them it was considered a sort of aristocratic sport and at best led to unthrifty ways, even if not open to the objection of positive immorality. Consequently but few race-horses were imported into this region in colonial times. The original horse stock of the northern colonies came from several European sources. England, Holland, France and Spain certainly, and Sweden, Denmark, Germany, Ireland and Italy probably contributed to it. The blood from this variety of sources, variously mingled, formed the mongrel stock of the country. This was further modified by local conditions and local breeding assuming different characters in different places, and the hardships of horse life incident to a new country, with strange forage and a rough climate, caused deterioration in size and form. Early writers are unanimous on this point, but many add that what was lost in size and beauty was gained in hardiness and other useful qualities.

After the war of independence there was an improvement in the live stock of the country. English Thoroughbred horses were imported both for sporting and to improve the horse stock of the country, and horse-racing rapidly grew in favor as wealth and leisure increased. The export trade in horses to the West Indies increased, particularly from New England. Pacers were most sought for this trade, but sometimes trotters

were advertised for.

As horse-racing increased in the last years of the last century the opposition to it revived, and in the earlier years of the present century this became ascendant, and stringent laws forbidding the sport were passed in most of the northern States.

The prohibition was sweeping and the penalties severe.

Horse-racing was then a contest between running-horses, and during this repression of racing, trotting as a sport began, at first in a very unostentatious, irregular and innocent sort of way. Probably no people or class of people have ever bred good horses which they prized and were proud of, who did not find pleasure in seeing them compete in speed or show their fleetness in some way, and during the repression of racing) which meant running), trotting came in as a substitute, poor though it was at first. It had a sort of encouragement from very many thrifty people who were not sportsmen, and was in a measure considered a sort of democratic sport in which even plow-horses could take part. Racing of any kind in those

days was a strife between two or more things, as it still is in most countries; no one thought that a single horse could run a race alone, but the instinctive inclination to see a spirited horse in action could be mildly gratified by letting him trot, even if single and alone, and testing by the watch how quickly a given distance could be covered. So "timing" animals came to be practised. We hear of it on the Harlem racecourse in 1806, four years after the laws forbidding horse-racing had been enacted, and again, a little later, near Boston, and it was reputed that certain horses could trot a mile in three min-This speed seemed so extraordinary that in 1818 a bet of a thousand dollars was staked (and lost) that no horse could be found that could trot a mile in three minutes. authorities date the beginning of trotting as a sport with this event. It is said that in betting the odds against the successful performance of the feat were great, which shows, strikingly, the enormous progress since made in developing speed at this gait.

In 1821, certain persons on Long Island were allowed by special statute to train, trot, etc., horses on a certain track, under certain restrictions, exempt from the penalties against horse-racing. Other organizations followed, and by 1830 the "training" of trotters was going on at several points, and trotting may be said to have become established as a sport. During this decade the record had been successively lowered to 2.40, The times of performance were carefully taken 2.34 and 2.32. at these "trials of speed," as the statute called them, and "records" became established by more formal sporting codes.

The ostensible object of these associations was the "improvement of the breed of roadsters;" driving single horses to wagons became fashionable and this led to the improvement of light one-horse wagons for business and pleasure. Those with steel springs were rare luxuries in 1830; by 1843, when the record of mile heats dropped to below 2.30, they were already common. During this thirteen years, the record had been lowered only half a second on mile heats, but three-min-

ate horses were no longer rare.

The fashion of wealthy men driving a single fast trotter for pleasure was for a long time a peculiarly American one, and played an important part in the development of this breed. But, as stated earlier, many influences have contributed; changes in the modes of travel, changes in the methods of war, sentiments regarding horse-racing, the incentives of the course, the general improvement of roads, improvement in carriages, the needs of modern business requiring quick roadsters, these and other influences have all been at work.*

^{*} For more details regarding the history of this development and the factors involved, see the paper already cited, Rep. Conn. Bd. Agr. for 1882, p. 215.

The material out of which this new breed is made is a liberal infusion of English Thoroughbred blood (usually more than two generations removed), with the mongrel country stock, previously described. There is a voluminous literature relating to special pedigrees and much speculation as to the comparative merits of the several ingredients of this composite blood.

Regarding the ideal trotter there is as yet a difference of opinion as to what the form should be, and it is too early to decide from actual results. That the gait is now hereditary, that it is the instinctive fast gait with some animals is certain, but whether this is due to inherited habit, inherited training, or to mere adventitious variation and selection, I will not discuss.

The gain in speed is given in the following table, which is the best records at mile heats, omitting the names of the special

performers:

Date. 1818,	Best Record.	Date. 1865,	Best Record. 2.181
1824,	2.40	1866,	2.18
	2.34	1867,	2.174
1830,	2.32	1871,	2.17
1834,	2.31±	1872,	2.16#
1843,	2.28	1874,	2.14
1844,	2.26±	1878,	2.13‡
1852,	2.26	1879,	2.12 8
1853,	2.25‡	1880,	2.10 8
1856, 1859,	$2.24\frac{1}{2}$ $2.19\frac{1}{4}$	1881,	$2.10\frac{1}{4}$

A sporting paper published in 1873 a list of three hundred and twenty-three horses, with their best records, down to the close of the preceding year. This first list of the kind known to me was very imperfect in its details; it was revised for the next year, and since that time many lists, in one form or another, have been published. The figures for the animals with records of 2.25, or better, are reasonably accurate; for the others there is much discrepancy. In the following table the numbers are my own, counting down to 1872, inclusive; the numbers after that date are derived from various lists published since that time in the sporting and breeding periodicals. From the very nature of the case, the table cannot be accurate in the larger numbers, but the numbers do not lose their value for comparison with each other from such faults as to the details of the larger numbers, and as such, it is undoubtedly the most significant series of numbers ever compiled to show progress in evolution, whether of a breed or species. The number of horses with records of 2.40, or better, is now stated to be over five thousand.

I leave it to mathematicians to plot the curves which immediately suggest themselves, and determine how fast horses will ultimately trot and when this maximum will be reached.

TABLE SHOWING THE NUMBERS OF HORSES UNDER THE RESPECTIVE RECORDS.

	2:30 or better.	2:27 or better.	2:25 or better.	2:23 or better.	2:21 or better.	2:19 or better.	2:17 or better.	2:15 or better.	2:18 or better.	2:11 or better
843	1								Total:	
1844	2	1								
1849	7	2								
1852	10	3							ding	
1853	14	5	100000	17.316					1000	
1854	16	6								
1855	19	6		3613		9.0			(SF 11)	
1856	24	7	1			1012				
1857	26	7	2	1 23						
1858	30	7	2	131.033		1000				
1859	32	9	2	1	1	New H				
1860	40	11	4	2	1					
1861	48	14	4	2	1					
1862	54	17	7	4	1					
1863	59	19	9	4	1					
1864	66	22	12	4	1				-	
1865	84	29	15	5	2	1				
866	101	32	17	6	3	1				
1867	124	42	21	9	5	2			939	
1868	146	52	28	13	6	2			-523	1
1869	171	63	34	15	10	4				
1870	194	72	35	16	11	5				
1871	233	99	40	17	12	6	1		1000	
1872	323					**				
873	376		74	28	15	.5	2		MIN SE	
874	506		98	40	16	11	5	1	17232	
875	190	100	134	61	30	13	5	2		
876	794		165	81	39	16	6	2	1	
1877	836		214	105	51	19	8	2		
1878	1,025		270	129	. 68	24	9	4	9 956	
1879	1,142		325	164	88	33	11	5	1	
1880	1,210		366	192	106	41	14	6	2	1
1881	1,532		419	227	126	49	15	7	2	1
1882	1,684		495	275	156	60	18	8	2	1



Photographic Records of Pedigree Stock. By Francis Galton, D.C.L. (Oxf.), Hon. Sc.D.(Camb.), F.R.S.

[PLATE].

It is my purpose shortly to communicate with the Councils of some of the Societies who publish stud or herd books, urging the systematic collection of photographs of pedigree stock and of more information about them than is now procurable. Believing that if my proposals were carried into effect, they would greatly facilitate the study of heredity, I desire, before approaching the Societies, to submit my intended proposals to the criticism of a scientific body, and none seems more appropriate for the purpose

than the Zoological Section of the British Association.

The following remarks are based on the Ancestral Law, which will be explained. Its purport is to measure the importance to the breeder of taking into account the various members of the ancestry of the animals he proposes to mate together, so much of the heritage coming on the average from each of them. Then the methods of utilising this bulky knowledge will be discussed, that of composite portraiture being one means of dealing with numerous photographs; another way is by obtaining measures, which can be arithmetically combined, from the photographs themselves, provided they have been taken in accordance with certain simple instructions. Next, the plan will be explained by which the Societies referred to above might initiate and maintain a systematic collection of photographs and other information useful to breeders, which should become self-supporting. Lastly, an allusion will be made to the huge waste of opportunities of advancing the art of breeding that goes on unchecked.

The Ancestral Law.—I have lately shown how the general knowledge that offspring can inherit peculiarities from the various members of their ancestry as well as from their parents may be superseded by a definite law whose nature was first suggested to me by theoretical considerations. Being subsequently in a position to verify its accordance with a large number of pertinent facts, I submitted the results to the Royal Society in a communication entitled 'On the Average Contribution of each Several Ancestor to the Total Heritage of the Offspring.' My theory was thoroughly examined from fresh points of view by Professor Karl Pearson, F.R.S., in one of his remarkable 'Contributions to the Mathematical Theory of Evolution,'2 in which he showed that the theory accorded with other observations, and accounted for other conclusions that had already been reached. Assuming, then, that the Ancestral Law may be accepted as at least approximately true, it will be found most serviceable in showing the relative importance and range of the data which breeders must take into account, if they pursue their art with thoroughness. The law is that, on the average, the two parents contribute between them one-half of the total heritage of the offspring, that the four grand-parents contribute between them one-quarter, the eight great-grand-parents one-eighth, and so on. Consequently, since $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + &c. = 1$, the whole of the heritage is accounted for. The same law may be stated in another form,

namely, that each parent contributes on the average one-quarter, each grand-parent one-sixteenth, each great-grand-parent one sixty-fourth, and so on. It is a property of the first series of fractions that each term is equal to the sum of all those that follow ($\frac{1}{2}$ being equal to $\frac{1}{4} + \frac{1}{8} + \frac{1}{16} + &c.$; $\frac{1}{4}$ to $\frac{1}{8} + \frac{1}{16} + &c.$), therefore it results that if genealogical knowledge should cease with the grand-parents, inasmuch as they contributed one-quarter, another quarter of the heritage will remain indetermined; if it ceases with the great-grand-parents one-eighth will remain indetermined; if

with the next ascending grade, one-sixteenth, &c.

It must be understood that the law is intended to apply only to what may be called plain heredity, that is to cases where qualities are capable of blending freely, or, if they refuse to blend, where they present themselves as alternative possibilities. The necessary modifications have yet to be investigated when it has to be applied to hybrid heredity, and to those partial forms of hybridism which occur in cross-breeding, especially in plants, where two parental qualities seem to produce a third and different quality in the offspring. Again, it takes no notice of prepotency, because it considers prepotency as likely to occur with equal frequency in each and all of the ancestral places, but when the prepotencies of particular ancestors are known or suspected it is easy to take them into Similarly the law takes no cognisance of the prepotency of one sex over the other, which must be allowed for in those particular races and qualities where it is known to exist. Lastly, as it relates to averages, its predictions will be truer for the mean of many offspring than for any one of them in particular. However, as we know that fraternal variation admits of being defined with mathematical precision for any measurable quality in any race, the diminution in trustworthiness when a prediction relating to a fraternity is applied to a single member of it, is easily

The ancestral law specifies the number, the grades, and the relative importance of the ancestors whom breeders must take into account, in order to predict with any given degree of certainty the most probable character of the future produce. It clearly shows the necessity of a much more comprehensive system of records than now exists. A breeder ought to be in a position to compare the records of at least the four parents of the animals he proposes to mate together, in respect to the qualities in which he is interested. More especially he ought to have access to photographs which indicate form and general attitude far more vividly than verbal descriptions. But the information in stud and herd books is too meagre for the requirements of the breeder, while the photographs published in newspapers and elsewhere are inadequate for making complete

genealogical collections.

Utilisation of the Records.—My principal suggestion is that a system of collecting photographs should be established, which would be serviceable to breeders. They should be serviceable to them not only as portraits, but also as affording means of obtaining measurements of the animal. It will be shown that the system might be easily initiated, and be afterwards self-supporting, but for the moment it will be convenient to take these important conditions on trust, and to begin by considering what could be done if we had the photographs. I will suppose, then, that the system has been in successful operation for many years and that it has become possible to obtain photographs of the parents, grandparents, and other ancestors of each of a large number of pure-bred horses and cattle taken

PORTRAITS of RACE HORSES and COMPOSITES of them.

Letters refer to horses, numerals to units of exposure. Total, 12 units in each case.



A, 12.-Sir Visto.



C, 12.-Raconteur.



E, 12.-Speedwell.



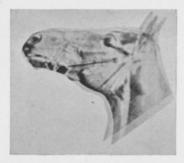
B 12.-Solaro.



D 12.- St. Marnock.



F, 12-Salebeia



A, 6; B, 6.



C, 6; D, 6.



E, 6; F, 6.



A, 4; B, 4; C, 1; D, 1; E, 1; F, 1.



C, 4; D, 4; A, 1; B, 1; E, 1; F, 1.



E, 4; F, 4; A, 1; B, 1; C, 1; D, 1.

Photographed by FRANCIS GALTON, F.R.S., to illustrate his memoir submitted to the British Association, Bristol, 1898, on 'Photographic Records of Pedigree Stock.'

under specified conditions. We have to explain how such photographs

might be employed in improving the art of breeding.

An habitual study of the form of each pure-bred animal in connection with the portraits of all its nearer ancestors would test current opinions and decide between conflicting ones, and it could not fail to suggest new ideas. Likenesses would be traced to prepotent ancestors and the amount of their several prepotencies would be defined; forms and features that supplement one another, or, as it is termed, 'nick in,' and others that clash or combine awkwardly, would be observed and recorded: conclusions which are based on incomplete and inaccurate memories of the appearance of the several members of the ancestry would be superseded by others derived from a study of their actual photographs. The value of the ancestral law would be adequately tested, and it would be possible to amend it where required. Thus the effects of organic stability, to which I have often called attention, have yet to be dealt with if they are not indirectly included in the law as it stands. Lastly, it is not unreasonable to suppose that every important stallion or bull would have a pamphlet all to himself, with photographs of his ancestors, and with appropriate particulars about each of them. Such pamphlets would become recognised

as a just form of advertisement.

Composite Photography.—It may be said that, even if all the ancestral photographs were spread in full view on a table, no human brain could combine into a single mental image the peculiarities in feature even of the two parents, and of the four grand-parents, in the proportion laid down by the ancestral law. There is, however, a method by which a substitute for a mental picture may be obtained, which may possibly prove serviceable in practice. It is by making composites of the photographs, allotting to each portrait its appropriate time of exposure.1 I submit a few composites which I have made of the heads of racehorses : the component portraits are from the earlier numbers of the 'Racing Illustrated.' I enlarged them to an uniform scale, reckoning from the middle of the eyeball to the fold within the nostril, cut them out to get rid of the confusion introduced by a variety of background, and then combined them in various proportions. Especially I took six, those of (A) Sir Visto, (B) Solaro, (C) Raconteur, (D) St. Marnock, (E) Speedwell, and (F) Salebeia, which will henceforth be distinguished by those letters. With the plate, stop, and the two small electric lamps that I used for illumination, it required an exposure of 240 seconds, say of 12 units of time, each consisting of 20 seconds, to give a good copy of any one of the portraits, so I proceeded as follows :-First, I made a composite of A and B, allowing 6 units of exposure to each of them, or 12 units in all; then I made another composite of A, B, and the four others, allowing 4 units to A, 4 units to B, and 1 unit to each of the four others, forming a total as before of 12 units. So while the composite which I will call A 6, B 6, illustrates the combined features of the two parents, that of A 4, B 4, C 1, D 1, E 1, F 1 illustrates those of two parents and four grand-parents in the proportions laid down by the ancestral law. I proceeded similarly with C, D and with C, D and the other four, and again with E, F and with E, F and the other four; I submit these six composites. Of course the process could be extended indefinitely, working backwards to include as many previous generations of ancestors as

¹ Composite Portraits, Nature, 1878; Composite Portraiture, Journ. Phot. Soc., 1881.

desired, and it might be equally well applied to portraits of other animals than horses, including men and women, whose features combine unexpectedly well in composites, though one sex be bearded and the other not. A composite may be made of any separate part of an animal, but hardly of the whole animal at once, because each separate joint is liable to be flexed differently in the different portraits. The ears of the horses in the illustration indicate what would then occur. This is not the place to enter further into the details of composite making, which I have now reduced to a very simple process whose accuracy is evidenced by the identity of the composites that have been re-made at different times from the same components. The specimens I submit would have been better if they had been made from the original photographs and not from photo-process copies of them, still they will serve to gauge the amount of information which composites are likely to give to the breeder. They should be carefully scrutinised and compared, when more differences and points of

interest will be found than are apparent at a first glance.

Measurement of Photographs.—A photograph considered merely as a portrait tells about as much of an animal as can be gathered from a single view of it; it defines the contour, the slope of the shoulders, the set of the head, the forms and the positions of the limbs, but this is by no means all that is obtainable from a photograph. It may be so taken that measurements made upon the photograph, after certain corrections have been applied to them, will be nearly as good as those made on the animal itself. Now, measurements are of the highest importance to the theoretical study of heredity, for science is based on numerical data, and the science of heredity is no exception to the general rule. Its progress depends primarily upon the power of procuring large collections of measurements of the same parts, which admit of being combined in any proportions by simple arithmetic. It matters little what limb, or bodily part, or faculty is the subject of measurement, because laws which are true for one particular quality, and for one particular race of animals or plants, will presumably apply with small modifications to any other quality and race. Therefore it would be no unworthy occupation for a scientific man to devote years of labour to carefully measuring each of many parts in the photographs of offspring and their ancestry, and to discuss the results by the elaborate methods of the higher statistics.

The photographs of which I speak are assumed to have been taken under the following conditions. They would represent side views of the animals and therefore be comparable on equal terms so far as position is concerned. The animals would have been photographed at a distance of not less than thirty feet from the camera, in order to avoid sensible distortion of the portrait. They should be taken while standing on hard ground, that the feet may be clearly shown, and no mistake The height of the camera above the arise about their heights. ground and its distance from the animal should be roughly measured and noted. Lastly, two direct measurements of the height of the animal should be made, one at its withers, the other at its croup. The photograph now becomes more than a mere picture, because the recorded data, together with others afforded by the photograph itself, supply corrections that will cause the measurements made upon it to correspond with more or less accuracy to those made on the animal itself. Of course, their correspondence would not be so exact as it would be in photographs taken in a 'hippometric' laboratory provided with marked lines on the

ground and walls, but such a laboratory is impracticable on many grounds. Thoroughbred horses are so easily frightened in unfamiliar places and at unfamiliar objects that the best plan is to photograph them leisurely among their accustomed surroundings. It is difficult and dangerous to apply tapes and calipers, which tickle and irritate, for thoroughbred horses are exceedingly sensitive, timid, fidgety, and often vicious, while they are supple and sudden in their movements of offence. Measurements of the two vertical heights, made in the usual way, are comparatively easy to manage.

I find, moreover, that vertical measurements of all kinds may be made quickly and accurately without touching the objects at all, by means of a simple instrument which I roughly put together for trial. [I submit its working part.] Its principle is that of a collimator, with additions and It seems very suitable for use at agricultural and other modifications.

shows where many animals are collected.

Though many useful measurements can be made on a plain photograph, it would be a decided gain to select two, three or more important osseous protuberances, such as can be easily felt, and to mark their positions by sticking on the animal small wafers of sufficiently adhesive paper-say, one quarter of an inch in diameter. The corresponding marks on the photographs will be too small to attract notice, but they are easily found when looked for, and afford excellent points from which to measure. I may add that measurements I have made, and had made, both on horses and on their photographs, show that the relative dimensions of horses differ considerably. If some five different measurements were made on an adult racehorse, it would be as easy to identify him by a 'Bertillon

process' as it is to identify prisoners.

It will be observed that the measured height of the animals at the wither and croup, supply a scale for vertical measures on the photograph at those points. If the line to which vertical measures are drawn on the photograph be the one that touches the edge of the feet nearest to the camera, a slight and simple correction has to be made. There is difficulty in respect to the relation between the vertical and the horizontal scales, but less so than might be anticipated, for the tilt of the camera is found closely enough by a rough knowledge of the height of the camera and its distance from the animal, combined with data supplied by the photograph itself. Again, the length between the rounded ends of the body, and the diameters of the limbs, are not sensibly affected by the animal standing very slightly askew. The necessary corrections admit of being easily found from appropriate tables. It is curious in how many different ways the required corrections may be determined when the range of available measures is slightly increased. I have already discussed the question for a different and more complicated series of data in 'Photographic Measurements of Horses and other Animals' (Nature, Jan. 6, 1898), which will show the general character of the problem, but I cannot enter into particulars now. The primary question is, will photographers and grooms take the proposed measurements with sufficient correctness, and are any additions to them feasible? To settle this question, many experiments should be concentrated by more than one photographer upon the same quiet and well-measured animals. These ought to determine the trustworthiness of the results according to the data in use, and would show the minimum of effort that is necessary to afford the required degree of accuracy. I should be content if the average error in the calculated height

and length of the horse did not exceed one inch, or say one-and-a-half per cent.

Systematic Collection of Photographs.—It remains to consider what has hitherto been taken for granted—the best method of starting a systematic collection of photographs of pedigree stock. My proposal is to suggest to the principal Societies which publish stud or herd books, that they should proceed as follows:

(1) To arrange with a photographer to store such negatives as the Society may hand over to his charge; he undertaking to supply prints from them to the public at a moderate cost and under reasonable

regulations.

(2) To invite owners of pure-bred stock to send to the Society with which they are in connection, a negative photographic plate of each of the animals which they use for breeding, and which are therefore adult, on the understanding that if the negative be accepted by the Society it will be handed over to the photographer.

(3) Only those negatives will be considered suitable for acceptance (a) which are of good quality; (b) which do not transgress specified limits of size; (c) which scrutiny shows to be strictly side views; (d) which have been taken at a distance from the animal of not less than 30 feet; and

(e) which show the animal standing on hard ground.

(4) The following information is to be stamped or written on the negative in such a way as to be clearly legible in the prints: (1) the name and sex of the animal, (2) year of its birth, (3) year and month of taking the photograph, (4) heights at its withers and croup, (5) height of camera and its distance from the animal.

(5) The Society shall order an asterisk to be affixed to the name of each animal entered in its stud or herd book, when the photographic

negatives of its sire and dam have been accepted.

It seems to me that a system such as this would be efficient, self-supporting and acceptable to all parties. Breeders would be pleased that photographs of their animals should be publicly recognised as serviceable for the advancement of their art. Owners of valuable animals are almost sure to order photographs of them on their own account, so the gift of the negatives to the Society would deprive them of nothing. The asterisks applied to the names of the offspring would be a valued distinction, and would help to introduce the system. Later on, when they had become common, the absence of an asterisk would excite suspicion and require explanation. Lastly, the printing of the photographs would be self-supporting. I have already expressed a belief that the custom would arise of printing a separate pamphlet for every important stallion or bull, containing its photograph and those of its nearer ancestors, together with other appropriate information. Larger publications of a more costly kind would doubtless. be issued under the auspices of each Society, to correspond with an awakened demand for fuller information on the antecedents of pedigree stock.

Printed Records.—As regards useful additions to the printed matter in stud and herd books, I would now merely allude to the need for them, and to the propriety of carefully reconsidering how much of real utility could be asked for from breeders that they would supply willingly and truthfully. The measurements of adult animals, of which I spoke, would be appropriate entries. An accumulation even of these during two or

three generations would be exceedingly valuable, considering how many coherent results in the science of heredity have been derived from observations of human stature, though limited to comparatively small numbers of parents and their offspring.

Conclusion.—The amount of money annually spent in rearing pedigree stock is enormous; so is the care and thought bestowed upon it, and so also is its national importance. The non-preservation of adequate records of pedigree stock is a cruel waste of opportunity, and has been most prejudicial to the acquirement of a sound knowledge of the art of breeding. If the scheme I have sketched be found feasible, it will cause much to be noted that has hitherto been overlooked, and much that is commonly observed to be placed permanently on record, instead of being ill remembered and soon wholly forgotten.



PRINTED BY
SPOTTISWOODS AND CO., NEW-STREET SQUARE
LONDON

nsisting of Francis
E. B. Poulton,

Pedigree Stock Records.—Report of the Committee, consisting of Francis Galton, D.C.L., F.R.S. (Chairman), Professor E. B. Poulton, F.R.S., and Professor W. F. R. Weldon, F.R.S. (Secretary), appointed to promote the Systematic Collection of Photographic and other Records of Pedigree Stock. (Drawn up by the Chairman.)

INQUIRIES made on behalf of the Committee have fully justified the belief that led to its appointment, namely, that few exact records exist of even the nearer ancestry of the members of any description of Pedigree Stock. The names of all their ancestry for many past generations are published in Stud-books, Herd-books, and other similar works, but in other respects those works afford scant means for obtaining that distinct presentment of each of the nearer ancestry which is needed for an exact study of the Art of Breeding. The information as to feature and form in the books mentioned above is almost wholly confined to colour, and in the case of horses only, to height at the withers. Many details relating to appearance and action are, however, scattered over the pages of various volumes and periodicals, but these would require an excessive amount of labour in research before any complete families could be properly worked through for even three generations. As regards photographs, those of the more celebrated animals are now published in one form or another; nevertheless, it has been found very difficult to obtain the photographs of even a few of those genealogical triads, consisting of an adult subject, its sire, and its dam, which form the primary molecules of every pedigree. The authorities who were consulted on thoroughbred horses and on purely bred shorthorn cattle, were hardly able to indicate a single case in which photographs exist of all the seven individuals—the adult subject, its two parents, and its four grandparents-which form the secondary molecules of a pedigree. Thus the admirable opportunities enjoyed by breeders for making systematic records that would afford a solid basis for the advancement of the art of breeding, have been hitherto most inadequately utilised. The reason is not far to seek. Heredity is a comparatively new science, and few persons are as yet acquainted with the character of the records most suitable for its study, or are sufficiently impressed with the need for their exactness and persistence. The most important of those records which it seems feasible to obtain are photographs, not merely pretty and well worked-up productions satisfactory to an artistic eye, but rather such as are analogous to the portraits made of criminals, for storage at the central police office, to serve as future means of identification. The desired photographs need to be taken under such conditions as shall ensure their being comparable under equal terms, and shall admit of the accurate translation of measurements made upon them into corresponding measurements made on the animals themselves. There are a variety of ways by which the latter process may be performed, but it was only after many trials that a method was found capable of being used with extreme facility. It will be described later on; in the mean time, its existence may be taken for granted. The problem was thenceforward reduced to that of devising a self-working system by which the more important pedigree animals, say the prize-winners at great Shows, should be habitually photographed under standard conditions. Before this could be done certain doubtful questions had to be solved by an adequate experiment. (1) Is it possible to make satisfactory photographs under standard conditions amid the hurry and under the necessary restrictions of a great Show? (2) If so, could they be made at a reasonable cost? (3) Is there

any likelihood of such a system being self-supporting?

The desired experiment was permitted to be made, in response to a request of the Committee, by the Royal Commissioners on Horse-breeding at their Show held last March at the Royal Agricultural Hall. On this occasion 29 premium stallions were selected for service throughout England during the current season, who will become the sires of some 800 foals within the present twelvemonth. The Committee desire to express their grateful thanks to the Royal Commissioners for the assistance thus cordially given to them. The results were most satisfactory; they will be found in an Appendix to the Blue Book (C.—9487. Price 21d.) just issued by the Royal Commission. Reference should be made to this by those persons who desire fuller information than is given in this Report. Twentyeight out of the 29 premium horses were photographed at the average rate of six minutes to each horse. Considered merely as portraits, they were very satisfactory, and they were of a size that gave, roughly, 2 inches or 50 millimetres for the height at the withers, being a little less than I millimetre to 1 inch of real height. Measurements made on them gave results that, in three-quarters of the cases, did not differ more than 3-inch from those made by two veterinaries on the animals themselves. In the remaining quarter of the cases in which the differences ranged up to a single instance of 2½ inches, it seemed from internal evidences and other considerations that the photographic method was the more trustworthy of the two. The experiment further showed that the cost of photography did not exceed what might be wholly or in part recouped by the sale of prints, and there was reason to believe that a highly skilled photographer might consent to take the photographs under standard conditions, at his sole charge, if he were permitted to sell authorised copies to newspapers and to private persons under such reasonable restrictions as might be thought proper by the authorities.

Should this hope be hereafter realised, it seems difficult to imagine that any serious difficulty would stand in the way of causing the photography of prize-winners to become a permanent feature in the larger Shows of Pedigree Stock. Of course, the uncertainties of weather have to be reckoned with, and the Shows held during the darker period of the year, in the smoky atmosphere of large towns, should be left out of consideration, unless artificial light could be used. But the more valuable animals are usually exhibited more than once, so that an occasional photographic mishap might be subsequently remedied.

Details relating to what has been said will now be given; they will be found stated at greater length in the Appendix to the Blue Book men-

tioned above.

Standard Conditions.—The arrangements now suggested are slight improvements on those under which the experiment was conducted. A wall, or solid vertical screen, is required for a background, and a hard and level pathway of 6 feet in width running alongside the wall for the horse to stand on. Two lines are to be made across the pathway at 2 feet apart, between which the fore-feet of the horse must stand while he is being photographed, his body being at the same time as nearly in the line of the pathway as possible, both of his hind feet being, at all events, upon it. The pathway should be rather light in colour, to show the feet

f.2+

clearly; it may be of flag-stones, concrete, or light-coloured bricks. Its curb, or edge, towards the camera must be sharp and clearly visible, because it is an important line of reference in the photograph. wall should be painted of a light colour—bluish, not yellow. Fifteen small marks, each the size of a sixpence, arranged in three horizontal and five vertical rows, at the exact distance of 3 feet apart, should be made upon the wall, to give a scale to the photograph. They are indicated in fig. 1 by small crosses. The lowermost row should be well clear of the pathway, say I foot above its level. Some of these marks will be sure to be visible in the photograph, though most of them will be hidden by the body of the horse. Simple screens or hangings should shield the horse from distracting sights. An aperture in a screen will enable a person who is stationed for the purpose on the other side of it to momentarily arrest the attention of the animal when the photograph is about to be taken. The camera is to be firmly clamped to a solid stand opposite to where the horse is to be placed, and to remain undisturbed during the whole operation. Its object-glass is to be 5 feet above the ground, that the view from it of the pathway may not be too much foreshortened, and it is to be 30 feet from the wall. The equivalent focus of the lens should not be less than 9 inches, otherwise the photograph will be too small for convenient measurement; the lens used in the experiment was of 13 inches focus, with plates of $6\frac{1}{9} \times 4\frac{3}{4}$ inches, and proved exactly suitable. The most important point of all is that the plate-holder of the camera should be strictly parallel to the wall, as tested by the images of the marks on the wall forming squares of exactly equal sizes on its ground-glass focussing screen. As many of them as are visible in the photograph will, of course, do the same. A label should be fixed to the wall, well above the back of the horse, but within the field of the camera, on which the permanent data of the instalment should appear in bold letters, easily legible in the photograph. Lastly, the horse should wear a distinguishing number for after-identification. The photograph will thus bear internal evidence of the standard conditions having been observed, and will carry its own scale. An experiment succeeded perfectly of indicating the position of the prominence at the hip, which is easily to be felt but is not distinctly seen, by labelling it with a wafer of thin white paper the size of a shilling; thick paste which penetrated between the hairs was needed to make the wafer adhere. The mark was, however, unnecessarily large and conspicuous, one of the size of a sixpence would have been ample. It might, perhaps, be printed on the horse with water-colour. The question whether any, or what, points of anatomical interest might be treated advantageously in this way has not yet been fully considered.

Calculation from measurements on the Photograph.—Fig. 1 represents on a scale of about one-third the actual size, the appearance of one of the photographs and of the measurements made upon it. SS is the line of junction between the pathway and the wall; the little crosses indicate the positions of the marks already described; qq is the curb, or edge, of the pathway opposite to the camera; p is any desired point on the ridge of the back of the horse, whose height above the ground it is desired to find. A measurement is made of the line that falls perpendicularly from p to qq; also of that from h to qq, h being the point where the perpendicular from p cuts a line so drawn on the pathway as to touch the sides of the shoes of the fore and of the hind foot that are nearest to the camera, and which may be called the hoof line. [Practically, the simplest



way is to measure the heights of those two feet above qq and to roughly interpolate.] Measurements are also made between such marks on the wall as are visible, to furnish the scale of reduction at the distance of the wall from the camera. Fig. 2 represents a section of the installation on the same vertical scale as fig. 1, but the horizontal scale is much smaller and its internal proportions are not preserved, the primary object being to make a clear diagram. C is the object glass, D the point on the ground below it, q is the section of qq, here seen sideways, h is the projection of H upon the wall. Consequently CD=in reality 5 feet, DS=30 feet, SQ=5 feet, but the proportions are different in fig. 2 for the reasons just given. A line from C through Q, determines the position of q, and qh being known by measurement, the position of h on the wall is known; then a line from C to h cuts the pathway at H, which gives the true position of the point where the vertical plane passing through C and p, cuts the 'hoof line' on the pathway. Now M, the point on the pathway on which the vertical from P falls, lies in the same vertical plane as H but a little further off from the camera, say 6 inches. This is a near enough

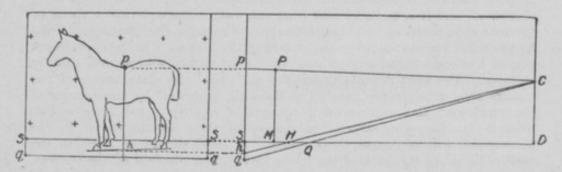


Fig. 1. Photograph. Its scale is about \(\frac{2}{9} \) of that actually used.

