

The height of water over the rifle, according to my experiments, makes no difference, as the same results were obtained when the rifle was submerged five inches as when submerged 12 inches. This is not singular, when we consider the rapidity with which the bullet travels and the short time the column of water has to act on it. The cause of the limited range under water, then, is the fact of the motion of the bullet being opposed by a medium of much greater density than the atmosphere.

The variation between different rifles, from my experiments I have been led to believe, is due in part to differences in the length of barrel, in the size of bore, and in the internal structure of barrel; but more particularly to the fact that as a rule the amount of powder and bullet are not only in absurd relations to each other, but are not in correct proportions for the length and bore of barrels peculiar to different rifles. These facts only demonstrate that there is a large number of very important points yet to be examined.

XVIII.—*The Fungi of Texas.*

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The following is an enumeration of all the species of Fungi which, so far as I am aware, have hitherto been detected in Texas. In addition to the few collected by Wright and others, and mentioned in Berkeley's North American Fungi, a small collection of two hundred specimens, gathered a few years since by Mr. H. W. Ravenal, has been examined; and after the determination of these, the whole number of species does not exceed one hundred and fifty. This is a very poor catalogue for a State which is undoubtedly rich in these plants; but the enumeration will possess an interest and a

value, on account of its being the first and only attempt yet made to bring together the results of previous observers, and to present in a separate and distinct manner what is known of the mycologic flora of Texas.

1. *Agaricus (Collybia) Texensis*, Berk. and Curt., Ann. Nat. Hist., ser. II, vol. xii, pp. 418.
In woods. Wright (3162).
2. *Montagnites Candollei*, Fr., Ep., 241.
On sandy ground. Wright.
3. *Leutinus tigrinus*, Fr., Hym. Eur., p. 481.
On wood. Wright (3148).
4. *Strobilomyces strobilaceus*, Berk., Outl., p. 236.
On the ground. Wright (3889).
5. *Polyporus (Mesopus) arcularius*, Fr., Hym. Eur., 526.
On trunks. Wright (3142).
6. *Polyporus (Anoderma) Lindheimeri*, B. and C. in Grevillea, N. A. F., No. 130.
On sassafras. Lindheimer (3639).
7. *Polyporus (Inoderma) versicolor*, Fr., Hym. Eur., 568.
On stumps. Houston ; Rav. (287).
8. *Polyporus (Inoderma) barbatulus*, Fr., Nova Sym., 71.
On wood. Bigelow (6376).
9. *Polyporus (Resupinatus) contiguus*, Fr., Hym. Eur., 571.
On wood. Wright, (3906, 3907).
10. *Trametes hydnoides*, Fr., Ep., 490.
On wood. Wright (3093).
11. *Trametes Lindheimeri*, B. and C., Grevillea, No. 154.
On stumps. Wright (3764, 3919).
12. *Merulius Wrightii*, Berk., Grevillea, N. A. F., 164.
On wood. Wright (3144.)
13. *Irpex tabacinus*, B. and C., Grevillea, N. A. F., 198.
On bark. Wright (3152).
14. *Kneiffia setigera*, Fr., Hym. Eur., 628.
On trunks. Wright (3899). Ravenal (154).
15. *Thelephora cladonia*, Schwz., Car., No. 1068.
On the ground. Wright (3272).
16. *Stereum dissitum*, Berk., Grevillea, N. A. F., 241.
On dead wood. Wright (3903).
17. *Stereum Curtisii*, Berk., Grevillea, N. A. F., 239.
On oak. Houston ; Rav. (134, 160).

18. *Stereum pruinatum*, B. and Curt., Cuba, No. 409.

On living trees. Houston ; Rav. (246).

19. *Stereum acerinum*, Fr., Hym. Eur., 645.

On trunks. Houston ; Rav. (269).

20. *Corticium calceum*, Fr., Hym. Eur., 652.

On wood. Wright (3914).

21. *Corticium comedens*, Fr., Hym. Eur., 656.

On fallen limbs. Houston ; Rav. (264).

22. *Corticium lactescens*, Fr., Hym. Eur., 650.

On fallen limbs. Houston ; Rav. (271).

