New York State Education Department

NEW YORK STATE MUSEUM

62d ANNUAL REPORT

1908

In 4 volumes

VOLUME 2

APPENDIXES 3-5

TRANSMITTED TO THE LEGISLATURE MARCH 15, 1909

ALBANY
UNIVERSITY OF THE STATE OF NEW YORK
1909

STATE OF NEW YORK

EDUCATION DEPARTMENT

Regents of the University

With years when terms expire

1913	Whitelaw Reid M.A. LL.D. D.C.L. *Chancellor*	New York
1917	St Clair McKelway M.A. LL.D. *Vice Chancellor*	Brooklyn
1919	Daniel Beach Ph.D. LL.D. - - - -	Watkins
1914	Pliny T. Sexton LL.B. LL.D. - - -	Palmyra
1912	T. Guilford Smith M.A. C.E. LL.D. - -	Buffalo
1918	William Nottingham M.A. Ph.D. LL.D. -	Syracuse
1910	Chester S. Lord M.A. LL.D. - - - -	New York
1915	Albert Vander Veer M.D. M.A. Ph.D. LL.D.	Albany
1911	Edward Lauterbach M.A. LL.D. - - -	New York
1920	Eugene A. Philbin LL.B. LL.D. - - -	New York
1916	Lucian L. Shedden LL.B. LL.D. - - -	Plattsburg
1921	Francis M. Carpenter - - - - -	Mount Kisco

Commissioner of Education

Andrew S. Draper LL.B. LL.D.

Assistant Commissioners

Augustus S. Downing M.A. Pd.D. LL.D. *First Assistant*
Frank Rollins Ph.D. *Second Assistant*
Thomas E. Finegan M.A. Pd.D. *Third Assistant*

Director of State Library

James I. Wyer, Jr, M.L.S.

Director of Science and State Museum

John M. Clarke Ph.D. LL.D.

Chiefs of Divisions

Administration, Harlan H. Horner B.A.
Attendance, James D. Sullivan
Educational Extension, William R. Eastman M.A. M.L.S.
Examinations, Charles F. Wheelock B.S. LL.D.
Inspections, Frank H. Wood M.A.
Law, Frank B. Gilbert B.A.
School Libraries, Charles E. Fitch L.H.D.
Statistics, Hiram C. Case
Trades Schools, Arthur D. Dean B.S.
Visual Instruction, Alfred W. Abrams Ph.B.

STATE OF NEW YORK

No. 64

IN ASSEMBLY

March 15, 1909

62d ANNUAL REPORT

OF THE

NEW YORK STATE MUSEUM

VOLUME 2

To the Legislature of the State of New York

We have the honor to submit herewith, pursuant to law, as the 62d Annual Report of the New York State Museum, the report of the Director, including the reports of the State Geologist and State Paleontologist, and the reports of the State Entomologist and the State Botanist, with appendixes.

St Clair McKelway
Vice Chancellor of the University

Andrew S. Draper
Commissioner of Education

Appendix 3

Economic geology

Museum bulletin 132

132 The Mining and Quarry Industry of New York State

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 451 ALBANY, N. Y. July 15, 1909

New York State Museum

John M. Clarke, Director

Museum bulletin 132

THE MINING AND QUARRY INDUSTRY

OF

NEW YORK STATE

REPORT OF OPERATIONS AND PRODUCTION DURING 1908

BY

D. H. NEWLAND

New York State Education Department
Science Division, June 7, 1909

Hon. Andrew S. Draper LL.D.
Commissioner of Education

My dear sir: I have the honor to transmit herewith for publication as a bulletin of the State Museum, the report on the *Mining and Quarry Industry of New York State for 1908*, prepared by David H. Newland, Assistant State Geologist.

Very respectfully
John M. Clarke
Director

State of New York
Education Department
COMMISSIONER'S ROOM

Approved for publication this 7th day of June 1909

A. S. Draper

Commissioner of Education

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 451 ALBANY, N. Y. JULY 15, 1909

New York State Museum

JOHN M. CLARKE, Director

Museum bulletin 132

THE MINING AND QUARRY INDUSTRY

OF

NEW YORK STATE

REPORT OF OPERATIONS AND PRODUCTION DURING 1908

BY

D. H. NEWLAND

PREFACE

This report deals briefly with the current discoveries, developments and production of mineral materials in New York State and follows the general plan of the preceding issues published each year since 1904. The main purpose of its preparation is that it may be of service to those engaged in exploitation of our resources, or otherwise interested in them.

It is proper to mention that the statistics of production relating to the year 1908 have been collected and partially compiled in collaboration with the Division of Mineral Resources of the United States Geological Survey, to whom credit is accordingly due for share in so much of the work. The descriptive text and notes, as well as the treatment of the statistics themselves, however, are independent of such cooperation.

The author desires to express grateful recognition of the assistance given by the mining and quarry enterprises of the State, numbering nearly 2000 in all, which have cordially responded to the requests for information.

INTRODUCTION

The year 1908, which will be remembered as an after-panic year, witnessed a marked reversal of conditions in the mineral industries of the State. To the prosperity and steady expansion that had so long obtained in these industries succeeded general depression and contraction, which continued with little or no relief throughout the 12 months. There were few mines or quarries that did not curtail operations, and many were closed down for at least a part of the year. The decline in productive activity was out of proportion to the rate of growth in the preceding years, so that the outputs of most materials were well below the totals recorded for 1907. Though the setback will doubtless prove only a temporary feature, it is certain that some time must elapse before the former activity is fully restored.

The census of production that has been conducted for the present and previous issues of this report covers some 30 different materials which are mined or quarried in this State. The total value of the output reported for 1908 based upon the materials in their crude or first marketable forms was $29,519,785. Compared with the total of $37,141,006 recorded in 1907 this showed a decrease of $7,621,221, or about 20 per cent. The output in 1907 was the largest ever made in the State, though it did not greatly exceed that of 1906 which was valued at $37,132,832. The corresponding total for 1905 was $35,470,987 and for 1904 $28,812,595, or a little less than the total for last year.

Among the different departments of the mineral industry iron mining was one that experienced the full measure of the depression, as it also had been among the first to respond to the prosperous conditions of the preceding years. The output amounted to 697,473 long tons against 1,018,013 tons in 1907. Under favorable conditions, instead of this decrease, there would have been without doubt a large gain that might have set a new mark for the industry in New York. The production was made by 10 mining companies as compared with 13 who reported active in 1907. The loss was shared by all the districts though in larger portion by the mines on the Clinton hematite belt which has been under recent development, while the Adirondack magnetite mines made the most favorable showing. The value of the iron produced in 1908 was $2,098,247.

The clay materials aggregated in value $8,918,863, as compared with $12,688,868 in the preceding year. The decrease of about 30 per cent was due both to a smaller output by the plants and to a reduction in market values. The combined output of brick, tile, fireproofing and terra cotta used for building purposes was valued at $6,071,850 as against $8,909,392 in 1907. In 1906 these materials represented a value of $11,063,433. The number of building brick made last year was 1,066,533,000 of which 817,-459,000, or about three fourths, represented common brick from the Hudson river region. Along with the decline in building materials there was a large decrease in the ceramic industry, the value of the pottery manufactures amounting to $1,653,241 as compared with $2,240,895 in 1907. The number of plants that were engaged in clay manufacturing of all kinds was 240, or two less than in 1907.

The value of the quarry products for 1908 was $6,615,614 against $7,890,327 in the preceding year, a falling off of 16 per cent. The total was divided according to the various uses into: building stone $1,264,403; monumental stone $139,077; curb and flagstone $928,511; crushed stone $2,659,016; other uses $1,624,607. The output of slate, millstones and limestone used in making hydraulic cement is not included in the figures. Of the different kinds of stone, granite was the one to show a gain and this was accounted for by its increased use for paving blocks and crushed stone. The quarries of the State are able to supply almost every variety of rock for building and other purposes, though there is a large importation from other states.

The manufactures of hydraulic cement contributed a production last year valued at $2,254,758. In 1907 the value amounted to $2,971,820. Of the product last year 1,988,874 barrels valued at $1,813,622 consisted of portland cement and 623,588 barrels valued at $441,136 of natural rock cement. The latter industry has shown a steady decline for a number of years past due to general conditions in the trade. On the other hand the situation in the portland cement industry may be expected to improve and there is every prospect that the State will soon have a much larger share in the production than at present.

From the salt mines and wells there was obtained last year 9,005,311 barrels valued at $2,136,736. The showing was better relatively than in many other branches of the mineral industry; as compared with the figures for 1907 (9,657,543 barrels valued at $2,449,178) there was a falling off in production of less than 7 per cent. For many years the output of the State increased very rapidly and it now amounts to about one third of the total for the entire country. Onondaga county where salt making was first introduced more than a century ago still held the leading place last year, though most of its product was not put into marketable form but was consumed for the manufacture of soda products. Livingston and Wyoming counties lead in the production of rock and brine salt respectively for the trade.

The mines and quarries of gypsum contributed an output of 318,046 short tons, or nearly the same as in 1907 when it amounted to 323,323 short tons. The value of the different gypsum materials including plaster of paris, wall plaster and gypsum sold in crude condition was $760,759 in 1908 against $751,556 in the preceding year. The gypsum industry has grown remarkably in the last few years, the output of the State having increased nearly tenfold in the decade from 1898. With the inexhaustible supplies afforded by the local deposits and the unrivaled facilities for reaching the principal eastern markets there is every prospect that the production will soon reach even greater proportions.

The combined value of the petroleum and natural gas produced in the State last year was $3,059,308 against $2,536,349 in 1907. The quantity of petroleum taken from the wells amounted to 1,160,128 barrels valued at $2,071,533 as compared with 1,052,324 barrels valued at $1,736,335 in the preceding year. The natural gas production was valued at $987,775 against $800,014 in 1907; the volume of gas amounted to 3,860,000,000 cubic feet against 3,052,145,000 in the preceding year. The exhaustion of both the petroleum and natural gas pools does not seem to be imminent, judging from the records of production for recent years.

A product of which the State has almost a natural monopoly is fibrous talc, which is found in St Lawrence county in extensive deposits and of superior quality. The material is consumed mostly in the paper trade and is shipped to all parts of the country as well as to foreign mills. The output of ground talc last year amounted to 70,739 short tons valued at $697,390 and showed a good gain over the total for 1907 which was reported as 59,000 short tons with a value of $501,500.

The garnet mines in the Adirondacks were worked last year on a much reduced scale. The output of 2480 short tons valued at $79,890 was less than half that for 1907, when 5709 short tons with a value of $174,800 was reported. The decline may be ascribed to the smaller demand for abrasive materials during the year.

Crystalline graphite was mined in Essex, Warren and Saratoga counties. The output amounted to 1,932,000 pounds valued at $116,100 against 2,950,000 pounds valued at $106,951 in 1907.

The mineral springs of the State reported sales last year of 8,007,092 gallons valued at $877,648, or about the same as in the preceding year. Saratoga county with the famous Saratoga and Ballston springs contributed about $175,000 to the total value.

Among the other mineral products of the State last year were apatite, carbon dioxid, clay, diatomaceous earth, emery, feldspar, marl, millstones, metallic paint, slate, pigment, pyrite, quartz, slate, sand and sand lime brick, the collected value of which amounted to $1,904,472 as compared with $2,318,764 in 1907.

Mineral production of New York in 1904

PRODUCT	UNIT OF MEASUREMENT	QUANTITY	VALUE
Portland cement	Barrels	1 377 302	$1 245 778
Natural rock cement	Barrels	1 881 630	1 207 883
Building brick	Thousands	1 293 538	7 473 122
Pottery	....	....	1 438 634
Other clay products	....	....	2 502 948
Crude clay	Short tons	8 950	17 164
Emery	Short tons	1 148	17 220
Feldspar and quartz	Long tons	8 703	28 463
Garnet	Short tons	3 045	104 325
Glass sand	Short tons	11 080	8 484
Graphite	Pounds	3 132 927	110 500
Gypsum	Short tons	151 455	424 075
Iron ore	Long tons	619 103	1 328 894
Millstones	....	....	21 476
Metallic paint	Short tons	4 740	55 768
Slate pigment	Short tons	3 132	23 876
Mineral waters	Gallons	8 000 000	1 000 000
Natural gas	1000 cubic feet	2 399 987	552 197
Petroleum	Barrels	1 036 179	1 700 770
Pyrite	Long tons	5 275	20 820
Salt	Barrels	8 724 768	2 102 748
Roofing slate	Squares	18 000	86 150
Slate manufactures	....	....	7 441
Granite	....	....	221 882
Limestone	....	....	2 104 095
Marble	....	....	478 771
Sandstone	....	....	1 800 697
Trap	....	....	408 406
Talc	Short tons	65 000	455 000
Other materials[a]	....	....	1 600 000
Total value	....	....	$28 812 595

[a] Includes apatite, carbon dioxid, diatomaceous earth, fullers earth, marl and sand. The value is partly estimated.

Mineral production of New York in 1905

PRODUCT	UNIT OF MEASUREMENT	QUANTITY	VALUE
Portland cement	Barrels	2 117 822	$2 046 864
Natural rock cement	Barrels	2 257 698	1 590 689
Building brick	Thousands	1 512 157	10 054 597
Pottery	....	....	1 620 558
Other clay products	....	....	2 603 861
Crude clay	Short tons	6 766	16 616
Emery	Short tons	1 475	12 452
Feldspar and quartz	Long tons	17 000	48 500
Garnet	Short tons	2 700	94 500
Glass sand	Short tons	9 850	7 765
Graphite	Pounds	3 897 616	142 948
Gypsum	Short tons	191 860	551 193
Iron ore	Long tons	827 049	2 576 123
Millstones	....	....	22 944
Metallic paint	Short tons	6 059	70 090
Slate pigment	Short tons	2 929	22 668
Mineral waters	Gallons	8 000 000	1 000 000
Natural gas	1000 cubic feet	2 639 130	607 000
Petroleum	Barrels	949 511	1 566 931
Pyrite	Long tons	10 100	40 465
Salt	Barrels	8 575 649	2 303 067
Roofing slate	Squares	16 460	94 009
Slate manufactures	....	....	1 000
Granite	....	....	253 955
Limestone	....	....	2 411 456
Marble	....	....	774 557
Sandstone	....	....	2 043 960
Trap	....	....	623 219
Talc	Short tons	67 000	469 000
Other materials*a*	....	....	1 800 000
Total value	....	....	$35 470 987

a Includes apatite, carbon dioxid, diatomaceous earth, fullers earth, marl, sand and sand lime brick. The value is partly estimated.

Mineral production of New York in 1906

PRODUCT	UNIT OF MEASUREMENT	QUANTITY	VALUE
Portland cement	Barrels	2 423 374	$2 766 488
Natural rock cement	Barrels	1 691 565	1 184 211
Building brick	Thousands	1 600 059	9 688 289
Pottery	. . . .	. . . .	1 795 008
Other clay products	. . . .	. . . .	2 472 003
Crude clay	Short tons	5 477	9 125
Emery	Short tons	1 307	13 870
Feldspar and quartz	Long tons	13 660	44 350
Garnet	Short tons	4 729	159 208
Glass sand	Short tons	9 000	8 600
Graphite	Pounds	2 811 582	96 084
Gypsum	Short tons	262 486	699 455
Iron ore	Long tons	905 367	3 393 009
Millstones	. . . .	. . . .	22 442
Metallic paint	Short tons	2 714	29 140
Slate pigment	Short tons	2 045	15 960
Mineral waters	Gallons	8 000 000	1 000 000
Natural gas	1000 cubic feet	3 007 086	766 579
Petroleum	Barrels	1 043 088	1 721 095
Pyrite	Long tons	11 798	35 550
Salt	Barrels	9 013 993	2 131 650
Roofing slate	Squares	16 248	57 771
Slate manufactures	. . . .	. . . .	4 150
Sand lime brick	Thousands	17 080	122 340
Granite	. . . .	. . . .	255 189
Limestone	. . . .	. . . .	2 963 829
Marble	. . . .	. . . .	400 915
Sandstone	. . . .	. . . .	1 070 829
Trap	. . . .	. . . .	847 403
Talc	Short tons	64 200	541 600
Other materials[a]	. . . .	. . . .	1 850 000
Total value	. . . .	. . . .	$37 132 832

[a] Includes apatite, arsenical ore, carbon dioxid, diatomaceous earth, fullers earth, mar
and sand and gravel exclusive of glass sand.

Mineral production of New York in 1907

PRODUCT	UNIT OF MEASUREMENT	QUANTITY	VALUE
Portland cement	Barrels	2 108 450	$2 214 090
Natural rock cement	Barrels	1 137 279	757 730
Building brick	Thousands	1 366 842	7 424 294
Pottery	...	...	2 240 895
Other clay products	...	...	3 023 679
Crude clay	Short tons	3 927	6 163
Emery	Short tons	1 223	13 057
Feldspar and quartz	Long tons	8 723	36 230
Garnet	Short tons	5 709	174 800
Glass sand	Short tons	1 200	1 380
Graphite	Pounds	2 950 000	106 951
Gypsum	Short tons	323 323	751 556
Iron ore	Long tons	1 018 013	3 750 493
Millstones	...	...	21 806
Metallic paint	Short tons	5 269	59 521
Slate pigment	Short tons	620	3 700
Mineral waters	Gallons	8 000 000	1 000 400
Natural gas	1000 cubic feet	3 052 145	800 014
Petroleum	Barrels	1 052 324	1 736 335
Pyrite	Long tons	49 978	162 430
Salt	Barrels	9 657 543	2 449 178
Roofing slate	Squares	11 686	53 625
Slate manufactures	...	...	1 175
Sand lime brick	Thousands	16 610	109 677
Granite	...	...	195 900
Limestone	...	...	3 182 447
Marble	...	...	1 571 936
Sandstone	...	...	1 998 417
Trap	...	...	941 627
Talc	Short tons	59 000	501 500
Other materials*a*	...	...	1 850 000
Total value	...	...	$37 141 006

a Includes apatite, arsenical ore, carbon dioxid, diatomaceous earth, fullers earth, marl and sand and gravel exclusive of glass sand.

Mineral production of New York in 1908

PRODUCT	UNIT OF MEASUREMENT	QUANTITY	VALUE
Portland cement	Barrels	1 988 874	$1 813 622
Natural rock cement	Barrels	623 588	441 136
Building brick	Thousands	1 066 533	5 200 951
Pottery			1 653 241
Other clay products			2 064 671
Crude clay	Short tons	4 697	11 605
Emery	Short tons	690	8 860
Feldspar and quartz	Short tons	16 413	68 148
Garnet	Short tons	2 480	79 890
Graphite	Pounds	1 932 000	116 100
Gypsum	Short tons	318 046	760 759
Iron ore	Long tons	697 473	2 098 247
Millstones			18 341
Metallic paint	Short tons	5 750	54 500
Slate pigment	Short tons	922	7 376
Mineral waters	Gallons	8 007 092	877 648
Natural gas	1000 cubic feet	3 860 000	987 775
Petroleum	Barrels	1 160 128	2 071 533
Pyrite	Long tons	23 775	104 798
Salt	Barrels	9 005 311	2 136 736
Sand and gravel			1 130 291
Sand lime brick	Thousands	8 239	55 688
Slate			111 217
Granite			367 564
Limestone			3 119 835
Marble			692 857
Sandstone			1 711 585
Trap			723 773
Talc	Short tons	70 739	697 390
Other materials*a*			333 648
Total value			$29 519 785

a Includes apatite, carbon dioxid, diatomaceous earth and marl.

CEMENT

The past year was a critical period for the cement trade. The depression which marked the last quarter of 1907 continued throughout the following 12 months with little or no abatement so far as the market for cement was concerned. Though production was kept down to a relatively low level in an effort to maintain some relation with the needs of consumers, the close of the year found most plants holding in stock a larger share of their output than usual and market conditions affording small encouragement for the immediate future. While the current season will witness, doubtless, a substantial betterment in the trade, the indications based on the first months pointed to slow progress extending over some time rather than a rapid recovery.

The combined production of portland and natural cement in New York State amounted in 1908 to 2,612,462 barrels valued at $2,254,-758. In 1907 the combined total was 3,245,729 barrels and the value $2,971,820. There was thus a decrease in output of 633,267 barrels, or nearly 20 per cent. The loss was mostly in the natural product which reached the lowest figure attained in a great many years.

Of portland cement the output of 1,988,874 barrels valued at $1,813,622 as against 2,108,450 barrels valued at $2,214,090 in the preceding year showed a decline of less than 6 per cent. The value of the cement per barrel, however, averaged only $.91 in 1908 compared with $1.05 in 1907. There were seven companies who operated during the whole or part of the year, or two less than in 1907. The works of the Hudson Portland Cement Co. at Hudson and of the Iroquois Portland Cement Co. at Caledonia were closed down throughout the season. The former company was recently bought out by the Atlas Portland Cement Co., a Pennsylvania corporation, which it is understood will dismantle the plant and erect new works at Greenport with a capacity of 5000 barrels a day. The plant of the Iroquois Portland Cement Co. was taken over in May 1908 by the Marengo Portland Cement Co. After extensive improvements the latter company intended to restart operations this spring. The Seaboard Cement Co. of Alsen and the Knickerbocker Portland Cement Co. of New York were organized during the year to engage in cement manufacture in the Hudson river region.

In the natural cement industry the main feature of the year's record was a further decline of production which amounted to 623,588 barrels valued at $441,136 against 1,137,279 barrels valued at $757,730 for 1907. There were six firms who were operative, or two less than in the preceding year. Of the total, three companies in the Rosendale district contributed 579,588 barrels with a value of $419,936.

The accompanying table gives the production of both portland and natural cement in New York State since 1890.

Production of cement in New York

YEAR	PORTLAND CEMENT		NATURAL CEMENT	
	Barrels	Value	Barrels	Value
1890	65 000	$140 000	3 776 756	$2 985 513
1891	87 000	190 250	3 931 306	3 046 279
1892	124 000	279 000	3 780 687	3 074 781
1893	137 096	287 725	3 597 758	2 805 387
1894	117 275	205 231	3 446 330	1 974 463
1895	159 320	278 810	3 939 727	2 285 094
1896	260 787	443 175	4 181 918	2 423 891
1897	394 398	690 179	4 259 186	2 123 771
1898	554 358	970 126	4 157 917	2 065 658
1899	472 386	708 579	4 689 167	2 813 500
1900	465 832	582 290	3 409 085	2 045 451
1901	617 228	617 228	2 234 131	1 117 066
1902	1 156 807	1 521 553	3 577 340	2 135 036
1903	1 602 946	2 031 310	2 417 137	1 510 529
1904	1 377 302	1 245 778	1 881 630	1 207 883
1905	2 117 822	2 046 864	2 257 698	1 590 689
1906	2 423 374	2 766 488	1 691 565	1 184 211
1907	2 108 450	2 214 090	1 137 279	757 730
1908	1 988 874	1 813 622	623 588	441 136

CLAY

The manufacture of clay materials is the largest of the mineral industries of the State. The clays are mostly of the commoner grades but they are widespread in their distribution and well adapted for building brick, which is the leading product. Every section and nearly every county of the State is represented in that branch of the industry. Paving brick, fire brick, drain tile, sewer pipe, building tile and fireproofing are also made in certain sections from local clays.

The resources in white burning clays or kaolin, on the other hand, are limited. Some deposits on Long Island and Staten Island approach kaolin in color and burning qualities though they are employed mainly for terra cotta. The dearth of these clays has been a drawback to the development of the ceramic industry in the State, but of late this branch has shown considerable progress. The kaolin used is shipped to the potteries from other states or is imported from Europe. Porcelain and semiporcelain tableware, porcelain electrical supplies, sanitary ware, as well as the common grades of pottery, are now quite important items in the list of clay manufactures.

Production of clay materials

Details of the production of clay materials in New York State during the last two or three years are given in the tables herewith. The figures are based on reports received from practically all of the manufacturers in every department. A comparison of the values reported for the different products in the tables shows that the industry experienced a decided setback in 1908. The year was one of great depression in nearly all lines of clay manufactures, contrasting strongly with the three preceding years when there was unexampled prosperity. The demand for clay building materials was specially poor, due to the small amount of new construction undertaken in New York and other large cities of the State. With the decline in demand there was an accompanying decrease in the prices received for the materials which reached a level below that of any recent year. Another factor that affected adversely the trade in building brick was the large stocks carried over by the plants from the preceding season. This was particularly influential in the Hudson river region which supplies the New York market. The final months of 1908 witnessed a gradual betterment in the conditions that continued into the current year. It is generally expected that the industry will soon regain a measure at least of its former prosperity.

The aggregate value of the clay manufactures of all kinds in 1908 was $8,918,863. Compared with the total for the preceding year, which was $12,688,868, there was a falling off of $3,770,005, or about 30 per cent, in the reported value. Of the 61 counties in the State 44 were represented in 1908 as having an output of this class of mineral materials. The number of individual plants in operation was 240 as compared with 242 in 1907 and 265 in 1906.

Among the different materials, building brick had the largest aggregate decrease. The total value reported by the manufacturers of these materials was $5,200,951 against $7,424,294 in 1907, showing a decline of $2,223,343. Of the aggregate, common brick accounted for $5,064,194 as compared with $7,201,525, and front and fancy pressed brick for $136,757 as compared with $222,769 for the preceding year. The production of vitrified paving brick was valued at $211,289 against $184,306, showing an increase for the year. Fire brick and stove lining amounted to a value of $545,951 against $624,033. The manufactures of drain tile amounted to $273,134 against $162,167; and of sewer pipe to $133.716 against $463,500. The production of terra cotta was valued at $709,360 as compared with $1,224,300 in 1907; fireproofing at $91,377 as compared with $45,672; and building tile at $70,162 as compared with $215,126. In addition there were produced miscellaneous materials, including flue lining, fire tile and shapes, conduit pipes, sidewalk brick and acid-proof brick, the collected value of which amounted to $29,080 against $104,575 in 1907. The potteries of the State reported an output valued at $1,653,241 as compared with $2,240,895 in the preceding year.

Production of clay materials

MATERIAL	1906	1907	1908
Common brick	$9 302 165	$7 201 525	$5 004 194
Front brick	386 124	222 709	130 757
Vitrified paving brick	178 011	184 306	211 289
Fire brick and stove lining	527 059	624 033	545 051
Drain tile	166 045	162 167	273 134
Sewer pipe	95 142	463 500	133 716
Terra cotta	1 037 387	1 224 300	709 360
Fireproofing	120 282	45 672	91 377
Building tile	217 475	215 126	70 162
Miscellaneous	129 402	104 575	29 080
Pottery	1 705 008	2 240 895	1 653 241
Total	$13 955 300	$12 688 808	$8 918 863

A distribution of the production among the counties in which it was made shows that Ulster county held first place last year in regard to value of output. It reported a total of $819,947, made up almost wholly of building brick. In 1907 the county ranked second to Onondaga county. Rockland county advanced from third to second place with a total of $800,603, represented entirely by building brick. Orange county which stood fifth in 1907 advanced to the fourth place with a value of $747,637. Onondaga county fell from first to the fifth place and contributed $734,880; it is the largest manufacturer of pottery in the State. The other counties that reported a value of over $100,000 in 1908 were Erie ($632,048); Dutchess ($605,371); Richmond ($587,919); Albany ($538,213); Kings ($416,474); Columbia ($283,720); Saratoga ($245,878); Monroe ($240,087); Schenectady ($238,750); Rensselaer ($233,-995); Westchester ($226,062); Ontario ($214,246); Steuben

($166,544); Suffolk ($125,430); and Chautauqua ($128,866). Queens county should also be included in the foregoing list, but the value is withheld in order not to reveal the individual figures.

Production of clay materials by counties

COUNTY	1906	1907	1908
Albany	$675 090	$540 341	$538 213
Allegany	111 683	111 751	44 627
Broome	12 000	8 250	*a*.........
Cattaraugus	35 500	41 234	*a*.........
Cayuga	17 860	14 832	13 280
Chautauqua	99 085	113 350	128 866
Chemung	90 000	88 940	89 000
Clinton	4 800	4 250	3 920
Columbia	489 750	433 357	283 720
Dutchess	975 410	781 262	605 371
Erie	804 159	786 703	632 048
Fulton	2 600	2 000	*a*.........
Greene	399 298	237 620	113 373
Jefferson	36 722	20 352	17 897
Kings	575 973	574 863	416 474
Livingston	*a*.........	*a*.........	53 555
Madison	16 800	32 000	12 550
Monroe	341 870	583 664	240 087
Nassau	163 700	105 000	71 390
Niagara	10 832	16 282	10 892
Oneida	103 263	98 315	88 606
Onondaga	1 094 635	1 331 443	734 880
Ontario	343 040	342 810	214 246
Orange	1 170 695	789 297	747 637
Queens	*a*.........	*a*.........	*a*.........
Rensselaer	296 762	321 016	233 995
Richmond	896 789	1 121 524	587 919
Rockland	1 767 012	1 258 467	800 603
Saratoga	388 450	256 275	245 878
Schenectady	92 700	83 637	238 750
Seneca	39 525	*a*.........	nil
Steuben	209 052	186 124	166 544
Suffolk	138 500	127 610	125 430
Tompkins	*a*.........	7 100	*a*.........
Ulster	1 465 457	1 324 476	819 947
Warren	34 500	25 000	*a*.........
Washington	22 033	22 990	11 295
Westchester	536 189	390 773	226 062
Other counties*b*	496 886	505 960	401 808
Total	$13 955 300	$12 688 868	$8 918 863

a Included under "Other counties."
b Includes in 1906 Genesee, Herkimer, Livingston, Montgomery, New York, Queens, St Lawrence, Tioga, Tompkins and Wayne counties. In 1907 includes Genesee, Herkimer, Livingston, Montgomery, New York, Queens, St Lawrence, Seneca and Wayne counties. In 1908, aside from counties marked *a* are included Genesee, Herkimer, Montgomery, New York, St Lawrence, Tioga and Wayne counties.

Manufacture of building brick

The output of common building brick in 1908 amounted to 1,056,769,283 valued at $5,064,194. In addition there were made 9,763,649 front and fancy pressed brick valued at $136,757, making an aggregate output of brick for building purposes of 1,066,532,932 valued at $5,200,951. The total number manufactured in the preceding year was 1,366,842,000 valued at $7,424,294, consisting of 1,351,591,000 common brick valued at $7,201,525 and 15,251,000 front and fancy pressed brick valued at $222,769. The manufacture of building brick was carried on in 37 counties by a total of 196 companies or individuals. In 1907 there were 36 counties represented with a total of 205 producers, and in 1906 there were 37 counties with 213 producers.

The average price received for common brick throughout the State in 1908 was $4.79 a thousand as compared with $5.33 a thousand in 1907 and $5.98 a thousand in 1906. Front and fancy pressed brick averaged $14 a thousand in 1908 against $14.61 a thousand in 1907 and $15.68 a thousand in 1906. The prices are based on sales at the yards.

Production of common building brick

COUNTY	1907		1908	
	Number	Value	Number	Value
Albany	60 210 000	$300 141	55 677 000	$255 013
Broome	1 500 000	8 250	*a*	*a*
Cayuga	1 804 000	10 832	1 309 000	8 480
Chautauqua	7 967 000	49 876	8 046 011	50 910
Chemung	13 289 000	88 940	14 833 000	89 000
Clinton	650 000	4 250	640 000	3 920
Columbia	84 972 000	433 357	61 971 000	283 720
Dutchess	149 130 000	781 262	132 003 973	605 371
Erie	52 282 000	309 697	35 960 325	202 043
Greene	35 876 000	184 620	12 094 825	57 723
Jefferson	2 667 000	20 352	2 321 749	17 807
Livingston	*a*	*a*	490 000	3 555
Monroe	25 198 000	148 462	15 617 815	63 730
Nassau	17 000 000	102 000	11 675 000	63 890
Niagara	2 681 000	16 282	1 543 014	10 802
Oneida	15 126 000	94 560	17 430 000	83 731
Onondaga	22 460 000	146 160	14 028 000	76 030
Ontario	2 600 000	18 200	2 768 000	16 040
Orange	154 502 000	789 297	151 869 000	747 037
Rensselaer	15 488 000	78 540	10 949 400	60 723
Richmond	39 205 000	180 569	25 308 500	89 083

Production of common building brick (*concluded*)

COUNTY	1907 Number	1907 Value	1908 Number	1908 Value
Rockland	232 018 000	$1 258 467	173 026 004	$800 603
St Lawrence	800 000	6 000	*a*	*a*
Saratoga	50 798 000	254 385	51 034 000	243 728
Steuben	3 287 000	29 818	2 051 890	21 870
Suffolk	20 130 000	124 610	20 108 150	122 430
Tompkins	1 100 000	7 100	*a*	*a*
Ulster	200 404 000	1 322 476	179 165 560	816 947
Warren	5 020 000	25 000	*a*	*a*
Washington	2 750 000	14 300	*a*	*a*
Westchester	59 307 000	323 553	39 801 577	184 774
Other counties *b*	11 370 000	70 169	9 452 400	52 639
Total	1 351 591 000	$7 201 525	1 056 769 283	$5 064 194

a Included under "Other counties."
b Includes in 1907 Genesee, Herkimer, Livingston, Montgomery, New York, Queens, St Lawrence and Wayne. In 1908 the following counties are included: Allegany, Broome, Fulton, Herkimer, Montgomery, St Lawrence, Schenectady, Tioga, Tompkins, Warren and Washington.

Hudson river region. The greater part of the brick production of the State is made in the Hudson river valley, in the stretch from Rensselaer and Albany counties southward to Westchester county. There is probably no other region in the whole country that compares with it in the number of brick plants and annual output. Practically the entire product belongs to the common grade of building brick and is marketed in New York city and vicinity. With its facilities for cheap water transportation the industry of this section has little competition from other centers of brick manufacture that ship by railroad.

The brick clays are found in terraced deposits on either side of the river, reaching from water level to a hight of 300 feet or more in places. They are interbedded with, and sometimes covered by, layers of sand and gravel. Their thickness may exceed 100 feet, though usually it is much less. Some clay is obtained by dredging from the bed of the river, such operations being conducted in the vicinity of Haverstraw. The Hudson river clays are generally of marly character, due to the presence of from 3 to 6 per cent of lime carbonate.

In the nine counties included in the region, there are more than 125 brickyards with a combined capacity of about one and a half billion of brick a year. The average product, however, falls considerably short of that amount.

During the past season, the depressed conditions in the building trade were responsible for a very small output from this region. On the whole business was poorer than for a long time with prices throughout most of the year at so low a level as to afford little or no profit to the manufacturer. An unfavorable factor in the early part of the year was the large number of brick carried over by the yards from 1907, amounting to fully 300,000,000 according to reliable estimates, though by a purposed delaying of active operations beyond the usual time its influence upon prices was lessened to a considerable extent. The season of manufacture was very short, as the yards also closed earlier than usual. The prevailing prices in the early part of the year were about $4.50 a thousand. As the season advanced there was a gradual improvement; and shipments were made at $4.75 and $5 in the summer. The upward tendency continued throughout the fall and early winter with the revival of building operations, and at the close of the year the prices reached as high as $6.75 and $7. The stocks held along the river at the beginning of the current season were smaller than usual.

The total number of common brick marketed from the Hudson river region in 1908 was 817,459,000 as compared with an output of 1,051,907,000 in 1907. The figures for the past year were compiled from the sales of the yards, while for the preceding year they were based on the output, so that some allowance must be made in comparing the totals. The actual production last year was no doubt smaller than the number reported as sold. The largest production on record was in 1906, when it amounted to 1,230,692,000, or about 50 per cent more than that for 1908.

There were 114 plants in operation last year with an average product of 7,171,000 against a total of 122 plants and an average product of 8,622,000 in 1907.

The value of the brick averaged $4.75 a thousand in 1908 and $5.20 a thousand in 1907, showing a decline of nearly 10 per cent. The highest price received in recent years was in 1905 when the average for the entire output of the region was $6.54 a thousand.

The decline in the production was generally distributed over the nine counties of the region, and all reported a smaller total than in 1907, though the largest falling off was in Rockland and Ulster counties. Ulster county stood first in size of output, as in the preceding year, with a total of 179,166,000 valued at $816,947. Rockland county maintained its place as the second largest producer in the region and reported a total of 173,926,000 valued at $800,603. Orange county ranked third in the list, the same as in 1907; its total was 151,869,000 valued at $747,637.

Output of common brick in the Hudson river region in 1907

COUNTY	NUMBER OF PLANTS	OUTPUT	VALUE	AVERAGE PRICE PER M
Albany	10	60 210 000	$300 141	$4 99
Columbia	6	84 972 000	433 357	5 10
Dutchess	19	149 130 000	781 262	5 23
Greene	5	35 876 000	184 620	5 15
Orange	9	154 502 000	789 297	5 11
Rensselaer	7	15 488 000	78 540	5 07
Rockland	31	232 018 000	1 258 467	5 42
Ulster	27	260 404 000	1 322 476	5 08
Westchester	8	59 307 000	322 553	5 46
Total	122	1 051 907 000	$5 471 713	$5 20

Output of common brick in the Hudson river region in 1908

COUNTY	NUMBER OF PLANTS	OUTPUT	VALUE	AVERAGE PRICE PER M
Albany	12	55 677 000	$255 013	$4 57
Columbia	4	61 971 000	283 720	4 57
Dutchess	18	132 004 000	605 371	4 58
Greene	4	12 095 000	57 723	4 77
Orange	8	151 869 000	747 637	4 92
Rensselaer	6	10 949 000	60 723	5 54
Rockland	29	173 926 000	800 603	4 60
Ulster	26	179 166 000	816 947	4 55
Westchester	7	39 802 000	184 774	4 64
Total	114	817 459 000	$3 812 511	$4 75

Other clay materials

The manufacture of paving brick was carried on during 1908 in Chautauqua, Greene, Onondaga and Steuben counties. There were five companies engaged in the business and the output was 14,570,-140 valued at $211,289. In 1907 there were but four producing companies with a production of 12,296,000 valued at $184,306. The additional producer in the 1908 production was Chautauqua county, which made no output in 1907.

Fire brick and stove lining were manufactured in Albany, Erie, Kings, Rensselaer, Richmond, Schenectady, Washington and Westchester counties by a total of 12 companies. The output of fire brick amounted in value to $442,967 and of stove lining to $102,984, a combined value of $545,951. In 1907 the value of the fire brick was $384,217 and of stove lining $239,816, a combined value of $624,033, 13 companies being represented in the output. The 1908 figures include a small production of acid proof brick from Onondaga county.

Draintile and sewer pipe were made in Albany, Cayuga, Erie, Genesee, Madison, Monroe, New York, Oneida, Onondaga, Ontario, Saratoga, Steuben and Washington counties, the only change in counties from 1907 being the addition of New York county with a small production of sewer pipe. The output of draintile was valued at $273,134 against $162,167 in 1907, and the output of sewer pipe was $133,716 against $463,500 in 1907. There were 22 companies engaged in these industries as compared with 19 in 1907 and 26 in 1906.

The output of terra cotta, fireproofing and building tile came from Allegany, Chautauqua, Erie, Kings, Monroe, New York, Ontario, Rensselaer, Richmond, Steuben and Westchester counties. Albany, Genesee, Onondaga and Queens counties which produced in 1907 reported no output in 1908, while Erie, Ontario and Steuben counties, not producing in 1907, made an output in 1908. Thirteen companies were active in 1908 as compared with 14 in 1907. The production of terra cotta was valued at $709,360 against $1,224,300 in 1907; fireproofing at $91,377 against $45,672 in 1907; and building tile at $70,162 against $215,126 in 1907. Of the 1907 figures for the building tile output over half consists of roofing tile and the remainder of floor tile and decorative wall tile.

Pottery

Though pottery clays do not occur in abundance within the bounds of New York State, the manufacture of the various grades of pottery is well represented. About the only materials of local origin employed in the industry are the stoneware clay of Onondaga county and the slip clay of Albany, while the products of the potteries embrace stoneware, earthenware, clay tobacco pipes, china tableware, art pottery, porcelain electrical supplies, chemical and sanitary ware, etc. The kaolin used is brought in from other states or imported from England. Much of the stoneware clay comes from New Jersey and the feldspar from Canada.

The number of potteries that were active in 1908 was 25, and of these all but one reported their production. The value of the output as shown by the returns, including an estimate for the single producer not reporting, amounted to $1,653,241, a sum considerably less than that of the preceding year. It may be remarked, however, that the total of $2,240,895 for 1907 was actually about $200,000 in excess of the proper valuation for that year, owing to the inclusion of extraneous material in the returns of electric supplies. The value of such pottery in 1908 was based on the porcelain alone, exclusive of the hardware trimmings.

The following counties were represented in the production: Albany, Erie, Kings, Livingston, Madison, Nassau, Onondaga, Ontario, Schenectady, Suffolk, Washington and Westchester. Onondaga county with six active firms was first in importance of output, which was valued at $637,796. Erie county with two producers stood second and Ontario county with three was third. Onondaga and Erie counties produced most of the tableware. The electric supplies were made chiefly in Schenectady and Ontario counties.

Value of production of pottery

WARE	1906	1907	1908
Stoneware	$84 031	$65 271	$44 712
Red earthenware	30 234	28 296	31 645
Porcelain and semiporcelain *a*	835 000	1 181 162	900 548
Electric and sanitary supplies	768 236	869 378*b*	595 247
Miscellaneous	77 507	96 788	81 089
	$1 795 008	$2 240 895	$1 653 241

a Includes china tableware and cream-colored ware.
b Includes a value of about $200,000 for hardware trimmings used in electric supplies.

Crude clay

In the foregoing tables relating to clay products no account has been taken of the crude clay entering into their manufacture. There are a few producers in the State who do not utilize the crude clay themselves, but ship their output to others for manufacture. Some of the material, like the Albany slip clay for example, is even shipped to points without the State. In 1908 returns were received from eight producers in this branch of the industry whose total shipments amounted to 4697 short tons valued at $11,605. The corresponding total for 1907 was 3927 short tons valued at $6163, and for 1906 it was 5477 short tons with a value of $9125. Besides slip clay the shipments included fire clay, brick clay and the white clay of Staten Island.

EMERY

There was a large falling off in the production of emery last year, the total amounting to 690 short tons valued at $8860 as compared with 1223 short tons valued at $13,057 in 1907. The decrease in quantity was thus 533 tons and in value $4197. The output was also smaller than in any recent year previously, the total for 1906 having been 1307 short tons valued at $13,870; for 1905, 1475 short tons valued at $12,452 and for 1904, 1148 short tons valued at $17,220. The statistics have been based on the crude material before grinding or other treatment except the rough cobbing to which it was subjected at the quarries. The rock was all shipped from Peekskill and distributed among the manufacturers of emery wheels and other emery abrasives, whose plants are mainly located in Pennsylvania.

The list of producers in 1908 included: Blue Corundum Mining Co., Easton, Pa.; Keystone Emery Mills, Frankford, Pa.; Tanite Co., Stroudsburg, Pa., and J. R. Lancaster, Peekskill. The total emery mined, as above given, exceeded somewhat the shipments from Peekskill, as these amounted to 579 short tons.

The emery is a mixture of corundum, spinel and magnetite, the corundum of course being the ingredient of most value. It occurs as a very hard and dense rock, of dark gray to nearly black color, sometimes showing the corundum in well developed prismatic crystals of lighter shade. There is considerable variation in regard to the mineral composition, and Magnus[1] who examined thin sections of the material reports that in some specimens the corundum constitutes over 50 per cent of the mass, while in others it is almost wanting. The emery occurs in the form of lenses and bands within an area of gabbroic intrusives known as the Cortlandt series. It is to be regarded, doubtless, as a segregation of the

[1] Abrasives of New York. N. Y State Geol. 23d An. Rep't. 1904.

igneous magma, quite similar in general features to the titaniferous magnetites that occur in gabbros and anorthosites. Some of the deposits were worked in the early days for iron ore, but the material proved too refractory for successful treatment in the furnace. The emery is not regarded in the trade as equal to the Grecian or Turkish product, though it is said to be very serviceable when made into wheels with a vitreous bond.

FELDSPAR

The small demand for feldspar among pottery manufacturers last year was reflected in a decreased output of the better grades of the mineral, i. e. the potash feldspars free from iron or other obnoxious impurities. On the other hand, the production of unselected feldspar, such as finds employment for roofing material, poultry grit, abrasive purposes, etc. showed a substantial gain over the quantity reported in 1907.

The occurrence of pegmatite, from which feldspar is obtained, is limited in this State to the Adirondack Precambric area and the southeastern region of crystalline rocks. The pegmatite forms dikes, sheetlike masses or irregular bodies, usually in association with larger masses of allied intrusive rocks of which it often constitutes but a coarser phase. Most occurrences have the composition of granite, containing besides feldspar a considerable proportion of quartz and smaller amounts of mica, hornblende or rarely pyroxene. The presence of iron-bearing minerals has an important bearing upon the quality of the product, since for pottery purposes it is absolutely essential that the feldspar contain nothing more than a trace of iron. When occurring in segregated particles their elimination can be effected sometimes by careful cobbing. In addition to those already enumerated, pyrite, magnetite and tourmalin are among the iron-bearing minerals commonly found in pegmatite. For pottery uses the potash feldspars (microcline and orthoclase) are the only ones produced in New York State and they seem to have the preference in that trade, though for what reason is not well understood. The plagioclase feldspars are found in the Adirondack pegmatites which are chiefly quarried for roofing material.

The quarries now active in the State are situated in Westchester, Essex and Saratoga counties. Those near Bedford, Westchester co. produce most of the pottery feldspar. They are operated by P. H. Kinkel's Sons who grind a large part of the output before shipment. The quartz obtained in the quarry operations also finds sale as a material for making wood filler. In the Adirondacks, the Claspka Mining Co. with a quarry near Batchellerville, Saratoga co. produces a small quantity of pottery feldspar, which is shipped crude to Trenton, N. J. The Crown Point Spar Co., Inc., is a recent enterprise with quarries and a mill near Crown Point. The property at Rock pond, Essex co. formerly owned by the International Mineral Co. is now operated by the Barrett Manufacturing Co. who use the output in the manufacture of "amatite" roofing.

Some attention was given during the past year to an occurrence of pegmatite near Corinth, Saratoga co. The American Feldspar & Milling Co. was organized to develop the property, but no shipments were made, except for experiment. The pegmatite is stated to occur in a dike 60 feet wide and traceable for 2000 feet on the line of strike. The outcrop is about 3 miles distant and 700 feet above the railroad.

The total production of feldspar in New York in 1908 amounted to 14,613 short tons valued at $53,148. The prices received at the quarries for the pottery grades ranged from $3 a long ton for crude to $6.50 a short ton for ground feldspar. The common grades of crushed feldspar brought about $3 a short ton.

GARNET

The conditions in the abrasive garnet trade during 1908 did not encourage activity among the Adirondack mines and the production showed a decided drop from the record figures reported in the preceding year. The demand was affected to some extent by an accumulation of stocks in the hands of abrasive manufacturers carried over from 1907, though the consumption of abrasives of all kinds was no doubt much below normal. With the improvement noticed in the latter part of the year it is anticipated that market conditions will be more favorable during the current season.

No new companies engaged in the mining of garnet during 1908. The North River Garnet Co. with mines and mill on Thirteenth lake carried on as heretofore the largest operations. For three months in the first part of the year the company's plant was closed down, while in the last three months it ran on a reduced scale. On Gore mountain the mines of H. H. Barton & Sons Co. produced only a fraction of their usual quota. The Crehore mine near North River was inoperative throughout the year. The property of G. W. Smith near Keeseville was taken over under lease by Mr E. Schaaf-Regelman and produced a small quantity of massive garnet, mostly for the foreign market.

A recent feature of the garnet trade has been the appearance of Spanish garnet, which was first imported in 1907. The mineral is said to occur in detrital material along streams and is collected and sorted by hand. It can hardly replace the domestic garnet to any great extent owing to its fine size, though it is imported at a cost much below that attainable by mines in this country. The imports of Spanish garnet in 1907 amounted to a value of $6432. They fell off in 1908 to $2095. The average value placed on the consignments was about $16.40 a long ton, or less than one half the average selling price of domestic garnet. There is no duty on abrasive garnet. Garnet sands are of frequent occurrence along the streams and lake shores of the Adirondacks, but so far as observed they are too finely comminuted to be valuable for abrasive uses.

The output of the Adirondack mines in 1908 amounted to 2480 short tons valued at $79,890. In the preceding year the total was 5709 short tons with a valuation of $174,800. The sales of garnet in 1908 amounted to 1996 short tons. Notwithstanding the small demand, there was no falling off in the prices which have been maintained at about the same level for many years past. The margin of profit is small and most of the output is sold on contracts covering the annual requirements of the consumers.

GRAPHITE

In the graphite industry of New York the most notable feature of the past year was a large decrease in production. The amount reported by the Adirondack mines was 1,932,000 pounds with a valuation of $116,100. In 1907 the total was 2,950,000 pounds valued at $106,951, while in 1906 it was 2,811,582 pounds valued at $96,084. The largest amount reported in any recent year was in 1905 when the production reached 3,897,616 pounds valued at $142,948.