Fig. 2. Section of installation on the same vertical scale as fig. 1. The horizontal scale is much smaller.

estimate, as one or two inches of error here have no sensible influence on the result. So the position of H establishes that of M, and a line drawn from C through M determines that of m upon the wall as it would be seen in fig. 2, and consequently on the photograph as seen in fig. 1. m is not shown in the figure as there is hardly room for it, and as it is not wanted in the simple way of working, which will immediately be explained. The height pm, as enlarged on the wall, has then to be reduced in the ratio of D M to D S, in order to obtain P M. The whole of this calculation is effected with the utmost ease by drawing the installation in its true proportions to a scale of 10th, using paper ruled into squares of 10th of an inch in the side, and converting the measurements made on the photographs into their corresponding values as projections upon the wall, reckoned in inches. The position of q is determined once for all on the paper by drawing a line from C through Q. A pin is inserted at C, and a loop made at one end of a thread, is thrown over it. Q serves as the zero point both horizontally and vertically for all the working part of the diagram up to the line that represents the wall. But the zero point for this line is q. Then, the thread stretched through h determines H. M is marked off at six divisions further on. The thread is now stretched through p, and the value of MP is read off at once. It is unnecessary here to enter more particularly into details. All other measurements in the plane of the

photographic picture can be reduced to the corresponding real values in the same general manner. These are the diameters of the body and of the limbs, the length of the body, and the distances between any points of reference that may have been marked in the way described above, as seen

Verification of the Results.—Numerous experiments have been made to test the exactitude of this photographic method of measuring living animals. The results of those made at the Show of the Royal Commission on Horse-breeding are given in the Appendix to the Blue Book. They are summarised as follows:—Two advanced veterinary students were deputed from the Royal Veterinary College to assist one another in measuring the animals that were photographed, for the purpose of controlling the photographic calculations. Each horse had its height above the ground measured at the withers, at the hollow of the back, and at the croup. Comparisons happened to be available in only twenty-six out of the twenty-nine premium horses, one of the latter having not been photographed, and two out of the remaining twenty-eight having been overlooked by the measurers. The comparison came out as follows:—

Sums of the Differences between Calculated and Observed Values.

v		Inches				
No. of Cases	Heights at	-	+	Totals		
26 26 26	Withers Back Croup	7¼ 15 8	13½ 8½ 12½	$\begin{array}{c} 20\frac{3}{4} \\ 23\frac{1}{4} \\ 20\frac{1}{4} \end{array}$		
78	Totals	301	34	641		

The approximate equality between the totals of the — and + differences, which are 30\(\frac{1}{4}\) and 34 respectively, testifies to the average correctness of the method and of the work. That between the summed results for the withers, back, and croup respectively, which are 20\(\frac{3}{4}\), 23\(\frac{1}{4}\), and 20\(\frac{1}{4}\), shows that each of these has been determined with about the same degree of correctness. It is therefore justifiable to treat all the 78 events on equal terms, in order to ascertain what that degree really is. This is done in the following table:—

Distribution of the Seventy-eight Differences without regard to their - or + signs.

Inches of Difference		Sums from beginning					
to nearest 4-inch	No. of Cases	Totals	Per cents.				
0	10	10	13				
1	11	21	27				
- 1	20	41	52				
1	9	50	64				
1	8	58	74				
11	4	62	79				
11	5	67	86				
19	4	71	91				
2	6	77	99				
21	1	78	100				

GALTON PAPERS

It thus appears that in 52 per cent., or in one-half of the cases, the differences, when reckoned to the nearest 1-inch, do not exceed 1-inch, and that in 74 per cent., or in three-quarters of the cases, the differences do not exceed 3-inch. In the remaining quarter of the cases the differences ranged upwards to a solitary instance of 21 inches. This summary does not, however, include one case where the veterinaries who entered their measures in 'hands' of 4 inches each, with the extra inches and fractions, obviously wrote down the wrong number of hands, 14 for The entry assigned to the animal indicated an exceptionally hollow back, which the photograph showed not to be the case. So the erroneous entry of 'hands' was corrected, and then observation and calculation agreed. Considering the difficulty of measuring a restive, and often vicious, thoroughbred horse, whom it is somewhat dangerous to tickle with measuring apparatus, also that each animal was only measured once, while the photographs were measured at least twice, and again that one blunder of entry was detected as above, it seems reasonable to ascribe the larger differences of from 1 inch to 21 inches, mainly to faults connected with measurement of the animals, and not to those connected with the photographs. An error in the latter of one millimetre, which corresponds to about 11 inch of actual height, is barely credible. This conclusion is confirmed by the more equable run of the statistical curve of photographic measures. It is further confirmed by some experiments made two years ago on behalf of the Chairman of the present Committee, on the degree of consistency between the measurements made (1) by the same veterinary student of the same horses on different occasions, and (2) between the means of the results of the several students. A discussion of these results showed that the probable error of a single measurement was considerable, and therefore that large errors might occasionally occur. Direct measures of the length of the body of a horse are considered by experts to be very untrustworthy, but the photographic method gives them with precision and simplicity. Owing to the roundness of the chest and buttocks, no correction seems necessary for the foreshortening of an animal that stands slightly askew.

Not a few inquiries and experiments have been made in relation to purely-bred shorthorn cattle. Thirty-one triads, each consisting of one adult subject, its sire, and its dam—the 'subjects' being the offspring of 7 bulls and 26 cows—have been photographed for the Committee by Mr. John Patten, Jun., under quasi standard conditions. The cattle were, for the most part, of the herd of the Duke of Northumberland, at Alnwick Park. The larger portion of the photographs were received too late to be properly dealt with in this Report. They seem to afford very valuable material for study.

SIXTH REPORT

OF THE



ROYAL COMMISSION

ON

HORSE BREEDING.

Presented to Parliament by Command of Mer Majesty.



LONDON:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY EYRE AND SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

And to be purchased, either directly or through any Bookseller, from
EYRE AND SPOTTISWOODE, EAST HARDING STREET, FLEET STREET, E.C., and
32, ABINGDON STREET, WESTMINSTER, S.W.; or
JOHN MENZIES & Co., 12, HANOVER STREET, EDINBURGH, and
90, WEST NILE STREET, GLASGOW; or
HODGES, FIGGIS, & Co., LIMITED, 104, GRAPTON STREET, DUBLIN.

ROYAL COMMISSION.

VICTORIA R.

Victoria, by the Grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

To our trusty and well-beloved Alfred Edward Pease, Esquire, in the Commission of the Peace for the North Riding of the County of York, Greeting.

Telherras We did by warrants under Our Royal Sign Manual bearing date respectively the third day of December, one thousand eight hundred and eighty-seven, and the first day of September, one thousand eight hundred and ninety-two, appoint Our Right Trusty and Right Entirely Beloved Cousin and Councillor William John Arthur Charles James, Duke of Portland, together with the several noblemen and gentlemen therein respectively mentioned, or any three or more of them, to be Our Commissioners to consider and report to Us the regulations under which Our Royal Bounty for the encouragement for the breeding of sound horses, instead of taking the form of Queen's Plates at Race Meetings, may best be expended in prizes, to be bestowed by Us at the chief Agricultural Shows in Great Britain, or in such other method as We may approve.

And whereas one of Our Commissioners so appointed, namely, Frederick George Ravenhill, Esquire, has since deceased.

Now know pt, that We, reposing great confidence in you, do by these Presents appoint you, the said Alfred Edward Pease, to be one of Our Commissioners for the purpose aforesaid, in the room of the said Frederick George Ravenhill, deceased, in addition to and together with the other Commissioners whom We have already appointed.

Given at Our Court at St. James's, the sixth day of June, one thousand eight hundred and ninety-five, in the fifty-eighth year of Our Reign.

By Her Majesty's Command,
(Signed) H. H. ASQUITH.

SIXTH REPORT

OF THE TOTAL PROPERTY OF THE PARTY OF THE PA

ROYAL COMMISSION

res

HORSE BREEDING.

MAY IT PLEASE YOUR MAJESTY:

We, the Commissioners appointed to dispose of Your Royal Bounty, which was formerly given in Queen's Plates for racing, and also the money which Parliament has granted for the encouragement of horse-breeding in Great Britain, humbly desire to submit to Your Majesty this our Sixth Report, in continuation of that which we had the honour to lay before Your Majesty on the 3rd of July 1895.

Since we had the honour of presenting our last Report, two shows have been held in London during the years 1896 and 1897, at which the Queen's premiums have been awarded, both of these shows being held in conjunction with the Hunters' Improvement Society.

The number of stallions entered in the district classes continues satisfactory, and we have been enabled to select suitable horses out of those exhibited to locate in the various districts in England, Wales, and Scotland.

An examination of the schedule will show that owners of mares continue to show their appreciation of the opportunity of having them served by stallions of approved soundness. In one or two instances, however, it will be seen that premium stallions have not covered the prescribed number of mares during the season of service, and your Commissioners have therefore deemed it desirable to formulate a new regulation which will enable them, in view of such cases, to reduce the amount of the premium.

The desirability of limiting the age of stallions, and preventing those which are unfruitful, from competing for Queen's premiums, has been the subject of careful consideration, and the Commissioners are of opinion that the time has arrived when some alteration of the rules is required, and they therefore propose to introduce regulations for securing this object, in the next premium list.

We beg to append to this Report information referring to the work of this Commission since the publication of our last Report in July 1895.



The district committees who have kindly acted in the various districts, and who have supervised all the local arrangements in connection with the Queen's premium stallions, are entitled to our warmest thanks, and we beg to avail ourselves of this opportunity of tendering to them our grateful acknowledgments for the services rendered.

All which we most humbly submit to your Majesty's most gracious consideration.

PORTLAND.
COVENTRY.
RIBBLESDALE.
HENRY CHAPLIN.
JACOB WILSON.
JOHN GILMOUR.
J. BOWEN JONES.
ALFRED E. PEASE.

J. Herbert Taylor, Secretary, 22, Great George Street, Westminster, S.W., July 26th, 1897.

APPENDIX A.

The following are the Conditions under which the Shows in the Spring of the Years 1896 and 1897 were held (those for 1895 forming an Appendix in the last Report), together with Details of Distribution for those

The shows are held in London in conjunction with the Hunters' Improvement Society.

Twenty-nine equal premiums, consisting each of 150%, are offered for thoroughbred stallions (four years old and upwards) for England, Wales, and Scotland.

* Each stallion winning a premium shall serve not less than 50 half-bred mares, if required, during the season, and shall stand or travel at the owner's option in the district for which he is exhibited at a fee not exceeding 40s. for each mare and 2s. 6d. for the groom.

Stallions shall compete in the district class only for which they are entered, and exhibitors may not enter more than one stallion in each class.

A stallion which has won four Queen's premiums in the same district class shall be ineligible for entry again in the same class, but shall be eligible for any other district class.

The following diseases shall disqualify a thorough-bred stallion for the purposes of this Commission,

Roaring-whistling. Ringbone. Unsound feet. Navicular disease. Spavin. Cataract.

The season of service commences :-On April 3rd and terminates on July 31st.

* In the conditions for the 1897 spring show this paragraph rend as follows, viz; :-
"Each stallies winning a premium shall serve not less than 50 half-bred nares, if required, during the season, and shall stand or travel, as the Commissioners may direct, in the district for which he is exhibited at a fee not exceeding 400, for each mare, and he, 6d, to the grecom."

The following was also incorporated in the conditions for the 1897 spring show, viz.:
"If any stallies winning a premium should not serve at least 30 half-bred mares during the season, the Commissioners reserve the power to reduce the premium."

The Distribution of Premiums for 1896 and 1897 in the respective Districts for England, Wales, and Scotland was as follows:—

District Class.	Counties.	-	District Class,	Counties.	
	Bodfordshire - Buckinghamshire Cambridgeshire Essex -		Е	Yorkshipe	Three stallions at 1984, each.
A	Hertfordshire Huntingdomhire Middlesex Norfolk Oxfordshire Suffolk	Three stallions at 1864, each,	2	Herofordshire - Monmouthshire - Shropshire - Staffordshire - Warwickshire - Worcestershire - South Wales	. Four stallions at 150f. each.
в {	Comborland - Durham Northumberland Westmoreland Derbyshire	Four stallions at 10%, each.	G {	Cheshire	Three stallions at 1504, each
c	Leicestershire . Lincolnshire . Northamptenshire	Four stallions at 1566, each,	н {	North Wales Rozburghshiro Berwickshiro and district,	One stallion a 180f.
-			1	Fifeshire and district .	One stallion at 150%.
D	Devenshire . Dersetshire . Hampshire . Kent .	Three stallions at 159f, each,	3	Dumfries, Kirkend- bright, and Wigtown Shires.	One stallion at 1866.
	Somersetshire -		к	Moray, Nairn, and Banfi Shires,	One stallion at 1806.
	Wiltshire		L	Ross-shire	One stallion at 150%.

This scheme of distribution thus absorbs, from the funds at the disposal of the Commission, 4,500L per annum, leaving 600L for expenses.

APPENDIX B.

SEASON 1894.

Per-centage of Foals left by the "Queen's Premium" Stallions from the Half-bred Mares during the Season of 1894.

District Class.		Owners of Stallions.	Stallions.	Per-centage of Foals from Half- bred Mares served during the Season.	
		H.R.H. Prince of Wales, K.G	Serra Pinto	74	
. 02	31	Mr. Donald Fraser -	Mount Gifford	61	
	u	The Duke of Hamilton and Brandon, K.T	Persistive	58	
	-	Mr. Edward Josceline Porcy	Braston	53	
	Ш	Dr. Walter Iliffe	Button Park	66	
В	3	Mr. W. Parkin Moore	King Ebor	59	
	Ų	Mr. Robert James Mann	Peregrine Falcon	59	
	0	Mr. Thomas Constable	Belville	45	
	ш	The Earl of Lonsdale	Blue Blood	79	
C	3	Mr. Binyoun Francis Drage	Potentate	53	
	U	Mr. John Charles Harford	Rameses	74	
	,	Colonel John Thomas North	Cedar	63	
D	31	Mr. William Henry Jenner Hogg	Homely	41	
D	1	The Compton Stud Company	Marioni	78	
		The Earl of Harewood	Bahadur	55	
E	ш	Mr. Charles Booth Emsall Wright	Knight of the Forest	36	
	1	The Lord Middleton	Sherbrooke	58	
	,	Mr. Thomas Carr	Crom-n-Boo	78	
	- 11	Messrs. Yeomans Bros.	Roseacre	60	
F	4	Mr. John Young	St. Clair	67	
	1	Mr. John Hutchinson -	Clapranald	63	
		Messrs. George and Phillip Steel	Blue Grass	57	
0	J	Mr. Peregrine Percy Pratt	Eglamore	67	
u	1	Mr. Llewellyn Heywood Jones	Theosophist	44	
н		Mr. R. N. Sutton Nelthorpe	Special Pleader	28	
1		Mr. Edwin Hodge Banks	Moss Hawk	59	
J		Mr. Duncan Hoyle Gibb	Harpagon	50	
К		Mr. William Wilson	Sir Harry	62	
L		Mr. William Wilson	Melibous	- 44	
11		The average per-centage of foals left b	other 99 stallions in 1894	58	

SEASON 1895.

PER-CENTAGE of FOALS left by the "QUEEN'S PREMIUM" STALLIONS from the Half-bred Mares during the Season of 1895.

District Class.		Owners of Stallions.	2	Per-centage of Foals from Half-brod Marcs served daring the Season.
A	{	H.R.H. Prince of Wales, K.G Mr. Alexander Fraser Mr. Walter Norman Richardson	-	Serpa Pinto
В	{	Mr. Edward Joseeline Percy - Dr. Walter Hiffe Mr. Albert Octavius Haslewood Mr. William Parkin-Moore		Brayton 59 Batton Park 78 Four Poster 59 King Ebor 73
С	{	Mr. Thomas Constable The Earl of Dysart Mr. Albert Octavins Haslewood Mr. R. N. Sutton Nelthorpe		Belville
D	1	The Earl Cowley Mr. Peregrine Percy Pratt Mr. William Wilson		Bloodstone
E	{	The Earl of Harewood - Mr. Dunean Hoyle Gibb The Lord Middleton		Baladur

District Class.		Owners of Stallions.	St	Per-centage of Foals from Half- bred Mares served during the Season.				
F	{	Mr. Thomas Carr Mr. John Roes Mr. Eusebius Gustavus Crowhurst Mr. A. P. Heywood Lonsdale		Crom-a-Boo - Glory Smitten Just in Time - Withernam -	-			78 60 51 58
G	{	Messrs. George and Phillip Steel The Duke of Hamilton and Brandon, K.T. The Earl of Shrewsbury and Talbot		Blue Grass - Par-ci-par-la - Sydenham -				71 62 42
H		Mr. John Hutchison		Chip Chase -				36
1		Mr. Edwin Hodge Banks	-	Moss Hawk -				59
J		Mr. John Hutchison	-	Clanranald -			-3	75
K		Mr. George Jeffery		Dry Tonet -				75
L		Mr. Frank Godson		The Salt -		-		69
		The average per-centage of foals lef	t by	the 29 stallions in 1	895		-	61

APPENDIX C.

RETURN of the Number of Stallions exhibited in each District Class at the London Shows in the Years 1895 and 1896. Names of Owners and winning and selected Stallions, with the Number of Maries served by each at the Royal Commission Fee of 21. 2s. 6d. or under, and at the Owner's own Fee; together with the Names and Addresses of the District Committee.

1895

District Class.	Number of Stal- lions Exhibited.	Owners of Stallions.	Stallion.	Served at Com- mission Fee.	Served at Owner's Fee.	Total,	District Committee.
	1	H.R.H. the Prince of Walos, K.G.	Serpa Pinto -	50	-	30	Sir William Pfolkes, Bart., Hillington, Lynn, Nesfelk, Mr. A. C. Fonntsine, Narford Hall, Swaffham, Nerfolk, Mr. C. D. Seymour, Barwick House, King's Lynn.
A	10	Mr. Alexander Frasor	British Prince -	31	-	31	Mr. R. Bond, Old Bank House, ü. Butter Market, Ipswich. Mr. A. J. Smith, Rendlesham, Woodbeidge, Mr. G. E. Walker, Woodbeidge, Suffelk.
		Mr. Walter Norman Bichardson	Pumpernickel -	15	-	15	Mr. E. B. Harmard, Grove Lodge, Sawbridgeworth, Horts, Mr. W. Smith, The Links, Esshop's Stortford, Herts, Mr. J. Lewis Wigan, Haverbrack, Bishop's Stortford, Herts.
		Mr. Edward Joseeline Percy -	Brayton .	35	-	35	Mr. R. Brydon, Londonderry Odloes, Senham Harbour, co. Darham. Mr. Clement Stephenson, Sandyford Villa, Newcastlo-on-Tyne, Mr. George Wilkinson, Shotton Grange, Blagdon, near Cramlington.
В	124	Dr. Walter Hiffe	Button Park .	28	-	28	Mr. G. L. Hogearth, Westmoreland and Kendal Agricultural Society, Kendal, Mr. J. Wakefield, Sodgewick Hosso, Kendal, Mr. C. H. Wilson, Oxonbolme, Kendal,
		Mr. Albert Octavius Haslewood	Four Poster .	54	1	55	Mr. Anthony Marshall, Annotend, Chathill, Northumberland, Mr. G. G. Rea, Middleton, Wooler, Northumberland, Mr. T. Tomlinson, Bailiff Gate, Alnwick,
	,	Mr. Wm. Parkin Moore	King Eter -	14	1	15	Mr. G. J. Bell, 1. Lonzdale Street, Carliale, Mr. John Steel, Wigton, Comberland, Mr. J. Thompson, Estate Office, Ernyton, Carliale,
		Mr. Thomas Constable -	Belville -	51	13	64	Mr. Frank Godson, Tomple Bruer, Lincoln. Mr. E. P. Rawraley, M. P. H., Girsby Manor, Lincoln. Mr. J. Tomlinson, Eirthorpe Manor, Billingborough, Lincoln- shire.
o	17-	The Earl of Dysart	Marioni	50	17	67	Mr. Algornon Hack, Buckminster, Grantham. Mr. J., Hornsby, Stapleford Park, Melton Mowbray, Mr. J. Rudkin, Hanby, Grantham, Lines.
		Mr. Albert Octavius Haslewood	Red Eugle -	6)	20	80	Mr. J. Eurron, Borrowah, Derby, Mr. S. Burton, Derbyshire Agricultural Society, Derby, Mr. F. Drewry, Euxton, Derby,
	1	*Mr. R. N. Sutten Nelthorpe	Special Piender or Tally-ho.	23	-	22	Mr. Harry Breeks, Kaelby Grange, Brocklesby, Lines, My, Walter Ellis, South Ferriby Grange, Barton-on-Humber, Hull. Mr. R. C. Lowish, Swallow Vale, Caister.

^{*} Special Pleader died suddenly on May 4th, 1895.



1895-continued.

District Class.	Number of Stal- lions exhibited.	Owners of Stallions.	Stallions.	Seeved at Com-	mission Fee.	Served at Owner's Pec.	Tretal.	District Committee.
	1	The Earl Cowley -	Bloodstone	1	26	9	33	Mr. T. Heoper Deacon, The Repository, Swindon, Wilts. Mr. T. B. Miller, M.F.H., The Kennels, Crickinde, Wilts. Mr. Arthur Rich, Oaksey, Malmosbury, Wilts.
D	39-	Mr. Peregrine Porcy Pratt .	Eglamore		50	1	28	Mr. C. Leveson-Gower, Titsey Piace, Limpsfield, Surrey, Mr. W. H. J. Hegg, Oakleigh, Fembury, Tanbridge Wells, Mr. T. Hocker, Brecklam, Edenbridge, Kent. Mr. H. G. Henre, M.F.H., Stanstead House, Godstone, Surrey,
	l	Mr. William Wilson • •	Sir Harry		54	-	54	Mr. T. J. Bennett, M.F.H., Cobham Court, Cobham, Surrey, Mr. Harry Puller, St. High Street, Crysden, Surrey, Mr. W. Wood, Ifield Court, Hield, Crawley, Sussex.
	1	The Earl of Harewood	Bahadur .		50	10	60-	Mr. E. C. Brooksbank, Healaugh Old Hall, Tadcaster, Mr. C. M. S. Pilkington, Harewood, Losda, Mr. F. W. Slingsby, Red House, Moor Monekton, York,
E	2	Mr, Dunean Hoyle Gibb	Harpagon		23	-	23	Mr. W. Harland, Ripon Agricultural Association, Ripon, Yorks. Mr. T. S. Mason, Fountains Hall, Ripon, Mr. W. C. P. Snowden, Risely Hall, Ripley, Yorks.
	1	The Lord Middleton	Sherbrooko		55	-	85	Mr. H. Cholmondelry, Estato Office, Siedmere, Yorks. Mr. W. Garforth, Swinton Gracge, Mallon. Mr. F. Reynard, Sunderlandwick, Driffield.
	f	Mr. Thomas Carr	Crom a-Boo		13	-	51	Mr. Fredk, Ames, M.F.H., Hawford Lodge, Worcester. Sir Harry F. Vernin, Bart, Hanbury Hall, Droftwich. Mr. C. W. Wicksted, Shakenhurst, Cleobury, Mortimer, Salou.
		Mr. John Rees	Glory Smitten		60	5	55	Mr. J. T. Fisher, Denant, Haverfordwest, Mr. R. H. Harres, Trefignme Hall, Haverlordwest, Mr. W. V. Thomas, Katalo Agent, Carmarthen.
P	22	Mr. Eusebius Gustavus Crow- burst.	Just in Time		46	1	67	Mr. Philip S. Danby, Church Farm, Offchurch, Leanington, Mr. J. H. Davis, Old Park, Warwick, Mr. W. Gilbert, 37, Clarendon Avenue, Leanington.
	1	Mr. A. P. Heywood Lonsdale .	Withernam		40	-	40	Mr. H. Ker Colville, Hellaport Hall, Market Drayton, Mr. H. W. Fell, Shavington Grange, Market Drayton, The Hon. G. Ormsby-Gore, The Lodge, Malpas, Cheshire.
	1	Messrs, George and Phillip Steel.	Elizo Grass		00		70	Mr. A. Birley, Bartle Hall, Presion. Mr. Jan. S. Fair, Estate Office, Lytham. Mr. Walter Mucklow, Elton Grango, Bury, Lanca.
G	12<	The Duke of Hamilton and Brandon, K.T.	Par-ci-Par-la	-	37	-	87	The Hon. J. E. Cross, High Legh, Knutstord, Hr. J. Hernby, Knowsley Estate Office, Present, Mr. Colin McIver, Estate Offices, Warrington.
		The Harl of Shrewsbury and Tallot.	Sydenlam	-	44	-	44	Rev. J. Armitstead, The Vicurage, Sandbuch, Cheshire, Mr. John Edwards, Haslington Hall, Crewe, Mr. Thomas Parton, Weston Hall, Crewe.
н	3	Mr. John Hutchison	Chip Chase		30	4	34	Mr. Thomas Calder, Swinton Rill, Coldstream, N.B. Mr. James Elliot, Burnhead, Hawick, N.B.
1	3	Mr. Edwin Hodge Banks -	Moss Hawk	-	71	+	71	Mr. W. Einckie, The Stables, Montrave, Leven, Fife, Mr. John Scott, Ballono, St. Andrew's, N.B. Mr. T. Webster, Nisbetfield, Collessio, Fife.
J	1	Mr. John Hutchison	Classranald	-	42	4	45	Mr. J. H. Dioloson, Dubton, Thornhill, Dumfriesahire, N.B. Mr. J. L. Drew, Doonhill, Newton Stewart, N.B. Mr. J. McKie, Ernspie, Castle Douglas, N.B.
K		Mr. George Jeffery	Dry Tossi	-	33	-	33	Mr. William Ross, Hilles Farm, Buckie, N.B. Mr. J. S. Robertson, Cawdor Estate Office, Nairn, N.B. Mr. J. P. Stuart, Orbliaton, Fochabers, N.B.
L	5	Mr. Frank Godson	The Salt	-	16	-	16	Mr. William Ford, Fentonbarns, Drum, N.B. Mr. James Lessile, Bughall, Linlithgow, Mr. T. M. Skirving, Niddrie Main, Edinburgh, Mr. James Wylle, Royal Bank of Scotland, Leven Street Edinburgh,
			Totals		1,179	93	1,271	

APPENDIX D.

1896.

District Class.	Number of Stal. Jons exhibited.	Owners of Stallions.	Stallions,	Served at Costs- mindon Pec.	Served at Owner's Fee.	Total.	District Committee.
	1	H.R.H. the Prince of Wales, K.G.	Serpa Pinto	- 25	-	23	Sir W. Ffelkes, Bart., Hillington Hall, King's Lynn. Mr. C. E. Cooke, Litcham, Swaitham, Norfolk. Mr. C. D. Seymour, Barwirk House, King's Lynn.
A	10	Mr. Donald France	Ammonite	. 54	15	62	Mr. P. W. Coales, Lathbury, Newport Pagnell. Mr. Henry G. Lepper, Aylesbury. Mr. C. M. Peror, Adatock Manor, Winslow, Bucks (Corresponding Member).
	I	Mr. William Renry Jenner Hogg.	Homely -	- 24	-	24	Sir Henry Simpson, Gordon House, Windsor (Corresponding Member), Mr. J. Twinch, Cippenham Lodge, Slough, Mr. H. E. Howard Vyse, Stoke Place, Slough,

1896-continued.

District Class.	Number of Stal- lions Exhibited.	Owners of Stallions.	Stallions		Served at Com- mission Fee.	Served at Owner's Yea.	Total	District Committee.
	1	Dr. Walter Hiffe	Button Park		33	1	50	M. G. L. Hoggarth, Westmoreland and Kendal Agricultural Society, Kendal. Mr. J. Wakefield, Sedgewick House, Kondal. Mr. C. H. Wilson, Oxenbolme, Kendal.
В	94	Mr. Albert Octavius Haslewood	Four Poster		723	6	58	Mr. Anthony Marshall, Annatend, Chathill, Northumberland, Mr. G. G. Ren, Middleton, Wooler, Northumberland, Mr. T. Toudinson, Bailiff Gate, Alawick.
		Messrs, George and Phillip Steel,	Hale		50	7	67	Mr. G. J. Bell, I. Lonsdale Street, Carlisio (Corresponding Member). Mr. F. Carleton Cowper, Carleton Derick, Penrith, Mr. S. D. Stanley Dodgam, Somerset House, Whitehaven.
		Mr. William Parkin Moore .	King Ebor		42	-	42	Mr. R. Bryden. Londonderry Offices, Seaham Harbese, Durham. Mr. Germent Stephenson, Sandyford Villa, Newcaslo-on-Tyna, Mr. George Wilkinson, Shotton, Grange Cond.
	1	Mr. Thomas Constable	Belville -		59	-	38	Mr. Frank Godson, Temple Bruce, Lincoln. Mr. K. P. Rawenkey, M. F. H., Girshy Manor, Lincoln. Mr. J. Tomilianu, Hirbburne Manor, Billiugheseach, Lincoln.
c	14-	The Eurl of Dysart	Marioni -		50	-	50	shire, Mr. Algornon Hack, Buckminster, Grantham (Corresponding Member), M. J. W. Hornshy, Barrowby, Grantham, Rev. J. P. Scalecoko, Waltham Rectory, Melton Mowbray.
		Mr. Albert Octavius Haslewood	Red Eagle	-	50	46	96	Mr. S. Barton, Derbyshire Asricultural Society, Derby (Corresponding Member). Mr. F. Drewys, Saxton, Derby. Mr. J. R. Smith, Castle Desington, near Derby.
	-	The Earl Fitswilliam	Riversdale		53	-	33	Mr. W. G. Maxwell, Longthorpe Manor, Peterborough, Mr. B. Painter, Burley-en-the-Hill, Oakham, Estland, Mr. S. Robson, 67, 83. Martins, Stamberl.
	-	Mr. Peregrine Percy Pratt .	Eglamore -		60	2	02	Mr. W. G. Jackson, Swanley, Kent. Mr. A. Leesey, Orpines, Wateringbury, Kent. Mr. S. Lee-Smith, Larkfield, Haidstoon,
D	20-	Mr. William Miles	Pairfield	-	56	-	56	Mr. G. Crake. 11, Lockyce Street, Plymouth. Mr. R. L. Marzaek, Haye, Calllegtes, Cornwall. Mr. John Young, Pustingh House, Yealmpton, Devon.
	(Mr, William Wilson	Sir Harry		17	-	67	Mr. J. Mark Camnove, Standon Ockley, Surrey, Mr. Harry Puller, St. High Street, Croydon, Surrey (Corre- sponding Member), Mr. Murray Marshall, Springwood, Godalming.
R		Mr. Thomas Omstable .	Ismeno .		40	1	50	Mr. E. C. Otter, Royaton Manor, near Bawter, Yorks, Mr. H. Whitsworth, Wath-upon-Daarne, near Rotherham, Mr. F. B. Wikinson, Byth Spital, Rotherham (Corresponding Member).
	84	The Lord Middleton	Sherbrooke	-	31	-	51	Mr. H. Cholmondeley, Estate Office, Stellmere, Yorks, Mr. W. Garforth, Swinton Grange, Malton, Mr. F. Reynard, Sunderlandwick, Driffield,
		Mr. William Jordison	Trundle Hill	1	53	61	94	The Hon, G. Lascellos, Sion Hill, Thirsk. Mr. T. Mason, Fountains Hall, Ripon. Mr. W. C. P. Snowden, Risely Hall, Riptey, Yorks.
		Mr. Albert Octavius Hashswood	Impréva -		11	1	18	Sir W. M. Curtis, Bart., M.F.H., Caynham Court, Ludlow, Mr. A. B. Boughton-Knight, Downlon Castle, Ludlow, Mr. G. H. Green, Wignare Grange, Leintwardine, R.S.O., Herofordshire,
p	17-		Maxwell		49	-	49	Mr. E. W. Harwood, Sillins, Rodditch. Colonal G. Raikes, Dunnington Hoath, Alcester, R.S.O. Mr. W. W. Wiggin, The Forehill House, near King's Norton, Worcostershire.
		Mr. P. W. G. Greswelde Williams.	Q.C		42	4	46	Mr. R. S. Bagnal, Ryal Hill, Earls Croome, Worcester, Colonel A. Wimmore Hooper, Kents Green Court, Powick, Worcester, Mr. T. L. Walker, Knightwick Manor, Worcester,
	-	Mr. A. P. Heywood Lonsdale	Withernam		50	-	50	Mr. H. H. Etches, Bark Hill House, Whitehurch, Salon, Mr. H. W. Fell, Shavington Granges, Market Drayton (Growgonding Member), Gr. A. MacKennie, P. M. C.V. S., Market Drayton, Salop,
	1	Mr. Edward Mitchell	Masterman		53	-	53	Rev. J. Armitstead, The Vicarage, Sandhach, Chrahir (Corresponding Member). Mr. J. Edwards, Hasilmeton Hall, Crews. Dr. C.F. Sutton, The Hollies, Holmes Chapel.
0	8	Colonel William Henry Foster, M.P.	Mintrock		37	-	37	Dr. C. F. Sutton, Warton Grange, Carnforth, Lames, Mr. E. Barton, Warton Grange, Carnforth, Lames, Mr. R. Burrow, Green Bank, Whittington, Kirkby Lonsdale, Mr. J. S. Fair, Estato Office, Lytham, Lames.
	4	Mr. Albert Octavins Haslewood	Par-ci-par-la		65	-		Mr. W. Garnott, Waddow, Clithoros. Mr. W. Mucklow, Elton Grange, Bury, Lanes. Mr. J. Whitehead, Edgworth and District Agricultural Society Greengate, Edgworth, near Bolton, Lanes.
H	3	Mr. Robert Oliver	Blakelaw		51	-	53	Mr. Thomas Caldor, Swindon Hill, Coldstream, N.B. (Corresponding Member). Spending Member). Mr. James Elitott, Berrnhend, Hawirk, N.B. Ospitain Humber, M.F.H., Anton's Hill, Coldstream, N.B.
	3 1	Mr. Edwin Hodge Banks .)	Hoss Hawk		el	-	61	Mr. W. Blackis, The Stables, Montava, Leron, Fife (Corre- aponding Member), Mr. John Scott, Ballone, St. Andrews, N.B. Mr. J. Welster, Nisbetheld, Collessie, Fife,
	4 1	Mr. J. Hutchison	Distracted		50	2		Mr. J. H. Dickson, Dabton, Thornhill, Dumfriesahire, N.B. Mr. J. L. Drew, Donnhill, Newton Stewart, N.R. (Corresponding Member).