23. *Corticium carneum*, Berk. and Cooke. (n. s.)

Effused, somewhat membranaceous, ochraceous flesh colour, the margin whitish and fibrillose; hymenium thin, smooth and even to the naked eye, cracking when dry.

On logs. Houston ; Rav. (78).

This is one of those species in which the hymenium is furnished with rough spindle-shaped cells, which project above the surface. It has been proposed to remove these species from *Corticium*, and place them in a genus intermediate between that and *Stereum*, under the name of *Peniophora*.

24. *Cyphella villosa*, Pers., Syn., 655, sub *Peziza*.

On twigs. Houston ; Rav. (183).

25. *Cyphella convoluta*, Cooke. (n. s.)

Scattered, cupshaped, then flattened, 1 to 2 m m. wide, margin membranaceous, involute, externally white, internally fleshy-red: spores oblong (.007 m m. long.).

On trunks. Rav. (295).

Resembling a small sessile *Peziza*, such as *P. leucoloma*.

26. *Herneola auricula Judae*, Fr., Hym. Eur., 695.

On trunks. Wright (3143).

27. *Guepinia spathularia*, Fr., Epict., 566.

On branches. Wright (3146).

28. *Secotium Texense*, B. and C., Grevillea, N. A. F., 327.

On the ground. Pope (6375).

29. *Geaster hygrometricus*, Fr., Sym. Myc., iii, 19.

On the ground. Drummond.

30. *Tulostoma fimbriatum*, Fr., Sym. Myc., iii, 43.

On the ground. Wright (3151).

31. *Bovista stuppea*, Berk., Grevillea, N. A. F., 330,

On the ground. Wright (3153).

32. *Scleroderma Texense*, Berk., Grevillea, N. A. F., 338.
On the ground. Drummond.
33. *Mitremyces lutescens*, Schwz., Car., t. 2, f. 1.
On the ground. Drummond.
34. *Physarum obrussum*, B. and C., sub *Didymium*.
On leaves. Lindheimer.
35. *Licea Lindheimeri*, Berk., Grevillea, N. A. F., 369.
On dead bark. Lindheimer.
36. *Arcyria cinerea*, Fr., Sys. Myc., iii, 180.
On stumps. Lindheimer (3631).
37. *Phoma helvolum*, B. and C., Grevillea, N. A. F., 386.
On leaves. Wright (3901).
38. *Phoma hysteriiforme*, Cooke. (n. s.)
Gregarious. Perithecia elongated so as to resemble some *Hysterium*, flattened at the base. Spores elliptical, binucleate (.01—.012 m m. long.), hyaline.
On herbaceous stems. Rav. (224).
- Somewhat resembling the next species, but manifestly entirely distinct.
39. *Phoma hysteroideum*, B. and C., in Herb. Curt.
On reeds. Houston ; Rav. (11).
40. *Phlyctæna smilacis*, Cooke. (n. s.)
Covered by the cuticle, minute, brown, collected in dense patches, slightly elevated. Spores filiform, curved at one extremity, and straight at the other, (.02—.025 m m. long).
On Smilax. Rav. (208, 209).
- Just the same kind of spores are described for an Australian species of this genus, *P. dissepta*, Berk.
41. *Diplodia Zece*, Schwz., (sub *Sphaeria*).
On *Zea Mays*. Rav. (198).
42. *Hendersonia magna*, Cooke. (n. s.)
Erumpent, disposed in linear series. Perithecia black, subglobose, here and there connate, like a *Dothidea*, split irregularly. Spores cylindrical, obtuse, 3—5 septate. (.06—.065x.01 m m.).
On herbaceous stems. Houston ; Rav., (140).
43. *Discella leguminum*, Cooke. (n. s.)
Crowded together in irregular blackened spots, circumscribed with a definite line, pustules confluent. Spores elliptical or pear-shaped, uni-nucleate, hyaline, (.012—.015x.006 m m.).
On legumes of *Prosopis*. Galveston.
44. *Discella angulata*, Cooke. (n. s.)
Gregarious, covered by the epidermis, which is split into irregular angular

fissures about the pustules. Spores elongated fusiform, hyaline, ($.02 \times .004$ m m.).

