

*Some Comparative Tables showing the Distribution of Ferns in the United States of North America. By George E. Davenport.*

*(Read before the American Philosophical Society, February 2, 1883.)*

The following tables have been prepared for a Text Book and Manual of the Ferns of North America (north of Mexico), but are believed to be of sufficient interest to justify publication in advance.

The attention of botanists is called to them, and their coöperation solicited in enabling the writer to render them more complete and accurate for final publication.

These tables are necessarily incomplete in their present form, no reliable data for all of the States and Territories being readily accessible. The number of species credited to many of the States might have been increased by assuming the presence of certain species from their well known geographical range, but it was thought best to give only those which could be verified, or had been vouched for by good authority.

Where a doubt exists in regard to the presence of a species said to have been collected in any State, and such doubt is not sufficient to justify exclusion, the species is credited with a query to indicate the uncertainty of its verification.

All varieties are excluded except where a variety stands as the sole representative of the species itself.

My thanks are due to John H. Redfield, Dr. George Engelmann, Professor D. C. Eaton, J. Donnell Smith and Wm. Stout for many additions, and it will further aid me greatly if others will send to me accurate lists of the species and varieties known to grow naturally in their respective States.

The list of ferns as given below may undergo some changes before final publication, the numbers correspond to those given in the tables :

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|-------------------------------|-------------------------------------|
| 1. <i>Acrostichum aureum.</i> | 18. <i>Notholæna Lemmoni.</i>       |
| 2. <i>Polypodium Plumula.</i> | 19.     " <i>Fendleri.</i>          |
| 3.     " <i>pectinatum.</i>   | 20.     " <i>dealbata.</i>          |
| 4.     " <i>vulgare.</i>      | 21.     " <i>nivea.</i>             |
| 5.     " <i>falcatum.</i>     | 22.     " <i>Newberryi.</i>         |
| 6.     " <i>Californicum.</i> | 23.     " <i>Parryi.</i>            |
| 7.     " <i>incanum.</i>      | 24.     " <i>tenera.</i>            |
| 8.     " <i>Scouleri.</i>     | 25. <i>Cheilanthes Californica.</i> |
| 9.     " <i>Phyllitidis.</i>  | 26.     " <i>Wrightii.</i>          |
| 10.    " <i>aureum.</i>       | 27.     " <i>viscida.</i>           |
| 11. <i>Gym. triangularis.</i> | 28.     " <i>microphylla.</i>       |
| 12.    " <i>hispida.</i>      | 29.     " <i>Alabamensis.</i>       |
| 13. <i>Notholæna sinuata.</i> | 30.     " <i>leucopoda.</i>         |
| 14.    " <i>ferruginea.</i>   | 31.     " <i>vestita.</i>           |
| 15.    " <i>candida.</i>      | 32.     " <i>Cooperæ.</i>           |
| 16.    " <i>Hookeri.</i>      | 33.     " <i>lanuginosa.</i>        |
| 17.    " <i>Grayi.</i>        | 34.     " <i>gracillima.</i>        |