District Class.	Number of Stal- lions Exhibited.	Owners of Stallions.	Stallions.	Served at Com- mission For.	Served at Owner's Pee.	Total.	District Committee,
К	6	Mr. George Jeffery • •	Dry Topat	10	1	80	Mr. William Rose, Hilton Farm, Buckie, N.B., Mr. J. S. Robertson, Cawdor Estate Office, Nairn, N.B., Mr. J. P. Stuart, Orbliston, Fochabers, N.B. (Corresponding Member).
L	*	Mr. James S. Durrell	Potentate -	53	10	63	Mr. T. A. Anderson, Ballachraggen, Alnoss, N.B. (Corresposding Member). Mr. T. Honderson, Roschaugh, Aveck, N.B. Mr. W. Boss, Kinnahaird, by Dingwall, N.B.
			Total -	1,545	154	1,470	

APPENDIX E.

RETURN of the Number of Stallbons exhibited in each District Class at the Lonion Show in the Year 1897.

Names of Owners and winning and selected Stallbons, together with Names and Addresses of the District Committee.

District Class.	Number of Stal- lions Enhibited.	Owners of Stallions.	Stallions.		District Committee.
	[Mr. James Heys	Attalus -		Mr. B. Davies Cooke, Park Lodge, Kimbelton, St. Noots, Mr. W. G. Maxwell, Longtherpe Manor, Peterborough, Mr. Noet Villiers, Estate Office, Connington, Peterborough,
A	16	Mr. Solomon Young	Curley - •		Mr. Thomas Brown, Little Hallingbury Hall, Bishops Stortford, Herts. Mr. James Christy, Writtle, Chelmsford. Mr. Joseph A. Phelger, The Codars, Springfield, Chelmsford (Corresponding Member).
	-	Mr. Eustuce Barkow · · ·	Galepian -		Mr. R. Bond, Old Bank House, 6, Butter Market, Ipswich (Corresponding Member). Mr. A. J. Smith, Resullesham, Woodbridge, Mr. John Symonds, Thisteton Hall, Burgh, Woodbridge.
	1	Mr. Ralph Rimmer	Active Hampton	n -	Mr. R. Brydon, The Dene, Scalam Harbour, co. Durham. Mr. Olement Stephenson, Sandyford Villa, Newcastle-on-Tyne. Mr. George Wilkinson, Shotton Grange, Cramlington, Northum- berland.
В	10	Dr. Walter Hiffs	First Flight II. Loughboro'.	OF.	Mr. G. L. Hoggarth, Westmoreiand and Kendal Agricultural Seciety, Kendal (Corresponding Member). Mr. J. Wakedold, Sedgewick House, Kendal. Mr. C. H. Wilson, Ozenholme, Kendal.
		Messes, George and Phillip Steel .	Hale · ·		Mr. C. J. Armstrong, Hetherington's Austion Co., Earl Street, Carlisle, Mr. F. Carleton Cowper, Carleton Derick, Penrith, Mr. John S. Rigg, Rim Bank, Appleby, Westmoreland.
		Mr. Albert Octavius Hashewood .	Red Eagle .		Mr. F. W. Hall, Estate Office, Alnwick, Northumberkand, Mr. Arathony Marshall, Amstead, Chathill, Northumberland, Mr. G. G. Ren, Middleton, Wooler, Northumberland,
		Mr. Frank Godson	Crowbottous		Mr. William B. Barit, Wellingere, Lincoln. Mr. J. Tomlinson, Birthorpe Manor, Billingborough, Mr. C. E. Williams, Stenford, Lincoln.
c	,	Mr. Albert Octavian Haslewood -	Four Poster .		Mr. S. Borton, Derbyshire Agricultural Society, Derby (Corresponding Member). Mr. F. Deswry, Buxton, Derby. Mr. J. B. Smith, Castle Donington, near Derby.
	and the	The Earl of Dysart	Marioni -		Mr. E. C. Clayton, Cottesmore Grange, Oakam, Mr. F. Astley Cooper, Buckminster Park, Grantham, Mr. Algernon Hack, Buckminster, Grantham (Corresponding Mumber).
		Mr. Harold Martin	Upsilon		Mr. H. D. Addey, Chythorys Manor, Alfued, Lincoln, Mr. E. P. Rawnsley, M.F.H., Gorsby Manor, Lincoln, Mr. C. B. Robson, Cawkwell, Horneastle, Lincoln.
		Mesurs, George Jeffery & Sons	Dry Toast .	-	Mr. G. P. Finch, The Briars, Alphington, Exeter, Mr. R. Harris, Halwill Manor, Beaworthy, N. Devon, Mr. G. Hext, Kingstone, Newton Abbot.
D	14.	Mr. William Wilson	Sir Harry		Mr. J. Mark Camanov, Standon, Ockley, Surrey, Mr. Harry Fuller, S3. High Street, Croydon, Surrey (Correspond- ing Member). Mr. T. Hooker, Breaham, Edenbridge, Kent.
		Major General John Jugo Tre- lawny.	Springsbl -	6	Mr. A. E. Bouchier, Tronsan, St. Germans, Cornwall. Mr. E. L. Marsack, Haye, Califorton, Corowall, Capinin J. D. A. Roberts, Trethill, Antony, near Devenport.
		Mr. William Wilson	Chibiaboa		Mr. T. S. Mason, Fountains Hall, Ripon, Yorks, Mr. C. M. S. Pilkington, Harewood, Leeds, Mr. W. C. P. Snowder, Riseley Hall, Ripley, Yorks,
В	13	Mr. James S. Darrell	Dermed -		Mr. Charles L. Kendall, The Green Farm, Beompton, Yorks. Colosed W. Scoby, Hobground House, Sanington, R.S.O., Yorks, Mr. Penn C. Sharbrooke, Keidholms Priory, Kirby Moceside, Yorks.
		Mr. Albert Octavius Haslewood	Impréva -		Mr. C. Howard Taylor, New Hall, near Barnsley, Mr. H. Whitworth, Wath-upon-Dearne, near Rotherham, Mr. F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark.

District Class.	Number of Stal- lions Exhibited-	Owners of Stallions.	Stallions.	District Committee.
	1	Mr. Lowis James Shirley	Alvin	Mr. H. O. L. Baker, The Cottage, Hardwicke, Gloucoster, Major F. Butler, Buller House, Circnocater, Colonel F. Henry, Elmostree, Tetbury,
P	21	Mr. George Du Cros	Botton Park - ·	Mr. Hornes Bourne, Breach Oak, Coventry, Mr. W. Dalo, Hertford Street, Coventry, Mr. J. Mnyfield, Allesley, near Coventry,
		Mg, Sammel Hill Wood	Spahi	Mr. Alfred Edwards, Cora Exchange Offices, Leominster, Here- fardshire. Mr. Stephen Robinson, Lynhalos, Kington, Herefordshire. Mr. A. P. Turner, The Leen, Fembridge, Herefordshire.
	1	Mr. Eusebius Gustavus Crowliurst -	Wildfire	Mr. Phillip S. Dunby, Church Parm, Offehurch, Leamington, Mr. J. H. Davis, Old Park, Warwick, Mr. W. Gilbert, 97, Churendon Avenue, Leamington,
	1	Mosers, Harris Bros	Amber Gate -	Rev. J. Armitstead, The Vicarage, Sandbach, Cheshire (Corresponding Member), Mr. J. Edwards, Haslington Hall, Crews, Dr. C. F. Sutton, The Hellon, Holmes Chapel.
G	15	The Duke of Westminster, K.G.	Grey Log	Captain H. R. Day, Stretten Hall, Malpas, Chashire, The Hon. Cecil T. Parker, Eaton Estate Office, Eccleston, Chester, Mr. S. H. Sandbach, Cherry Hill, Coddington, Malpas, Cheshire,
		Mr. Albert Octavius Haslewood -	Par-ci-par-la -	Mr. Colin McXver. Estate Offices, Warrington. Mr. W. Mnekkow, Elton Grange, Bury, Lanes. Mr. J. Whitehead, Edgeworth and Destrict Agricultural Society, Greengate, Edgeworth, near Bolton, Lanes.
н	4	Mr. Robert Oliver	Blakelaw	Mr. Thomas Calder, Swinton Hill, Coldstream, N.B. (Corresponding Member). Mr. James Elliott, Burshead, Hawick, N.B. Captain Hunter, Anton's Hill, Coldstream, N.B.
1	3	Mr. Binyoun Francis Drugo .	The Weaver	Mr. W. Blackie, The Stables, Montrave, Leven, Fife, Mr. John Scott, Ballone, St. Andrews, N.B. Mr. T. Webster, Nisbetfield, Colessie, Fife,
J	3	Mr. Robert James Mann	Isobath · · ·	Mr. J. H. Dickson, Dabton, Thornhill, Dundriesshire, N.B. Mr. W. B. O'D, Young Mellowal, Craig Lodge, Gienluce, N.B. Mr. J. McKie, Ernspie, Castle Douglar, N.B.
K	8	Messes, George Jeffery & Sons -	Fairfield - ·	Mr. William Ross, Hilton Farm, Backie, N.B. Mr. J. S. Robertson, Cawdor Estate Office, Nairn, N.R. Mr. J. P. Stuart, Orbitston, Forhabers, N.B. (Corresponding Member).
L	4	Mr. James 8. Darrell	Potentate	Mr., T. A. Anderson, Ballschruggen, Alness, N.B. (Corresponding Member). Mr. T. Henderson, Rosebangh Estates Office, Fortrose, N.B., Mr. W. Ross, Kinnabhird, by Dingwall, N.B.

T

from F. Entern Lee H 2 × 12

HORSE BREEDING

SEVENTH REPORT

GOLLEGE BALTON TO PAPERS NO

OHE THERE

ROYAL COMMISSION

OW

HORSE BREEDING.

Presented to both Bouses of Parliament by Command of Ber Maiesty.



PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY WYMAN AND SONS, LIMITED, PRITER LANG. E.C.

And to be purchased, either directly or through any Bookseller, from EYRE and SPOTTISWOODE, East Handing Street, Fight Street, R.C., and 32, Admington Street, Westminster, S.W.; of JOHN MENZIES & Co., 12, Handing Street, Edinburgh, and 90, West Nile Street, Glassow; of HODGES, FIGGIS & Co., Limited, 104, Grapton Street, Durling

1899.

SALE OF GOVERNMENT PUBLICATIONS.

Parliamentary:
Statutes Public General, Session 1898. With Index, Tables, &c., &c. Roy. Svo. Cloth.
Second Revised Edition. By authority. A.D. 1835-1713 to A.D. 1872-1880. 14 Vols. P.
Revised Editions. Tables showing subsequent Repeals, effected by Acts of 60 & 61 Vict. 1887.

State Trials, being Reports of the Chief State Trials which have taken place between 1820 and the present time, published under the supervision of a Committee appointed by the Lord Chancellor. Roy. 8vo. Half cloth, 1820-1823 to 1850-1828. 8 Vols.

Price 10s. each.

SEVENTH REPORT

OF THE

ROYAL COMMISSION

ON

HORSE BREEDING.

Presented to both Bouses of Parliament by Command of Ber Majesty.



LONDON:
PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY WYMAN AND SONS, LIMITED, FETTER LANE, E.C.

And to be purchased, either directly or through any Bookseller, from EYRE AND SPOTTISWOODE, EAST HARDING STREET, FLEET STREET, E.C., and 32, ABINGDON STREET, WESTMINSTER, S.W.; or JOHN MENZIES & Co., 12, HANOVER STREET, EDINBURGH, and 90, WEST NILE STREET, GLASGOW; or HODGES, FIGGIS & Co., LIMITED, 104, GRAFTON STREET, DUBLIM

1899

SEVENTH REPORT

OF THE

ROYAL COMMISSION ON HORSE BREEDING.

MAY IT PLEASE YOUR MAJESTY-

WE, the Commissioners appointed to dispose of Your Royal Bounty, which was formerly given in Queen's Plates for racing, and also the money which Parliament has granted for the encouragement of horse breeding in Great Britain, humbly desire to submit to Your Majesty this our Seventh Report, in continuation of that which we had the honour to lay before Your Majesty on the 26th July 1897.

Since we had the honour of presenting our last Report, two shows have been held in London during the years 1898 and 1899, at which the Queen's Premiums have been awarded, both of these shows being held in conjunction with the Hunters Improvement Society.

The number of the stallions presented for competition in the district classes continues satisfactory, and the quality distinctly higher than at some of the former shows, and in support of this we would call attention to the following Report received from the judges with reference to the stallions upon which they had adjudicated at the recent (1899) show.

"We report that we consider the general quality of the horses good, and an "improvement on what we have seen at similar exhibitions, but we noticed that "several otherwise desirable horses were unable to show their action from having "contracted feet, chiefly the result of neglect."

We have been enabled to select and to locate suitable horses out of those exhibited in the various districts in England, Wales, and Scotland.

As mentioned in our previous Report to Your Majesty, the desirability of limiting the age of stallions, and preventing those which are unfruitful from competing for Queen's Premiums, has been a subject of consideration, and the Commissioners have deemed it desirable to formulate the following new regulations, viz.:—That no stallion over 20 years of age, or any stallion whose average percentage of foals for two seasons does not amount to at least 40 per cent., should be eligible to compete for a Queen's Premium.

Your Commissioners are pleased to record the following Report received by Professor Sir George Brown, on behalf of the veterinary inspectors at the 1898 show, with reference to the stallions submitted to them for inspection for soundness.

"Comparing the results of the veterinary examinations of the Queen's Premium stallions exhibited at the present show at the Royal Agricultural Hall with the results of similar examinations at Newcastle in 1887, and Nottingham in 1888, it is impossible to avoid the conclusion that a remarkable success has attended the efforts which have been made to prevent the use of animals for breeding purposes affected with hereditary diseases, such as cataract, navicular disease, ringbones, and spavin.

"Since that time, and especially during the past four or five years, there has been a noticeable decrease in the above-named diseases, which were at one time exceedingly common, and in the present exhibition it is satisfactory to be able to state that a critical inspection of the eyes of 49 horses did not reveal a single instance of cataract or other disease of the visual organ. Further, it may be observed that no instance of roaring or broken wind was discovered although the tests applied were exceptionally severe. The total result of the veterinary inspection was the rejection of only three horses out of the 49 examined."

GALTON CONTRACTOR SONO

2443. Wt. 1643. 2000-8/99. Wy. & S.

The question of improving the quality of the mares in this country is one of great importance, and continues to have the careful consideration of your Commissioners.

Upon this question we have addressed a circular letter to the Masters and Secretaries of Hunts throughout the country asking if they could see their way to offering at local shows prizes or premiums for brood mares the property of residents in their respective districts covered by a Queen's Premium stallion. From the answers received it would appear that something is being done in this way, though many, while fully alive to the importance of the object, regret that they are unable, principally from lack of funds, to adopt the suggestion.

In the Appendix will be found a Table showing the number of premiums, prizes, and reserves gained in 1898 by the stock of the premium stallions at the different summer meetings at which medals are awarded by the Hunters Improvement Society.

Representations having been made on behalf of the British Association through Mr. Francis Galton, D.C.L., F.R.S., to have the stallions exhibited at our recent show severally photographed, measured, &c., your Commissioners felt that in granting the request they might be rendering assistance, in the way proposed, to the advancement of the study of heredity. Further particulars will be found in Appendix G. of this Report.

We beg to append to the Report information referring to the work of this Commission since the publication of our last Report in July 1897.

We would avail ourselves of this opportunity to tender our warmest thanks to those gentlemen who have acted on the various district committees, and who have so efficiently supervised the local arrangements in connection with the Queen's Premium stallions.

All which we most humbly submit to Your Majesty's most gracious consideration.

PORTLAND (PRESIDENT).
COVENTRY.
RIBBLESDALE.
HENRY CHAPLIN.
JACOB WILSON.
JOHN GILMOUR.
J. BOWEN JONES.
ALFRED E. PEASE.

J. HERBERT TAYLOR,

SECRETARY,

Victoria Street,
 Westminster, S.W.

7 August 1899.

APPENDIX A.

The following are the Conditions under which the Shows in the Spring of the Years 1898 and 1899 were held (those for 1897 forming an Appendix in the last Report), together with Details of Distribution for those years:—

The shows are held in London in conjunction with the Hunters Improvement Society.

Twenty-nine equal premiums, consisting each of 150l., are offered for thoroughbred stallions (four years old and upwards) for England, Wales, and Scotland.

Each stallion winning a premium shall serve not less than 50 half-bred mares, if required, during the season, and shall stand or travel at the owner's option in the district for which he is exhibited, at a fee not exceeding 40s, for each mare and 2s. 6d. for the groom.

If any stallion winning a premium should not serve at least 30 half-bred mares during the season, the Commissioners reserve the power to reduce the premium.

It shall be a condition that no Queen's Premium Stallion shall be allowed to be exhibited for competition during the season of service.

Stallions shall compete in the district class only for

which they are entered, and exhibitors may not enter more than one stallion in each class.

A stallion which has won four Queen's premiums in the same district class shall be ineligible for entry again in the same class, but shall be eligible for any other district class.

The following diseases shall disqualify a thoroughbred stallion for the purposes of this Commission, viz:-

Roaring—whistling. Ringbone. Unsound feet. Navicular disease. Spavin. Cataract.

The season of service commences :-

On April 3rd and terminates on July 31st.

The Distribution of Premiums for 1898 and 1899 in the respective Districts for England, Wales, and Scotland, was as follows:—

District Class.	. Counties.		District Class.	Counties.	
	Bedfordshire Buckinghamshire		Е	Yorkshire	Three stallions at 150%, each.
A	Essex	Three stallions at 150% each.		Gloncestershire - Herefordshire	
	Middlesex Norfolk Oxfordshire Suffolk		F	Staffordshire Warwickshire Worcestershire	Four stallions at 150f, each.
			1	South Wales	
В	Cumberland - Durham - Northumberland Westmoreland -	Four stallions at 150t. each (1898). Three stallions at 150t. each (1899).	G {	Cheshire Lancashire North Wales	Three stallions at 150%, each.
c	Derbyshire Leicestershire Lincolnshire Northamptonshire Nottinghamshire Rutlandshire	Four stallions at 150l.	н {	Roxburghshire	One stallion at 150%.
	Berkshire -		1 .	Fifeshire and district	One stallion at 150%.
	Dorsetshire -	Three stallions at 150L each (1898).	J	Dumfries, Kirkend- bright, and Wig- town Shires.	One stallion at 150%.
D	Kent Somersetshire -	Four stallions at 150t. each (1899).	К	Moray, Nairn, and Banff Shires.	One stallion at 1504.
	Sussex		L	Ross-dilre	One stallien at 150/.

This scheme of distribution thus absorbs, from the funds at the disposal of the Commission, 4,250% per annum. leaving 750% for expenses.

APPENDIX B.

SEASON 1896.

Percentage of Foals left by the Queen's Premium Stallions from the Half-bred Marcs during the Season 1896.

[District : Class.	Owners of Stallic	oms.					Stalli	ions.			Percentage of Fools fron Half-bred Mares serves during the Season.
	H.R.H. Prince of Wales, K.G.	+					Serpa Pinto				57 49
- A	Mr. Donald Fraser		-				Ammonite -				55
	Mr. W. H. Jenner Hogg					+	Homely -				
			-		-		Button Park				69
В	Mr. Albert Octavins Haslewood					-	Four Poster				65
D						19	Hale				48
	Mr. William Parkin-Moore -					-	King Ebor -				76
	Mr. Thomas Constable						Belville -				54
C						-	Marioni -				67
	Mr. Albert Octavius Haslewood		-			17	Red Eagle -				43
	The Earl Fitzwilliam						Riversdale -				68
	Mr. Peregrine Percy Pratt -	-				24	Eglamore -	-			67
D	Mr. William Miles		-				Fairfield -				42
	Mr. William Wilson						Sir Harry -				38
	Mr. Thomas Constable				7		Ismeno -				36
E	The Lord Middleton						Sherbrooke -				59
	Mr. William Jordison						Trumdle Hill				54
	Mr. Albert Octavius Haslewood						Imprévu -				73
-	Mr. Joseph Wheeler			-			Maxwell -				62
F	Mr. F. W. G. Greswolde-Williams						Q.C				73
	Mr. A. P. Heywood Lonsdale						Withernam -		-		48
	Mr. Edward Mitchell						Masterman	-			0.46
G	Colonel William Henry Foster, M.	16.	4				Mintrock -				76
	Mr. Albert Octavius Haslewood						Par-ei-par-la	-			62
H	Mr. Robert Oliver - · ·						Blakelaw -				59
T				-			Moss Hawk				52
Ĵ	Mr. John Hutchison		1				Clanranald -				60
K	Mr. George Jeffery		4				Dry Toast -				57
I.	Mr. James S. Darrell		-				Potentate .				92
							e Percentage of allions in 1896	Foals	left	by)	55

SEASON 1897

PERCENTAGE of FOALS left by the QUEEN'S PREMIUM STALLIONS from the Half-bred Marcs during the Season 1897.

District Class.	Owners of Stalli	ons.					Stallion	14.			Percentage of Foals from Half-bred Mares serves during the Season.
	(Mr. James Heys					4.	Attalus -				62
A	Mr. Solomon Young					- 63	Curley -				36
A	Mr. Eustace Barlow						Galopian .				71
				- 1		-	Active Hampton		4		51
						63	First Flight II. or		glibo	000	68
В	Messrs. George and Philip Steel					- 24	Hale				60
	Mr. Albert Octavius Haslewood					4	Red Eagle -	4			66
	/ Mr. Frank Godson						Crowbottom				58
	Mr. Albert Octavins Haslewood					4.1	Four Poster				53
C						-	Marioni -	3			75
	The Earl of Dysart					4.	Upsilon -		-		59-
			2.0	-		4	Dry Toust -	4			57
D	Mr. William Wilson										74
	Major-General J. Jago-Trelawny										70
	Mr. William Wilson					-	Chibiabos -				60
E			-	-		+	Dermod -				39
	Mr. Albert Octavius Haslewood	-	-			-	Imprévu -				66
	/ Mr. Lewis James Shirley -		-	-		-	Alvin -	-			47
**			-	-	-		Button Park				100
F	Mr. Samuel Hill Wood						Spahi				69
	Mr. Eusebins Gustavus Crowhun	st.					Wild Fire				62
	(Messrs. Harris Bros		-	1.4			Amber Gate			30	75
G	The Duke of Westminster, K.G.	-	-	-	+1	+	Grey Leg -				68
	Mr. Albert Octavins Haslewood	-		-		-	Par-ci-par-la				57
H	Mr. Robert Oliver	-	-		4	- 40	Blakelaw -				58
I						-	The Weaver				36
J	Mr. Robert James Mann					-	Isobath ·				31
K			+		+	. 7	Fairfield -				27
L	Mr. James S. Darrell	+	-	-	*		Potentate -				28
				Th	e Ave	Sta	e Percentage of Fe allions in 1897	onls	left b	2)	58

RETURN of the Number of Stallions exhibited in each District Class at the London Shows in the years 1897 and 1898. Names of Owners and Winning and Selected Stallions, with the Number of Mares served by each at the Royal Commission Fee of 2l. 2s. 6d. or under, and at the Owner's own Fee; together with the Names and Addresses of the District Committee.

1897.

	4.7						
PARTIES CHAME.	Number of Stal- lions Exhibited.	Owners of Stallions.	Stallions.	Served at Com- salution Fee.	Served at Owner's Fee.	Total	District Committee.
	1	Mr. James Heys · ·	Attalus	36	-	36	Mr. R. Davies-Cooko, Park Lodge, Kimbolton, St. Neota. Mr. W. G. Marwell, Longthorpe Manor, Peterborough. Mr. Noel Villiers, Estato Office, Connigitor, Peterborough.
	16 (Mr. Solomon Young	Curiey	50	15	67	Mr. Thomas Browne, Little Hallingbury Hall, Bishop's Stortford, Herr Mr. James Christy, Writtle, Chelmsford. Mr. Joseph A. Piedger, The Codars, Springfield, Chelmsford. (Coresponding Member, 1)
	-	Mr. Esstace Barlow	Galopian -	38	3	41	Mr. B. Bond, 05d Bank House, 6, Butter Market, Ipswich. (Corresponding Member.) Mr. A. J. Smith, Rendlesham, Woodbridge. Mr. John Symooda, Thislaton Hall, Burgh, Woodbridge.
	1	Mr. Ralph Rimmer	Active Hamp- ton.	38	-	38	Mr. R. Brydon, The Dene, Seaham Harbour, County Durham. Mr. Clement Stephomon, Sandyford Villa, Newcastle-on-Tyne, Mr. George Wilkinson, Shotton Grange, Cramlington, Northumberian
	10 (Dr. Walter Hiffe	First Flight II. or Lough- boro."	87	-	37	Mr. G. L. Hoggarth, Westmoreland and Kendal Agricultural Social Kendal. (Corresponding Member.) J. Wakefeld, Sedgwick House, Kendal. Mr. C. H. Wilson, Ovenholme, Kendal.
		Messrs, George and Philip Steel.	Hale	51	19	70	Mr. C. J. Armstrong, Hetherington's Anction Co., Earl Street, Carlisli Mr. F. Carleton Cowper, Carleton Derick, Penrith. Mr. John S. Rigg, Elm Bank, Appleby, Westmoreland.
	1	Mr. Albert Octavius Haalewood.	Red Engle -	64	3	67	Mr. F. W. Hall, Estate Office, Alawick, Northumberland, Mr. Anthony Marshall, Annatond, Chathill, Northumberland, Mr. G. G. Bea, Middleton, Wooler, Northumberland.
l	1	Mr. Frank Godson	Crowbottom -	28	-	28	Mr. William B. Burtt, Wellingere, Lincoln. Mr. J. Tomlinson, Birthorpe Manor, Billingborough. Mr. C. E. Williams, Sleaford, Lincoln.
	9 {	Mr. Albert Octavius Hasle- wood.	Four Poster -	54	41	95	Mr. S. Burton, Derbyshire Agricultural Society, Derby. (Corresponding Member.) Mr. F. Dewery, Buxton, Derby. Mr. J. B. Smith, Castle Donington, near Derby.
I		The Earl of Dynart · ·	Marioni	50	4	54	Mr. E. C. Clayton, Cottesmore Grange, Oakham. Mr. F. Astley Cooper, Buckminster Park, Grantham. Mr. Algerson Hack, Buckminster, Grantham. (Corresponding Membe
l		Mr. Harobi Martin	Upsilon	97	-	27	Mr. H. D. Addey, Claythorpe Manor, Alford, Lincoln. Mr. E. P. Rawnsley, M.F.H., Girshy Manor, Lincoln. Mr. C. E. Bobson, Cawkwell, Hornesstle, Lincoln.
١	1	Mesers. George Jeffery and Sons.	Dry Toast -	61	41	102	Mr. G. P. Finch, The Briars, Alphington, Exeter. Mr. E. Harris, Halwill Manor, Beaworthy, N. Devon. Mr. G. Hexx, Kingstone, Newton Abbots.
	14	Mr. William Wilson	Sir Harry -	00		60	Mr. J. Mark Cazmove, Standon, Ockley, Surrey. Mr. Harry Puller, Sl, High Street, Croydon, Surrey. (Corresponding Member.) Mr. T. Hooker, Broxham, Edenbridge, Kent.
١		Major-General John Jago Trelawny.	Springald -	23	-	23	Mr. A. R. Bonchier, Trenesn, St. German's, Cornwall. Mr. E. L. Marsack, Haye, Callington, Cornwall. Captain J. D. A. Roberts, Trethill, Antony, near Devempert.
	1	Mr. William Wilson	Chibiabos -	58	*	58	Mr. T. S. Mason, Fountains Hall, Ripon, Yorks. Mr. C. M. S. Pilkington, Harewood, Leeds. Mr. W. C. P. Snowden, Risoley Hall, Ripley, Yorks.
	15	Mr. James 8. Darrell -	Dermod	33		33	Mr. Charles L. Kendall, The Green Farm, Brompton, Yorks. Colonel W. Scoby, Hobground House, Simington, R.S.O., Yorks. Mr. Penn C. Sherbrooke, Keldholme Priory, Kirby Moorside, Yorks.
	-	Mr. Albert Octavius Hasle- wood.	Imprivu -	50	8	58	Mr. C. Howard Taylor, New Hall, near Barmley. Mr. H. Whitworth, Wath-upon-Dearne, near Hotherham. Mr. F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark.
		Mr. Gassero Du Cosa	Alvin	19		19	Mr. H. O. L. Raker, The Cottage, Hardwicks, Glomoester. Major F. Betler, Bollar House, Circunetter. Colonel F. Henry, Elmostree, Tetbury.
	n	Mr. George Du Cros	Spahi	14		14	Mr. Horace Ecouras, Breach Oak, Coventry. Mr. W. Bale, Hertford Street, Coventry. Mr. J. Mayfield, Albestey, near Coventry. Mr. Alfred Edwards, Corn Exchange Offices, Localizator, Herefordship
		Mr. Emeblus Gustavus					Mr. Stephen Robinson, Lynhales, Kington, Herefordshire. Mr., A. P. Turner, The Locu, Pembridge, Herefordshire.
		Crowhurst.	Wildfire -	37	-	37	Mr. Philip S. Danby, Church Farm, Offchurch, Leamington. Mr. J. H. Bavis, Od Park, Warwick. Mr. W. Gilbert, 37, Clarendon Avense, Leamington.

APPENDIX C .- continued.

District Class.	Sumber of Stal- Hors Exhibited.	Owners of Stallions.	Stallions.	Servol at Com- mission Fee.	Serrol at Owner's Fee.	Total	. District Committee.
		Messes, Harris, Bros.	Amber Gate -	6		4	Rev. J. Armitstead, The Vicarage, Sandbach, Cheshire. (Corresponding Member.) Mr. J. Edwards, Haslington Hall, Crewe. Dr. C. F. Sutton, The Hollies, Holmes Chapel.
G	18	The Duke of Westminster, K.G.	Grey Log -	42		50)	Captain H. R. Day, Stretton Hall, Malpus, Cheshire. The Hon, Gedl T. Parker, Exton Extate Office, Eccleston, Chester. Mr. S. H. Sandbach, Cherry Hill, Coblington, Malpus, Cheshire.
	l	Mr. Albert Octavius Hasle- wood.	Par-ci-par-la -	40		49	Mr. Colin McIver, Estate Offices, Warrington. Mr. W. Mucklow, Elfon Grange, Sury, Lanes. Mr. J. Whitehead, Edgworth and District Agricultural Society, Greengate, Edgworth, near Bolton, Lanes.
н	4	Mr. Robert Oliver	Blakelaw -	50		52	Mr. Thomas Calder, Swinton Hill, Cobistream, N.B. (Corresponding Member.) Mr. James Elliott, Burnhead, Hawick, N.B. Captain Hunter, Anton's Hill, Cobistream, N.B.
1	5	Mr. Binyoun Francis Drage	The Weaver -	50	4	54	Mr. W. Blackie, The Stables, Montrave, Leven, Fife, Mr. John Scott, Ballone, St. Andrew's, N.B. Mr. T. Weister, Nisbetfield, Colessio, Fife.
3	3	Mr. Robert James Mann -	Isobath	20		20	Mr. J. H. Dickson, Dabton, Thornhill, Dumfriesshfre, N. H. Mr. W. R. O'D. Young McDowal, Craig Lodge, Glenbuce, N. B. Mr. J. McKie, Eruspic, Castle Douglas, N. B.
к	2	Messrs, George Jeffery and Sons.	Fairfield	35		25	Mr. William Ross, Hilton Farm, Buckle, N.B. Mr. J. S. Robertson, Cawdor Estate Office, Nalm., N.B. Mr. J. P. Stuart, Orbliston, Fochabers, N.B. (Corresponding Member.)
L	4	Mr. James S. Darrell .	Potentate -	18		18	Mr. T. A. Anderson, Pallachraggen, Alness, N.B. (Corresponding Member). Mr. V. Horderson, Rosehangh Estates Office, Portrose, N.B. Mr. W. Ross, Klanahaird, by Dingwall, N.B.
	116		TOTALS	1,158	146	1,364	

APPENDIX D.