On limbs of trees. Galveston, Rav. (58).

45. *Melasmia acerina*, Lev., Ann. Sci. Nat., 1848, p. 252.

On leaves. Wright (3772).

46. *Septoria ampelina*, B. and C., Grevillea, Amer. Fungi, 440.

On leaves of *Vitis vulpina*. Wright (3885).

47. *Phyllosticta micropuncta*, Cooke. (n. s.)

Epiphyllous. Perithecia minute, black, crowded together in suborbicular spots. Spores minute, ovate, hyaline, ($.003$ m m. long).

On leaves of *Persea Carolinensis*. Ravenal, (235).

48. *Septoria Magnoliæ*, Cooke. (n. s.)

Epiphyllous. Perithecia black, half immersed in the leaf, crowded together in irregular brownish spots. Spores linear, nucleate, ($.025-.03$ m m. long).

On leaves of *Magnolia grandiflora*. Rav. (8).

49. *Septoria vestita*, B. and C., Grevillea, N. A. Fungi, 440*.

On gourds. Rav. (205).

50. *Septoria speculariæ*, B. and C., Grevillea, N. A. F., 439.

On *Specularia perfoliata*. Rav. (254).

51. *Torula quaternata*, B. and C., Grevillea, N. A. F., 507.

On leaves of *Dasydirion*. Wright (3768).

52. *Sporidesmium asteriscus*, B. and C., Grevillea, N. A. F., 534.

On *Pycnanthemum*. Rav. (289).

53. *Sporidesmium compactum*, B. and C., Grevillea, N. A. F., No. 523.

On carious wood. Rav. (49).

54. *Sporidesmium compositum*, B. and C., Grevillea, N. A. F., No. 525.

On oak rails. Rav. (248).

55. *Sporidesmium mundulum*, Cooke. (n. s.)

Effused in black patches. Spores nearly ovate, cellular, dark-brown, almost opaque; the spores adhere together for some time in a concatenate manner, the lower one being attenuated into a kind of short stem, ($.015 \times .01$ m m.).

On oak logs. Houston; Rav. (197.)

56. *Coryneum Kunzei*, Corda, Icon., IV, f. 131.

On oak twigs. Rav. (292).

57. *Phragmidium mucronatum*, Fr., S. M., iii, 497.

On leaves. Wright (3896).

58. *Triphragmium deglubens*, B. and C., Grevillea, N. A. F., 559.

On leaves. Wright (389).

59. *Puccinia prunorum*, Link., Sp., ii, 82.

On *Cerasus* and *Prunus*. Wright (3904).

60. *Puccinia lobata*, B. and C., Grevillea, N. A. F., 550.
On *Sida lepidota*. Wright (6400).
61. *Uromyces Texensis*, B. and C., Grevillea, N. A. F., 563.
On leaves of *Reuellia*. Wright (3879).
62. *Uromyces pulcherrimus*, B. and C., Grevillea, N. A. F., 565.
On leaves of *Abutilon*. Wright (3771).
63. *Uromyces solidus*, B. and C., Grevillea, N. A. F., 567.
On leaves of *Desmodium*. Wright (3882).
64. *Uromyces Phaseoli*, Strauss, Grevillea, N. A. F., 567.*
Probably the same as *Uromyces appendiculatus* P.
On *Phaseolus*. Wright (3888.)
65. *Uromyces Myristica*, B. and C., Grevillea, N. A. F., 568.
On leaves of *Euphorbium*. Wright (3890).
66. *Trichobasis rubigo-vera*, Lev., Ann. Sci. Nat.
On *Trichodium*. Rav. (285).
67. *Trichobasis Junci*, Strauss (sub *Uredo*).
On *Juncus*. Houston; Rav. (274).
68. *Graphiola Phœnicis* Poit., Ann. Sc. Nat., 1824, 473.
On *Chamœrops*. Wright (4780.)
69. *Peridermium Ephedrae*, Cooke. (*Peridermium Pini*, var. *minor*, B and C., Grevillea, N. A. F., No. 576).
On *Ephedra*. Wright.
70. *Æcidium Orobi*, D. C., Grevillea, N. A. F., 583.*
On *Psoralea*. Pope (4844).
71. *Stilbum aleuriatum*, B. and C., Grevillea, N. A. F., 594.
On decayed wood of *Acer*. Wright (3782).
72. *Rhinotrichum Curtisii*, Berk., Grevillea, N. A. F., 657.
On wood. Wright (3892).
73. *Verticillium solediatum*, B. and C., Grevillea, N. A. F., 670.
On dead wood. Wright (3777).
74. *Macrosporium compactum*, Cooke. (n. s.)
Black, effused in the form of a compact crust. Threads fasciculate, brown, septate, unbranched. Spores oval, obtuse at the ends, divided longitudinally and vertically into numerous cells, sooty-brown (.02—03x.012—014 mm.).
On stems of *Ricinus*. Rav. (272,273).
75. *Cercospora Altheana*, Sacc., Michelia, ii, 269.
On leaves of *Malva*. Rav. (229.)
76. *Cercospora Gnaphaliacea*, Cooke. (n. s.)
Amphigenous. Threads fasciculate, simple, collected in rounded brown spots. Spores robust, linear, 3—5 septate, hyaline (.04—07x.005 mm.),
On leaves of *Gnaphalium*. Rav. (283).