The statistics indicate a considerable gain in the value of the material which averaged 6 cents a pound in 1908 as compared with 3.6 cents a pound in the preceding year, though this may be partly due to a somewhat different standard used in reporting the values last year. The graphite after its first separation from the gangue undergoes repeated refinings, by which products of varying purity and market value are secured. The finest grades of crystalline graphite from the Adirondacks bring from 10 to 20 cents or even more a pound.

The American mine owned by the Joseph Dixon Crucible Co. has for a number of years furnished most of the graphite obtained in the State. The mine is situated at Graphite near Hague on Lake George. The graphite occurs as disseminated scales or flakes in a quartzite of the Precambric series. The quartzite is quite widely distributed in the eastern Adirondacks, but no other locality has been found where it carries so coarse a flake and at the same time is so free from other scaly minerals. The Joseph Dixon Crucible Co. owns a mine also just north of Hague near the lake shore and on Lead hill west of Ticonderoga, but these were not operated in 1908. The product of the American mine, after the first separation at the local mill, is refined at the company's mill at Ticonderoga.

The Crown Point Graphite Co. was operative for a short time only during the past year, as it was engaged in building a mill at the mines near Chilson lake, Essex co. The deposit belongs to a different type than that described above, the graphite occurring in bunches and scattered flakes within beds of crystalline limestone. The process of separation devised by the company is said to consist in crushing the limestone to a powder and recovering the graphite on screens. Where the quartzite is the gangue, the graphite is separated by gravity or flotation methods. The Crown Point Graphite Co. has a finishing mill at Crown Point Center.

The Glens Falls Graphite Co. made a small production in 1908 from the mines at Conklingville, Saratoga co. The graphite is found in a quartz schist, a feldspathic representative of the Precambric sediments.

Extensive beds of the graphitic quartzites occur near Rock pond, Essex co., 7 miles north of the American mine, and have been under development by John D. Bly of Crown Point. The work done in the past year has shown the existence of a rich seam, which assays up to 20 per cent carbon, and a very large area of lower grade rock.

The Saratoga Graphite Co. has been recently organized for the purpose of working a deposit near Saratoga Springs.

GYPSUM

The production of gypsum is made in the central and western parts of the State, in Madison, Onondaga, Cayuga, Monroe, Genesee and Erie counties. The gypsum is associated with the Salina formation, which carries the rock salt beds, and is quarried or mined along the outcrop from Madison county westward. The Salina formation can be traced to the east into Albany county but with such diminishing thickness as to preclude the occurrence of workable gypsum deposits in that section.

Most of the workings are situated near the southern edge of the belt occupied by the Salina beds. The gypsum occurs below the Bertie waterlime, which marks the top of the formation, and above the salt horizon. Its beds are regularly disposed with respect to the inclosing rocks, dipping with them at a very low angle to the south. They afford a practically inexhaustible supply. Their greatest thickness along the outcrop is in Onondaga county where as much as 60 feet have been found, divided into several layers. In the western part of the State the beds range from 4 to 8 feet thick. Many of the borings for salt have encountered gypsum, showing its continuation for long distances to the south along the dip of the strata.

The present extensive utilization of gypsum in New York has been due to the establishment of plants for the manufacture o plaster of paris, stucco, wall plasters, etc., a branch of the industry that has grown to large proportions in the last decade. Formerly the principal outlet for the mineral was in agriculture, which still affords a small market for the ground product. Another use that has become quite important is in the portland cement trad a considerable proportion of the gypsum listed in the accompanying table as sold in crude state is shipped to points in Pennsylvania and elsewhere for admixture with portland cement.

The gypsum rock as found in New York has a gray or drab color. It contains a varying amount of impurities in the form of lime and magnesia carbonates, clay and silica or quartz, besides a small proportion of organic matter which is the principal coloring agent. In calcination the organic substances are broken up or driven off. The impurities on the average amount to from 5 to 15 per cent of the total.

Manufacture. Most of the gypsum that is mined or quarried in the State undergoes some kind of preparation before shipment. In the case of the material sold to portland cement manufacturers, however, a portion is shipped in lump form to be later crushed at the cement works and mixed with the clinker before grinding. A part of the gypsum, also, is crushed at the mines and shipped in bags. A very small quantity is sold in calcined condition to cement makers who prefer to use the material in that form. For agricultural purposes the gypsum is always ground to a very fine product which is marketed under the name of land plaster. The manufacture of calcined plasters calls for the greater part of the output of gypsum at the present time. By calcination the gypsum is converted into plaster of paris or stucco in which form it is used largely as a structural material, also for casts, molds and in plate glass manufacture. The calcination is performed generally in vertical kettles, covered at the top, and provided with mechanical stirrers for keeping the material in constant motion so as to prevent overburning. In one or two of the more recently erected plants, the calcining process is carried out in a rotary kiln of the Cummer type, which has an important advantage of being continuous in its work. For plaster of paris the temperature of burning does not exceed 350° to 380° F. as a maximum. Wall plasters and cement plasters are made from plaster of paris by addition of some organic or mineral substance which serves to retard the setting process. Wall plasters may also contain some fiber, such as hair, fibrous talc, or a wood fiber made from basswood or willow. A product known as wall board consists of layers of paper cemented with plaster of paris, forming thin sheets which can be nailed to the studding and joists of buildings in the place of lath and which are then covered with a coat of plaster.

The manufacture of gypsum products is carried on in the State by other than the producing companies, and there are a number of plants that make wall plaster, etc. from gypsum purchased from the local mines or imported. The imported gypsum comes mostly from Nova Scotia. No attempt to secure information of such operations has been made in connection with this report.

The mining companies who are engaged in the calcined plaster trade have plants in Syracuse and vicinity; at Wheatland and Garbutt, Monroe co.; Oakfield, Genesee co.; and Akron, Erie co.

Production and trade. The market conditions last year were rather poor, with a recession in both demand and prices. The decrease in portland cement production affected the trade to some extent, while the falling off in building operations was an adverse factor in the calcined plaster industry. However, the production of crude gypsum showed only a small loss as compared with the record output of 1907. The total reported by the mining companies was 318,046 short tons against 323,323 short tons in 1907, a decrease of 5277 tons, or less than 2 per cent for the year. The output was 262,486 short tons in 1906, 191,860 short tons in 1905, and 151,445 short tons in 1904.

The growth of the industry suffered only a temporary check, and its prosperity in the future seems assured by reason of the inexhaustible character of the local deposits and their exceptional situation with regard to the principal markets. Within the last 10 years the State has gained a leading position in the trade, the production having increased during that period from an average of about 30,000 tons annually to the present total of over 300,000 tons.

Of the quantity of crude rock that was reported as mined or quarried last year about 65 per cent was converted into calcined plasters by the producing companies. Their figures showed a total of 160,930 short tons of plaster of paris, wall plaster, etc. valued at $574,757 as compared with a total output of 145,684 tons valued at $533,265 in 1907. The amount of ground gypsum or land plaster made was 5712 short tons valued at $14,255 against 15,441 short tons valued at $38,859 in 1907. The portion sold in crude condition to cement manufacturers and for other purposes amounted to 95,146 short tons valued at $171,747 against 91,060 short tons valued at $179,432 in the preceding year.

Production of gypsum

MATERIAL	1907		1908	
	Short tons	Value	Short tons	Value
Total output, crude	323 323	....	318 046	....
Sold crude	91 060	$179 432	95 146	$171 747
Ground for land plaster	15 441	38 859	5 712	14 255
Wall plaster, etc. made	145 684	533 265	160 930	574 757
Total value	....	$751 556	....	$760 759

The Gypsum Products Co. has engaged in the mining of gypsum near Oakfield, Genesee co., shipping a small quantity last year for the first time.

The Interstate Gypsum Co. is a new organization, owning a property near Akron, Erie co.

The Empire Gypsum Co. has erected a calcining plant at Garbutt, Monroe co. The gypsum is taken from the company's mine near by, which is worked on the room and pillar system. The calcining plant is equipped with a jaw crusher, rolls, cylindrical dryer, pulverizer and three 11-ton vertical kettles. The gypsum is manufactured into plaster of paris and wall plaster. A part of the crude rock is shipped to glass factories in the Pittsburg district where it is calcined and employed as cement in the grinding of plate glass.

IRON ORE

The iron mining industry received a decided setback last year and for the first time in a number of years the output showed a decrease. During the decade from 1898 to 1907 the State's production gained steadily, reaching a total of 1,018,013 long tons in the latter year as compared with 179,951 long tons in 1898. Under favorable conditions of the iron trade there would have been a further increase last year, which probably would have set a new mark for the industry in New York. Several properties had been brought to the producing stage when the depression began and compelled a suspension of operations. With the contraction of the market the operative mines reduced their output and a few closed down entirely. Before the end of 1908 conditions showed some improvement, though it can hardly be expected that prosperity will be fully restored much before the close of the current year.

There were 10 companies which reported a production of iron ore in 1908 against 13 companies so reporting in the preceding year. One new producer, the Cheever Iron Ore Co., was added to the list, so that out of the number of active companies in 1907 four were closed down throughout the year.

The accompanying table gives the production of iron ore distributed according to kinds for the period 1890–1908 inclusive. The statistics covering the years previous to 1904 are taken from the annual volumes of the *Mineral Resources* published by the United States Geological Survey. The production of magnetite as given in the table represents high grade ore and concentrates suitable for furnace use and not the mine output which is considerably larger as much of the ore is concentrated.

Production of iron ore in New York State

YEAR	MAGNETITE	HEMATITE	LIMONITE	CARBONATE	TOTAL	Total value	Value per ton
	Long tons	Long tons	Long tons	Long tons	Long tons		
1890	945 071	196 035	30 968	81 319	1 253 393	....	.....
1891	782 729	153 723	53 152	27 612	1 017 216	....	.....
1892	648 564	124 800	53 694	64 041	891 099	$2 379 267	$2 67
1893	440 693	15 890	35 592	41 947	534 122	1 222 934	2 29
1894	....	....	....	....	242 759	....	.....
1895	260 139	6 769	26 462	13 886	307 256	598 313	1 95
1896	346 015	10 789	12 288	16 385	385 477	780 932	2 03
1897	296 722	7 664	20 059	11 280	335 725	642 838	1 91
1898	155 551	6 400	14 000	4 000	179 951	350 999	1 95
1899	344 159	45 503	31 975	22 153	443 790	1 241 985	2 80
1900	345 714	44 467	44 891	6 413	441 485	1 103 817	2 50
1901	329 467	66 389	23 362	1 000	420 218	1 006 231	2 39
1902	451 570	91 075	12 676	Nil	555 321	1 362 987	2 45
1903	451 481	83 820	5 159	Nil	540 460	1 209 899	2 24
1904	559 575	54 128	5 000	Nil	619 103	1 328 894	2 15
1905	739 736	79 313	8 000	Nil	827 049	2 576 123	3 11
1906	717 365	187 002	1 000	Nil	905 367	3 393 609	3 75
1907	853 579	164 434	Nil	Nil	1 018 013	3 750 493	3 68
1908	663 648	33 825	Nil	Nil	697 473	2 098 247	3 01

The total output reported by the mines in 1908 was 697,473 long tons valued at $2,098,247. Compared with the preceding year when the output amounted to 1,018,013 long tons valued at $3,750,493 there was a decrease of 320,540 tons or 31 per cent. The average value of the ore was $3.01 a ton against $3.68 a ton in 1907.

Classified as to variety the production consisted of 663,648 long tons of magnetite valued at $2,031,457 and 33,825 long tons of hematite valued at $66,790. A large portion of the magnetite was marketed in the form of concentrates with an approximate content of 65 per cent iron, while the rest was lump ore ranging from about 52 to 60 per cent iron. The hematite ore was mainly derived from the Clinton deposits and probably averaged about 40 per cent in iron content.

In the Adirondack region the active producers were Witherbee, Sherman & Co., and the Port Henry Iron Ore Co. at Mineville; the Chateaugay Ore & Iron Co. at Lyon Mountain; the Cheever Iron Ore Co. at Port Henry; and the Benson Mines Co. at Benson Mines. The producers in southeastern New York were the Sterling Iron & Railway Co., who operated the Lake mine, and the Hudson Iron Co., who operated the Forest of Dean mine.

The output of hematite was made by the Old Sterling Iron Co. with mines near Antwerp, Jefferson co., and by the Furnaceville Iron Ore Co. of Ontario Center, Wayne co. and C. A. Borst of

Clinton, Oneida co. The Rossie Iron Ore Co., the Fair Haven Iron Co. and the Ontario Iron Ore Co., who were active in 1907, made no output last year.

Mineville. Though there was less activity in mining last year, the properties of both Witherbee, Sherman & Co. and the Port Henry Iron Ore Co. continued in steady operation. The output of the two companies totaled 502,663 long tons as compared with 751,155 long tons in 1907, which was the largest amount hitherto recorded for the district. The Old Bed mines, which include the "21," Joker and Bonanza workings, contributed the larger part of the total, the remainder coming from the Harmony shafts, Smith mine and Barton hill tunnel which belong to Witherbee, Sherman & Co.

Despite the contraction of mine output there has been no interruption in the progress of the works of development and improvement that were started previous to the depression, and the conditions of the properties may be considered as better than at any time in the past. With the return of a normal iron market the companies will be able to profit from an increased output which can be maintained from present ore reserves for several years to come. The combined productive capacity of the two companies is now about 1,000,000 tons a year.

The principal underground developments during the year were connected with the new shaft of the Port Henry Iron Ore Co. on the "21" property, and the exploration in the Joker-Bonanza, Harmony and Barton hill mines by Witherbee, Sherman & Co. The shaft sunk by the former company was bottomed at a depth between 500 and 600 feet and the ore was encountered within a short distance. It will have a hoisting capacity of 1500 tons a day, more than twice the output formerly secured from the incline.

The results obtained with the diamond drill in exploring the southerly part of the Joker-Bonanza ground during the past year afforded much new information regarding the form of that deposit and brought to light the existence of another magnetite body below it. In the southernmost sections some change was shown in the shape of the Bonanza-Joker body as previously mapped,[1] though the exact modifications can not now be fully stated. Drill holes put down into the foot wall from the workings above revealed a

[1] See description by J. F. Kemp in N. Y. State Mus. Bul. 119. 1908. p. 72 *et seq.*

magnetite deposit apparently of large extent. In one hole 71 feet of ore was encountered split into two portions by a horse, and in another hole 34 feet of solid ore was found. The ore probably belonged to a single seam, but further exploration will be necessary to clear up the relations. The Harmony mines, the most recent of the Mineville workings, made a good record and will be capable of a large yield when in full operation. Some of the ore now mined can scarcely be distinguished from the rich, coarsely crystalline magnetite found in the Barton hill group. The latter mines were not actively exploited last year as work was concentrated on the new adit designed to tap the ore bodies in their downward extension. The adit was driven to a point 500 feet north of the old Arch pit, or 1700 feet from the portal. Ore was found in a nearly continuous seam, but of variable thickness, sharply compressed in places and again swelling out to form a body of good size. The deposits were thus far from exhausted by the early operations.

Lake Sanford. The exploration of the titaniferous magnetites near Lake Sanford, Essex co. was continued in 1908 with results fully commensurate with anticipations. Up to October 1, 1908 the Tahawus Iron Co., who recently took over the properties, had drilled 26 holes on the Sanford ore body to an average depth of 199 feet without reaching the lower limits of the ore. The available ore in this deposit alone amounts to many millions of tons. Experiments in mill treatment have confirmed the view that a portion of the titanium can be removed by crushing and passing over magnetic separators with additional benefit as regards the iron content. A product averaging about 60 per cent iron and not more than 6 or 7 per cent titanium can be made without difficulty. The company has secured a charter for the construction of an electric road which will probably be built from Lake Champlain to Tahawus. An alternative route has been surveyed from the Adirondack branch of the Delaware & Hudson Railroad.

Lyon Mountain. Owing to the destruction by fire of the new mill early in 1908 the mines at Lyon Mountain did not make the expected output last year. The loss of the plant was critical, inasmuch as many improvements in the way of a central electric power station, new trackage, etc. had just been completed that should have led to important economies. The old mill was again placed in commission.

Benson mines. The Benson Mines Co. was operative during a part of the year, but made only a fraction of the output of which the mines are capable. An important addition to the equipment that is to be provided according to the company's plans is a nodulizing plant for the treatment of the concentrates. The process of nodulizing iron ore was first applied to the residues obtained from burning pyrites in the manufacture of acids. Experiments with the process on some magnetic concentrates have shown that it has a beneficial effect in lowering the sulfur content and agglomerating the fine particles into lumps that are better adapted for the blast furnace. The apparatus employed for the purpose consists of a long rotary kiln usually heated by gas, into which the material is fed and where it is subjected to a temperature that produces incipient fusion. The rotary motion of the kiln prevents the formation of a solid cake and the product comes out in the form of nodules or lumps from ¼ to ½ inch in diameter. Though magnetite is one of the most resistant minerals to heat, it is said that the nodulizing of concentrates can be effected without difficulty, probably owing to the small quantities of impurities present and the influence of the highly heated gases which may reduce it partially to metallic condition.

Salisbury mine. This mine situated 2 miles north of Salisbury Center, Herkimer co. is expected to begin shipments during the current season. It has been under development for some time by the Salisbury Steel & Iron Co. The mining and milling plants have been nearly completed and the railroad extended 6 miles north from Dolgeville to the mill site at Irondale. The mill has a capacity of 500 tons crude ore a day; it is equipped with Ball-Norton drum and belt type of magnetic separators which have been so successfully used elsewhere on Adirondack magnetites. A cobbing machine is designed to effect a preliminary separation of the lump ore as mined into furnace and mill products. The mill stands at the base of the hill below the main shaft with which it is connected by means of a Bleichert aerial tramway 6250 feet long. Gas engines of 750 horse power using producer gas will supply power for the mines and mill. The installation and developments completed and under way call for an expenditure of about $500,000.

Clinton hematite mines. There was a cessation of development work on the Clinton belt last year and only two mines made any shipments. The producers were C. A. Borst at Clinton and the Furnaceville Iron Ore Co. at Ontario Center. A resumption of activity may be expected with the return of favorable trade conditions.

A detailed account of the Clinton ores and their local occurrence was published in 1908 by the New York State Museum.[1] The resources in these ores were found to be very large, the estimated quantity available in the three principal areas taking into account only seams above 18 inches thick and within 500 feet from the surface reaching 600,000,000 tons. Though, of course, much of this will not be commercially mineable for a long time to come, yet there are large quantities so situated as to permit extraction at a comparatively low cost.

MILLSTONES

The production of millstones, although much smaller than formerly, is still an important industry in certain sections of Ulster county. This area furnishes nearly all of the millstones produced in the United States, the other producing states being Pennsylvania, Virginia and North Carolina. In addition to the domestic supply a large number of millstones and buhrstones are annually imported from France and other European countries.

The New York stone is known as Esopus stone, a name derived from a former name for Kingston, which was an important shipping point. It is a firm white conglomerate varying in fineness from that of a coarse sandstone to a coarse conglomerate with some pebbles 2 inches in diameter. It is composed of partially rounded whitish quartz pebbles in a silicious matrix. The stone is obtained from certain beds of Shawangunk grit, a rock lying unconformably upon the Hudson River shales and formerly correlated with the Oneida conglomerate, but now known to lie in the horizon of the Salina. Its thickness varies from 50 to 200 feet.

The quarrying operations are carried on along the northern border of the Shawangunk mountain, in Rochester and Wawarsing townships, Ulster co., mainly along the line of the New York, Ontario and Western Railroad at Wawarsing, Kerhonkson, Accord, Kyserike, Granite, St Josen and Alligerville, while New Paltz and Kingston also are shipping points.

Quarrying is carried on with but a small equipment, the stone being worked out by hand bars, wedges and sometimes with the use of powder. It is dressed by hand at the quarry into millstones and chasers. The millstones are dressed into stones varying in

[1] Iron Ores of the Clinton Formation in New York State, by D. H. Newland & C. A. Hartnagel. N. Y. State Mus. Bul. 123.

diameter from 15 inches to 54 inches or even larger and are used for the grinding of paint, grain, cement, gypsum etc. The chasers are stones dressed to run on edge on a platform of blocks of the same material, and are used in grinding heavier material such as quartz, feldspar, barite etc. Depending largely on their weight for crushing the fragments, they are of large size varying in diameter, as produced in 1908, from 54 to 72 inches.

The production has been decreasing steadily for some years owing to the introduction of roller mills in flour making, and ball mills, emery stones and other improved grinding machinery in other industries. The demand for millstones is now largely from corn-grinding mills in the south and from gypsum and plaster mills, while chasers are still used in quartz, feldspar and barite mills.

Millstones varied in value in 1908 from $3 for 15 inch, to $45 for 54 inch stones, while chasers sold for $30 to $70 varying in size from 54 to 72 inches.

The production in 1908 amounted to $18,341 as against $21,806 in 1907. The number of millstones made was 871 and chasers 182, and in addition a small production of blocks and disks for use in roll crushers.

MINERAL PAINT

Under this title are included the natural mineral colors which require nothing more than washing or grinding in their preparation for the market. The raw materials found in the State that have been used for the purposes are iron ore, ocher, shale and slate. New York is also one of the leading producers of artificial pigments, specially those made from lead, but the crude materials are mostly derived from without the State.

The Clinton hematite affords an excellent base for the manufacture of metallic paint and mortar color. The beds with a relatively high iron content are employed, as they possess the softness and uniformity of texture, as well as depth of color, which are generally sought for. The mines owned by C. A. Borst at Clinton, Oneida co. and those of the Furnaceville Iron Co. at Ontario, Wayne co. supply most of the ore for paint. The hematite from the former locality belongs to the oolitic variety and that sold to paint manufacturers carries about 45 per cent iron. The ore in Ontario county is of fossil character carrying about 40 per cent iron. The red hematite from St Lawrence county is also used for metallic paint.

The manufacturers of metallic paint and mortar colors in New York State include the Clinton Metallic Paint Co. of Clinton, the William Connors Paint Manufacturing Co. of Troy, and the Rossie Iron Ore Paint Co. of Ogdensburg. A considerable quantity of the Clinton hematite is shipped to points outside of the State for manufacture.

Both shale and slate are ground for mineral paint, their color depending largely upon the amount and character of the iron oxids present. When there is a large proportion of ferric oxid the shale and slate may be sold as metallic paint. At Randolph, Cattaraugus co. beds of green, brown and bluish shale occurring in the Chemung formation have been worked by the Elko Paint Co. In years past red shale from the base of the Salina formation has been obtained in Herkimer county for paint. A similar material occurring in the Catskill series has been worked at Roxbury, Delaware co. The red slate of Washington county, which belongs to the Cambric, is also ground for paint. The Algonquin Red Slate Co. of Worcester, Mass. and A. J. Hurd of Eagle Bridge, are producers of this material.

A product known as mineral black has been made from the slates found in the Hudson River series. Certain beds contain considerable carbon in a finely divided almost graphitic condition which gives them a dense black color.

The ferruginous clay called ocher is of common occurrence, but is not now worked in the State. Sienna, a deep brown variety of ocher, is found near Whitehall.

The production of mineral paints in 1908 was as follows: metallic paint and mortar color, 5750 short tons valued at $54,500; slate pigment 922 short tons valued at $7376. In 1907 the following quantities were reported: metallic paint and mortar color 5269 short tons valued at $59,521; slate pigment 620 short tons valued at $3700. These quantities include only the output made by manufacturers within the State from local materials.

MINERAL WATERS

New York has held for a long time a leading position among the states in the utilization of mineral waters. The different springs, of which over 200 have been listed as productive at one time or another, yield a great variety of waters in respect to the character and amount of their dissolved solids. There are some that contain relatively large amounts of mineral ingredients and are specially valuable for medicinal purposes; Saratoga Springs, Ballston Springs, Richfield Springs and Lebanon Springs are among the more noted localities for such waters. Numerous other springs are more particularly adapted for table use, containing only sufficient mineral matter perhaps to give them a pleasantly saline taste. Both kinds of waters are generally carbonated and sold in small bottles.

Of late there has developed an important business in the sale of spring waters which can hardly be classed as mineral in the common acceptance of the word, but which are extensively consumed for office and family use in the larger towns and cities. Their employment depends upon their freedom from harmful impurities, in which feature they are generally superior to the local supplies. In so far as such waters are an article of commerce they may well be included in a canvass of the mineral water industry. They are distributed usually in large bottles or carboys in noncarbonated condition.

Character of mineral waters. Among the spring waters that contain mineral ingredients in appreciable quantity those characterized by the presence of alkalis and alkaline earths are the most abundant in this State. The dissolved bases may exist in association with chlorin and carbon dioxid, as is the case with the springs of Saratoga county, or they may be associated chiefly with sulfuric acid as illustrated by the Sharon and Clifton springs.

The mineral waters of Saratoga Springs and Ballston are found along fractured zones in Lower Siluric strata, the reservoirs occurring usually in the Trenton limestone. They are accompanied by free carbon dioxid, which together with chlorin, sodium, potassium, calcium and magnesium, exists also in dissolved condition. The amount of solid constituents in the different waters varies from less than 100 to over 500 grains per gallon. Large quantities of table and medicinal waters are bottled at the springs for shipment to all parts of the country. The carbon dioxid which issues from the wells at Saratoga is likewise an important article of commerce.

The waters at Richfield Springs contain the elements of the alkali and alkaline earth groups together with sulfuric acid and smaller amounts of chlorin, carbon dioxid and sulfureted hydrogen. They are employed for medicinal baths as well as for drinking purposes. The springs issue along the contact of Siluric limestone and Devonic shales. Sharon Springs is situated to the east of Richfield Springs and near the contact of the Lower and Upper

Siluric. Clifton Springs, Ontario co. and Massena Springs, St Lawrence co. are among the localities where sulfureted waters occur and are utilized.

The Oak Orchard springs in the town of Byron, Genesee co. are noteworthy for their acid waters which contain a considerable proportion of aluminum, iron calcium and magnesium, besides free sulfuric acid.

The Lebanon spring, Columbia co. is the single representative in the State of the class of thermal springs. It has a temperature of 75° F. and is slightly charged with carbon dioxid and nitrogen.

Ordinary spring waters. The greater quantity of spring waters consumed in the State belongs to the nonmedicinal, noncarbonated class, represented by such springs as the Great Bear, Deep Rock, Mount View, Sun Ray, Chemung etc. The waters are obtained either from flowing springs or from artesian wells and are shipped in carboys or in tank cars to the principal cities where they are bottled and distributed by wagons among the consumers. The essential feature of such waters is their freedom from noxious impurities. This is generally safeguarded by the care exercised in the handling of the waters which are also regularly examined in chemical and bacteriological laboratories.

Carbon dioxid. Besides the sale of mineral waters, an extensive industry has been developed in the State in connection with carbon dioxid which is given off by some of the springs. The collection, storage and shipment of the gas for use in making carbonated beverages and for other purposes have received attention at Saratoga Springs, where the industry has become of greater importance even, as regards the value of the output, than the trade in the mineral waters themselves. Over 30 wells have been driven in that vicinity for gas alone. The carbon dioxid is pumped to the surface together with the water, separated from the latter at the well and then conveyed to gas holders, similar to those used by municipal gas plants, where it is stored preparatory to charging into cylinders. The cylinders are made to withstand the heavy pressure necessary to liquefy the gas and are of two sizes, the smaller holding about 25 pounds and the larger from 40 to 50 pounds. The principal producers are the New York Carbonic Acid Gas Co., the Lincoln Spring Co. and the Natural Carbonic Gas Co. The gas is said to be superior to that produced by the calcination of magnesite or other artificial methods.

List of springs. The following list includes the names and localities of most of the springs in the State that are employed commercially, as shown by a canvass of the industry:

NAME	LOCALITY
Baldwin Mineral Spring	Cayuga, Cayuga co.
Diamond Rock Spring	Cherry Creek, Chautauqua co.
Mrs D. N. Palmer	West Portland, Chautauqua co.
Breesport Oxygenated Mineral Spring	Breesport, Chemung co.
Chemung Valley Spring	Elmira, Chemung co.
Chemung Spring	Chemung, Chemung co.
Lebanon Mineral Spring	Lebanon, Columbia co.
Monarch Spring	Matteawan, Dutchess co.
Mt Beacon Spring	Matteawan, Dutchess co.
Mount View Spring	Poughkeepsie, Dutchess co.
Ayers Amherst Mineral Spring	Williamsville, Erie co.
Lehn Rock Spring	Williamsville, Erie co.
Beauty Spring Water Co.	Lyons Falls, Lewis co.
Cold Spring	New York Mills, Oneida co.
Glacier Spring	Franklin Springs, Oneida co.
Lithia Polaris Spring	Boonville, Oneida co.
G. Wells Smith	Franklin Springs, Oneida co.
W. W. Warner	Franklin Springs, Oneida co.
Geneva Lithia Spring	Geneva, Ontario co.
Red Cross Spring	Geneva, Ontario co.
Crystal Spring	Oswego, Oswego co.
Deep Rock Spring	Oswego, Oswego co.
Great Bear Spring	Fulton, Oswego co.
J. Heagerty	Oswego, Oswego co.
Os-we-go Spring	Oswego, Oswego co.
Redstone Spring	Oswego, Oswego co.
Mammoth Spring	North Greenbush, Rensselaer co.
Shell Rock Spring	East Greenbush, Rensselaer co.
City Spring	Rosebank, Richmond co.
Massena Mineral Spring	Massena Springs, St Lawrence co.
Arondack Spring	Saratoga Springs, Saratoga co.
Artesian Lithia Spring	Saratoga Springs, Saratoga co.
Chief Spring	Saratoga Springs, Saratoga co.
Congress Spring	Saratoga Springs, Saratoga co.
Geyser Spring	Saratoga Springs, Saratoga co.
Hathorn Spring	Saratoga Springs, Saratoga co.
Hides Franklin Spring	Saratoga Springs, Saratoga co.
High Rock Spring	Saratoga Springs, Saratoga co.
Patterson Mineral Spring	Saratoga Springs, Saratoga co.
Saratoga Seltzer Spring	Saratoga Springs, Saratoga co.
Saratoga Carlsbad Spring	Saratoga Springs, Saratoga co.
Star Spring	Saratoga Springs, Saratoga co.
Washington Lithia Spring	Saratoga Springs, Saratoga co.
Red Jacket Spring	Seneca Falls, Seneca co.
H. W. Knight	Seneca Falls, Seneca co.

NAME	LOCALITY
Pleasant Valley Mineral Spring	Rheims, Steuben co.
Sulphur Spring	Hornby, Steuben co.
Setauket Spring	Setauket, Suffolk co.
Sparko Crystal Spring	Huntington, Suffolk co.
Elixir Spring	Clintondale, Ulster co.
Sun Ray Spring	Ellenville, Ulster co.
Vita Spring	Fort Edward, Washington co.
Briarcliff Table Water	Briarcliff Manor, Westchester co.
Gramatan Spring Water Co.	Bronxville, Westchester co.
Putnam Spring Water Co.	Peekskill, Westchester co.

Production. The magnitude of the business carried on in connection with the production and sale of mineral waters is shown by statistics received for the year 1908. The number of springs reporting sales was 48, and the amount of water sold was 8,007,-092 gallons valued at $877,648. The value is based on the retail prices, but does not include bottles or carriage. The statistics are known to be incomplete, but it is almost impossible to make a thorough canvass owing to the many changes that take place in the industry from year to year. No account has been made of the water used locally in hotels, sanatoriums etc. The actual value of the production was probably not far from $1,000,000.

In addition the production of carbon dioxid from the wells at Saratoga Springs should be taken into account. In recent years this has amounted to between 4,000,000 and 5,000,000 pounds with an average value probably of about $300,000.

Business in 1908 was generally below the normal. The spring resorts were especially affected by the financial depression and were frequented by greatly reduced numbers. In the case of Saratoga Springs the season was the worst that has been experienced in a long time, due to a combination of circumstances, of which the dissensions among the proprietors of the springs have not been the least influential. The courts were applied to for injunctions against the carbon dioxid producers while a law was passed by the Legislature prohibiting the use of pumps to increase the flow of the springs. A more recent development has been the securing of a legislative enactment to bring the springs under State supervision by purchase of the land on which the more important wells are located.

Analyses of new springs. The following analyses relating to new springs have been reported. The Diamond Rock Spring is situated at Cherry Creek, Chautauqua co., the Redstone Spring at Oswego and the Weedsport Spring at Weedsport, Cayuga co. All are examples of the spring waters of nonmedicinal character that are sold for family and office use. The amounts of dissolved mineral matter are expressed in grains per United States gallon.

	DIAMOND ROCK SPRING	REDSTONE SPRING	WEEDSPORT SPRING
$NaCl$	.48	31.41	.03
$CaSO_4$	9.36	....	8.54
$MgSO_4$	1.88	....	1.29
Na_2SO_4	....	3.40	.22
K_2SO_4	.07	....	....
$CaCO_3$	....	2.10	1.74
$FeCO_3$	....	....	.06
Na_2CO_3	a.43	7.64	....
$MgCO_3$	b3.09	1.17	....
$NaNO_3$	.74	....	....
SiO_2	tr	.35	....
CO_2 (free)	....	....	2.66

a Reported as $NaHCO_3$.
b Reported as $Mg(HCO_3)_2$.

NATURAL GAS

The natural gas fields of the State are found in the central and western parts, south from Lake Ontario. There are 15 counties that contain productive fields. Though scarcely comparable as regards size with the gas pools found in the Appalachian region farther south, the fields appear to have a long life, as instanced by those in Chautauqua county where the first holes were put down over 80 years ago and which are still productive. The gas fields of Cattaraugus county have been under development since 1865. Despite the continuous drain upon the resources, the yield of gas has increased markedly of recent years in response to the greater activity in exploration.

Geological occurrence. The range of the productive gas pools geologically may be said to extend from the base of the Paleozoic sedimentary formations, the Potsdam sandstone, to the Chemung and Portage formations of the Devonic which are near the top of the Paleozoic series as represented in New York. Certain formations, however, are more prolific than others, and the wells in each field, as a rule, derive their main supply from a definite horizon.

Though small amounts of gas have been found in sandstones correlated with the Potsdam, the lowest beds which are the source of any considerable flow are the limestones of Trenton age. The wells of Oswego and Onondaga counties now supplying gas are bottomed in the Trenton, though in many instances secondary contributions are derived from the overlying Utica shale. Elsewhere, as in Oneida and Jefferson counties, these limestones have not afforded any durable supply.

The next higher horizon of importance is at the base of the Lower Siluric and includes the Medina sandstone and its eastern representative, the Oswego sandstone. The occurrence of pools in this formation is of recent discovery, but they now yield a very large portion of the production. The principal field opened since 1890 is in Erie county beginning near Buffalo and extending eastward through the towns of Cheektowaga, Amherst, Lancaster, Clarence, Alden and Newstead. A second field occurs south of Buffalo between that city and Jewettville. The wells at Avon and Caledonia, Livingston co. are said to reach the Medina. In the last two years large pools have been encountered in what is regarded as the white Medina sandstone in northern Chautauqua county, notably at Westfield and Silver Creek. The recent discoveries at Pavilion, Genesee co. are likewise reported to be in that formation.

The remaining formations of the Lower Siluric are made up mostly of shales and limestones. They appear to be relatively poor reservoirs for gas.

In the Devonic system practically all of the formations represented in western New York have been found to contain gas at one or more localities. The most prolific, undoubtedly, are the upper members, the Portage and Chemung shales and sandstones. They are tapped by numerous wells in Allegany, Cattaraugus and Chautauqua counties. The principal gas supplies are derived from southern Allegany and Cattaraugus counties, from the same fields which yield petroleum. Many of the wells yield both gas and oil, and a part of the gas is consumed locally in operating the oil pumps, while the remainder is run into pipe lines for distribution in the neighboring cities and villages. The original wells put down in the Lake Shore belt of Chautauqua county at Fredonia, Brockton, Mayville and Ripley seem to have found the gas mainly in the Chemung shales. The deeper wells that were drilled later encountered reservoirs at different horizons below the Chemung, as far down as the Medina. The Marcellus and Onondaga formations of the Devonic are considered by Bishop[1] to be the sources of the gas at Gowanda, in northern Cattaraugus county.

---

[1] Oil and Gas in Southwestern New York. N. Y. State Geol. 19th An. Rep't. 1901. p. 116.

The geographical limits of the gas fields can only be broadly defined, but it is observable that with one or two exceptions they are situated in the western section of the State in the middle and southern tiers of counties. The wells of Oswego county, near the end of Lake Ontario, represent the most easterly points at which the presence of gas in quantity has been established, and there the pools seem to be confined to small areas. The disturbed condition of the strata has, no doubt, militated against the accumulation of gas in the eastern section of the State.

Production. The information received for the year 1908 showed that there were about 1000 gas wells in the State, the output of which was used for lighting and heating purposes, not including the wells in the oil regions of Cattaraugus and Allegany counties that supplied gas for pumping petroleum. The wells were operated by about 200 individuals and companies. Chautauqua county had more than one half of the total number of producers, though most of them were individuals operating only a single well for private use. Aside from them the production of the fields was largely controlled by companies who have pipe lines and distribute the gas for general consumption.

The production during the past four years is shown in the accompanying table which gives the value of the output for the leading counties as nearly as it can be distributed. The total value in 1908 amounted to $987,775 against a value of $800,014 in 1907, a gain of $187,761 for the year.

Production of natural gas

COUNTY	1905	1906	1907	1908
Allegany-Cattaraugus	$204 430	$247 208	$250 159	$204 730
Chautauqua	26 232	94 345	106 411	153 010
Erie*a*	281 253	317 554	320 199	451 860
Livingston*b*	41 805	52 805	55 780	54 083
Onondaga	16 825	16 385	17 030	13 837
Oswego	13 583	13 182	10 585	12 805
Wyoming*c*	22 872	25 100	30 850	37 431
Total	$607 000	$766 570	$800 014	$987 775

a Includes a part of the production of Genesee county.
b Includes also Seneca, Schuyler, Steuben, Ontario and Yates counties.
c Includes also Niagara and Genesee counties.

The quantity of gas produced in 1908 was approximately 5,800,000,000 cubic feet. In arriving at this total estimates are included for certain producers who were unable to supply exact figures, but as it is only the smaller operators who do not keep records of the flow, the estimate is very close to the actual production. No account is made, however, of the gas consumed by oil producers for pumping. The quantity of gas yielded by the wells in 1907 was 3,052,145,000 cubic feet; in 1906, 3,007,086,000 cubic feet; and in 1905, 2,399,987,000 cubic feet. The value of the natural gas reported by the producing companies varied according to locality from a minimum of 18 cents to a maximum of 50 cents a thousand cubic feet. The general average for the whole State in 1908 was about 26 cents a thousand.

New developments. There was unusual activity shown last year in the drilling of new wells and the results on the whole were very encouraging as indicated by the augmented production.

In Chautauqua county the principal developments have been in the fields near Silver Creek, Sheridan and Westfield, on the shores of Lake Erie, where the gas is found at depths of from 1900 to 2300 feet in what is considered the white Medina sandstone. At Silver Creek and Sheridan the South Shore Natural Gas Fuel Co. and the Silver Creek Gas & Improvement Co. have drilled a number of wells in the past three or four years. The latter company alone has 25 wells. The companies supply Sheridan, Silver Creek, Forestville and Dunkirk. The Welch Gas Co. at Westfield has three producing wells, of which one was completed in 1908. This well found the gas at 2230 feet. The Frost Gas Co. completed five new wells last year making 14 in all. The wells are located in the towns of Sheridan and Pomfret at depths of from 1900 to 2100 feet, and the gas is piped to Dunkirk.

Important developments have been made recently near Pavilion, Genesee co. by the Pavilion Natural Gas Co. and the Alden-Batavia Natural Gas Co. The former company has nine wells which supply gas to Leroy and Pavilion. The Alden-Batavia Co. has eight wells in the same vicinity the flow of which is piped to Pavilion and Batavia. One well was completed in 1908, which gave a flow of 500,000 cubic feet a day from a depth of 1700 feet. The same company drilled a well at Fargo in the town of Darien finding gas at 1249 feet.

PEAT

There have been no practical developments in the utilization of the peat deposits of the State since those mentioned in the issue of this report for the year 1906. The subject has continued to receive much attention, however, and further experiments along similar lines may follow. The results thus far attained in the use of peat for fuel purposes seem discouraging enough though they should be judged perhaps as bearing upon the success of special processes rather than as having much significance with regard to the ultimate outcome of experimentation.

The destruction by fire last year of the peat plant erected by the International Fuel & Power Co. for operation on Black lake unfortunately prevented the publication of any details of its efficiency under working conditions. This was the most extensive enterprise that has yet been undertaken in this country and involved an outlay, it is reported, of about $200,000. The peat was to be excavated by dredging, dried artificially and made into briquets; all the machinery requisite for the work was mounted on a self-propelling barge. Though up to the present no active steps have been taken to rebuild the plant, investigations of the peat deposits in Black lake and vicinity have been under way.

Experiments in connection with the use of peat in paper manufacture, to which reference was made in a previous report, have not yielded any apparent results, so far as the establishment of an industry is concerned. The company that was organized for developing the peat beds near Oswego was a subsidiary of the enterprise at Capac, Mich. which operated for a time making coarse grades of paper from peat. Samples of peat from Oswego and Glens Falls were treated in the Michigan plant, and the material from the former place was reported as well adapted for use in paper.

PETROLEUM

The oil pools found in New York State constitute the northern extension of the Appalachian field which reaches its main development in Pennsylvania, Ohio and West Virginia. They underlie small areas in Cattaraugus, Allegany and Steuben counties near the Pennsylvania border. The first well was drilled in Cattaraugus county in 1865, while Allegany county began producing about 1880. The oil is encountered in fine grained sandstones of dark color belonging to the Chemung formation of the Upper Devonic.

In Cattaraugus county the productive area embraces about 40 square miles, mostly in Olean, Allegany and Carrolton townships. The pools occur at several horizons from 600 to 1800 feet below the surface. The principal ones are the Ricebrook, Chipmunk, Allegany and Flatstone.

The oil field of Allegany county extends across the southern townships of Clarksville, Genesee, Wirt, Bolivar, Alma, Scio and Andover and is divided into several pools that are considered to be more or less independent. The Bolivar, Richburg and Wirt pools have been most productive. The oil is found at depths from 1400 to 1800 feet. The Andover pool lies partly in the town of West Union, Steuben co. and is tapped by wells from 850 to 1000 feet in depth. The discovery of oil in the town of Granger on the Livingston county border has been in some respects the most noteworthy addition to the productive area of late years, since the pool is much farther north than any heretofore found in the State.

There has been little change in the production of petroleum for several years past, though the drilling of new wells is not so actively prosecuted as formerly; the maintenance of the output at a nearly constant level may be ascribed in a large degree to the relative permanence of the pools. Many of the wells drilled 25 years ago or more are still producing a sufficient quantity to make their operation profitable. Practically all of the production is now obtained by pumping. By using gas engines which are fed by the natural gas that accompanies the petroleum the pumps can be worked at small expense, and wells yielding less than a barrel a day are remunerative. The product is transported to the refineries by pipe lines. The following companies handle practically all of the output of the State: The Allegany Pipe Line Co., Columbia Pipe Line Co., Union Pipe Line Co. and Fords Brook Pipe Line Co., all of Wellsville; Vacuum Oil Co. of Rochester, and the Tide Water Pipe Co., Limited, of Bradford, Pa.

The output of petroleum in 1908 amounted to 1,160,128 barrels as compared with 1,052,324 barrels in the preceding year. The following table shows the total in each year since 1891. The statistics are from the *Mineral Resources of the United States Geological Survey*, except those for the years 1904 to 1907 inclusive which have been compiled from the receipts of oil reported by the companies above mentioned.

a Production of petroleum in New York

YEAR	BARRELS	VALUE
1891	1 585 030	$1 [illegible]91 07[illegible]
1892	1 273 343	7[illegible]8 207
1893	1 031 391	66[illegible] [illegible]
1894	942 431	70[illegible] 404
1895	912 948	1 24[illegible] 468
1896	1 205 220	1 420 053
1897	1 279 155	1 005 730
1898	1 205 250	1 008 284
1899	1 320 909	1 708 920
1900	1 300 925	1 759 501
1901	1 206 618	1 460 008
1902	1 119 730	1 530 852
1903	1 162 978	1 849 135
1904	1 036 179	1 709 770
1905	949 511	1 566 931
1906	1 043 088	1 721 095
1907	1 052 324	1 736 335
1908	1 160 128	2 071 533

a The statistics for the years 1891–1903 inclusive are taken from the annual volumes of the *Mineral Resources*.

The records of new wells for 1908 as compiled and published by the *Oil City Derrick* show that about 450 wells were completed during the year in New York State. Of the number 60 were "dry" holes and the increment from the new production amounted to about 750 barrels a day.

PYRITE

The St Lawrence Pyrite Co. with mines at Hermon, St Lawrence co. was the only active producer of pyrite during the past year. The American mine near Gouverneur was closed down in 1907 and, though subsequent exploratory work revealed new supplies of ore, there seems to be little likelihood of a resumption of operations in the near future. The High Falls deposits which were taken over on option by the Oliver Mining Co. made a small output in the way of experiment, but no regular mining was undertaken.

A brief account of the St Lawrence county deposits was given in previous issues of this report. Further details relating to the mining and milling of the ores have been published by Felix A. Vogel of the St Lawrence Pyrite Co.[1] This company acquired

[1] The Mineral Industry. 1908. 16:845–51.

the old Stella mines in 1905 to which it subsequently added other property until its holdings now aggregate about 25,000 acres. At the start Stella no. 2 mine was unwatered and explored, and connection was made with the Stella no. 1 mine situated 800 feet to the south which was found to be on the same vein. A second deposit known as the Anna vein, situated below and 1600 feet southeast of the Stella, was then developed.

The Stella veins dip about 28°, while the shaft on the Anna vein has a slope of 45°. The dip is toward the northwest. The ore is hoisted through no. 1 shaft on the Stella and no. 4 on the Anna vein. In the former mine levels are run at close intervals owing to the flat dip, and the ore is removed by breast stoping. The Anna vein is worked in levels 75 feet apart by stoping and milling. This vein is paralleled by several deposits within the hanging wall which have been intersected by a crosscut from no. 4 shaft. Very little water is encountered in the workings.

The deposits are described by Mr Vogel as bedded veins conformable to the gneisses and schists which inclose them. They are apparently related to certain igneous intrusions, though their precise derivation is not known. The ore carries from 15 to 40 per cent sulfur, the highest grade being found in the old Stella mine. The Anna vein averages 24 per cent.

The mill erected by the St Lawrence Pyrite Co. has a capacity of 500 tons a day. Concentration is effected by Hancock jigs, supplemented by Hartz jigs and Overstrom tables. The concentrates carry from 40 to 48 per cent sulfur. They are shipped to acid burners in the East and Middle West.

SALT

The salt producers of the State felt the effects of the commercial crisis last year, though in respect to output their showing was relatively better than that made by many other branches of the mineral industry. The depression, however, served to check for the time the upward progress of the local trade. For many years the industry had undergone rapid and almost uninterrupted growth which placed it in a leading position among the salt-producing states of the country. The output of nearly 10,000,000 barrels reported in 1907 was about one third of the total recorded for the United States in that year and showed a sixfold increase for the local industry during the last quarter of a century.

The total quantity of salt produced from mines and wells in

1908 was 9,005,311 barrels of 280 pounds against 9,657,543 barrels in the preceding year. The decrease amounted to 652,232 barrels, or a little under 7 per cent. The value of the output was $2,136,736 as compared with $2,449,178 for 1907. The production fell a little short of the quantity reported in 1906, but was larger than any total reported previous to that year.

Expressed on a tonnage basis the output last year amounted to 1,260,743.5 short tons against 1,352,056 short tons in 1907, showing a decrease of 91,312.5 short tons.

A smaller output was indicated in the returns for both brine salt and rock salt, though the former showed relatively a greater loss. It is to be noted, however, that only a part of the brine salt included in the production of the State was actually sold or used in that form. The largest producer of brine, the Solvay Process Co., consumed all of its output in the manufacture of soda products, including soda ash, carbonate, bicarbonate etc. With this single exception the companies who were engaged in the industry marketed their product in the form of rock and brine salt.

There were 32 mines or works that contributed to the production last year, as compared with 33 in 1907. They were distributed among the following counties: Genesee 1, Livingston 3, Onondaga 20, Schuyler 2, Tompkins 3, Wyoming 3. The International Salt Co., which is the largest producer of .the various grades of brine salt for the market, operated three plants: Ithaca works, Ithaca; Cayuga works, Myers and Glen works, Watkins. The Yorkshire works at Warsaw, operated by the company in 1907, were inactive last year. There were no new firms added to the list during the year.