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| 35. <i>Cheilanthes tomentosa</i> .       | 81. <i>Asplenium parvulum</i> .        |
| 36. " <i>Eatoni</i> .                    | 82. " <i>Trichomanes</i> .             |
| 37. " <i>Fendleri</i> .                  | 83. " <i>viride</i> .                  |
| 38. " <i>Clevelandii</i> .               | 84. " <i>dentatum</i> .                |
| 39. " <i>Parishii</i> .                  | 85. " <i>montanum</i> .                |
| 40. " <i>Lindheimeri</i> .               | 86. " <i>Bradleyi</i> .                |
| 41. " <i>myriophylla</i> .               | 87. " <i>Ruta-muraria</i> .            |
| 42. " <i>argentea</i> .                  | 88. " <i>septentrionale</i> .          |
| 43. <i>Cryptogramme acrostichoides</i> . | 89. " <i>firmum</i> .                  |
| 44. <i>Pellaea gracilis</i> .            | 90. " <i>myriophyllum</i> .            |
| 45. " <i>Breweri</i> .                   | 91. " <i>cicutarium</i> .              |
| 46. " <i>Bridgesii</i> .                 | 92. " <i>angustifolium</i> .           |
| 47. " <i>atropurpurea</i> .              | 93. " <i>thelypteroides</i> .          |
| 48. " <i>aspera</i> .                    | 94. " <i>Filix-fœmina</i> .            |
| 49. " <i>Wrightiana</i> .                | 95. <i>Phegopteris polypodioides</i> . |
| 50. " <i>ternifolia</i> .                | 96. " <i>hexagonoptera</i> .           |
| 51. " <i>ornithopus</i> .                | 97. " <i>Dryopteris</i> .*             |
| 52. " <i>brachyptera</i> .               | 98. " <i>alpestris</i> .               |
| 53. " <i>andromedæfolia</i> .            | 99. <i>Aspidium Lonchitis</i> .        |
| 54. " <i>cordata</i> ?                   | 100. " <i>acrostichoides</i> .         |
| 55. " <i>flexuosa</i> .                  | 101. " <i>munitum</i> .                |
| 56. " <i>pulchella</i> .                 | 102. " <i>aculeatum</i> .              |
| 57. " <i>densa</i> .                     | 103. " <i>Mohrioides</i> .             |
| 58. <i>Pteris longifolia</i> .           | 104. " <i>Thelypteris</i> .            |
| 59. " <i>Cretica</i> .                   | 105. " <i>Noveboracense</i> .          |
| 60. " <i>serrulata</i> .                 | 106. " <i>Nevadense</i> .              |
| 61. " <i>aquilina</i> .                  | 107. " <i>Oreopteris</i> .             |
| 62. <i>Ceratopteris thalictroides</i> .  | 108. " <i>conterminum</i> .            |
| 63. <i>Adiantum pedatum</i> .            | 109. " <i>patens</i> .                 |
| 64. " <i>emarginatum</i> .               | 110. " <i>fragrans</i> .               |
| 65. " <i>tricholepis</i> .               | 111. " <i>spinulosum</i> .             |
| 66. " <i>capillus-veneris</i> .          | 112. " <i>Boottii</i> .                |
| 67. " <i>tenerum</i> .                   | 113. " <i>cristatum</i> .              |
| 68. <i>Vittaria lineata</i> .            | 114. " <i>Floridanum</i> .             |
| 69. <i>Tænitis lanceolata</i> .          | 115. " <i>Goldieanum</i> .             |
| 70. <i>Blechnum serrulatum</i> .         | 116. " <i>rigidum</i> .                |
| 71. <i>Lomaria spicant</i> .             | 117. " <i>Filix-mas</i> .              |
| 72. <i>Woodwardia radicans</i> .         | 118. " <i>marginale</i> .              |
| 73. " <i>Virginica</i> .                 | 119. " <i>unitum</i> .                 |
| 74. " <i>angustifolia</i> .              | 120. " <i>juglandifolium</i> .         |
| 75. <i>Camptosorus rhizophyllus</i> .    | 121. " <i>trifoliatum</i> .            |
| 76. <i>Scolopendrium vulgare</i> .       | 122. <i>Onoclea sensibilis</i> .       |
| 77. <i>Asplenium serratum</i> .          | 123. " <i>Struthiopteris</i> .         |
| 78. " <i>pinnatifidum</i> .              | 124. <i>Cystopteris fragilis</i> .     |
| 79. " <i>ebenoides</i> .                 | 125. " <i>bulbifera</i> .              |
| 80. " <i>ebeneum</i> .                   | 126. " <i>montana</i> .                |

\* *Phegopteris calcarea* is included here as a variety with Hooker and Baker.