77. *Pilacre faginea*, B. and Br., Ann. Nat. Hist., No. 380.

On dead wood. Wright (3100).

Dr. Max. Cornu is of opinion not only that *Pilacre faginea* and *Pilacre Petersii* are forms of the same species, but that they are the conidia of another more highly developed fungus.

78. *Peziza (Cupulares) irrorata*, B. and C., Mycographia, fig. 254.

On soil. Wright (3138).

79. *Peziza (Humaria) melaloma*, A. and S., Mycographia, fig. 67.

On burnt soil. Wright (3137).

80. *Peziza (Sarcoscypha) pusio*, B. and C., Mycographia, fig. 106.

On the ground. Wright (3145).

81. *Peziza (Sarcoscypha) Texensis*, B. and C., Mycographia, fig. 145.

On the ground. Wright (3134).

82. *Peziza (Sarcoscypha) scutellata*, L., Mycographia, fig. 131.

On wood. Wright (3135).

83. *Peziza (Sarcoscypha) stercorea*, P., Mycographia, fig. 147.

On dung. Wright (3140).

84. *Peziza (Dasyscypha) virginea*, Batsch, El., 125.

On twigs. Wright (3136).

85. *Peziza (Mollisia) rubella*, Pers., Syn., p. 635.

On wood. Ravenal (103).

86. *Patellaria cyanea*, Cooke. (n. s.)

Scattered, dark-blue, almost black. Cups flattened, orbicular ($\frac{1}{2}$ —1 m. m.) convex. Asci clavate, sessile. Sporidia clavate, or fusiform, 3—5 septate, rather constricted at the joints ($.03 \times .007$ m. m.), the cells being nucleate. Paraphyses clavate, simple, or furcate, dark blue at the tips.

On herbaceous stems. Houston, Rav. (223).

Evidently allied to *Patellaria indigotica* C. and Pk., and, like that, with the gelatina hymenica coloured blue, so that a blue tint is suffused over the whole of the hymenium.

87. *Eustegia Magnoliæ*, B. and Rav., (stylosporous state).

On leaves of *Magnolia grandiflora*. Houston ; Rav. (236).

88. *Hysterium prælongum*, Schwz.

On wood. Wright (3894, 3916) ; Rav. (69).

89. *Hysterium (Glonium) lineare*, Fr., S. M., ii, 583.

On wood. Rav. (73).

90. *Hysterium (Glonium) medium* Cooke. (n. s.)

Perithecia elliptical or elongated, obtuse at both extremities, flattened above, black, densely gregarious or sometimes confluent. Asci cylindrical. Sporidia oval, at length uniseptate, hyaline, ($.008$ — $.01 \times .004$ m. m.).

On decorticated *Berchemia*. Rav. (293).

Resembling *Glonium lineare* in many points, but differing in the contour and size of the sporidia.