The large number of plants in Onondaga county may be explained by the development of the solar process of salt manufacture in Syracuse and vicinity where it has been carried on for a long time by individuals and companies who have received their supply of brine from wells located on State lands. The brines are distributed among the evaporating plants through pipe lines. The control of the lands and wells was relinquished by the State last year through a sale to the Onondaga Pipe Line Co. and the Mutual Pipe Line Co. of Syracuse. The property was transferred for the nominal sum of $15,000. This terminated the long established interests of the State in salt manufacture. The output of solar salt in Syracuse and vicinity has been marketed for many years through the Onondaga Coarse Salt Association.

Details as to the production of salt in 1907 and 1908 are given herewith. The various grades listed as common fine, common coarse, table and dairy, coarse solar and packers are those employed in the trade and are based upon the methods of manufacture and purposes for which the salt is used. Table and dairy salt includes the finest grades of artificially evaporated salt, specially prepared for the table and for butter and cheese making; it brings the highest price in the market. Under common fine is listed the other grades of fine, artificially evaporated salt that are not specially prepared. Common coarse represents the coarser product from artificial evaporation, while coarse solar is that made by the solar process. This process is used only by the manufacturers in Onondaga county. Packers salt includes the product sold to meat packers and fish salters. Under "Other grades" are listed agricultural salt and other kinds not specified in the returns from producers, as well as the entire output of rock salt and of salt in brine used for the manufacture of soda products. As will be observed the salt thus listed bears a much smaller value per barrel than the grades first mentioned, due largely to the fact that the salt consumed in brine is given only a nominal valuation.

Of the different counties that were represented in the returns received for 1908, Onondaga held first place in regard to output, though most of its production was made by the Solvay Process Co. and was not marketed in the form of salt. The relative rank of the counties according to their output of marketable salt was as follows: Livingston, Wyoming, Tompkins, Schuyler, Onondaga and Genesee.

Livingston county furnished the entire product of rock salt. The Retsof Mining Co. operated the mine at Retsof and the Sterling Salt Co. the mine at Cuylerville. The latter mine began production in the fall of 1906. Mines were opened several years ago at Livonia and Greigsville, but they have not been recently active. The single manufacturer of brine salt in Livingston county was the Genesee Salt Co. with works at Piffard. The combined output of rock and brine salt from the county in 1908 was valued at $842,594.

Wyoming county, represented by the Iroquois Salt Co. of Perry, the Rock Glen Salt Co. of Rock Glen and the Worcester Salt Co. of Silver Springs, made an output valued at $352,281.

In an accompanying table is given the production of salt in New York State during the period of 25 years from 1884 to 1908 inclusive. It is noticeable that while the industry has grown rapidly the value of the product has increased in a much smaller ratio. The figures for the years previous to 1904 are quoted from the annual volumes of the *Mineral Resources*.

Production of salt by grades in 1907

GRADE	BARRELS	VALUE	VALUE PER BARREL
Common fine	1 214 093	$446 618	$ .37
Common coarse	155 593	64 794	.42
Table and dairy	1 183 643	639 464	.54
Coarse solar	415 971	156 072	.37
Packers	43 614	14 993	.34
Other grades*a*	6 644 629	1 127 237	.17
Total	9 657 543	$2 449 178	$ .25

a Includes rock salt, salt in brine used for soda manufacture, and small amounts of brine salt for which the uses were not specified in the returns.

Production of salt by grades in 1908

GRADE	BARRELS	VALUE	VALUE PER BARREL
Common fine*a*	941 682	$372 485	$ .39
Common coarse	194 593	72 427	.37
Table and dairy	1 188 636	631 987	.53
Coarse solar	520 607	117 136	.22
Packers	36 114	14 515	.40
Other grades*b*	6 123 679	928 186	.15
Total	9 005 311	$2 136 736	$ .237

a Common fine includes a small amount of common coarse.
b Include rock salt, salt in brine used for soda manufacture, and small amounts of brine salt for which the uses were not specified in the returns.

Production of salt in New York since 1884

YEAR	BARRELS	VALUE
1884	1 788 454	$705 978
1885	2 304 787	874 258
1886	2 431 563	1 243 721
1887	2 353 560	936 894
1888	2 318 483	1 130 409
1889	2 273 007	1 136 503
1890	2 532 036	1 266 018
1891	2 839 544	1 340 036
1892	3 472 073	1 662 816
1893	5 662 074	1 870 084
1894	6 270 588	1 999 146
1895	6 832 331	1 943 398
1896	6 069 040	1 896 681
1897	6 805 854	1 948 759
1898	6 791 798	2 369 323
1899	7 489 105	2 540 426
1900	7 897 071	2 171 418
1901	7 286 320	2 089 834
1902	8 523 389	1 938 539
1903	8 170 648	2 007 807
1904	8 724 768	2 102 748
1905	8 575 649	2 303 067
1906	9 013 993	2 131 650
1907	9 657 543	2 449 178
1908	9 005 311	2 136 736

SAND AND GRAVEL

BY HENRY LEIGHTON

The sand industry is one of New York State's large mineral industries and deserves recognition in a statistical summary of mining and quarry operations. It can best be discussed by dividing it into its various branches.

Molding sand. One of the most important uses of sand is in the casting of the metals — brass, iron, steel etc.— the sand being used in forming the mold around which, or into which, the molten metal is poured and allowed to cool.

Owing to the various metals used, the variations in size, shape and complexity of the castings, and to the various methods in use by foundrymen, it is impossible to define in a general way the characters of a molding sand. All kinds of sand are used, both singly and in admixture with other sands, clays, glues, molasses etc., each serving for a distinct variety of casting.

Sharp, angular sand free from clay, sandy loam, clayey sand and even fine gravel are all used in the foundries, but the material having by far the most universal use and serving the most purposes, is a fine grained clayey sand or loam, and it will be the only type of molding sand discussed in this paper.

Although an experienced foundryman can usually gage quite accurately the value of a sand by an ordinary visual examination and the "feel" of a moist sample, yet there are definite qualities which a sand must possess in order to be classed as a brass sand, core sand, sand for rough castings, etc.

A pure white quartz sand when moistened and packed into a definite form, seems to have no tendency to "stand up" well in a firm mass, but on the slightest touch crumbles and falls apart. In casting, the sand must be of such a character that after firmly tamping it around the pattern, the latter may be drawn out and the walls or projections of the cavity will retain their position until the metal can be poured in, and also exposed portions must resist the abrading action of the stream of metal. This property is termed the "bonding power" and can be measured by various means such as by making briquets of the sand and determining their tensile strength. The chief factors determining the bonding power are (1) the amount of clay present in the sand; (2) the amount of water with which it was tempered; (3) the amount of tamping given it. In special cases various clays or certain organic substances are added to increase the bonding power. In a series of tests made on molding sands of Wisconsin[1] the clay percentage ranged from a slight amount up to 39.44 per cent with an average in 34 samples of 13.18 per cent. After the sand has been several times subjected to the heat in casting, its clay content becomes dehydrated, loses its plasticity and bonding power and the sand becomes "dead."

Permeability is the property which all molding sands must possess to a certain extent, of allowing the steam, heated air, or other gases to pass through the pores of the sand and escape during the casting. The permeability of a sand depends upon the amount of pore space or voids and upon the shape and size of such voids, the latter factor being as important as the former. The work of King and Slichter[2] has demonstrated that the porosity of a sand depends on the size and arrangement of the grains, that a sand composed of well rounded grains will have a smaller amount of

---

[1] Ries. Wis. Geol. Sur. Bul. 15. 1906. p. 205.

[2] U. S. Geol. Sur. 19th An. Rep't, pt. 2, p.209–15, 306.

pore space when tamped than a sharp, angular sand, that a fine grained sand will usually have a greater porosity than a coarse grained, and that the minimum porosity can be obtained by a mixture of rounded grains of several sizes.

If a sand does not possess the desired permeability a mixture of some other sand is often added to increase the pore space. The coarser sands, since they have the larger pores, although their total porosity may be less than a fine sand, have usually the greater permeability.

The size of the particles is of importance in determining the use of the sand. For a brass casting, for small iron castings or for any work which requires delicate lines in the mold, a fine sand is very essential, and sand for such work usually will pass almost completely through a sieve with 100 meshes to the inch. Sands for general iron casting are often much coarser, while the sands used in making cores are very coarse, sometimes almost ranging into gravels.

Chemical analysis, although of less importance than a physical examination, sometimes indicates the importance of detrimental impurities such as calcium carbonate, an excess of iron oxids, etc. Microscopic examination may also show certain minerals which would be easily attacked by the hot metal, but ordinarily these are of rare occurrence in molding sands.

Distribution. As we have already seen, sands used for molding purposes have a wide range in character and are therefore not strictly limited to one type of occurrence. They occur both as residual deposits, alluvial and beach sand of both Quaternary and present age and as glacial deposits, all of which types are represented in this State. The most widely known molding sand in the State and a sand recognized as a standard by foundrymen is the Quaternary sands bordering the Hudson river and extensively worked in Saratoga, Schenectady and Albany counties. Other counties in the same belt producing molding sand at the present time are Essex, Rensselaer, Greene, Dutchess, Orange and Washington. The sand throughout this area is very easily obtained, as it lies in beds covered only by a thin coating of soil or sod. The soil and sod over an area of a few rods is carefully stripped off until the sand is reached. The sand is taken out and transported to the railroad or river and either piled in large rectangular heaps or placed directly in cars, or loaded into barges. The beds of good sand vary from 8 inches up to 8 feet in thickness, and a bed 1 foot thick over 1 acre yields approximately 1200 tons. The finer grades of sand usually occur in the thinner beds. As a rule, beds under 8 inches in thickness are not taken out. The dealers generally buy the sand rights of an area from the owner, paying him $75 to $800 per acre for the privilege of removing the sand, the work being done by men acquainted with the various grades and their value. After the sand has been removed and the soil or sod replaced the farm is as well suited for agricultural purposes as before.

Scattered throughout the rest of the State are numerous sand beds which are being worked for molding sand as well as for building sand. They are mainly Quaternary sands deposited in isolated patches by the action of glacial waters during the glacial period. Returns have been received from Erie, Livingston, Cayuga, Niagara and Oneida counties, the latter two counties producing only core sand.

Near Poughkeepsie at one time a residual sand overlying a Potsdam limestone was quarried and used as a molding sand.[1]

The large railroad foundries at Dunkirk and Depew are largely supplied with molding sand from Erie county.

The statistics gathered from the molding sand producers, although not complete, indicate in a general way the importance of the industry, the total production for last year being 312,819 short tons valued at $277,290. Comparing this with the production in 1907 (693,293 short tons valued at $539,674) as given by the United States Geological Survey we note a decided falling off. This is probably due, however, to the sluggishness of all iron and steel work during the year. Of the total amount the Hudson river region contributed 299,320 tons valued at $270,145. From counties outside of this area returns are incomplete, the production in Erie county and vicinity being of much greater importance than the returns would indicate.

Core sand used in connection with molding sand is obtained at scattered localities, the county showing the largest production being Oneida. The total production of the State was 27,624 short tons valued at $22,371.

Glass sand. The use of sand in the manufacture of glass is an important feature of the sand trade, and sand suitable for such a purpose is of high value.

Glass sand is obtained either from deposits of unconsolidated silicious sand of exceptional purity or from sandstones and quartzites, which have to be crushed.

[1] Merrill. N. Y. State Mus. Bul. 19. 1898. p. 225.

For the various grades of glass, sands of varying purity may be used. For the highest grade such as is used in cut glass ware and in lens-making a pure white sand containing practically 100 per cent quartz or silica must be used, as a fraction of a per cent of iron will impart a greenish tinge to the glass, the presence of clay will detract from its brilliancy and transparency, while other impurities will also ruin its value. For the manufacture of window glass and plate glass, where a slight greenish tinge will do no harm, a sand containing as much as one half per cent of iron oxid is frequently safely used, while sands with a slightly greater percentage of iron, have been used, the color being removed during the fusion by certain oxidizing agents such as manganese or arsenic which oxidizes the green ferrous silicate to a less conspicuous ferric silicate. For the cheaper grades of glass such as are used in bottle manufacture, structural glass, etc., a sand of less purity may be used but rarely does the percentage of silica fall below 97.5.

Aside from the consideration of the size of the deposit, the distance from railroads or waterways, cost of haulage etc., the owner of a prospective glass sand deposit should make a thorough examination of his sand under a microscope to determine its probable purity and physical characteristics. The necessary qualifications to be observed by simple tests are summed up by Burchard[1] as follows:

The sand should be nearly white in color; it should be of medium fineness (passing a 20 to 50 mesh horizontal sieve); the grains should be uniform in size, even and angular, or, less preferably, they may be rounded. A simple chemical test may be employed by heating the sand in a dilute acid. Effervescence indicates the presence of lime; loss of color shows the presence of clay impurities. Iron in the most minute quantities may be detected by dissolving sand in hydrofluoric acid and adding potassium ferrocyanid which produces a blue precipitate if iron is present. Complete quantitive analysis as well as a furnace test should be made as a final determination of the character of a prospective sand.

Some sands may be partially purified by washing processes which remove clay, mica scales, organic matter, etc. while in some cases where the iron exists as magnetite grains some form of magnetic separation may be effective.

The glass sand industry has been on the decline in this State for several years and at present the only producing area is that

[1] U. S. Geol. Sur. Bul. 285. p. 454.

around Cleveland in Oswego county. A quantity of glass sand was at one time produced in Oneida county from the Oneida lake area and a quartz rock was crushed at Ellenville in Ulster county. The exhaustion of some of the Oneida lake beds and the closing down of a number of the New York State glass factories have combined, however, to bring the industry to its present condition.

Building sand. The one great universal use of sand is for building purposes, either mixed with cement, making cement mortar or mixed with lime to form the ordinary lime mortar. For these purposes, specifications usually call for a clean, sharp sand free from clay or other impurities and frequently stipulate that it be screened. The addition of sand to portland cement, if the proper sand and mixture are used, not only decreases the final cost as compared to pure cement, but also increases the strength of the resulting mortar. Experiments carried on by Mr L. C. Sabin[1] seem to indicate that the mineral composition of the sand need not necessarily be of quartz grains but that a sand composed of any mineral, even limestone, will make a good mortar, provided that the grains are not of such a character as to undergo further serious alteration. In regard to the shape of grain he states that sharp and angular grains are the most satisfactory although lenticular grains give good satisfaction. The sand should be of coarse grain or a mixture of coarse and fine grains, such sands packing together so as to leave less pore space and therefore requiring a relatively small amount of cement to form an impervious mortar. A small percentage of clay or rock dust is not objectionable provided the mortar is not to come in contact with sea water which causes some disintegration of such a material.

New York State is well supplied with building sand. The greater part of the State was buried under the glacial sheet during the glacial period and instead of a mantle of residual clay such as covers nonglaciated areas, we have covering the surface an irregular mantle of boulder clay containing pockets of stratified sand and gravel, sorted and deposited by the glacial streams and lakes, while the more recent waters have also re-sorted some of the material and deposited it along the present streams. Almost every farm in central and western New York contains a sand and gravel pit; large amounts are found along the Niagara river, Lake Erie, Lake Ontario, while the borders of the Hudson have some large banks of it which were deposited while the Hudson river waters were at

[1] Sabin, L. C. Cement and Concrete. New York, 1907. p. 181

higher levels. A large sand business is carried on on Long Island where the beach sands are pumped or sucked up through tubes and loaded onto barges for shipment. Among the more important glacial deposits containing sand beds are elevated deltas of former streams emptying into the glacial lakes, kames and beaches and bars of the former glacial lakes.

The building sand business is carried on usually to supply a local demand, since, owing to the widespread occurrence of sand, very little need be shipped. The larger cities are all well supplied with material close at hand. New York city obtains its supply mainly from the Long Island beaches. Buffalo has a good supply on the shores of Lake Erie, although most of it is shipped from the Canadian shore. Rochester is supplied by the large glacial deposits known as Pinnacle and Cobb's hills. Syracuse obtains sand from the glacial deposits surrounding the city, and Albany is supplied from the large terraces north of the city along the river.

This year, the first attempt was made to collect statistics and the results are far from being complete. The sand producers are so numerous, and the industry is so widespread and so unstable that to gather together all the production, specially that of building sand, is an almost impossible task.

The following table gives the production by uses of the various sands in 1908, with the 1907 production as published by the United States Geological Survey included for comparison.

Under the heading "Other sands" are included glass sand (one producer), fire sand, polishing sand, etc. The gravel includes gravel for road making, for concrete and for roofing.

Production of sand and gravel

MATERIAL	1907	1908
Molding sand	$539 674	$277 290
Core sand	....	22 371
Building sand	925 028	666 809
Other sands[a]	51 271	43 368
Gravel	251 548	120 453
Total	$1 767 521	$1 130 291

[a] Includes glass sand, fire sand, furnace sand, filter sand, engine sand and polishing sa[nd]

SAND-LIME BRICK

The sand-lime brick industry received a decided set back in 1908, having been seriously affected by the decrease in building activity in the State. No new plants were in operation and several firms retired from the business. Only six plants made sales of this product during the year and of these only four manufactured any brick.

The Watertown Sand Lime Brick Co., a firm which reported a large output in 1907, has gone into bankruptcy, while two firms idle in 1907 have retired permanently from business, viz. the Newburg Sand Lime Brick Co. and the Roseton Sand Lime Brick Co. Two new firms have been organized but are not yet in operation, the Grant Brick Co. of Brooklyn and the Atlas Brick Co. with a plant at Nassau.

The total production for the year was 8,239,450 brick valued at $55,688 against a production in 1907 of 16,610,000 brick valued at $109,677, a decrease of 49 per cent. The average price per thousand of the common sand-lime brick in 1908 was $6.44, while front and fancy brick averaged $9.11 and $10 respectively. The six companies making sales in 1908 were as follows:

NAME	LOCATION
Buffalo Sandstone Brick Co.	Buffalo
Rochester Composite Brick Co.	Rochester
Paragon Plaster Co.	Syracuse
Sandstone Brick Co.	Schenectady
Schenectady Brick Co.	Schenectady
Granite Brick Co.	Glens Falls

SLATE

Roofing slate of various colors is obtained in Washington county near the Vermont state line. The industry has been carried on there for the last half century or more, but it has shown little tendency toward expansion commensurate with the progress of the quarry industry in general. The total value of the output of slate in 1908 was $111,217 as compared with a valuation of $54,800 in 1907, $61,921 in 1906, $95,009 in 1905 and $93,600 in 1904. Practically the entire product was used for roofing purposes. The manufacture of other slate materials, such as mantels, floor tiling, blackboards, billiard tables, etc., has not been developed in the New York district, though it plays an important part in the slate industry of Vermont and Pennsylvania.

The main product of Washington county is red slate. This is the most valuable variety of roofing slate. The color is an attractive shade of red or reddish brown which does not change on exposure. Red slate brings an average of $7 or $8 a square and is shipped all over the country and even abroad for use on fine buildings. The principal quarries are near Granville and North Granville on the north end of the slate belt. Sea green, purple and variegated slates are obtained around Middle Granville, Salem and Shushan. The red and green varieties sometimes occur in alternating beds in the same quarry. Black slate has been worked at different times in the southern portion of the metamorphic belt, but the operations apparently have not been a commercial success. There are abandoned quarries at Hoosick, New Lebanon and New Hamburg. The quarry of the last mentioned locality was developed about 10 years ago.

The quantity of roofing slate made in 1908 was 13,735 squares valued at $111,119. The average price received was $8.09 a square, a much higher average than was received for the product of other slate districts in the east, due to the fact that most of the output consisted of red slate, of which the New York quarries have a natural monopoly. The production was distributed among 11 firms and individuals, most of whom operated on a small scale.

STONE

BY HENRY LEIGHTON

The quarrying of stone for building purposes, road and pavement construction and for various other purposes is one of the most widespread and important of the State's industries, furnishing employment to 4000 or 5000 wage-earners and annually producing about $7,000,000 worth of stone ($6,615,614 in 1908).

The rocks of the State, ranging in age from the very earliest Precambric to early Carbonic and comprising igneous, metamorphic and stratified representatives, are abundantly able to supply almost every type of rock desired for building purposes, save some ornamental stone. Notwithstanding the large amount of local stone used, considerable quantities of stone are annually imported into the State; granites from New England, limestones from Indiana and sandstones from Ohio, coming from large centers of production where development is on such a large scale that the stone can be shipped into the State at a price almost as low as that asked for local material.

The industry, however, with the enormous amount of building construction, road improvement and canal work in the State is in a flourishing condition and will probably show a large advance in the coming year.

In the following discussion of the quarry industries the subjects of slate, millstones and rock quarried for cement are omitted and will be found discussed under separate headings.

As one might expect, the quarry industries suffered under the general stagnation of business in 1908 and reported a production of $6,615,614 against $7,890,327 in 1907, a loss of 16 per cent. Of the total, limestone quarries produced $3,119,835, or 47 per cent, sandstone amounted to $1,711,585, or 25 per cent, trap $723,-773, or 11 per cent, marble $692,857 or 10 per cent, and granite $367,564, or 5 per cent. All kinds of stone showed a falling off in their output except granite which, owing to increased use of crushed stone and paving blocks, showed a decided increase. The increased public interest in good roads, the barge canal construction and concrete work in general, is the cause of a large demand for crushed stone and this item is the largest of the total stone production, namely $2,659,016, or 40 per cent, a decrease from that of 1907 of $162,457.

Next in value is the production of rubble, riprap, lime, and miscellaneous products with a value of $1,624,607 against $1,642,-232 in 1907. The value of the building stone produced was $1,264,403 against $2,208,545. Flagstone and curbing, with an output chiefly of bluestone, were valued at $928,511 against $1,064,193 in 1907. The production of monumental stone which is mostly of marble also showed a decrease, having a value of $139,077 in 1908 and $162,359 in 1907.

Production of stone in 1906

VARIETY	BUILDING STONE	MONU-MENTAL	CURBING AND FLAGGING	CRUSHED STONE	ALL OTHER	TOTAL VALUE
Granite	$231 190	$4 119	*a*	$13 980	$5 900	$255 189
Limestone	229 479	....	$8 067	1 590 205	1 136 078	2 963 829
Marble	337 365	99 100	*a*	*b*	24 450	460 915
Sandstone	610 549	*a*	991 611	51 205	323 464	1 976 829
Trap	*a*	....	....	780 103	67 300	847 403
Total	$1 408 583	$103 219	$999 678	$2 435 493	$1 557 192	$6 501 165

a Included under "All other." *b* Included under "Limestone."

Production of stone in 1907

VARIETY	BUILDING STONE	MONUMENTAL	CURBING AND FLAGGING	CRUSHED STONE	TOTAL VALUE	TOTAL VALUE
Granite	$84 774	$9 613	*a*	$92 950	$8 563	$195 900
Limestone	189 782	. . . .	$13 123	1 725 203	1 254 339	3 182 447
Marble	1 408 190	152 746	*a*	*b*	11 000	1 571 936
Sandstone	525 799	. . . .	1 051 070	55 818	305 730	1 998 417
Trap	*a*	. . . .	. . . .	939 027	2 000	941 627
Total	$2 208 545	$162 359	$1 064 193	$2 812 998	$1 642 232	$7 890 327

a Included under "All other." *b* Included under "Limestone."

Production of stone in 1908

VARIETY	BUILDING STONE	MONUMENTAL	CURBING AND FLAGGING	CRUSHED STONE	ALL OTHER	TOTAL VALUE
Granite	$71 122	$27 585	*a*	$152 783	$116 074	$367 564
Limestone	245 655	. . . .	$15 668	1 047 629	1 210 883	3 119 835
Marble	567 444	111 492	. . . .	. . . .	13 921	692 857
Sandstone	380 182	. . . .	912 843	135 741	282 819	1 711 585
Trap	. . . .	. . . .	. . . .	722 863	910	723 773
Total	$1 264 403	$139 077	$928 511	$2 659 016	$1 624 607	$6 615 614

a Included under "All other."

Granite

Under the strict use of the word, granite is an entirely crystalline igneous rock made up of potash feldspar and quartz, with usually small amounts of either mica, hornblende or pyroxene. Among quarrymen and builders, however, the name granite is given to various other types of rocks, such as the heavier and darker colored diorites, norites and gabbros, syenite which resembles granite but lacks quartz, and the bedded or banded rock known as gneiss or schist. The broader use of the term will be employed in this discussion.

Two main areas of extensive outcrops of granitic or gneissic rocks can be recognized: the Adirondack region and the area comprising the Highlands of the Hudson. The Adirondack mountains are made up of large masses of crystalline rocks, anorthosites, norites, gneisses and granites, and around the borders of this mass many quarries have been opened. At present there are but few active quarries which are located as follows: West Chazy, Clinton co.; Ausable Forks, Essex co.; Gloversville, Fulton co.; Little

Falls, Herkimer co.; and Wellesley and Picton islands, Jefferson co.

Throughout the whole Adirondack region and the bordering area there is an immense amount of building stone, durable and capable of taking a fine polish, but at present lack of demand and the inaccessibility of some of the outcrops have prohibited any extensive development.

In the area comprising the Hudson River Highlands in Putnam, Orange, Rockland and Westchester counties and in New York county are large masses of granite, gneiss and schists all of which have been worked. In Westchester county, following the river from Peekskill to Yonkers, is a belt of gneissic rock in which many small quarries are located, those in operation in 1908 being at Scarsdale, Glenville, Yonkers, Peekskill, New Rochelle and Hastings. The only other active quarry reporting from the Highland region was one operated for crushed stone at Carmel in Putnam county. In former times quarries were in operation in Rockland and Orange counties and on Manhattan Island, furnishing some gneissic stone for buildings in New York and for some of the West Point buildings.

The chief use of granite in the State is in the form of crushed stone for roads, concrete and railroad ballast, and by far the largest share of this material is quarried and prepared in Little Falls where an increasing output is made year by year. The rock used is properly a syenite, an outlier of the Adirondack border.

The Westchester and Putnam county material, owing to its gneissic character, is better adapted for a building stone than for crushing or paving purposes and the output is sold mainly as rough building stone. Some of the granites and less schistose gneisses, however, are dressed and polished and present a very handsome appearance.

The greater part of the Jefferson county granite was used in 1908 in making paving blocks. The output of monumental stone, though considerable, was not as great as the beauty and durability of the stone would warrant. The beautiful pink color, good polish and durability should give to this stone a wider demand specially for interior decoration and for monumental work.

At Ausable Forks, Essex co. a dark green syenite is quarried and utilized as a building and monumental stone, taking a handsome polish.

The production of granite last year showed a remarkable and gratifying advance over that of 1907 or in fact over that of any recent year, the total value for 1908 being $367,564 as against $195,900 in 1907 and $255,189 in 1906, an increase over the year 1907 of 87 per cent. This increase is specially noteworthy when we realize that other building stone and brick showed a decided falling off in 1908. The gain seems to be a general one in the granite industry, being confined to no special district nor to any special use of the granite. All counties report an increased production and all uses are represented in the increase except the building stone which shows a decrease of 18 per cent as compared with the preceding year. Among the important advances were the large production of crushed stone at Little Falls and the substantial increase in the paving block business in Jefferson county, carried on by the Picton Island Red Granite Co. and J. Leopold & Co. During the year the former company opened up a new quarry of pink granite near the water's edge and with the good quality of the stone and good transportation facilities they anticipate a large output.

The stone of the Hudson River Highland area, although it showed a substantial increase in production, situated as it is so near the large New York market, should have a larger demand as it occurs in inexhaustible amounts. The more gneissic, less massive varieties make good foundation stone while some of the true massive granites take a good polish and are well suited for monumental work.

Production of granite

	1906	1907	1908
Building stone	$231 190	$84 774	$71 122
Monumental	4 119	9 613	27 585
Crushed stone	13 980	92 950	152 783
Rubble, riprap	2 423	5 600	15 351
Other kinds*a*	3 477	2 963	100 723
Total	$255 189	$195 900	$367 564

a Includes in 1908 curbing, paving blocks, and minor uses.

Limestone

Owing to the many purposes for which limestone seems particularly adapted, and because of its wide distribution in the State, it holds first place in importance among the quarry products. As crushed stone for road building and concrete work, it has attained a wide use; as a building stone, its ease of dressing and quarrying and its durability favor it; large quantities are burned into lime; a large amount is annually consumed as a flux, and it has as well many minor uses.

With the exception of some crystalline, metamorphic limestone that is quarried and sold as flux or burned into lime, the stone classed under this head is all of a massive noncrystalline character. The limestones occur in formations from the Cambric to the Devonic systems, the chief limestones used being the Beekmantown, Chazy, Trenton, Lockport dolomite, Cobleskill, Onondaga and Tully. They vary in color from gray and brown to blue or black, while the white and lighter colored limestones are rare. In chemical composition they vary from almost pure calcium carbonate to dolomite and frequently become argillaceous, arenaceous, ferruginous or silicious.

The total production of limestone in 1908 exclusive of stone used in cement manufacture was valued at $3,119,835, a small decrease over the production of 1907, which was $3,182,447, or about 2 per cent. This decrease seems to be fairly evenly distributed over the various uses of the stone and as well over the various counties, none of which shows a marked decrease or increase in production during the year. The production was distributed among the various products as follows: crushed stone $1,647,629; building stone $245,655; lime $401,728; furnace flux $230,117; other uses $594,706. The lime made by the Solvay Process Co. and by the Union Carbide Co. in connection with their products is included under "Other uses" in 1908 while in previous years it appears under "Lime."

Production of limestone

MATERIAL	1906	1907	1908
Crushed stone	$1 590 205	$1 725 203	$1 647 629
Lime made	*a*795 348	*a*888 309	401 728
Building stone	229 479	189 782	245 655
Furnace flux	287 816	338 127	230 117
Rubble, riprap	32 975	14 588	*c*
Flagging, curbing	8 067	13 123	15 668
Miscellaneous	19 939	13 135	*b* 579 038
Total	$2 963 829	$3 182 447	$3 119 835

a Includes Solvay Process Co.'s lime.
b Includes lime made by Solvay Process Co. and Union Carbide Co., also rubble and riprap.
c Included in "Miscellaneous."

Crushed stone. The crushing of limestone for application in macadam road construction is one of the important uses of the stone. Its value for this purpose depends on the facts that it is easy to crush and that when rolled to a smooth surface the particles of limestone bind themselves together into a firm impervious mass. With the increasing demand for good roads in all parts of the State the crushed stone industry is becoming more and more important. In general, however, with other industries the production received a setback in 1908, it being valued at $1,647,629 while in 1907 it was $1,725,203. Erie stands first among the counties as a producer with a production of $369,754 as against $250,720 in 1907. It is followed in order by the following counties, the production for 1907 being included in brackets: Dutchess $233,261 [$399,244]; Rockland, one producer; Ulster $169,414 [none]; Genesee $122,310 [$200,150]; Onondaga $108,768 [$63,885] and Albany $104,250 [$126,920].

Lime. The manufacture of lime by the calcination of limestones is an industry carried on in the State from earliest times. On a small scale it is carried on in almost every county where limestone is found, as it requires but a relatively small outlay of money to establish a plant. The greater part of the production, however, comes from a few counties, where larger firms have developed the industry. The statistics for 1908, included herewith, represent only lime made and sold as such either hydrated or unslacked. The production of the Solvay Process Co. of Onondaga county and of the Union Carbide Co. of Jefferson county has been transferred to the column headed "Other uses." The total production of lime excluding these two firms was $401,728, a slight decrease over the production of 1907. This production was distributed over 20 counties of which one county, Warren, produced 42 per cent of the total, while four counties, Warren, Jefferson, Clinton and Washington, together produced 76 per cent of the total production. The production of these counties with their 1907 production inclosed in brackets is as follows: Warren $170,832 [$212,530]; Jefferson $52,454 [$30,871]; Clinton $45,000 [$62,000]; and Washington $36,960 [$54,400].

Building stone. The use of our native limestones for building construction is rather restricted and the chief use is for foundations and bridge work. The competition with Bedford limestone and other building materials seems to retard any large development of the local limestone quarries for building stone. Nevertheless a gain is shown in the production, the value for 1908 being $245,655 as compared with $189,782 in 1907. The gain has been due mainly to an increased production from the Newport Construction Company's quarry at Newport, Herkimer co., and an increase in the Schoharie county production. Erie county still leads in production, the 1908 value being $112,409 as against $114,351 in 1907. Following it in order are Schoharie county with a production of $30,555; Herkimer county $30,000; Onondaga county $16,709; Jefferson county $13,513.

Furnace flux. Limestone used in smelting operations for flux is quarried and shipped to the various metallurgical establishments in the State. The blast furnaces around Buffalo use a large quantity of New York State material quarried from the Onondaga limestone beds of Erie and Genesee counties, the larger quarries being situated at Williamsville and Clarence, Erie co. and at North Leroy, Genesee co.

The iron furnaces of the Adirondack region use limestones quarried at Chazy, Clinton co., and Port Henry, Essex co., and other localities report small amounts of limestone sold as flux and utilized in nearby blast furnaces.

With the true limestone flux we include, also, a quantity of marble quarried at Gouverneur, St Lawrence co. and shipped to Ohio blast furnaces.

The total production of flux for 1908 was valued at $230,117, while the 1907 output was valued at $338,127, the decrease being due to the sluggishness of the iron and steel trade. Of this amount Erie and Genesee counties produced $191,970, or about 82 per cent of the total, Erie county producing $138,563 as against $202,845 in 1907; Genesee county $53,407 as against $82,863 in 1907. St Lawrence county produced $14,606, increasing the output of 1907 which was $9843, while Clinton county produced $5640 as against $19,200 in 1907, and Essex county also produced a large output. Other counties reporting a production were Cayuga, Columbia, Madison, Oneida, Rensselaer, Seneca and Westchester.

Production of limestone by counties in 1907

COUNTY	CRUSHED STONE	LIME MADE	FURNACE FLUX	BUILDING STONE	OTHER USES	TOTAL
Albany	$126 920	$2 000	....	$300	....	$129 220
Cayuga	32 578	400	$560	7 000	$13 050	53 588
Clinton	25 200	62 000	19 200	3 150	1 010	110 560
Dutchess	399 244	....	....	....	....	399 244
Erie	194 144	300	202 845	114 351	5 087	516 727
Fulton	9 141	11 637	....	....	....	20 778
Genesee	200 150	....	82 863	500	....	283 513
Greene	5 475	350	....	5 500	500	11 825
Herkimer	450	5 750	....	75	....	6 275
Jefferson	422	30 871	....	6 067	4 312	41 672
Lewis	475	55 255	....	604	758	57 092
Madison	45 000	....	5 000	....	....	50 000
Monroe	30 908	....	....	6 410	537	37 855
Montgomery	35 000	....	....	6 677	1 038	42 715
Niagara	30 123	500	....	1 920	8 250	40 793
Oneida	27 213	....	7 980	....	....	35 193
Onondaga	63 885	399 996	895	11 404	3 600	479 780
Ontario	3 433	....	....	808	678	4 919
Rockland	284 800	....	....	....	....	284 800
St Lawrence	....	10 940	9 843	809	154	21 746
Saratoga	10 000	....	....	2 500	....	12 500
Schoharie	12 051	300	....	18 446	....	30 797
Seneca	1 325	200	....	1 750	400	3 675
Warren	11 200	212 539	....	86	1 437	225 262
Washington	40 000	54 400	....	....	....	94 400
Westchester	132 566	24 116	275	....	....	156 957
Other counties*a*	3 500	16 755	8 666	1 425	215	30 561
Total	$1 725 203	$888 309	$338 127	$189 782	$41 026	$3 182 447

a Includes Columbia, Essex, Orange, Orleans, Schenectady, Ulster and Wayne.

Production of limestone by counties in 1908

COUNTY	CRUSHED STONE	LIME MADE	FURNACE FLUX	BUILDING STONE	OTHER USES	TOTAL
Albany	$104 250	. . . .	. . . .	$200	$500	$104 950
Cayuga	39 051	$400	$510	6 216	2 500	48 677
Clinton	18 136	45 000	5 640	8 250	7 592	84 618
Columbia	3 700	. . . .	4 500	360	. . . .	8 560
Dutchess	233 261	1 600	. . . .	. . . .	512	235 373
Erie	369 754	515	138 563	112 409	33 711	654 952
Fulton	4 666	12 840	. . . .	. . . .	. . . .	17 506
Genesee	122 310	2 520	53 407	2 461	100	180 798
Greene	3 270	. . . .	. . . .	1 000	. . . .	4 270
Herkimer	6 085	3 607	. . . .	30 000	5 180	44 872
Jefferson	2 500	52 454	. . . .	13 513	133 521	201 988
Lewis	780	4 000	. . . .	888	80	5 748
Madison	27 993	. . . .	3 000	. . . .	14 340	45 333
Monroe	14 002	21 756	. . . .	3 981	176	39 915
Montgomery	8 561	. . . .	. . . .	5 343	6 416	20 320
Niagara	12 950	5 400	. . . .	2 622	16 500	37 472
Oneida	26 150	. . . .	50	4 000	1 000	31 200
Onondaga	108 768	*a* 1 450	. . . .	16 709	*a* 355 105	482 032
Rensselaer	15 700	. . . .	100	3 425	6 750	25 975
St Lawrence	462	7 305	14 606	723	562	23 658
Saratoga	12 259	. . . .	. . . .	625	2 271	15 155
Schoharie	32 971	232	. . . .	30 555	. . . .	63 758
Seneca	1 340	400	60	1 120	2 980	5 900
Ulster	169 414	2 530	. . . .	. . . .	500	172 444
Warren	16 000	170 832	. . . .	1 005	3 357	192 194
Washington	55 860	36 960	. . . .	250	. . . .	93 070
Westchester	38 509	22 927	37	. . . .	. . . .	61 473
Other counties *b*	198 927	9 000	9 644	. . . .	1 053	218 624
Total	$1 647 629	$401 728	$230 117	$245 655	$594 706	$3 119 835

a Lime used by Solvay Process Co. included in "Other uses."
b Includes Essex, Ontario, Orange, Orleans, Rockland and Schenectady.

Marble

True marble, a crytalline limestone, is fairly abundant in New York State, though its occurrence is limited to the metamorphic regions, including the Adirondack region and the lower Hudson valley. The industry is concentrated into three main areas: Gouverneur, St Lawrence co.; South Dover, Dutchess co.; and Tuckahoe, Westchester co. Aside from these there are two firms producing limestone which, as it is capable of taking a fine polish and is used for interior decorations and for monumental work, is classed as marble in the trade. The quarries are located near Plattsburg in Clinton county, where a Chazy limestone is quarried, and at Glens Falls, Warren co., where a fine grained Trenton limestone is polished and sold as black marble.

The Tuckahoe stone is a rather coarse grained pure white dolomitic marble. It is quarried and dressed for building stone almost entirely, and it has been used in the construction of some notable buildings in Washington, New York and Boston. The South Dover region also produces a pure white dolomitic marble which when dressed makes a handsome and durable stone. Among the recent structures of this stone is the new office building of the House of Representatives in Washington which is partly faced with this white marble. One new firm, the Dover White Marble Co., has been organized and is installing an electric air channeling plant and is also engaged in stripping and opening their quarries. St Lawrence county is at present the chief producer of marble in the State. The marble quarried near Gouverneur is light gray to dark blue in color, of coarse grain, and takes a very handsome polish. A large part of it is shipped as monumental stone, considerable building stone and rubble also being sold. A certain quantity of it is also shipped to Ohio for use as a flux, this production, however, being tabulated under limestone.

The total production of the State in 1908 was $692,857 as against $1,571,936 in 1907, a large decrease. This extraordinary drop in production was mainly caused by a decrease in the production of marble for building purposes at South Dover and Tuckahoe. The only producer in the South Dover area in 1908 was the South Dover Marble Co., while at Tuckahoe the Waverly Marble Co., for many years a large producer, has ceased operations permanently after operating during a part of 1908. This quarry, the famous Norcross quarry, has been in operation for half a century and has furnished stone for many noted structures, particularly the Metropolitan Life Insurance building in New York city, with its massive tower. Aside from the production of building stone at Tuckahoe, the Tuckahoe Lime & Lumber Co. and its successor, the Marbolith Stone Co., used considerable stone in a finely crushed condition for making an "artificial stone," with a cement base.

In the Gouverneur district, although a drop in production was reported and was inevitable under the trade conditions of 1908, the decrease was by no means serious. Building stone, both rough and dressed, was produced to the value of $131,037 as compared with $146,190 in 1907; monumental stone $111,492 as against $152,746 in 1907. A new firm, the New York White Marble Co., has been incorporated and has spent the year in development. Prospects in December were favorable for a very brisk year in 1909. The Extra

Dark Marble Co. has been purchased by Mr Newton Aldrich and will be enlarged, while the other large companies contemplate increasing their output.

At Plattsburg, Clinton co. the Rutland-Florence Marble Co. during the year quarried a large amount of Chazy limestone which was sold as marble for interior decorations.

The black Trenton limestone of Glens Falls was also quarried by one firm, Finch, Pruyn & Co. and sold in rough state for building stone.

Production of marble

VARIETY	1906	1907	1908
Building marble	$337 365	$1 408 190	$567 444
Monumental	99 100	152 746	111 492
Other kinds	24 450	11 000	13 921
Total	$460 915	$1 571 936	$692 857

Sandstone

Sandstone is more widely distributed over the State than any other stone. Many large areas underlain by good sandstones, however, are not worked at present, because of the abundant supply of better stone which can be cheaply obtained from the more extensively developed areas. In western New York to the south of Lake Ontario an extensive quarrying industry is carried on in the Medina sandstone, the operations being confined mainly to Orleans county. This stone is a medium grained, usually red stone, although some white stone has been extracted. It has been used in a number of important buildings and forms a beautiful and durable stone. It has also a wide use in street work as paving blocks and curbing. Quarries in the Medina formation have also been worked in Niagara, Monroe, Wayne and Oswego counties. In the northern Adirondack region, in Jefferson, St Lawrence and Franklin counties, a large amount of sandstone of Potsdam age has been quarried both as building stone and as flagging. The stone varies from pink to gray and from a firm hard quartzite to a friable sandstone. The main production at present comes from the vicinity of Burke in Franklin county and consists chiefly of flagging, which is shipped to Montreal and other Canadian cities.

Along the Hudson river from Orange county northward to Washington county various beds of sandstone occur in the Hudson river formation. They are quarried for rubble, local building stone and crushed stone in Albany, Greene and Dutchess counties, and in former times were taken out at many other localities.

Minor sandstones, in which from time to time quarries are opened, are the Oneida conglomerate, Clinton and the Triassic brownstones, the latter now practically abandoned.

By far the most important sandstone, both as to areal distribution and annual output, is the variety known as bluestone.

Bluestone. This variety of sandstone constitutes one of the important sources of wealth of certain sections of the State. It is a name applied to certain, usually bluish, evenly bedded sandstones occurring in the upper Devonic strata. Its importance lies in the fact that it splits in thin regular horizontal slabs along planes known as lifts, and that these slabs are in turn intersected by two sets of joints lying at about right angles which facilitate the extraction of blocks of convenient size.

The stone taken out in most districts is classed under three heads: (1) "flagging," the thin slabs used for sidewalks; (2) "edge" stone, or thicker slabs which are used in curbing, as Belgian bridge in crosswalks and as sills and coping in construction work; (3) "rock," or rough more or less square blocks which may be dressed or sold in rough condition for building and for bridge construction. Among the minor uses are for crushed stone and for rubble and riprap, for which purposes the waste rock is almost entirely used. As a flagging, bluestone is suitable because of the even surface obtainable with little or no dressing and because after long usage it does not assume a slippery surface.

The bluestone quarries are usually situated upon the hillsides and the waste material is dumped down the slope, while the stone is hauled in wagons down the slopes to the shipping points. Flagstones and curbstones are usually roughly hand dressed while building stone, sills etc. are dressed in various mills situated in the district.

The area from which bluestone is obtained extends roughly from Albany, Greene and Ulster counties on the east, due westward through Sullivan, Delaware, Broome and Chenango counties and so on to Lake Erie.

There are four main districts in the area: (1) the Hudson river region comprising Greene and Ulster counties and having for its main outlet the Hudson river; (2) the Delaware river district, Broome, Delaware and Sullivan counties with the main transportation on the railroads following along the Delaware river and its branches. The principal railroads are the Erie, New York, Ontario and Western and the Delaware and Eastern; (3) Chenango county with the main shipping centers at Norwich and Oxford; and (4) Wyoming county with the main quarries around Warsaw and Portageville. In addition to these districts bluestone has been or is being quarried to some extent in almost every county throughout the main area, the counties represented in the production for 1908 including besides those mentioned, Albany, Otsego, Tioga, Yates, Allegany, Cattaraugus and Chautauqua.

The industry in the Hudson river district is chiefly controlled by a few large shippers with docks at Catskill, Saugerties and Rondout. To these points the stone is hauled by wagons, sometimes from a distance of from 10 to 15 miles. Quarrying is carried on throughout all the year except the most severe portions of the winter, and by the time navigation opens up on the river the shippers have a large stock on hand. Shipments are made almost entirely by water on barges, and owing to the accompanying low transportation charge this district controls the market in New York city and ships to numerous other coast markets on Long Island sound, etc.

The quarrying of bluestone is one of the important industries of the Delaware valley region in Broome, Delaware and Sullivan counties. The quarries are usually situated far up on the sides of the hills and the quarrying and transportation of the stone down the steep hillsides is attended with some difficulty. The stone is taken out by numerous small producers, many of whom simply work a quarry at odd times when other work is unavailable, while others develop their property more extensively. In this area at present the small producers sell nearly all their stone to a few large dealers or shippers who maintain "docks," or loading places, and railroad switches at various places on the lines of the New York, Ontario and Western, Erie, and Delaware and Eastern. The market for this district is mainly inland cities easily reached by railroad from the shipping points, and includes Philadelphia, Binghamton, Syracuse, Rochester etc. The output is mostly flag and curbstone.

In Chenango county the output is also mainly flag and curb and the market is, as in Delaware county, the inland New York State cities.

The Wyoming county stone, however, is used mainly for building purposes, very little flagging or curbing being shipped. The industry centers around Warsaw and Portageville where several companies operate extensive quarries and load the stone onto cars directly from the quarries.

The quarries outside of these four areas are operated usually to supply local demand or for use in nearby cities and the individual output is generally small.

A list of firms and individuals shipping stone during 1908 is appended. Most of these operate quarries and also buy of small quarrymen in their vicinity.

In gathering statistics of bluestone it is impracticable to attempt a canvass of all the individual producers, many of whom operate only in a small way and more or less spasmodically. The tabulations herewith are based on figures obtained from dealers and such large producers as ship their product direct to market. A slight duplication doubtless exists in the tables owing to the fact that the shippers buy or exchange stone with each other for purposes of convenience, and such exchanges or purchases are almost impossible to eliminate from their reports, yet it is believed that the figures as given are substantially correct.

As is brought out in the tables, the year 1908 was a dull year for most of the districts, but the falling off in production was no more than might be expected in a year when building and constructional work was so greatly depressed. The consensus of opinion of the bluestone dealers seems to be that the coming year 1909 will show an active demand for their stone and that the industry will resume its wonted activity.

The Hudson river district was an exception to the general rule and its production exceeded that of 1907 by $74,762. The total production by districts for the years 1907 and 1908 was as follows, the 1907 production being inclosed in brackets: Hudson river $368,657 [$293,895]; Delaware river $447,784 [$703,428]; Wyoming county $174,214 [$196,769]; Chenango county $93,667 [$106,703]; other districts $27,064 [$15,132]. Comparison between the production of the Delaware river district in 1907 and 1908 is hardly just since it is probable that in 1907 considerable stone quarried in Pennsylvania, but sold by New York dealers, was included in the figures. There would, no doubt, however, still be shown a decrease in production for 1908.