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|--------------------------------------|--------------------------------------|
| 127. <i>Woodsia Ilvensis</i> .       | 142. <i>Osmunda regalis</i> .        |
| 128.     " <i>glabella</i> .         | 143.     " <i>Claytoniana</i> .      |
| 129.     " <i>hyperborea</i> .       | 144.     " <i>cinnamomea</i> .       |
| 130.     " <i>scopulina</i> .        | 145. <i>Botrychium simplex</i> .     |
| 131.     " <i>Oregana</i> .          | 146.     " <i>Lunaria</i> .          |
| 132.     " <i>Mexicana</i> .         | 147.     " <i>boreale</i> .          |
| 133.     " <i>obtusa</i> .*          | 148.     " <i>matricariæfolium</i> . |
| 134. <i>Nephrolepis exaltata</i> .   | 149.     " <i>lanceolatum</i> .      |
| 135. <i>Dicksonia pilosiuscula</i> . | 150.     " <i>ternatum</i> .         |
| 136. <i>Trichomanes Petersii</i> .   | 151.     " <i>Virginianum</i> .      |
| 137.     " <i>radicans</i> .         | 152. <i>Ophioglossum vulgatum</i> .  |
| 138. <i>Schizæa pusilla</i> .        | 153.     " <i>crotalophoroides</i> . |
| 139. <i>Aneimia Mexicana</i> .       | 154.     " <i>nudicaule</i> .        |
| 140.     " <i>adiantifolia</i> .     | 155.     " <i>palmatum</i> .         |
| 141. <i>Lygodium palmatum</i> .      |                                      |

## TABLES SHOWING DISTRIBUTION.

Numbers correspond with those to the List.

\*Verified or credited on good authority.

?Uncertain, or not positively verified.

	TOTAL.
ALABAMA—4, 7, 29, 31?, 47, 60, 61, 63, 66, 75, 78, 79, 80, 81, 82, 85, 86, 92, 93, 100, 105, 118, 133, 135, 136, 137, 142?, 150, 152, 153, 154.	29* 2?
ALASKA—4, 42?, 43, 63, 71, 95, 97, 98, 102, 107, 111, 124, 126, 145, 146, 147, 148, 149, 150, 152.	19* 1?
ARIZONA—4, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 26, 29, 33?, 35, 36, 37, 40, 41, 43?, 47, 49, 53?, 54, 55, 61, 63, 66, 104, 109, 117, 124, 130, 131, 132, 133, 151, 152.	37* 3?
ARKANSAS—4, 7, 20, 29, 31, 33, 35, 47, 61, 63, 66, 73, 74, 75, 78, 80, 81, 82, 86, 87, 92, 94, 95, 96, 100, 104, 105, 111, 113, 118, 122, 123, 124, 125, 133, 142, 143, 144, 150, 151, 152.	41*
CALIFORNIA—4, 5, 6, 8, 11, 15, 22, 23, 25, 27, 32, 33?, 34, 37, 38, 39, 41?, 43, 45, 46, 49, 51, 52, 53, 57, 61, 63, 64, 65?, 66, 71, 72, 82, 94, 95?, 98, 101, 102, 103, 106, 109, 116, 124, 130, 131, 145, 150, 151.	44* 4?
COLORADO—4, 19, 33, 36, 37, 43, 44, 45, 47, 49, 61, 80, 82, 88, 94, 97, 99, 117, 124, 126, 130, 131, 145?, 146, 149, 151.	25* 1?
CONNECTICUT—4, 47, 61, 63, 73, 74, 75, 79, 80, 82, 87, 94, 95, 96, 97, 100, 104, 105, 111, 112, 113, 115, 118, 122, 123, 124, 125, 127, 133, 135, 141, 142, 143, 144, 146, 148, 149, 150, 151, 152.	40*
DAKOTA—4, 33, 47, 61, 97, 99?, 111, 117, 122, 124, 125, 127, 130, 131, 150, 151.	15* 1?

\* *Woodsia Plummeræ* Lemmon (Botanical Gazette Jan. 1882), is apparently a very glandular form of this species.