1898.

District Class.	Number of Stal- lions Exhibited.	Owners of Stallions.	Stalilons.	Served at Con- mission Yee.	Served at Owner's Fee.	Total.	District Committee.
		Mr. Solomon Young	Curley	51	5	56	Mr. Thomas Brown, Little Hallingbury Hall, Bishop's Stortford, Herts Mr. James Christie, Writtle, Chrimsford, Mr. Joseph A. Piedger, The Celars, Springfield, Chelmsford, (Cor- responding Member).
A	25	Mr. W. H. Jenner Hogg -	Homely	19	1	200	Mr. William Harris, Willington, Bedford, Mr. Benjamin Howkins, Bromban, Bedford, Mr. T. Munckton, Estate Office, Old Warden, Biggieswade.
		Mr. Edwin Hawkes	New Barns* or 664 Colm-	63	22	84	flon. Alex. E. Parker, Estate Office, Culford, Bery St. Edmunds. Mr. B. Davies Cooke, Park Lodge, Kimbolton, St. Neots. Mr. Noel Villiers, Estate Office, Connington, Peterborough.
	1	Mr. Ralph Rimmer	Active Hamp- ton.	34	-	34	Mr. G. L. Hoggarth, Westmorehard and Kendal Agricultural Society Kendal. (Corresponding Member). J. Richmond, Fungarth, Kendal. Mr. J. Wakefreld, Sedgewick House, Kendal.
В	8	Mr. T. S. G. H. Robertson- Alkman.	Isls	10	-	10	Mr. G. J. Bell, I. Lonsdale Street, Carlisle. Mr. G. A. Eimington, Eashoppards, Penrith. Colonel L. C. Salkeld, M. F. H., Holme Hill, Dalston, Camberland.
		Mr. Albert Octavius Haslewood.	Red Eagle -	60	1	62	Mr. F. W. Hall, Estate Office, Alawick, Northamberland. (Corresponding Member.) Mr. Anthony Marshall, Anastese, Chathill, Northumberland. Mr. G. Ben, Middleton, Wooler, Northumberland.
		Mr. Gilbert Leigh Abbot -	Toboggan -	15	-	15	Mr. Charles H. Backbouse, The Bank, Darlington. Mr. W. H. V. Ralefon, Streatlam Castle, Darlington. Mr. George Smarthwalte, Holme House, Pierce Bridge, Darlington.

^{*} New Earns died suddenly, April flat, 1898, and Old Coin, the lat Reserve Horse, was substituted.

APPENDIX D .- continued.

							•
District Chas.	Number of Stal- liens Exhibited.	Owners of Stallions.	Stallions.	Served at Oons- mission Fee.	Served at Owner Fee.	Total.	District Committee.
		The Right Hon. Henry Chaplin, M.P.	Erskine	7		7	Mr. C. Clarke, Brookside, Scopwick, Lincoln. Mr. Frank Godenn, Temple Broor, Lincoln. Mr. Hugh Jackson, St. John's House, The Heath, Bracebridge, Lincoln.
c	12	Mr. Albert Octavius Haslewood.	Four Poster -	54	16	70	Mr. S. Burton, Derbyshire: Agricultural Society, Derby. (Corresponding Member.) Mr. F. Brewry, Buxton, Derby. Mr. J. R. Smith, Castlo Domington, near Derby.
		Mr. Ernest T. Hooley .	Marioni	50	5	35	Mr. George H. Bennett, Sawley, near Derby. Mr. Edwin Canner, Stanley Grunge, near Derby. Mr. George Rossell, Sandinere, near Nottingham.
		Mr. Einyoun Francis Drage	The Weaver -	50	10	60	Mr. Philip Beatty, The Lodge, Market Harborough. Mr. C. Edmond de Trafford, Hothorpe, Theddingworth, Rugby. Str Herbert H. Langham, Bart., Cottesbrooke, Northampton.
		(Mr. William A. Fountain -	Albert Moore	41	- 1	42	Mr. R. T. Hermon Hodge, M. P., Wyfold Court, Rending. Sir Heary Simpson, Gordon Bouse, Windsor. (Corresponding Member.). Mr. W. Weall, Pinkney's Green, Maidenhead.
D	- 18	Mr. William Wilson	Chibiabos -	81	10	91	Mr. W. A. Calvert, Broomells, Holmwood Station, Dorking, Mr. Harry Fuller, 83, High Street, Croydon, Surrey, (Corresponding Member,
		Mr. Euseblus Gustavus	Just in Time .	27		27	Mr. W. C. Jackson, Swanley, Kent. Dr. W. Bishop, Elham, Canterbury.
		Crowhurst.	- III III III I				Mr. F. S. W. Cornwallis, M.P., Linton Park, Maldstone, Mr. G. E. Macbean, Eridge Green, Tunbridge Wells.
		Mr. H. S. Constable	Cyclops - '	63		62	Mr. F. Grainger, Thornbolme, Burton Agnes, Hull. Mr. D. Grant, Estate Office, Wassand, Hull. Mr. Frederick Reynard, Sunderlandwick, Driffield. (Corresponding Member.)
	10	Mr. James S. Darrell •	Dermod - ·	53		58	Mr. Echert Coverdale, Hagg House, Pickering, Yorkshire, Mr. Echert Hill, The Low Hall, Ecompton, Feskering, Yorks. Colonel W. Scoby, Holgreund House, Simmington, York.
		Mr. Albert Octavius Hasle- wood.	Imprévu -	60		60	Mr. C. Howard Taylor, New Hall, near Barnsley. Mr. H. Whitworth, Wath-upon-Dearne, near Eotherham. (Corresponding Member.) Mr. F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark.
		Mr. Lewis James Shirley -	Alvin	60	-	60	Mr. E. Thurston Bassett, Crossways, Cowbridge, Glamorganshire. Mr. W. H. Lewis, 2, Church Street, Cardiff. Mr. E. Stratton, The Duffryn, Newport, Monmouthshire.
y	17	Mr. George Du Cros	Button Park -	92		312	Mr. Hornce Bourne, Breach Oak, Coventry. Mr. W. Dale, Bertford Street, Coventry. Mr. J. Mayfield, Alledge, sear Coventry.
		Mr. J. Yorsyth Rees	Pantaloon -	43	1	44	Mr. H. E. Fisher, Denant, Haverfordwest, Mr. W. V. Howell Thomas, Estate Agent, Carmarthen, Mr. Owca H. S. Williams, Fern Hill, Haverfordwest.
		Mr. F. W. G. Greswoode- Williams.	Q. C	24		24	Mr. R. S. Eagnall, Ryal Hill, Earl's Croome, Worcester. Colonel A. Whamore Hooper, Kents Green Court, Powick, Worcester. Mr. T. L. Walker, Knightwick Manor, Worcester.
		Mr. Robert Yerburgh, M.P.	Goschen -	54	22	76	Mr. T. Mitchell Eccles, Crosshill, Blackburn, Lancashire. Mr. W. Garnett, Waddow Lodge, near Clitheroe. Mr. Daniel Thwaltes, Troy, Blackburn, Lancashire.
G	7	Mr. Albert Octavius Hasle- wood.	Par-ci-per-la -	50	- 4.	54	Mr. W. Ashhurner, Coulshead Grange, Ulverston. Mr. C. A. Birley, Hartle Hall, Preston, Lascoablre. Mr. J. S. Pair, Estato Office, Lythum, Lancashire.
		Mr. James Lionel Dugdale	St. Cyr · ·	48	1	48	Mr. George S. Brown, Eastham, Cheshire. Mr. Colin McIver, Estate Offices, Warrington. Mr. William Parker, Great Stanney Hall, Sutton, Chester.
11	3	Mr. Robert Oliver	Blakelaw -	54		63	Mr. Thomas Calder, Swinton Hill, Coldstream, N.B. (Corresponding Member), Mr. Jemns Riliott, Flex, Hawick, N.B. Mr. H. M. Leadbetter, Legerwood, Earlston, N.B.
1		Mr. Albert Octavius Hasle- woods	Evil Eye .	52		38	Mr. W. Blackie, The Stables, Montrave, Leven, Fife. (Corresponding Member.) Mr. John Scott, Ballone, St. Andrewa, N. R. Mr. T. Webster, Nubertheld, Collessie, Fife.
J	3	Mr. John Hutchison	Clanranald -	-56	10	06	Mr. J. Stewart Lyon Foxwood, Amisfield, R.S.O., Dumfriesshire, Mr. Neil Mackenzie, Holestane, Thornhill, Dumfriesshire, N.B. Mr. J. McKle, Ernspie, Castle Douglas, N.B.
K	8	Mr. Thomas Kloman Blekell,	Mountain Dew	10	-	39	Mr. William Ross, Hilton Farm, Euckle, N. B. Mr. J. S. Robertson, Cawdor Estate Office, Nairu, N. B. Mr. Robert Walker, Altyre, Forres, N. B.
L.	6	Mr. William Wilson	Wentworth -	62	-	63	Mr. T. A. Anderson, Ballachraggan, Alness, N.B. (Corresponding Member.) Mr. William Marray, Bellfield, Inversess, N.B. Mr. W. Roos, Klunathnird, by Dingwall, N.B.
	116		TOTALS	1,311	118	1,420	
					1		

APPENDIX E.

RETURN of the Number of Stallions exhibited in each District Class at the London Show in the Year 1899. Names of Owners and winning and selected Stallions, together with Names and Addresses of the District Committee.

District Class,	Number of Stallions Exhibited.	Owners of Stallions.	Stallions.	District Committee.
		Mr. Fred Crisp	Marioni	Mr. C. E. C. Cooke, Hinxton Grange, Saffror Walden. Mr. George P. Evans, M.F.H., Merton Grange Sandy. Colonel H. W. Hurrell, Madingley Hall, Cam bridge.
A	18	Mr. Edwin Hawkes	Old Coin	Mr. B. Davies Cooke, Park Lodge, Kimbolton St. Neots. Mr. Charles F. Hignett, Huntingdon. Mr. Noel Villiers, Estate Office, Connington Peterborough.
		Mr. Edmund Broughton Barnard.	Pumpernickel	Sir Walter Gilbey, Bart., Elsenham Hal Bishops Stortford. Mr. Abel H. Smith, M.P., Woodhall, Hertford. Mr. James I. Kirkby, Tharbies, Sawbridge worth, Herts. (Corresponding Member.)
		Mr. Thomas Kinsman Bickell.	Belville	Mr. R. Brydon, The Dene, Seaham Harbon Co. Durham. Mr. Clement Stephenson, Sandyford Villa Newcastle-on-Tyne. Mr. George Wilkinson, Shotton Grange, Cran lington, Northumberland.
В	6	Mr. George H. Du Cros	Button Park -	Mr. G. L. Hoggarth, Westmoreland and Kenda Agricultural Society, Kendal. Mr. J. Richmond, Plumgarths, Kendal. (Corresponding Member.) Mr. John Wilson, Helsington Laithes, new Kendal.
		Mr. Solomon Young	Curley	Mr. F. W. Hall, Estate Office, Alawick, North umberland. (Corresponding Member.) Mr. Anthony Marshall, Annstead, Chathil Northumberland. Mr. G. G. Rea, Middleton, Wooler, Northumberland.
		Mr. Albert Octavius Haslewood.	Four Poster · ·	Mr. S. Burton, Derbyshire Agricultural Society Derby. (Cocresponding Member.) Mr. F. Drewry, Buxton, Derby. Mr. William Wright, Wollaton, Nottingham.
c	17	The Keynsham Stud Company.	Mountain Dew	Mr. F. Cartmell, Saxelbye, Melton Mowbray. Mr. T. Ritchie, Maplewell, Loughborough. Mr. G. Tempest Wade, Birstall, near Leicester.
		Mr. William Vellacott Andrew.	Ringoal	Mr. W. G. Maxwell, Longthorpe Manor, Peter borough. Mr. B. Painter, Cow-Close-Farm, Burley-on-the hill, Oakham, Rutland. Mr. S. Robson, 67, St. Martin's, Stamford.
		Mr. John Drage -	Trap	 Mr. Richard Haywood Farmer Brampton Hil Northampton. Mr. L. Foster, Irthlingborough, Northampton shire. Mr. Rowland Wood, Clapton, Thrapeton.

APPENDIX E.—continued.

	Number			
lass.	of Stallions Exhibited.	Owners of Stallions.	Stallions.	District Committee.
		Mr. William Wilson	Chibiabos	Mr. Harry Fuller, 83, High Street, Croydor Surrey, (Corresponding Member.) Mr. W. C. Jackson, Swanley, Kent. Mr. Uvedale Lambert, South Park Farn Bletchingley, near Rodhill.
D	9	Messrs, George Jeffery & Son.	Dry Toast	Mr. G. P. Finch, The Briars, Alphington Exeter. Mr. G. Hext, Kingstone, Newton Abbot. Mr. Edward P. Northey, Higher Bowden Farn near Oakhampton.
		The Compton Stud	Grand National -	Mr. A. C. Clarke, Red Lion Hotel, Shepte Mallet. Mr. O. N. Holt-Needham, The Manor, Cast Cary, Somerset. Major C. D. Sherston, Evercreech, Somerse (Corresponding Member.)
		Mr. Eusebius Gustavus Crowhurst.	Just in Time	Dr. W. Bishop, Elham, Canterbury. Mr. F. S. W. Cornwallis, M.P., Linton Par Maidstone. Mr. G. E. Macbean, Eridge Green, Tunbrid, Wells.
		Mr. Henry Strickland Constable.	Cyclops	Mr. F. Grainger, Thornbolme, Burton Agne Hull. Mr. D. Grant, Estate Office, Wassand, Hull. Mr. Frederick Reynard, Sunderlandwick, Drifield. (Corresponding Member.)
E	11	The Lord Middleton	Hindley	Mr. H. Cholmondeley, Estate Office, Sledmer Yorks. Mr. Frederick Reynard, Sunderlandwie Driffield. Hen. T. Willoughby, Settrington House, York
		Mr. Albert Octavius Haslewood.	Imprévn -	Dr. E. J. Sullivan, South Kirkby, near Wak- field. Mr. C. Howard Taylor, New Hall, near Barr- ley. Mr. H. Whitworth, Wath-upon-Dearne, ne Rotherham. (Corresponding Member.)
		Mr. Lewis James Shirley	Alvin	Mr. R. Thurston Bussett, Crossways, Co- bridge, Glamorganshire. Mr. T. G. Cartwright, Fairwater, near Cardiff Mr. W. H. Lewis, 2, Church Street, Cardi (Corresponding Member.)
F	18	Mr. John Forsyth Roes	Pantaloon	Mr. P. Lt., Griffiths, Trefloyne, Penally, R.S., Pembroke, Mr. W. V. Howell Thomas, Estate Ager Carmarthen. Mr. J. C. Yorke, Treewn, Letterston, Pembrok
		The Lord Tredegar	Red Hat	Mr. Edward Curre, M.F.H., Itton Court, Che stow. Mr. Richard Stratton, The Duffryn, Newpor Monmouthshire. Mr. Rowland Forestier-Walker, Castleton, ne Cardiff. (Corresponding Member.)
		Captain Henry Heywood- Lonsdale.	Withernam	Mr. H. W. Fell, Shavington Grange, Mark Drayton. (Corresponding Member.) Mr. A. MacKenzie, Market Drayton, Salop. Mr. T. M. Parker, Whitehureb, Salop.



APPENDIX E.—continued.

District Class.	Number of Stallions Exhibited.	Owners of Stallions,	Stallions.	District Committee.
		Mr. William Henry Jenner- Hogg.	Homely	Mr. Charles Garnett, Ramwells, Bromley Cross, near Bolton. (Corresponding Member.) Mr. Colin MacIver, Estate Offices, Warrington. Mr. Frederick Whowell, Carr Bank House, Tottington, near Bury.
G	12	Mr. Albert Octavius Haslewood.	Radius	Mr. Thomas Davies, Needwood, Behington, Birkenhead. Mr. William Parker, Great Stanney Hall, Sutton, Chester. Mr. Arthur H. Edwardson, 6, Hamilton Square, Birkenhead. (Corresponding Member.)
		Mr. Arthur Knowles	The Tinman	Mr. C. Addison Birley, Bartle Hall, Preston, Lancashire. Mr. James S. Fair, Estate Office, Lytham, Lancashire. (Corresponding Member.) Mr. Charles F. Thompson, The Arcade, Lan- caster.
Н	9	The Compton Stud	Carouse	Mr. Thomas Calder, Swinton Hill, Coldstream, N.B. (Corresponding Member.) Mr. James Elliott, Flex, Hawick, N.B. Mr. H. M. Leadbetter, Legerwood, Earlston, N.B.
I	3	Mr. William Wilson	Oatlands	Mr. W. Blackie, The Stables, Montrave, Leven, Fife. (Corresponding Member.) Mr. John Scott, Ballone, St. Andrew's, N.B. Mr. T. Webster, Nisbetfield, Collessie, Fife.
J	1	Mr. John Hutchison	Florismart	Mr. J. H. Dickson, Dabton, Thornhill, Dumfries- shire, N.B. Mr. J. Stewart Lyon, Foxwood, Amisfield, R.S.O., Dumfriesshire, N.B. Mr. J. McKie, Ernspie, Castle Douglas, N.B.
K	6	Mr. Alexander Cook	Crême-de-la-Crême	Mr. William Ross, Hilton Farm, Buckie, N.B. Mr. J. S. Robertson, Cawdor Estate Office, Nairn, N.B. Mr. Robert Walker, Altyre, Forres, N.B. Mr. James Black, Town and County Bank Elgin, N.B. (Corresponding Member.)
L	1	Mτ. William Wilson	Wentworth	Mr. T. A. Anderson, Ballachraggan, Alness, N.B. (Corresponding Member.) Mr. J. Middleton, Davidston, Cromarty, N.B. Mr. W. Ross, Kinnahaird, by Dingwall, N.B.
	104			and the same of th

APPENDIX F.

The following Table shows the Number of Stallions entered at the Shows in the Spring of the Years 1896 to 1899, inclusive:—

1896.	1897.	1898.	1899.	
110	116	116	104	

The following gives the Number of Stallions sent by the Judges for veterinary examination, and the Number passed as sound by the Veterinary Inspectors.

	1	1896.	1897.	1898.	1899.
Stallions sent for veterinary inspection		65	60	49	45
Stallions passed as sound after veterinary inspection	-	57	50	46	41

The Number of Stallions rejected by the Veterinary Inspectors, and the reason and cause thereof:—

		Cat	ise of	Disc	ualifi	catio	n.				1896.	1897.	1898. 1899.	1899.
Roaring	*		-				*0			31	5		Fall H	
Whistling	-			-	*	-	-		+	-	5	4	-	-
Jasound fee	et		-	-			-	4		3	-	1	-	1
Ringbone	-	-		2		-	-				-	1	1	1
Navicular d	iseas	0	10.50					-	2	-	-	-	The state of	-
spavin -				-			-					4	2	1
Cataract	4	-		-			-	-			1	-	-	1
			Tor		ejecter	l in a	mah.	Vone			8	10	3	4

The following shows the List of Honours awarded in 1898 to the produce of Queen's Premium Stallions at the different Summer Meetings at which Medals are awarded by the Hunters' Improvement Society:—

Hunters In	nprove	men	t Soc	iety's	Gold	Med	als						-	3
Hunters In	nprove	men	t Soc	iety's	Silve	r Me	dals			**	-	-	-	8
Champion	Prizes	4	-						-	-			-	2
Premium	10			-		-						-	-	12
First	10			-		-	-	-	-		-	-	-	88
Second	**		+3			-				-	-		-	79
Third			10	4								-	-	39
Fourth	**								-	1	4	-	-	2
Fifth		-			1	-	-	-	-	-		-	-	2
Reserve				4				-			-	10	-	48
						T	OTAL	Nun	nber (of Aw	rards		-	283
												_		



APPENDIX G.

By Francis Galton, D.C.L., F.R.S., on the Protography of the Premium Horses.

In consequence of a memoir communicated by me to the British Association (Report British Association 1898, p. 697) a Committee was appointed, with myself as Chairman (p. xev.) "to promote the systematic collection of Photographic and other Records of Pedigree Stock." It is desired to encourage the gradual accumulation of trustworthy material, now neglected, that shall hereafter be of extreme value in the study of Heredity and of the Art of Breeding.

The field of operations is so wide that after some tentative efforts it seemed best to concentrate the earliest attempts of the Committee upon the thoroughbred horses that are selected by the Royal Commissioners on Horse Breeding. They have the advantage of being only 29 in number, they are of national importance as the future sires of some 800 foals during the coming year, a great prestige is properly attached to the initiative of a Government body, and lastly, the Show is held at the Royal Agricultural Hall, which is largely used for other exhibitions of Pedigree stock. These were strong reasons for applying to the Royal Commissioners to allow me to make a trial. Permission was cordially granted, and I proceed to report the principal results.

The aim of the desired Records is to place in a permanent form as good a presentment as is feasible of the form and gait of Stallions and Brood Mares, by Photographs taken under standard conditions, by direct Measurements of the animal, and by Descriptive terms whose meanings are strictly defined.

It is not for a moment maintained that the idea of a horse which can be conveyed by those means is as full and just as that gained by the Judges and Spectators who see him in the ring and put through his paces, nevertheless, photographs of the specified kind, measurements, and descriptions suffice to preserve from oblivion much that is of sterling value.

The science of Heredity, like other sciences, must be based on recorded facts; these may be meagre, but if they refer to the same points, and are numerous and exact, they will supply a solid foundation.

refer to the same points, and are numerous and exact, they will supply a solid foundation.

Photographs being the most popular as well as the most important of the above Records, and being by far the most difficult to obtain under such conditions as will enable them to be compared on equal terms, will be almost exclusively the subject of the following remarks. They are offered in answer to the primary question, whether it be practicable to photograph a considerable number of horses under standard conditions amid the bastle of a Show held at the Agricultural Hall. By a "Standard Photograph" is meant a nearly accurate side view, taken at a distance of about 30 feet from the camera, whose plate holder must be strictly parallel to the screen, and whose height above the ground is known. The photograph itself must bear evidence of and contain means of measuring any small deviation of the animal from an exact side view, and it must contain marks by which the precise distance of the animal from the camera, and the vertical and horizontal scales of its portrait may be determined, and the parallelism of the plate to the screen be verified. These conditions give a scientific value to the portrait. They enable trustworthy measurements of the animal to be deduced from those made between any desired points in his photographed outline, as well as the heights of those points above the ground, according to methods described in the Additional Notes. In addition to this, it may be thought desirable to mark the position of certain bony prominences in the body and in the limbs, which are of anatomical importance, useful as points of reference, and easily felt by the hand, though indistinguishable by the unassisted eye, therefore an experiment was made which will be described in the Additional Notes.

There is a large backyard adjacent to the place where the veterinary inspection is performed. A temporary

There is a large backyard adjacent to the place where the veterinary inspection is performed. A temporary shed which had been built at one end of this for other purposes, was utilised to support a cloth to serve as a background. A cartload or more of sand was spread and levelled along the side of the shed, and three rows of flag-stones were laid along the sand to form a level platform, 6½ by 17 feet, for the horses to stand upon in their turns, The camera was placed in a fixed position opposite to the middle of the screen, and approximately 30 feet from it. The focal length of its lens was 13 inches, so the image of the horse in the camera fell easily into a rectangle of 3½ by 2½ inches. Sensitive plates, measuring 6½ by 4½ inches, were used; consequently, wherever the horse might stand on the platform within reasonable limits, his image was sure to fall somewhere on the plate. The photographer was Mr. Charles Reid, of the Studio, Wishaw, N.B.; he was accompanied by his son, who made the exposures.

The arrangements for the first day of the Show are that the Judges commence their work by making a provisional selection of about twice the required number of horses, which are then subjected in turns to veterinary examination. Those who pass are led back to their stalls, and at an hour fixed in the programme are paraded together before the Judges and compared; the final selection of the 29 premium horses is then made. The only opportunity for photographing each horse was in the short interval between his passing the veterinary examination and being led back to his stall, and it was, of course, necessary to photograph all of those who passed the examination, because the final selection of the premium horses had not then been made. After each provisionally selected horse had been passed by the Veterinaries, he was led to the platform, and at once measured by two students deputed for the purpose from the Royal Veterinary College (subsequent measures being made in their stalls), then the attention of the horse was momentarily arrested and the photograph was taken. The skill and readiness with which the grooms coaxed and hustled refractory horses into the proper place was truly remarkable, but the difficulty of arresting the attention of the animals proved greater than might have been anticipated. They were so excited by the neighbourhood of other horses and their unusual surroundings that they often wholly refused to notice waived handkerchiefs, antic gestures, or sounds. The quickness with which the photographer caught momentary opportunities was clearly the result of long experience with horses. I subsequently learnt that nearly all of his plates proved successes, but in the hands of an ordinary photographer the result would have been very different. very different.

When the time arrived for beginning operations there was so dense a fog that photography was impossible, but it cleared a little after 9 a.m., and no want of light was afterwards felt. The photography lasted 3½ hours, from about 9h. to 1h. 30m., during which time 35 horses were photographed, including 28 out of the 29 who were subsequently awarded premiums, the measuring and photographing being thus done at the average rate of six minutes for each horse. Occasionally one of them was very troublesome and occupied so much time that the slow stream of horses going to the platform and passing away from it became blocked, and horses had to be sent to their stalls to be led out again later.

Herewith, I enclose a set of the 28 prints to show the degree of artistic skill and definition that was attained. They are unquestionably of a high order of merit, but presumably not so high as might be reached after more experience under like circumstances. The background is somewhat too dark, a fault easily to be remedied on

APPENDIX.

Again, the camera was not raised high enough; the ground sloped awkwardly downwards from the platform, and it was not possible under the hurried conditions to arrange a suitable stage. The result is that the width of the platform is so foreshortened in the photograph that the position of the horse's feet cannot be located as exactly as is desirable upon it. An error of half a foot (or one quarter of the breadth of a flag-stone) might occasionally be made. Now at a distance of 30 feet an error of half a foot is that of 1-60th, which would make the calculated height or length of the horse differ to that amount. As the height of one of these horses at the withers, and as also the length of his body, is about 64 inches (16 hands), it follows that the measures in that case would be fully 1 inch wrong. Had the object glass of the camera been raised to the level of the horse's back, the error would have been reduced by nearly one-half, and would have become insignificant. A comparison between certain measures made by the Veterinaries and those derived from the photographs is given in the Additional Notes. It proves conclusively that whenever the standard conditions are observed, the measures of heights, length, diameter of limbs and curves of outline may be made more trustworthily by means of photographs than by direct measurements on the living animal.

The main result of this experiment has been to prove the feasibility of taking photographs of horses at a Show, that shall be acceptable as ordinary portraits, and will at the same time be of sterling scientific value. I beg in consequence to express a hope that the Royal Commissioners may think fit to arrange that photography under standard conditions shall become a permanent feature of their annual Shows, it being impossible to ensure that those conditions shall be strictly attended to when animals are photographed at their homes, though easy to do so at a public exhibition. The experience gained by this trial (as will be described directly more in detail) proves how mexpensive, and at the same time how necessary, it is to have an appropriate installation, one that might be removed and replaced when desired. It also shows that the total annual cost need not exceed 20%, or say 25%, the whole of which, as I have reason to believe, might ultimately be borne by the photographer, if he were permitted to sell authorised copies for his own profit, under such restrictions as the Royal Commissioners might properly exact. If the Royal Commissioners led the way, other societies who exhibit at the Royal Agricultural Hall would doubtless be glad to follow their example and to avail themselves of their installation. The managers of local exhibitions would in time pursue a like practice, until the custom of utilising exhibitions for the purpose of photographing prize winners under standard conditions became general, and probably more or less self-supporting, and the principal object of the Committee of the British Association, as set forth in the first paragraph of this Report, would be attained. Horses and other pedigree animals are usually exhibited more than once, so occasional failures due to bad weather admit of being subsequently rectified.

42, Rutland Gate, June 1899.

ADDITIONAL NOTES.

- 1. COST OF THE EXPERIMENT.
- 2. Discussion of the Results.
- 3. Suggestion as to Future Arrangements in respect to
 - a. Installation.
 - b. Conduct of Operations.

L Cost :

The cost of the trial was as follows :-

Paid for the photographs of	35 horses	(inclu	ding	trav	relling	ex	penses	of	the	£.	8.	d.
photographer and assistance)		-		-			+	-		15	12	
Paid for laying down the stone	platform	-	-	-	-	+	-	-		4	1	4
						T	otal -		- 1	E. 19	13	4

The prints were about 1s. each, so the cost of each set of prints of the 29 premium horses would be

I do not reckon here the fees (4l. 4s.) to the veterinary measurers, because if the standard conditions are strictly followed in making the photographs, the measures would be, for the most part, superfluous.

2. Discussion of the Results :

Fig. 1 is a rough tracing from one of the photographs; it shows their size and the method with which it was dealt, so far as concerns the determinations of the height of the horse at its withers, back, and croup, and of its length. The principle of the calculation is further illustrated by Figs. 2 and 3. Fig. 2 is a side view of the installation in its true proportions, C being the object glass of the camera, CD its height above the ground, Q the edge of the platform on which the horse stands (that is the line qq in Fig. 1, now seen sideways), and qdY the section of the screen. Fig. 3 shows the same thing but in greatly changed proportions to give distinctness to the additional details introduced in it. J is the object to be measured; it is analogous to a horse, inasmuch as it stands symmetrically upon four legs, of which two appear in the figure. The intention is to show how the height of P above the ground, which is expressed by PM, is to be measured; P corresponds to either Π , Π , or Π in Fig. 1. It will be observed that the position of q is determined by drawing a line from C, through Q, until it cuts the line Yd, produced. Aq is obtained by measuring on the photograph the dotted lines at 1 and 5, in Fig. 2, and multiplying those values by the proper factor. In the present case the factor was 1.5, which changed

the measures made in millimetres on the photograph to inches on the screen. [I speak of the unmounted set with which I worked; the mounted ones are slightly stretched]. HQ is determined by hq. M is an ideal point, half way between H and K, and may be taken as six inches from H, an inch or two of error here making no sensible difference in the results. Thus MQ becomes known. The point p corresponds to some specified point on the back of the horse, such as one of those marked II, III, or IV in Fig. 1. The value of qp is found from its measure on the photograph, multiplied by the same factor as before; then the intersection of pC with the vertical from M, gives P; PM is the desired height.

from M, gives P:PM is the desired height.

This somewhat involved operation becomes exceedingly simple when performed mechanically. The method I used may prove useful in other ways, so there is all the more reason for describing it now. A drawing board, four feet long, was marked as in Fig. 2, on the scale of one-tenth of the natural size, this being $dQ=90^\circ, QD=270^\circ, DC=37^\circ$. A drawing pin was fixed at C, and the loop at one end of a long thread was thrown over it. A scale of tenths of an inch, with its zero at g, was drawn along qY. A piece of paper ruled crossways with lines one-tenth of an inch apart, had its corner fixed at Q, which served as zero for the horizontal lines, the lowest of which coincided with Qd, and also as zero for the vertical lines. Measurements were then made in millimetres of the five vertical and the one horizontal line, that are dotted in Fig. 1. By the aid of a simple table calculated for the purpose, the photographic values in millimetres of q were at once converted into the real values of QM in inches (by pure accident, the figures of these values are here closely alike). Then by rough interpolation or extrapolation, as the case may be, the values of QM for the lines 1, 2, and 3 were found and noted. The thread was then stretched from C through p, and the value of P was read off at once.

The following is an example of the work:-

Table 1.-Measurements of the Horse "Marioni."

							Withers.	Back.	Croup.	Length.
g' h' on photo. in	millimet	res -			-		3.2	3.6	3.75	3.6
g' P' "	**		-		-	-	542	21.0	5:40	510
QM (by Table) re	al values	in inch	ies			-	34	37	38	37
$q' p' \times 1.5 = qp$	**		-		4	-	81.1	76:5	81'0	76.5
Calculated PM	"	,,	4	-	-	-	65.1	60'7	64'6	60'5
Observed PM	"			-	-	-	651	61.0	641	62'5
Diff	erences t	to near	est i	inch			è		0	20

The differences are small both here and elsewhere in the first three columns; so the Withers, Back, and Croup will be considered together, and the Length afterwards.

Table 2.

Sums of the Differences (1) with, and (2) without regard to their - or + Signs.

		-								Number of Cases.	-	+	TOTALS.
Withers		-	-			-				26	71	134	201
Back		-		-	-	-		-	-	26	15	81	. 231
Croup	-				-			4	-	26	8	121	201
						To	TALS			78	30}	34	64}

Mean Error, 0'82.

The close equality between the totals of the — and + differences is a proof of the general correctness both of the method and of the data, while that between the separate results for the withers, back, and croup shows that each of these has been determined with an equal degree of exactness. These three sets may therefore be combined in order to obtain enough cases for trustworthy statistics of the amounts of difference; this has been done in Table 3.

APPENDIX.

TABLE 3.

Comparison of the Values calculated from 26 Photographs, with the Measures of the Horses themselves. (They refer to the heights of Withers, Back, and Croup, combined indiscriminately.)