DIRECTORY OF BLUESTONE DEALERS

NAME	OFFICE
Delaware river district	
Broome co.	New York city
Deposit Stone Co.	New York city
Erie Bluestone Association	Gulf Summit
J. W. Lockwood	Deposit
P. S. Madden	
Delaware co.	
M. L. Connor	Walton
E. J. Cotter	Hancock
Thomas Johnston	Horton
George W. Kazenstein	Hancock
W. O. King	Sidney
Kirkpatrick Bros.	Hancock
Estate of N. L. Lupton	Cooks Falls
James Nevins's Sons	Fish's Eddy
Cyrus Peak	Long Eddy
W. J. Randall	Hancock
W. P. Schneider	East Branch
Herbert Shaw	Walton
Standard Bluestone Co.	Jersey City, N. J.
Travis & Kingsbury	Hale Eddy
N. E. Whipple	Walton
Sullivan co.	
Kenney Bros.	Long Eddy
Anthony Manny	Hankins
Henry Prigge	Hoboken, N. J.
C. B. Tyler	Roscoe
J. D. Woolsey	Livingston Manor
Hudson river region	
Greene co.	
James Leach	Tannersville
Smith & Yager	Catskill
George S. Young	Platt Clove
Ulster co.	
William Craft	Quarryville
Hudson River Bluestone Co.	Kingston
John Maxwell's Sons	Saugerties
McArthur Bros., Winston & Co.	Brown Station
Benjamin Murray	Saugerties
Ulster & Delaware Bluestone Co.	Allaben

Chenango county

Earl Brown	Oxford
Chenango Bluestone Co.	Norwich
Clarke, Conroy & Co.	Norwich
Keeley Bros.	Oxford
James Masterson	South Oxford
J. W. Ryan	Norwich

Wyoming county

American Bluestone Co.	Warsaw
Portageville Bluestone Co.	Portageville
Warsaw Bluestone Co.	Warsaw

Other districts

Albany co.	
Edwin Stewart	South Berne
Cummings Bros.	Voorheesville
Allegany co.	
L. Gorton	Belmont
Cattaraugus co.	
William Brondart	Franklinville
James Rounds	Olean
Cayuga co.	
Henry Murray	Kings Ferry
Chautauqua co.	
L. L. Pierce	Fredonia
Genesee co.	
Acra Bluestone Co.	Acra
Madison co.	
George Standt	Canastota
Oneida co.	
Charles Dawes	Clinton
Otsego co.	
Edwin Adams	Cooperstown
Mrs. Mary Gazlay	Cooperstown
Ingalls Stone Co.	Binghamton
J. K. Palmer & Co.	Clearfield, Pa.
Schenectady co.	
Ellis Stone Co.	Schenectady
Tioga co.	
Gilbert B. Edgecombe	Waverly
Yates co.	
Louis A. Cheney	Himrods

The total production of sandstone for the year was $1,711,585 against $1,998,417 in 1907, a decrease of 15 per cent. A number of smaller quarries were idle during the year and the larger firms report a decreased demand for their stone. Thirty counties are represented in the total. The decrease was distributed over the output of building stone and the curb and flagstone. The constantly increasing demand for crushed stone is shown by the fact that the value of the output of crushed stone increased from $55,818 in 1907 to $135,741 in 1908, an increase of 143 per cent.

Classified as to uses the output for 1908 was as follows, the production in 1907 being included in brackets: building stone $380,182 [$525,799]; curbing and flagstones $912,843 [$1,051,070]; paving blocks $239,239 [$320,301]; crushed stone $135,741 [$55,818]; rubble and riprap $28,792 [$24,812]; other uses $14,818 [$20,617].

The bluestone district furnished in 1908, 67 per cent of the total sandstone quarried, with a total production of $1,151,386.

Orleans county was by far the largest producer outside of the bluestone area and the total output was $398,287 against $542,218 in 1907. This county produced paving blocks to a value of $227,537 or nearly all produced in the State.

Production of sandstone in 1907

DISTRICT	BUILDING STONE	CURBING AND FLAGGING	PAVING BLOCKS	CRUSHED STONE	RUBBLE, RIPRAP	ALL OTHER
Bluestone						
Hudson river...	$60 613	$219 357	$13 925	....	....	....
Delaware river.	66 627	633 600	873	....	$1 528	$800
Chenango co. ..	62 302	28 380	175	$500	1 029	14 317
Wyoming co. ..	195 155	659	....	....	955	....
Other districts..	7 123	1 484	2 400	4 125	....	....
Total bluestone	$391 820	$883 480	$17 373	$4 625	$3 512	$15 117
Sandstone						
Orleans co.	$85 750	$139 140	$296 928	$15 500	$800	$4 100
Other districts..	48 229	28 450	6 000	35 693	20 500	1 400
Total sandstone	$133 979	$167 590	$302 928	$51 193	$21 300	$5 500
Combined total	$525 799	$1 051 070	$320 301	$55 818	$24 812	$20 617

Production of sandstone in 1908

DISTRICT	BUILDING STONE	CURBING AND FLAGGING	PAVING BLOCKS	CRUSHED STONE	RUBBLE, RIPRAP	ALL OTHER
Bluestone						
Hudson river.....	$26 400	$296 607	....	$45 650	....	....
Delaware river....	43 597	428 372	....	1 630	$4 185	....
Chenango co......	54 871	27 309	....	319	....	$11 168
Wyoming co......	170 722	450	....	....	3 042	....
Other districts....	13 199	5 820	....	8 045	....	....
Total bluestone...	$308 789	$758 558	....	$55 644	$7 227	$11 168
Sandstone						
Orleans co.......	$59 138	$111 455	$227 537	$8 687	$1 470	....
Other districts....	12 255	52 830	11 702	71 410	20 095	$3 650
Total sandstone..	$71 393	$154 285	$239 239	$80 097	$21 565	$3 650
Combined total...	$380 182	$912 843	$239 239	$135 741	$28 792	$14 818

Trap

Trap is a name commonly applied to a series of igneous rocks, distinguished chiefly by their basic composition, their fine grain, and, because of their basicity, by a dark color. In mineral composition they differ from granite in the total absence of quartz and by the more basic character of their feldspars. They consist mainly of plagioclase (soda lime feldspar) and pyroxene. In diabase, by far the most common rock type of the series, the feldspars have crystallized out in needle or lathlike forms, forming an interlocking network, with the pyroxene filling up the interstices.

Trap appears usually in two forms of occurrence: (1) as dikes which are usually vertical, wall-like masses of rock, which have been intruded while in semifluid condition into fissures, from some molten mass below; (2) as sheets which are intrusions of similar character but which have been forced between the bedding planes of sedimentary strata and have a horizontal position.

Of the first type, the dikes, there is an abundance around the borders of the Adirondacks especially in Clinton and Essex counties. However, owing to their small size or their inaccessibility, they are with the exception of one near Greenfield, Saratoga co. and one at Little Falls, Herkimer co. of no present commercial importance.

The sheet of diabase forming the Palisades and altogether in New York and New Jersey, having an outcrop of some 70 miles and a thickness of 300 to 800 feet, is the most valuable trap mass in the State. Rockland and Richmond counties are the chief producers.

The chief use of trap at the present time is in the form of crushed stone for use as a material in macadam road construction. Its peculiar interlocking crystallization and the abundance of pyroxene have given to the rock a very decided toughness, and, since this property is accompanied by the quality of the separate particles to bind into a firm mass after the road is constructed, the material has attained a well earned reputation as one of the best road metals.

The other important uses are in the form of crushed stone for concrete construction and for railway ballast. As a building or monumental stone diabase is of little importance. In the first place its toughness makes it an extremely expensive stone to quarry and to dress, and then too its somber hue is generally objectionable, although in monumental work the contrast between the hammered and polished surface is a pleasing feature.

The production of trap in 1908 was confined to the dike near Greenfield, Saratoga co., where considerable road metal was taken out, and to the Rockland county quarries at Haverstraw, Nyack, Mt Joy and Rockland Lake. The crushing plant of the Quinroy Construction Co. at Port Richmond, Richmond co. was destroyed by fire in March 1908 and no output was made. They will probably rebuild their plant during the coming season.

Owing to the general decrease in construction work during 1908, because of business depression, the output of trap rock fell below that of 1907, the total value in 1908 being $723,773 as against $941,627 in 1907. About 81 per cent of the production was sold for macadamizing roads and the remainder used for concrete construction and railway ballast.

Production of trap

MATERIAL	1907		1908	
	CUBIC YARDS	VALUE	CUBIC YARDS	VALUE
Crushed stone for roads	362 904	$349 485	755 754	$584 837
Crushed stone for other purposes	619 550	589 542	175 144	138 026
Paving blocks, etc.	....	2 600	....	....
Other	....	....	1 113	910
Total	982 454	$941 627	932 011	$723 773

TALC

Talc deposits, remarkable for their size and character, are found in St Lawrence county. They are exploited on a large scale and furnish most of the ground talc used in this country, besides a considerable quantity for export. The product is commonly sold under the name of mineral pulp, which is suggestive of its principal application; much of the talc has a fibrous texture that is preserved even after fine grinding and this feature makes it particularly valuable for incorporation in paper stock. Foliated talc which occurs in subordinate quantity, is also produced to some extent by the mines.

Features of the occurrence. The supply of fibrous and foliated talc is obtained from a single district, in southwestern St Lawrence county. Geologically the limits of the district can be quite sharply defined. The talc is associated with crystalline limestones and schists of Grenville age, which occupy a belt some 12 miles long and from 1 to 3 miles wide extending in a northeasterly direction nearly across the towns of Fowler and Edwards. The belt is inclosed by gneisses, largely of granitic and dioritic composition, no doubt in part at least of igneous derivation; while dark hornblendic gneisses of uncertain origin are not uncommon. A small area of the gneisses is included in the central part of the belt with the Grenville bordering it on all sides.

The talc deposits occur along minor belts within the limestones and tremolite schists. They are locally described as veins, but really have nothing in common with them, being beds or layers interstratified with the limestones. They have the same strike and dip as the latter and are at times continuous for long distances, as at Taleville where workable deposits extend fully a mile along the outcrop.

The derivation of the talc has been explained by C. H. Smyth jr as due to chemical alteration of silicates produced during the metamorphism of the limestone. Originally an impure calcareous sediment, the limestone under dynamic influences, has taken on a crystalline character and became impregnated with silicates, chiefly tremolite, actinolite and pyroxene. Certain beds seem to have contained sufficient magnesia and silica to permit a complete transformation into tremolite, forming a tremolite schist, while other layers with a preponderance of lime have undergone a partial change, showing scattered crystals and aggregates of silicates within the crystalline limestone. Tremolite is always the principal silicate in vicinity of the talc beds, though elsewhere pyroxene (enstatite and diopside) is common. The change from tremolite to talc is a result of weathering, and takes place readily under the influence of ground waters holding carbon dioxid. A coordinate process has produced serpentine from the same silicates, though this mineral is seldom found with the talc, being confined so far as observed to the outlying areas. The principle determining the nature of the end product, whether talc or serpentine, seems to be a problem not yet solved. The alteration of tremolite to talc, according to Van Hise,[1] may be given the following chemical formula:

$$Ca\,Mg_3\,Si_4\,O_{12} + H_2O + CO_2 = H_2\,Mg_3\,Si_4\,O_{12} + CaCO_3$$

The alteration is accompanied by an increase in volume of talc and calcite amounting to 25.61 per cent, though if the talc alone is considered there is a decrease of .83 per cent as compared with the tremolite. There is little or no calcite present in the talc; it has doubtless been removed by the water circulations during the process of alteration.

The beds under exploitation range from a few feet up to 50 feet or more in thickness. They are inclined at varying angles, usually between 30° and 60°, from the horizontal. The dip is uniformly toward the northwest. Masses and seams of unaltered tremolite are sometimes included within the deposits.

Character of the talc. The characteristic product of the region has a fibrous texture, belonging to the variety known as agalite. It is in fact a pseudomorph of tremolite, to which the fibrous

[1] Treatise on Metamorphism, p. 286.

texture is to be ascribed. Occasionally masses of very large fibers in closely compacted parallel arrangement are met with, very similar in appearance to amphibole asbestos. The usual grade, however, consists of a belted mass of interlacing fibers, seldom more than a fraction of an inch in length, and sometimes so fine as to resemble massive talc.

On the western end of the talc belt, the mineral is quite often foliated. Certain mines in this section yield the foliated variety in quantity, as intercalated seams in the fibrous talc. The name rensselaerite has commonly been applied to the foliated variety, but such usage is not warranted. The type specimens of rensselaerite collected and described by Ebenezer Emmons show it to be harder than talc and more nearly allied to serpentine in physical character, while it is an alteration product of pyroxene. The foliated talc is white with often a greenish tint and at times yields quite large and transparent leaves, resembling selenite.

Near the surface the deposits show discoloration from iron and organic matter, but at a little depth they yield material which when ground is a beautiful opaque white, light in texture and very uniform.

The only defect in the talc from this section is the presence oftentimes of a certain amount of grit which is hard to eliminate from the ground product. It can be traced to fine particles of quartz disseminated through the talc and in the case of the fibrous variety also to the existence of some unaltered tremolite. Samples of the prepared fiber when examined under the polarizing microscope will commonly reveal a little of the original tremolite. The proportion of grit is so small as to have little or no effect upon the uses of the talc for many purposes, yet it limits the market to some extent, and efforts have been made to devise a method for its separation, though up to the present time without much success.

Mining of talc. The mine openings are situated along the outcrop of the talc beds which have a northeasterly strike in conformity with that of the inclosing limestones. With the exception of the mines owned by the Union Talc Co. near Silvia lake on the southwestern end of the belt they lie in proximity to the Oswegatchie river, which furnishes most of the power used in the talc mills. The American and Arnold mines of the Union Talc Co. are 2 or 3 miles south of the river. In the central part of the belt near Fullerville the Ontario Talc Co. owns three mines. The eastern portion of the belt around Talcville includes the mines of the

United States Talc Co. and the several properties of the International Pulp Co., the largest producer in the district. A new company, the Uniform Fiber Talc Co., is at present opening a mine just west of Talcville.

Mining is all underground. The general practice in the district does not differ materially from the method employed in working other deposits which are similarly situated, though of course the soft and slippery nature of the material necessitates that the pillars left for roof support should be of large size. The workings are reached through inclines carried down on the footwall. In case the bed is not over 15 feet or so in thickness a single drift is run from either side of the incline at intervals of about 50 feet. The drift is carried nearly the full width of the bed and connected with the level above at short intervals by upraises, after which the talc is removed between the levels, leaving pillars 25 feet square or more to support the roof. With a bed of greater thickness two drifts may be run on the same level, leaving a wall of talc between to assist in supporting the roof.

Both machine drills of the percussion type and hand drills are employed in the mines. The talc is easily penetrated, though the holes must be cleaned at frequent intervals to prevent binding of the drills, and on that account the machines have not the usual advantage over hand work as regards economy. The rock is blasted by dynamite. It splits readily along the bedding or cleavage planes. The large blocks or slabs from blasting are reduced by sledges to a size convenient for handling. From the stopes the talc is loaded into cars and run out to the incline where it is dumped into skips for hoisting to the surface. It is aimed to leave the gritty and impure talc in the walls and pillars and to send only the milling grade to the surface.

Preparation for the market. The processes in use for grinding and preparing the talc have been gradually evolved out of long-continued experimentation. It is said that the first prepared talc sent from the district was ground in a gristmill. With the discovery of the value of the fibrous variety as a paper filler attention was given to the methods of treatment which have been perfected until the various grades now marketed are recognized as standard and find general favor in the paper trade. The development of the industry began to take on a permanent character about 1880 and in the next decade attained nearly its present importance.

The mills, all of which are run in connection with the mines, number seven or eight in all. They have a combined capacity of about 100,000 tons of prepared talc a year. With one or two exceptions they are situated along the Oswegatchie river in the stretch between Edwards and Gouverneur, the sites being selected with reference to water power facilities.

The reduction of the talc is accomplished in several stages. The lump talc, as mined, is first broken in a jaw crusher of the Blake type. The broken product is then run through a cone grinder or through rolls where it is reduced to 1 inch size or less. In the third stage the crushed product may be ground between burstones of special manufacture or in a centrifugal grinder of which the Griffin mill is the common type. After this grinding the finest material may be removed by screening or by fans which blow it into settling chambers and forms one of the grades for the market. The remainder undergoes a final reduction in pebble mills. Alsing cylinders are generally employed for the last stage. They are 8 or 10 feet long and 6 feet in diameter and are lined with porcelain brick. They make from 20 to 25 revolutions a minute. Their charge consists of about 1 ton of talc and 3 tons of flint pebbles. The grinding of a single charge takes from 2 to 5 hours depending upon the grade of product that is desired. The fibrous character of the talc is maintained throughout the grinding to the end product so that it is difficult to size the ground talc by screening; consequently the grades of fiber are generally regulated by the duration of the final grinding process.

The foliated talc undergoes essentially the same treatment. The coarser grades as finished have a scaly appearance much like ground mica and can be used as a substitute in some of its applications. This variety is ground also to an impalpable powder and employed for the same purposes as massive talc. The milling of either variety represents the greater part of the expense of production of the talc for the market.

The finished product is shipped in sacks holding 50 pounds each. Quotations are made from Gouverneur as shipping point, though the mills along the Oswegatchie river are near the line of the Gouverneur & Oswegatchie railroad and their output is loaded directly into cars. The product of the mills off the line of this railroad is hauled by teams to Gouverneur.

Uses. The talc from this district, as already stated, is mainly used in the paper trade. The fibrous product goes into book and writing paper as filler and finisher, and it is used to a considerable extent, though perhaps not so widely, in newspaper. It is more readily incorporated with paper stock than clay and at the same time has a beneficial influence upon the strength of the paper. For wallpaper the foliated talc is often employed to give a lustrous surface. The manufacturers of gypsum wall plasters are consumers of talc which takes the place of hair, wood fiber or asbestos in these plasters. Among minor uses are in the manufacture of waterproof paints, steam pipe coverings and toilet powders.

Production. The production of talc in recent years has averaged about 65,000 tons. Of late there has been no decided expansion from year to year, though the tendency on the whole has been upward rather than to remain stationary. This appears from the following table which gives the output and value for each year since 1896.

Production of talc in New York

YEAR	SHORT TONS	VALUE	VALUE PER TON
1896	46 089	$399 443	$8 67
1897	57 009	396 936	6 96
1898	54 356	411 430	7 57
1899	54 655	438 150	8 02
1900	63 500	499 500	7 87
1901	62 200	483 600	6 99
1902	71 100	615 350	8 65
1903	60 230	421 000	7 ..
1904	65 000	455 000	7 ..
1905	67 000	519 250	7 75
1906	64 200	541 600	8 43
1907	59 000	501 500	8 50
1908	70 739	697 390	9 86

The production in 1908 of 70,739 short tons valued at $697,390 was considerably above that of the preceding year due mostly to the shortage of supply in 1907 brought about by the burning of one of the larger milling plants. There was also an increase in the average prices received for the ground talc, the average of nearly $10 a ton being the highest for a long time. At the low prices which prevailed in some of the years past, there was little or no profit for the mining companies, and the present level can not be considered as excessive. As the gain was made during a year of depression in the paper trade and in other lines of industry which are consumers of talc, the outlook for steadier and more remunerative prices in the immediate future seems very assuring.

New developments. The new mill at Hailesboro built by the International Pulp Co. to replace the old mill which was destroyed by fire has been completed and placed in operation. The mill has a nominal capacity of 100 tons of ground talc a day adding about 25 tons a day to the former capacity.

The Uniform Fiber Talc Co. was organized in September 1908 and secured a talc property on Wintergreen hill belonging to the N. H. Freeman farm just west of Talcville. Plans have been made looking toward the construction of a mill near the mine, for which purpose the Sullivan water power on the Oswegatchie river about ½ mile above Dodgeville has been purchased. The power will be transmitted to the mill by electricity. The company intends to make an output of from 30 to 50 tons a day. A vertical shaft put down on the property encountered a bed of fibrous talc of good grade.

The Ontario Talc Co. has continued the development of the Potter mine below Fullerville with favorable results, finding an excellent grade of fibrous talc.

INDEX

Appendix 4

Entomology

Museum bulletins 129, 134

129 Control of Household Insects

134 24th Report of the State Entomologist 1908

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 446 ALBANY, N. Y. May 1, 1909

New York State Museum

John M. Clarke, Director

Ephraim Porter Felt, State Entomologist

Museum bulletin 129

CONTROL OF HOUSEHOLD INSECTS

BY

EPHRAIM PORTER FELT D.Sc.

New York State Education Department
Science Division, April 2, 1909

Hon. Andrew S. Draper LL.D.
Commissioner of Education

MY DEAR SIR: The State Entomologist has prepared a short bulletin on the *Control of Household Insects*. I believe this would prove of usefulness to our housekeepers, an aid to public comfort and health and I beg to submit the document to you herewith, with the recommendation that it be printed as a bulletin of the State Museum.

Very respectfully
JOHN M. CLARKE
Director

State of New York
Education Department
COMMISSIONER'S ROOM

Approved for publication April 3, 1909

A. S. Draper

Commissioner of Education

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 446 ALBANY, N. Y. May 1, 1909

New York State Museum

John M. Clarke, Director

Ephraim Porter Felt, State Entomologist

Museum bulletin 129

CONTROL OF HOUSEHOLD INSECTS

BY

EPHRAIM PORTER FELT D.Sc.

INTRODUCTION

One need not go back a decade to note a marked change in sentiment toward certain insects commonly found in homes. There have been great additions to our knowledge respecting the economic importance of some of these insects during recent years. This bulletin aims to present in concise form the status of the principal species and gives special attention to methods of controlling the pests.

There is no denying the beneficial influence of a pleasant home. It should be a place where such material benefits as protection from diseases, cleanliness and personal comfort predominate. There is deep pathos in the present situation. Many a widow protects cherished garments from "moth and rust," while the insect primarily responsible for the disruption of the home, through the introduction of the germs of typhoid fever, flies about he house unchallenged and ready, under favorable circumstances, to play its part in another tragedy.

Doubtless such deplorable conditions are preventable and our descendants of another century will stand amazed at our blind toleration of such a menace to life and happiness.

Let us seek to control the ordinary household pests; let us recast our estimation of the house fly and the malarial mosquito and gage our actions accordingly. The malevolent house fly is a constant menace to the integrity of the home. Those who have not suffered from disease germs introduced by this pest, should recognize the danger and adopt adequate precautionary measures.

Recent discoveries respecting the part played by insects in the dissemination of malaria, yellow fever and typhoid fever, read like a romance. Mosquitos as distributing agents of malaria have been suspected for many years. An active impetus was given to this suspicion through the discovery by Ross that certain Indian mosquitos harbored a malarial parasite affecting birds. It was only a step from this to human malaria. The mosquito-malarial theory took such firm hold that in 1900 Drs Low and Sambon spent the summer on the fever-ridden Roman campagna, relying entirely for protection from malaria upon flimsy mosquito netting. Their field test was further confirmed by the shipment of malarial-infected mosquitos to London, where they were allowed to bite Dr Patrick Manson's son, who in due time came down with the disease though residing in a nonmalarious section.

The deadly, justly dreaded "yellow jack" has likewise been traced to its lair through the heroism of a few devoted scientists. Volunteers lived in a fever stricken locality with no protection from infection other than the frail mosquito bar. They even slept in beds soiled by fever patients for the sake of demonstrating beyond question that the disease was not infectious. Drs Carroll and Lazear went further and allowed themselves to be bitten by infected mosquitos. Both contracted the disease, the latter losing his life on the altar of scientific investigation. This was true heroism. All honor to these martyrs. Theirs was not a useless sacrifice. Before their time, a yellow fever outbreak meant the loss of hundreds or thousands of lives, simply because there was no known adequate method of preventing the disease. Prolonged arbitrary and wasteful quarantines were maintained. Thousands fled from infected districts. The horrors of the shotgun quarantine prevailed. The control of the yellow fever epidemic of 1905 in New Orleans is a most striking testimony to the value of the recent discoveries regarding this disease. This outbreak was handled as a mosquito-borne infection and for the first time the disease was stamped out before cold weather and with comparatively little loss in either life or property.

The Spanish-American War has resulted in a material addition to our knowledge respecting the part flies may play in the spread of typhoid fever, an infection costing the country $350,000,000 annually, it is estimated. The conditions in the army camps were such as to result in the unquestioned indictment of the ordinary house fly as the chief agent, under such conditions, in spreading the deadly germs of typhoid fever and other grave intestinal diseases. These conclusions have been supported by thoroughly competent investigators working under quite varied conditions. There is no questioning the deadly potentialities of the hitherto supposedly harmless house fly, if it has access to disease-infected discharges, a condition altogether too frequent in country districts.

DISEASE CARRIERS

Typhoid or house fly[1]

Known and tolerated from time immemorial, this insect is more than a nuisance. It is a menace to life under certain conditions. It is far from being a necessary evil, since the adoption of comparatively inexpensive methods is all that is essential to bring about an enormous reduction in its numbers

The fly as a disease carrier. The experience of recent years, particularly that of the Spanish-American War, has called attention in a most forcible manner to the part flies may play in conveying typhoid fever and other affections of the digestive system. Typhoid fever affects about 250,000 Americans annually, 35,000 of the cases proving fatal. There is no denying the important part played by water in carrying this infection, nevertheless the common house fly is a most efficient agent in this work. Virulent typhoid bacilli have been found on the legs and within the body of this insect, persisting in the latter case, for 23 days. A number of serious outbreaks have been observed by competent physicians in various parts of the country, and in each instance the infection through a common water or food supply did not afford a satisfactory explanation. Similarly, the cholera bacillus has been found in large numbers on flies, has been recognized in fly specks 17 hours after feeding and as late as four days, and infected flies have carried the disease germs to milk. It is equally certain that flies may convey the germs responsible for certain forms of diarrhoea and

[1] *Musca domestica* Linn.

other intestinal disorders. It is more than probable that flies play an important part in causing the heavy mortality among bottle-fed babies, the proportion of deaths between these and breast-fed babies being as 25 to 1. It has been shown that flies may ingest, carry and discharge tubercular bacilli, thus aiding materially in spreading tuberculosis. Furthermore, it is held that flies may, under certain conditions, convey plague, trachoma, septicemia, erysipelas, leprosy, and there are reasons for thinking that this insect may possibly be responsible for the more frequent

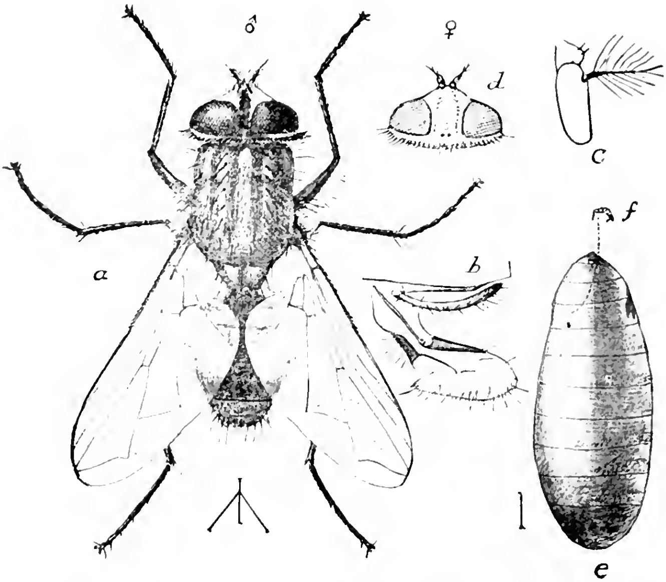


Fig. 1 Typhoid or house fly: *a*, male, seen from above; *b*, proboscis and palpus from the side; *c*, tip of the antenna; *d*, head of female; *e*, puparium; *f*, the anterior breathing-pore or spiracle, all enlarged. (After Howard & Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

new cases of smallpox occurring in the near vicinity of a hospital. The eggs of certain intestinal parasites, such as those of the tapeworm, may be swallowed by the fly and passed uninjured.

Methods of carrying diseases. The most common and dangerous infections conveyed by the house fly are typhoid fever, other intestinal disorders, including those affecting young children, and tuberculosis. Typhoid germs may be discharged from the human system several weeks before diagnosis is possible, continue in numbers 6 to 8 weeks after apparent recovery, and in exceptional cases may persist during a period of several years. There are authentic records of a patient distributing these germs for 17 years and being the incipient cause of 13 cases during 14 years of that period. Even the urine of patients may contain active typhoid bacilli. Similarly, the germs producing other intestinal disorders are discharged from the system though presumably not persisting for such extended periods. It is well known that the germ causing tuberculosis is abundant in the sputum of patients.

The house fly subsists entirely upon fluids and feeds with apparently equal gusto upon fresh manure, decaying vegetable matter, sputum or the daintiest culinary preparations. It is only necessary for discharges from patients suffering from typhoid fever or other intestinal diseases to be exposed in open vessels or poorly constructed privies in order to secure the spread of the infection. The hairy legs are fouled with thousands of deadly bacilli and countless numbers are swallowed. Shortly thereafter the flies may appear in the house and incidentally contaminate the food, to the great peril of the consumer, with the germs adhering to the limbs and those deposited with undiminished virulence in the familiar fly specks. This, while disgusting and abhorrent to every sense of decency, occurs repeatedly in nature and is apparently ignored by the masses, despite the deadly peril thus incurred.

Habits. The house fly breeds by preference in horse manure, though it lives to a limited extent in cow manure and miscellaneous collections of filth, especially decaying vegetable matter. The flies deposit their eggs upon manure and similar material, the young maggots hatching in less than 24 hours and, under favorable conditions, completing their growth in 5 to 7 days. The maggots then transform to an oval, brown, resting or pupal stage, remaining in this condition from 5 to 7 days. The life cycle is therefore completed in 10 to 14 days, the shorter period being true of the warmer parts of the year, particularly in the vicinity of Washington, D. C. One fly may deposit 120 eggs, and as there may be 10 or 12 generations in a season, it is not surprising that this insect should become extremely abundant by midsummer. Calculations show that, under favorable conditions, the descendants from one fly might at the end of a season reach the stupendous number of over 190 quintillion. It has been estimated that 1200 house flies might be bred from a pound of manure, and at this rate a good load would produce two and one half million. Fortunately, breeding is confined to the warmer months, only a few flies wintering in houses in a more or less dormant condition.

Ordinarily, flies do not travel a great distance and, in most instances, probably breed within 300 to 500 feet of places where they are extremely abundant. Butcher carts, grocery wagons and electric or steam cars carrying more or less exposed meat and other supplies attractive to flies, may become important agents in the dissemination of disease, since it is only necessary for these vehicles to load where conditions are favorable for fly infection and we may have a mysterious outbreak of disease at some distance from the source of trouble.

Sanitary and control measures. It is perhaps needless to add, in view of the foregoing, that the greatest care should be taken to exclude flies from the sick room, especially in the case of contagious diseases The flies are not only annoying to the patient but may aid in carrying the disease to others. The proper disposal of infected discharges, such as those from typhoid patients, should never be neglected, and under no conditions left where flies may gain access to the infection.

All food, particularly that eaten without having been cooked, should be carefully protected from flies by the use of screens. This is especially true of milk, since it affords a favorable medium for the multiplication of certain disease germs. It applies to dealers in food supplies as well as to the home. An important step toward better sanitation would be taken if the public refused to patronize provision stores, restaurants and hotels overrun by flies.

A large reduction in the number of house flies found in most places is thoroughly practical. This can be best effected by doing away with conditions favorable to the unrestricted multiplication of this pest. The first step is to prevent flies from breeding in horse manure and other waste products from the stable. All manure should be placed in a fly-proof receptacle or the accumulation treated daily with small quantities of chlorid of lime. If the manure is removed from the stable at intervals of seven days and spread upon the field, there will be comparatively little breeding. One of these measures can be applied to every stable in cities and villages. The farmer, if unable to carry out any of the preceding suggestions, will find a large measure of relief from the fly nuisance, if the manure is stored in tight, practically fly-proof cellars, such as can be easily constructed with the modern concrete foundation. Flies breed but little in darkness, and the writer has known of barns comparatively free from flies, simply because the manure was stored in the darker parts of a large barn cellar.

The treatment of manure, described above, should be supplemented by care in preventing the accumulation about the premises, of decaying organic matter such as fruit, table scraps, etc. Swill barrels should always be provided with tight covers and care exercised that there be no leakage or an accumulation of fly-breeding material about the barrel. The old-fashioned box privy should be abolished unless it is conducted on the earth closet principle and the contents kept covered with lime or dry earth, so as to prevent both the breeding and infection of flies. The modern water-closet and cesspool is by far the best and safest solution of this last named difficulty. Such conveniences—one might well term them necessities — are no more costly than a long run of fever with its attendant suffering and occasional death. The presence of numerous flies about the dwelling may be construed as indicating a nearby, usually easily eliminated, breeding place.

It will be found in practice that some flies are very apt to exist in a neighborhood even after the adoption of rigid precautions. They should be kept out of houses, so far as possible, by the use of window and door screens, supplemented by the employment of Tanglefoot or other sticky fly paper. This, though somewhat disagreeable, is much to be preferred to the use of poisonous preparations likely to result in dead flies dropping into food. Prof. C. P. Lounsbury, Government Entomologist of South Africa, suggests, in addition to the above, putting fresh pyrethrum powder upon window sills and supplementing this by the judicious use of an insect net.

The control of this pest is of great importance to the community. Individual effort in this direction should be strengthened and sustained by all officials charged with protecting the public health. The Health Department of Washington, D. C. has already promulgated excellent ordinances against the fly pest. Similar action should be taken by health officials in our municipalities and villages.

Fruit flies

These light brown flies, only about $\frac{1}{8}$ of an inch long, are most commonly found about the pomace of cider mills and on overripe or partly decaying fruit. They are attracted by fermented liquids, such as wine, cider, vinegar, beer, and may frequently be observed on the sides of jars containing preserved fruits. There are two species[1] which appear to be most abundant. It is very difficult

[1] Drosophila ampelophila Loew and D. amoena Loew.

to keep these insects out of houses on account of their small size. Dr Howard has listed these forms as likely to be disease carriers. These little insects ordinarily enter the house rarely unless attracted by overripe or canned fruit. The latter should be hermetically sealed, making it safe from injury, and stored in the cellar or other place comparatively inaccessible to the flies, as soon as convenient. These small flies can be easily destroyed with fresh pyrethrum powder.

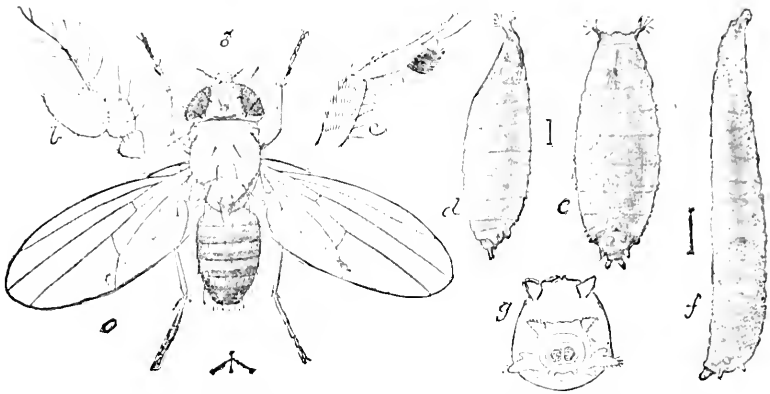


Fig. 2 Fruit fly: *a*, adult fly; *b*, antenna; *c*, base of tibia and first tarsal joint; *d*, puparium, side view; *e*, same, dorsal view; *f*, larva; *g*, anal segment of same; *a*, *d*, *e*, *f*, much enlarged; *b*, *c*, *g*, still more enlarged. (After Howard, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

Malarial mosquito[1]

This insect has always been with us. It is only recently that its connection with the spread of malaria has been established beyond question, though there has long been a suspicion that some mosquitos might be responsible for this disease.

Infection by malaria. Medical men, best qualified to pass upon the question, unhesitatingly affirm that certain mosquitos are responsible for the dissemination of this malady. Malaria, like some other diseases, is caused by a specific germ. It is peculiar in that it has to pass through certain changes within the body of the mosquito before it can develop successfully in the human system. Moreover, malarial mosquitos are harmless until they have become infected by biting some person suffering from this disease. These germs may be carried by man in a latent con-

[1] Anopheles maculipennis Meign.

dition for years. This is especially true of Italians. The sequence of events may be briefly summarized as follows: A female mosquito bites a person having malarial germs in his blood. The malarial parasites enter the walls of the mosquito's stomach, undergo certain changes therein, and in from 7 to 14 days make their way to the salivary glands and are then ready to enter the system of the next person bitten. These germs then undergo a series of changes, and if the person is not immune a more or less severe case of malaria develops. So far as known, the malarial mosquito, and that only, can carry this infection. The connection between malaria and extensive excavations has long been recognized, though it is only recently that a satisfactory explanation of this condition has been advanced. Malarial mosquitos breed in large numbers in pools in and about excavations. Italians are our principal excavators. Most of them have suffered from malaria and have the disease germs

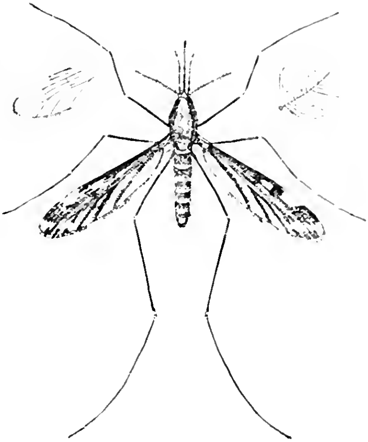


Fig. 3 Malarial mosquito, female, with male antenna at right and wing tip showing venation at left. (After Howard, U. S. Dep't Agric. Div. Ent. Bul. 25. n. s. 1900)

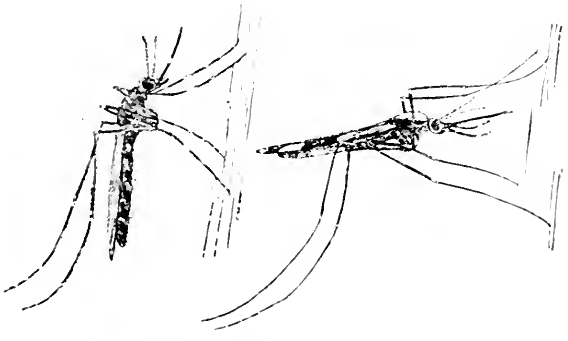


Fig. 4 Common and malarial mosquitos at rest, the latter to the right. (Reduced from Howard, U. S. Dep't Agric. Div. Ent. Bul. 25. n. s. 1900)

in their systems. The malarial mosquito, breeding in large numbers about recent excavations, derives its infection from the Italians and then, if opportunity allows, inoculates Americans. We therefore frequently have exceptionally severe outbreaks of malaria following extensive excavations. This is exactly what would be expected if the above statements are true.

Habits. The appearance and habits of the malarial mosquito are important if we wish to avoid malaria. The malarial mosquito is easily recognized by its spotted wings and, in particular by the characteristic resting position, the beak and the body being in almost a straight line and at a considerable angle to the supporting surface. On the other hand, our ordinary mosquitos do not have spotted wings and when at rest the beak and the body form an obtuse angle, the body being approximately parallel with the supporting surface. The wriggler of the malarial mosquito occurs in grassy pools, beside streams and is frequently very abundant in collections of water in and about recent excavations. The wriggler of the malarial mosquito is easily recognized by the absence of a conspicuous air tube, by its resting in a horizontal position just beneath the surface film, and the usually bright or dark brown and greenish colors. The wrigglers of the common mosquito, conversely, have a large air tube at the posterior extremity, invariably rest with the body at a considerable angle to the surface of the water and are a dull whitish or yellowish white. The malarial mosquito breeds more or less during the warm months of the year, the spotted-winged adults wintering in any shelter, frequently in houses and occasionally flying in midwinter. The capture of chilled specimens on snow banks in early spring is not unusual.

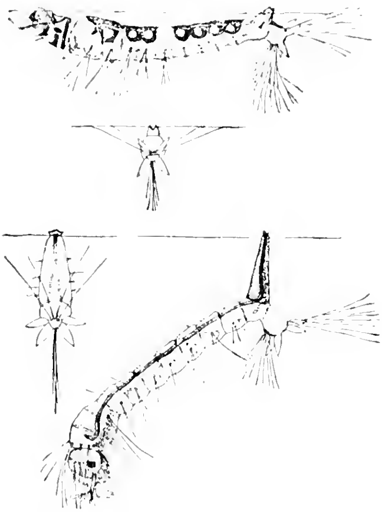


Fig. 5 Characteristic feeding position of malarial mosquito wriggler in upper figure, and that of the common mosquito in lower figure. (After Howard. U. S. Dep't Agric. Div. Ent. Bul. 25, n. s. 1900)

Control measures. Malarial outbreaks may be prevented or controlled in two ways. The malarial mosquito is very local in its habits. It is comparatively easy, by draining breeding pools and treating those not easily drained, with oil, to eliminate the mosquito and thus do away with all danger of infection. This is practicable in most cases and in sections where malaria is more or less prevalent, is the only course to pursue.

The malarial mosquito is widely distributed in the North and there is always a chance of an outbreak following the appearance of parties suffering from malaria or having the parasite in their blood, as for example, Italians. The advent of either in a neighborhood should be preceded if possible by extraordinary activity in draining or treating breeding places in order to destroy as many of the insects as possible and thus reduce the danger of infection. Methods of value in controlling common mosquitos will be equally serviceable in checking this disease carrier.

Yellow fever mosquito[1]

This, though a southern species, is of interest owing to its great economic importance. It is a dark brown form, marked with strongly contrasting silvery white, and is frequently designated as the day mosquito in the South.

Yellow fever carrier. This insect appears to be the only method by which yellow fever may be conveyed from one person to another. As in the case of the malarial mosquito, the yellow fever mosquito is harmless until it has become inoculated with the germs by biting a yellow fever patient, and even then some 12 days must elapse before it can convey the infection. As a result of the recent discoveries relating to this insect, the control of a yellow fever outbreak means a strenuous, well sustained campaign against this insect, supplemented by the exercise of special care to prevent mosquitos gaining access to yellow fever patients.

Habits and control. The yellow fever mosquito appears to have in the South much the same habits as our house mosquito in the North. It displays a marked preference for the water in cisterns, tanks and similar places; consequently measures of value in reducing the house mosquito will prove equally serviceable in controlling this much more dangerous southern species.

ANNOYING FORMS

Cluster fly

This interesting species[2] has received its popular name because of the large clusters occasionally found in autumn in houses. It is easily distinguished from the rather closely related house fly by the black thorax covered rather thickly with tawny hairs frequently

---

[1] *Stegomyia calopus* Meign.

[2] *Pollenia rudis* Fabr.

inclining to a grayish shade. The young of this species live about the roots of grasses and there is a record of its having been reared from cow dung. Clusters of this insect can easily be destroyed by dusting the flies liberally with fresh pyrethrum powder. The insecticide may be molded into moist cones and burned if preferred. The stupefied flies, in either case, should be swept up and burned.

Wasps and hornets

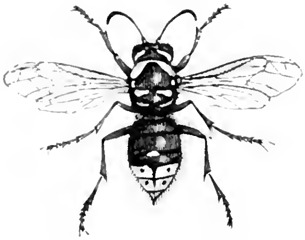


Fig. 6 Wasp enlarged. (After Riley)

The paper wasp[1] and the common wasp[2] frequently occur about buildings and are of considerable service in destroying flies. Occasionally, if exceptionally abundant, they may become a nuisance on account of the danger from stinging. These insects can easily be excluded by the use of screens and in case of their being excessively abundant the nests should be found and the inmates destroyed at night with chloroform or bisulfid of carbon.

House or rain barrel mosquito[3]

This modest, brown, though by no means retiring mosquito, hardly needs an introduction. Its suggestive song is so well understood that we instinctively prepare for the inevitable. This mosquito takes advantage of man at every possible opportunity, while we tamely submit to a series of annoyances which could be eliminated at a less expenditure of energy than is necessary to endure repeated trials of patience with a reasonable degree of fortitude.


Fig. 7 House mosquito. Egg mass with enlarged eggs above and at the left; young wrigglers below. (Reduced from Howard, U. S. Dep't Agric. Div. Ent. Bul. 25. n. s. 1900)

Habits. This insect winters in small numbers in houses or other shelters, the females depositing clusters of eggs upon standing water on the approach of warm weather. Breeding may continue

[1]V e s p a g e r m a n i c a Fabr.
[2]P o l i s t e s sp.
[3]C u l e x p i p i e n s Linn.

under favorable conditions till checked by frosts in the fall. This domestic pest displays a marked partiality for water in rain barrels, cisterns, defective eave troughs, old wooden buckets, tin cans or similar receptacles. The black eggs are deposited in raftlike masses of some two to four hundred, and the entire development to the adult may occur within 14 days. One rain barrel may produce thousands of mosquitos and provide an abundance of these ubiquitous annoyances throughout a season.

Control. This species, like a number of other mosquitos, is quite local in habit and its presence may be construed as an indication of nearby breeding places. The elimination of useless barrels, tin cans, etc. will accomplish much toward reducing the numbers of this pest, and this should be supplemented by attention to gutters and eave troughs to see that they have not become bent or clogged so as to afford breeding places. Rain barrels and cisterns, if a necessity, may be rendered innocuous by covering them closely, even though nothing more substantial than mosquito netting be employed. Should this latter be undesirable, the surface may be kept covered with a film of kerosene, without detriment to the employment of the water for domestic purposes, provided the water be drawn from the lower part of the vessel.

Salt marsh mosquito[1]

The salt marshes, as might be presumed, present peculiar conditions and these are accompanied by a corresponding variation in animal life. Those at all familiar with marsh conditions have learned by experience about the large, voracious swarms of mosquitos which may occur in such sections.

Habits. The salt marsh mosquito is typical of several forms which breed by preference in brackish water. The short tubed, dark colored wrigglers are found here and there in pools, being by far the most numerous within two or three hundred feet of the high land, this area being that portion of the marshes flooded only by high tides. These more or less regular overflows of water result in numerous eggs hatching and the production of ravenous hosts of mosquitos, easily recognized by their white banded legs, beak and body, the latter in addition, bearing a conspicuous longitudinal white stripe. These insects differ greatly from our house mosquito, in that they fly considerable distances, there being authentic records of their having been found 40 miles from the nearest available breeding place. Occasionally hosts of these

[1] *Culex sollicitans* Walk.

insects invade New York city to the great discomfort of the residents

Control. The control of this species is practicable though at the outset it appears somewhat difficult. All that is necessary is to provide drainage so that pools of water will not stand more than a few days This is accomplished by running narrow ditches within about 25 feet of the headland and 40 or 50 feet apart, all being connected with some tidal creek so that they are flushed out twice daily. The walls of the ditches should be perpendicular and the bottom at a uniform level. Experience has shown it inadvisable to have the walls sloping or to attempt to secure a uniform

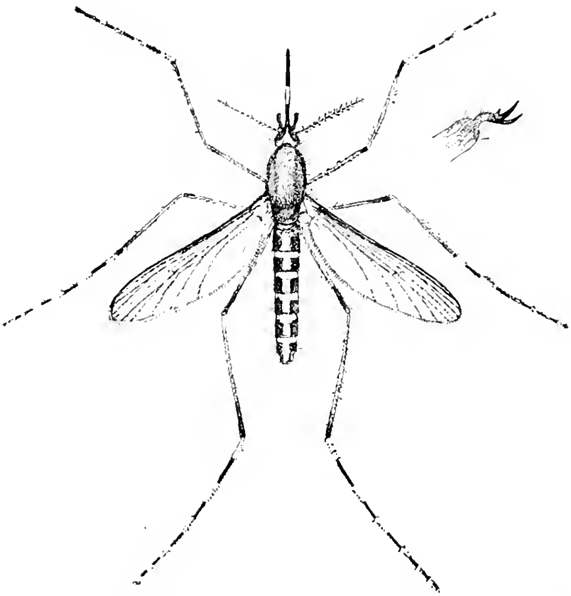


Fig. 8 Salt marsh mosquito from above, the toothed front claw more enlarged. (After Howard, U. S. Dep't Agric. Div. Ent. Bul. 25. n. s. 1900)

pitch, since the latter almost invariably results in pools not reached by the daily tides. This work has been conducted on an extensive scale in the vicinity of New York city with most gratifying results. Several types of ditching machines are in use and the work is comparatively inexpensive.

The elimination of mosquito breeding places on the salt marshes may sometimes be accomplished by the use of tidal gates and a series of drains. This method, while thoroughly effective, belongs to the domain of land development rather than to that of insect subjugation. The additional cost in many cases may be more than met by the increased value of the marshes treated.

House fleas

The cat and dog flea[1] is the species most usually abundant in houses in New York State, judging from the specimens submitted with complaints. This species, as its common name indicates, occurs indiscriminately upon both the cat and the dog and may be found about their sleeping places. The minute, white eggs are laid mostly in such places. The slender, active larvae feed upon organic matter in cracks and crevices, and are most numerous about the sleeping places of domestic animals. The flea is a prolific insect. The closing of a dwelling for several weeks or more in warm weather affords almost ideal conditions for rapid multiplication, and more than once householders have been surprised

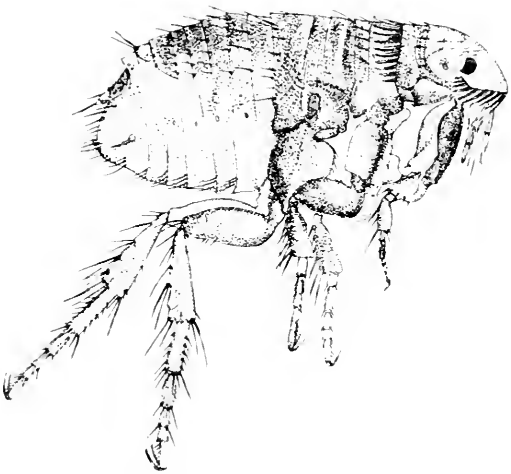


Fig. 9 Cat and dog flea, seen from the side, enlarged. (Original)

on returning to find the home overrun by these active, annoying pests. A rat flea is an important factor in the spread of bubonic plague.