91. *Hysterium* (*Lophodermium*) *xylomoides*, Chev., in Duby.
On leaves. Rav. (182).
92. *Hysterium* (*Lophodermium*) *maculare*, Fr., S. M., ii, 592.
On leaves of *Persea*. Houston ; Rav. (234).
93. *Ailographum* *maculare*, B. and Br., Ann. N. H., No. 968.
On leaves of *Quercus aquatica*. Houston ; Rav. (101).
94. *Phacidium* *dentatum*, Fr., S. M., ii, 577.
On oak leaves. Wright (3909).
95. *Asterina* *Wrightii*, B. and C., Grevillea, N. A. F., 790.
On *Cucurbitaceæ*. Wright (3880).
96. *Acrospermum* *viridulum*, B. and C., Grevillea, N. A. F., 1001.
On leaves of *Quercus obtusiloba*. Houston ; Rav. (166).
97. *Acrospermum* *foliicolum*, B. and C., Grevillea, N. A. F., 1000.
On leaves of *Smilax*. Rav. (165).
98. *Torrubia* *Ravenalii*, B. and C., Grevillea, N. A. F., 799*.
On larvæ. Wright (3155).
99. *Xylaria* *Titan*, B. and C., Grevillea, N. A. F., 823.
On stumps. Lindheimer (2676).
100. *Xylaria* *clavulus*, B. and C., Grevillea, N. A. F., 825.
On dead grass. Wright (3150).
101. *Xylaria* *digitata*, Grev., Fl. Ed. 356.
On stumps. Lindheimer (3627).
102. *Xylaria* *rhopaloides*, Kze., Weig. Exs.
On stumps. Wright (3904).
103. *Poronia* *ædipus*, Mon. Syll., 209.
On dung. Wright (3778).
104. *Hypoxyylon* *malleolus*, B. and Rav., Grevillea, N. A. F., 827.
On oak. Galveston Bay ; Rav. (26).
105. *Hypoxyylon* *multiforme*, Fr., S. V. S., 384.
On branches. Houston ; Rav. (138).
106. *Hypoxyylon* *rubiginosum*, Fr., S. V. S., 384.
On wood. Wright (3893).
107. *Hypoxyylon* *argillaceum*, Fr., S. M., ii, 333.
On oak. Houston ; Rav. (108).
108. *Hypoxyylon* *fuscum*, Fr., S. M., ii, 332.
On branches. Houston ; Rav. (132).
109. *Hypoxyylon* *Sassafras*, Schwz., Syll., No. 87.
On *Persea* ; Rav. (211). On fallen limbs ; Rav. (110, 127).
110. *Hypoxyylon* *annulatum*, Schwz., Fr. El., 264
On wood. Galveston Bay ; Rav. (39).

111. *Hypoxyton investiens*, Schwz.

On oak rails. Rav. (249). Wright (3913).

112. *Eutypa limæformis*, Schwz., Syn., No. 86.

On dead logs. Houston ; Rav. (238).

113. *Diatrype* (*Diatrypella*) *opaca*, Cooke. (n. s.)

Erumpent, suborbicular, dark brown. Ostiola depressed, sulcate, scarcely distinct. Asci clavate, much attenuated below. Sporidia sausage-shaped, very numerous, yellowish in the mass.

On *Ilex opaca*. Houston ; Rav. (243).

Also received from Florida. Allied to *D. quercina*, but the pustules are smaller, and neater, the ostiola less prominent and smaller.

114. *Diatrype hypophloea*, B. and Rav., Grevillea, N. A. F., 852.

On *Magnolia grandiflora*. Rav. (240).

115. *Diatrype atropunctata*, B. and C., Grevillea, N. A. F., 851*.

On branches. Rav. (168).

116. *Diatrype punctulata*, Berk. and Rav., Grevillea, N. A. F., 851*.

On oak. Galveston Bay ; Rav. (35).

117. *Diatrype rumpens*, Cooke. (n. s.)

Elliptical, subconvex, at length casting off the cuticle, the fragments of which adhere around the margin. Ostiola scarcely prominent. Asci cylindrical. Sporidia broadly almond-shaped, dark-brown, opaque, ($.015 \times .009$ m m.).

On bark. Galveston Bay ; Rav. (63).