Distribution of the Differences without regard to their Signs.

ng.	Sums from b	Number of Cases.	Inches of Difference.	1	
Cent.					
13	10	10	0		
27	21	11	1		
59	41	20	1		
64	50	9	1		
74	58	8	1		
79	62	4	1}		
86	67	5	11		
91	71	4	12		
99	77	6	2		
100	78	1	21		

Note.—Twenty-eight of the 29 premium horses were photographed, but two of these were not measured. In one case the observed height of back was recorded as 14 hands (56 inches), the height of the withers being 15 hands and 3½ inches (63½ inches), and that of the croup 15 hands and 3 inches (63 inches). If the record of 14 be correct, the back would be conspicuously hollow, which is not the case in the photograph. The calculated value was 14 hands and 3¼ inches (59¼ inches), so there can be no doubt that the 14 was miswritten for 15. I have corrected and treated it accordingly.

It appears from Table 3 that in 52 per cent, or in a full half of the cases, the greatest difference between calculation and observation was only half an inch, and that in three-quarters of the cases it was only one inch. In the remaining quarter, the differences ranged upwards to a solitary case of 2½ inches. These cannot be ascribed wholly to photographic misreadings, or other errors, because the photographs were measured at least twice, and the coarsest measurements could not err to that amount. Considering the difficulties in the way of an exact measurement of human stature (with which I have had large experience), and the serious augmentation of those difficulties when measuring a restless horse, and bearing in mind that one important error has already been detected in the records of the veterinary measurers, I should limit the maximum amount of liability to error in the photographic method to 1½ inches, and to ½ inch when the line qq in Fig. 1 is sharp and clean, and the standard conditions are strictly observed. There can, I think, be no reasonable doubt that the photographic method under those conditions is practically more exact than that of direct measurement of the animal itself.

A direct and trustworthy measurement of the length of a vicious or timid horse is extremely difficult, perhaps impracticable. It was attempted, in this case, in a rude way, but with results that were not self-consistent; they differed from the calculated values, nearly always in excess, up to 7½ inches. The calculated values were perfectly self-consistent, forming a pure curve when profile of a horse is almost exactly the same as it would appear at any greater distance, and the effect of a slight obliquity in his position is insensible, on account of the roundness of his chest and buttocks. The errors in excess, alluded to above, were errors in the wrong direction, due doubtless to faultiness in the rough method employed, for which I was responsible. For determination of length of body, the photographic method is the only o

3. Suggestions on future Arrangements:

a. Standard Installation :

- If no appropriate wall be available, a vertical frame of wood should be provided, about 17 feet wide and 8 feet high, which can be taken to pieces and stored away when not wanted. It should fit into sockets let permanently into the ground.
 - 2. A light-coloured hanging to be attached to the frame.
- 3. Studs to be fixed both in the vertical and in the horizontal bars of the frame, 3 feet apart, to project through button-holes in the hanging, as indicated rather coarsely by the small crosses in Fig. 1. They are to afford a scale to the photograph, and means of verifying the parallelism of the plate in the camera, to the screen, and would be of some use in securing the hanging in its place.
- 4. A level platform of stone, concrete, brick, or other hard material to be laid down in front of the screen; its edge that fronts the camera to be 6 feet from the screen. That edge, which is also the top of the face of the curbstone (if any), must be sharp and kept clean during photography, being a most important line of faceners.
- 5. The platform to be marked in a way clearly visible to the groom, but not of a character to frighten the horse. The simplest method, perhaps, is to have a broad, longitudinal pathway, and two cross lines, say 2 feet apart; the horse's fore feet to be always between the cross lines, and all his feet, so far as feasible, to be on the pathway.
- 6. Three sockets to be let permanently into the ground, 30 feet from the screen, and opposite to its middle, to receive the feet of a solid tripod for the camera.

7. The tripod to be a rough, substantial construction, not folding up, with a metalled top arranged to have a base-board firmly clamped to it. The tripod is intended to be stored away like lumber, without suffering harm.

8. The base-board to which the camera will be clamped is to be provided with adjusting screws for levelling. The whole arrangement to be such that the height of the object-glass above the level of the platform shall be 5 feet, and that the back-plate of the camera shall be truly vertical and parallel to the screen, as shown by the squares in the screen, whose corners are formed by the studs, appearing as squares in the photograph. The cost of this installation would be small, for although very important, it is, for the most part, rough and simple. The annual cost of putting it up and of taking it down, and of occasional repairs, would be triffing.

b. Conduct of Operations

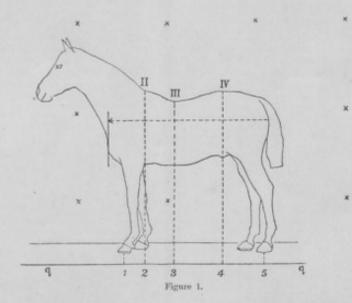
Every detail must be considered and provided for in good time, that the operations when once commenced may proceed without a check. A small omission may cause disaster, there being no time for repairing it.

The general supervision and responsibility for the requisite local arrangements and the control of the operations should be vested in some one person of sufficient authority to settle petty difficulties on the spot without reference.

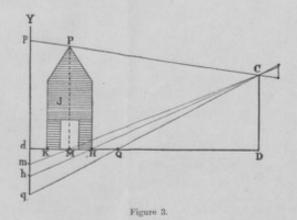
The photographer must be thoroughly experienced in dealing with horses. He will need at least two assistants, and a large number of dark shdes to avoid the loss of time in changing plates.

The experiment of marking anatomical points succeeded perfectly, the position of the prominence of the hipbone being indicated by a disc of thin paper, stuck on with thick paste (gummed paper not being sufficiently adhesive to hair); but the discs were unnecessarily large and conspicuous; they were the size of a shilling. A circular mark no larger than the end of a lead pencil would be perfectly distinct in the photograph when looked for, and it would not attract attention; perhaps it might be stamped on the horse with white water-colour. The particular points to be marked require careful consideration.

To guard against after mistakes, the catalogue number on the neck of the horse should be so pushed to its side as to appear in the photograph. A placard should be placed on the screen showing all the permanent details of the installation, as place, date, name of the show, and the standard data, in letters of 1½ inches.







Challenger, H.M.S. A Report on the Scientific Results of the voyage of, during the years 1873-1876, under the command of Captain George S. Nares, R.N., F.R.S., and Captain Frank Turte Thomson, R.N. Prepared under the superintendence of the late Sir C. Wyville Thomson, Kat., F.R.S.; and now of Sir John Murray, K.C.R. Complete in Fifty Volumes.

Price 1011, 124. Military :-

Price 31s. 6d.

Arrica by Theaty. The map of. By Sir Edward Hertalet, K.C.B. Three vols.

Communicial Tenatics. (Hertalet's.) A complete collection of Treaties &c., &c., between Great Britain and Foreign Powers so far as they relate to Commerce and Navigation, &c., &c. By Sir Edward Hertalet, KALB., &c., &c., Price 15s. each.

Board of Trade Journal, of Tariff and Trade Notices and Miscellaneous Commercial Information. Published on the 15th of each Month. Price 6d. Index to Vols. I to 14. July 1886 to June 1893. And to Vols. XV. to XX. July 1893 to June 1896.

Kew, Royal Botanie Gardens:—Bulletins of Miscellaneous Information. Volume for 1897. Monthly parts, 1898, price 4d.

SEVENTH REPORT

OF THE

ROYAL COMMISSION

ON

HORSE BREEDING.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE, BY WYMAN AND BONS, LIMITED, PRITER LANE, E.C.

And to be purchased, either directly or through any Bookseller, from EYRE AND SPOTTISWOODE, EAST HARDING STREET, FLEET STREET, E.C., and 32, ABINGDON STREET, WESTMINSTER, S.W.; or JOHN MENZIES & Co., 12, HANOVER STREET, EDINBURGH, and 90, WEST NIER STREET, GLASSOW; or HODGES, FIGGIS & Co., LAMITED, 104, GRAFTON STREET, DUBLAN.

1899:

dee note at back TIP SU GALTON SON PAPERS ON P

TEN YEARS' PROGRESS IN BREEDING TROTTERS.

(From THE HORSEMAN. Copyright 1897, by The Chicago Horseman Newspaper Company. Chicago, April 20, 1897.)

T IS ten years last October since the Glenview dispersal sale took place, at which 187 trotting bred horses were sold for an aggregate of \$337,740, an average of \$1,806 per head. This included every horse in that famous trotting stud, good, bad, and indifferent. Nutwood sold for \$22,000 Pancoast for \$28,000 and Reina Victoria for \$7,025-the two latter being the highest auction prices paid up to that time for a stallion and brood mare. Many of the high prices realized were not altogether unexpected, and at the figure named Nutwood was conceded a great bargain. His purchaser, F. D. Stout, was prepared to bid as high as \$25,000. For several years prior to this values had been on the up grade. In 1883 a three-year-old, unbroken filly by George Wilkes sold for \$1,720, the first Nutwood weanling of Kentucky breeding brought \$570 at public auction, and both were considered bargains. The filly is now known as Joy, the dam of Waco, 2:164. The weanling is Nutmeg, 2:19, a successful sire. That same fall, The King, a handsome young horse without a record, then making a tour of the western fairs in charge of Frank Van Ness, was held at \$5,000. The late Colonel Richard West sold 20 head, mostly weanlings and yearlings, for \$15,000, an average of \$750. Next year, a daughter of Alma Mater in the brood mare ranks sold for over \$4,000. The greatness of George Wilkes had even then in a well-defined manner "cast its shadow before," his young sons were held at stiff prices, and even then were hard to find for sale.

When William L. was three years old, \$7,500 was refused for him, and that same fall he was sold for \$10,000. Alcyone was sold for \$15,000, and an option at the same figure was secured on Sultan. These are but a few of many similar instances occurring prior to 1886. Buyers from all sections were in evidence at Highlawn, at Woodburn, at Ashland, at Ash Grove, at Indian Hill, at Glenview and other farms, and prices running into the four figures were cheerfully paid for their best bred youngsters even at weaning time.

filv

There was during these years a continuously active demand at prices profitable for the seller and buyer-although no "boom" had yet set in, and at the spring and fall Kentucky auctions many good youngsters and mares could be picked up at small cost. It was, therefore, felt that the Glenview auction would be a crucial test of values. So large and so choice a lot of trotters had never before been thrown on the market at forced sale. Its success would vindicate the judgment of the hundreds of new breeders who had kept on buying in the face of the rising market; its failure would put a big damper on the whole business. While the conservative were somewhat apprehensive, the sale was looked forward to with more general and widespread interest than has probably ever been called forth by later and higher priced auctions, and Glenview, on that October morning, became the Mecca of all the prominent buyers and breeders of that day. They came with money as well as enthusiasm, and the success of the sale has long been a matter of history. Now, through a perspective of ten years, the Glenview sale stands out clearly and unmistakably as the real inception of the famous "boom" in trotters, so remarkable in many ways, for its intense activity and its soaring values, for the unbounded confidence of its devotees, and their lavish expenditure of money in their efforts to buy the best. The boom culminated some six years later, and now that it has bloomed, and its blossoms have fallen thick and fast, to not a few it may seem that it has left nothing but a memory of blasted hopes and shrunken fortunes. The decade covers many marvelous achievements, and in various ways it is the most remarkable period of trotting horse history. Let us briefly review from a statistical standpoint this period of the past ten years, and summarize briefly what has been accomplished.

At the close of 1886, there were 2,490 trotters that had taken records of 2:30 or better. In 1892 this number had increased to 7,494, and at the close of 1896 the number is 12,945. During the six years following 1886, new trotters to the number of 5,000 had been added to the 2:30 list. During the four past years, 5,000 new trotters have made 2:30 records. The average number of new 2:30 trotters brought out annually for the past 10 years has been 1,050. In 1886 there were 513 pacers with 2:30 records, or about one pacer for every five trotters. In 1892, the pacing standard of speed was reduced to 2:25, and at the close of that year the list of 2:25 pacers numbered 1,309, or about one 2:25 pacer to six 2:30 trotters. Today there are 4,302 pacers in the list, the proportion of standard pacers to standard trotters being now one to

three. Since 1892 5,500 new 2:30 trotters and 3,000 new 2:25 pacers have been added to the standard list, the annual production of both having averaged over 2,000 for the last four years. Eighty per cent., or four-fifths, of the entire 2:30 list has been made in the past ten years, and 88 per cent., or seven-eighths, of the entire pacing list.

A breed must always be in existence before the register or stud book of the breed is formed, although this self-evident fact appears sometimes to be lost sight of. The register or the rules under which it is compiled does not make a breed. On the contrary, a breed must exist in very considerable numbers, and must have made its mark and its value apparent, before the need for a register arises. The pedigrees and performances of the trotter had been recorded and printed in various publications many years before the 2:30 standard was formulated. The first 2:30 standard was formally adopted as a basis for registration in 1879, and that standard with its successive amendments has brought order out of comparative chaos, and has been of immense service in "establishing a breed of trotters on a more intelligent basis," according to the expressed intention of its framers. When the standard was formally adopted in 1879, there were then on record 496 sires of 2:30 trotters, over 150 of which, or 30 per cent., were non-standard because of failure to come up to standard requirements.

The following table shows the increase in the number of 2:30 sires, since the adoption of the standard and during the period under review:

		Sires Non-	100	Per cent.
	Sires.			Non-Registered.
At close of 187		150	496	30 per cent
At close of 188		372	1153	32 per cent
At close of 189	6 3539	1163	4702	25 per cent

Per cent. of inc. since 1886 . . . 78 68 75

Decrease in the proportion of non-standard to standard sires since 1886, 7 per cent.

What proportion of registered stallions succeed in siring standard speed, is always an interesting question, but in attempting to answer it, we enter the realms of guesswork to a large extent. We do not know what proportion of registered stallions are bred to mares and have progeny, or at what age they make their first service, or how many of them are gelded, or die without leaving a foal. A stallion that is bred to a mare when three years old will be nine years old when the foal from that service has reached maturity, or the age of five. Hence, it is only fair to assume that the younger sires of 1886 must have been foaled in or

prior to 1877, and those of 1896 in 1887. Of course, there are exceptions, but they are few and far between, as for instance Woodline, at four years a sire of one, and Lancelot at five years a sire of two trotters, but these rare exceptions must be excluded from a comparison of this sort. To the close of 1886, there are 781 registered sires of speed, and there appear to be about 1,600 stallions registered as having been born up to and including 1877. About 50 per cent. of these registered stallions at the age of nine years or over are thus successful sires. There also appear to be about 9,000 stallions born up to and including 1887, and in 1896 there are 3,539 successful registered sires, or about 40 per cent. This is a falling off, at the end of our period, of 10 per cent. between the proportion of registered stallions and successful sires, but who can tell whether this decrease is due to lack of progeny or incapacity to sire speed?

The volume of registration to the close of 1896 is not yet a matter of public record, but these few approximate figures dealing with the number of standard bred stallions show how the breed has multiplied with striking rapidity, viz.;

Registered	stallions	born	to	close	of	1881	2,000
Registered	stallions	born	to	close	of	1887	9,000
Registered	stallions	born	to	close	of	18901	5,000
Registered	stallions	born	to	close	of	18942	7,000

During the seven high pressure years, from 1887 to 1894, they increased at the rate of over 2,500 a year. Of late years the knife has been freely applied by wholesale, and since 1894 breeding operations have been so restricted that probably not over one-fifth the number of mares is now being bred that were during these years. It would be interesting to know the number of trotting bred stallions that are this season commanding a large public patronage in the stud. Their paucity would probably be startling when placed alongside the figures given. The pendulum has now swung to the other extreme.

Let us now compare the annual output of new trotters and pacers at the beginning and at the end of the period under review. For more convenient comparison, the figures are put in tabulated form, viz.:

	Number.
	Trotters. Pacers.
New standard performers in 18	885 307 86
New standard performers in 18	886 357 123
Per cent. of increase in 1886	
New standard performers in 18	8951,350 847
New standard performers in 19	8961,056 849
Per cent of decrease in 1896	22 0

The production of 2:30 trotters is on the down grade, the

5 f.3r

shrinkage of last year from the volume of 1895 being 22 per cent. The annual output of new 2:25 pacers is at a standstill. It is more than probable that the decrease will continue to be more marked than it has been. The decade from 1886 to 1896 has seen the rapid rise of the standard trotter and pacer, and has also witnessed the beginning of their decline. The next ten years are likely to witness their complete extinction as factors in racing, or in the breeding problem.

But if the standard trotter and pacer measured by the 2:30 and 2:25 gauge are surely becoming things of the past, let us see what this same standard has done in the way of improving the breed, and in bringing us a much faster race of trotters, the primary purpose for which it was formed. If one was asked off hand to name the number of trotters that had 2:15 records ten years ago, I think the answer would be wide of the mark. Most people that are well posted would guess a larger number than the records show. At least the smallness of the number was a surprise to me.

The date in front of the sire's name is the year in which he was foaled, and the date at the end of the line is the year in which the record was made. This is the complete list of 2:15 trotters ten years ago. There are 12 sires, and 13 trotters, nine of which made their best records against time. It will be noted that but one stallion, Dictator, has two in this exclusive list.

The complete list given under their sires is as follows:

2:15 TROTTERS TO CLOSE OF 1806, UNDER THEIR SIRES.

Year Sire Foaled.	Sire.	Trotter.	Record	Year Record Made.
1852 1854 1856 1863 1863 1864 1865 1867	Norman 46	Lula Goldsmith Maid St. Julien Harry Wilkes Hopeful Jay-Eye-See Phallas Maxie Cobb Maud S Clingstone Majolica Trinket Rarus	2:15	1874 1880 1886 1878 1884 1884 1884 1885 1882 1885 1881

^{*}Records made against time.

At the close of 1896 the following 75 sires are credited with two or more 2:15 trotters, viz.: 5

at close of 1891s.

£34

SIRES OF TWO OR MORE 2:15 TROTTERS.

SIRES OF T	WC	OR M	ORE 2:15 TROTTERS.	
	Av	rerage		erage
N	lo. 1	Speed.		Speed.
1856.			1879.	40 00
George Wilkes	2	14.	Dexter Prince 2	10.75
1863.			Pilot Medium 9	12.61
Happy Medium	4	11.31	Simmons 8	13.25
Distator	3	12.25	Bayonne Prince 3	13.08
Dictator			Clay 2	13.50
Delmant	2	13.62	Oberlin 2	14.25
Belmont	-	10101	1880	
	3	11.83	Patronage 2	8.25 8.37 11.41
Aberdeen	2	14.	Whips 2	8.37
Sam Purdy	-	11.	Wilton 3	11.41
1867.	9	14.75	King Clay 2	12.37
Startle	-	13.10	Stranger 5	
1868.	10	11.52	Wilkes Boy 6	13.08
Electioneer	10	14.50	1881	
Norwood	4	14.50	Lord Russell 2	10.75
1870.	1	12.31	Gambetta Wilkes . 2	12.12
Nutwood	4	12.87	C. F. Clay 3	13.58
Kentucky Prince	2		Sidney 3	14.33
Princeps	2	13.	Riley Medium 2	14.50
1871.	0	10 05	1882.	
Wedgewood	2	12.35	Gov. Benton 2	11.37
Robert McGregor	11	14.11	Baron Wilkes 6	12.50
Almont Boy	2	13.75	St. Bel 2	12.37
Crittenden	2	14.50	Eagle Bird 3	13.33
1872			and the second s	13.
Mambrino King	2	10.	Elyria 4 Patchen Wilkes 3	14.
Almont, Jr	3	13.92	1883.	11.
18724			Goldleaf 2	12.25
Red Wilkes	8	13.		11.75
Santa Claus	2	9.87	Allandorf 2	14.37
Young Jim	3	9.08	Quartermaster "	14.01
Kentucky Wilkes	2	11.62	Black Hawk Mc-	14.12
Gen. Washington	2	12.25	Gregor 2	14.
Hambletonian 1644.	2	14.25	Wilkes 2	14.
Nephew	2	14.	1885.	12.75
1875.			Gossiper2	
Onward	9	12.52	McEwen 3	13.16
Yg. Fullerton	2	12.25 12.75	Strathway 2	12.87
Reveille	2	12.75	Candidate 2	14.1
Bourbon Wilkes	2	12.25	Axtell 2	17
Abe Downing	2	14.	Axtell 2 Boodle 2	11.
1876.			Boodle 2	14.
Alcantara	6	12.66	1887.	40
Cyclone		13.	McKinney 2	13.
St. Arnaud	2	13.12	Year unknown.	
King Wilkes		13.37	Iris 2	13.50
1877	A			-
Director	3	9.83	75 stallions, the	
Alcyone		12.14	sires of246	in 2:15
Pancoast	3	12.75		
1878.	-			
Guy Wilkes	10	11.97		
Jay Bird	6	12.50	NE CONSTRUCTION OF THE PARTY OF	
Jay Bud			amonged chronolo	eieally.

In the above table, the sires are arranged chronologically according to the year of their birth, given in first column. Those sires born in the same year are placed in order according to the record of their fastest trotter. By this arrangement, looking at the different years, it can be seen at

7 fibr

a glance which stallion of that year has sired the fastest trotters to date. For instance, Red Wilkes heads the stallions of 1874, Onward those of 1875, etc. Following the name of the stallion; are given the records of all the 2:15 trotters each one has sired, taken from the 1896 Year Book. The figures given are the seconds and fractions of a second over and above 2 minutes. The column headed "No." is the total number of 2:15 trotters sired by that stallion, and the final column is the average speed of the stallion's entire 2:15 trotting list, the "2" minutes being omitted in this column as unnecessary. The average is expressed in seconds and decimals of a second over 2 minutes. The comparative rank (so far as age, number of 2:15 trotters, speed of fastest trotter, and average speed of the whole number) of any of the stallions can be easily arrived at from an inspection of this table.

In the last ten years we have jumped from one solitary sire of two trotters to this formidable array of 75 stallions that have sired 246 with records from 2:03¾ to 2:15, and every one of these stallions (with the possible exception of Iris) is standard bred and registered. Remarkable as this increase is, only half the story has been told. Those stallions with one 2:15 trotter in the list have increased in number from 11 in 1886 to 209 in 1896. Chronologically arranged according to the year of their birth, these sires are named below. Sires of the same year are ranked according to the speed of their fastest trotter, the record being abbreviated as in the previous table, and following the stallion's name and registered number, viz:

1846—Norman 25—14. 1852—Abdallah 15 (Ale:

1852—Abdallah 15 (Alexander's)—14.

1854—Volunteer 55—11¼. 1856—Godfrey Patchen 32— 14¾.

1861—William Rysdyk 527— 13¹/₄.

1862—A. W. Richmond 1687—

1863—Bayard 53—12¼. 1864—Jay Gould 194—8¼. Harold 413—8¾. Pilot Duroc 905—12¾. Idol 44—13¾.

1865—Rysdyk 653—14. William H. Allen 700—14.

1866—Squire Talmage 668—9¼. Blackbird 401—12¼. Strathmore 408—13¾. Louis Napoleon 207—14½. Gen. Stanton 2545—15.

1867—Deucalion 889—10¾. Orange Blossom 238— 13¼. Bay Star 11267—14. Hylas 831—12¼. Hylas 831—12¼. Flatbush Abdallah 893—

1870—Abdallah Mambrino 3715 —11¼. Opal 18178—12¼. Ridgewood 10358—13¼. Alex. H. Sherman 4852—

13¼. Monroe Chief 875—14½. 1872—Hawspatch 1140—9¼.

Polonius 4090—934. Patchen Mambrino 11835—10.

Mohican 608—121/2. Schuyler 1539—131/2. Gibraltar 1185—141/4. Pickpocket 9357—141/4. Inca 557—141/2. Abbotsford 707—143/4.

1873—Egmont 1828—10¾. Artillery 750—13¼. Roger Hanson 1985—13¾. Arthurton 365—15.

1874—Bay Tom, Jr., 18816—13¼. | 1880—Hambletonian King Almont 1276—13¼. | 1679—8½. | Don Carlos 2097 Alroy 5715—14¼. Kensett 961—14¼. Gypsey Boy 1994—14½. Indiaman 1242—14¾. Moody 4706—14%. Mambrino Wilkes 6083— Challenger 1064—15. 1875—Barney Wilkes 7433—9½. Altamont 3600-9%. Jerome Eddy 1260—10¼. Charles Caffrey 1043— 10%.

Leland 1300-111/2. Sultan 1513-11 (2:07½ rejected). Ambassador 1496—12¼. Egbert 1136—12½. Hambletonian Prince 9716-121/2. Marin 19440-13. Allie Gaines 2380-1314. King Rene 1278—13¼. Silas Wright 2610—13¼. Tremont 1565—14. Clark Chief 19308—14¼. Harry Wilkes 1896—14½.

Almonarch 3224—15.

1876—Young Rolfe 3517—9.
St. Cloud 5966—12.
Rumor 3033—13¾.
Coronet 1035—14¼.
Del Sur 1098—14½.

Atlantic 1003—1434. 1877—Tramp Panic 17753—10. Orpheus 1416—11. Sfrius 6162—13. Heptagon 1230—13¾. Nutbourne 1399—14¼. Eldridge 1137-141/2.

Albert 2366—14½. Green Boy 3966—15. 1878—Cornelian 1085—11¾. Roscoe Conkling 8035— 1234.

Erelong 1141-1314. 1879-Vatican 11308-8%. Meander 1311—10. Patchen 17023—10½. Tempest 1881-11. Endymion 4594-131/2. Jerome Turner 3869-131/2. Intrigue 3029—14. Brown Jug 21985—14¼. Anteeo 7868—14¾. Paramount 1435—14¾. Madrid 1835—14%. Eros 5326—14%. Amboy 17370-15.

Wilkes Don Carlos 2097-1014. Warlock 3378-11%. Billy Wilkes 2938-12%. Cadmus Hambletonian 3445-131/4. Thorndyke 1656-1414. Ansel 7093—14½. Wilmore 11848—14½.

1881—Binderton 3003—101/4. Talavera 1943—10¼. Jersey Wilkes 2516—12. Wilkomont 2734-121/4. Wilkes Spirit Jr., 17486-Hambletonian, Jr., 19093 $-12\frac{1}{4}$ Phallamont 3175-1214. Sir Knight 5572-121/2. California Nutwood 15119

Walsingham 2166-15. 1882—Charley Wilkes 3563—934. Champion Medium 2142 -10½. Sir Walter, Jr., 7800— 111/4. Darknight 2858-111/2. Junio 14957-12. William L. 4244—12. Woodford Wilkes 2528— 121/2. Storm King 2161—13¼.
Hillside Prince 2721—13¼.
Asmoor 13467—13½.
Patron 2529—13¾. Allie Wilkes 3873-13%. Ashland Wilkes 14¼. Sentine: Wilkes 2499-· 141/2. Hector Wilkes 6276-15.

Norval 5335-15. 1883-Woodbine 3926-101/2. Don McGregor 4736—11. Cyril 24646—11¼. Red Cedar 7107—12. Silver Cloud 9978—12½. Herschel 3524-13. Plymouth 14453-1314. Black Wilkes 3541-13%. Linkwood Chief 4481—14. Belladonna 7188—14¼. Nutbreaker 2952—14¼. Cleaver 1226—14¼. Monon 4071-1414. Norman Wilkes 2947-141/4. Sphinx 5343-1434.

9 9.50

1884—Chimes 5348—6. Keeler 6435—8¼. Albert W. 11333—10. Dr. Strong 6112-101/4 Sable Wilkes 8100-11. Norfolk-3670-1114. Glenwold 12867-11%. Harold Patchen 4081-121/4. Delmarch 9789-121/4. Robert L. 4409—121/4. Russia 3675-121/2. Col. Tom 6415-121/2. 21424-Wilkes Arthur 121/2. Acolyte 7412-131/2 Mikagan 4554-13%. Norseman 9409—14. Atto Rex 6821—14. Don Marvin 7927-141/2. Bay Ethan 8873—141/2. Anderson Wilkes 4197-John G. 6470-15. 1885—Edgardo 4153—10. Charles Derby 4907-114. Chime Bell 5380-12. Criterion 2864—121/4. Egotist 5018-121/4 Elberton 4032-121/6. Alfred G. 12452-121/2. Rene 11980—12¾. Prince Regent 7491—13¼. Red King 6448—13½.

Red Fern 13393—141/2. Count Princeps 7783-15. Repetition 5939-15. 1886-Hummer 6112-101/4. Whitby 069-121/4. May King 10272-121/6. Alcone 6780—13. Temple Bar 7554—13¾. Wildnut 13472—14. Fairholm 5603—141/4. Hurly Burly 5827-15. 1887—Republican 9288—9¹/₄. Copeland 13303—11¹/₂. Fred S. Wilkes 15728-121/2. Lancelot 6860-141/4. Highwood 8067-141/2. Barnhart 8997-15. 1888—De Lancey 9979—13. Lord Wellington 9768— YEAR OF BIRTH UN KNOWN. Moorokus-714. Denning Allen 28240-834. Nephew (Dorsey's)-934.

Hambletonian Chrisman 10178

Abdallah (Conklin's)-1314.

Pilot Almont-12%.

Willoughby—13¼. Rolla Golddust—14¼.

C. S. P.-1434.

Haroldmont 7352-131/2. Blackstone, Jr.-15. What is particularly worthy of notice is the large number of young stallions that have attained the distinction of being sires of 2:15 trotting speed. The total number of sires in both tables is 284. Thus only six per cent. of all the 2:30 sires have succeeded in siring even one 2:15 trotter, and less than two per cent. have sired as many as two such trotters. For this reason, ability to sire 2:15 trotting speed places that stallion far above the average of 2:30 sires. These stallions are worthy of special mention, of being singled out from the common host of so-called "successful sires;" and the younger members of the 2:15 sires will not be lost sight of by the sagacious breeder, who is looking towards the requirements of the future. A summary of the two foregoing lists showing the gradual coming in and the growth of this distinguished band of stallions, as well as indicating the years that have been most prolific in bringing them forth,

_12.

the two Tables I an II o

f. 5.

NUMBER OF 2:15 TROTTING SIRES—BORN FROM 1846 TO 1888.

		One n 2:15.	Total each year.
Born in 1846		1	1
Born in 1852	'	1	1
Born in 1854		1	1
Born in 1856	1	1	2
Born in 1861		1	1
Born in 1862		1	1.
Born in 1863	2	1	3
Born in 1864	1	4	5
Born in 1865		2	2
Born in 1866	2	5	7
Born in 1867	1	2	4
Born in 1868	2	0	2
Born in 1669	0	27	3
Born in 1870		5	8
Born in 1871	A	0	4
Born in 1872	2	9	11
Born in 1873	0	4	4
Born in 1874	7	10	17
Born in 1875	5	17	22
Born in 1876	4	6	10
Born in 1877	3	R	- 11
Born in 1878	9	3	- 5
Born in 1879	6	13	19
Born in 1880	R	8	14
Born in 1881	5	10	15
Born in 1882	6	16	2?
Born in 1883	5	15	20
Born in 1884	0	. 91	21
Born in 1885	1	14	18
Born in 1886	9	8	10
Born in 1887		6	7
Born in 1888	0	2	2
Totals		191	273
Year unknown	1	10	11
Totals	75	209	284
Number not registered		8.	9
Sires standard and registered	74	201	275

The variance from year to year in the numbers that are born is a fair indication that the 2:15 sire still owes his existence to a combination of fortuitous circumstances: that like the "honest man," he is one horse picked out of thousands, and that his owner even in these days may deem himself favored beyond many.

If the past decade has witnessed the decline of the 2:30 trotter, it is because of the rapid rise and increase of the 2:15 trotter. The one has made the other possible. Compare the growth of both during the last ten years, viz.:

2:15 TROTTERS.
1886
Increase
2:30 TROTTERS.
1886
Increase
Increase in favor of 2:15 sires, per cent
Increase in favor of 2:15 trotters, per cent
This comparative increase will be much more marked during the next decade in favor of the 2:15 trotter.
The influence of the standard on the production of 2:15 speed will be apparent from the following figures, viz.:
2:30 SIRES IN 1896.
Total number of sires
Registered standard
2:15 SIRES IN 1896.
Total number of sires

In closing, let me call attention to this single fact. In 1886, the fastest record was that of Maud S., 2:08%. In 1896, Alix, 2:03%, takes this place of honor. The difference is five seconds, believed by many to be brought about solely by the substitution of the pneumatic tired sulky introduced in 1892.

Be this as it may, the ultimate limit of trotting speed is still hid in the womb of the future, and is as much a conundrum as ever. In the face of the progress that has been made in the past ten years, I do not doubt that at the close of the next decade there will be at least a fair sprinkling of two-minute trotters.

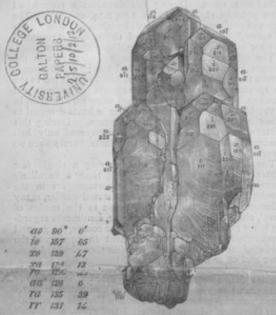
TRON KIRK.

Dable on page to is not primes as I wrote it. The individual records of the trotters, are unitted to save apace I suppose, but as far as it goes it is probably correct. I kept no copy of my MSS, - & reliance must be placed on the printer t proof reader for the correctness of the figures. This may give you a letter idea of the growth of the eves. Af Mester

NATURE

on comparison with the table of angles given in Miller's "Mineralogy," rendered the identification of the more conspicuous planes easy. The remaining planes were then easily determined from the relation which connects three planes lying in a zone. The forms present are : o 1111 a 101), r 100, r 221, x 210, i 321, u = 410, u = 223.