DELAWARE—4, 61, 63, 73, 74, 75, 80, 82, 93, 94, 96, 100, 104, 105, 112, 113, 115, 118, 122, 127, 133, 135, 142, 143, 144, 150, 151, 152.	} 28*
DIST. OF COLUMBIA—4, 47, 61, 63, 74, 80, 82, 92, 93, 94, 96, 100, 104, 105, 111, 118, 122, 125, 133, 141, 142, 143, 144, 150, 151, 152.	} 26*
FLORIDA—1, 2, 3, 7, 9, 10, 28, 58, 59, 61, 62, 66, 67, 68, 69, 70, 73, 74, 77, 80, 81?, 82, 84, 89, 90, 91, 94, 96, 100, 104, 108, 109, 114, 119, 121, 122, 134, 136?, 140, 141, 142, 143, 144, 150, 151, 153, 154, 155.	} 46* 2?
GEORGIA—29, 31, 61, 73, 74, 75, 81, 85, 93, 122, 133, 142, 144, 154.	14*
IDAHO—61, 94, 102.	3*
ILLINOIS—4, 7, 33, 47, 61, 63, 73?, 75, 78, 80, 82, 93, 94, 95, 96, 97, 100, 104, 105, 111?, 118, 122, 123, 124, 125, 133, 135, 142, 143, 144, 150, 151.	} 30* 2?
INDIANA—4, 7, 31, 47, 61, 63, 73, 75, 78, 80, 82, 87, 92, 93, 94, 96, 100 104, 105, 111?, 115, 117?, 118, 122, 123, 124, 125, 133, 135, 142, 143, 144, 150, 151, 152.	} 33* 2?
INDIAN TERRITORY—36, 47, 115, 133.	4*
IOWA—4, 33, 44, 61, 63, 80, 82, 94, 95.	9*
KANSAS—20, 31?, 47, 63, 75, 92, 115, 122, 124, 133, 151.	} 10* 1?
KENTUCKY—4, 7, 31, 35, 47, 61, 63, 66, 75, 78, 79, 80, 81, 82, 85, 86, 87, 92, 93, 94, 95, 96, 100, 104, 105, 111, 113, 115, 118, 122, 124, 125, 127?, 133, 135, 137, 141, 142, 143, 144, 150, 151, 152?.	} 41* 2?
LOUISIANA—7, 61, 63, 73, 74, 80, 92, 93, 94, 95, 100, 104, 105, 109, 111, 114, 122, 125, 142, 144, 150, 151, 153.	} 23
MAINE—4, 61, 63, 73, 80, 82, 94, 95, 96, 97, 100, 102?, 104, 105, 110, 111, 112, 113, 115, 118, 122, 123, 124, 125, 127, 133, 135, 142, 143, 144, 145, 148, 149, 150, 151, 152.	} 35* 1?
MARYLAND—4, 31, 61, 63, 73, 74, 75, 78, 80, 82, 85, 87, 93, 94, 95, 96, 100, 104, 105, 111, 112, 113, 115, 118, 122, 124, 127, 133, 135, 141, 142, 143, 144, 150, 151, 152.	} 36*
MASSACHUSETTS—4, 44, 47, 61, 63, 73, 74, 75, 80, 82, 87, 92, 93, 94, 95, 96, 97, 100, 104, 105, 111, 112, 113, 115, 118, 122, 123, 124, 125, 127, 133, 135, 141, 142, 143, 144, 145, 148, 149, 150, 151, 152.	} 42*
MICHIGAN—4, 43, 44, 47, 61, 63, 73, 74, 75, 80, 82, 87, 92, 93, 94, 95, 96, 97, 99, 100, 102, 104, 105, 110, 111, 112, 113, 115, 117, 118, 122, 123, 124, 125, 127, 131, 133, 135, 142, 143, 144, 145, 146, 148, 149, 150, 151.	} 47*
MINNESOTA—4, 31, 44, 47, 61, 63, 75, 93, 94, 95, 97, 100, 104, 110, 111, 115, 118, 123, 125, 127, 130, 143, 150, 151.	} 24*
MISSISSIPPI—7, 66, 73, 80, 94, 96, 100, 122, 142, 144, 150.	11*