Control measures. Fleas are very likely to occur on cats and dogs and if these animals must be retained in the home, care should be exercised to keep their sleeping places clean. Provide the animal with a mat or blanket upon which it may sleep. This mat should be taken up frequently, shaken and the collected dust beneath burned. This is a most effective method of preventing the multiplication of these insects. An animal known to

[1] Ctenocephalus canis Curtis.

be infested with fleas should have a quantity of fresh pyrethrum powder rubbed into the hair. This will stupefy the pests, causing them to drop off and then they may be swept up and burned. Dusting hosiery with pyrethrum powder has been found very effective in preventing flea bites in situations where such precautions are advisable.

It is frequently very difficult to deal with a bad infestation, due to the impossibility of getting at the breeding places or destroying all of the fleas at one time. Dr Henry Skinner of Philadelphia states that he has successfully destroyed fleas in a badly infested room, by sprinkling the floor liberally with about 5 pounds of flake naphthalene and closing the room for 24 hours. The acrid fumes destroyed the fleas and inflicted no material injury. There is no danger in this procedure and we earnestly commend it to those troubled by this pest. Fumigation with hydrocyanic acid gas, described on page 42, where practical, is a most satisfactory method of dealing with this condition.

A sparse infestation has been handled satisfactorily, according to Dr Howard, by placing a white cloth, like a pillow case, in the middle of the floor. The fleas, attracted by the color, jump on the cloth and may then be captured with a wet finger and put into water.

Bedbug[1]

The brown, oval, flattened, malodorous insect so generally designated by the above name, is too familiar to require description.

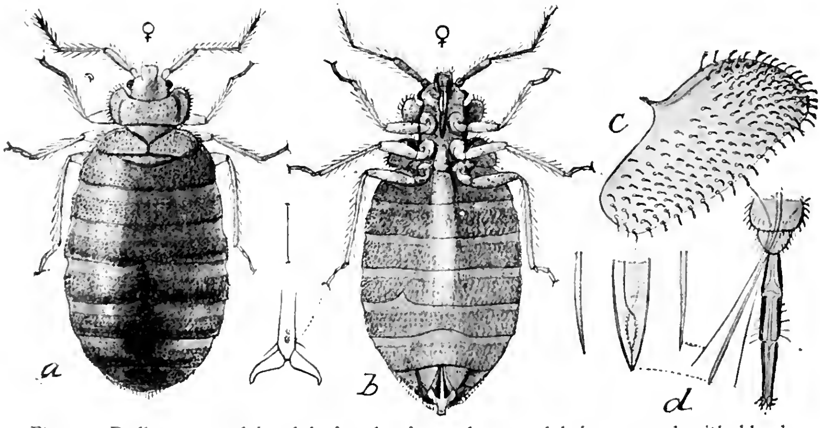


Fig. 10 Bedbug; *a*, and *b*, adult females from above and below, gorged with blood; *c* and *d*, structural details. (After Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

[1] Cimex lectularius Linn.

It is especially likely to be abundant in old houses where cracks and crevices abound, and its continuance therein is favored by the old style wooden bedstead with its numerous shelters. The occurrence of this pest in a home is not necessarily a reflection upon the ability of the housewife. Its continuance there may be the occasion of grave reproach. Bedbugs are very liable to occur on boats, are occasionally found in sleeping cars and are said to be much more common in the Southern than in the Northern States.

Habits. This insect, as many can vouch for by personal experience, is nocturnal in habit. Recent experiments show that it may feed under certain conditions on mice as well as upon man. This habit, should it prove to be general, accounts for cases where bedbugs are found very abundant in houses which have been uninhabited for some time. Another species[1] occurs in swallows' nests and occasionally invades adjacent living rooms. It appears to live almost exclusively upon birds, though a third form,[2] found on chickens, has been known to suck human blood, but not under natural conditions.

The oval, white eggs of the bedbug are deposited in cracks and crevices in batches of 6 to 50 or thereabouts. The yellowish white, nearly transparent young hatch therefrom in a week or 10 days. Experiments have shown that about 11 weeks are necessary for the young insects to attain maturity, though the period is probably greatly modified by the degree of warmth and the abundance of food. It is said that ordinarily only one meal is taken between each of the five molts preceding the attainment of maturity. Full-grown bugs at least are able to endure long fasts with apparently no inconvenience. It has been stated that the bedbug may serve as a carrier of certain diseases.

Control measures. Cracks and crevices, loose wall paper and the old wooden bedsteads afford ideal hiding places for this disgusting pest. The modern tight construction of both floors and walls, and iron or brass bedsteads reduce the retreats of this species to a minimum and greatly facilitate its control.

The insect can be controlled in the older type of dwelling only by extreme vigilance. Cracks and crevices should be stopped so far as possible, and the joints of the old-fashioned bedstead treated liberally with benzine, kerosene or similar oils. Hot water can be

[1] Cimex hirundinis Jenyns.

[2] Cimex columbarius Jenyns.

employed for cleansing bedsteads where this treatment seems preferable. Corrosive sublimate is frequently used, though a deadly poison and should be employed with great caution. The daily inspection and the destruction of bugs found on the bed and bedding soon results in eliminating the pest unless the building affords comparatively inaccessible retreats, as, for example, a very defective floor.

A room badly infested by this pest might well be thoroughly fumigated with brimstone; 2 pounds of sulfur are advised for each thousand cubic feet of space, the treatment being continued at least 24 hours if possible. The sulfur candles now manufactured are excellent for this purpose. A more effective though much more dangerous method is the employment of hydrocyanic acid gas, directions for the use of which are given on page 42. This latter is especially serviceable where entire buildings are badly infested.

It may be comforting to know that the bedbug has active enemies in the little red ant and also cockroaches. Unfortunately these insects are serious nuisances in the household and hardly more welcome than the pest under consideration.

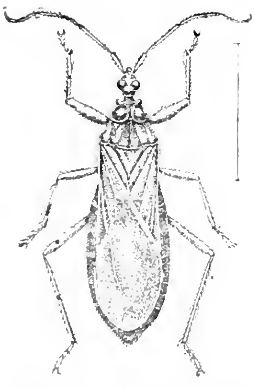


Fig. 11 Masked bedbug hunter or kissing bug, from life, i. e. about twice natural size. After Howard. U. S. Dep't Agric. Div. Ent. Bul. 22 n. s. 1900)

Bedbug hunter

This species[1] occasionally occurs about houses and with one or more allies was widely noticed by newspapers in 1898 under the name of kissing bug. This brownish or black insect is about ¾ of an inch long and has somewhat the same shape as the malodorous squash bug of the garden. It is beneficial, since it preys upon insects. The grayish, sprawly legged young are unusually interesting on account of their being covered with particles of lint. This gives them a nondescript appearance and undoubtedly is of service in enabling them to creep up unobserved upon their prey.

[1] Opsicoetus personatus Linn.

House centipede[1]

This light brown, rapidly running, sprawly legged centipede arouses more or less aversion and terror through apprehension. Like other centipedes, it is capable of inflicting a somewhat poisonous bite though, as a rule, it is only too glad to escape. The house centipede has become well established in the dwellings of Albany, N. Y. and is presumably more or less abundant in other cities of the State. It is beneficial in that it is known to prey upon house flies, cockroaches and other insects. Its presence in a house should be welcomed, since it is capable of inflicting no injury aside from a somewhat poisonous bite, the latter being extremely rare.

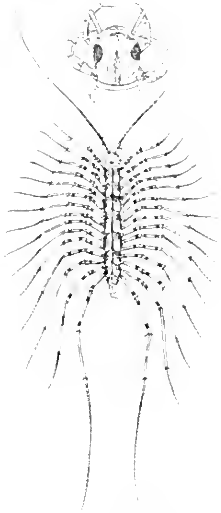


Fig. 12 House centipede; seen from above, enlarged, the head still more enlarged (After Wood)

FABRIC PESTS

Clothes moths

The small, white caterpillars of these insects, frequently in a cylindric, webbed case, are very different from the young of the

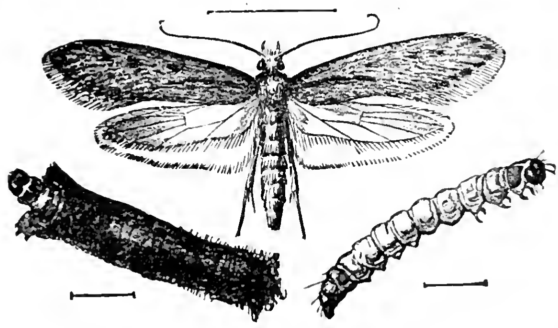


Fig. 13 The common case-making clothes moth, adult, larva [illegible] enlarged. (After Riley)

carpet beetles noticed on page 25, one of which is frequently referred to as the Buffalo clothes moth. The true clothes moths

[1] Scutigera forceps Raf.

are small, grayish yellow moths or millers, indistinctly dark spotted and having a wing spread of less than half an inch. The progeny of not all small moths are injurious to fabrics, though several such destructive species occur in this State.

Description and habits. The most common form in New York State is known as the case-making clothes moth[1] easily recognized in the immature stage by the cylindric case which the small caterpillar drags around as it moves from place to place.

The webbing or southern clothes moth[2] is stated to be the more abundant and injurious species in the latitude of Washington though it occurs farther north. This species is about the same size as the preceding and has uniformly pale yellowish wings. The young or caterpillar does not construct a case but lines its runways with fine silk. This destructive caterpillar feeds on a variety of animal materials, having been found in woolens, hair, feathers and furs, and is frequently a troublesome pest in museums.

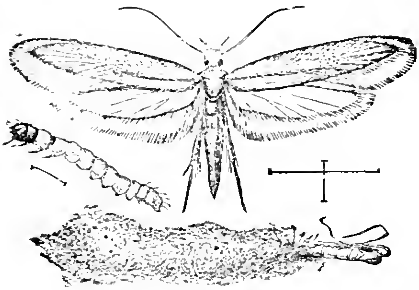


Fig. 14 Webbing or southern clothes moths: adult, larva, cocoon and empty pupal skin; enlarged. (After Riley)

The tapestry moth[3] is rare in this country and is larger than either of the other two, having a wing spread of about $\frac{3}{4}$ of an inch. The base of the forewings is black, the outer portion being a variable creamy white. This larger species displays a marked preference for the heavier fabrics, such as carpets and horseblankets and may be found in felting, furs, skins, carriage upholstering, etc.

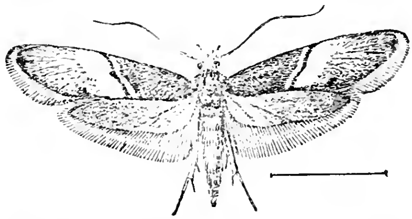


Fig. 15 Tapestry moth: adult, enlarged. (After Riley)

Control measures. Clothes moths, like carpet beetles, fleas and some other household pests, thrive best in situations where there is relatively little disturbance. Clothing used almost daily and other fabrics subject to frequent handling, brushing or sweeping

---

[1] Tinea pellionella Linn.
[2] Tineola biselliella Hum.
[3] Trichophaga tapetzella Linn.

are relatively immune from injury. Woolens and furs are most likely to be damaged while in storage during warm weather. These, before being laid away, should be thoroughly aired, brushed and carefully examined for the presence of the destructive larvae. Then they should be packed in cedar chests or tight boxes, preferably with some naphthalene or camphor, as these latter materials are of some service as repellents. A very effective and cheap method of storing articles for the summer is to put them in tight pasteboard boxes and seal the covers firmly with strips of gummed paper.

Valuable furs and similar articles are frequently deposited with storage companies. Experiments conducted under the direction of Dr Howard, Chief of the Bureau of Entomology, have shown that all danger of injury by clothes moths and their associates may be obviated by keeping the temperature at about 40° Fahrenheit. This is sufficiently low so that insects, even if present, will remain in a dormant and therefore harmless condition.

Occasionally a clothespress becomes badly infested by clothes moths. All garments should then be removed, aired, thoroughly brushed and care taken to destroy any larvae which may not have been dislodged by this treatment. The clothespress itself should be thoroughly brushed and cleaned. These measures should afford relief. It is a very poor plan to have in the attic or some unused part of the house miscellaneous woolens or other materials in which the pests can breed unrestricted, as such places are likely to serve as centers for the infestation of more valuable articles. Methods of fumigating are briefly discussed on pages 27, 42.

Spraying with benzine or naphtha two or three times during warm weather is advisable for the purpose of preventing injury to cloth-covered furniture, cloth-lined carriages and similar articles in storage or unused for extended periods. Care should be exercised to prevent the inflammable vapor of these oils gaining access to fire of any kind.

Carpet beetles

Housekeepers of Albany, N. Y., at least, are seriously troubled by carpet beetles. These destructive insects, it will be seen by referring to page 23, are very different from the clothes moths though operating somewhat in the same manner.

Description. The Buffalo carpet beetle[1] is a stout, oval beetle $\frac{1}{8}$ of an inch long or less and easily recognized by its black and

[1] Anthrenus scrophulariae Linn.

white or yellowish white and red mottled wing covers. The red markings form an irregular line, with three lateral projections on each side, down the middle of the back. The common name Buffalo carpet beetle is suggestive of the shaggy, stout grub or larva, some ¼ of an inch long, found working in carpets, more generally along seams or cracks in the floor.

The black carpet beetle[1] is a more slender, black or brownish beetle somewhat larger than the oval Buffalo carpet beetle, though rarely attaining a length of $\frac{3}{16}$ of an inch. It is peculiar on account of the greatly produced terminal antennal segment in the male. The slender, reddish brown grub, some quarter of an inch or more in length, is easily distinguished from that of the Buffalo carpet beetle by the long, brushy tail of reddish hairs and the sparse clothing of the tapering body.

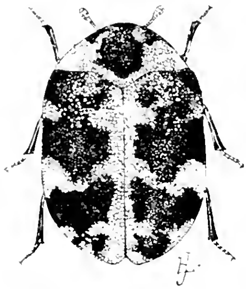


Fig 10. Buffalo carpet beetle, seen from above, enlarged (Original)

Habits. Both of these carpet beetles are rather common on flowers the latter part of May and early in June and may be brought into houses therewith. They also occur on windows in early spring, are found in the fall and occasionally in the winter. Both play possum when disturbed. The eggs of the Buffalo carpet beetle are deposited in convenient places and the young grubs develop quite rapidly. It is probable that there are not more than two generations in the North though the insects are active in warm houses throughout the year. The black carpet beetle has very similar habits though the development of its grub appears to be much slower. This latter insect is known to feed upon feathers and has been reared in flour and meal. Woolens are more liable to injury than other fabrics.

Control measures. Obviously it is advisable to destroy the beetles found about houses before they have had an opportunity of laying eggs. It is desirable to avoid bringing the pests into the house with flowers. Both of these insects breed in organic matter, presumably in outbuildings or outdoors, as well as within, fly to the flowers and may then, in the case of the Buffalo carpet beetle at least, be carried into dwellings before eggs[2] are deposited. The

---

[1] *Attagenus piceus* Oliv.

[2] Professor Slingerland, Rural New Yorker, 1896, 55:582, records obtaining eggs from Buffalo carpet beetles taken on flowers.

substitution of rugs or matting for carpets is advised in localities where the pests are destructive.

Infested carpets should be taken up and thoroughly cleaned, and if badly infested, sprayed with benzine. This latter should invariably be done outdoors, owing to the extreme inflammability of this oil. Local injury can frequently be stopped by passing a hot iron over a damp cloth laid on the affected part of the carpet. The steam penetrates the fabric and destroys the pest in its retreat. The danger of subsequent injury can be largely avoided by filling all cracks and crevices in poorly constructed floors with putty or plaster of paris. Laying tarred paper under a carpet has been frequently advised as a preventive.

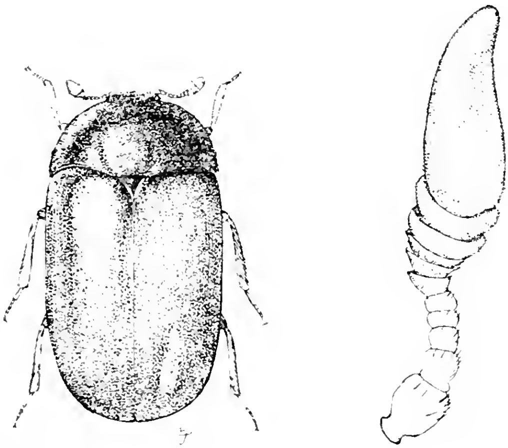


Fig. 17 Black carpet beetle, seen from above, enlarged; antenna of the male, still more enlarged (Original)

These insects can undoubtedly be destroyed by fumigation with burning sulfur, bisulfid of carbon and hydrocyanic acid gas. The first named is frequently employed and though the fumes are very pungent, liable to blacken silver and cause other damage, particularly if considerable moisture is present, it is one of the safest fumigants. Bisulfid of carbon, on account of its inflammability, is hardly a safe material to employ in dwellings. Hydrocyanic acid gas has been used extensively in the last decade for the destruction of household pests. Directions for using it are given on page 42.

For the treatment of garments and furs stored during warm weather, see the discussion on page 24.

Silver fish, bristle tail or fish moth[1]

This peculiar, elusive insect is frequently the subject of inquiry by careful housekeepers. It is rather common about houses though rarely seen. It is about $\frac{3}{8}$ of an inch long, silvery gray and tapering. Perfect specimens have very long antennae and three equally long appendages at the posterior extremity.

Habits. This insect feeds upon farinaceous matter such as the sizing of paper, starch, paste etc. It has even been known to eat off the face of museum labels to such an extent as to render them illegible. It thrives best in places where there is comparatively little disturbance and is therefore rarely numerous in houses having few crevices and no storeroom where articles are allowed to remain undisturbed for months or even years at a time.

Control measures. This insect, if abundant, can be controlled to best advantage, according to Mr Marlatt, by slipping into their haunts pieces of paper liberally treated with a thick, boiled, starchy paste poisoned with arsenic. This material should be used with extreme care and placed only where there is no danger of children getting hold of the poison. Ordinarily the dusting of this insect's haunts with fresh pyrethrum powder, followed by thorough cleaning, is preferable to the employment of an arsenical poison. Damage is most likely to occur in comparatively moist places or where articles are allowed to remain undisturbed for a year or more.

Book louse

This is a pale louselike insect[2] only $\frac{1}{25}$ of an inch long and frequently designated as the "death watch" because of the peculiar ticking sound it makes. This latter is supposed to predict an early death in the family. An allied species[3] has similar habits and is considered to be the true "death watch." Both of these species, as well as allied forms, live upon vegetable matter and occasionally may become very abundant. There have been several records of this insect issuing in enormous numbers from mattresses stuffed with hair, corn husks or straw. An infestation of this kind can be controlled best by removing and burning the infested mattress. The apartment then should be thoroughly cleaned.

---

[1] Lepisma domestica Pack.
[2] Atropos divinatoria Fabr.
[3] Clothilla pulsatoria Linn.

White ants[1]

These insects, despite their general resemblance to the more common ants, are very different creatures. The flying ants, though having somewhat the same size as some of our winged, black ants, may be recognized at once by the numerous veins of the wings. White ants are frequently very injurious to buildings or their contents, particularly in Washington and to the southward. Occasionally they cause serious injuries in New York, and in at least one instance established themselves in safe deposit vaults and proceeded to destroy valuable records and to tunnel the wooden blocks of electrotypes. The whitish, wingless, antlike forms make large tunnels in woody and other vegetable fibers,

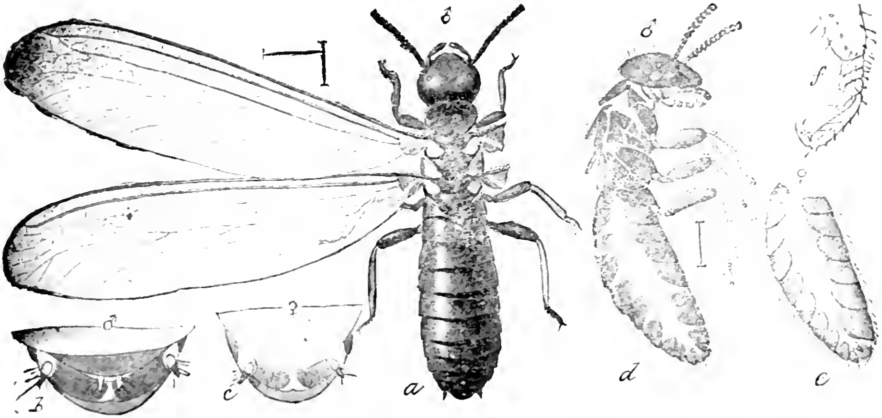


Fig. 18 White ants: *a*, adult male from above; *b*, posterior extremity of the same from below; *c*, the same of the female; *d*, male seen from the side; *e*, side view of the abdomen of the female; *f*, tarsus showing the segments and the claw. *a*, *d*, *e* are enlarged; *b*, *c*, *f* greatly enlarged. (After Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4, n. s. 1896)

invariably avoiding the light. They pass from one object to another only through covered galleries. The secrecy with which these pests operate enables them to cause extensive injury before their presence is suspected. These peculiar insects are familiar to many who have observed their operations in an old stump.

Control measures. Nothing but the most thorough work will clean a building or a vault of these insects, because their burrowing habits enable them to get beyond the reach of destructive gases. An infested vault should have everything removed, every crack and crevice thoroughly cleaned and then special attention given to doors or other means of entrance, to see that there is no possi-

[1] *Termes flavipes* Kollar.

bility of insects entering through an unsuspected crevice. Before replacing the contents of the vault, wood, papers or other materials likely to be infested should be most carefully examined and, if necessary, thoroughly heated or repeatedly fumigated with some gas. Great care should be exercised to prevent the reinfestation of any such place. It is even more difficult to control this pest in buildings, since if it becomes abundant nothing can be done aside from installing brick, stone or concrete foundations. This form of construction is especially advisable in warmer sections of the country. Where books, papers and exposed woodwork only are infested, thorough and protracted fumigation with hydrocyanic acid gas, described on page 42, may be advisable.

Crickets

These black, chirping, nocturnal insects[1] occasionally make their way into houses and for the most part are welcome. Sometimes they may cause serious injury. Dr Lintner records a case where a suit of clothes, just from the tailor, was completely ruined in a night by the common black field cricket[2] which had entered an open window in some numbers. Such injury is exceptional. Crickets can be destroyed where necessary by the use of ground-up carrots or potatoes to which a liberal amount of arsenic has been added. They may also be caught by taking advantage of their liking for liquids and placing low vessels containing beer or other fluids about their haunts.

FOOD PESTS

House ants

There are several species of ants likely to occur in houses. These little insects are not specially destructive nor obnoxious aside from their faculty of getting into everything.

The little red ant[3] is particularly troublesome, since its small size, it being only about $\frac{1}{16}$ of an inch long, enables it to enter almost any receptacle not hermetically sealed. Furthermore, this little pest is very prolific and occasionally literally overruns buildings to the serious discomfort of the inhabitants. This tiny species is perhaps the most common and the most abhorred of all, owing to the difficulty of eradicating it.

---

[1] Gryllus domesticus Linn. and others.

[2] Gryllus luctuosus Serv.

[3] Monomorium pharaonis Linn.

The little black ant[1] is about $\frac{1}{4}$ of an inch long and though normally occurring under stones in yards, also invades the house in considerable numbers.

The pavement ant[2] is about $\frac{3}{8}$ of an inch long and is very common along the Atlantic seaboard.

The large, black ant[3] is the giant among our household ants. It may be half an inch or more in length, is normally a wood feeder and has frequently been designated as the carpenter ant. This large species occasionally invades buildings, particularly in the country, lives in the timbers and makes systematic levys upon the food supplies of both kitchen and pantry. Occasionally this species may become very abundant in a dwelling.

Control measures. A house badly infested by ants, particularly if a rather old building, might well be thoroughly fumigated with

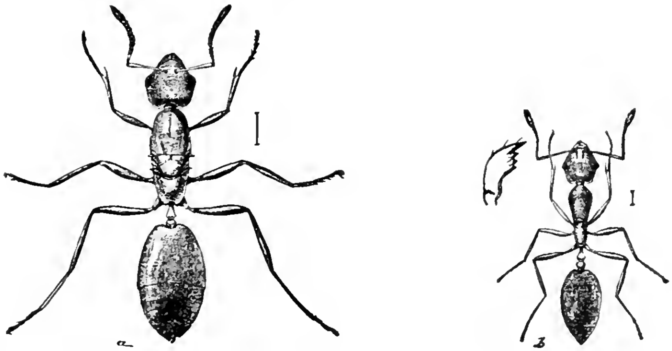


Fig. 19 Red ant: *a*, female; *b*, worker or neuter, enlarged. (After Riley)

hydrocyanic acid gas, directions for which are given on page 42. This method of treatment is especially good for the little red ant, because its nests are usually in the walls of the building and therefore inaccessible.

Aside from the fumigation mentioned above, the next most satisfactory method of controlling these pests is to search for their nests and destroy them so far as possible. This can be accomplished only by ascertaining the origin of the continuous stream of ants and is frequently impossible. The little black ant and the pavement ant are very likely to build nests outdoors under stones. Should the nests be found they can be destroyed by liberal applications of boiling water or spraying with kerosene.

[1] Monomorium minutum Mayr.
[2] Tetramorium caespitum Linn.
[3] Camponotus herculeanus Linn.

Outdoor nests of ants can be destroyed by the use of carbon bisulfid. Make a hole several inches deep with a broom handle and put therein about 1 ounce of carbon bisulfid and cover quickly. In the case of a large nest, several holes should be made at a distance of a foot or a foot and a half and each charged with carbon bisulfid. A more recent method is scooping out a portion of the soil and filling the cavity with a solution of cyanide of potassium, using 1 ounce of this deadly poison to a gallon of water. Another probably equally effective method is the sprinkling of the surface of the nest with fine particles of potassium cyanide. This material, it should be remembered, is a most dangerous poison and every precaution should be taken to avoid disastrous results. The nests of the large black ant are usually found in timbers, such as studding in the walls and are therefore wellnigh inaccessible. The writer has seen 2 x 4 joists badly riddled by the operations of this insect.

Trapping the ants by means of sponges dipped in sweetened water is frequently advised and gives good results if conscientiously carried out. First, attractive foods should be removed, so far as possible, prior to the distribution of the pieces of sponge saturated with sweetened water. These latter should be gathered from time to time and the ants clinging thereto destroyed by dropping in boiling water.

Cockroaches

Cockroaches and their smaller cousins, the croton bugs, are frequently the bane of the neat housekeeper, particularly in old city dwellings. These species are distributed through commercial agencies and have become well established in most large cities and villages on the principal routes of travel, especially seaports and places on rivers or canals, since these pests are invariably found on ships and boats. The old houses with their numerous inaccessible crannies and crevices afford a multitude of hiding places and enable the roaches to exist year after year, in spite of strenuous efforts to exterminate them.

Description. At least three species of cockroaches may be found in houses. The American cockroach[1] is a large, dark brown species nearly an inch and a half long and has well developed wings. The Oriental cockroach or black beetle[2] is a nearly wingless, dark brown or black form about an inch long. The Australian

[1] Periplaneta americana Linn.
[2] Periplaneta orientalis Fabr.

cockroach,[1] frequently brought to our shores by vessels, is a reddish brown form about an inch and a quarter long, easily recognized by the yellow, irregular, oval markings just behind the head. A slender, light green cockroach[2] about an inch long is occasionally introduced with tropical fruits. The smallest and the most pestiferous of all is the croton bug,[3] a light brown, dark marked cockroach only about $\frac{3}{4}$ of an inch in length.

Habits. The larger American or European cockroaches are frequently somewhat abundant, but the most numerous is the smaller croton bug. These insects find the dampness of water pipes very congenial, and on account of their abundance in such places, they are widely known as water bugs. Roaches, both large and small,

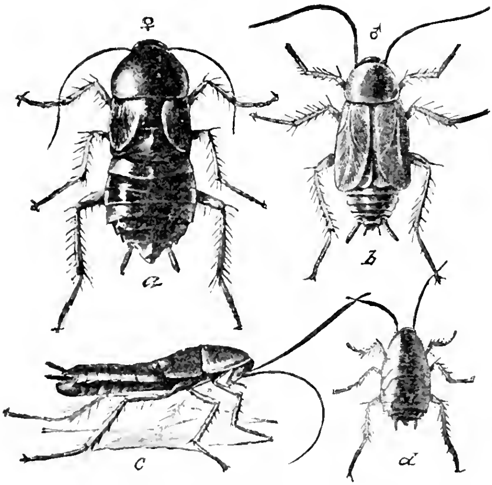


Fig. 20 Oriental cockroach: *a* and *c*, female from above and the side: *b*, male; *d*, a half grown individual; all natural size. (After Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4, n. s. 1896)

feed upon a variety of vegetable and animal matter. The refuse scraps of the sink, the food on the pantry shelves, woolens, leather of shoes, furniture or books, the sizing or paste of cloth-bound books and similar materials are all liable to be gnawed by these almost omnivorous pests. Aside from the actual amount of injury inflicted, the fetid, roachy odor is imparted to infested food stuffs. It is only fair to state that these disgusting pests are known to feed upon that horror of the housewife, the bedbug. There is small choice between the two evils.

[1] Periplaneta australasiae Linn.
[2] Panchlora hyalina Stahl.
[3] Ectobia germanica Linn.

Control measures. Badly infested houses can be cleared of these pests most easily by thorough and perhaps repeated fumigations with hydrocyanic acid gas as described on page 42. Carbon bisulfid, has also been advised as a fumigant. On account of the inflammability of the latter, we would prefer to use in houses the somewhat more poisonous hydrocyanic acid gas. Carbon bisulfid with its heavy fumes is particularly adapted to the destruction of these pests in the holds of vessels.

A still safer method of fumigation consists in burning pyrethrum in infested compartments. It is stated that the vapors of this insecticide are frequently more effective in destroying roaches than the use of the powder itself. The room should be kept closed from six to ten hours. The smoke of burning gunpowder is also very obnoxious and deadly to roaches, particularly the black English roach. The moistened powder should be molded into

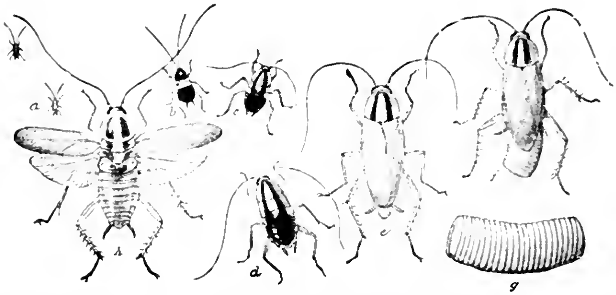


Fig. 21 Croton bug: *a*, *b*, *c*, *d*, successive stages in the development of the young; *e*, adult; *f*, female, with egg case; *g*, egg case enlarged; *h*, adult, with wings spread; all natural size except *g*. (After Riley)

cones, placed in an empty fireplace and ignited. It is particularly valuable in the case of old houses.

There are a number of roach poisons placed upon the market and some of these are undoubtedly very efficacious, particularly if assisted by persistent cleanliness and the eradication of inaccessible haunts, so far as possible. We would further suggest the testing of naphthalene in the flake form, as described on page 20, as a means of at least partially suppressing this pest. The liberal use of Persian insect powder or pyrethrum is also of service in destroying these insects. The paralyzed cockroaches should be swept up and burned.

A relatively simple method, described by Mr Tepper of Australia, is to mix plaster of paris one part, and flour three or four parts, in a saucer and place the preparation about the haunts of the pests. Near by there should be a saucer containing a little water and made easily accessible to the roaches, by laying a few sticks as bridges up to the rim. The insects eat the mixture, drink the water and soon succumb.

There are several methods of trapping cockroaches, particularly the larger species. A deep vessel partially filled with stale beer or ale can be placed in roach haunts and small sticks adjusted so that the insects can crawl over the edge and to within a short distance from the surface of the liquid. The pests fall into the trap and, being unable to escape, are drowned in large numbers. This method is of comparatively little service with the smaller, more wary croton bug.

Larder beetle[1]

The parent insect, a stout, dark brown beetle with the base of the wing covers mostly yellowish, is frequently rather common about houses in May and June. This insect breeds by preference on animal matter such as ham, bacon, various meats, old cheese, horns, hoofs etc. The very hairy, brown grub is about half an inch long when full grown.

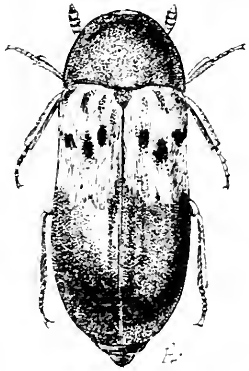


Fig. 22 Larder beetle, seen from above, enlarged. (Original)

Meats and other food stuffs attractive to this insect should be stored in places inaccessible to the beetles. It is said that old cheese can be used very successfully for trapping the parent insects. Cheese or meat infested by the grubs should have the affected part cut away and the surface washed with a very dilute carbolic solution. The packing of meats in tight bagging is of considerable service in preventing attack

Cheese skipper

The cheese skipper[2] is the young of a small, black, glistening fly about $\frac{3}{16}$ of an inch long. The white, cylindric maggots are easily recognized by their peculiar jumping power. This is accomplished by bringing the two ends of the body together and then suddenly

[1] *Dermestes lardarius* Linn.
[2] *Piophila casei* Linn.

straightening with a quick muscular action. The maggots of this insect are likely to occur on cheese, particularly that which has been kept for some time, and also upon ham. This species has proved to be a serious pest in some packing houses. It is more or less abundant about cheese factories.

This little pest can be best controlled by storing products likely to be injured, in a dark place. Scrupulous cleanliness is a most efficient preventive. Rubbing daily the bandages and sides of cheese, in hot weather, has been recommended for the purpose of destroying or brushing off eggs. The cheese may be washed with hot whey or with lye, the latter acting as a repellent. Smoked meats should be put in places inaccessible to the flies. A fine screen, 24 to the inch wire mesh, effectively excludes this little insect.

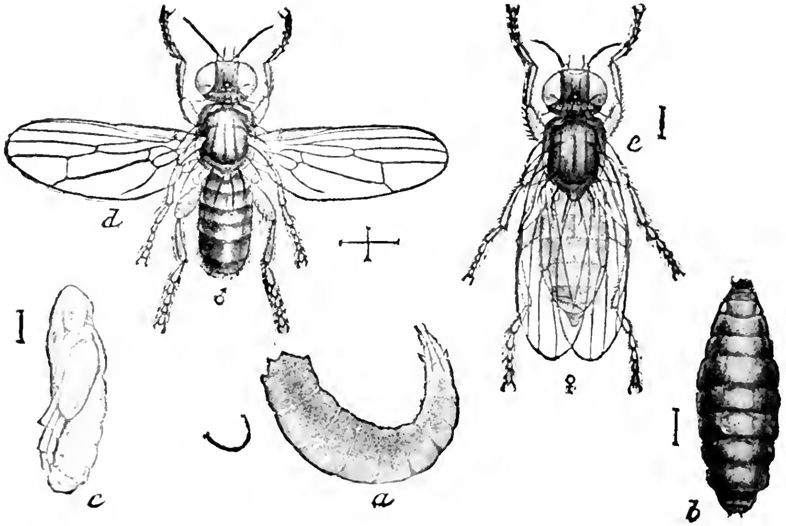


Fig. 23 Cheese skipper: *a*, maggot or larva; *b*, puparium; *c*, pupa; *d*, male fly; *e*, female; all enlarged. (After Howard, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

Cheese or meat infested by skippers is not necessarily ruined, since the injured parts can be cut out and the remainder used as food.

Cereal and seed pests

A number of these insects are likely to occur in houses and, on account of their somewhat similar habits, they are discussed under a general head. Most of these species are important because of their infesting cereals or cereal preparations of one kind or another.

The Indian meal moth[1] is one of the more common of these species. The whitish, brown-headed caterpillar lives in a large variety of substances, including all cereal preparations and such diverse materials as various nuts, dried fruits, seeds etc. The caterpillar spins a light web to which particles of its food and frass adhere. The parent moth is reddish brown, with a coppery luster and has a wing spread of about ¾ of an inch.

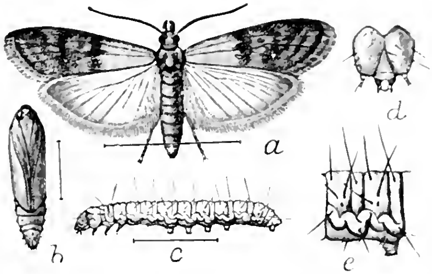


Fig. 24 Indian meal moth: *a*, moth; *b*, pupa; *c*, caterpillar from the side; *d*, head and *e*, first abdominal segment of caterpillar, more enlarged. (After Chittenden, U. S. Dep't Agric. Div. Ent Bul. 4. n. s. 1896)

The meal snout moth[2] subsists mostly upon cereals though it has been recorded as feeding upon other seeds and dried plants

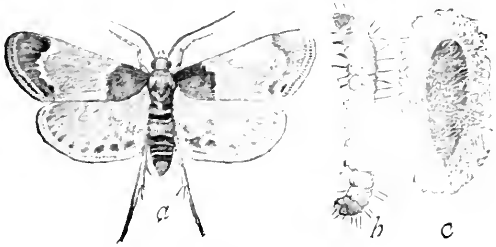


Fig. 25 Meal snout moth: *a*, adult; *b*, larva; *c*, pupa in its cocoon; twice natural size. (After Chittenden, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

and displaying a preference for clover. The whitish caterpillars live in long, silken tubes.

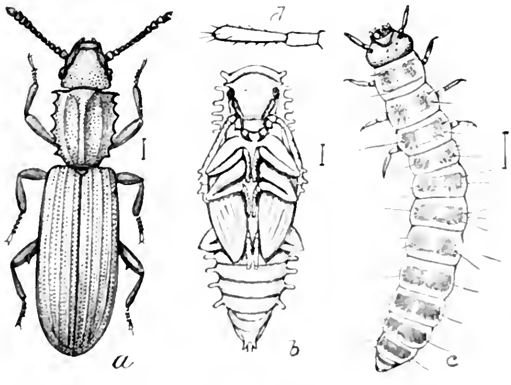


Fig. 26 Saw-toothed grain beetle: *a*, beetle from above, *b* pupa from below, *c*, grub or larva; all enlarged. (After Chittenden, U. S. Dep't Agric. Div. Ent. Bul. 4 n. s. 1896)

---

[1]*Plodia interpunctella* Hubn.
[2]*Pyralis farinalis* Linn.

The saw-toothed grain beetle[1] is one of the smallest and most persistent of the grain beetles. It is only about $\frac{1}{10}$ of an inch long, reddish brown, flattened and easily recognized by the peculiar saw edge along the sides of the thorax. This species displays a marked preference for all cereal preparations though it occurs in preserved fruits, nuts and seeds and has been recorded as injuring yeast cakes, mace, snuff and even red pepper. This species will breed for extended periods in packages of cereals. The writer had his attention called recently to a case where this beetle multiplied by the millions in a brewery, spread therefrom to adjacent houses and caused a great deal of annoyance by getting into everything, not excepting clothing that was worn and bedding in use.

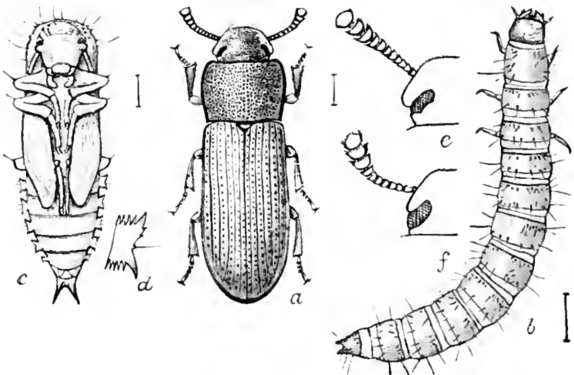


Fig. 27 Confused flour beetle: *a*, beetle from above; *b*, grub or larva, from above; *c*, pupa, from below; all enlarged; *d*, *e*, and *f* structural details. (After Chittenden, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

The confused flour beetle[2] is a stout, rust-red beetle about $\frac{1}{6}$ of an inch long. It, like the preceding form, has a marked liking for cereal preparations, though it occurs in such diverse products as ginger, cayenne pepper, baking powder, orris root, snuff, slippery elm, peanuts and various seeds. A closely allied form with similar habits, known as the rust-red flour beetle[3] occurs mostly in the Southern States.

The meal worms[4] are rather common pests of meal and the ordinary stable foods. The large, brown or dark brown parent beetles have a length of about $\frac{7}{8}$ of an inch and are frequently

---

[1] Silvanus surinamensis Linn.
[2] Tribolium confusum Duv.
[3] Tribolium ferrugineum Fabr.
[4] Tenebrio obscurus Linn. and T. molitor Linn.

found about houses. The young or larvae are an inch or more in length, cylindric and yellowish brown.

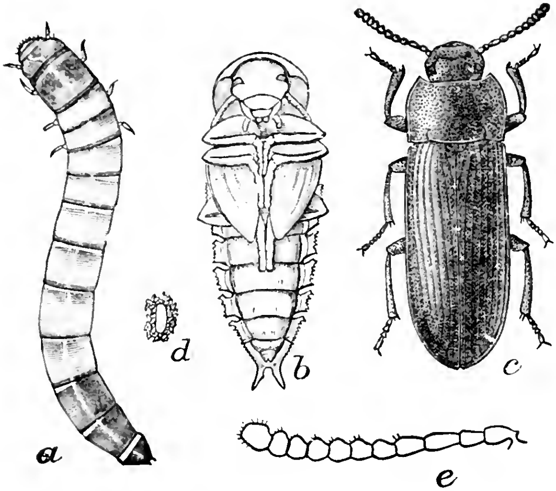


Fig. 28 Meal worm: *a*, larva; *b*, pupa; *c*, female beetle; *d*, egg, with surrounding case; *e*, antenna. *a*, *b*, *c*, *d*, about twice natural size, *e*, more enlarged. (After Chittenden, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

The cadelle[1] is another inhabitant of grain bins. The beetle is rather stout, shining dark brown and about $\frac{3}{8}$ of an inch long. The peculiar grub or larva, over an inch long, is easily recognized

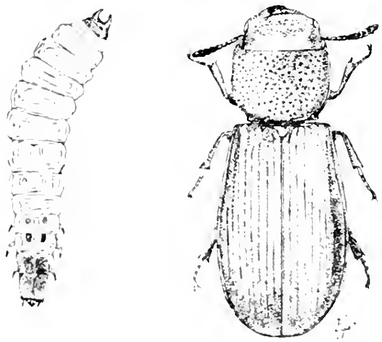


Fig. 29 Cadelle, beetle and larva, from above, enlarged. (Original)

by its flattened appearance and the dark brown plates just behind the head and at the opposite extremity of the body.

[1] Tenebrioides mauritanicus Linn.

The drug store beetle[1] is a rather stout, light brown beetle about $\frac{1}{8}$ of an inch long, which attacks a large variety of substances. It occurs in mills, granaries and warehouses, living upon flour, meal, breakfast foods, condiments, roots and herbs and animal sub-

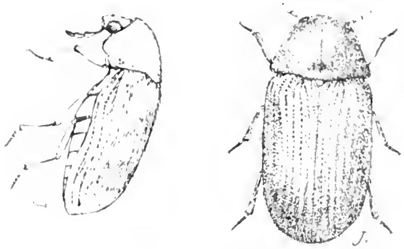


Fig. 30 Drug store beetle, seen from above and the side, enlarged. (Original)

stances. It has even been known to colonize itself in a human skeleton which had been dried with the ligaments left on, and has been recorded as perforating tinfoil and sheet lead.

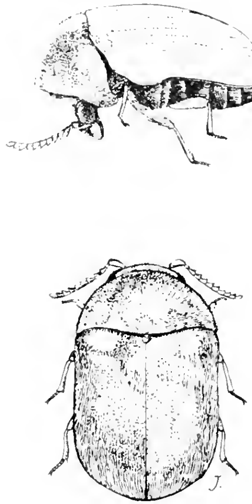


Fig. 31 Cigarette beetle, seen from above and the side, enlarged. (Original)

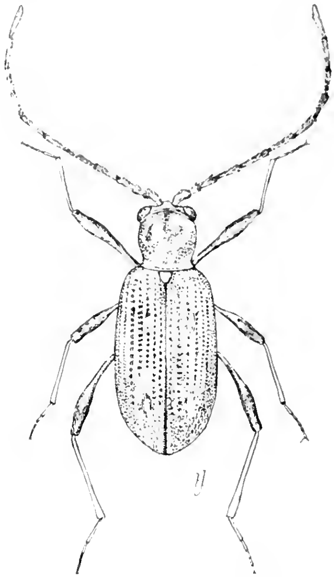


Fig. 32 Spider beetle, seen from above, enlarged. (Original)

The cigarette beetle[2] is another tiny omnivorous species. The beetle is light brown, stout, slightly hairy and only $\frac{1}{8}$ of an inch long. It infests a large variety of food stuffs, including condi-

[1] S i t o d r e p a p a n i c e a Linn.

[2] L a s i o d e r m a s e r r i c o r n e Fabr.

ments, drugs of various kinds and dried herbarium specimens. It is best known on account of its work in tobacco, cigarettes in packages being frequently perforated by this tiny pest.

Spider beetles. The white marked spider beetle[1] is a small, reddish brown form with four white marks on its wing covers. Its long antennae and legs and subglobular body are suggestive of a spider, hence the common name. This species feeds upon a large variety of dried vegetable and animal substances, such as insect collections, dried plants and herbaria, red pepper, cotton seed, refuse wool, and is said to be injurious to furs, clothing, roots, grain, stuffed animals, etc. The brown spider beetle[2] lives with the preceding, has similar habits and differs principally in the absence of the white markings.

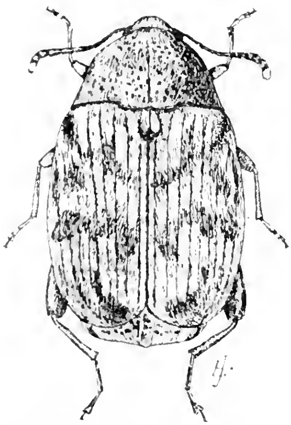


Fig. 33 Bean weevil, seen from above, enlarged. (Original)

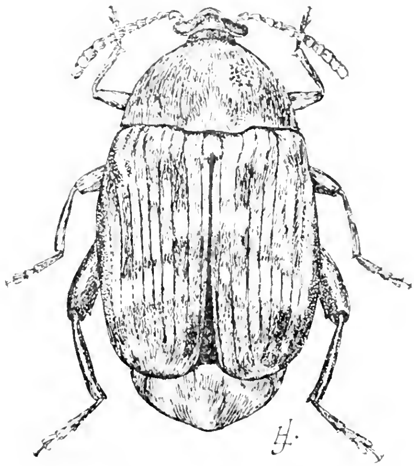


Fig. 34 Pea weevil, seen from above, enlarged. (Original)

The pea weevil[3] and various bean weevils[4] are stout, grayish weevils most easily recognized by their occurring respectively in peas and beans. The original infestation usually occurs in the field, though these insects are capable of breeding for extended periods in the dried seeds of their food plants.

Control measures. It is comparatively easy, with the exercise of a moderate degree of care, to avoid serious injury by any of

[1] Ptinus fur Linn.
[2] Ptinus brunneus Duft.
[3] Bruchus pisorum Linn.
[4] B. obtectus Say and others.

these pests, since they invariably require access to a liberal amount of food for an extended period. Any materials likely to produce numbers of these insects should not be allowed to lie undisturbed and accessible for a series of months. Most of these pests can easily be destroyed by heating the infested material to about 125 or 150 degrees Fahrenheit. This should be done carefully and time enough given so that the heat will penetrate and destroy all of the insects. Anything infested should be promptly cared for either by destroying the entire package or treating the same with fumes of carbon bisulfid.

Fumigation with carbon bisulfid is comparatively easy of execution since it is only necessary to put the material in a tight pail or can, put on the top a spoonful or thereabouts of the insecticide in a shallow saucer or plate, cover the receptacle tightly and allow the whole to stand for preferably 24 or 36 hours. This insecticide may be used on a large scale according to Dr W. E. Hinds, at the rate of 3-5 pounds to 1000 cubic feet of space.

FUMIGATION WITH HYDROCYANIC ACID GAS

This is one of the most effective methods of destroying insects in houses, particularly if the infestation is general. It should be remembered at the outset that potassium cyanide, sulfuric acid and their derivative, hydrocyanic acid gas, are among our most active and deadly poisons. They should be handled with extreme care and every precaution taken to avoid an accident, since a slight mistake might result in one or more fatalities.

One ounce of high grade, 98% cyanide of potassium and one fluid ounce of the best commercial sulfuric acid, diluted with two fluid ounces of water, should be used for every 100 cubic feet of space. These amounts should be doubled for poorly constructed houses. The fumigation should last at least 30 minutes and it would be preferable to have it continue three or four hours, or if feasible, all night.