I had no intention of describing the specimen at the time it was shown me, and did not pay enough attention to the physical characters of the faces to be able to recall The specimen was for the most part remarkably limpid, with a pale mauve tint in its purest portions. It was in part penetrated by fine delicate needles of epidote,



as is shown in the very excellent diagram attached, which gives a very clear and accurate idea of the specimen. remarkably large crystal from the same locality has recently been added to the mineral collection of the Natural History Museum, Cromwell Road. It is of a much deeper mauve colour than Mr. Henson's specimen; itashows the same general forms, the planes o and a are bright and even, but the small planes, r, x, i, are some what rough. These same characters are also those ob-served on the faces of such smaller specimens as I have examined. W. J. L.

THE EVOLUTION OF THE AMERICAN TROTTING-HORSE?

THE American trotting-horse is an example of a new breed of animals in process of formation. As yet it can hardly be called a definite breed in which the special and distinctive character is either fully developed in quality or satisfactorily fixed by heredity. Great progress has, however, been made, many individual animals have attained great speed, and all the better ones have derived their trotting excellence in part, at least, through

The origin of most breeds is involved in considerable obscurity, as to how much they are due to conscious and how much to unconscious selection, what motives led to this selection, how far the enhancement of the special qualities have been due to physical environment, and how far to education, training, nourishment, or cultivation.

By Wm. H. Brewer, from the American Journal of Science.

The formation of this new breed is so recent, the development of a special quality has been so marked, there is such an abundant literature pertaining to its history, the system of sporting "records" is so carefully planned and comprehensively conducted, and withal has become so extensive, that we have the data for a reasonably accurate determination of the influences at work which led to this new breed being made, the materials of which it is made, and the rate of progress of the special evolution.

It is as an implement of gambling and sport that the trotter has his chief value to the biological student. Sporting events are published or recorded as the mere everyday use of animals is not, and the records of races give numerical data by which to measure the rate of progress. Similar data do not exist for the study of the evolution of any other breed.

Incidental to the preparation of a paper pertaining to this matter for farmers and breeders, I have compiled and collated certain data which have a scientific as well as economic value, the more interesting portion of which I condense for this paper.

The horse has several gaits which he uses naturally, that is, instinctively. And besides those which are natural, he has been taught several artificial ones, some of which have been much used, particularly in the middle ages. But to trot fast was not natural to horses; when urged to speed they never assumed it, and until within a century the gait was neither cultivated nor wanted by any class of horsemen. A breed of fast trotters, had it been miraculously created, would doubtless soon have perished in that it would have had no use, satisfied no fancy, and found no place in either the social or industrial world as it then was.

Before the present century the chief and almost sole uses of the horse were as an implement of war, an instrument of sport and ceremony, an index of rank and wealth, and an article of luxury.

For all these uses, as then pursued, a fast trotter was not suited, nor was he better adapted to the heavy coaches over rough roads, or the slow waggon-trains of armies. The horse best adapted to all these, however much he may have varied as to size, strength, and fleetness, was one whose fast gait was the gallop or run rather than the trot. For leisurely horseback travelling the ambling gait (or pacing gait as it came to be called in America) was preferred. With increasing use of horses for draft, certain heavy but slow breeds were developed in the Old World, of which the Dutch, Clydesdale, and Norman breeds are

The causes which led to the cultivation of the trotting gait in this country, and the evolution of a breed with which it should be instinctively the fast gait, were various, and the separate value of each as a factor in the problem would be very differently estimated by different persons studying the subject from different points of view. that he is so valuable and plays such a part as a horse of use, it is easy to see why a breed of trotting roadsters should be produced to meet certain important demands of our modern civilisation. But this does not explain how the process actually began.

Reasoning a priori, the trotter, as a horse of use, should have originated in western Europe; as a matter of fact, he not only did not begin there, but he was unpopular there until well developed here. Locomotives began to draw armies to the battle-field, the war-horse declined in actual as well as relative importance, the modern, light, steel-spring, one-horse, convenient business waggon as well as the modern buggy came into common use after trotting as a sport was established, and after the gait had been extensively cultivated and bred to. The trottinghorse is specially adapted to various modern uses, but these uses followed his development, rather than led it, although in later days this factor has been an important one in the rate of progress.



The influences which originally led to the starting of the breed were more social than economical; a similar fact a century earlier marked the founding of that famous running breed, the English thoroughbred. The origin of the trotter, however, was not so simple as that, and several diverse social factors were involved, only the chief of which will here be noticed.

From early colonial times horses have been more generally owned by the masses of the people here than in any country of western Europe. They have had a more general use in agriculture and in business, their ownership or possession has had less social significance, and they have had less importance as instruments of gambling. The colonists importance as instruments of gambling. who settled north of Delaware Bay, although of various nationalities, were largely those whose religious prejudices and social education was opposed to horse-racing. With the great majority of them it was considered a sort of aristocratic sport, and at best led to unthrifty ways, even if not open to the objection of positive immorality. Consequently but few race-horses were imported into this region in colonial times. The original horse stock of the northern colonies came from several European sources. England, Holland, France, and Spain certainly, and Sweden, Denmark, Germany, Ireland, and Italy probably, contributed to it. The blood from this variety of sources variously mingled, formed the mongrel stock of the This was further modified by local conditions and local breeding assuming different characters in different places, and the hardships of horse life incident to a new country, with strange forage and a rough climate, caused deterioration in size and form. Early writers are unanimous on this point, but many add that what was lost in size and beauty was gained in hardiness and other useful qualities.

After the war of independence there was an improvement in the live stock of the country. English thoroughbred horses were imported both for sporting and to improve the horse stock of the country, and horse-racing rapidly grew in favour as wealth and leisure increased. The export trade in horses to the West Indies increased, particularly from New England. Pacers were most sought for this trade, but sometimes trotters were advertised for

As horse racing increased in the last years of the last century the opposition to it revived, and in the earlier years of the present century this became ascendant, and stringent laws forbidding the sport were passed in most of the northern States. The prohibition was sweeping and the penalties severe.

Horse-racing was then a contest between runninghorses, and during this repression of racing, trotting as a sport began, at first in a very unostentatious, irregular, and innocent sort of way. Probably no people or class of people have ever bred good horses which they prized and were proud of, who did not find pleasure in seeing them compete in speed or show their fleetness in some way, and during the repression of racing (which meant running), trotting came in as a substitute, poor though it was at first. It had a sort of encouragement from very many thrifty people who were not sportsmen, and was in a measure considered a sort of democratic sport in which even ploughhorses could take part. Racing of any kind in those days was a strife between two or more things, as it still is in most countries; no one thought that a single horse could run a race alone, but the instinctive inclination to see a spirited horse in action could be mildly gratified by letting him trot, even if single and alone, and testing by the watch how quickly a given distance could be covered. So "timing" animals came to be practised. We hear of it on the Harlem racecourse in 1806, four years after the laws forbidding horse-racing had been enacted, and again, a little later, near Boston, and it was reputed that certain horses could trot a mile in three This speed seemed so extraordinary that in 1818 a bet of a thousand dollars was staked (and lost) that no horse could be found that could trot a mile in three minutes. Some authorities date the beginning of trotting as a sport with this event. It is said that in the betting the odds against the successful performance of the feat were great, which shows, strikingly, the enormous progress since made in developing speed at this gait.

In 1821, certain persons on Long Island were allowed by special statute to train, trot, etc., horses on a certain track, under certain restrictions, exempt from the penalties against horse-racing. Other organisations followed, and by 1830 the "training" of trotters was going on at several points, and trotting may be said to have become established as a sport. During this decade the record had been successively lowered to 2.40, 2.34, and 2.32. The times of performance were carefully taken at these "trials of speed," as the statute called them, and "records" became established by more formal sporting codes.

The ostensible object of these associations was the "improvement of the breed of roadsters;" driving single horses to waggons became fashionable, and this led to the improvement of light one-horse waggons for business and pleasure. Those with steel springs were rare luxuries in 1830; by 1843, when the record of mile heats dropped to below 2.30, they were already common. During this thirteen years, the record had been lowered only half a second on mile heats, but three-minute horses were no longer rare.

The fashion of wealthy men driving a single fast trotter for pleasure was for a long time a peculiarly American one, and played an important part in the development of this breed. But, as stated earlier, many influences have contributed: changes in the modes of travel, changes in the methods of war, sentiments regarding horse-racing, the incentives of the course, the general improvement of roads, improvement in carriages, the needs of modern business requiring quick roadsters, these and other influences have all been at work. I

these and other influences have all been at work.\(^1\)
The material out of which this new kease insue is a liberal infusion of English thoroughbred blood (usually more than two generations removed), with the mongrel country stock, previously described. There is a voluminous literature relating to special pedigrees, and much speculation as to the comparative merits of the several ingredients of this composite blood.

Regarding the ideal trotter there is as yet a difference of opinion as to what the form should be, and it is too early to decide from actual results. That the gait is now hereditary, that it is the instinctive fast gait with some animals is certain, but whether this is due to inherited habit, inherited training, or to mere adventitious variation and selection, I will not discuss.

The gain in speed is given in the following table, which is the best records at mile heats, omitting the names of the special performers:

Date. 1818,	Best Record.	Date. 1865,	Best Record. 2.184
1824,	2.40	1866,	2.18
	2.34	1867,	2.171
1830,	2.32	1871,	2.17
1834,	2.311	1872,	2.16
1843.	2.28	1874,	2.14
1844,	2.261	1878,	2.13
1852,	2.26	1879,	2.12
1853,	2.25	1880,	2.10
1856,	2.24	1881,	2.10
1859,	2.19		

A sporting paper published in 1873 a list of three hundred and twenty-three horses, with their best records, down to the close of the preceding year. This first list

³ For more details regarding the history of this development and the factors involved, see the paper already cited, Rep. Conn. Bd. Agr. for 1882, p. 215.

1074

of the kind known to me was very imperfect in its details; it was revised for the next year, and since that time many lists, in one form or another, have been published. figures for the animals with records of 2.25, or better, are reasonably accurate; for the others there is much dis-crepancy. In the following table the numbers are my own, counting down to 1872, inclusive; the numbers after that date are derived from various lists published since that time in the sporting and breeding periodicals. From the very nature of the case, the table cannot be accurate in the larger numbers, but the numbers do not lose their value for comparison with each other from such faults as to the details of the larger numbers, and, as such, it is undoubtedly the most significant series of numbers ever compiled to show progress in evolution, whether of a breed or species. The number of horses with records of 2.40, or better, is now stated to be over five thousand.

I leave it to mathematicians to plot the curves which immediately suggest themselves, and determine how fast horses will ultimately trot, and when this maximum will be marked.

Table showing the numbers of Horses under the respective

	a. 30 of better.	2.27 or better.	2.25 or better.	2.23 or better.	2.21 or better.	a 19 or better.	2.17 or better.	2 15 or better.	2.13 or better.	2.11 of better.
1843 1844	1 2									
1044	2	1								
1849	. 7	2								
1852	10	3								
1853	1.4	5								
1854	14 16	5 6								
1853 1854 1855 1856 1857 1858 1859	19	6								
1856	24	7	1						-	
1857	26	7 7 7	2					-		
1858	30	7	2							
1859	32	9	2	1	1					
1860	40	11	4	2	1					
1861 1862 1863	48	14	4	2	1					
1862	54	17	7	4	1					
1863	59 66	19	7 9 12	4	1					
1864	66	22	12	4	1					
1865	84	29	15	4 4 4 5 6	1 2 3 5 6	1				
1866 1867	101	32	17	6	3	1				
1867	124	42	21	9	5	2				
1868	146	52	28	13	- 6	2				
1869	171	63	34	15	IO	4				
1870	194	72	35	16	11	5				
1871	233	99	40	15 16 17	12	450	1			132
1872	323	-	No.	28	-	-38	Man.			1
1873	376		74	28	15	5	2			
1874	500	-	98	40	16	II	5 5 6	I		
1875	10000	-	134	61	30	13 16	5	2		
1876	794	-	165	81	39	16	6	2		
1877	836	-	214	105	68	19	8	2		
1870 1871 1872 1873 1874 1875 1876 1877 1878	1,025	FIRE	270	120	68	24	9	4		
1879	1,142	-	325	164	88	33		5	1	
1880	1,210	-	366	192	106	41	14	6	2	I
1881	1,532	-	419	227	126	49	15	7 8	2	1
1882	1,532	-	495	275	156	60	18	8	2	1

INSTITUTION OF MECHANICAL ENGINEERS

THIS Institution held their usual Spring meeting at This institution of Civil Engineers, 25, Great George the Institution of Civil Engineers, 25, Great George Street, on April 11 and 12, the president, Mr. Percy G. B. Westmacott, in the chair. Three papers were read, and discussed at length; a fourth, by Mr. A. C. Bagot, on "The Application of Electricity to Coal Mines," was postponed for want of time.

The first paper was by Prof. A. G. Greenhill, of Woolwich Arsenal, and deat with the strength of shafting

when exposed both to torsion and end-thrust. He has worked out for this case, by a complete mathematical investigation to be published in the Proceedings, the following formula :-

where P = end-thrust, T = twisting moment, I = moment of inertia of cross-section, E = modulus of elasticity, I = maximum distance between bearings, which will allow a shaft to be stable. a shaft to be stable.

When there is no twisting moment, as in a long column, the second part of the right-hand expression vanishes, and we have the ordinary formula of Euler. If there be no end-thrust, as in ordinary mill shafting, the first part vanishes. The special case where both occur together is that of the screw-shaft of a steamer; but here, it appears, on working the figures out with ordinary dimensions, that the second part is small in comparison with the first, and may be neglected. Hence a screw-shaft may so far be treated as if it were a long column only; and it follows at once that the numerous bearings interposed between the engines and propeller (say, about every 25 feet) are quite unnecessary so far as stiffness is concerned. If retained, as seems desirable, simply to support the weight of the shaft, they might at least be made in some way elastic, so as to enable the shaft to accommodate itself to the sagging and straining of the vessel. It was, in fact, admitted on all hands that screw-shafts never give way from twist or thrust, but always by cross-breaking through strains induced by the unequal movements of the ship; and if so, there seems every reason for taking some steps at least in the direction which Prof. Greenhill indicates.

Another point which the paper touched upon was the question of hollow versus solid shafts. Now that shafts can be conveniently east out of ingot steel, they are frequently made hollow, with the obvious advantage of increasing the stiffness as compared with the weight. Thus, in the case of the screw-shaft of the City of Rome, which is 25 inches diameter, with an internal hole of 14 inches diameter, it appears that the moment of inertia is 09 of that of an equal solid shaft, while the weight of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the control of the latter would be a state of the latter would be latter would be 1 45 that of the former. Again, if a solid shaft were used of the same weight as the hollow shaft, or 20.7 inches diameter, its moment of inertia, and there-fore its stiffness, would be barely half that of the latter. Even if a transverse crack, I inch deep, were to occur in the hollow shaft (which it might be urged would place it at a serious disadvantage) the loss of stiffness comes out to be 6 per cent, whereas in a solid shaft of equal diameter the corresponding loss would be 5 per cent.; so that even here the advantage on the side of solidity is

only I per cent. These figures might seem to be conclusive, yet the solid shaft has its defenders. Mr. Edward Reynolds, of Messrs. Vickers and Co., stated roundly that the history of hollow screw-shafts was a mere history of disaster (which, however, was denied by a subsequent speaker); and he quoted some experiments of his own on shafts one-fourth the size of that in the City of Rome, where, tested under a 1-ton weight falling from about 20 feet, the hollow shaft was rapidly destroyed, while the solid shaft remained uniquened. This occurred even when great care was injured. This occurred even when great care was taken to prevent the hollow shaft from getting flattened during the process. His explanation was that the com-paratively unstrained fibres towards the centre of the ection came in to support and relieve the exterior parts, whenever, by cracks or otherwise, these became unduly loaded. Prof. Kennedy, who followed, seemed to lean to the same view, and quoted the increase of strength observable in the metal between the holes of a drilled plate, as being due, in some unexplained manner, to the in-fluence of the unstrained metal behind the holes. A very satisfactory explanation of this fact was, however, given by Mr. Wrightson at the last meeting of the British

[April 26, 126, 1883

Association. The real question to which Mr. Reynolds's tests point is probably how far theories which rest on the hypothesis that elasticity is perfect can properly be applied to cases where the breaking point has been nearly reached; and this is a question on which more light is very urgently needed, especially with reference to such eases as screw-shafts, where fractures, as a matter of

fact, do very commonly occur.

The second paper, by Mr. W. Ford Smith, dealt with twist drills, milling machines, and other methods for the cutting and dressing of metal surfaces, which have been introduced within the last few years; and was almost entirely of a practical character. The third paper, by Mr. John Jameson, was on "Improvements in the Manufac-ture of Coke," and dealt with a new method, invented by the author, for recovering the gas, gas-tar, and ammo-niacal liquor, which are separated from coking coal during the process of carbonisation. As the paper points out, these products are not originally present in the coal. There is, for instance, no ammonia in coal; but there are combinations containing nitrogen and hydrogen, and in almost any process of distillation parts of the evolved nitrogen and hydrogen unite, under very obscure conditions, to form ammonia, which, however, is not stable, but readily decomposes in the presence e.g. of oxygen. Every process of distillation, in fact (but some much more than others), favours the formation of gas on the one hand and of condensable hydrocarbons on the other. regard to the former, its value in the neighbourhood of coke-ovens is not usually high, and it is a question whether it may not best be burnt in the oven itself, to furnish the heat required in any case for the distilling process; but the value of tar and ammonia is great, and would probably not fall very low, even if the production were largely increased. At the same time, as a fuel they are not even equal to the same weight of pure carbon. It will be seen, therefore, that there is ample room for a process which will enable us to separate and utilise these by-products, instead of simply using them as fuel, or, which is far worse, discharging them unburnt to poison the air and destroy vegetation. Mr. Jameson's method of effecting this end is very simple. He takes an ordinary "beehive" coke-oven, makes it tolerably airtight by letting coke-oven, makes it tolerably airtight by letting tar soak into the brickwork, and covers the floor with an impervious substance, in which are inserted some large bricks or quarls, pierced with holes. Below these is a chamber connected with a pipe, which leads, through any convenient form of condenser, to a small exhausting fan. The oven is now charged and lighted from the top, to which alone air is admitted. The heat of com-bustion, penetrating downwards, gradually distils the pitch and gases out of the coal, and the fan being set to work, these products, instead of passing upwards to the fire, are sucked downwards through the holes in the floor, and afterwards separated, the tar being left in one con-denser, the ammoniacal liquor in another, and the gas either used at once for steam-raising, &c., or stored in a gas-holder till required.

In the discussion which followed, the advantage of saving the waste products was fully admitted, though some rather startling estimates of the author (who had assumed that 75,000,000/. per annum was practically wasted under our present system of coal consumption) were sharply But by the ironmasters who were present it was strongly laid/down that the first duty of a coke-oven was to make good coke—such coke as would give the best results in a blast-furnace; and that to this duty all consideration of by-products must give way. It was further suggested that pitch was a valuable ingredient in coke, and that this pitch was left in it by the present system, but withdrawn on the new one. This idea, however, seems to be founded on a misapprehension. Jameson and others were able to state positively that the coke made by his process could not be distinguished in

quality from the product of the old beehive over Christoval ne vicinity of the quantity per ton of coal was the same; and t hairy-bodied, by-products, though differing very greatly in qooth-skinned according to the character of the coal, method

densation, &c., were almost always sufficient to skull would within a few months or even weeks, the 10% or dices ranged quired to adapt an existing oven to the new arrant them being If these results are confirmed by more extended agle varied in different localities, the process seems likely, is g nerally speaker phrased it, "to take a prefty prominent nostrils wide, among the great inventions of the present day." es. Not unes. Not un-

out of fifty CORONERS' SCIENCE IN CHINA totice of this WHETHER Chinamen are or are not believexes are often

VV principle that it is better that nine guilty e frequently should escape rather than that one innocent, should suffer, they do at all events, by their mcharacters of conducting inquests, leave open a wide door oup. To the escape of murderers. A deeply-rooted repugija, which lies dissection of the human body and a consequentame descripacquaintance with anatomy, coupled with an entitler adjacent ance of the action of poisons, deprive coroners Melanesian means of arriving at decisions except those furn probably a outward symptoms and appearances. From earments there, however, the importance attaching to human large island been recognised by the custom of holding ined in appearcases of sudden death, and various works have been measurelished embodying all the knowledge available on Florida sublished embodying all the knowledge available on Florida subject to assist coroners in their duty of investigate ails, it was best-brown of these was the Se yuen luh, or "F description the washing away of wrongs," which was givly applicable, world in the thirteenth century, and which, usar I had no same title, subsequently received the imprimated of Simbo, officers of the Board of Punishments, who, in rence in the cise of their legislative function, issued it as page a rather for coroners. In this work is expounded that as fars are cise of their legislative function, issued it as caps a rather for coroners. In this work is expounded that as far as system of Chinese medical jurisprudence, of wirection, we following is a slight sketch.

system of Chinese medical jurisprudence, or wirection, we following is a slight sketch.

One of the first directions given to coroners, subject for one of Mrs. Glasse's celebrated dictum, and is to ople as the that before issuing a warrant for an inquest the ight and in be quite sure that there really is a corpse. This ad of Treasury is a corpse than the reason which makes allied parties. be quite sure that there reasy is a corpse. This are of Freasury is no less curious than the reason which makes ailing native It appears to be not uncommon for uns re finely cut, sary. It appears to be not uncommon for unser finely cut, swindlers to demand inquests on imaginary cathe cephalic the purpose of extorting money from the wealthe of the houses where the bodies are said to be, what cephalic than fall into the clutches of the law, generall bones were sum demanded on condition that all proceed a race the stayed. But being well assured of the existing disposition contacts the coroner should proceed to the spot he Saleman. stayed. But being went asserted to the spot he Solomon corpse, the coroner should proceed to the spot he Solomon corpse, the coroner should proceed to the spot he Solomon vided with onions, red pepper, salt, white prunest island of gar with the lees. If death has just taken place amongst the examine the top of the head, back of the ears, tof this archiany other vital part where a sharp-pointed leir physical may have been inserted. In case of his failir ounced type any such cause of death, he should interrogate the Guppy and neighbours, and then proceed to exact

wounds there may be on any other part of the I An infallible guide to the date of a wound in the colour of the bone affected. If it is a recye FROM of a slight nature, the bone will be red, but SSION OF severe, the bone will be of a dark blue colour. care should, however, be taken to ascertain

colours are genuine, and not manufactured to the diagram the story told by the relatives. A red tint ma Henson last to the bone by painting it with an ointment omen of this safflover, sapanwood, black plums, and alumserved were addition of boiling vinegar. On the other helf, but from alum or nutgalls, mixed with vinegar, impart a which Mr. or black hue. These counteriest colours may approximate be distinguished by their many to black hue. be distinguished by their want of brightness. nent angles uncommonly a fictitious wound is made afterefer, which,





COMMITTEES APPOINTED BY THE GENERAL COMMITTEE AT THE BRISTOL MEETING IN SEPTEMBER 1898.

1. Beceiving Grants of Money.

Solject for Exceetigation or Purpose	Members of the Committee	Grania
Making Experiments for Impre- ing the Construction of Function Manchasts for use in Ecotrical Managements, [Acad TM., box year's grant not expended.]	Chairman, — Lord Bayleigh. Socretary.— Mr. E. T. Gamelerock. Lord Ealvin, Professors W. E. Ayrston, J. Perry, W. G. Adams, Gliver J. Lodge, and G. Casey Fusier, Dr. A. Mairhond, Mr. W. H. Proces, Professors J. D. Kreening, Son J. D. Kreening, A. A. Schouter, Dr. J. A. Freening, J. J. Thomason, Mr. W. S. Shaw, Dr. J. J. Thomason, Mr. W. S. Shaw, Dr. J. T. Bottomley, Ber. T. C. Fittypatrick, Professors J. Viciams Jones, Dr. G. John- stone Stoney, Professor S. T. Thompson, Rr. J. Remain, Mr. El. M. Griffith, Professor A. W. Elekan, and Professor H. L. Callendar.	A 4 d 200 0 0
	T. C. Fingatrick, Professor J. Yudamu Jones, Dr. G. John- stone Stoney, Professor S. P. Thompson, Mr. J. Bennie, Mr. E. H. Griffiths, Professor A. W. Ricker, and Professor H. L. Callender.	
Seistoological Observations.	Chairman.—Prof. J. W. Judd. Scorelary.—Professor J. Milos. Lord Kelvin, Sir F. J. Branwell, Professor G. H. Darwin, Ma. Rocace Darwin, Major L. Darwin, Mr. Professor J. A. Kwiege, Professor J. A. Kwiege, R. Mohlole, Professor J. Perry, Professor J. R. Poptsing, Pro- Essor T. G. Boncey, Mr. G. V. Bery, Professor H. H. Tarme, Mr. O. J. Symons, and Dr. C. Devices.	TS 0 0
To assist the publication of Science Abstracts."	Chairmon. — Professor A. W. Edeker. Scorotory. — Professor W. E. Ayr- ton. Captain Alvery and Professor S. P. Thompson.	300 0 0
Experiments on the Heat of con- bination of Metals in the forma- tion of Alleys.	Chairman,—Lord Kelvin. Servetery.—Dr. A. Galt. Professor F. G. FrisGerald, Dr. J. H. Gladatone, and Professor G. J. Ledge.	20 0 0
Radiation from a source of Light in a Magnesia Field.	Cheirman, Professor F. O. Fits- genild. Scentary, Professor T. Preston. Professor A. Schuster, Professor O. J. Lodge, Professor S. F. Thompson, Professor Molley, and Profescor W. E. Adeney.	50 0 0
To co-operate with Professor Karl Peneson in the Calculation of certain lategrals.	Cheirman.—Bav. Robert Harley. Secretary.—Dr. A. R. Fonyth. Dr. J. W. L. Gheisber, Professor J. Ledge, and Professor Karl Pear- son.	10 0 0
The Action of Light upon Dyed Colours.	Chairman.—Dr. T. E. Thorpe. Scordary.—Professor J. J. Ham- nel. Dr. W. H. Perkin, Professor W. J. Rassell, Captain Abney, Pro- fessor W. Strood, and Professor R. Meldola.	10 0 0
The relation between the Absorp- tion Spectra and Chemical Con- stitution of Organic Substances.	R. Meldola. Chairman and Sorretary.—Pro- fessor W. Nool Hartley. Professor F. R. Japp and Professor J. J. Dobbie.	0 0 0
To establish a Uniform System of recording the Boults of the Chemical and Easterful Exam- ination of Water and Sewage.	Chairman.—Professor W. Exmany, Scoretary.—Dr. S. Eideal. Six W. Crooken, Professor P. Clowes, Professor P. F. Prank- land, and Professor E. Doyos.	10 0 0
The Collection, Preservation, and Systematic Engletration of Photographs of Geological In- terest.	Chairman, —Professor J. Gulkin. Secretary. —Professor W. W. Walter Fredessor T. G. Bonney, Dv. T. An- derson, and Mosen. A. S. Beld. E. J. Garwood, W. Gary, H. B. Woodwand, J. E. Bedford, B. Khleev, B. H. Thibeson. J. J. H. Touli, J. G. Goodshild, H. Gosten, and C. V. Crock.	10 0 0
Yo study Life-cones in the British Carbeniferous Rocks.	Chaleman.—Mr. J. E. Marr. Sceristry.—Mr. E. L. Garwood. Mr. E. J. Garwood. Mr. E. H. Froed, Mr. R. Crox. Dr. Wheelton Hand, Dr. G. J. Hande, Mr. P. F. Kendel, J. J. W. Kirkley, Mr. E. Kideton, Mr. G. W. Lamplugh, Profits	30 0 0
To examine the Conditions under which remains of the Irish Eli- are found in the Isla of Man.		
To further investigate the Fauns and Flora of the Phristoress Bods in Canada.		20 0 0
Photographic and other Eccord- ef the Disappearing Drift Section at Moel Trylam.	Chairman,-Dr. H. Hicks,	5 0 0

BRIT. ASSOC.





Subject for Investigation or Purpose	Members of the Constition	Grunte
The Investigation of the Ty Newydd Caros, Tremsirchico.	Cheleman.—Dr. H. Hicks. Sterefory.—Rev. G. C. Polles. Mr. A. Strahan, Mr. E. T. Newton, Mr. Q. H. Morton, and Rev. — H.G.	£ 4. £.
The Encaration of the Guiferous Cursa at Upbill, near Westen- super-Mare.		50 0 0
To enable Dr. H. Lyster Jamisson, or, failing Mm, some other competent investigator, ic carry on a definite piece of work at the Zoological Station at Nagles.	Chairman,—Professor W. A. Hardman, Sometary,—Professor G. B. Howes	100 0 0
To enable Mr. Marsin T. Wood- ward to study the endprotogy of the Mellinon; Mr. T. S. Taylor to investigate the endpressing via the Polynois and Mr. G. Resborr to continue his studies on the the expression of martin Alga, or, to enable other com- petent Naturalizes to perform a definite pions of work at the Marine Laboratory, Pymouth.	Chairman.—Mr. G. C. Bourne. Scorelary. — Professor E. Eap Lankseiter. Professor Bydney H. Vines, Mr. A. Sedywick, Professor W. F. E. Weldon, and Mr. W. Garstang.	49 0 0
Compilation of an Index Generum et Specierum Animalium.	Chairman.—Dr. H. Woodward. Soretary.—Mr. F. L. Bather. Dr. P. L. Schoter, Rev. T. R. R. Sobblog, Mr. R. McLachlan, and Mr. W. E. Hople.	100 0 0
Es work out the details of the Observations on the Migration of Biels at Lighthouses and Lightships, 1880–87.	Chairman.—Professor A. Newton. Severary.—Mr. John Cordenax. Mr. John A. Harvie-Brown, Mr. E. M. Eurrington, Esr. E. P. Knubley, and Dr. H. O. Forben.	15 0 0
To construct a Circulatory Ap- paratus for keeping Aquatio Organisms under definite Physi- eal Conditions.	Chairman.—Mr. W. E. Hoyle. Forwiery.—Mr. F. W. Ganable. Professor S. J. Hickson and Mr. Y. W. Eseble.	15 0 0
The Periodic Investigation of the Plankton and Physical Con- ditions of the English Channel during 1899.	Chairmen.—Professor E. Bay Lasksoter. Sovoetery.—Mr. Walter Garstang. Professor. W. A. Herdman, Mr. H. N. Eckson.	200 0 0
the Exploration of the Island of Bocotra.	Chairman.—Dr. J. Scott Keltle. Sarvelory.—Dr. H. O. Forbes, Dr. W. T. Emalord, Producer Englisy Emilione, Producer W. F. E. Weldon.	35 0 0
Hate Monopolies in other Creatries. Unexpended balance of 130, 13s, 6d.]	Chairman — Professor II. Shig- wick, Knowlesy.—Mr. H. Biggs, Mr. W. M. Actworth, the Rt. Hon. L. H. Courtney, and Professor H. S. Fouwell.	
eture Dealings in Raw Produce.	Chairman.—Mr. L. L. Price. Scowiery.—Prof. A. W. Figs. Major P. G. Craigie, Professor W. Conningham, Professor Kilgeworth, Professor Gonner, Mr. R. H. Hooker, and Mr. H. R. Rathboos.	10 00
to consider means by which better practical effect can be given to the Introduction of the fiver Gauge proposed by the Associa- tion in 1884. Balance of last year's grant un- exponded, 171. In 2d.]	Chairman, —Mr. W. H. Pronce. Secretary. —Mr. W. A. Price. Leef Kerles, Sir F. J. Brauwell, Sir B. Trusman Wood, Maj- dem. Wibber, Mr. H. E. Comp- ton, Mr. A. Steak, Mr. A. Le New Festix, Mr. C. J. Beett, New Festix, Mr. C. J. Beett, T. Buckery, Col. Waldin, Mr. E. Bige, Mr. Consud W. Ciscke, and Mr. Verson Bops.	10 40
he Lake Village at Glastonbury.	Cheirmen. — Dr. R. Munon. Sovotney. — Mr. A. Bulloid. Professor W. Boyd Dawkins, Gene- nal Prof. Edivers, Sir John Exans, and Mr. Arthur J. Evans.	50 0 0
o organise an Ethnographical Survey of the United Kingdon, ind surreproded balance in hand, 112.]	Chairman, —Mr. E. W. Brahrook, Secretary, —Mr. E. Silvary Hart- land, Mr. Francis Galton, Dr. J. G. Gagoos, Frefenser A. C. Hadden, Dr. Joseph Anderson, Mr. J. Ressilly Almo, Dr. J. Beldos, Mr. W. Crrobe, Prefessor D. J. Canninghan, Professor W. Byd Dawkins, Mr. Arthur J. Kvans, Dr. H. O. Forbos, Mr. F. G.	25 0 0
	Davkins, Mr. Arthur J. Evans, Dr. H. O. Forbes, Mr. F. G. Hilton Price, Sir H. Howerth, Professor H. Meldolis, General FOS-Evers, and Mr. E. G. Bavenstein.	
o co-operate with the Elishester Excuration Fund Committee in their Explorations	Chairman,Mr. A. J. Evans. Secretary,Mr. John L. Myros Mr. E. W. Brabrook.	10 0 0
erganise an Ethnological Survey of Canada.	Chairman.—Professor D. P. Pen- haldren. Dr. Groccya Davroca. No. M. Sander, S. P. Groccya Davroca. No. M. Sander, S. P. Groccya Davroca. No. M. Sander, S. S. Harris, S. M. Harris, S. P. Harris, S. P. G. Bourlinet, Abbid Caso, Mr. R. Suite, Abbid Caso, Mr. R. Suite, Abbid Tangar, Mr. C. Hills-Tout R. F. David Boyle, Rev. Dr. Sondon, Dr. Kreis. Branchemia, Rev. Revis. Dr. J. Madoian, Pr. Kreis. Branchemia, Rev. Professor B. R. Tylor, Ros. G. W. Boon, Professor J. Kavari, and Mr. A. F. Rozafer.	35 0 /
		60 0 0