Scarcely an inch broad, rather convex. The same species has been received from South Carolina on ash. Rav. (1555).

118. *Diatrype dryophila*, Curr., Linn. Trans., xxii, p. 269.

On bark. Houston ; Rav. (177).

119. *Diatrype exutans*, Cooke. (n. s.)

Broadly effused, black, produced beneath the cuticle, which is soon cast off. Ostiola punctiform, depressed. Asci cylindrical. Sporidia elliptical, attenuated towards each extremity, brown, with a single nucleus, ($.014 \times .008$ m m.).

On bark. Galveston Bay ; Rav. (76).

Two or three inches or more long, with an irregular outline, thinner than *D. rumpens*.

120. *Melogramma gyrosum*, Tul., Carp., ii, 87.

On *Liquidambar*. Rav. (241).

121. *Nectria episphaeria*, Fr., S. M., ii, 454.

On *Valsa stellulata*. Rav. (158).

122. *Valsa stellulata*, Fr., S. M., ii, 381.

On rotten logs. Rav. (68, 97, 133). Wright (3900).

123. *Valsa tetraploa*, B. and C., in Rav., Fungi Car.
On *Smilax*. Houston ; Rav. (242). On bark. Houston ; Rav. (102).
124. *Valsa Vitis*, Schwz., Syn. Car., No. 117.
On *Vitis*. Houston ; Rav. (100, 180, 218).
125. *Valsa velata*, Pers., Syn., 32.
On fallen limbs. Houston ; Rav. (194).
126. *Massaria Curreyi*, Tul., Carp., ii, 231.
On basswood. Houston ; Rav. (297).
127. *Sphaeria (Byssisedæ) aquila*, Fr., S. M., ii, 442.
On wood. Galveston Bay ; Rav. (79).
128. *Sphaeria (Byssisedæ) culcitella*, B. and Rav., in Rav., Exs. iv, 53.
On logs. Rav. (32).
129. *Sphaeria (Villosæ) canescens*, Pers., Syn., 448.
On *Carpinus*. Rav. (104, 215, 300).
130. *Sphaeria (Sordaria) macrospora*, Awd., in Hedw.
On rabbits' dung. Ravenal (230).
131. *Sphaeria (Sporormia) minima*, Awd., Hedw., 1868, p. 66.
On rabbits' dung. Ravenal (230).
132. *Sphaeria (Immersæ) livida*, Fr. S. M., ii, 479.
On naked wood. Wright (3781, 3902).
133. *Sphaeria (Immersæ) botulæspora*, Cooke. (n. s.)
Gregarious, immersed. Perithecia black, compressed laterally, pierced at the apex. Asci saccate. Sporidia cylindrical, straight, or slightly curved, obtuse at each extremity, uniseptate, the upper cell being twice the length of the lower, constricted at the septum, brownish, ($\cdot 07 - \cdot 08 \times \cdot 012$ mm.).
On old oak rails. Houston ; Rav. (202).
134. *Sphaeria (Immersæ) Texensis*, Cooke. (n. s.)
Scattered over greyish or bleached spots. Perithecia subglobose, immersed in the blackened wood, scarcely prominent. Asci cylindrical. Sporidia lanceolate, uniseptate, hyaline, ($\cdot 015 \times \cdot 006$ mm.).
On old oak rails. Houston ; Rav. (250).
135. *Sphaeria (Obtectæ) pertacta*, Cooke. (n. s.)
At first covered. Perithecia globose, black, at length exposed above, through elongated fissures of the cuticle, generally arranged in a linear series. Asci clavate, sessile. Sporidia biseriata, elliptical, attenuated towards each end, hyaline, ($\cdot 02 - \cdot 023 \times \cdot 01$ mm.).
On fallen branches. Galveston Bay ; Rav. (57).
136. *Sphaeria (Caulicolæ) torulæspora*, Cooke. (n. s.)
Gregarious. Perithecia black, of an obtusely conical form, flattened at the base, at length exposed. Sporidia linear, multiseptate, brown, resembling some forms of *Torula*, slightly constricted at the commissures, ($\cdot 08 \times \cdot 004$ mm.).
On herbaceous stems. Rav. (60).



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