Prior to treatment all fluids, especially liquid or moist foods, should be removed from the house. Arrangements should be made to open the building from the outside after the fumigation is completed. Windows and doors should be sealed as tightly as possible, either by stuffing damp paper in the crevices or pasting strips of paper over cracks. Chimney places, ventilators and other orifices should be closed tightly. The gas is generated by dropping the cyanide of potassium, previously broken into lumps about the size of a walnut and preferably placed in thin bags or wrapped loosely in thin paper, into the requisite amount of diluted acid. The acid should be carefully diluted by pouring it slowly, accompanied by frequent stirring, into the necessary amount of water. This dilution should be slow enough to avoid all danger of this very strong acid splashing and perhaps causing dangerous burns. It will be found advisable to have one or more jars or generators in each room or hallway, since it is not wise to use more than two pounds of cyanide in a generator. The large, preferably deep, earthenware vessels used as generators should be placed near the middle of the room and on a thick layer of newspapers in order to avoid possible injury from splashing acid. Precautions should be observed, if the building is in contact with others in a row, to see that parties in adjacent dwellings are warned and arrangements made so that the rooms next the treated building will be kept well aired during the fumigation. It is unsafe to attempt to fumigate individual rooms in a house or a building in a row, unless one can be certain that there will be good aeration on all sides of the apartment or building. The deadly character of this gas is shown by the destruction of sparrows resting upon the eaves of a building during fumigation. One should not attempt to fumigate a building or a room alone, because an accident under such conditions is very likely to result fatally. Since hydrocyanic acid gas is lighter than air, operations should commence at the top of the building and proceed successively from floor to floor. Better still, place the requisite amount of the cyanide of potassium in thin bags, suspend each over its generator in such a manner that when a string near the exit is loosened, all will drop into the jars. The poison should not be in a thick paper bag, as the action of the acid may be seriously hindered if not almost prevented.

Under no conditions should any one be allowed to enter the building prior to the completion of the fumigation and its thorough aeration. At least 30 minutes and preferably an hour or more, depending somewhat upon the means of ventilation, should be allowed for this latter process. It is unsafe to enter any recently fumigated building until all the odor of the gas, resembling that of peach kernels, has disappeared. The contents of the fumigating jars should be carefully disposed of together with any remaining cyanide. These substances can either be buried deeply in the soil, or if in a city, may be poured into the sewer.

The following memoranda will doubtless prove of service in practical work.

1 Estimate the cubical contents and the amount of materials for each room.
2 Remove all liquids and moist foods in particular.
3 Seal all exits tightly with strips of paper or by filling crevices.
4 Provide for ventilation from the outside.
5 Weigh out the cyanide and place it in thin bags or do it up loosely in thin paper.
6 Place the generators in the various rooms, each upon a thick layer of newspapers.
7 Dilute the acid carefully and put it in the generators.
8 Distribute the amounts of cyanide to the various rooms.
9 Be certain that everything is all right and nobody in the building or room. *Notify* occupants of adjacent rooms or houses that the fumigation is to be commenced.
10 Drop in the cyanide, preferably from near the exit and close tightly.
11 Adopt suitable precautions to prevent the room or building being entered during the fumigation period.
12 Open the ventilators from the outside.
13 After the building has been thoroughly aerated, remove the generators and take care of their contents together with any excess of cyanide.

INDEX

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 455 ALBANY, N. Y. SEPTEMBER 15, 1909

New York State Museum

JOHN M. CLARKE, Director
EPHRAIM PORTER FELT, State Entomologist

Museum bulletin 134

24th REPORT OF THE STATE ENTOMOLOGIST

ON

INJURIOUS AND OTHER INSECTS

OF THE

STATE OF NEW YORK

1908

New York State Education Department
Science Division, February 10, 1909

Hon. Andrew S. Draper LL.D.
Commissioner of Education

SIR: I have the honor to communicate herewith for publication as a bulletin of the State Museum, the annual report of the State Entomologist for the fiscal year ending September 30, 1908.

Very respectfully
JOHN M. CLARKE
Director

State of New York
Education Department
COMMISSIONER'S ROOM

Approved for publication this 11*th day of February* 1909

A S Draper

Commissioner of Education

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 455 ALBANY, N. Y. September 15, 1909

New York State Museum

John M. Clarke, Director
Ephraim Porter Felt, State Entomologist

Museum bulletin 134

24th REPORT OF THE STATE ENTOMOLOGIST 1908

To John M. Clarke, Director of Science Division

I have the honor of presenting herewith my report on the injurious and other insects of the State of New York for the year ending October 15, 1908.

A number of species have inflicted serious injuries upon both fruit and shade trees. A most interesting phenomenon was the wide-spread and abundant flight of the snow-white linden moth. An unusual feature was the capture, within the limits of the city of Albany, of two specimens of a small, green, subtropical cockroach.

Fruit tree insects. Fruit trees in the western part of the State were seriously injured in some sections by the cigar case bearer, a species which is very rarely abundant enough to cause material damage in the Hudson river valley. Depredations by the above mentioned case bearer were frequently associated with severe injury by a small plant mite known as the blister mite. Western fruit growers were also greatly exercised by the caterpillars of the white marked tussock moth eating into the young fruit, a troublesome departure from the normal habit. The fall canker worm was unusually abundant and destructive on eastern Long Island and in the vicinity of New York city. The San José scale is one of the most serious insect pests of the horticulturist. The warm, dry weather the latter part of the season has been favorable to the unrestricted multiplication of this insect, and in some cases infested orchards have become very badly affected. Our observations show that, as a rule, fruit growers are experiencing much less trouble in keeping this scale insect in check than was the case in earlier years. Early spring applications of a lime-sulfur wash are giving very good satisfaction. Some parties are meeting with excellent results from applications of a miscible or so called "soluble" oil. We have preferred, as a rule, to confine our recommendations to a material like the lime-sulfur wash, which is not only effective but safe and also valuable in controlling fungous diseases. Numerous observations have been made on the above mentioned and other insects.

It is gratifying to state that conditions in the Chautauqua grape belt have materially improved, so far as injury by the grape root worm is concerned. Though this insect is generally distributed throughout the grape belt, severe injuries by it have been confined to restricted areas. The grape blossom midge was responsible for an unprecedented outbreak, destroying from 50 to 75% of the blossoms on one acre of Moore's early grapes at Fredonia. It was generally present throughout the grape section and somewhat abundant in limited portions of certain vineyards. It is probable that this species has been responsible for failure to fruit in other cases where the losses were attributed to some unknown cause or possibly to unfavorable weather conditions. This insect is now under investigation. We hope to solve its life history next spring, a necessary preliminary to devising a practical method of preventing serious injury in the future.

Shade tree protection. Ravages by the elm leaf beetle have been very severe in many Hudson valley cities and villages and, as a result, popular interest in the welfare of our shade trees has increased greatly. This concern has been accentuated by extensive defoliations inflicted by the white marked tussock moth, a species which has been quite injurious in Buffalo for some years past.

Injuries by these and other shade tree pests have emphasized most strongly the recommendations of the Entomologist and, as a result, more than ever before is being done to protect our shade trees. The work of the city forester of Albany has been very beneficial, though owing to certain hindrances his work was not as effective as it might otherwise have been. The city of Buffalo has at last committed itself to a definite policy of shade tree protection. A forester was appointed and excellent work has already been accomplished in that municipality. The authorities of several villages have given careful consideration to shade tree protection and there is a good prospect that more will be accomplished another year. The work against the gipsy moth, noticed below, has resulted in a marked improvement in the spraying outfit. We believe that certain of this apparatus, modified to suit our conditions, could be adopted to advantage and would prove of much benefit, since it would, by making the spraying easier and quicker, afford great encouragement on account of the largely increased efficiency. Our work upon shade tree insects, consisting mostly of local examination and recommendation, has consumed much time and has been productive of marked improvement in the welfare of the trees.

Gipsy and brown tail moths. These two insects have continued their injurious work in Massachusetts, the first named being by far the more destructive. The gipsy moth has been found in small numbers at both Springfield and Greenfield, Mass., as recorded in our previous report. Points where this insect was likely to become established have been closely watched and as yet it has not been found in this State. A warning placard, illustrating this species and the brown tail moth, has been conspicuously posted in many post offices and other public places in the State. Prompt and efficient treatment of isolated colonies, should they be found in this State, is of utmost importance if extended injury is to be avoided.

The work against the gipsy moth, as revealed by a personal examination the past summer, is being prosecuted with great vigor. The residential sections are in excellent condition, though large woodland areas have been seriously damaged. The work with parasites, conducted by the state of Massachusetts in cooperation with the federal government, is most encouraging. The staff in charge of this work has been materially strengthened during the past year, and its efficiency greatly increased by the dispatch of a special agent to Japan. The latter secured some most promising parasites which already have been bred through one generation in this country, and lead us to hope that they may soon become important factors in controlling this species. The control of these introduced pests should be encouraged in every possible manner, since it is much more economical to check them in a restricted area than to allow the struggle to extend over a wide territory.

Forest insects. The extensive outbreaks by the green striped maple worm, recorded in our previous report, have been continued in southern Rensselaer county, and it is probable that this species was associated, as was the case last year, with the antlered maple caterpillar. The depredations by the snow-white linden moth, noticed in our preceding report, were continued in the Catskills and extensive injuries in the Adirondacks were also brought to our attention. The only hope of preventing damage of this character is by the encouragement of natural agents, prominent among which may be mentioned native birds. The efficiency of insectivorous birds has been repeatedly emphasized by the Entomologist.

The bark borers or Scolytidae comprise a large number of very destructive species. The literature relating to this group is greatly scattered and comparatively inaccessible, hence a bibliographic catalogue is a necessary preliminary to further work upon these insects. We submit for publication, as an appendix of this report, a catalogue of the described Scolytidae of America north of Mexico by Mr J. M. Swaine.

Gall midges. The studies upon this important group have progressed very successfully. We have already prepared preliminary keys for the separation of most forms into subfamilies, tribes, genera and species, together with tables giving the food habits of those which have been reared. Some idea of the magnitude of this work may be gained when it is remembered that we have studied over 300 bred species and now recognize 700 species, representing about 50 genera. The systematic arrangement alone of this large number of microscopic insects is an immense task. And in addition to the above, many descriptions have been drafted and numerous biological notes transcribed.

The later work upon these insects has of necessity been confined mostly to systematic study, owing to the fact that material was coming in faster than it could be worked up in a satisfactory manner. We have succeeded, in spite of the pressure of other matters, in rearing during the past season about 75 species, the biology of most of which was previously unknown. There is on hand a large series of galls from which some extremely desirable material may be expected another season. The work upon this group is so well in hand that there should be no difficulty in bringing it to a successful conclusion in the near future.

The rearing and care of breeding jars containing gall midges require much time. Assistant Entomologist D. B. Young had general charge of this work and was ably assisted by Miss Fanny

T. Hartman. In addition, Mr Young rendered material service in separating our large amount of material into the major groups, while Miss Hartman has made over 600 microscopic preparations.

Flies and mosquitos. The ubiquitous and well known house fly has been the recipient of much attention because recent investigations show it may be the responsible agent, under certain conditions, in the dissemination of typhoid fever and other grave intestinal disorders. Observations upon its life history and habits have established the practicability of largely reducing if not eliminating this menace to health and personal comfort. A press bulletin on this insect was issued and this will be supplemented by a more extended account.

There is much interest in the control of mosquitos. The Entomologist inspected the work in progress on the Flushing meadows and has kept in touch with similar operations in other localities. Attention has also been given to the control of freshwater species, especially the malaria-carrying form. The practicability of such work has been established and we look for a great extension of interest in the local suppression of these annoying pests.

Aquatic insects. The studies of insects inhabiting our fresh waters have been continued by Dr James G. Needham. His report on the work done at Old Forge was made public in the report of this office for 1907. Dr Needham is now engaged in completing his monographic account of the stone flies (Plecoptera), a work which should be ready for the printer some time during the coming winter. Dr Betten has made good progress in his studies of the caddis flies (Trichoptera), and it is expected that his work upon this group will be completed the coming spring. These two publications, when issued, will supply a most important want in our knowledge of aquatic forms and add much of value to the series of reports and bulletins on aquatic insects.

Publications. Many popular economic notices have been contributed by the Entomologist to the agricultural and local press, and a few accounts of more general interest have been widely disseminated through the agency of the Associated Press. The large number of Cecidomyiidae reared in 1907 rendered it advisable to publish preliminary descriptions of these, and a reprint from the report for that year, entitled *New Species of Cecidomyiidae II*, was issued October 26, 1907. Owing to numerous delays in printing, the report for last year did not appear during the fiscal year, although a large amount of time was necessarily expended upon the more technical part in carrying it through the press.

Collections. The additions to the collections have not been as numerous as in preceding years, owing to the necessity of giving more attention to the arrangement and classification of material on hand. A number of previously unknown Cecidomyiidae were reared and several important gaps in our knowledge respecting this group filled.

Several extremely desirable accessions, aside from those mentioned above, have been made to our biological collections. One of the most interesting was a complete series representing the egg, larva, pupa and adult of the remarkable Taeniorhynchus perturbans Walk., generously contributed by Mr J. Turner Brakeley of Hornerstown, N. J., the discoverer of the early stages and one of the most active in working out the life history of this previously very elusive species.

Two important additions have been made to our exhibit collections, namely, an enlarged model of the onion fly, showing the egg, maggot, puparium, adult fly and an onion infested by maggots; also an enlarged model of the cigar case bearer showing its work upon apple leaves. Both of these were executed by Mrs Otto Heidemann of Washington, D. C.

The arrangement and classification of the collection has received much attention. Assistant Entomologist D. B. Young has separated the Staphylinidae into their major groups and determined many species. He has also given considerable time to the arrangement of the Syrphidae. The completion of the catalogue of the Hill collection occupied much time during the past year. Miss Hartman also assisted in the preparation of the above mentioned catalogue and has done a great deal of general curatorial work, such as mounting, labeling and caring for insect specimens.

Office matters. The general work of the office has been conducted as in previous years, the Assistant Entomologist being responsible for the correspondence and other matters during the absence of the Entomologist. Assistant I. L. Nixon resigned October 12, 1907, and Miss Fanny T. Hartman was temporarily appointed to the vacancy October 26, with subsequent confirmation. Numerous specimens have been received for identification and many inquiries made concerning injurious forms. Owing to their having been no important bulletin or report issued during the season, there has been a decrease in the number of packages sent through the mails or by express. This latter has undoubtedly had some effect upon the correspondence. 1470 letters, 171 postals, 42 circulars, 408 packages were sent through the mails and 39 packages were shipped by express.

Nursery certificates. We have continued, as in past years, to indorse upon the request of the State Commissioner of Agriculture nursery certificates issued by his office and destined for points in the state of Virginia, since the Virginia authorities insist that all certificates accompanying shipments of nursery stock to that state shall be indorsed by an official entomologist. The following is a list of firms to whom these nursery certificates were issued during 1908:

Stark Bros. Nursery Co., George A. Sweet, Bryant Bros., all of Dansville; George S. Josselyn, T. S. Hubbard Co., F. E. Schifferli, Lewis Roesch, Foster & Griffith, all of Fredonia; The Chase Nurseries, Henry Sears & Co., The M. H. Harmon Co., H. E. Merrell, all of Geneva; E. Moody & Sons, Lockport; Jackson Perkins, Newark; Allen Nursery Co., Brown Bros. Co., Herrick Seed Co., Perry Nursery Co., First National Nurseries, Chase Bros. Co., Ellwanger & Barry, Western N. Y. Nursery Co., Rochester Nursery Co., H. S. Taylor Nursery Co., Glen Bros., all of Rochester; F. R. Pierson Co., Tarrytown.

General. We would acknowledge at this time our indebtedness to Dr L. O. Howard, Chief of the Bureau of Entomology, United States Department of Agriculture, and his associates for identifying a number of insects. Several correspondents have rendered valuable services in securing desirable material for the collection. There has been, as in previous years, a most helpful cooperation on the part of all interested in the work of this office.

The tacit limitations of earlier years confined the studies of the economic entomologist to insect enemies of well recognized farm crops, such as corn, potatoes, fruit, or to those forms annoying or injurious to domestic animals. The later extensive insect depredations upon shade and forest trees have served to emphasize the practical importance of this field. The more recent discoveries that malaria and yellow fever are transmitted by mosquitos, and that typhoid fever and other grave intestinal diseases may be conveyed by house flies, has made the entomologist a most welcome ally of the sanitarian. Furthermore, careful investigations of injurious and dangerous insects have repeatedly demonstrated the value of such studies as a necessary preliminary to practical control work on the farm or marsh, in the orchard or even about the home. Prophylactic measures against yellow fever, malaria and typhoid must depend in large measure upon an intimate knowledge of the habits of certain insects and their part in the dissemination of the dangerous germs. The study of injurious insects is by no means completed. There is great need of investigations that can not be adequately conducted with our present resources. The exhibit collections should be greatly strengthened by a large series of well executed, enlarged models of the smaller, more injurious insects. Such a departure would greatly increase the practical and educational value of the entomologic exhibits, particularly as the significance of some of the more recent discoveries can not be adequately portrayed without such aid. This latter would also do much to bring the larger exhibit necessary for the Education Building up to a high standard.

Respectfully submitted

EPHRAIM PORTER FELT

State Entomologist

Office of the State Entomologist, October 15, 1908

INJURIOUS INSECTS

Poplar sawfly

Trichiocampus viminalis Fallen

This sawfly, first observed in this country in 1888 by Dr J. A. Lintner, has become rather abundant upon Carolina poplars in the vicinity of Albany during recent years. Complaint of injuries by this species has also been received this season from Cambridge, N. Y. Dr Lintner stated in 1888 that this species was so abundant upon small poplars in his garden that it was necessary to pick and burn the infested leaves in order to prevent more serious injury.

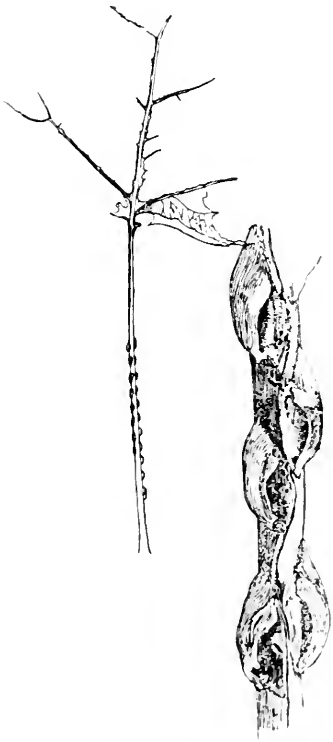


FIG. 1 Poplar sawfly, leaf stem showing oviposition and a portion of the stem greatly enlarged. (Original)

Life history and habits. The orange-yellow, black spotted, false caterpillars may be seen in early June. The young larvae feed in company on the under side of the foliage, skeletonizing most of the leaf. The larvae then break up into clusters of 6 to 8 or 10, migrate to other leaves and by this time are large enough so that everything is devoured except the larger veins, feeding invariably beginning at the tip of the leaf. The presence of leaves eaten in the above described ways is most characteristic of this species. The larvae attain full growth very quickly and some may be observed spinning up the latter part of June. The period of oviposition is quite extended and eggs, young larvae and full-grown larvae may frequently be observed upon the same tree the latter part of June and into July. A second generation of larvae occurs about the middle of August. The full-grown larvae of the first generation may spin their oval, brown cocoons in leaves or other debris. The second generation presumably hibernate in the cocoon, adults appearing the following spring and depositing their eggs in minute slits on either or both sides of the petiole in series of 10 to 15 or even more, since Dr Lintner records as many as 28 or 30 in one row.

Description. The egg is pearly white, oval and about 1 mm in length. Its position is indicated by a slight swelling about 1.5 mm long, the swellings being about 1 mm apart.

Larva. The young larvae are about 6 mm long, have dark brown or blackish heads and pale green or yellowish green bodies.

Partly grown larva. Length 1 cm. Head subglobose, jet-black, the most of the body being a very pale green with a conspicuous row of sublateral, subquadrate, black spots, a pair on each segment. The anterior portion of the body, namely the first thoracic segment and the lateral tubercles on the 2d, 3d and the 11th segments, particularly laterally, is variably tinged with pale orange, giving a very characteristic appearance. The larvae are rather thickly clothed with short, whitish setae arising from inconspicuous tubercles. True legs pale yellowish basally, yellowish transparent apically. The whitish transparent prolegs occur on the 2d to the 7th and 8th and 9th abdominal segments, each segment also with a small, black, lateral dot. Anal plate subcircular, black with whitish setose tubercles.

Full-grown larva. Length 1.5 cm. Head jet-black. Body a deep yellowish orange, sparsely covered with fine, whitish hairs and with a conspicuous row of irregular subquadrate lateral markings, a pair on each segment, and a substigmatal row of small triangular, black markings. The black anal plate bears several pairs of submedian white setae.

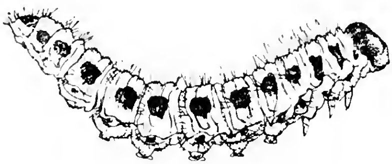


FIG. 2 Poplar sawfly, side view of larva, enlarged. (Original)

Adult. Length .8 cm. Wing spread 1.8 cm. Head shining black, short, broad. Antennae nearly as long as the body, composed of nine segments, the first two short, the others long, slender and tapering successively to the apex. Thorax black dorsally, the venter and the abdomen yellowish. Wings yellowish basally, the stigma large, distinct. Legs mostly pale yellowish, the pulvilli dark brown.

Remedial measures. This leaf feeder should be easily controlled by timely applications of an arsenical poison, preferably arsenate of lead.

Bibliography

1888 **Lintner, J. A.** Ins. N. Y. 4th Rep't, p. 44–46. (Brief account, as Aulacomerus lutescens)

1889 ——— Ins. N. Y. 7th Rep't, p. 223–24. (Synonymy, as Aulacomerus lutescens)

1906 **Felt, E. P.** N. Y. State Mus. Mem. 8, 2:568–69. (General account)

Grape blossom midge

Contarinia johnsoni Sling.

The work of this little midge has been observed here and there in Chautauqua vineyards for the last four years. The enlarged blossom buds, infested by maggots, have been found in small numbers each spring. Nothing was known as to the source of these little pests, aside from the fact that they were produced by some small fly. It was not till the spring of 1909 that we were enabled to rear this insect and show that it belonged to the genus Contarinia and has as allies several destructive species. One closely related form, Contarinia violicola Coq., has proved very injurious to the extensive violet-growing industry located at Rhinecliff, N. Y. Another member of this genus, Contarinia pyrivora Riley, is well known on account of its destroying young pears. A third form, Contarinia sorghicola Coq., infests sorghum in the South and causes a serious shrinkage in the production of seed, while a West Indian species, Contarinia gossypii Felt, is injurious to cotton. In addition, Contarinia viticola Rübs., which further study may show to be identical with the species attacking grape blossoms in the Chautauqua region, has been recorded as injurious to grape blossoms in Europe by Rübsaamen,[1] a noted authority upon this group.

Injuries. The grape blossom midge of the Chautauqua region was first observed in scattering numbers by the late Professor Slingerland and Fred Johnson in 1904, at which time it was recorded from the towns of Ripley, Westfield, Portland and Brocton. It has occurred in small numbers from year to year since then, and in 1908 aroused considerable apprehension among growers on ac-

---

[1] 1906 **Rübsaamen, E. H.** Zeitschrift für Wissenschaftliche Insektenbiologie, 2:194–98.

1909 ——— Die Wichtigsten deutschen Reben-Schädlinge und Reben-Nützlinge, p. 74–76.

count of injuries inflicted upon early Moore grapes. One acre of this variety, belonging to Mr H. L. Cumming of Fredonia, had 60 to 75% of the blossoms destroyed by this midge. Investigations by the writer last June showed that the insect was generally distributed, even in extensive vineyards, throughout the grape belt, being observed from Fredonia westward to Ripley, while Mr Fred Johnson recorded its occurrence at North East, Pa. The injury resulting from the attack of this insect simply causes the destruction of infested blossom buds. There was some complaint of grape clusters being unusually open and irregular during 1908, and as this midge was abnormally abundant, it was undoubtedly a factor in the production of light bunches. Furthermore, it is probable that some of the mysterious failures of the grape crop in restricted areas may be attributed to the work of this species. An examination of grapevines in the vicinity of Albany and at Nassau, N. Y. failed to reveal any signs of this insect's work.

Description. The presence of this enemy in a vineyard is easily recognized. The infested blossom buds remain closed and are conspicuous on account of their abnormal size. They are about ⅛ of an inch in length and usually longer than broad. They vary in color from the nearly normal green to a variable red tinted extremity. The actual presence of the destructive yellowish maggots is easily demonstrated by opening a bud. Seven to eight or ten larvae may occur in one blossom bud. The affected buds remain on the vines only a short time, dropping within a few days to a week after the injury becomes noticeable.

Larva. The pale yellowish or whitish maggot or larva is about 1/12 of an inch long and may be easily recognized by the presence of a somewhat characteristic, brownish, forked breastbone near the anterior extremity. The younger maggots are whitish, becoming lemon-yellow upon attaining full growth. The maggots, together with those of related species, have a peculiar method of locomotion. The extremities are brought together and then suddenly released. The movement frequently results in throwing the maggot a distance several times its own length.

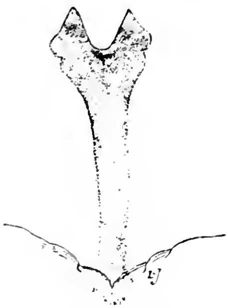


Fig. 3 Maggot of grape blossom midge, breastbone greatly enlarged. (Original)

Fly. The parent insect is an extremely delicate, pale yellowish fly only about 1/25 of an inch long. The male is easily recognized by the long, knobbed, hairy feelers or antennae one half longer than the body. The female is about 1/16 of an inch long and may be distinguished by the shorter, less densely haired feelers or antennae. This sex is provided with a long, slender ovipositor as long as the body, well adapted to placing the tiny eggs within the developing floral tissues.

Technical description. *Larva.* Length 1.5 to 2 mm. The smaller larvae are whitish, the larger ones pale yellowish. Head rather short, broad, with a length about equal to the diameter. Antennae short, stout, uniarticulate. Breastbone bidentate, the teeth rather broadly triangular and moderately chitinized, the basal

FIG. 4 Maggot of grape blossom midge, view of head, enlarged. (Original)

FIG. 5 Maggot of grape blossom midge posterior extremity, enlarged. (Original)

portion semitransparent and tapering posteriorly. The segmentation of the body rather distinct, the skin nearly smooth. The penultimate segment with a short, stout, cuticular process at the posterior lateral angles. Terminal segment broadly rounded, subtruncate distally, posteriorly with a pair of submedian acute dermal papillae, and just within, a pair of stouter, semitransparent, strongly curved pseudopods. Anus ventral, broadly oval.

Male. Length 1 mm. Antennae one half longer than the body, thickly haired, fuscous yellowish; 14 segments, the fifth with the basal portion of the stem with a length one half greater than its diameter, the distal part with a length three times its diameter, the enlargements subglobose, the basal one with a sparse subbasal whorl of setae, the circumfilum with the loops sparse, long and extending to or a little beyond the middle of the subglobular distal enlargement, which latter has a scattering subbasal whorl of curved setae and a similar circumfilum, the loops extending to the base of the following segment. Palpi: first segment short, subquadrate, the second stout, with a length over three times its diameter, the third a little longer, more slender, the fourth one fourth longer than the third. Mesonotum fuscous yellowish. Scutellum and postscutellum yellowish. Abdomen fuscous yellowish; genitalia darker. Wings hyaline, costa light brown, subcosta uniting therewith before the basal third, the third vein at the apex; fringe abundant. Halteres whitish transparent. Legs mostly pale yellowish; claws long, slender, evenly curved, the pulvilli as long as the claws. Genitalia; basal clasp segment stout, truncate; terminal clasp segment rather stout, slightly tapering; dorsal plate short, deeply and triangularly emarginate, the lobes diverging, obliquely truncate and sparsely setose; ventral plate long, very deeply and roundly emarginate, the lobes long, slender, with a few coarse setae at the narrowly rounded apex; style short, stout.

Female. Length 1.5 mm. Antennae nearly as long as the body, rather thickly haired, fuscous yellowish, yellowish basally; 14 segments, the third greatly produced, with a length six times its diameter, the fifth subsessile, cylindric, with a length two and one half times its diameter, slightly constricted near the basal third, subbasal and subapical whorls rather thick, short, strongly curved; terminal segment somewhat produced, the apical fourth forming a broadly rounded knob. Mesonotum fuscous yellowish, the submedian lines sparsely haired. Scutellum and postscutellum fuscous yellowish. Abdomen a little lighter, the distal segments slightly fuscous. Halteres pale yellowish. Coxae, femora and tibiae mostly pale straw, the anterior and midtarsi fuscous yellowish, the posterior tarsi apparently pale yellowish. Ovipositor nearly as long as the body, the terminal lobes with a length six times their width, very slender, subacute apically and with a few coarse setae.

Life history. The delicate parent midges undoubtedly appear with the unfolding of the blossom buds or soon after, and the female deposits 7 to 10 or more eggs. These hatch quickly, the maggots develop rapidly and become full grown at about blossoming time. Infested blossom buds were very abundant in vineyards June 11, 1908, while a week or 10 days later the insects had practically disappeared. This indicates clearly that the period of larval existence is very short. The maggots or larvae either drop from the infested bud or fall with it and seek shelter in the ground, remaining in an earthen cocoon during the rest of the season and transforming to pupae the following spring. The few adults reared by us under artificial conditions appeared April 30, 1909. It is probable that those hibernating in the field do not emerge till much later, namely, early in June before the grapes are in bloom. There appears to be no reason for believing that this insect can subsist upon other vines than grape, unless it be the allied Virginia creeper. The extent of injury is undoubtedly influenced greatly by the time the midges appear, since if they fly in large numbers just as the blossom buds appear and the latter are therefore in a favorable condition for infestation, there is likely to be much more serious injury. This is probably the explanation of the almost total destruction of the bloom in the acre of early Moore grapes noticed above. It is possible that this new American pest is an introduced species, brought to the Chautauqua region on recent importations of grape. It is to be hoped that it will not multiply greatly and become a serious menace to this important industry.

Remedial measures. Nothing very definite can be advised in the way of control measures. Clean culture, supplemented by liberal feeding, is the most hopeful method of avoiding serious injury, as we have yet to find this insect very abundant throughout large, well cultivated vineyards. Most of the infested clusters so far as our observation goes, occur near the outside of a vineyard in the vicinity of abundant natural shelters. The burning over of grassy headlands and margins of ditches in early spring could hardly cause much injury and might be of service in destroying the wandering maggots. The delicate parent insects would succumb readily to pyrethrum powder and presumably would be stupefied by heavy smoke. These insects fly mostly during the quieter part of the day and it might be practical, in the case of a badly infested vineyard, to watch for the appearance of the adults and then stupefy or destroy them by generating a heavy smudge throughout the vineyard. Attempts to control this midge by applications to the vines before the flies appear are very likely to result in failure.

Bibliography

1904 **Slingerland, M. V. & Johnson, Fred.** Cornell Agric. Exp. Sta. Bul. 224, p. 71–73. (Brief illustrated account with description of larva and gall, as Cecidomyia)

1908 **Felt, E. P.** Grape Belt, June 12; Buffalo News, June 13; Country Gentleman, June 18, 73:607; Economic Ent. Jour. 1:243. (Brief records of injury, as Cecidomyia)

1909 —— Grape Belt, May 18 (Records rearing of adult, outlines the life history and discusses remedies)

1909 —— Economic Ent. Jour. 2:257 (Records rearing and discusses importance)

Gladioli aphid

Aphis gladioli n. sp.

The abundant occurrence of a plant louse upon gladioli bulbs is something unusual. No outbreak of the kind had been previously brought to our attention, and Dr L. O. Howard informs the writer that he is unable to find any record of an aphid occurring upon this showy plant. This new form of injury was first brought to our attention last July, by the reception of a number of gladioli bulbs badly infested with plant lice, although they had been previously fumigated with sulfur. The insect must be exceedingly prolific, since one small box containing about a dozen bulbs had the interstices almost filled with exuviae and plant lice. The presence of large numbers of these insects injures the salability of the bulbs, since it weakens them materially and frequently results in a failure to bloom. This species has caused more or less trouble to some of our growers for the past two or three years, particularly in late winter. Examples of this plant louse were submitted to Mr Pergande, through Dr L. O. Howard, and by him pronounced to be an unknown species of aphis.

Description. The very young plant louse is about .75 mm long, pale yellowish or whitish transparent with an obscure subapical orange band on the abdomen. The antennae are slightly fuscous apically, the tip of the beak, the distal tarsal segments and the cornicles being fuscous; the eyes are black. The antennal segments in this stage have the following measurements: Third .21 mm, fourth .06 mm, fifth .141 mm. The cornicles are subcylindric, being .09 x .045 mm.

The partly full grown wingless female has the following antennal measurements. Third segment .195 mm, fourth .12 mm, fifth .085 mm, the sixth .415 mm, the cornicles being subcylindric, .135 x .06 mm.

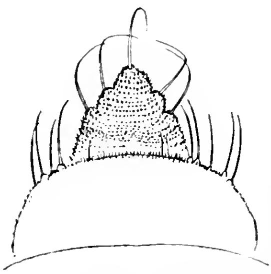


Fig. 6 Gladioli aphid, posterior extremity of wingless female, enlarged. (Original)

The full grown wingless female is rather stout, a pale yellowish white, the head dorsally, frequently having a distinct yellowish cast and the subapical abdominal segments a deeper yellowish cast on the venter. The apex of the third, fourth and fifth antennal segments and the apexes of the tibiae, tarsi and the beak are fuscous. The cornicles are light fuscous and the eyes black.

Winged female. Length 1.75 mm. This form is dark brown and yellowish, the antennae being mostly a fuscous yellowish, the head fuscous, the pronotal lobes a variable fuscous and separated from the mesonotum by a yellowish or deep orange area. The thorax has the median and two conspicuous submedian lobes fuscous. Scutellum fuscous, postscutellum light fuscous. Abdomen a variable yellowish orange and with a variable, oval, or subquadrangular, fuscous area on the dorsum of the fourth, fifth, sixth and seventh segments. Cornicles fuscous and tapering slightly. Wings with a yellowish white stigma. Legs mostly a pale

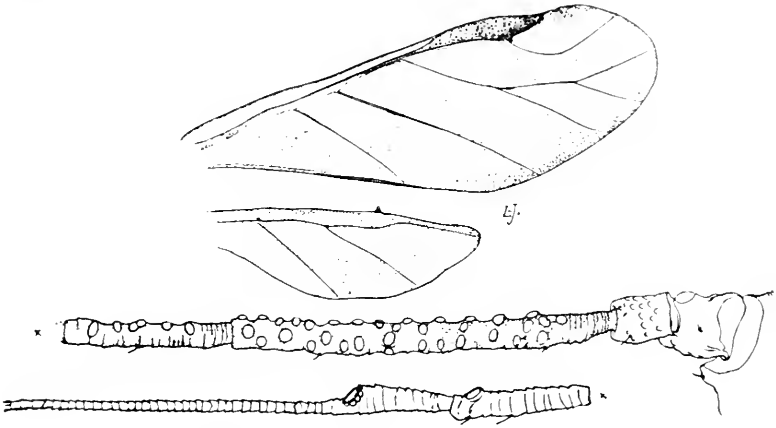


FIG. 7 Gladioli aphid, wings and antenna, much enlarged. (Original)

yellowish, the femora and tibiae apically and the tarsi fuscous. Venter of prothorax yellowish, the mesothorax with broad, angulate, fuscous sclerites ventrally. The abdomen ventrally yellowish and deep orange, the two apical segments narrowly margined mesially with fuscous. The antennal segments have the following measurements: The third .36 mm, the fourth .165 mm, the fifth .105 mm and the sixth .375 mm, the sensoria being very abundant on the third and fourth segments; cornicles .15 x .045 mm, tapering gradually.

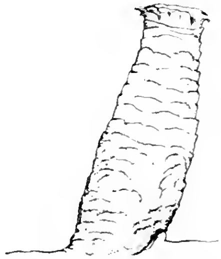


FIG. 8 Gladioli aphid, honey tube, enlarged. (Original)

Life history. Gladioli bulbs are kept by growers in large warehouses, the temperature being maintained at about 40 degrees throughout the winter. This insect is evidently unable to breed under these conditions. As spring advances and the house begins to warm up in March, the aphids appear in large numbers, reproducing so abundantly that the window frames and sills may become literally covered with wings and bodies of plant lice. It is comparatively easy, in a badly infested house, to sweep up a gill of wings and exuviae from under one window. This plant louse multiplies freely upon the bulbs, usually being massed around the origin of the roots and sometimes nearly covering the entire under surface. Breeding evidently continues from some time in March until into July, with the production of numerous winged individuals the latter part of July, at least in the case of bulbs submitted for examination, though winged females undoubtedly occur earlier in the season under warehouse conditions. By July 28th winged females had entirely disappeared in our breeding cages, though young were still numerous on the bulbs; later, all disappeared. An investigation about the middle of August resulted in finding no living aphids in the storage warehouse or upon the plants in the field. It is stated that when digging in October a few plant lice may be found upon the bulbs. These evidently remain in a dormant condition till the house warms up in the spring as described above.

Fig. 9 Gladioli aphid, posterior extremity of young nymph, enlarged. (Original)

Remedies. Fumigation with sulfur has been found ineffective in controlling this species. It is more than probable that judicious fumigation with hydrocyanic acid gas would be entirely successful in controlling this pest. This might be accomplished by treating the entire house or by arranging for the fumigation of badly infested trays whenever necessary. The bulbs would probably not be injured by any strength of gas which would be harmless to ordinary growing plants, and it is probable that more gas could be used with safety. This point can be determined only by actual tests made preferably under warehouse conditions.

Green cockroach

Panchlora hyalina Saus.

Two specimens of this Central American form, kindly determined through the courtesy of Dr L. O. Howard, were brought to the office in March, each taken from a different section of Albany, N. Y. The occurrence of a single specimen would have little significance, as it might easily have been brought to the city upon fruit boats, but the finding of two in different sections is not so readily explained, particularly as we find records of this species having been taken in other parts of the country. The earliest record is that of a specimen being captured in a store in Boston

December 26, 1878, and is given on the authority of the late Dr Samuel Kneeland. Again in 1879 a female was found alive with numerous young in a house at Salem, Mass. In both of the above mentioned cases the insect was identified as Panchlora nivea Linn. A specimen was also taken by Dr Carl F. Gissler of Brooklyn, N. Y., September 21, 1890. It has also been recorded from Porto Rico.

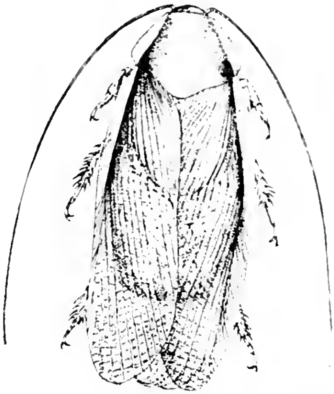


FIG. 10 Green cockroach, enlarged. (Original)

Description. This slender species is a rather fragile, light green, yellow margined form with the thinner portions of the wings transparent. It is nearly an inch long and has the long, slender, pale yellowish antennae characteristic of this group, the terminal segments of which are interesting, since they are strongly constricted at the base and thus subsessile. The legs and undersurface are pale yellowish green.

The young, as noted by Dr Howard, are light brown and are remarkable in that the body becomes broader posteriorly.

Life history and habits. This species, aside from being a tropical form, is particularly interesting because of its viviparous habits, most cockroaches producing large, characteristic oötheca. It is a tropical form and the abundance of constantly warm houses, not to mention greenhouses, should render it comparatively easy for this species to maintain itself in our climate, particularly when reinforced by frequent importations as appears to be the case at the present time. This or an allied form, according to Malcomb Burr, is occasionally found in Europe, being brought from South America.

Bibliography

1890 **Smith, J. B.** Psyche, 5:405. (Recorded from Boston and Salem, Mass., as Panchlora nivea)

1891 **Riley, C. V.** Insect Life, 3:356. (Recorded from Brooklyn. Observations on life history, as Panchlora viridis); 3:443-44. (Brief general illustrated account)

1903 **Rehn, J. A. G.** Am. Ent. Soc. Trans. 19:285. (Distribution)

The typhoid or house fly and disease

Musca domestica Linn.

The house fly is such an extremely common species that description appears unnecessary. Dr Howard's investigations show that fully 98% of the flies in houses are ordinary house flies. A few others are associated with this dominant species. The stable fly, Stomoxys calcitrans Linn. may be rather abundant about houses in the fall and is responsible for the persistent belief that under certain conditions the house fly bites. Invariably the offender is this last named species, a form which presents an extremely close general resemblance to the house fly and may be dis-

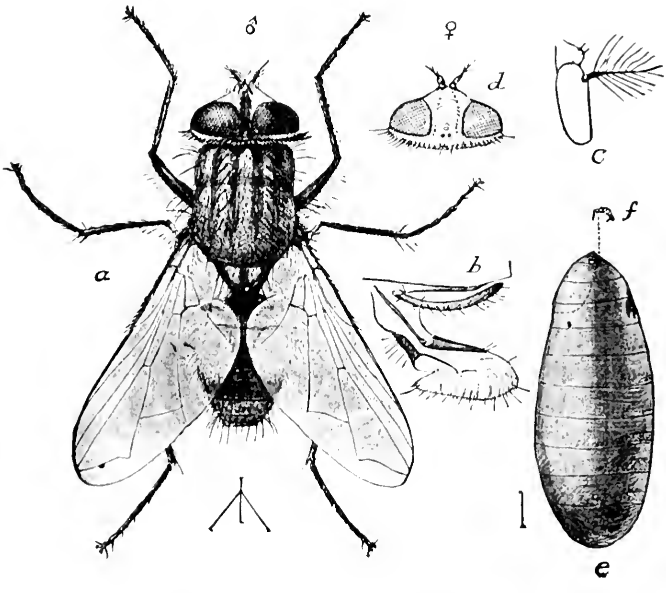


Fig. 11 Typhoid or house fly: *a*, male, seen from above; *b*, proboscis and palpus from the side; *c*, tip of the antenna; *d*, head of female; *e*, puparium; *f*, the anterior breathing-pore or spiracle, all enlarged. (After Howard & Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

tinguished therefrom at once by its bite. It occurs, as a rule, about the stable. Another fly liable to be abundant about houses in the fall is the cluster fly, Pollenia rudis Fabr., a species somewhat larger than the house fly and easily recognized by the yellowish hairs upon the thorax. The small, yellowish fruit fly, Drosophila ampelophia Loew, only about ⅛ inch long, is sometimes rather abundant in houses and is invariably found in association with overripe or decaying fruit. These various species, although annoying and under certain conditions dangerous, sink into insignificance compared with the common house fly.

Habits. The house fly subsists entirely upon fluids taken up by means of the fleshy tongue. It apparently feeds with equal gusto upon fresh manure, decaying vegetable matter or the daintiest culinary preparations. This catholicity of taste frequently results in flies feeding greedily upon exposed discharges, in open vessels or poorly constructed privies, from patients suffering from typhoid fever or other grave intestinal diseases. The hairy legs are thus fouled with thousands of deadly bacilli and countless numbers of germs are swallowed. Shortly thereafter the same flies may appear in the house and incidentally contaminate the food, to the great peril of the consumer, with the germs adhering to the limbs and those deposited with undiminished virulence in the familiar fly specks. This, while disgusting and abhorrent to every sense of decency, occurs repeatedly in nature and is apparently ignored by the masses, despite the deadly peril incurred.

There is abundant evidence to show that this insect breeds by preference in horse manure, though it also occurs to a limited extent in cow manure and in miscellaneous collections of filth and specially decaying vegetable matter. The parent insects deposit their eggs upon manure and similar materials, the young maggots hatching therefrom in less than 24 hours and, under favorable conditions, completing their growth in five to seven days later. The maggots then transform to the oval, brown, resting or pupal stage, remaining therein from five to seven days. The life cycle is thus completed in 10 to 14 days, the shorter period being true of the warmer parts of the year, particularly in the vicinity of Washington, D. C. One fly may deposit about 120 eggs, and as there may be 10 to 12 generations in one season, it is not surprising that this insect should become extremely abundant by midsummer. Calculations show that under favorable conditions the descendants from one fly might at the end of a season reach the stupendous number of over 190 quintillion. Dr Howard's studies show that as many as 1200 house flies, in various stages, might be found in one pound of manure. At this rate, one good load of manure might produce two and a half million flies. Fortunately, breeding is confined to the warm months, only a few flies wintering in houses in a more or less dormant condition.

Flight and dissemination. This is something of great importance in view of the part flies may play in the spread of disease. The experiments of Dr L. O. Howard, Government Entomologist, have shown conclusively that the major portion of the flies about a building breed in the immediate vicinity, probably within 300 to 500 feet. There is no denying the fact that this insect is capable of flying considerable distances but ordinarily this does not seem to occur. There is another phase of this question which has apparently received little consideration, namely, the conveyance of flies by vehicles of one kind or another. Only a little observation is necessary to show that the butcher cart of the country is a very efficient carrier of flies, presumably receiving accessions and leaving individuals at almost every stopping place, even though the route traversed may occupy an entire day. The same is true, though to a more limited extent, of trolley cars and express cars carrying sacked meat or other supplies equally attractive to flies. It is only necessary for these carriers to load where conditions are favorable for the infection of flies and we may have a mysterious outbreak of disease at some distance from the source of trouble.

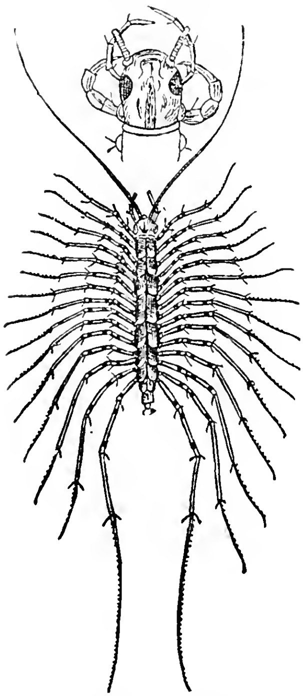


Fig. 12 House centipede: seen from above, enlarged, the head still more enlarged. (After Wood)

Natural enemies. The house fly, though so abundant, is subject to attack by various natural enemies. One of the most common is a fungous disease known as E m p u s a m u s c a e which is occasionally responsible for the death of many flies, particularly toward the end of the summer. It is not uncommon to find a few individuals affected by this disease every year. A small, reddish mite may be occasionally found attached to flies, seriously weakening the host. There are, in addition, wasps and spiders which prey upon flies and undoubtedly are of considerable service though they are very rarely sufficiently abundant to materially reduce the numbers of this pest. Another interesting enemy of the house fly is known as the house centipede, S c u t i g e r a f o r c e p s Raf., a harmless species which, in recent years, has become well established in many houses in New York State. It is credited with preying on house flies, cockroaches and presumably other insect inhabitants of dwellings.

The house fly as a carrier of disease. The house fly is such a common insect that altogether too much has been taken for granted. Up to recently it has been considered simply as an inevitable nuisance. Later developments have shown that this insect may be an important factor in the dissemination of certain diseases.

Typhoid fever is one of the most serious ailments to which man is subject. There are about 250,000 cases of this disease annually in America, about 35,000 proving fatal. 60% of the deaths in the Franco-Prussian War and 30% of the deaths in the Boer War were caused by this disease. Positive statements have been made to the effect that the house fly was an active agent in the dissemination of this disease, while certain reputable physicians consider this charge unproved. The Spanish-American War, if it accomplished nothing else, called attention in a most forcible manner to the part flies might play in the dissemination of typhoid bacilli. Dr M. A. Veeder of Lyons writing in 1898 was very strongly of the opinion that the house fly was largely responsible for the dissemination of this disease in camps. Dr Walter Reed writing of an outbreak near Porto Principe in the annual report of the War Department states that the outbreak "was clearly not due to water infection but was transferred from the infected stools of patients to the food by means of flies, the conditions being especially favorable for this manner of dissemination." Dr L. O. Howard, writing in 1900 on the fauna of human excrement, quotes from Dr Vaughan, a member of the army typhoid commission, as follows:

27 Flies undoubtedly served as carriers of the infection.

My reasons for believing that flies were active in the dissemination of typhoid may be stated as follows:

a Flies swarmed over infected fecal matter in the pits and then visited and fed upon the food prepared for the soldiers at the mess tents. In some instances where lime had recently been sprinkled over the contents of the pits, flies with their feet whitened with lime were seen walking over the food.

b Officers whose mess tents were protected by means of screens suffered proportionately less from typhoid fever than did those whose tents were not so protected.

c Typhoid fever gradually disappeared in the fall of 1898, with the approach of cold weather, and the consequent disabling of the fly.

It is possible for the fly to carry the typhoid bacillus in two ways. In the first place fecal matter containing the typhoid germ may adhere to the fly and be mechanically transported. In the second place, it is possible that the typhoid bacillus may be carried in the digestive organs of the fly and may be deposited with its excrement.