MISSOURI—4, 7, 20, 31, 33, 35, 47, 61, 63, 66, 75, 78, 80, 82, 92, 93, 94, 96, 100, 104, 111, 118, 122, 124, 125, 133, 135, 142, 143, 144, 150, 151, 152.	} 33*
MONTANA—4, 97, 99, 111, 122, 124, 125, 127, 150, 151.	} 10*
NEBRASKA—4, 33, 44, 47, 61, 63, 75, 80, 82, 92, 94, 95, 96, 99, 104, 105, 110, 111, 113, 118, 124, 125, 127, 133, 135, 142, 143, 144, 150, 151.	} 30*
NEVADA—37, 103.	} 2*
NEW HAMPSHIRE—4, 44?, 47?, 61, 63, 73?, 75?, 80, 82, 87?, 93, 94, 95, 97, 100, 102, 104, 105?, 110, 111, 112?, 113, 115, 118, 122, 123, 124, 125?, 127, 128, 133, 135, 142, 143, 144, 148, 150, 151, 152.	} 31* 8?
NEW JERSEY—4, 31, 44, 61, 63, 73, 74, 75, 79?, 80, 82, 83, 85, 87, 93, 94, 96, 100, 104, 105, 111, 113, 115, 118, 122, 124, 125, 127, 133, 135, 138, 141, 142, 143, 144, 149, 150, 151, 152.	} 38* 1?
NEW MEXICO—12, 13, 14, 16, 19, 20, 21?, 26, 28?, 29, 33, 34, 36, 37, 40, 47, 48?, 49, 50?, 54, 55?, 56, 66, 81, 82, 88, 124, 131? 132, 133, 139.	} 25* 6?
NEW YORK—4, 31, 44, 47, 61, 63, 73, 74, 75, 76, 79, 80, 82, 85, 86, 87, 92, 93, 94, 95, 96, 97, 100, 102, 104, 105, 110, 111, 112, 113, 115, 118, 122, 123, 124, 125, 127, 128, 129, 133, 135, 141, 142, 143, 144, 145, 146, 148, 149, 150, 151, 152.	} 52*
NORTH CAROLINA—4, 7, 29, 31, 35, 47, 61, 63, 66, 74, 75, 78, 80, 81, 82, 85, 87, 92, 93, 94, 96, 100, 104, 105, 111, 118, 122, 124, 125, 127, 133, 135, 141, 142, 143, 144, 150, 151, 152.	} 39*
OHIO—4, 7, 47, 61, 63, 73, 75, 80, 82, 87, 92, 93, 94, 95, 96, 97, 100, 104, 105, 111, 113, 115, 118, 122, 123, 124, 125, 127?, 133?, 135, 142, 143, 144, 150, 151, 152.	} 34* 2?
OREGON—4, 5, 6, 8, 11, 34, 43, 46, 57, 61, 63, 64, 71, 82, 94, 97, 98, 101, 111, 124, 130, 131, 133, 151.	} 24*
PENNSYLVANIA—4, 31, 44, 47, 61, 63, 73, 74?, 75, 78, 79, 80, 82, 85, 87, 92, 93, 94, 96, 97, 100, 102, 104, 105, 111, 112, 113, 115, 118, 122, 123, 124, 125, 127, 133, 135, 141, 142, 143, 144, 148?, 150, 151, 152.	} 42* 2?
RHODE ISLAND—4, 61, 63, 73, 74, 75, 80, 82, 93, 94, 95, 96, 97, 100, 104, 105, 111, 112, 113, 118, 122, 123, 124, 125, 127, 133, 135, 141, 142, 143, 144, 150, 151, 152.	} 34*
SOUTH CAROLINA—7, 73, 80, 82, 84?, 109, 150, 153, 154.	} 8* 1?
TENNESSEE—7, 29, 35, 61, 63, 75, 76, 78, 81, 82, 85, 86, 87, 100, 111, 124, 125, 133, 135, 137, 141, 152.	} 22*
TEXAS—7, 12, 13, 14, 15, 16, 20, 26, 28, 29, 30, 33, 35, 40, 47, 48, 49, 50, 54, 55, 56, 61, 65, 66, 80, 81, 82, 109, 120, 121, 132, 133, 139, 152, 153.	} 35*