1. Hearing Grants of Money-continued.

Subject for Investigation or Purpose	Members of the Consulttee	Grani	la:
To conduct Explorations with the object of assortaining the age of Stone Circles.	Chairman.—Dr. J. G. Garson. Servizoy.—Mr. H. Balfour, Gen. Pirt-Eisens, Sir John Evano, Mr. C. H. Bend, Professor Mel- dola, Mr. A. J. Kwan, Dr. H. Munes, and Professor Boyd- Davklins.	4 to 0	40
The physiological effects of Pep- tone and its Precureurs when introduced into the circulation.	Chairman.—Professor E. A. Schl- fer. Scovelary. — Professor W. H. Thompson. Professor B. Boyce and Professor C. S. Sherrington.	20 0	0
Investigation of the Electrical Changes accompanying the Dis- change of the Ecoplestory Centres.	Cheirman.—Dr. A. Waller. Serviney.—Professor Waymouth Beld. Professor F. Gotch and Dr. J. S. McDonald.	20 0	0
Influence of Drugs upon the Vac- cular Nervous System.	Chairman.—Professor Francis Gotch. Severtary.—Professor W. D. Halli- burtes. Mr. F. W. Mott.	10 0	0
Histological Changes in Nerve- cells,	Chairman,—Profusor E. A. Schiffer,—Profusor B. Bepo. Fredomor C. S. Shemington and Mr. W. B. Warrington.	20 0	0
The Micro-Chemistry of Culls.	Chairman,—Professor E. A. Soblder. Soblder. Professor A. B. Massalless. Professor E. Bay Lanksster, Professor W. D. Hallburton, and G. C. Boorne.	40 0	0
Blishology of Supravocal Capsules.	Chairman, -Professor E. A. Schüfer, Servetary-Mr. Swalle Viscent, Mr. Victor Borsley.	20 0	0
Comparative Histology of Corebral Cortex.	Chairman.—Profusor F. Gotch, Scrutary.—Dr. G. Mann. Dr. F. W. Mott.	20 0	0
Fertilisation in Pheophyson.	Clairman.—Professor J. B. Farmer. Scentury.—Professor B. W. Phillips. Professor F. O. Bower and Professor Harvey Gluco.	20 0	0
Experimental Investigation of Assimilation in Plants.	Chairman.—Mr. F. Darwin, Servetary.—Professor J. E. Green, Professor Marshall Ward.	20 0	0
Scolingiani and Botanical Publicu- tion.	Cheirman.—Ber. T. B. R. Stebbing. Streetlary.—Mr. Fr. A. Builder. Professor W. A. Herchan, Pro- fessor W. F. R. Woldon, Mr. A. C. Seward, Mr. Adam Sody- wick, Mr. C. D. Sherborn, Mr. B. Daydon Jackson, Mr. W. E. Hoyle, Dr. F. L. Schater, and Dr. D. Sharp.		
To investigate the Ereatic Elocks of the British Eds., and to take measures for their preservation.	Chaleman.—Professor E. Hall. Scoretory.—Prof. P. F. Kandali. Professor T. G. Eusney, Mr. C. E. De Bance, Professor W. J. Solias, Mr. B. H. Tiddeman, Rev. B. N. Harrison, Mr. J. Horna, Mr. Dugald. Bell, Mr. F. M. Berton, &r. J. Lonas, Mr. A. B. Devery- bons, Mr. J. W. Stather, and Mr. B. D. Yankier.	15 0	0
Corresponding Societies Com- mittee for the proposation of their Esqueet,	Chairman.—Professor R. Moblola. Sverstary.—Mr. T. V. Helmost. Mr. Francis Galton, Sir Douglas Galton, Mr. O. J. Symons, Dr. J. G. Garcon, Sir John Evans, Mr. J. Hopkinson, Professor T. G. Bessery, Mr. W. Whitaker, Mr. Cuthbert Pick, Mr. Horsco T. Brewn, See, J. O. Levan, and Professor W. W. Watta.	25 0	0

Not receiving Grants of Money. Subject for Investigation or Purpose Monless of the Committee

19

121

Chairman Professor S. P. Thompson.
Secretary.—Mr. J. Swinburne. Prof. G. H. Bryne, Mr. C. V. Burbon, Mr. E. T. Glazebrock, Professor A. W. Bicker, and Dr. G. Johnstone Stoney.
Chairman,—Lord McLaren. Sevetary.—Professor Crom Brown. Mr. John Murray, Dr. A. Buchan, and Professor E. Copeland.
Chairman.—Professor A. W. Rücker, Scordery.—Professor W. Watson, Professor A. Schuster and Professor H. H. Turner,
Chrimen Professor W. G. Adams. Scentery Dr. C. Chree. Lord Kolrin, Professor G. H. Durwin, Professor G. Chrystal, Professor A. Schuster, Captain R. W. Creak, the Astronomer Reyal, Mr. William Ellin, and Professor E. W. Recker.
Chairman.—Mr. W. N. Shaw. Secretary.—Mr. W. C. D. Whetham. Rev. T. C. Fitspatrick, Mr. E. H. Griffiths, and Mr. S. Shinner.
Cheirman.—Professor Callendat. Scorotory.—Professor C. H. McLeod. Professor F. Adams and Mr. R. F. Stapart.

3



9. Not received an electrical Manage and based

Subject for Investigation or Purpose	Mondace of the Committee
The Rate of forecase of Underground Temperature downwards in various Localities of dry Land and under Water.	Chairman.—Professor J. D. Kwerett. Swertkary.—Professor J. D. Kwerett. Swertkary.—Professor J. D. Kwerett. Frofessor Lord Kelvin, Mr. G. J. Symmus, Sir A. Orkkin, Mr. J. Olakshor, Professor Sulvant Biski, Do. C. La Kwer Froste, Professor A. S. Hernshol, Professor G. A. Lebort, Mr. A. B. Wynor, Mr. G. G. Stander, Mr. A. B. Wynor, Mr. G. F. Bondon, Professor Michael Saith, and Professor H. L. Calinostur. Smith, and Professor H. L. Calinostur.
	Mr. A. Strahan, Professor Michie Smith, and Professor H. L. Callendur.
That Professor S. P. Thompson and Pro- fessor A. W. Eddler be requested to draw up a lisport on the State of our Knowledge oncertaing Resultant Tenes.	
The Application of Photography to the Elucidation of Meteorological Pho- nomena.	Chairman.—Mr. G. J. Symons. Surestory.—Mr. A. W. Clayden. Professor R. Meldola, Mr. John Hopkin- nos, and Mr. H. N. Dickson.
For Calculating Tables of certain Ma- thematical Functions, and, if secon- sary, for taking steps to carry out the Calculations, and to publish the re- ealits in an accessible form.	Chairman.—Lord Kelvin. Servitory.—LioutColonal Allan Cen- ningham. Professor B. Price, Dr. J. W. L. Glaicher, Professor A. G. Greenhill, Professor W. M. Hicks, Major P. A. Maonahos, and Prefessor A. Lodge.
Considering the best Methods of Ec- ording the Direct Intensity of Solar Enclistion.	Chairman.—Dr. G. Johnstons Stoney. Scientary.—Professor H. McLood. Nr G. G. Soloso, Professor A. Schuster, Sir H. E. Boscos, Capitals W. & W. Aboey, Pr. C. Chee, Professor G. F. Fattlendd, Professor H. F. Callendar, Mr. G. J. Symons, Mr. W. E. Wilson, and Professor A. A. Eambard.
To consider the most suitable Method of Determining the Components of the Magnetic Force on board Ship.	Chairman, — Professor A. W. Bücker. Scordary. — Mr. C. H. Lees. Lord Kelvis, Professor A. Schuster, Cap- tain Creak, Professor Stread, Mr. C. V. Boys, and Mr. W. Watson.
That Mr. E. T. Whittaker be requested to-draw up a Report on the Finnetary Theory.	
That Miss Hardonstle be requested to draw up a Report on the present state of the Theory of Point-Groups.	
Preparing a new Series of Warn-length Tables of the Spectra of the Ele- ments.	Chairman.—Sir H. E. Roscon. Neverdory.—Dr. Marchall Watts. Sir J. N. Lockyur, Professors J. Dawar, G. D. Liveing, A. Schuster, W. N. Hartley, and Welcott Gibts, and Captain Abory.
The Continuation of the Eddingraphy of Spectroscopy.	Chairman,—Professor H. NcLeod, Scretzry.—Professor Roberts-Austen, Mr. H. G. Madan and Mr. D. H. Nagel,
The Teaching of Natural Science in Elementary Schools.	Chairman, —Dr. J. H. Gladstone. Scordary. —Profusor H. E. Armaleong. Mr. George Gladstone, Mr. W. E. Dan- stan, Sir J. Labbock, Sir Phillip Magnes, Sir H. E. Rasco, Dr. Sci- vanne F. Thompson, and Professor A. Smithelft.
The Electrolytic Methods of Quantita- tive Analysis.	Chairman.—Frofessor J. Reserson Rey- molds. Scoretary.—Dr. C. A. Kolm. Professor Frankland, Professor F. Chiwos, Dr. Hugh Manshall, Mr. A. E. Flotcher, and Professor W. Oarleton Williams.
The Presention of Agriculture: to re- port on the means by which is various Countries Agriculture is advanced by research, by special Educational Insti- tutions, and by the dissemination of information and advice among Agri- culturates.	Chairman.— Sir John Kunan. Accordary.— Professor H. E. Armetrong. Professor M. Funter, Professor Harrholl Want, Sir J. H. Gilbert, Right Hon. J. Bayco, Professor J. W. Ribertien, Dr. W. Samders, Professor Mills, Professor J. Marce, Professor & Warngston, Professor Pushon, and Mr. 6. U. Protering.
Isomeric Naphthalene Derivatives.	Chairman.—Probasor W. A. Tilden. Secretary.—Probasor H. E. Armstrong.
The Description and Electration of the Food! Phyllopeda of the Paleonoic Ecoks.	Chairman, Rev. Professor T. Willables. Secretary Professor T. E. Jones. Dr. H. Woodward.
To consider the heat Methods for the Registration of all Type Specimens of Funds in the British Isles, and to report on the same.	Chairman.—Dr. H. Woodward. Sovetary.—Mr. A. Smith Woodward. Bar, G. F. Wholborne, Mr. H. Kidston, Pro- Issor H. G. Sorley, and Mr. H. Woods.
The Collection, Preservation, and Sys- tematic Registration of Canadian Photographs of Geological Interest.	Chairman.—Profumor A. P. Coleman. Secretary.—Mr. Farks. Profumor A. B. Willmots, Profuser F. D. Adams, Mr. J. B. Tyrrell, and Frofusor W. W. Walts.
To report upon the present state of our Knowledge of the Structure of Crystals.	Cheirman.—Professor N. Story Masku- lyon. Servetary.—Professor H. J. Miers. Mr. L. Pintcher, Professor W. J. Sollas, Mr. W. Enriso, Mr. G. F. H. Smith, and the Earl of Derkeley.
To continue the investigation of the Zaology of the Sandwich bisteries, with power to cooperate with the Constitute appeting for the purpose the total power to the propose of the Sandwicky, and to avail themselves of such assessed to avail themselves of such assessed and the sandwicky of the control of the constitution of the Transless of the Wancom at Recalible. The Constitute of the Wancom at Recalible.	Chairman.—Professor A. Kewten. Screening.—Dr. David Shap. Dr. W. T. Blandard, Professor S. J. Hick- am, Dr. Y. L. Schater, and Mr. Edgar A. multh.
To report on the present state of our Knowledge of the Ecology and Botany of the West India Islands, and to take stops to investigate ascertained	Chairman.—Dr. P. L. Schatz. Socretary.—Mr. G. Murray. Mr. W. Caeruthen, Dr. A. C. Günther, Dr. D. Sharp, Mr. F. Du Case Godman.



2. Not receiving Grants of Money-continued.

Bulgest for Investigation or Purpose	Members of the Committee
Zeological and Setanical Publication.	Chairman.—Ber. T. H. B. Stebbing. Scovetary.—Mr. F. A. Bather. Professor W. A. Herdman, Mr. W. E. Haylo, Dr. P. Lutley Schatter, Mr. Adam Sudgwick, Dr. D. Sharp. Mr. C. D. Sherborn, and Professor W. F. E. Wel- den.
To permote the Systematic Collection of Photographic and other Records of Puligree Stock.	Cheirman,—Mr. Francis Galton. Secretary.—Professor W. F. R. Weldon.
Climatology of Tropical Africa.	Cheirman, Mr. E. G. Ravenstein, Secretary, Mr. H. N. Dickson, Sir John Kirk, Dr. H. B. Mill, and Mr. G. J. Symins.
To Innestigate and Report on Professor Kindo Hacito' Scheme of producing a Ratiof Globe on a large scale.	Chrisman.—Col. G. Earl Church, Secretary,—Mr. E. G. Earcenstein, LieutCol. F. Balloy, Professor P. Goldon, Dr. J. Scott Kellie, and Dr. H. H. Mill.
The Anthropology and Natural History of Toron Straits.	Choirman.—Sir W. Turner, Servitory.—Professor A. C. Haddon. Professor M. Foster, Dr. J. Soutt Keltle, Professor L. C. Miall, and Professor Marsholl Ward.
To co-operate with the Committee ap- pointed by the International Con- gress of Hygiene and Demography in the invertigation of the Mental and Physical Condition of Children.	Chairman,—Sir Donglas Galton, Scrotary.—Ev. Francis Warner, Mr. R. W. Brabrook, Dr. J. G. Garvon, and Mr. White Wallis.
The Collection, Preservation, and Sys- tematic Registration of Photographs of Anthropological Interest.	Cheirmen.—Mr. C. H. Read. Scoretary.—Mr. J. L. Myros. Dr. J. G. Garson, Mr. H. Ling Roth, Mr. H. Balfour, Mr. E. S. Hartland, Pro- fessor Flinders Petris.
The Present State of Anthropological Traching in the United Kingdom and Elsewhere.	Chairman,—Professor E. B. Tylor, Secondary,—Mr. B. Ling Rock, Professor A. Matshinter, Professor A. C. Haddon, Mr. C. H. Boad, Mr. H. Bal- foss, Mr. F. W. Beller, Dr. H. Musco, and Professor Findance Patris.

Communications ordered to be printed in extenso.

Commissions ordered to be printed in extense.

'On Recembine Coordinates, by Dr. J. H. Visano.

'On Recembine Michine with Viscous Friside in Two Dimensors,' by Professor

'An Recembine Michine with Viscous Friside in Two Dimensors,' by Professor R. Mathematical Proof of the Meaning of Viscous Films with those of a Perfect Frield moving in Two Dimensions,' by Professor Sid G. G. Stokes, F.H.S.

'On the Relative Advantages of Long and Short Magnets,' by Professor E. Massont.

'On the Establishment of Tomporary Magnetic Observatories in certain localities, especially in Tropical Countries,' by Professor Von Becold and Gen-Major

'Photographic Records of Pedigree Stock, with the accompanying Einsteadisms,' by Mr. Fracton Galino.

'Some of the Mechanical and Economic Features of the Cair Question,' by Mr.

T. Foster Econo.

'A new Instruments Eurolopes, and its Application to the Teath of Wheels, and for other purposes,' by Professor H. S. Hele-Shase.

'A new Instruments Eurolopes, and its Application to the Teath of Wheels, and for other purposes,' by Professor Klabs and Mr. W. H. Lang, is the Proceedings of the Sections.

Resolutions referred to the Council for consideration, and action if desirable,

That the Council be requested to bring under the notice of the Admiralty the importance of securing systematic observations upon the Ermino of the seas must of the United Kingdom, and that the co-operation of the constguerd might be profits; it is covered for the purpose.

That having regard to the letter of December 13 last, from Sir E. Mannel Ermino and the Council be requested to take further action with regard to a Bureau of Erlandagy, by resewing the correspondence with the Trystees of the British Masseem.

Toospon, the Council for requested to consider the desirability of supresenting to the Ethiology, by renewing the correspondence with the Trustees of the British Massem.

That the Council be requested to consider the desirability of supresenting to the Chickest Council to the Chickest Council to the Chickest Council to the Chickest attility to the science of Torestrial Nagawisas, supechally in view of the Antantic Expeditions which are about to have controlled to the Council to the Council to the Council to requested or should be established at such a discover from clearly and transgray as sends an possibility of disturbance from them. That the Council to requested to consider the adversability of suggestion of the British Association a soluble believed to the Reliability of suggestion of the British Association a soluble believed to the Science of the British Association a soluble to the properties of continuous Science and the British Association as soluble to the properties of continuous Science and the British Association as soluble to the soluble soluble to continuous Science and the British Association and the British of the Science of Science on the Science of the Science of the Science of the Science on the Science of the Science of Science on the Science of Science on the Science of Science of Science on the Science of Science on the Science of Science of Science on the Science of Scienc

Change of Days of Meeting of General Committee and Committee of Roomnendations.

The second meeting of the General Committee is appointed to be hold on Friday, and the first meeting of the Committee of Recommendations on the following Monday.

BEIT, ASSOC.

6

agained and Mr. Looped Buildeably's Cuthedian will at the user being, competed, though the has a 15th, monkly to a the same proper, competed, though the has a 15th, monkly to the theory for wroning the distribution. The product of the competence of of the

inclination of the control of the co

of column 2 to the column is seening owner and from the	
the second secon	
	And in case of
	THE PERSON
Linearity, and it, the speciment is the state of and	A Per Per
	E. P. Person
	THE REAL PROPERTY.
	Louis Co. No.
	THE PARTY
THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSONS AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSONS AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSONS AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSONS AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN	LIVERTON
COLLEGE OF THE PARTY AND PARTY AND PARTY.	Course over
X	State of the last
The state of the s	LITTLE POS
11 11 10 V W W	or good division in
	F 3503
	1000
Marine Company	E
MATERIAL PROPERTY.	STATE A
The state of the state of the state of	Section 197
this first to capital Autor (Spain & State Con . Spain	State Section
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	140000
100 th 10	Special Park Special St.
	2223
Total Marie Day of the Co.	10000
	00 Dec 10
	STATE OF
DEPOSIT SERVICE	BATTON S BATTON
Marie Barrie	TOTAL PROPERTY.
Special Control of Participation and Control of Special Control of Spe	a larger by the larger by the larger
	The last
	E E
the bound in the party of the latter property	레카는
DESCRIPTION AND DESCRIPTION OF PERSONS ASSESSMENT	All Street
Topological and the proof of the party of th	
	自己是
	The state of
Color Street Str	Mary Co.
	意味
	1 22
The same of the sa	SEE
	THE PERSON
	2 252
the basis are in an arrangement when the property of	The Lawrence
being produced from the latter was not seeing to come protect.	
STATE OF THE PERSON NAMED IN COLUMN 2 ASSESSMENT OF THE PARTY OF THE P	
Section 1 and 1 an	STATE OF
AMAZORIAN AND AND AND AND AND AND AND AND AND A	
A CONTROL OF THE PROPERTY OF T	
A Company of the Comp	THE PERSON NAMED IN
AND	
AND COLUMN AND ADMINISTRATION OF THE PROPERTY	AND STREET STREET
AND COLUMN AND ADMINISTRATION OF THE PROPERTY	
AND THE PROPERTY OF THE PROPER	
AND THE PROPERTY OF THE PROPER	
ARCHETT Are the second of the	
ALCOHOLO, the property of the	
Section 1. The property of the	
ALEXANDER OF THE PROPERTY OF T	
And the second of the second o	
ARCHITIC AND DESCRIPTION OF THE PROPERTY OF TH	
AMERICAN AND ADMINISTRATION OF ARMS IN A MARK STATE OF A MARK	
Section 2 (1997 and 1997 and 1	
Section 2 (1997 and 1997 and 1	
Section 2 (1997 and 1997 and 1	
Section 2 (1997 to 1) the second of the control of	
Section 2 (1971) A layer a many common and the section of the sect	
Section 2 (1997) and the property of the control of	
Section 2 (1997) and the property of the control of	
Section 2 (1997) and the property of the control of	
Section 2 (1997) and the control of	
Section 2 (1997) and the control of	
Section 1. The section of the sectio	
Section 2 (1997) and the control of	
Section 2. The section of the control of the contro	
Section 2. The section of the control of the contro	
Section 2. The section of the control of the contro	
Section 2. The section of the control of the contro	
Section 1. The section of the sectio	
Section 1. The section of the sectio	
Section 2. The section of the control of the contro	

ADDRESS COMMUNICATIONS TO J. H. STEINER, REGISTRAR, LOCK BOX 4, CHICAGO, ILL.

Form L

OFFICE OF THE

AMERICAN TROTTING REGISTER ASSOCIATION.
1700 OLD COLONY BUILDING, CHICAGO, ILL.

APPLICATION FOR RECISTRATION.

Sex			Under w	hat Rule eligible.	
Name		Color	foaled	day of	18
Record, if any When	re and when made	al teat by the #20		and the second	100000
Marks	The second respective				
(Do not be afraid of giving to	so much information.)				
Name of sire(Certificate of owner of sire at time dam w	Reg. No	Son			
(College of Auto of One as also con a					
					45.54
Name of Dam (When registered dam is reached g			ol	Page	
(When registered dam is reached g	ive page and volume.)	D O and Stat			
Bred by					
Name of second dam	Keg. No	50	n or	b	
Name of second dam (Information a	bout names of dams must be positiv	e.) Reg. V	01	rage	
Bred by		P. O. and Stat	e_rfl	olemet .	
(Furnish a certificate from breeder of each d			n of		
Got by OMION	Reg. No.	Dag	ATE ON	Daga	
Name of third dam	mer must discount on 16 months on more	sesta shoot)			
Bred by		. P. O. and Stat	e		I to a later
Got by	Reg. No	So.	n of		
Name of fourth dam	and Language Demonstration State	Reg.	vol	Page	
Bred by	and page in bruce a Amorican State	P. O. and St	ate	100000000000000000000000000000000000000	
Got by					
Succeeding dams and sires					
Succeeding dams and sites and					
Give address of all successive own					
Present owner.	the Charles of the	P. O. addre	SS	and stem with a	2001
	Signature of breeder or)				
I HEREBY CERTIFY THAT THE FORE-	legal representatives, or reason for not giving it,			100 100 030000	
GOING PEDIGREE IS CORRECT.	Signature of applicant				
	P. O. Address,				
Dated	200000000000000000000000000000000000000				

Instructions (see other side) should be carefully read before filling out this blank.

* If there are no white marks, write "solid color."

[OVER.]

About Names, Preparing Pedigrees for Registration, the Standard, etc.

BLANK FORMS will be furnished gratuitously to all applicants. The requirements of the blanks must be complied with. If carelessly filled out they will be rejected. Nothing will be required that is not essential, and all "little things" must be in their place.

Go no further in filling the blank than you can substantiate by competent evidence. All crosses must be clearly established. Any attempt at fraud in the near or remote crosses will be promptly exposed when detected.

When a pedigree is forwarded that runs into that of an animal already registered, don't fail to refer to that animal and show the relationship. When an animal has a record, don't fail to give that record, with the time and place where made.

Select three or four good and new names for each animal in the order preferred, and the first one not taken will be accepted. The name of an owner as a prefix will not be accepted. We will accept no more "Hambletonians" nor "Mambrinos" nor "Wilkes" nor "Pilots," etc., in any form.

ctc., in any form.

The American Trotting Register Association adopted the following rule: "That every stallion and colt will be registered under a name distinctively his own, and that the name of a distinguished ancestor or sire will not be repeated in any form when naming animals further removed than the immediate progeny of such ancestor or sire; that no stallion or colt will be registered by a name already recorded for another animal, or by a prohibited name, unless he has started in a public race under said name prior to January 1, 1892, and that no mare foaled after January 1, 1890, will be registered under a name by which another animal has been registered, except as above provided in cases of stallions and colts."

Fill the blanks carefully, and then compare them, to see that nothing is omitted.

At the annual meeting of the American Trotting Register Association, April 3, 1895, the following rule was adopted: "That the instructions to the registrar in regard to the registration of non-standard animals are hereby modified so that any horse, mare or gelding may be registered in said non-standard department, provided its pedigree is established under the rules of the association and the registration fee is paid."

s paid."
All animals upon which rank depends must first be registered at the expense of the applicant. If a performer makes its sire or dam

standard it must first be registered.

Let it be observed that the standard itself makes registration a condition and requisite to standard rank.

25	REGISTRATION FEE, who	ether :	Standard	or	Non-Standa	ard,		\$2.00	STOCKHOLDERS. \$1.00
34003	Official Certificate of Regis	stratio	on,			-		.50	.50
No. of Concession, Name of Street, or other party of the last of t	Transfers of Ownership,	-	-	-	* ·		82	.25	.25

THE TROTTING STANDARD.

In order to define what constitutes a standard bred trotting horse, and to establish a BREED of trotters on a more intelligent basis, the following rules are adopted to control admission to registration. When an animal meets the requirements of admission and is duly registered, it shall be accepted as a standard-bred trotting animal.

FIRST. Any trotting stallion that has a record of two minutes and thirty seconds (2:30), or better; provided any of his get has a record of 2:35 trotting, or better; or provided his sire or dam is already a standard trotting animal.

SECOND. Any mare or gelding that has a trotting record of 2:30, or better, whose sire or dam is standard.

THIRD. Any horse that is the sire of two trotters with records of 2:30, or better.

FOURTH. Any horse that is the sire of one trotter with a record of 2:30, or better; provided he has either of the following additional qualifications: 1. A trotting record of 2:35, or better. 2. Is the sire of two other animals with trotting records of 2:35. 3. Has a sire or dam that is already a standard trotting animal.

FIFTH. Any mare that has produced a trotter with a record of 2:30.

SIXTH .- The progeny of a standard trotting horse when out of a standard trotting mare.

SEVENTH. Any mare whose sire is a standard trotting horse, and whose dam and second dam are by a standard trotting horse.

THE PACING STANDARD.

In order to define what constitutes a standard-bred pacing horse, and to establish a BREED of pacers on a more intelligent basis, the following rules are adopted to control admission to registration. When an animal meets the requirements of admission and is duly registered, it shall be accepted as a standard-bred pacing animal.

FIRST. Any pacing stallion that has a record of two minutes and twenty-five seconds (2:25), or better; provided any of his get has a record of 2:30 pacing, or better; or provided his sire or dam is already a standard pacing animal.

SECOND. Any mare or gelding that has a pacing record of 2:25, or better, whose sire or dam is standard.

THIRD. Any horse that is the sire of two pacers with records of 2:25, or better.

FOURTH. Any horse that is the sire of one pacer with a record of 2:25, or better; provided he has either of the following additional qualifications: 1. A pacing record of 2:30, or better. 2. Is the sire of two other animals with pacing records of 2:30. 3. Has a sire or dam that is already a standard pacing animal.

FIFTH. Any mare that has produced a pacer with a record of 2:25, or better.

SIXTH. The progeny of a standard pacing horse when out of a standard pacing mare.

SEVENTH. Any mare whose sire is a standard pacing horse, and whose dam and second dam are by a standard pacing horse.

EIGHTH. The progeny of a standard trotting horse, out of a standard pacing mare, or of a standard pacing horse, out of a standard trotting mare.

J. H. STEINER, Registrar,

LOCK BOX 4, CHICAGO, ILL

Form 1.

OFFICE OF THE AMERICAN TROTTING REGISTER ASSOCIATION.

1700 OLD COLONY BUILDING, CHICAGO, ILL.

APPLICATION FOR RECISTRATION.

Name				Under what Rule eligible			
					18		
Record, if any When					519379		
*Marks		A1)					
Bred by		P. O. and State	e				
(Do not be atraid of giving to							
Name of sire	Reg. No	Soi	of				
(Certificate of owner of sire at time dam wa	as bred must be furnished.)						
File and the second of the second of the second			Carrier all	All control of Sections			
Name of Dam	or reason Buildings	Page .	1	Dama			
(When registered dam is reached gr	ive page and volume,)	Reg.	VOI	Page	10112		
Bred by		P. O. and Sta	ite				
Got by	Reg. No	S	on of				
Name of second dam	bout names of dams must be positive	Reg.	vol.	Page			
Bred by		P. O. and Sta	ite	olansii			
Got by	Reg. No	S	on of	71083 3117			
Name of third dam	es sent for entry, if possible, on seps	arate sheet.)	vol.	Page			
Bred by		P. O. and Sta	ite				
Name of fourth dam	- I In Donn't I market Ct. I	Reg.	vol	Page			
MADE TO SELECT ON THE SECOND SELECTION OF SECOND SE							
Give address of all successive owner	rs						
		The properties		•			
		with the last two					
Present owner		P. O. addre	:SS				
	Signature of breeder or legal representatives, or	le tre indu sond o	100012-1024	A CONTRACTOR			
	reason for not giving it,)						
GOING PEDIGREE IS CORRECT.	my self to be source to be	and some		and all experience made			
	P. O. Address,						
	Name of Sire (Certificate of owner of sire at time dam was a common of the second dam (When registered dam is reached go by (Purnish a certificate from breeder of each di Got by (Purnish a certificate from breeder of each di Got by (Attach list of produce of all mar Bred by (Got by Mame of third dam (Attach list of produce of all mar Bred by Got by Succeeding dams and sires Got by Got address of all successive owner Give address of all successive	Name of Sire	P. O. and State	P. O. and State P. O. and P. D. P. O. and P. D. P. O. and P. D. P. D. P. D. A. P. D. P	Name of Dam (When registered dam is reached give page and volume.) Bred by Reg. No. Son of Name of second dam (Information about names of dams must be positive.) Bred by (Purnish a certificate from breeder of each dam, or give reason for not doing so.) Got by Reg. No. Son of Name of third dam (Attach list of produce of all marces sent for entry, if possible, on separate sheet.) Bred by Reg. No. Son of Name of fourth dam (If any dam is thoroughbred, give vol. and page in Bruce's American Stud Book where recorded.) Bred by P. O. and State Got by Reg. vol. Page Got by Reg. No. Son of Page On the dam of fourth dam of the entry of the en		

Instructions (see other side) should be carefully read before filling out this blank. * If there are no white marks, write "solid color."

[OVER.]

INSTRUCTIONS



About Names, Preparing Pedigrees for Registration, the Standard, etc.

BLANK FORMS will be furnished gratuitously to all applicants. The requirements of the blanks must be complied with. If carelessly filled out they will be rejected. Nothing will be required that is not essential, and all "little things" must be in their place.

Go no further in filling the blank than you can substantiate by competent evidence. All crosses must be clearly established. Any attempt at fraud in the near or remote crosses will be promptly exposed when detected.

When a pedigree is forwarded that runs into that of an animal already registered, don't fail to refer to that animal and show the relationship. When an animal has a record, don't fail to give that record, with the time and place where made.

Select three or four good and new names for each animal in the order preferred, and the first one not taken will be accepted. The name of an owner as a prefix will not be accepted. We will accept no more "Hambletonians" nor "Mambrinos" nor "Wilkes" nor "Pilots," etc., in any form,

etc., in any form.

The American Trotting Register Association adopted the following rule: "That every stallion and colt will be registered under a name distinctively his own, and that the name of a distinguished ancestor or sire will not be repeated in any form when naming animals further removed than the immediate progeny of such ancestor or sire; that no stallion or colt will be registered by a name already recorded for another animal, or by a prohibited name, unless he has started in a public race under said name prior to January 1, 1892, and that no mare foaled after January 1, 1890, will be registered under a name by which another animal has been registered, except as above provided in cases of stallions and colts."

Fill the blanks carefully, and then compare them, to see that nothing is omitted.

At the annual meeting of the American Trotting Register Association, April 3, 1895, the following rule was adopted: "That the instructions to the registrar in regard to the registration of non-standard animals are hereby modified so that any horse, mare or gelding may be registered in said non-standard department, provided its pedigree is established under the rules of the association and the registration for its raid."

All animals upon which rank depends must first be registered at the expense of the applicant. If a performer makes its sire or dam standard it must first be registered.

Let it be observed that the standard itself makes registration a condition and requisite to standard rank.

	REGISTRATION FEE, whether Standard Official Certificate of Registration,	or	Non-Standard,	\$2.00	\$1.00
	Official Certificate of Registration,	-		-50	-50
	Transfers of Ownership,			.25	-25

THE TROTTING STANDARD.

In order to define what constitutes a standard bred trotting horse, and to establish a BREED of trotters on a more intelligent basis, the following rules are adopted to control admission to registration. When an animal meets the requirements of admission and is duly registered, it shall be accepted as a standard-bred trotting animal.

FIRST. Any trotting stallion that has a record of two minutes and thirty seconds (2:30), or better; provided any of his get has a record of 2:35 trotting, or better; or provided his sire or dam is already a standard trotting animal.

SECOND. Any mare or gelding that has a trotting record of 2:30, or better, whose sire or dam is standard.

THIRD. Any horse that is the sire of two trotters with records of 2:30, or better.

FOURTH. Any horse that is the sire of one trotter with a record of 2:30, or better; provided he has either of the following additional qualifications: 1. A trotting record of 2:35, or better. 2. Is the sire of two other animals with trotting records of 2:35. 3. Has a sire or dam that is already a standard trotting animal.