Dr Alice Hamilton in 1903, studying the part played by the house fly in a recent epidemic of typhoid fever in Chicago which could not be explained wholly by the water supply nor on the grounds of poverty or ignorance of the inhabitants, captured flies in undrained privies, on the fences of yards, on the walls of two houses and in the room of a typhoid patient and used them to inoculate 18 tubes, from five of which the typhoid bacillus was isolated. She further found that many discharges from typhoid patients were left exposed in privies or yards, and concluded that flies might be an important adjunct in the dissemination of this infection. More recently, Dr Daniel D. Jackson investigating in 1907 the pollution of New York harbor, found that by far the greater number of cases occurred within a few blocks of the water front, the outbreak being most severe in the immediate vicinity of sewer outlets. He gives a series of charts showing an almost exact coincidence between the abundance of house flies and the occurrence of typhoid fever, when the dates are set back two months to correspond to the time at which the disease was contracted. The bacilli of typhoid fever were found by Ficker in the dejecta of house flies 23 days after feeding, while Hamer records the presence of this bacillus in flies during a period of two weeks. Most significant of all, it should be noted that competent physicians in position to make extended observations upon this disease and the methods by which it may become disseminated, are most strongly of the opinion that under certain conditions at least, the fly is a most important factor. Epidemics spread by flies, according to Dr Veeder, tend to follow the directions of prevailing warm winds. He considers flies the chief medium of conveyance in villages and camps where shallow, open closets are used, thus affording the insects free access to infected material, and where it is possible to eliminate water and milk as the sources of infection. Drs Sedgwick and Winslow, writing in 1903 state that "the three great means for the transmission of typhoid fever are fingers, food and flies," the authors holding the last to be the most important.

The possibilities of transmitting typhoid fever are appalling to the layman when it is remembered that the germs of this disease may be in the system several weeks before diagnosis is possible, continue in numbers six to eight weeks after apparent recovery and in exceptional cases may be discharged from the system during a period of several years. There are authentic records of a patient distributing these germs for 17 years and being the incipient cause of 13 cases during 14 years of that period. Furthermore, Dr M. A. Veeder of Lyons cites a case where typhoid fever was perpetuated from year to year in a locality, ascribing it to a physician recommending the burial of all typhoid excreta and the execution of this direction by a favorite nurse. It is well known that soil infected by these germs may be the origin of new cases, and Dr Veeder significantly observes that the annual recurrence of typhoid fever in the above mentioned locality ceased with the death of the two parties mentioned above and a change in the method of disposing of typhoid discharges.

The evidence against this insect may therefore be summed up briefly as follows: Virulent typhoid bacilli have been found upon the legs and within the body of this insect, persisting in the latter case for 23 days. A number of serious outbreaks have been observed by competent physicians, where infection through a common water or food supply did not satisfactorily explain the outbreak. This positive evidence, while not establishing beyond all question the culpability of the fly, is further supported by the opinion of a number of reputable physicians who have had extensive experience with outbreaks of this character.

The evidence showing that flies may play an important part in the diffusion of cholera is, according to Dr Nuttall, absolutely convincing. He cites experiments showing that cholera bacilli may be found on flies in large numbers, while they may occur in the dejecta within 17 hours after feeding and as late as four days. Infected flies have been given access to milk and cholera cultures made therefrom.

Typhoid fever and cholera, while both serious infections, are by no means the only diseases which may be conveyed by flies. Certain forms of diarrhoea and enteritis are undoubtedly due to specific germs, and there is no reason why the bacilli causing these infections may not be carried as easily and in the same way as those responsible for typhoid fever. The monthly bulletin of the New York State Department of Health for October 1908, states that during 1907 there were in New York State 37,370 deaths of infants under 2 years of age, 9213 being due to diarrhoea and enteritis. Careful investigators, it is stated, have placed the proportion of deaths between bottle-fed and breast-fed babies as 25 to 1. Physicians recognize the necessity of providing pure milk for young children, and in most instances it is comparatively easy to see how flies might be responsible for the major portion of the infections, since they usually occur in numbers about stables, in the vicinity of milk houses, in the neighborhood of milk stations, on milk wagons and, in fact, are found in greater or less numbers wherever milk is stored, excepting in refrigerators and similar places. Martin states that each succeeding year confirms his observation of 1898 to the effect that the annual epidemic of diarrhoea and typhoid is connected with the appearance of the common house fly, while Nash, in the *Lancet,* records no mortality from diarrhoea among infants at Southend during July and August 1902, this immunity being accompanied by the almost complete absence of the house fly. This insect was abundant in that locality in September and coincidently epidemic diarrhoea developed. Sandilands, in the *Journal of Hygiene,* states that the great majority of cases of diarrhoea are due to the consumption of infected food, and suggests that the seasonal incidence of diarrhoea coincides with and results from the seasonal prevalence of flies. Dr Jackson records several epidemics of a malignant type of dysentery radiating from a single point and disappearing entirely when proper disinfection of closets was enforced.

The evil possibilities of the fly are by no means exhausted in the above recital. It is well known that flies feed upon sputum. Experiments by Lord recorded in the *Boston Medical and Surgical Journal* show that flies may ingest tubercular sputum and excrete tubercular bacilli, the virulence of which may last for at least 15 days. He considers the danger of human infection from this source to lie in the ingestion of fly specks on food, and suggests that during the fly season great attention should be paid to the screening of rooms and hospital wards containing patients with tuberculosis and laboratories where tubercular material is examined.

Nuttall considers that the evidence previously submitted proves that the house fly may carry about and deposit anthrax bacilli, though there may be a question as to how generally flies are responsible for the dissemination of this disease. Parke admits the possibilities of flies distributing, in addition to those mentioned above, plague, trachoma, septicemia, erysipelas and leprosy. Furthermore, there are those who would hold flies responsible for the more frequent new cases which occur in the zone immediately surrounding the smallpox hospital and which may be due either to the wafting out of infected particles or their carriage by flies. The latter is considered the more probable. Howe, according to the statement of Dr Howard, has demonstrated that the purulent conjunctivitis of the Egyptians is spread by the house fly. The experiments of Grassi show that the eggs of Taenia, Trichocephalus and Oxyuris pass uninjured through the alimentary tract of flies.

Sanitary and control measures. It is perhaps needless to add, in view of the foregoing, that the greatest care should be taken to exclude flies from the sick room, especially in the case of contagious diseases. The flies are not only annoying to the patient but may aid in carrying the disease to others. The proper disposal of infected discharges such as those from typhoid patients should never be neglected. Vessels which have contained any such material should be thoroughly cleaned and never left where flies may gain access to the infection.

All food, particularly that eaten without cooking, should be carefully protected from flies by the use of screens. This is especially true of milk, since it affords a favorable medium for the multiplication of certain disease germs. This applies to dealers in food supplies as well as to the home. An important step toward better sanitation would be taken if the public refused to patronize stores and eating places overrun by flies.

A large reduction in the number of house flies found in most places is thoroughly practical. This end can be best attained by doing away with conditions favorable to the unrestricted multiplication of this pest. The first step is to prevent flies from breeding in horse manure and other waste products from the stable. All manure should be placed in a fly proof receptacle or the accumulation treated daily with small quantities of chlorid of lime. If all manure is removed from the stable at intervals of three days and spread upon the field, there will be comparatively little breeding. Some one of these measures can be applied to every stable in cities and villages. The farmer, if unable to carry out any of the preceding suggestions, will find a large measure of relief from the fly nuisance, if the manure is stored in tight, practically fly proof cellars, such as can be easily constructed with the modern concrete foundation. Flies breed but little in darkness, and the writer has known of barns comparatively free from flies, simply because the manure was stored in the darker parts of a large barn cellar.

The treatment of manure described above should be supplemented by care in preventing the accumulation about the premises, of decaying organic matter such as fruit, table scraps, etc. Swill barrels should always be provided with tight covers and care exercised that there be no leakage or an accumulation of fly-breeding material about the barrel. The old-fashioned box privy should be abolished unless the same be conducted on the earth closet principle and the contents kept covered with lime or dry earth, so as to prevent both the breeding and infection of flies. The modern water-closet is by far the best and safest solution of this last named difficulty. The presence of numerous flies about the dwelling may be construed as indicating a nearby, usually easily eliminated breeding place.

It will be found in practice that some flies are very apt to exist in a neighborhood even after the adoption of rigid precautions. They should be kept out of houses, so far as possible, by the use of window and door screens, supplemented by the employment of Tanglefoot or other sticky fly paper. This, though somewhat disagreeable, is much to be preferred to the use of poisonous preparations which are likely to result in dead flies dropping into food. Prof. C. P. Lounsbury, Government Entomologist of South Africa, suggests, in addition to the above, putting fresh pyrethrum powder upon window sills and supplementing this by the judicious use of an insect net.

Bibliography

The following bibliography comprises most of the more important literature relating to the life history and habits of the house fly and its part in the dissemination of various diseases affecting man.

1869 **Packard, A. S.** Am. Nat. 2:638-40

Observations on the anatomy and life history.

1873 ——— On the Transformations of the Common House Fly, with Notes on Allied Forms. Bost. Soc. Nat. Hist. Proc. 16:136-50.

A detailed account of the life history and of the anatomy of the early stages, with brief notices of allied species.

1876 ——— The House Fly. Am. Nat. 10:476-80

Observations on the life history and habits.

1883 **Harrington, W. H.** House Flies. Ent. Soc. Ont. Rep't 1882, p. 38-44

A somewhat extended discussion with quotations from Packard and other authors.

1884 **E. P. W.** Dangers from Flies. Nature, 29:482-83

Abstract of a note by Dr B. Grassi in which he calls attention to flies occurring on various pathogenic materials and conveying germs to receptive membranous surface. Ophthalmia is noted as an Egyptian complaint, very probably carried by flies. Grassi's experiments show that flies may ingest and pass unharmed, eggs of a human parasite (Trichocephalus) and probably of the tapeworm (T a e n i a s o l i u m).

1884 **Riley, C. V.** Am. Nat. 18:1267-68

Note on Grassi's experiments showing that flies are agents in the diffusion of infectious maladies, epidemics and even parasitic diseases and recording the ingestion and passage of Trichocephalus eggs and also of alcoholic eggs of T a e n i a s o l i u m.

1887 ——— The Plymouth Typhoid Epidemic. Science, 10:214

Gives the mortality figures of the outbreak in 1885 and cites an instance "in which the disease seems to have been transmitted through the air." The first case, that of a stranger, occurred in a hotel, the discharges being thrown without treatment into a water-closet which communicated with a room only 3 feet distant in which the landlord's daughters slept. The drinking water of the place was good and the three cases following the first were in all probability due to germs transmitted by flies.

1887 **Fyles, Thomas W.** Insects Troublesome in the Household and How to Deal with Them. Ent. Soc. Ont. 17th Rep't, p. 33-34

A summarized biologic account.

1890 **Aaron, C. B.** In Dragon Flies *vs.* Mosquitos, p. 37-42, 53-54

A brief discussion of the life history and habits with observations on the house fly as a carrier of disease.

1890 **Beutenmueller, William.** In Dragon Flies *vs.* Mosquitos, p. 123-24

Brief observations on the habits of the house fly and the possibility of controlling the insect.

1890 **Weeks, A. C.** In Dragon Flies *vs.* Mosquitos, p. 81-84

Brief notice of habits of the house fly with frequent references to associated species.

1891 **Marlatt, C. L.** Insect Life, 4:152-53

Records unusual mortality among flies in Washington caused by E m p u s a A m e r i c a n a Thax.

1892 **Power, Henry.** Conjunctivitis Set Up By Flies. Brit. Med. Jour. Nov. 19, p. 1114

Records the severe inflammation of the conjunctiva accompanied by extensive corneal ulceration within 24 hours after having been stung in the eye by a fly which had apparently risen from a dung hill. The case was marked by general prostration and feebleness for months after. Another case was recorded, diphtherial in nature, after a fly had gotten into a man's eye. [The first case can hardly be attributed to a house fly.]

1894 **Skinner, Henry.** Ent. News, 5:18

Surgeon General Sir William Moore is quoted as reporting an instance where anthrax was spread by flies from the unburied carcass of a dog. It is also noted that the greatest abundance of flies in India is coincident with cholera outbreaks. It is suggested that leprosy is often conveyed by flies. Ophthalmia is thus disseminated. [These notes may not all apply to the house fly.]

1896 **Aylett, W. R.** Am. Microscopical Jour. 18:288

Summary of Dr Aylett's experiments showing that flies ingest and pass tubercular bacilli.

1896 **Lugger, Otto.** Entomologist, Minn. State Exp. Sta. 2d Rep't, p. 145–55

A somewhat extended account of the life history and habits of the house fly. The opinion is expressed that the larvae may be beneficial because they breed in and destroy material which might produce pathogenic germs, though attention is called to the probability of flies carrying cholera and gangrene.

1896 **Howard, L. O. & Marlatt, C. L.** U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. p. 43–47

A summarized gene ral account of the house fly with mention of several associated species Preventive measures are discussed briefly.

1896 **Osborn, Herbert.** U. S. Dep't Agric. Div. Ent. Bul. 5. n. s. p. 19–20

Refers to opinions in which flies are held to be the authors or probable carriers in epidemics of anthrax, cholera, typhoid fever, phthisis, leprosy and ophthalmia.

1896 **Sibthorpe, E. H.** Cholera and Flies. Brit. Med. Jour. Sept. p. 700

Flies are considered as scavengers not conveyers of cholera. An outbreak of disease occurred in a native regiment and on each occasion after leaving an old camp for a new, a recrudescence occurred. This was attributed to leaving flies behind; when they followed and mustered in force the disease abated.

1897 **Buchanan, W. J.** Cholera Diffusion by Flies. Indian Med. Gazette, 3:86–87

Gives details respecting a cholera outbreak in a jail, stating that all prisoners affected fed in the corner of the jail near infected huts, whereas those eating in the opposite hospital corner, diagonally across, escaped the malady. This data was considered sufficient to indicate the fly as a very probable carrier of the contagion.

1898 **Howard, L. O.** House Flies. U. S. Dep't Agric. Div. Ent. Cir. 35, ser. 2, p. 1–8

A summarized account of the life history of this insect, with a discussion of remedial measures.

1898 ———— Further Notes on the House Fly. U. S. Dept. Agric. Div. Ent. Bul. 10. n. s. p. 63–65

Gives details of experiments with applications of air-slaked lime, land plaster, gas lime, chlorid of lime and kerosene to horse manure, the treatment with kerosene and chlorid of lime being advised. Data on the abundance of larvae and puparia in manure are also given.

1898 **Veeder, M. A.** Flies as spreaders of sickness in camps. Med. Record, 54:429–30

Records flies feeding upon typhoid excreta and passing from that to food supplies. Bacterial cultures were made from both fly tracks and fly excreta.

1899 **Howard, L. O.** The Economic Status of Insects as a Class. Science, 32:233–47

It is stated on page 237 that purulent conjunctivitis of the Egyptians is spread by the house fly, while anthrax bacilli may be conveyed by the bite of Tabanus or Stomoxys. The house fly is mentioned as a probable carrier of typhoid fever.

1899 **Hutt, H. L.** Ent. Soc. Ont. 29th Rep't. 1898. p. 99–100

A summarized account of the life history and habits of the house fly, with mention of a few associated species

1899 **Nuttall, G. H. F.** On the Role of Insects, Arachnids and Myriapods as Carriers in the Spread of Bacterial and Parasitic Diseases of Man and Animals, a Critical and Historical Study. Johns Hopkins Hosp. Rep't, 8:1–152

Concludes that the evidence that flies transmit anthrax is not above question. Grants that flies are important agents in conveying cholera and assumes that the evidence relating to the dissemination of this disease could safely be applied to typhoid fever. Flies ingest and pass tubercular bacilli. An exhaustive examination of the evidence relating to the dissemination of a number of diseases. An extended bibliography is given.

1899 **Reed, Walter.** War Dep't An. Rep't, p. 627–33

Major Reed reporting on the local epidemics of typhoid fever in the 8th cavalry and 15th infantry encamped near Porto Principe in February and March 1899, after detailing the conditions existing in the camps, states that the outbreak " was clearly not due to water infection, but was transferred from the infected stools of patients to the food by means of flies, the conditions being especially favorable for this manner of dissemination."

1899 **Veeder, M. A.** The Relative Importance of Flies and Water Supply in Spreading Disease. Med. Record, 55:10–12

Flies are responsible for such typhoid and other intestinal diseases as occur in small neighborhood epidemics extending in short leaps from house to house, without reference to water supply or anything else in common. Epidemics spread by flies tend to follow the directions of prevailing warm winds. In villages and camps where shallow open closets are used, giving free access of flies to the chief source of infection, the flies are the most important carriers. These diseases are therefore usually fly-borne in villages and camps. The burial of typhoid infected matter in the ground is no protection against flies. On the contrary it actually perpetuates it in the locality from year to year.

1900 **Howard, L. O.** A Contribution to the Study of the Insect Fauna of Human Excrement. Wash. Acad. Sci. Proc. 2:541–600

A detailed study of the insects breeding in human excrement, with special reference to the house fly and its part in disseminating typhoid fever. Unquestioned evidence is submitted to show that this insect may breed in human excrement, and the following conclusions from a paper read by Dr Vaughan before the American Medical Association at Atlantic City, N. J. June 6, 1900, are quoted.

27 Flies undoubtedly served as carriers of the infection.

My reasons for believing that flies were active in the dissemination of typhoid may be stated as follows:

a Flies swarmed over infected fecal matter in the pits and then visited and fed upon the food prepared for the soldiers at the mess tents. In some instances where lime had recently been sprinkled over the contents of the pits, flies with their feet whitened with lime were seen walking over the food

b Officers whose mess tents were protected by means of screens suffered proportionately less from typhoid fever than did those whose tents were not so protected.

c Typhoid fever gradually disappeared in the fall of 1898, with the approach of cold weather, and the consequent disabling of the fly.

It is possible for the fly to carry the typhoid bacillus in two ways. In the first place fecal matter containing the typhoid germ may adhere to the fly and be mechanically transported. In the second place, it is possible that the typhoid bacillus may be carried in the digestive organs of the fly and may be deposited with its excrement.

1900 **Reed, Walter, Vaughan, V. C., & Shakespeare, E. O.** Abstract of Report on the Origin and Spread of Typhoid Fever in the U. S. Military Camps During the Spanish War of 1898. Washington, Government Printing Office

1901 **Fletcher, James.** Can. Ent. 33:84–88

A review of Dr Howard's paper entitled: *A Contribution to the Study of the Insect Fauna of Human Fxcrement*, and giving the more important conclusions resulting from the investigation.

1901 **Howard, L. O.** The Carriage of Disease by Flies. U. S. Dep't Agric. Div. Ent. Bul. 30. n. s. p. 39-45

A discussion of the house fly and associated species as carriers of disease, with a consideration of protective measures. It is assumed that the fly was responsible in a large measure for the typhoid outbreak in the army camps during the late Spanish-American War.

1902 **Ehrhorn, Edward M.** Insects as Distributors of Human Diseases. Cal. State Bd Hort. 8th Biennial Rep't, 1901 2, p. 103-14

The life history and methods of controlling the house fly are briefly discussed on pages 111-12. It is considered an active agent in the dissemination of typhoid fever.

1902 **Firth, R. H. & Horrocks, W. H.** An Inquiry into the Influence of Soil, Fabrics and Flies in the Dissemination of Enteric Infection. Brit. Med. Jour. no. 2178, p. 936-43

An extended discussion with the conclusion that house flies, Musca domestica, can convey enteric infective matter from specific excreta or other polluted material to objects on which they may walk, rest or feed, and that enteric bacilli pass through the digestive tract of the fly.

1902 **Howard, L. O.** Insects as Carriers and Spreaders of Disease. U. S. Dep't Agric. Year Book, 1901, p. 177-92

The life history of the house fly and methods of controlling it and at the same time o preventing the dissemination of typhoid fever by means of flies is given on pages 185-88.

1902 **Lounsbury, C. P.** Agric. Jour. (South Africa) Jan. 30, repr. p. 1-10

A detailed account of the house fly with a discussion of repressive measures. It is stated that medical men in India firmly believe that cholera is very frequently transmitted by the house fly, though typhoid or enteric fever is considered the most important disease conveyed by this insect. It is stated that an American zoologist found that fly maggots, genus Musca (species not stated), will devour the common round worm eggs and that the eggs of the latter are passed off alive in the excreta of the winged adults.

1902 **Veeder, M. A.** Typhoid Fever From Sources Other Than Water Supply. Med. Record, 62:121-24

A case is cited where typhoid was perpetuated from year to year, the continuation of the trouble being ascribed to a physician recommending the burial of typhoid excreta and its execution by a nurse. The death of these two parties was followed by a change in the disposal of typhoid infected material and the practical disappearance of the disease. A typhoid outbreak in the Spanish-American War, occurring in a company of the best and most intelligent men, is charged to improper sanitary regulations, actuated by kindliness on the part of comrades. Data is also given respecting a picnic ground where unsanitary conditions prevailed and have undoubtedly been responsible for a number of typhoid cases, through the agency of the house fly.

1903 **Geddings, H. D.** The Fly and Mosquito as Carriers of Disease. Ohio Sanitary Bul. 7:31-39

Recommends the employment of every possible means to prevent the multiplication of flies and the infection by them of kitchens and messing places.

1903 **Hamilton, Alice.** The Fly as a Carrier of Typhoid. Am. Med. Ass'n Jour. 40:576-83

A detailed study of a typhoid outbreak in Chicago. She states that Majors Firth and Horrocks succeeded in proving that flies feeding on typhoid infected material could carry the same to suitable cultural mediums. The following are her conclusions:

1 The epidemic of typhoid fever in Chicago during July, August, September and October of 1902 was most severe in the 19th ward which, with 1-36 of the city's population, had over 1-7 of all the deaths from this disease.

2 A concentration of the epidemic in this locality can not be explained by contamination of the drinking water, or of food, or on the ground of ignorance and poverty of the inhabitants, for the 19th ward does not differ in these respects from several other parts of the city.

3 An investigation of the sanitary conditions of this region shows that many of the street sewers are too small and that only 48% of the houses have sanitary plumbing. Of the remaining 52%, 7% have defective plumbing, 22% water-closets with intermittent water supply, 11% have privies connected with the sewer but without water supply and 12% have privies with no sewer connection.

4 The streets in which the sanitary arrangements are the worst had the largest number of cases of typhoid fever during this epidemic, irrespective of poverty of the inhabitants.

5 Flies caught in two undrained privies, on the fences of two yards, on the walls of two houses and in the room of a typhoid patient, were used to inoculate 18 tubes and from five of these tubes the typhoid bacillus was isolated.

6 Many discharges from typhoid patients are left exposed in privies or yards and flies may be an important adjunct in the dissemination of the typhoid infection.

1903 **Martin, A. W.** Flies in Relation to Typhoid Fever and Summer Diarrhoea. Public Health, 15:652–53

Each succeeding year confirms my observation in 1898, that the annual epidemic of diarrhoea and of typhoid is connected with the appearance of the common house fly. . . . The annual epidemic of these two diseases begins and ends with the appearance and disappearance of the domestic fly.

1903 **Nash, J. T. C.** The Etiology of Summer Diarrhoea. The Lancet, 164:330

Records no mortality from diarrhoea among infants at Southend during July and August 1902, this immunity being accompanied by the almost complete absence of the house fly. In September the fly made its appearance and coincidentally, epidemic diarrhoea. The year preceding had 23 deaths during this period.

1904 **Hayward, E. H.** The Fly as a Carrier of Tuberculosis Infection. N. Y. Med. Jour. 80:643–44

Flies feeding on tuberculous sputum in six hours passed tubercular bacilli unimpaired

1904 **Lord, F. T.** Flies and Tuberculosis. Bost. Med. & Surg. Jour. 151:651–54

The experiments show

1 Flies may ingest tubercular sputum and excrete tubercle bacilli, the virulence of which may last for at least 15 days.

2 The danger of human infection from tubercular fly specks is by the ingestion of the specks on food. Spontaneous liberation of tubercular bacilli from fly specks is unlikely (experiment B), if mechanically disturbed infection of the surrounding air may occur. As a corollary to these conclusions it is suggested that

3 Tubercular material (sputum, pus from discharging sinuses, fecal matter from patients with intestinal tuberculosis) should be carefully protected from flies lest they act as disseminators of the tubercular bacilli.

4 During the fly season greater attention should be paid to the screening of rooms and hospital wards containing patients with tuberculosis, and laboratories where tubercular material is examined.

5 As these precautions would not eliminate fly infection by patients at large, food stuffs should be protected from flies who may already have ingested tubercular material.

1905 **Cobb, J. O.** Is the Common House Fly a Factor in the Spread of Tuberculosis? Am. Med. 9:475–77

Refers to experiments by Hayward and Hoffman showing that tubercle bacilli can be ingested and discharged by the house fly with undiminished virulence. He holds that the bacilli may enter the system through the digestive tract rather than by the lungs. He calls attention to the universal prevalence of house flies about stores of all kinds dealing in human foods, and states that here we have a most prolific source of infection. He claims to have collected reliable data from all over the world on this point. He states that army medical officers from the Philippines find that cholera was continually spread by street venders and small shopkeepers.

1905 **Melander, A. L.** The Common House Fly a Dangerous Pest. Wash. Agric. Exp. Sta. Press Bul. p. 1–7

A summarized account of the life history, habits and methods of control.

1905 **Mays, Thomas J.** The Fly and Tuberculosis. N. Y. Med. Jour. & Phila. Med. Jour. 82:437–38

Unreservedly condemns the article of J. O. Cobb on the dissemination of tuberculosis by the house fly, claiming that his data is far from conclusive.

1905 **Ward, Henry B.** The Relations of Animals to Disease. Science, 45:194–95

The spread of typhoid germs by flies is accepted and the reported conveyance by this insect, of cholera, anthrax, septicemia, pyemia, erysipelas, tuberculosis and bubonic plague is noted, some being regarded as well proved and others as open to question. Mention is made of Grassi's experiments in which the eggs of both tapeworms and round worms, Taenia solium, Oxyuris and Trichuris were sucked up by flies and recovered unaltered from their dejecta.

1906 **Howard, L. O.** House Flies U. S. Dep't Agric. Bur. Ent. Cir. 7, p. 1–9

A summarized discussion of the house fly and other species associated therewith, with particular reference to remedial measures.

1906 **Sandilands, J. E.** Epidemic Diarrhoea and the Bacterial Content of Food. Jour. Hygiene, 6:77–92

Important conclusions:

4 The great majority of cases of diarrhoea are due to the consumption of food which has been infected in the district in which the cases have occurred.

5 The infected matter thus conveyed to food is generally the excrement of some person suffering from diarrhoea.

6 The life history of house flies and the facility with which they can convey the fecal excrement of infected infants to the food of the healthy, suggests that the seasonal incidence of diarrhoea coincides with, and results from the seasonal prevalence of flies.

1907 ——— Method of Transmission of Contagious Diseases. N. Y. State Dep't Health. Mo. Bul. August, p. 11–13

An abstract of a circular issued by the Public Health Department of France, flies being credited with disseminating typhoid fever, tuberculosis, cholera, etc.

1907 **Buchanan, R. A., Glasg, M. B. & Glasg, F. F. P. S.** The Carriage of Infection by Flies. Lancet, 173:216–18

An illustrated account with the following conclusions: The experiments conclusively show that flies alighting on any substances containing pathogenic organisms are capable of carrying away these organisms in large numbers on their feet and of depositing them in a gradually diminishing number on surface after surface with which they come in contact. They further serve to demonstrate the necessity for the exercise of stringent measures for preventing access of flies to all sources of infection and to protect food of all kinds against flies alighting on it.

1907 **Dickinson, G. K.** The House Fly and its Connection with Disease Dissemination. Med. Record, 71:134–39

An extended summarized statement with bibliography.

1907 **Hewitt, C. Gordon.** On the Bionomics of Certain Calyptrate Muscidae and their Economic Significance, with Special Reference to Flies Inhabiting Houses. Jour. Econ. Biol. 2:79–88

The house fly is briefly treated on pages 83–86.

1907 **M'Vail, John C.** The Prevention of Infectious Diseases, p. 61, 66–67

The part flies play in the spread of typhoid or enteric fever is assumed and preventive measures described.

1907 **Preston, C. H.** Insect Carriers of Infection. Pub. by Contemporary Club, Davenport, Ia. p. 20–21

The fly is charged with carrying germs of typhoid fever, tuberculosis, dysentery, etc.

1908 **Bruner, Lawrence.** The House Fly. [Neb.] State Ent. Cir. 10, p. 1–4

A summarized account.

1908 **Frost, W. & Vorhees, C. T.** The House Fly Nuisance. Country Life in America, May

1908 ——— Fighting the House Fly. North Carolina State Board of Health Bulletin. Reprint from Country Life in America

A general account.

1908 **Hamer, W. H.** Nuisance from Flies. London County Council Rep't, No. 1138, p. 1–10

Observations on flies, with special reference to their development in horse manure, their occurrence about stables and similar places, and their relation to diarrhoea.

1908 ——— Nuisance from Flies. London County Council Rep t, No. 1207, p. 1–6

Further observations, with remarks on behavior of Homalomyia, Musca and Stomoxys, and additional observations on flies and diarrhoea.

1908 ——— The Breeding of Flies. Summarized. Am. Med. 3:431

The breeding of flies in horse manure, collection of dust and other refuse confirmed. Children, dirty walls and ceilings and particles of food on the floor and in sinks are attractive to flies. Laboratory experiments demonstrate that flies may carry the typhoid bacillus in a living condition for over two weeks. They also disseminate the germs of zymotic diarrhoea and Asiatic cholera. Tubercle bacilli have been found alive in the intestinal tract of the house fly.

1908 **Hewitt, C. Gordon.** The Biology of House Flies in Relation to Public Health. Royal Inst. Public Health Jour. Oct. Separate p. 1–15

1908 **Howard, L. O.** How Insects Affect Health in Rural Districts. U. S. Dep't Agric. Farmers' Bul. 155, p. 1–19

The house fly is characterized as the principal insect agent in the spread of typhoid fever.

1908 **Jackson, Daniel D.** Pollution of New York Harbor as a Menace to Health by the Dissemination of Intestinal Diseases through the Agency of the Common House Fly. Pub. by the Merchants' Ass'n, p. 1–22

A detailed examination of local conditions showing that by far the greater number of cases of typhoid fever in 1907 occurred within a few blocks of the water front, the outbreaks being most severe in the immediate vicinity of sewer outlets. The same was also found true of deaths resulting from intestinal diseases. Charts are given showing an almost exact coincidence between deaths from the latter and the prevalence of the house fly. The same is shown to be true of typhoid fever when the dates are set back two months to correspond to the time at which the disease was contracted. Several epidemics of dysentery of a malignant type have been known to radiate from a single point and to entirely disappear when proper disinfection of closets was enforced. On several occasions local epidemics of typhoid fever were traced to transmission by flies.

1908 ——— Conveyance of Disease by Flies. Summarized. Bost. Med. & Surg. Jour. 159:451

Reports that he finds that the relation between the number of flies captured and the number of deaths reported are substantially the same as in 1907. A notable decrease in mortality this summer corresponded with catching a much smaller number of flies. Dr Jackson finds on 18 swill barrel flies 18,800,000 bacteria or over 1,000,000 to each fly.

1908 **N. Y. State Dep't Health.** Mo. Bul. October, p. 259–83

Summary of International Congress on Tuberculosis, page 284, Mortality Statistics of Infants.

1908 **The House Fly.** Cur. Med. Lit. 50:1656

Summary of Newstead's report. Flies breed in horse manure, a mixture of this with cow dung, fermenting hops, ash pits containing fermenting vegetable matter and all temporary collections of fermenting matter. They feed on most decaying vegetable matter, manure and particularly human, rotten flock beds, straw mattresses, old cotton garments and sacks and waste paper, bread, fruits and vegetables and excreta of animals generally.

1908 **Robertson, Alexander.** Flies as Carriers of Contagion in Yaws (Framboesia tropica). Trop. Med. & Hyg. Jour. 11:213

Experiments show that flies may carry the virus of yaws.

1908 **Smith, Theobald.** The House Fly as an Agent in the Dissemination of Infectious Diseases. Amer. Jour. of Public Hygiene, August, p. 312–17

Summary discussion.

1908 **Theiss, Mary B. & Louis E.** An Advance Agent of Death. Good Housekeeping, May

1908 **Wilcox, E. V.** Fighting the House Fly. Country Life in America, May

Discussion of repressive measures.

1908 ——— House Flies. Florida Health Notes, May

Brief general notice.

1909 **Davis, Dora.** Hops and Flies. The Christian Advocate, June 17, 1909, 84:954

Immunity from flies is believed to have been secured by shading porch and open windows with hop vines.

1909 **Felt, E. P.** The Economic Status of the House Fly. Econ. Ent. Jour. 2:39–44

A general discussion of the fly as a disease carrier.

1909 ——— Control of Household Insects. N. Y. State Mus. Bul. 129, p. 7–11

A summarized account.

1909 **Griffith, A.** The Life History of House Flies. Public Health, 21:122–27

Biologic studies and observations on the house fly.

1909 **Howard, L. O.** Economic Loss to the People of the United States through Insects that Carry Disease. U. S. Dep't. Agric. Bur. Ent. Bul. 78:23–36

A general summary of the losses caused by disease-carrying insects.

1909 **Metcalf, Z. P.** The House Fly. N. C. Dep't Agric. Ent. Cir. 25, p. 1–8

A summary account with special reference to control measures.

1909 **Smith, Theobald.** The House Fly as an Agent in the Dissemination of Infectious Diseases. Amer. Health Mag. May, 2:38–39

1909 ——— The House Fly at the Bar. Merchants Ass'n, New York, p. 1–48

A resumè of the evidence against the house fly, consisting of letters from health officers and others interested in sanitation, and with short articles or excerpts from publications by Dr D. D. Jackson, Dr L. O. Howard, Dr Alice Hamilton, Dr J. B. Huber, Prof. W. L. Underwood and others. There is also a brief bibliography.

NOTES FOR THE YEAR

A number of insects have been brought to attention during the past season. Some of the more important outbreaks are noticed in the following paragraph. The large, greenish caterpillar of the imperial moth, Basilona imperialis Drury, was unusually abundant during August and September, and on Staten Island it was credited with being somewhat injurious. Ordinarily this species is so rare as to attract no attention. The scurfy bark louse, Chionaspis furfura Fitch, has been abundant in several localities. This species has attracted more notice in recent years, partly because the presence of the San José scale has increased popular interest in the work of all Coccidae. The scurfy scale, however, appears to have been more destructive during the last five years than the equally common oyster scale, Lepidosaphes ulmi Linn.

Maple trees have been injured somewhat in various localities by the cottony maple scale, Pulvinaria innumerabilis Rathv., and also by the false maple scale, Phenacoccus acericola King. Both of these species are more likely to be injurious in the southern part of the State, though the false maple scale was sufficiently abundant to attract attention at Johnstown. The elm bark louse, Gossyparia spuria Mod., occurred in numbers on elms in both Brooklyn and Mt Vernon and also at Schenectady. This latter pest is rather generally distributed in the eastern portion of the State at least and, as pointed out by the writer earlier, the English sparrow is probably an important factor in carrying the pest from tree to tree in our cities.

Fruit tree insects

Gipsy moth (Porthetria dispar Linn.). This insect has not to our knowledge established itself in New York State, though a marked advance in our direction was discovered during the season, small colonies having been found at Springfield and Greenfield, Mass., both localities about 50 miles from our State line. The work against this insect in Massachusetts, as shown by our investigations in midsummer, is being most vigorously pushed, particular stress being laid upon preventing its further spread. This species, as has been repeatedly explained, spreads slowly, being dependent largely upon the activity of man and beast for conveyance from one locality to another. The continued exercise of vigilance by both state and national authorities may perhaps delay the invasion of this State for a decade or more. The warning placard illustrating both this species and the brown tail moth, has been conspicuously posted in many post offices and other public places located in portions of the State where the pest is most liable to appear. Additional copies are on hand and can be used to replace those broken or lost and also for sending to other localities should future developments warrant such procedure.

A better idea of what gipsy moth infestation means may be gained from the following notes made June 24, while examining conditions in the infested territory. Starting from Boston we passed through Cambridge and Brookline to Waltham, observing in particular conditions in Waltham park. This latter comprises over 100 acres of rocky land mostly covered with a dense growth of oaks some 20 to 40 feet high. No winter work such as creosoting egg masses on trees and clearing out underbrush was done, though the whole was rather badly infested. The entire park was sprayed with poison with one of the giant outfits described below, though the application was made rather late. The results were very gratifying, since practically no trees were seriously injured by caterpillars, though the park is surrounded by badly infested territory. The policy has been to safeguard such treated areas by clearing a strip about 100 feet wide around the entire border. This is done by cutting out and burning all underbrush and then applying tree Tanglefoot to the trunks of the remaining trees, so as to prevent caterpillars from ascending the trees. The latter do not, as a rule, pass this barrier, though at the time of our visit some were entering the park and supplementary spraying was necessary here and there in order to prevent further damage. Continuing from Waltham we passed through Arlington, Winchester and Stoneham to Melrose. Here and there along the entire route considerable woodland areas were stripped or nearly defoliated by gipsy moth caterpillars, and in one instance at least, the badly affected area was fully a mile and a quarter in length. These woodlands were all on hillsides and consisted mostly of oak ranging from 30 to 50 feet or more in hight. These stony hills are said to have very little agricultural value, being rated at $15 per acre. The cost of adequately controlling a pest like the gipsy moth in such situations is at once apparent. The general condition of the residential area was very gratifying, practically no trees either along the roads or on private estates were defoliated. Continuing, we passed from Melrose northward and eastward to Lynn, thence to Salem and across to Beverly. The same conditions prevailed as were observed in the vicinity of Arlington, except that the injury north of Salem appeared for the most part to be more recent and the woodland had not suffered so much, though limited tracts here and there were evidently badly infested. The street trees of Salem, though in very bad condition a few years ago, are now practically free from the pest.

The authorities are depending upon several methods for the control of the gipsy moth. Owing to the short season during which spraying is practical, an effort has been made to accomplish as much as possible by winter work, which latter consists in creosoting egg masses on trees throughout the infested area. This is supplemented, in the case of woodlands, by burning over the ground in order to destroy egg masses which may have been broken while climbing the trees or dislodged by birds or other natural agents. This burning is preferably deferred till early spring, after the eggs have hatched, and is usually preceded by cutting out the underbrush. The latter, if abundant, must be removed so that the trees will not be injured by fire. Then, by carefully controlling the flames, and especially by backfiring, it is possible to burn over a large area without materially injuring the forest. The extended area infested makes it impossible to treat all parts in an ideal manner, and a rather crude method of controlling the pest in woodlands has been adopted in some cases. This is accomplished by simply allowing the caterpillars to strip the woods and then burn over the ground just as the majority of them are leaving the trees and seeking food elsewhere. This method of procedure, while undoubtedly injurious to the trees, is much less harmful than were the insects allowed to propagate without restriction.

The work with parasites conducted by the state of Massachusetts in cooperation with the federal government is most encouraging. The work of 1907 has been considerably extended by providing larger quarters and a more adequate staff. Furthermore, special efforts have been made to secure larger sendings from European countries, and a special agent was dispatched to Japan. This latter undertaking has proved most encouraging, in that a large Apanteles and a new egg parasite of the gipsy moth have been received from Japan, and the Apanteles at least, has been bred through one generation in American caterpillars. The sendings from Japan have in addition resulted in the introduction of four species of Tachinidae which promise to be very efficient parasites of the brown tail moth. Marked improvements have been made in methods of handling and rearing parasites and other natural enemies. These latter justify the expectation that it will be practical to breed thousands of the more effective species prior to their being liberated under favorable conditions. This work with parasites may rightly be considered as most important, owing to the fact that the gipsy moth is now so widely established as to render any widespread method of control, aside from that by natural enemies, exceedingly costly.

Recent progress in wholesale spraying for the control of the gipsy moth has been most striking and should prove suggestive to the fruit grower and immensely helpful to all parties having charge of extensive spraying operations such as the control of insect pests upon shade trees. The capacity of the ordinary spraying outfit has been greatly increased by replacing the usual 6 horse power gasolene engine weighing some 1800 pounds, by a 10 horse power engine made especially for automobiles and weighing only 400 pounds. Furthermore, a heavier and more powerful pump has been employed, the whole weighing no more than the usual spraying outfit. The machinery is mounted upon a stout wagon with a 400 gallon tank, and a heavy inch and a half hose some 400 to 800 feet long, with a smooth one quarter inch nozzle is used for work in the woodlands. A pressure of 200 to 250 pounds is maintained. The hose is handled much as though a fire was in progress. Ten men, at intervals of 6 or 8 feet, carry the end of the hose, the nozzle being in charge of a superior man with instructions to keep it moving all the time. The pressure is sufficient to throw the insecticide 40 or 50 feet, and the resistance of the air breaks it into a fine spray. The foliage is well covered if the nozzle is handled intelligently. This giant outfit is particularly adapted to work in woodlands. It usually requires four horses and is capable of spraying 14 to 16 acres a day, much depending upon conditions. The cost of treatment in this manner is reduced to about $10.20 per acre where the woodland is fairly clear of underbrush. An interesting modification of this apparatus has been employed for spraying strips along the roadside. It simply consists of a giant extension nozzle mounted on a universal joint so that the tip may be lifted 40 or 50 feet from the ground. This last named apparatus, with a favorable wind, can cover a strip 400 feet wide. Contractors with apparatus such as that described above have been able to spray woodland where there was little or no underbrush and the trees ranging from 40 to 50 feet high at $17.50 per acre. This improved apparatus can also be employed in spraying street trees, a contractor being able to make money therewith at the rate of $1 to $1.25 per tree for spraying large elms. A responsible contractor stated that he could ship apparatus and men to a city at a considerable distance and treat a number of trees thoroughly at less than $2 per tree. The above is given since there are numerous inquiries as to the best method of spraying shade trees and the cost of doing such work.

Brown tail moth (Euproctis chrysorrhoea Linn.). The brown tail moth, though widely distributed in Massachusetts, seems to have become in the last year or so a pest of much less importance than the gipsy moth. Its nests are to be noted here and there but as a rule it is not very destructive. Part of the immunity from damage may be due to a fungous disease which has destroyed millions of the caterpillars, and also to the fact that many of the hibernating caterpillars were killed by the exceptionally cold weather of last winter. There is no record known to us of this insect having made its way nearer the New York State line than the Connecticut river valley.

Cankerworms. Reports of injuries by these looping caterpillars were received from several localities on the north shore of eastern Long Island and also from the vicinity of New York city. Specimens submitted upon examination showed that both the spring cankerworm, Anisopteryx vernata Peck, and the fall cankerworm, Alsophila pometaria Harr., were responsible for the injury, the last named species, however, being by far the more abundant on eastern Long Island and also in certain Connecticut localities. The caterpillars vary greatly in color, ranging from light green to almost black, and are usually ornamented with several narrow, white lines, some specimens frequently being adorned with a broad, dorsal, black stripe margined by white lines and with the sides light green, thus presenting an intermediate condition between the two extremes in color. The spring cankerworm may be recognized by the presence of but two pairs of legs at its posterior extremity, while the fall cankerworm has three pairs. The females of both species are wingless, grayish, grublike moths which are obliged to crawl up the tree if they deposit their eggs where the newly hatched caterpillars can find an abundance of sustenance. The spring form is so called because the females remain in the ground till some time after midwinter, crawling up the trees during warm weather, even in February though more usually in March. The fall cankerworm is thus designated because the females usually crawl up the trees and deposit their eggs in late fall or early winter. The eggs of both species hatch at about the same time, namely, when the young leaves begin to appear.

Cankerworms are exceedingly voracious and, when present in numbers, nothing but the most prompt action will be of service in mitigating the trouble. The larvae are somewhat resistant to insecticides and as a consequence it is advisable to spray at the inception of the outbreak with paris green used at the rate of 1 pound of poison with an equal amount, by weight, of lime, to 50 to 75 gallons of water. The lime is added to lessen the danger of injury by poison. Arsenate of lead can be employed at the rate of 1 pound to 7 gallons of water, though as it is a slower acting poison, it is usually advisable to apply paris green. The homemade arsenite of lime is equally effective. Ordinarily one application of poison is sufficient, but if this does not prove satisfactory, a second treatment should be given a few days or a week later.

Cankerworms spread very slowly, owing to the fact that the females are wingless, and as a result the species must depend largely for carriage upon winds and other natural agencies, consequently an orchard once freed of the pest is not likely to be attacked for some time. We have yet to hear of a serious outbreak in orchards systematically sprayed from year to year. The ordinary treatment for the control of the codling moth and other leaf feeding insects is usually sufficient to keep this pest under control. Advantage may also be taken of its limited means of locomotion and injury prevented by the use of sticky bands, such as Tree Tanglefoot, tar or printers ink. The Tree Tanglefoot is a new material which has come into high favor in eastern Massachusetts where it is used extensively in gipsy moth work. Experience has shown that it can be applied with practically no injury to most trees, and possesses a decided advantage in remaining adhesive for a considerable period. It is advisable, if either tar or printers ink is used, to apply these materials to a band of tarred paper wrapped around the trunk of the tree, rather than to make the application direct to the bark. We much prefer to advise the employment of arsenical poisons, since they are of service in checking other leaf feeders, rather than to recommend adhesive bands, because the latter have a very limited range of usefulness.

Cigar case bearer (Coleophora fletcherella Fern.). This insect was responsible last spring for very severe injuries to a number of orchards at South Byron and vicinity. An examination of conditions early in June showed that a considerable proportion of the foliage was badly damaged and would drop within a few weeks. The operations of this insect were so severe in some places as to give the trees a brownish appearance when viewed from a distance.

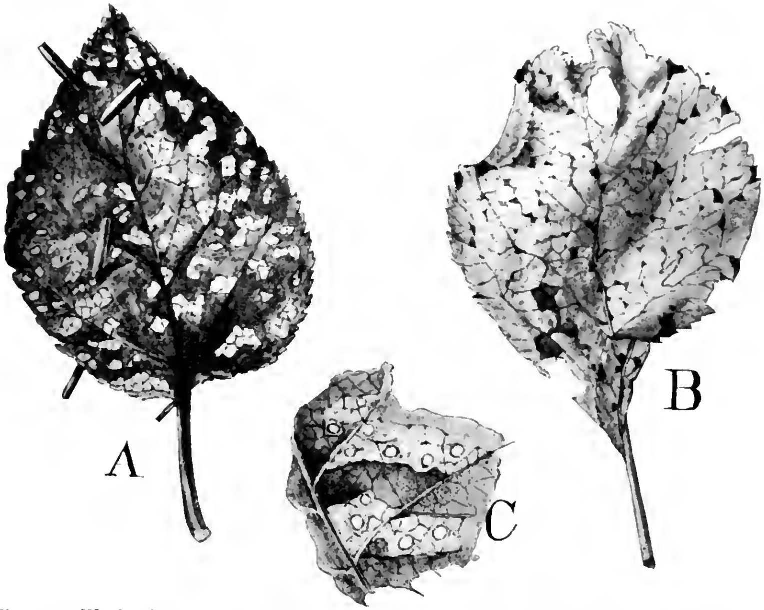


FIG. 13 Work of cigar case bearer. *a*, showing the spotted character of earlier work; *b*, leaf with the parenchyma entirely destroyed; *c*, a portion more enlarged. (Original)

An examination in the fall showed that this species was rather abundant at Albion and promises to cause considerable injury another spring unless controlled by timely spraying. The cigar case bearer was by far the more abundant though a few specimens of the pistol case bearer, Coleophora malivorella Riley, were also present in the orchard. Both of these insects are amenable to the same treatment, namely, thorough spraying with an arsenical poison at the time the young leaves appear in the spring. It is important that the application be made early, otherwise it may be difficult to destroy the voracious caterpillars before the buds have been seriously injured.

Blister mite (Eriophyes pyri Nal.). The blister mite is widely distributed in western New York and has also been found in several places in the Hudson valley. It has been especially destructive the past season to apple trees, being so abundant upon the foliage at South Byron early in June as to give many trees a brownish appearance when viewed from a distance. Many of the badly infested leaves dropped later and the same is true of orchards in the vicinity of Albion. In some instances at least half of the leaves must have been destroyed by the work of this pest. The characteristic blister of this form is easily distinguished by its peculiar, raised, spongy, brick-red appearance. The venation disappears in the affected area and furthermore, there is almost invariably a small, round hole near the center of the blister. These blisters may occur singly or in groups and frequently fuse to form irregular, reddish brown blotches which eventually may include a considerable proportion of the leaf. Inasmuch as the mites spend most of their time within the leaves, it is impractical to attempt any remedial measures during the summer. The pest winters under the bud scales and at such times it can be destroyed in large numbers by spraying with a lime-sulfur wash or one of the miscible or so called "soluble" oils. An application of a lime-sulfur wash is in our judgment preferable, since there is not the slightest danger of injuring the trees. Furthermore, reliable commercial preparations of this material can now be purchased, so that it is not necessary to bother with boiling if one feels that the delay incident to preparation is a serious hindrance. Orchards which have shown during the past season a more or less general infestation by this mite should be sprayed after the leaves drop and before they appear again in the spring with one of the contact insecticides named above, in order to prevent the chance of serious injury occurring another season.