UTAH—23, 24, 33, 43, 45, 57, 61, 63, 66, 94, 99, 103, 117, 130, 131.	15*
VERMONT—4, 44, 47, 61, 63, 73, 75, 80, 82, 83, 87, 92, 93, 94, 95, 96, 97, 100, 102, 104, 105, 110, 111, 112, 113, 115, 118, 122, 123, 124, 125, 127, 128, 129, 133, 135, 142, 143, 144, 145, 148, 149, 150, 151, 152.	45*
VIRGINIA, including W.Va.—4, 7, 31, 35, 61, 63, 66, 74, 75?, 80, 81, 82, 85, 87, 92, 93, 94, 97, 104, 105, 111, 113, 115, 118, 124, 127, 133, 135, 141, 142?, 144?, 150, 151.	30* 3?
WASHINGTON TERRITORY—4, 5, 8, 11, 34, 43, 57, 61, 63, 71, 82, 94, 99, 101, 103, 111, 124, 130, 145, 150, 151, 152.	21* 1?
WISCONSIN—4, 31, 33, 44, 47, 61, 63, 75, 80, 82, 92, 93, 94, 95, 97, 100, 104, 105, 110, 111, 113, 115, 118, 122, 123, 124, 125, 127, 133, 135, 142, 143, 144, 150, 151.	35*
WYOMING TERRITORY—57, 131, 145, 150.	4*

REMARKS. No positively accurate comparisons can be made from the incomplete data furnished by these partial tables, but so far as now known. New York, Michigan, Florida, Vermont and California, in the order named, have the greatest number of species of ferns within their respective limits.

In the first, second and fourth of these States, the number has, in all probability, reached, or very nearly reached, its maximum, while in the third and fifth it is likely to be largely increased, and those States from their favorable situations, climates, and comparatively extensive, unexplored territory, will, undoubtedly, lead all other States in the future. Arizona and Texas alone being at all likely to compete with them for the highest place.

If, however, we distribute our ferns according to the number of square miles of territory which each of the five first named States contains, then Vermont will lead the others, her ratio being as 1 fern to every  $226\frac{2}{3}$  square miles, that for New York as 1 to 814, Michigan 1 to  $1191\frac{1}{2}$ , Florida, 1 to 1289, and California 1 to  $4295\frac{1}{2}$  square miles of territory.

Taking the extremes of the territorial limits, excluding the District of Columbia, which has 1 species to each  $2\frac{1}{2}$  miles of territory, Rhode Island gives us 1 species for each  $38\frac{1}{4}$ , and Delaware 1 to 75, as compared with Pennsylvania's 1 to  $109\frac{1}{4}$ , Colorado's 1 to 4200 and Texas 1 to  $7878\frac{2}{3}$  square miles.

If we take an average of the fern-flora for the different geographical sections of the United States, on the basis of the present list, New England gives us an average of 40 species for each State, the Middle Atlantic States 40, the South Atlantic 27, the Gulf States 23, and the Central States 25, the Pacific States 23, and the Territories an average of 19.

The returns from most of the Territories are altogether too meagre at present to permit of any comparisons, and those already made will necessarily undergo considerable modification as the gaps in the lists for other States fill up.

But while no absolutely reliable comparisons can be made, nor the pre-



cise limits of each species be determined from the present incomplete tables, we may ascertain from them, with a tolerable degree of certainty, the range of certain species, and find material for some interesting observations.

Thus we find the cosmopolitan *Asplenium trichomanes* and *Pteris aquilina* in thirty-five and thirty-nine, out of the forty-eight States and Territories respectively, while their actual presence in a greater number may be safely assumed. *Polypodium vulgare* appears in thirty-three, with the same, or an even greater probability of its occurring in others in its favor, while its near congeners, *P. californicum*, and *P. falcatum*, as well as *P. scolieri* are restricted to two or three States. Of the remaining Polypodiums, all but *incanum*, which appears in twelve States are restricted to the single State of Florida, which furthermore monopolizes all the species we have in six genera, the tropical character of these being at once indicated by this fact.

The only other State (since the discovery of *Scolopendrium* in Tennessee has divided with New York the honor of that ferns presence) which may now claim a monopoly of a genus is New Jersey, the very local *Schizaea* being restricted to a portion of its limits and again restricted to a single species.

*Adiantum pedatum* occurs in thirty-five States or Territories, while its congener, *A. capillus-veneris*, is restricted to thirteen, and the tropical *A. tenerum* to a single State.