FIFTH. Any mare that has produced a trotter with a record of 2:30.

SIXTH.—The progeny of a standard trotting horse when out of a standard trotting mare.

SEVENTH. Any mare whose sire is a standard trotting horse, and whose dam and second dam are by a standard trotting horse.

THE PACING STANDARD.

In order to define what constitutes a standard-bred pacing horse, and to establish a BREED of pacers on a more intelligent basis, the following rules are adopted to control admission to registration. When an animal meets the requirements of admission and is duly registered, it shall be accepted as a standard-bred pacing animal.

FIRST. Any pacing stallion that has a record of two minutes and twenty-five seconds (2:25), or better; provided any of his get has a record of 2:30 pacing, or better; or provided his sire or dam is already a standard pacing animal.

SECOND. Any mare or gelding that has a pacing record of 2:25, or better, whose sire or dam is standard.

THIRD. Any horse that is the sire of two pacers with records of 2:25, or better.

FOURTH. Any horse that is the sire of one pacer with a record of 2:25, or better; provided he has either of the following additional qualifications: 1. A pacing record of 2:30, or better. 2. Is the sire of two other animals with pacing records of 2:30. 3. Has a sire or dam that is already a standard pacing animal.

FIFTH. Any mare that has produced a pacer with a record of 2:25, or better.

SIXTH. The progeny of a standard pacing horse when out of a standard pacing mare.

SEVENTH. Any mare whose sire is a standard pacing horse, and whose dam and second dam are by a standard pacing horse.

EIGHTH. The progeny of a standard trotting horse, out of a standard pacing mare, or of a standard pacing horse, out of a standard trotting mare.

J. H. STEINER, Registrar,

OVER.



Breeders' Cards.



HORSES.

BARKER, JOHN, J.F., THE GRANGE, BISHOPS STORTFORD, HERTS-Recolor of Poligree Hacksoys. The Brood Marce in the Stad have been selected from the best string in the country, and the Sires include such noted performers as Danegali, Evolution, Saxon, Reality, Helon Squirs, General Gordon, Field Marshal, Agility, Counsaghi, Garton Dake of Counsaght, do. Per-ticulars of Stad Herces and young stock on application to the

GILBEY, SIR WALTER, ELSENHAN PADDOCES, ESSEX. Hackney Stallings: Royal Danagels 1938, Gay Consamph 4010, Gay Dana-gali 4011, Royal Dana 5781, County Member 48, Old Times 1835 Hadon Squire 8106. Shire Stallings: Highwood Conqueror, Norman Conqueror 1940. Ascilland Tony Stalling: Good Friday, Hamber Sire: Rallymens. Polo Stallings: Rosewater and Lord Polo.—For particulars of See, politics: Rosewater and Lord Polo.—For particulars of See, Politics: Congress, Co., apply to CHAS. CAATURE, Peyton Hall, Sishop Stortford.

HENDERSON, ALEXANDER, EUROOT PARE, FARINGDOW, REILES Shire Horses. Marksaton Ecyal Harold, Champlon London Show 1807. Buscot Harold, Champlon London Show, 1806, and other Stallions. Colts and Silles by the above for sale.—Apply WALTER CROSLAND, Estate Office, Euroot Park, Paringson.



CATTLE.

BRUNTWOOD ESTATE. Select Hard of Red Polled Cattle. Onl those from the best prize and milking strains kept. Always few on sale. BRINTWOOD ESTATE OFFICE, Cheedle, Cheekler.

HENDERSON, ALEXANDER, BURCOT PARK, FARINGON, ERREP-Pedigree Houthborns of deep milking strains, Bates-Cruichshank, Young Bulls for Sale, Address, Mr. Walter Croickers, Estate Office, Buscot Park, Faringion, For

OSENTON, GEORGE, MARINES, WESTERHAM. Poligree Aberdeen-Angus Cattle.

SCOTT-MURRAY, C. A. Shorthorn Bulls from first-class milking dams, combining milk with fiesh.—Apply, E. VERECE, Estate Office, Hambledon, Henley-on-Thames.

STRATTON, R., THE DUFFETS, NEWPORT, MOR. Shorthorn Cattle Milk and flesh combined. Young buils for sale.



SHEEP.

MOS, ALERED, SPRING GROVE, WYE, KENT. Flock No. 10 of the Kent and Romsey Marsh Sheep Breeders Association. Estab-lished 18CI. Rams and Even always for Saic. Amor IX, gained the Champion Price at the Keol and Romsey Marsh Sheep Breeders' Association Show and Sale in 1928, where SE rams were offered; it also fetched the highest price at the Sale. Imagestion of the cetter Flock invited. Half mile from Wys, three and a Saif nables from Ashford Stations, S.E.E.

BLYTHWOOD SOUTHDOWNS.—This Flock has obtained premier honours at all the principal Agriculturalishows. For particulars of Rams for Sale and Hire, address, SIR JANES HATTE, Bart. Highwood, Stansied, Eases.

OPER. WILLIAM & NEPHRWS, RERKHAMPPED, ENGLAND. Breaders and Exporters of pure Shrorabire Sheep. First Print for Pen of Ewa, Egyal Show, 1858. Five lumbred breading Ewes. The largest export flock of Shropshires in England. The first used present season include Two First, One Second, and One Third Royal Show Prins winners.

ERON, ALEXANDER, RUROUT PARK, FRANKROOS, REKES, gree Hampshire Down Sheep of the most fashionable prins-ing trains and pure-bred Berkshire Figs. Young Boars Sale.—Address, Walven Chottaro, Estate Office, Buscot



PIGS.



Live Stock.

Blackleg.

Your correspondent "W. D." asks for advice upon this complaint. You recommend him to dispose of the dead animals on lines very similar to what. I advocated that the Agricultural Department ought to take to stamp out this lisease some time ago, and although I believe it to be the best in the long run, still I can give him a recipe which I have known to answer in cases similar to his. It is inexpensive, and so simple that he may do it himself. In fact, I have done hundreds, although I never saw one done previously, only having heard the operation described. Get some black helabore root, which can be purchased of most chemists, then thave a piece, about an inch long, down to about the size of the stem of a briar tobacce pipe, leaving a lump at one end. Then pass a penknife crossways through the animal's ear, and thrust the helabore through the hole thus made from the inside of the ear, the small end, of course; afterwards lap some sewing cotton round the small end of it, and tie the ends of the cotton together. It is a good plan to fasten some of the hair of the ear under the cotton, as this will help to hold the helabore in the ear. If properly done this will remain in the ear for days, and when it comes out will leave a hole in the ear. I may add that I usually pass my knife through a ridge in the ear, which, if he examines it from the mode, he will see not far from the centre of the ear. Let me observe that this operation will not injure the health of the cattle in the least, nor stop their growth; and for this reason alone I consider it better than setoning with medicated tape, and, in my opinion, it is more effective.

Day Howe, Brechabary, Worccater
Followsyn 28th.

Tuberculosis-No Legislation by Government.

Mr. Channing asked the First Lord of the Treasury in the House of Commons on Thursday whether, having regard to the repeated expressions of opinion by the Central and Associated Chambers of Agriculture, the British Dairy Farmers' Association, and many other representative bodies, to the effect that the questions relating to tuberculosis should be dealt with by the State in legislation for the whole country. Her Majesty's Government would introduce a bill or bills to meet this desire, and seeme uniform administration threschoot. desire, and secure uniform administration throughout the United Kingdom. Mr. Balfour replied that the Government were not at present prepared to propose legislation on this subject.

Swine Fever.

In reply to Mr. Daly in the Hesse of Commons Mr. Long said, the regulation made by the Lancashire County Council prohibiting the introduction of swine into the county from Ireland except for slaughter was revoked as from the lat ult., but he believed that similar regulations were still in liferee in some of the Welsh counties. Doubtless the Irish authorities did all that they could to provent the exportation of diseased animals, but there was still a daager of the introduction of disease by that means, and he was not surprised that the local authorities concerned should desire to protect their districts from it. The matter is entirely within their own discretion, and he could not undertake to do more than bring under their notice any representations be might receive on the subject.

Feeding of Dairy Cows and Milk Production.

Mr. Harald Farke, Agricultural Commissioner to the Danish Government, London, addressed the members of the Newcastle Farmers' Club on "The Relation of Feeding of Dairy Cows to Milk Production," on Saturday week, Mr. G. D. Atkinson Clark presided over a largely-attended meeting.

Mr. Farer, in the course of his paper, said that if they wanted to find what was the influence on the milk production of a certain change in the feeding, it was necessary that all the other influences should be eliminated. Many circumstances affected the milk production. If they wanted to find the relation of feeding to milk production they must guarantee that the changes they observed in the milk production were really the result of changes in the feeding. There were many circumstances which made observation of changes in milk production, which were supposed to be due to change of feeding, of doubtful value in many cases. In order to

eliminate all of the many slamsleing factors that influence milk production, it was necessary to work on a broad basis. It was the system of Professor Fjord (on whose experiments the lecture was based), to take observations with many cows for a long time, on different farms, through different sensons, and to work always with different sets of cows which were alike in every repect, so that the total weight, age, milk yield, number of days since calving, &c., were the same for each set of cows. As long as the feeding was the anne for each set of cows, the milk production was also the same in every respect. When a slight change was made in the feeding of one set, and a difference in the milk production of the different sets was observed, it was occaluded that this difference was caused alone by the difference of feeding, and thereby some information was gained of the relation between the feeding and the milk production. Having dealt in some detail with these experiments, or rather of the exact observations taken on a large number of cows fed on practical farms in a practical manner, under ordinary working conditions, and for several months during two or three years, and comparing always two or more sets which were as nearly as possible identical, went to prove that, within the limits of feeding mentiosed, the composition of the milk remained the same, whether an addition to the food was given in roots, or in corn and cake, or whether some of the corn and acke was replaced by roots. The same result, that the food, within practical limits, has next to no influence on the composition of the milk, had been found by later experiments. On the other hand, it had been found that an addition to the food crassed, and it seemed that the loss of flesh might partly re-appear either as an increased flow of milk or as a slightly raised percentage of fat in the milk, and the way in which it did appear seemed in some measure dependant on the kind and composition of the food crassed, and it seemed that the loss of flesh might partl

the year.

A vote of thanks was accorded Mr. Faber for his paper, and the meeting then terminated.

Birmingham Shorthorn Show and Sale.

Sale.

The annual spring show of pure Shorthorn stock at Bisgley Hall, Birnsingham, under the auspices of the Birnsingham Agricultural Exhibition Society, was opened on Wednesday morning, and was continued on Thursday and Friday. The total entries were 488, which made a good average. Among the exhibitors were the Prince of Wales, the Earl of Camperdown, the Earl of Carnarvon, Mr. Victor Cavendish, M.P., the Marquis of Exeter, the Right Hon. F. J. S. Foljambe, and Colonel Ganter, M.P. The judges were Messry. Edward Mason (Kendal), Robert Wright (Lincoln), A. S. Gibson (Nottingham), and J. Patten (Alnwick).

The first prize in the Senior Ferrale class was awarded to Mr. W. Darlington's (Malvers) 10am cow, Banbury Musical, a daughter of Royal Nottingham, and nearly eight years old. Mr. W. J. Hosken came second with Wild Duchees, a roan four year-old, which has won many honours in the West of England, and Mr. G. Harrison obtained the reserve number for an Abendenshire-bred roan cow, eleven years old. Mr. T. B. Earle tops the class for Junior Heifers with Marigold 42nd, and Mr. G. Harrison is second with a roan, Dalmeny Fanny 3rd, bred by the Earl of Rosebery. In Calves Mr. Goo. Harrison was again successful with Lady Evajust under a year old, and of great promise. Of forty-nine Balls in Class 5, all over thirty months old, Mr. T. R. Wilkine's Cashier, four years old, and bred in Aberdeenshire, was adjudged fest, and Mr. William Bell's Sailor Prince came next. In the big lot of Bulls between twenty-one and thirty months Mrs. Mary Lewis took first place with Warlock, a roan fon of the noted Watchman, and the second place went to Mr. Anthony Dolson for Ingram's Crown. The Balls between ten and twenty-one months were a good lot, the best of which was adjudged to be Mr. W. Atkinson's Estimation. For Bulls overeding fifteen and not exceeding twenty-one months dolt the first place was awarded to Mr. A. Hiscock, jun, of Motomies, for Mapir Victor, Mr. George Freeman's Fashoda Chief second, Mr. W. J. Hosken's Freeman's Fash

[MARCH 6, 1899.

Trevethoe third, Mr. John Harrison's white Silver King fourth. In the last class, that for Bull Calves, Mr. C. W. Brierley, now of Brimfield, Salop, was first with Royal Jeweller, a fine roan calf, less than a year old. Next in order came the Right Hon. F. J. Savile Fol-jambe's Beau Sabreur, a red-and-white son of Leonidas.

The judges were: --Classes I to 5 and 35, Mr. Edward Mano Watsrecook, Nailand, near Kendal; Mr. Robert Wright, North Rastb, Lincoln. Classes 6 to 9, Mr. Arthur S. Gibson, Euchdingto Nottingham: Mr. John Futten, Park Farm, Almvick.

Basib, Lincoln. Classes 6 to 9, Mr. Arthur S. Gibson, Emblington Notifingham: Mr. John Patters, Fark Farra, Alawiok.

Best Five Bulls in Classes 8, 8, or 16: J. A. Precce (Fairy Earl, Make).

Best Five Bulls in Classes 8, 8, or 16: J. A. Precce (Fairy Earl, Make).

Best Five Bulls in Classes 8, 8, or 16: J. A. Precce (Fairy Earl, Make).

Best Five Bulls in Classes 8, 8, or 16: J. A. Precce (Fairy Earl, Make).

Corn of Heifers, cooselide Marquist of York, Racco Sherborns 12th, Evolution (Early Make).

Corn of Heifers, cooselide Marquist of York, Bacco Sherborns 12th, Corn of Heifers, Theoretical (Marquist of York, Bacco Sherborns 12th).

Corn of Heifers, Theoretical (Marquist of York, Bacco Sherborns 12th).

Larroman (Annie): As, E. S. Thorston (Marchianess Farewell), 8 W. W. Sodd (Fairett 15th); A. T. S. Hands (Yorke 8th), W. W. and E. Pope Quicklinnel, 8. Existen (Cubbess 15th), 7: Stokes (Tailp 10th), C. E. Foodshows (Vercona Tuh), C. H. Josliffe (Charming Sail), W. S. Downling (Coccosts 8th), Rev. L. of Godd Doncaster), felfers, ecocoling on and not succeeding three years: 1, H. F. Verkin (Classence Silver Lift); ed); c. Excess of late John Garne Countess Rosamond); r. Mrs. L. H. Holland (Princess superial); s. M. Mrs. Holland (Moll) Farewell as 70; c. O. Jernard (Hardbotla 8th and Feilliand 4th). Heifers, exceeding one and not succeeding two years: 1, T. E. Karie (Maripold 18th); s. J. G. Harrison (Dairomy Farang Jed); r. T. M. Rodland (Wincome Boasty Rol); s. J. Garrison (Dairomy); h. L. H. Heifers (Lady Vol.), r. T. Mace (Balay Flower); s. East Fowin (Chiroleston), J. J. L. Mace (Balay Flower); s. E. Earl Fowin (Chiroleston), J. Jarrison (Hassyl), Earl Flower); s. Earl Fowin (Chiroleston), J. Bartison (Hassyl), Earl Flower); s. F. B. Rat Fowin (Chiroleston), J. Burlison (Hassyl), Earl Flower); s. F. B. Rat Flower (Chiroleston), J. Bartison (Hassyl), Earl Flower); s. F. B. Rat Flower (Chiroleston), J. Bartison (Hassyl), Earl Flower); s. F. B. Rat Flower (Chiroleston), J. Bartison (Hassyl), Earl Flower); s.

arrison (Maggie), Earl Pawin (Frincess Amy eth), T. Mace (Union and).

Built, errording thirty months: 1, T. B. Wilkins (Cashier);

W. Buil (Saline Frince): r, S. Feel (Fairy Dube); Ac.

W. Hainsworth (Frethman's Star); -4, T. B. Holbert,

W. Hainsworth (Frethman's Star); -4, T. B. Holbert,

J. Blackley (Press of Millions). Fells, exceeding twenty-one of not exceeding thirty months: 1, Mrs. M. Levis (Warlock); -2, A. Joschan (Ingrawa Crown); S. W. T. Chamberlapes (White Hoseau (Ingrawa Crown); S. W. T. Chamberlapes (White Hoseau (Horacon and Star)); S. O. Hickford (White Indide); r, J. Barris (Duke of Cumberland 18th); Je, S. Green(Countainson); Barris (Duke of Cumberland 18th); Je, S. Green(Countainson); B. T. Hotter (Woodborough Hutterty), W. Bell (Lord owlet); s. S. T. Thirter (Lord Mayor); J. Garne (King Hal), Mrs. Starion (Higherover); Built, exceeding on and for exceeding the starter of the starter of

Kingscote (Lord Kingscote Gwynne), D. Arkell (Edward 2nd), Mrs M. Dewis (Ras Alula).

THE SALE.

Bulls,				
Mr. T. B. Wilkins's Cashler-Mr. Bulley				
			-	20
			-	
			-	
			2	84
		-	-	
Mr. J. H. Wheatley's Royal Jubileo - Mr. Craddox	a.		72	
		-	-	
Mr. W. T. Chamberlayne's White Rose Enight-3	for Mr.	acut:	-	89
Mr. J. Harris's Oxford Duke of Calthwelle litth!	tle. II	artory	400	-02
Mr. J. Harrin's Duke of Comberland 8th Mr. Du-	dling			88
				8
				10
Mr. W. J. Hosken's Jack Tar-Marquis of Easter .				-4
Mr. T. Stoken's Lifford Star-Duke of Satherland .				- 4
Earl of Lathom's Duke Carolins 13th-Mr. Cooper .		100	-	- 1
Mr. F. H. Butt's Sutteetly Prince 11th-Mr. Rolls	nd			13
Mr. Goorge Gerward's Gay Beau-Mr. Dodd	4		400	- 4
Mr. Wm. Flux's Harnhill Prince 54h-Mr. Corlett				4
Colonel Genter's Duke of Tregunter 14th - Mr. Bri	chtan	O.		-4
Mr. H. Wyatt's Lavender Lad 3rd-Hon, W. F. D.	Soult	h	-	14
Prince of Wales's Crystal King-Mr. Hishop .				-4
Mr. Gauree Goreard's Roman Chief Mr. Thornele:	*	44		- 0
Cantala Dancosche's Pearl Diver Mr. Burkley				: 8
Mr. Pennya's Duke of Harrington 5455-Mr. Atkin	AOD:		44	- 61
Sir N. Kimpoota's Lord Sandgrove 37th-Sir A. Pa	Jmer	10	46	- 6
Mr. Allan's Coastguard-Colonel Reeve			-	-2
Mr. Bulley's Maraton Royalist 56h - Mr. Nicholson				- 6
Mr. Ingo's Mosshawk-Mr. Clarke				- 5
Mr. Ings's Suron Constantine-Mr. Faut				- 60
Mr. King's Chewton Clipper Ind Mr. Barnes		16 -		4
Mr. L. de Hothschild's Mystle Lord - Mr Griffiths				- 5
Mr. S. H. Allen's Cossiele-Mr. Norton				8

Frank Usher's Lord Drewton II and Sir Walter Gilbey's Irish-bred Danish Duke; the former won, with the latter as reserve. These animals headed their respective classes, and in the other classes for young horses the first prizes went also to Mr. Edmondson's Deplomatist and Mr. Shaw's Country Gentleman. For the older stallions, which practically also decided the champion cup, the fight for the cup was again between Mr. Buttle's Rosador and Sir Walter Gilbey's Royal Danegelt, both handsome some of Danegelt. Last year Royal Danegelt, both handsome some of Danegelt. Last year Royal Danegelt won, while the victory fell to Rosador in 1897. On this occasion Mr. Buttle's hrone again triumphed. In the other classes first prizes fell to Mr. Whittick's Wismal Fireaway, and Mr. Greatbatch's Bouncing Boy in the selling classe. The champion prize for Young Mares went to Mr. Hickling's Miss Terry, with Mr. Waterhouse's Liberty as reserve. In the Older classes the winner of the cup was Mr. Waterhouse's Queen of the South, Mr. H. Livesey's Surprise being reserve; and they also stood in the same position for the championship for Mares. First prizes for Pony Stallions went to Sir Gilbert Greenall's Sir Horace and Mr. S. Woodiwies's Sharplow, and for Pony Mares to Sir Gilbert Greenall's Sir Horace and Mr. S. Woodiwies's Sharplow, and for Pony Mares to Sir Gilbert Greenall's Dorothy Derby and Captain Cullen's Greeta.

The following officiated as Judges: "Harkney and Pony Clauses: C. E. E. Cooke, Illustion Grange, Saffron Walden; Arthur E. Frans, Brousylfa, Nerchana, Deolghablie; T. D. Essel, The Grange, Berostrd, Hull. Barrosu Chanes: Lauses Bornsby, Laxton Park, Stamford; Tom Milbbell, The Park, Eccleshill, Breafford: Stewards: James Felton, I. Regest's Park Square, Strathburge, Glasgow; Léone Bodwell, Bugtoner, Mark Square, Strathburge, Glasgow; Léone Bodwell, Bugtoner, Mark Square, Strathburge, Glasgow; Léone Bodwell, Bugtoner, Mark Square, Strathburge, Glasgow; Leone Bodwell, Mark Square, Mark Square, Leone Square, Leone Bodwell, Strathgraph, N. St., J. Hessnessed, June, Bole, Norfolk; E. W. Senthall, Driffield, Yorks; S. J. Williams, Wilton Eosel, Leoneou, S. W.

SPECIAL PRIZES.

Chempion Cup and Gold Medal for best Stallion: F. W. B util (Rosadow); r. Riv Walter Gilbey (Royal Danogeli). Bost Stallion in Chasses I. Z., and 4: F. Usher (Lord Irewton 2nd); r. Sir Walter Gilbey (Dasish Devis). Bost Stallion in Classes 6, r. and 8: F. W. Builde (Rosador); r. Sir Walter Gilbey (Royal Dassegeli). Challenge Cup and Gold Modal for best Mare: Walter Walter-house (Queen of the South); r. H. Livsey (Surprise).



HACKNEY STALLION ROYAL DANEGELT.

The property of Sir Walter Gilbey, Bart. Champion in 1898, and Reserve for Champion in 1899, London Hackney Shore.



HACKNEY STALLION ROSADOR.

The property of Mr. F. W. Buttle. Champion in 1999 and 1897, and Reserve for Champion 1898, London Hackney Show.

Stokes (Liftord Star). Bulls, exceeding fifteen and not exceeding swenty one acoustics: 1. Capitain Dunctonic (Pour) Svery; 2. H. Yanti (Lawronic Holes). A. A. Treece (Ironic Lawronic Holes). A. A. Treece (Ironic Lawronic Holes). A. A. Treece (Ironic Lawronic Lawr

Mr. A. Hissock, ion, a Masor Victor—Riss. W. F. D. Smith Mr. W. J. Hosken's Trevethor—Capitain Whitting Str. F. S. Fry's Boan Mand—Mr. Breichen.

Mr. G. Presenan's Forest Chief—Mr. Hampton Messes. Evanu's Prince Cardens—Lord Petrityn Mr. G. Presenan's Forest Chief—Mr. Hampton Messes. Evanu's Prince Cardens—Lord Petrityn Mr. T. Macy's Daisy King—H. P. Rivind
Mr. G. Presenan's Forest Chief—Mr. Thompson Mr. E. P. Bulley's Bendands Red—Earl of Warwick Mr. J. A. Presen's Reiths Union—Mr. Bubby Mr. G. W. Ericeley's Royal Jeweller—Mr. Jones Mr. T. Stoken's Majostic—Mr. Bulley Mr. G. W. Ericeley's Royal Jeweller—Mr. Jones Mr. T. Stoken's Majostic—Mr. Bulley Misson. Evanus a Order Kinght—Mr. Frowst Mr. T. Stoken's Majostic—Mr. Bulley Misson. Evanus a Order Kinght—Mr. Frowst Mr. Hyalt Mr. V. C. Cavershib's Bolder Lord Barrington—Mr. Horton Mr. Bulley's Janus—Mr. Moeris O.A. Ser N. Kingspoto's Lord Kingspoto's Grymns—Mr. Bott Mr. P. Jerkins's Jewish Lad—Mr. De Ja Mare Mosses, Evanus Star of Hope—Mr. Peele

London Hackney Horse Show.

THE Siteenth annual show of the Hackney Horse Society was opened at the Royal Agricultural Hall, London, on Tuesday and closed on Friday. The entries numbered 485, of which 227 were stallices, 173 mares, fifty three geldings, and forty-two driving. The quality was excellent, and the show has been largely attended. H.R.H. the Prince of Wales paid a short visit on Tuesday afternoon, when he was received by the President of the Society (Lord Tredegar), Sir Walter Gilbey, and the President-elect (Mr. C. E. Galbraith). The efforts of the executive to suppress the disoplerty noises indulged in at former meetings were baccessfull, and the preceedings passed off very safessifully. The yadging was protracted, continuing until the closing day.

The stalline classes were first deadt with and after the class awards had been music, the class pice of young Stallions, for which the chief compactives were Mr.

Bost Mare in Chance 10.11, 11 and 181 A, W. Hobling (Miss Terry); v. W. Waterhouse (Liberty).

Bost Mare in Chance at 14, 15, 16, 12 and 18; W. Waterhouse (Quases of the Southly v. R. Lirency (Supprise).

Bost Mare or Guideing in Class II under free years old: Mrs. W. W. Robertson (Gavotte).

Bost Mare or Guideing in Class 25 under free years old: C. Scorah (Bamborough Fashion).

CLASS PRIPES.

CLASS PRIZES.

Bost Marie or Gelding in Chas 28 under five years old : C. Scorak (Bambocough Fashino).

CLASS PRIZES,

Yaarling Entire Colla, foaled 1801 (29 entries): J. E. Edmondson (Edplacenties)); E. E. B. Gary (26. Donata); S. T. Kirk (Marier of Edplacenties)); S. E. B. Gary (26. Donata); S. T. Kirk (Marier of Edplacenties)); S. Cockayne Fros. (Pudock Harles); r. Lees Knowlee, M.F. (Saldent Felix); e. A. C. Chapman (Alchbergs Sir John), E. Eurow (Handy Andy), Ravonas de Lasam (Strathuara and Viceory).

Stallings, two years old, foaled 1897 (21 extravis); J. R. J. Shaw (Gravity); S. J. List (Lampon Fashino); S. A. P. Shaw (Gravity); Davis of Consangable); e. E. Hanner (Crinquevallt); S. A. Kelsey (Star of Weighton); G. W. F. Kirly (Consty King); S. E. Liddell-Grainger (Margody); de, J. Berton and Sons (Durwurt Squire), Mr. Fischter (Lord Lavender); e. Ockayne Reo. (Publick Peloning).

R. Liddell-Grainger (Sagredy); de, J. Berton and Sons (Durwurt Squire), Mr. Fischter (Lord Lavender); e. Ockayne Reo. (Publick Peloning).

R. Liddell-Grainger (Sagredy); de, J. Berton and Sons (Durwurt Squire), Mr. Fischter (Lord Cavreder); e. Ockayne Reo. (Publick Peloning).

R. Liddell-Grainger (Margody); de, J. Berton and Sons (Durwurt Squire), Mr. Fischter (Lord Cavreder); e. Ockayne Reo. (Publick Peloning).

R. Liddell-Grainger (Margody); de, J. Fischter (Lord Garymode), T. Kirk (Margody); e. J. Refer of Chey (Danish Belo); S. T. Mitchell e. J. Brance (College); e. J. Refer (College); e. J. Refe

Cuttings,

AMDREW'S HOUSE,

CIRCUS, LONDON, E.C. HOLBORN

Advertisements and News received for all papers.

The Times,

Frinting House Square, London, E.O.

(G. E. Wright, Publisher.)

Cutting from issue dated

SHOWS AT THE ROYAL AGRICULTURAL HALL.

TO THE EDITOR OF THE TIMES.

TO THE EDITOR OF THE TIMES.

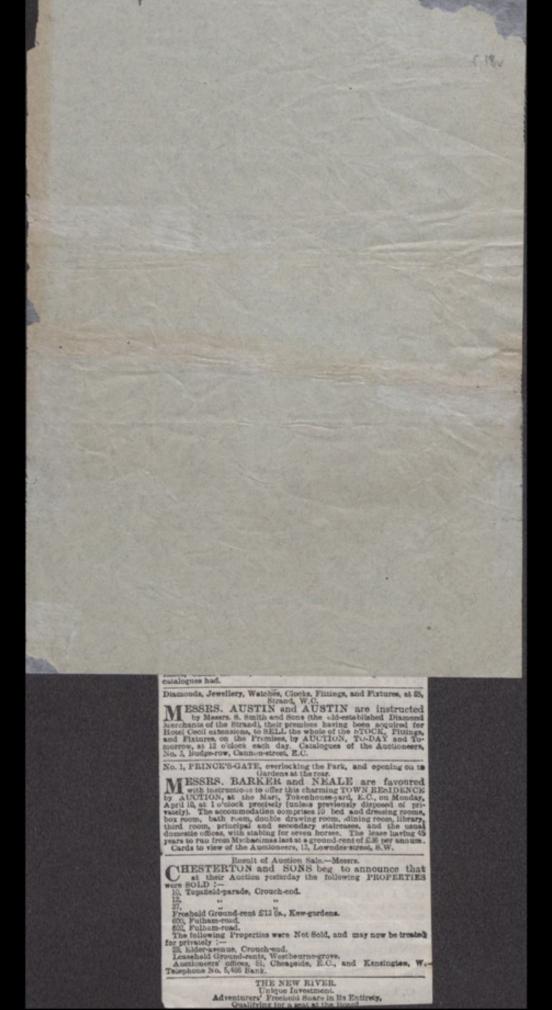
Sir,—Your interesting article on the Shire Horse Show and on the others that will shortly succeed it at the Royal Agricultural Hall affords abundant evidence of the serious interest felt in horsebreeding. I would add that no less than 3,300 thoroughbred horses are foaled aspually and that the contingent of purely-bred cattle, let alone other kinds of pedigree stock, is as important as the horses. The systematic collection of new material for the advancement of the art of breeding must therefore be recognized as of unquestionable value. That which I have in view is of little immediate importance but will grow in value as the generations pass on. It will then be retroepective information such as is urgently needed, but is now unattainable. A "personal" knowledge of the two parents is no more than one half of the required knowledge; the addition of the four grandparents leaves one than one half of the required knowledge; the addition of the four grandparents leaves one quarter still undetermined, that of the eight great-grandparents leaves one-eighth, and so on. (See Proc. R. Soc., 1898, and Report Brit. Assoc., 1898, p. 597.) The names of the ancestry of any pedigree animal, up to the above degrees and much further back, are easily traced in the stud books, but nothing exists to afford that presentment of each individual ancestor which is required for a thorough investigation of the art of breeding. Enough might be recorded and preserved that would be of high future value, which soon becomes forgotten and utterly lost The waste of opportunities seems to me a deplorable and even wicked negligence. It would be so easy to make and record certain simple measurements and to preserve a side-view simple measurements and to preserve a side-view photograph. The measurements would be of direct value in themselves, and indirectly as giving a scale to the photograph. There is no room here for details. I have gone pretty thoroughly into the subject in the second of the above memoirs.

above memoirs.

My present object is to urge numerous distinct authorities, and those whom they represent, to obtain means at the Royal Agricultural Hall for the convenient measurement and photography of prize pedigree stock of every kind that may be exhibited there. There is no really suitable and quiet place for this. I write feelingly, because the Royal Commission for Horsebreeding have at the instance sentimed some attention. have at my instance sanctioned some attempts in that direction during their forthcoming show, and I feel that with the best good will of all parties those attempts will perforce be carried on under considerable difficulties. I maintain that the Royal Agricultural Hall ought to be pro-vided with a suitable hippometric laboratory with attached photographic studio, and that the societies who hold shows in the hall ought to

avail themselves of it.

FRANCIS GALTON.



British Association for the Advancement of Science.

To the President and Council of



GENTLEMEN.

A Committee having been appointed by the British Association for the Advancement of Science, 'to promote the systematic collection of Photographic and other Records of Pedigree Stock,' I ask for your advice and influence in carrying out their objects, which are intimately connected with the advancement of the Art of Breeding.

The use of a well-considered system of Records would increase rapidly with each successive generation of the Stock; therefore, the chief aim of the Committee is to work for the future, by checking the great waste of opportunities that now goes on. They desire to encourage the photography of animals according to standard conditions, and such measurements and descriptions as would be of eventual importance, though of little immediate value.

If you should be disposed to appoint a Committee to consider seriously the practicability of the proposal, and, if you desire that it should confer with some member of the Committee of the British Association, it would give me pleasure to make the necessary arrangements. The principal questions to be discussed are probably the following, of course with especial reference to that description of Pedigree Stock with which your Society is interested:—

- I. What are the Records which-
 - (a) owners would not object (ultimately) to furnish?
 - (b) would be trustworthy?
 - (c) would be of substantial use, whether to Breeders or to those who occupy themselves theoretically with Heredity and the Art of Breeding?
- II. Whether, and, if so, how would your Society be probably disposed to encourage or assist in the collection of such Records?
- III. In what convenient way might the Records be preserved, and rendered available for reference?

I am, yours faithfully,

FRANCIS GALTON,

Chairman of the above-named Committee of the British Association.