The Osmundas are represented by one or more species in twenty-nine, Onoclea in twenty-eight States or Territories, and these probably occur in more, although not reported west of the Rocky mountains. *O. sensibilis* extends as far west as Dakota and Montana, and in the last mentioned Territory is said to have been discovered in a fossil state.

*Cystopteris fragilis* extends from Maine to California, through thirty-three States and Territories, apparently avoiding the South Atlantic and Gulf States, with the exception of North Carolina, while *C. bulbifera* occurs in twenty-five, covering a more unequal, but broader range south and west, the limits of which terminate in Louisiana and Dakota. *C. montana* so recently discovered in Colorado by Brandegee is reported elsewhere in the United States only from Alaska. The Aspidia are represented in forty-four, the Asplenium and Botrychia in forty-one States or Territories each, while the drought-resisting Gymnogrammes, Notholænas, Cheilanthes, and Pellæas are almost wholly restricted to the arid regions west of the Rocky mountains, a few scattering species only coming East, North or South.

It is interesting to note the changes which have taken place in the number and distribution of our ferns since Redfield published his valuable paper on the "Geographical Distribution of the Ferns of North America," in the Torrey Club Bulletin for January, 1875, and Watt, his admirable review of Mrs. Lyell's Hand-Book in the Canadian *Naturalist* for 1870. Mr. Redfield enumerated 125 species, which have been increased up to the pres-



ent time to 153 or 156, according as we may consider the claims of certain ferns to specific rank, or their right to a place in our fern-flora, while the range of the older species has been more or less extended.

Taking the number in the list accompanying this paper for a basis, viz., 155, we have an increase of 30 species since 1875, and we may confidently expect a still greater increase as the vast regions of Arizona, New Mexico and Western Texas are more thoroughly explored.

Fournier enumerates 505 Mexican species, of which number only 55 are known to occur within our own limits; but how many of the remaining 450 are lurking in the cañons this side of the Mexican border, to reward the patient search of keen-eyed botanists, remains yet to be made known.

#### SUPPLEMENTARY.

The foregoing tables were prepared in March, 1882. Since that time several additions have been made to our Fern Flora, and many additional credits noted; these have so changed the status of the leading States as given in the text, and are so interesting for comparisons by which to mark progressive changes in the future, that it seems best to place them on record here in a separate note.

By the certain addition of 7, and the probable addition of 1 or 2 more to the entire fern flora of the United States, our list is increased from 155 to 162 or 164.

Numbers 94, 99 and 151 are to be credited to Alaska; 45, 131 and 124 to Idaho; 117 to Washington Territory; 124 to Utah, and 97 (*Var. calca-reum*) to Iowa.

California by the addition of numbers 24, 99, 117 and 154, advances from the fifth to the second place, and, if a little *Woodsia* lately received from Lower California proves to be *obtus*a, as seems probable, and the doubtful credits were verified, would lead New York.

Florida by the addition of *Polypodium Swartzii* takes rank for the present with Michigan, although if we concede the presence of the doubtful credits Michigan will still lead by one species and take rank as third, a position, however, which she would be almost certain to yield up, perhaps before the close of another season.

Arizona by the addition of 81, 120, *Polypodium thyssanolepis*, *Pellaea marginata*, *Cheilanthes lendigera*, *Cheilanthes* ——— sp.? *Notholæna Aschenhorniana*, *Asplenium monanthemum*, *Asplenium Glenniei* and *Aspidium* ——— sp.? pushes rapidly to the front, contests the honor of third position with Florida and Michigan, and threatens before long to become a close competitor for the leading place.

Glancing over the entire field of our Fern Flora at the present time, it is safe to assume from the nature of her territory, and the close proximity of an extensive and almost unexplored mountainous area to a portion of Mexican territory rich in ferns, that Arizona in time will lead all the other States in the wealth of her fern flora.





Davenport, Geo. E. 1883. "Some Comparative Tables Showing the Distribution of Ferns in the United States of North America." *Proceedings of the American Philosophical Society held at Philadelphia for promoting useful knowledge* 20(113), 605–612.

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