Small fruit insects

Grape root worm (Fidia viticida Walsh). This insect is generally distributed throughout the Chautauqua grape belt. There has been a marked improvement in conditions over those obtaining last year, as there was comparatively little evidence of injury, though there were reports of severe local damage in vineyards in Sheridan or Fredonia. An examination of a number of vineyards failed to disclose any alarming conditions, and we are well satisfied that as a whole there has been a material betterment. Part of this is undoubtedly due to better cultivation, particularly the stirring of the soil when the majority of the insects are in the pupal stage. Furthermore, many growers have sprayed with an arsenical poison, and this treatment has undoubtedly been of great service in preventing the pest from becoming unusually abundant. Severe local injuries may be expected in the future, and all growers are advised to keep a close watch of their vineyards, remembering that the insect may be very destructive in one portion of the field and hardly be present in another.

Shade tree insects

Elm leaf miner (Kaliosysphinga ulmi Sund.). The injurious work of this European species was first observed by us in this country in 1895, and a brief notice was given thereof in the report of this office for the year 1898. This miner was at that time very injurious to Camperdown elms in Washington park, though its operations were also very apparent upon Scotch elms and were less extensive upon English elms in both Albany and Troy. The severe injuries of earlier years have been somewhat lessened though it has been reported from other sections of the State. A few years ago it was quite destructive to elms at Ithaca, N. Y. and last year it was reported as being very injurious to weeping elms at Syracuse. Complaints of its ravages were also received from Kenwood near Albany.

FIG. 14 Elm leaf miner (author's illustration)

There is no very satisfactory method of controlling this pest, since the larvae work exclusively between the upper and lower epidermis, devouring the tender parenchyma and making a rather characteristic, irregular blotched mine. The insect hibernates within a cocoon just below the surface. It has been suggested that the upper layer of soil might be removed and buried at some depth. Ordinarily the insect is not sufficiently destructive to warrant adopting such measures.

Elm leaf beetle (Galerucella luteola Mull.). This imported species continues to be a serious pest of elms, particularly in the Hudson valley, many of the elms of Yonkers, Poughkeepsie, Hudson, Albany, Troy, Schenectady, Schuylerville and Ithaca and probably other localities in the State being very badly injured. The work at Schuylerville and Schenectady was exceptionally severe and the same is also true of its operations at Ithaca. The major part of the injury in Albany at least was due to delay in appointing a city forester and getting the spray apparatus into operation. Furthermore, it is very difficult to secure men who can be relied upon to do thorough work. Experience has demonstrated beyond all question the practicability of keeping the elm foliage practically intact, even in localities where the pest is very abundant. It is for public spirited citizens in affected localities to insist upon the maintenance of such a standard.

The observations of the past season show in a most striking manner the extremely local character of this pest. The badly infested area in Albany has been restricted for the past decade to the older and more thickly settled fourth of the city. A study of conditions in Schenectady showed a similar restriction, the destructive work of the pest being limited almost exclusively to a small section of the older part of the city, in the vicinity of Church street and not extending in any direction more than 10 blocks from the center of the infestation. Furthermore, the most severe injury was noticed upon a group of elms near the open belfry of a church, clearly indicating that the insects winter most successfully where a structure of this kind affords abundant shelter.

Bag worm (Thyridopteryx ephemeraeformis Haw.). New York city and its vicinity represents about the northern extension of this species, as a rule. It was somewhat surprising, therefore, to receive healthy larvae from Germantown, only about 40 miles south of Albany. Mr T. F. Niles, who sent in the specimens, states that no young trees have been set in this locality within the past 2 years nearer than a quarter of a mile, consequently it would seem as though the species was able under certain conditions to maintain itself considerably farther north than has heretofore been supposed possible.

Fall webworm (Hyphantria textor Harr.). This common species has been unusually abundant in some portions of the

State, its webs on willow in particular forming conspicuous features in the landscape. In several instances small wild cherry trees were entirely defoliated by this pest. The promiscuous breeding of this insect on roadside and other trees, simply increases the danger of attack to more valuable trees, particularly when the latter are not sprayed systematically. Well cared for and systematically sprayed orchards suffer very little from injuries by this species.

White marked tussock moth (Hemerocampa leucostigma Sm. & Abb.). The white marked tussock moth continues to be a serious pest on horse-chestnuts and lindens in particular. It was extremely abundant and destructive in both Brooklyn and New York. It was numerous, though probably not quite so injurious in some other localities in the State. The impending destruction in Buffalo, we are pleased to state, was greatly mitigated by the activity and efficiency of the newly appointed city forester, Mr H. B. Filer. Buffalo has long held an unenviable reputation because of the poor condition of its shade trees, particularly horse-chestnuts, and we trust that the above mentioned appointment means a well supported and an advanced policy respecting shade tree protection.

The caterpillars of this notorious shade tree pest also occasioned considerable anxiety in the fruit section of the western part of the State. The partly grown caterpillars were found in considerable abundance in orchards, eating into the young fruit, the amount of damage being estimated at from 10 to 80%. This method of injury is by no means unknown, since similar work was observed in Nova Scotia in the summer of 1907. Though it is difficult to adequately control caterpillars which have developed the fruit-eating habit, it is very easy to keep this pest under control in commercial orchards. Systematic spraying with an arsenical poison will in the long run, at least, prove most efficacious in destroying the pest, though it may take a few years to bring about these results in badly infested orchards fruiting every season. It is comparatively easy to practically clear trees of this insect by collecting the conspicuous white egg masses any time during the winter. This work can be done thoroughly and at comparatively slight expense, then there is no occasion for worry as to the outcome another season, and an orchard once cleared is easily kept comparatively free from subsequent injury.

Snow-white linden moth (Ennomos subsignarius Hubn.). This species, at one time recognized as a most destructive enemy of lindens, has risen with phenomenal rapidity from the obscurity of recent years. The past season has been most remarkable for the extensive flights of the snow-white moths [pl. 1, fig. 2] in many cities and villages, not only in New York State but in other sections. The moths were so numerous about electric lights as to attract widespread attention. Their advent in New York city occurred about July 16 and the effect was aptly compared by various writers to a snowstorm. In the well lighted sections myriads could be seen circling about the electric lights and invading many brilliantly lighted places in such numbers as to be a veritable nuisance. The following morning the arc lights were found choked with the insects, and characteristic groups of snow-white wings here and there were mute evidences to the voracity of the English sparrow. This bird, despite its numerous failings, destroyed thousands of the moths, hunting them without mercy until there were comparatively few survivors from the night before. The abundance of the insects and the extended area where swarms were present is most remarkable. Aside from New York city, where the largest number of the moths seemed to be present, they were reported by the local press as swarming at Nyack, Ossining, Newburgh, Hudson, Albany, Troy, Cohoes, Ballston, Saratoga, Glens Falls, Schenectady, Amsterdam, Johnsonville, Gloversville, Little Falls, Herkimer, Ilion and Utica. It is interesting to note that the moths appeared in Albany and other northern localities about five days later than at New York city. Aside from the above mentioned records, the local press of numerous other cities and villages contained brief notices of the swarming of this species, though with no record as to local occurrence. The widespread character of the flight is well illustrated by authentic records of hosts occurring at Newark, N. J., Springfield, Mass. and Ottawa, Can., the latter flight occurring July 23d. This visitation is all the more striking when it is recalled that in recent years at least, this moth has been comparatively rare, hardly attracting notice for a generation, despite the fact that in earlier years it was considered an important enemy of lindens.

The remarkable local swarms recorded above are probably due to conditions being generally favorable for the multiplication of the species throughout the infested area. There is a possibility that some of the flights were due to swarms drifting with the wind from defoliated tracts lying at some distance. This is hardly an adequate explanation for the presence of many of the local swarms, particularly as observations in Albany show that the linden foliage in the western part of the city, where the trees are somewhat abundant, was badly injured by the insect, and it was in this section of the city where the moths were most numerous. It is probable that there were comparatively few extensive flights. The causes for this excessive abundance are probably to be found in the scarcity of bird life, in the temporary reduction of native parasites and possibly in part to unusually favorable climatic conditions.

The extensive defoliations by this species, recorded in our report for last year,[1] have been continued and large areas in the Catskills have suffered severely. Reports of injury in the towns of Hardenburg, Shandaken and Ladleton, Ulster co., indicated defoliation of extensive tracts of beech. There is also a record of severe injury by this pest from DeBruce, Sullivan co. This species was likewise destructive to beeches in the Adirondacks, Forester E. S.

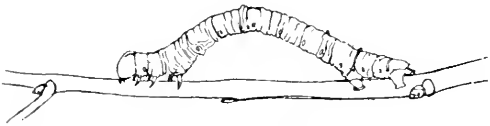


Fig. 15 Snow-white linden moth, larva on twig. (Original)

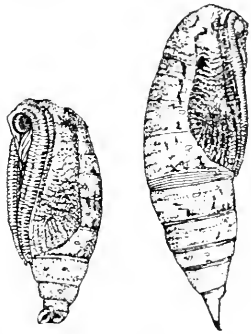


Fig. 16 Snow-white linden moth, pupae, enlarged. (Original)

Woodruff reporting that the beeches on the John Brown tract number 2, ranges 12 and 13, lots 3 to 8 were defoliated, the stripped area being about 3 miles long and having a width of ½ mile at one end and 1 mile at the other. The caterpillars fed at first upon young beeches, then stripped the older beeches, practically skeletonizing the foliage, and then turned to birches and maples, eating holes in the foliage of the latter. The lower limbs of the trees on the defoliated area bore numerous empty pupal cases in September, and irregular egg masses occurred in abundance upon the bark of beech, birch and maple. The eggs of this species are deposited at an oblique angle to the supporting surface, are about 1 mm in length, barrel-shaped and light brown, with a conspicuous dark salmon ring at the extremity. They occur in irregular

[1] N. Y. State Ent. 23d Rep't, 1907. N. Y. State Mus. Bul. 124, p. 23-28.

masses [pl. 1, fig. 1] about half an inch in diameter, each containing from 50 to over 100 eggs.

It is not expected that the above recorded flights in cities and villages will be followed by extensive injuries another season, since it is very probable that the English sparrows destroyed many of the adults before there was an opportunity for the deposition of eggs.

Spruce gall aphid (Chermes abietis Linn.). This introduced, widely distributed species has been the cause of an unusual number of complaints in New York State. Mr John Herliky, arboriculturist of Brooklyn, writing under the date of June 22d stated that many Norway spruce trees throughout Prospect park, and in fact in different parts of that section of the State, have been

FIG. 17 Spruce gall aphid, normal type of gall. (Original)

dying of late. Specimens were submitted for examination and were found to contain a few of the characteristic galls of this insect and, in addition, an apparently undescribed injury. Numerous subglobular, aborted buds were found here and there at the base of the branches or at the base of new growth and on investigation were found to contain numerous small, light brown aphids. It is probable that these aphids entered the developing buds the preceding year and, on account of their abundance, prevented the usual growth and the development of the normal type of gall. An examination, at this time, of spruces in Albany showed that these trees likewise, in addition to the typical galls produced by this aphid, bore the subglobular dead buds inhabited by numerous aphids described above. An examination of infested trees in Albany the latter part of September showed that the dead buds described above had been deserted by the aphids and many of them contained numerous cast skins. Some showed evidence of having been invaded by parasites, which latter presumably preyed upon the young plant lice.

Complaint of this insect's work, accompanied by specimens, was received from Mr C. C. Laney, superintendent of parks, Rochester, N. Y. This gentleman stated that the galls were more abundant on white spruce than upon any other coniferous tree. Serious injuries were reported from Elizabethtown by Mr Seth Sprague Terry, who stated that 50 spruce trees, none over 25 feet high, have practically all the new growth affected by this insect. Mr John Nill sent from Star lake, in the southwestern part of St

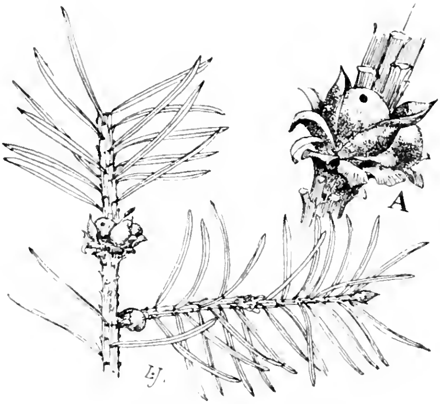


FIG. 18 Spruce gall aphid, destroyed buds; *a*, one enlarged. (Original)

Lawrence county, badly infested spruce twigs with an inquiry as to the cause of the trouble.

This insect, while rarely causing the death of the trees, frequently produces serious deformities, because twigs bearing galls are very likely to die, thus producing a very unsightly tree. Experiments conducted by Mr R. A. Cooley showed that thorough spraying in April with a whale oil soap solution, 1 pound to 2 gallons of water, is very effective in checking this insect. A more detailed discussion is given in New York State Museum memoir 8, volume 1, pages 189–91.

Miscellaneous

Corn worm (Heliothis armiger Hubn.). This species is much better known as the boll worm of the South, though it is frequently quite destructive in that section to corn. Occasionally it becomes somewhat abundant and injurious in New York State. Dr Lintner in his first report records this insect as being quite abundant and destructive to corn in Ontario county and its probable occurrence at the same time in the vicinity of Albany. Six years ago this insect was somewhat abundant in the vicinity of New York city, complaint of injuries having been received from Mt Vernon.

The operations of this species in the North are confined mostly to corn and tomatoes, the major portion of the damage being inflicted in the late summer or fall. This latter was true of injuries reported from Shelter Island, the caterpillars being brought to notice about the middle of October. The damage at Mt Vernon in 1902 did not occur until the latter part of August. The caterpillar of this species is extremely variable in color, ranging from a light green with reddish brown marks on the side to a darkish green, brown or even nearly black caterpillar with a variable whitish lateral line. It closely resembles in general appearance some of our common cutworms, being stout, and when full grown is an inch or more in length. The caterpillars begin their operations near the tip of the ear, eating down between the husks and making irregular frass-filled galleries over the face of the green cob, destroying a considerable proportion of the corn and defiling most of the remainder. Occasionally this species is quite destructive to tomatoes, on account of its eating rather large holes into the ripening fruit.

The pest can be controlled in the North only by recourse to hand picking. This measure will be particularly valuable at the incipiency of the attack, since ears which have been injured somewhat are more attractive to the insect than those protected by tightly folded husks. Care should also be exercised when removing caterpillars from recently infested ears to replace the husks so far as possible and thus reduce the chances of reinfestation.

White ants (Termes flavipes Koll.). It is not often that these insects are recorded as injurious in New York State, though they are undoubtedly present in many dwellings, particularly in the southern part of the State and occasionally inflict serious injury. Our attention was called last winter to the operations of white ants in the storage vaults of a New York city printing company. The vaults were filled with electrotypes and halftones mounted and unmounted, newspaper files and other material. The white ants fairly riddled the blocks upon which the electrotypes were mounted and ran galleries through files of back publications, thus causing heavy losses.

These insects can be easily recognized as white, wingless, ant-like forms. They are only seen, as a rule, when material in which they are boring has been disturbed as in the above mentioned

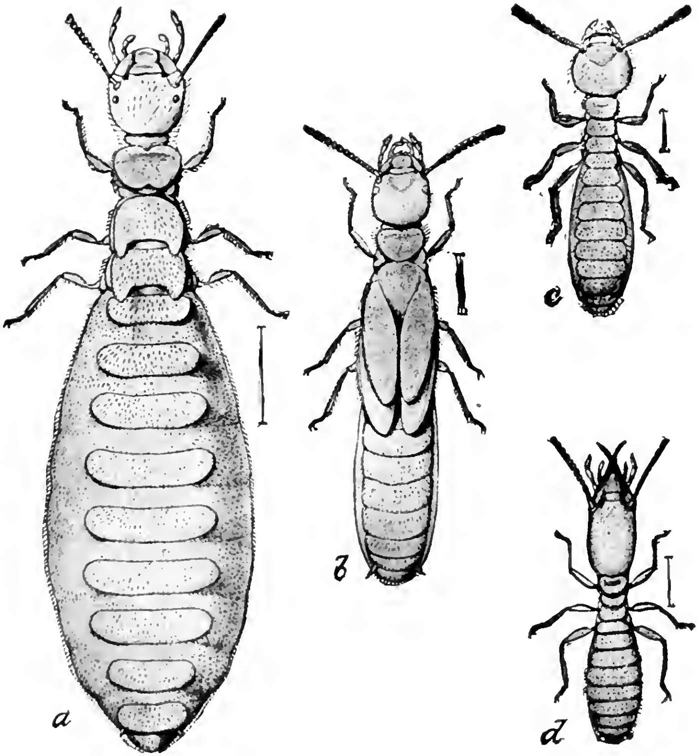


Fig. 19 Termes flavipes: *a*, queen; *b*, young of winged female; *c*, worker, *d*, soldier, all enlarged. (After Marlatt, U. S. Dep't Agric. Div. Ent. Bul. 4. n. s. 1896)

instance. This form remains active throughout the year in buildings that are kept warm during the winter. The ants excavate numerous irregular galleries through wood, paper and almost any material except stone or metal. They are communistic in habit and with a social organization similar to that of the honey bee. The only satisfactory method of preventing injury in vaults and similar places is first to thoroughly clean the infested chamber or chambers by removing everything in which the insects may be living. The door of the vault should be tight enough so that there would be no danger of subsequent entrance, and great care should be exercised to prevent reintroduction of the pest with material for storage. Fumigation with hydrocyanic acid gas would be of but limited value, since the fumes would hardly destroy all the insects in their galleries. The infested backing of electrotype blocks should be burned, while the insects in bulky papers or other material could be destroyed either by spreading the papers out loosely and drying thoroughly, or in some instances by subjecting to a gentle heat for a considerable period, since white ants succumb readily to both heat and excessive dryness. Storage boxes for valuable papers should be of metal or at least lined with tin and special care exercised to avoid any crevice which would allow the insects to enter.

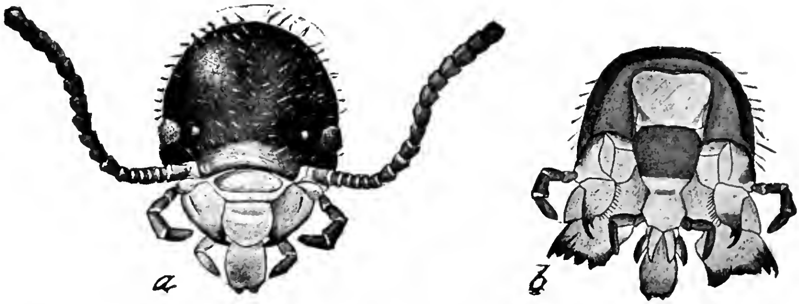


FIG. 20 Termes flavipes: *a*, dorsal view of head of winged female; *b*, ventral aspect of same, with mouth parts open, greatly enlarged. (After Marlatt, U. S. Dep't Agric. Div. Ent. Bul 4. n. s. 1896)

Mosquito notes. The season of 1908 was particularly interesting because a considerable proportion of New York city was invaded by large swarms of the salt marsh mosquito, Culex sollicitans Walk. Undoubtedly the insects came from adjacent marshes, possibly those of New Jersey and very likely some at least, from undrained areas on Long Island. The pests were so numerous in the city as to be a pronounced scourge for a few days, and did much to arouse popular interest in the problem of mosquito control.

The draining operations on Staten Island have been completed and the resultant change for the better has been most marked. Many places which were previously almost uninhabitable because of the swarms of mosquitos are now comparatively free. The work of draining marshes in other portions of Greater New York has been continued and during the summer a large proportion of the salt marsh areas in Flushing and its immediate vicinity has been ditched. Nine tenths of the Flushing meadows are now already drained, and it is probable that the work on the remaining tenth will be completed this fall. Operations have already been begun about Jamaica bay.

The antimosquito work at Orient, L. I., begun some two years ago, has been pushed to a successful completion and most gratifying results have been obtained. The indications are that operations of this kind will be continued until most of the salt marshes

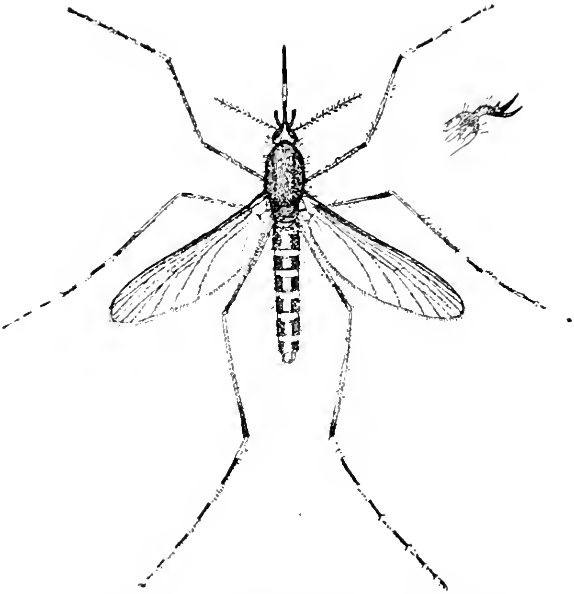


FIG. 21 Salt marsh mosquito from above, the toothed front claw more enlarged. (After Howard, U. S. Dep't Agric. Div. Ent. Bul. 25. n. s. 1900)

on Long Island will be practically free from these pests. The operations against the salt marsh mosquito naturally lead to some consideration being given to the fresh-water forms, particularly the common house mosquito, Culex pipiens Linn., and the malarial mosquito, Anopheles maculipennis Meig. Experience has demonstrated the practicability of controlling these two species, and it is only a question of time before this knowledge will be taken advantage of, and will lead to a great increase in comfort and practical freedom from malarial infections.

LIST OF PUBLICATIONS OF THE ENTOMOLOGIST

The following is a list of the principal publications of the Entomologist during the year 1908. Fifty-seven are given with title,[1] time of publication and a summary of the contents of each. Volume and page number are separated by a colon, the first superior figure gives the column and the second the exact place in the column in ninths: e. g. 71:969[27] means volume 71, page 969, column 2, in the seventh ninth, i. e. a little more than two thirds of the way down.

New Species of Cecidomyiidae II. N. Y. State Mus. Bul. 124, p. 286–304. Separate, p. 1–23 (Issued Oct. 26, 1907)

A number of new species are described.

A Caterpillar. Country Gentleman, Oct. 31, 1907, 72:1025[21]

A brief descriptive account of the red humped apple caterpillar, Schizura concinna Sm. & Abb.

Shade Tree Protection. Troy Record, Oct. 29, 1907

The elm leaf beetle, Galerucella luteola Mull.; the white marked tussock moth, Hemerocampa leucostigma Sm. & Abb. and several other injurious pests are discussed and a plea made for the better protection of shade trees.

Notes on the Insects of the Year 1906 in New York State. U. S. Dep't Agric. Bur. Ent. Bul. 67. 1907. p. 39–43

A number of insects are briefly noticed, the following being the more important: San José scale, Aspidiotus perniciosus Comst.; grape root worm, Fidia viticida Walsh; sugar maple borer, Plagionotus speciosus Say; white marked tussock moth, Hemerocampa leucostigma Sm. & Abb.; elm leaf bettle, Galerucella luteola Mull.; false maple scale, Phenacoccus acericola King; elm bark louse, Gossyparia Spuria Mod. and the violet gall midge, Contarinia (Mayetiola) violicola Coq.

Fighting the Scale. Suburban Life, 1908, 6:38–40

A summarized account of the San José scale, Aspidiotus perniciosus Comst.; and methods of control with brief notices of the oyster scale, Lepidosaphes ulmi Linn. and the scurfy scale, Chionaspis furfura Fitch.

The Insect Year. Country Gentleman, Jan. 30, 1908, 73:107[22]

A summary of insect injuries. The following species are noticed: San José scale, Aspidiotus perniciosus Comst.; grape root worm, Fidia viticida Walsh; apple leaf folder, Ancylus nubeculana Clem.; Epizeuxis denticularis Harv.; white marked

---

[1] Titles are given as published, and in some instances they have been changed or supplied by the editors of the various papers.

tussock moth, Hemerocampa leucostigma Sm. & Abb.; elm leaf beetle, Galerucella luteola Mull.; sugar maple borer, Plagionotus speciosus Say; green striped maple worm, Anisota rubicunda Fabr.; the antlered maple caterpillar, Heterocampa guttivitta Walk. and the snow-white linden moth, Ennomos subsignarius Hubn.

Hair Snake. Country Gentleman, Feb. 6, 1908, 73:128[42]

A summary account of the habits of hair snakes, Mermis sp. with a statement of their harmlessness.

Entomological Notes for 1907. American Fruits, 1908. 8:13

A summary account of injuries by the San José scale, Aspidiotus perniciosus Comst.; grape root worm, Fidia viticida Walsh; apple leaf folder, Ancylus nubeculana Clem.; Epizeuxis denticularis Harv., white marked tussock moth; Hemerocampa leucostigma Sm. & Abb., elm leaf beetle; Galerucella luteola Mull., green striped maple worm; Anisota rubicunda Fabr., antlered maple caterpillar; Heterocampa guttivitta Walk., snow-white linden moth, Ennomus subsignarius Hubn. and white grubs, Lachnosterna fusca Frohl.

Observations on the Biology and Food Habits of the Cecidomyiidae. Economic Entomology. Journal, Feb. 1908, 1:18–21

Summarized observations on the habits and life history of a number of forms.

Scale in an Apple Orchard. Country Gentleman, Mar. 26, 1908, 73:306[1]

A general discussion of remedial measures for San José scale, Aspidiotus pernicious Comst.

Gipsy and Brown Tail Moths and Miscellaneous Notes. Western New York Horticultural Society Proc. 53d An. Meeting 1908, p. 112–14

Notes on the progress made in controlling Porthetria dispar Linn. and Euproctis chrysorrhoea Linn., with special mention of the work with parasites. Also brief observations on a number of forms injurious in 1907.

Insect Control in its Larger Aspects. N. Y. State Fruit Growers Proc. 1908, p. 139–45. [Separate issued Apr. 11, 1908] In part in Country Gentleman, Mar. 5, 12, 1908, 73:229, 258

An address discussing briefly the present conditions and the methods most likely to be of service in the immediate future.

Entomological Notes for 1907. Economic Entomology. Journal, Apr. 1908, 1:148–50.

Brief notes are given on the San José scale, Aspidiotus perniciosus Comst.; grape root worm, Fidia viticida Walsh; apple leaf folder, Ancylus nubeculana Clem.; Epizeuxis denticularis Harv.; white marked tussock moth, Hemerocampa leucostigma Sm. & Abb.; elm leaf beetle, Galerucella luteola Mull.; sugar maple borer, Plagionotus speciosus Say; green striped maple worm, Anisota rubicunda Fabr.; antlered maple caterpillar, Heterocampa guttivitta Walk.; snow-white linden moth, Ennomos subsignarius Hubn. and Lachnosterna fusca Frohl.

Contarinia gossypii n. sp. Entomological News, 1908, 19:210-11

Original description of a species injuring cotton in the British West Indies.

Bark Louse. Country Gentleman, May 14, 1908, 73:488[43]

Brief economic account of the scurfy bark louse, Chionaspis furfura Fitch.

[Report on the Work of Importing Parasites of the Gipsy and Brown Tail Moths, Porthetria dispar Linn., Euproctis chrysorrhoea Linn.] Sup't for Suppressing the Gipsy and Brown Tail Moths, 3d An. Rep't, 1908, p. 210-13

A great improvement in the condition of infested territory is noted. The methods of importing parasites and the progress made are both most commendable. Careful biological studies of the parasites are advised, because of the importance of such knowledge in establishing species. The desirability of giving special attention to the rarer parasites is urged. Attention is called to the advisability of obtaining parasites from Japan, even though it involves considerable expense.

Currant Worm. Country Gentleman, May 28, 1908, 73:536-37

Brief economic account of the currant worm, Pteronus ribesii Scop.

Protect the Trees. Troy Times, May 28, 1908; Ithaca Journal, Schenectady Star, Poughkeepsie Eagle, May 29; Albany Argus, May 30; Daily Saratogian, June 1; Albany Times Union, June 2

Brief warning notice in regard to the elm leaf beetle, Galerucella luteola Mull.

Maple Pest in Johnstown. Johnstown Republican, June 2, 1908

Brief descriptive account, with remedies for the false maple scale, Phenacoccus acericola King.

Moth Work in Massachusetts. Country Gentleman, June 11, 1908, 73:598[42]-99

A review of the third annual report on the work against the gipsy and brown tail moths in Massachusetts.

Grape Blossom Midge. Grape Belt, June 12, 1908, p. 4; Buffalo News, June 13

Brief statement of injury and life history of the grape blossom midge, Cecidomyia johnsoni Sling.

Insecticides. Country Gentleman, June 18, 1908, 73:606[45]–7[12]

Brief discussion of the relative merits of paris green and arsenate of lead in bordeaux mixture.

Apple and Grape Pests. Country Gentleman, June 18, 1908, 73:607[23]

Brief accounts of injuries by the cigar case bearer, Coleophora fletcherella Fern.; the apple blister mite, Eriophyes pyri Nal., and the grape blossom midge, Cecidomyia johnsoni Sling.

Cutworms and Wireworms. Country Gentleman, June 18, 1908, 73:608[26]

Brief general accounts with discussion of remedies.

Apple Canker Worms. Country Gentleman, June 18, 1908, 73:608[11]

Brief economic account of the fall and spring canker worms, Alsophila pometaria Harr. and Anisopteryx vernata Peck.

Observations on the Genus Contarinia. Economic Entomology. Journal, 1908, 1:225–28

Brief notes are given on the following species: Contarinia pyrivora Riley, C. sorghicola Coq., C. liriodendri O. S., C. ananassi Riley, C. rumicis Loew, C. gossypii Felt, C. setigera Lint., C. negundifolia Felt, C. perfoliata Felt, C. quercifolia Felt, C. agrimoniae Felt, C. virginianiae Felt and C. clematidis Felt.

Some Problems in Nomenclature. Entomological Society of America. Annals, 1908, 1:102–4

A brief discussion of the validity of descriptions of insect galls with special reference to the Cecidomyiidae.

Wireworms. Country Gentleman, July 2, 1908, 73:646[47]

Brief discussion of remedies.

Elm Leaf Aphis. Country Gentleman, July 2, 1908, 73:647[17]

The life history and remedial measures for the elm leaf aphis, Schizoneura americana Riley are briefly discussed.

San José Scale. Country Gentleman, July 2, 1908, 73:647[23]

Brief general discussion of the San José scale, Aspidiotus perniciosus Comst., with a summary statement of the comparative value of the various sprays.

Shade Trees and the Elm Leaf Beetle. Ossining Citizen, July 6, 1908

Brief statement respecting the practicability of protecting elms from the elm leaf beetle, *Galerucella luteola* Mull.

Elm Leaf Beetle. Schenectady Union, July 7, 1908

A summary of local conditions with directions for controlling the elm leaf beetle, *Galerucella luteola* Mull.

Protect the Birds. American Humane Association. Leaflet. [Issued July 8] 1908. p. 1-4, 6-7

A brief popular discussion of the economic value of birds as natural checks upon injurious insects.

The Hop Merchant. Country Gentleman, July 9, 1908, $73:667^{34}$

A brief economic notice of the hop merchant, *Polygonia comma* Harris with special reference to currant.

Gipsy Moth Work. Country Gentleman, July 9, 1908, $73:667^{42}$

A brief account of recent developments in Massachusetts with special reference to progress made in spraying and the necessity of keeping watch for the appearance of *Porthetria dispar* Linn. in New York State.

Elm Leaf Beetle. Ithaca Journal, July 13; Amsterdam Recorder, Hudson Register, Poughkeepsie Eagle, July 14; Schuylerville Standard, July 16

General account of injuries by the elm leaf beetle, *Galerucella luteola* Mull., with a discussion of remedial measures.

Oyster Scale. Country Gentleman, July 16, 1908, $73:686^{37}$

Brief economic account of the oyster scale, *Lepidosaphes ulmi* Linn.

White Marked Tussock Moth. Grape Belt, July 17, 1908

Brief directions are given for controlling the white marked tussock moth, *Hemerocampa leucostigma* Sm. & Abb.

Shade Tree Pests. Dunkirk Observer, July 18, 1908; Grape Belt, July 28, p. 7

A reprint of a large portion of N. Y. State Museum bulletin 109 on the white marked tussock moth and the elm leaf beetle.

The Soldier Bug. Country Gentleman, July 23, 1908, $73:704^{23}$

Discusses briefly the habits of soldier bugs, Podisus sp., in connection with the finding of a nymph feeding on the grub of a potato beetle.

Blister Mites. Country Gentleman, July 23, 1908, $73:706^{47}$

A brief discussion of the character, extent of injuries and remedial measures for *Eriophyes pyri* Nal.

Giant Caterpillar. Country Gentleman, Aug. 6, 1908, 73:746[46]

Brief description of the larva of the giant caterpillar, Samia cecropia Linn. with observations on its life history.

Leaf Mites. Country Gentleman, Aug. 6, 1908, 73:747[22]

Remedial measures are given for the clover or brown mite, Bryobia pratensis Garm., and the red spider, Tetranychus telarius Linn.

Grain Moth. Country Gentleman, Aug. 13, 1907, 73:767[16]

Brief discussion of remedial measures for the grain moth, Sitotroga cerealella Oliv.

Flies as Carriers of Disease (Press Bulletin) Albany Evening Journal, Aug. 13; Brooklyn Eagle, Aug. 13; Utica Press, Aug. 14; Yonkers Statesman, Aug. 14; Boston Herald, Aug. 15; New York Farmer, Aug. 20, p. 7; Country Gentleman, Aug. 27, 1908, 73:830[15]–31[16]

A summary account of flies as carriers of disease, with directions for abating the nuisance.

[Scientific Notes] Economic Entomology. Journal, Aug. 15, 1908

Brief observations on the following: Grape blossom midge, Cecidomyia johnsoni Sling., page 243; white marked tussock moth, Hemerocampa leucostigma Sm. & Abb., page 276; bag worm, Thyridopteryx ephemeraeformis Haw., page 276; elm leaf beetle, Galerucella luteola Mull., page 280.

Notes on the Work Against the Gipsy Moth. Economic Entomology. Journal, Aug. 15, 1908, 1:275–76

A brief account with special reference to improved methods of spraying and the work with parasites.

Melon Aphis. Country Gentleman, Aug. 20, 1908, 73:786[47]

Remedial measures are given for the melon aphis, Aphis gossypii Glov.

Saddle Back. Country Gentleman, Aug. 27, 1908, 73:812[45]

Brief descriptive account of the saddle back caterpillar, Sibine stimulea Clem.

San José Scale. Country Gentleman, Sept. 17, 1908, 73:889[36]

Brief economic notice of the San José scale, Aspidiotus perniciosus Comst.

The Wheat Wire Worm. Country Gentleman, Sept. 24, 1908, 73:910[25]

A brief descriptive account of the wheat wire worm, Agriotes mancus Say, with a discussion of remedial measures.

Insect Bands. Country Gentleman, Oct. 8, 1908, 73:961[12]

Brief comments upon the use and value of sticky bands with special reference to "Tree Tanglefoot."

A Scale. Country Gentleman, Oct. 8, 1908, 73:961[15]

A brief descriptive account of Chionaspis euonymi Comst. with a discussion of remedies.

The Difficult Apple Maggot. Country Gentleman, Oct. 8, 1908, 73:962[32]

A general account of the apple maggot, Rhagoletis pomonella Walsh, with a discussion of remedies.

Katydid Eggs. Country Gentleman, Oct. 15, 1908, 73:984[36]

Brief descriptive account of the eggs of Microcentrum retinervis Burm. or M. laurifolium Linn.

Scientific Notes. Economic Entomology. Journal, 1908, 1:330

Record of injury by Ennomos subsignarius Hubn. and its unusual abundance. A new injury to gladioli bulbs by a species of Aphis is also recorded.

23d Report of the State Entomologist on Injurious and Other Insects of the State of New York, 1907. N. Y. State Mus. Bul. 124. Oct. 15, 1908. 542p. 44 pl.

Contents

ADDITIONS TO COLLECTIONS OCT. 16, 1907–OCT. 15, 1908

The following is a list of the more important additions to the collections.

DONATION

Hymenoptera

Amphibolips prunus Walsh, oak plum gall, Sept., Michigan, through **R. B. Hough,** Lowville.

Trichiocampus viminalis Fallen, poplar sawfly larvae, Aug. 21, **Daniel Harrington,** Cambridge.

Kaliosysphinga ulmi Sund., leaf miner on elm, June 16, **L. L. Woodford,** Pompey.

Urocerus edwardsii Brulle, Jan. 7, **Hermann Von Schrenk,** St Louis, Mo.

Coleoptera

Eccoptogaster rugulosus Ratz., fruit tree bark beetle on pear, through State Agricultural Department, Sept. 15, Rochester.

Cryptorhynchus lapathi Linn., mottled willow borer, larvae on balm-of-gilead, Aug. 10, Corning, through **C. H. Peck,** Albany.

Tyloderma fragariae Riley, strawberry crown borer, June 11, **D. B. Belden,** Fredonia.

Pissodes strobi Peck, white pine weevil, larvae on pine, July 6, **J. G. Newbury,** Coxsackie.

Chelymorpha argus Licht., argus tortoise beetle, larva on grape, June 25, **G. H. Barber,** Westfield.

Galerucella luteola Mull., elm leaf beetle, larvae and pupae, July 9, **A. E. Milligan,** Schuylerville.

Plagionotus speciosus Say, sugar maple borer, adult on maple, June 26, **J. C. Von Steenburgh,** Ballston.

Photinus ? pyralis Linn., fire fly, serial, longitudinal and transverse sections, adult, Dr **S. G. Shanks,** Albany.

Diptera

Culex perturbans Walk., all stages, June and July, **J. T. Brakeley,** Hornerstown, N. J.

A number of Cecidomyiid galls from Miss **Cora H. Clarke,** Magnolia, Mass.

Siphonaptera

Pulex irritans Linn., common human flea, adult; Ctenocephalus canis Curt., cat and dog flea, adult, July 24, **Dudley R. Kathan,** Schenectady.

Lepidoptera

Basilona imperialis Dru., imperial moth, larva, Sept. 3, **M. J. Dutche,** Oakwood Heights. Same, larva on maple, Aug. 12, Dr. **A. B. Kelly,** Albany.

Hyphantria textor Harr., fall webworm, larvae on apple, July 7, **J. A. Thompson**, Rochester.

Halisidota caryae Harr., hickory tussock moth, larvae, July 8, **H. N. Otterson**, Bolton, Mass. Same, larva, July 6, **Irving T. Thornton**, Orchard Park.

Tolype velleda Stoll., lappet moth, larva, July 22, **George S. Graves**, Newport.

Alsophila pometaria Harr., fall cankerworm, young, June 5, **A. Mair**, Oakdale.

Ennomos subsignarius Hubn., snow-white linden moth, adult, July 23, **C. Gordon Reel**, Kingston, through Forest, Fish and Game Com'n. Same, pupae on oak, July 3, **W. O. Ensign**, Livingston Manor.

Ania limbata Haw., filament bearer or horned spanworm, larva, June 6, **H. W. Covert**, Waterford.

Memythrus tricinctus Harr., M. polistiformis Harr., M. simulans Grote, M. asilipennis Boisd., M. dolii Neum., Aegeria apiformis Clerck, Sesia bassiformis Walk., S. albicornis Hy. Edw., S. corni Hy. Edw., S. pyri Harr., S. scitula Harr., S. rubristigma Kellicott, and S. pyralidiformis Walk., Apr. 30, **G. P. Englehardt**, Brooklyn.

Thyridopteryx ephemeraeformis Haw., bag worm, larvae on red cedar, July 7, Germantown, through **T. F. Niles**. State Dep't Agric.

Sitotroga cerealella Oliv., adult in popcorn, Aug. 14, **F. B. Holmes**, Albany.

Tischeria malifoliella Clem., apple leaf miner, larvae on apple, July 7, **J. A. Thompson**, Rochester.

Odonata

Hetaerina americana Fabr., adult, Aug. 26, **Winifred Goldring**, Slingerland.

Hemiptera

Phylloxera caryaecaulis Fitch, hickory gall aphid, adults and young on hickory, June 8, **The American Nursery Co.**, New York city. Same, gall on hickory, Sept. 1, **Munson-Whitaker Co.**, New York city.

Colopha ulmicola Fitch, cockscomb elm gall, on elm, June 18, **L. L. Woodford**, Pompey. Same, young on elm, July 6, **Irving T. Thornton**, Orchard Park.

Pemphigus tessellata Fitch, nymphs on alder, Aug. 24, **George S. Downing**. Albany. Same on maple Sept. 19, Mrs **George H. Freeman**, Loudonville.

Chermes abietis Linn., spruce gall aphid, young on Norway spruce, June 22, **John Herliky**, Brooklyn. Same, galls, July 30, **Seth Sprague Terry**, Elizabethtown. Same, galls on spruce, Aug. 10, **C. C. Laney**, Rochester. Same, dead adults on spruce, Aug. 31, **John Nill**, Star Lake.

Aspidiotus perniciosus Comst., San José scale, adult on hornbeam, Oct. 13, **W. E. Kenney**, Brooklyn.

Eulecanium tulipiferae Cook, tulip tree scale, young on tulip tree, Apr. 6, **J. Aspinwall,** Newburgh.

Pulvinaria innumerabilis Rathv., cottony maple scale, adults on elm, June 2, **E. S. Brignall,** Schenectady. Same, on maple, June 12, Mrs **Stephen Niles,** Coeymans. Same, adults on maple, June 24, **E. R. Concklin,** Pomona.

Phenacoccus acericola King, false maple scale, young on maple, Oct. 12, **Frank H. Downer,** New Rochelle. Same, May 29, **G. F. Beakley,** Johnstown. Same, adult on maple, July 29, **S. B. Huested,** Blauvelt.

Gossyparia spuria Mod., elm bark louse, adults on elm, June 2, **E. S. Brignall,** Schenectady. Same, Aug. 3, **W. E. Kenney,** Brooklyn. Same, young on elm, Sept. 16, Mrs **W. C. Mains,** Mt Vernon.

Icerya purchasi Mask., cottony cushion scale, on Acacia, Feb. 25, **L. Menand,** Albany.

Orthoptera

Panchlora hyalina Stoll., on apples, Mar. 16, Mrs **Abraham Lansing,** Albany. Same, Mar. 26, **J. R. Gillett,** Albany.

Isoptera

Termes flavipes Koll., white ant, adult, Feb. 3, **A. T. De La Mare Co.,** New York city.

EXCHANGE

Diptera

Culicidae

Banks, C. S., Government Entomologist, Manila, P. I. Myzomyia ludlowii Theob., M. mangyana Banks, Myzorhynchus barbirostris V. d. W., M. vanus Walk., Stegomyia aurostriata Banks, S. persistans Banks, S. samarensis Ludl., Worcesteria grata Banks, Helecoetomyia pseudotaeniata Giles, Leucomyia cuneatus Theob., Culex fatigans Wied., C. microannulatus Theob., Mansonia uniformis Theob., Banksinella luteolateralis Theob., Finlaya aranetana Banks, F. poicilia Theob., Aedomyia squamipenna Arriz.

Dolichopodidae

Aldrich, J. M., Moscow, Idaho. Psilopodinus mundus Wiel., Agonosoma filipes? Loew, A. scintillans Loew, Mesorhaga albiciliata Ald., Diaphorus mundus Loew, D. opacus Loew, Asyndetus syntormoides Wheel., Chrysotus barbatus Loew, C. discolor Loew, C. picticornis Loew, Argyra robusta Jno., Leucostola cingulata Loew, Porphyrops effilatus Wheel., Syntormon affine Wheel., Neurigona carbonifer Loew, Medeterus aurivittatus Wheel., Hydrophorus philombrius Wheel., Scellus vigil O. S., Aphrosyllus praedator Wheel., Dolichopus acuminatus Loew, D. albicoxa Ald., D. detersus Loew,

D. lobatus Loew, D. ovatus Loew, D. pugil Loew, D. setifer Loew, D. sexarticulatus Loew, D. setosus Loew, Gymnopternus crassicauda Loew, G. debilis Loew, G. frequens Loew, G. phyllophorus Loew, Hercostomus unicolor Loew, Tachytrechus vorax Loew, Pelastoneurus laetus Loew, P. lamellatus Loew, P. neglectus Wheel.

Tabanidae

Hine, J. S., Columbus, O. Chrysops vittatus Weid., Tabanus fronto O. S., T. tener O. S., T. trispilus Wied.

PURCHASE

Onion fly, Phorbia ceparum Meig., enlarged models representing the egg, maggot, puparium, adult and an infested onion.

Cigar case bearer, Coleophora fletcherella Fern., an enlarged model representing the larva and its operations on an apple leaf. Both from Mrs **Otto Heidemann**, Washington, D. C.

Honey bee, Apis mellifica Linn., life history group.

European hornet, Vespo crabo Linn., life history group.

Ground beetle, Calosoma sycophanta Linn., life history group.

Corn stalk fly, Chlorops taeniopus Curtis, life history (in alcohol).

Cabbage butterfly, Pieris rapae Linn., life history group.

4 insects in amber.

The above from **The Kny-Scheerer Co.**, New York city.

Appendix A

STUDIES OF AQUATIC INSECTS

A PECULIAR NEW MAY FLY FROM SACANDAGA PARK

BY JAMES G. NEEDHAM

Among a small lot of neuropteroid insects sent me by Dr Felt for determination, was a new May fly with a remarkable development of the adbomen. Five of the abdominal segments have their flaring lateral margins expanded broadly, forming a wide parachute or aeroplane. This peculiarity has its parallel among known May flies only in the New Zealand species Oniscigaster wakefieldi; a species that was described by McLachlan 36 years ago, and made the subject of a special report by him to the British Association for the Advancement of Science[1] and an announcement to the Entomological Society of London,[2] and of two special papers.[3] The last paper gave full descriptions of both nymphal and adult[4] stages. Eaton's *Monographic Revision of Recent Ephemeridae* pages 224–26 gives a description of the adult insect, and adds [pl. 21, fig. 36] an excellent figure of the venation. In Hutton's list of New Zealand Neuroptera[5] is found another description of the adult. In 1899 Eaton[6] added two additional New Zealand species to the genus, O. intermedius, with considerably less dilatation of the lateral margins of the abdominal segments, and O. distans, with hardly any lateral expansion at all. So Eaton dropped from his characterization of the genus all mention of the invisciform abdomen, that had brought the type species into such prominent notice. In 1904 Hudson described the three species in his New Zealand Neuroptera [p. 42–45] and added a much needed description of the nymph of O. distans [pl. 1, fig. 11; pl. 11, fig. 15], which appears to agree quite well with that of the typical species.

The New York May fly about to be described exhibits a more

1 Report of 1873, p. 118 (1874).
2 Proceedings for 1874, p. vi.
3 Ent. Mo. Mag. 10:108–9, wood cut, 1873; Linn. Soc. Zool. Jour. 1874. 12:39–46, pl. 5, fig. 1–5.
4 The figure of the adult is copied by Sharpe in volume 5 of the Cambridge Natural History.
5 New Zeal. Inst. Trans. 1898. 31:218.
6 Ent. Soc. Lond. Trans. p. 292–93, pl. 10, fig. 6a, 6b, 6c.

marked dilatation of the lateral margins of the abdomen than even Oniscigaster wakefieldi. Its abdomen is more than onisciform: it is a veritable parachute. The expansion involves segments 5 to 9 of the abdomen (in O. wakefieldi, only 6 to 9), and begins and ends more abruptly than in the New Zealand species. Our insect distinguishes itself from Oniscigaster, however, by lacking a median caudal seta, and by a symmetrical forking of the median vein, that forking being very unsymmetrical in Oniscigaster. And since in these respects it agrees with the genus Siphlurus, which stands in the system next Oniscigaster, I was at first inclined, in spite of the parachute, which in Oniscigaster is certainly of no great systematic consequence, to refer it to Siphlurus. By my key in Bulletin 86, N. Y. State Museum, page 22, it would be traced to Siphlurus, with the discrepancy that there is no backward prolongation of the sternite of the 9th abdominal segment in the female. It differs from Siphlurus, also, in having the claws of the forefeet differentiated from those of the other feet, being obtuse and inflated and not at all clawlike in form: also, in having the radial sector in the hind wing twice dichotomously and symmetrically forked. I think therefore that this species represents a genus distinct from both Siphlurus and Oniscigaster, although closely allied to both, and as such I describe it below. Probably the male, and the nymph if known, would add other differential characters.

Siphlonisca gen. nov.

Caudal setae two, slightly longer than the body. Claws of the front tarsus inflated and obtuse; those on the other tarsi hooked and clawlike, and similar each to each. Hind tibia longer than its tarsus: last segment of tarsus longest, in all the feet. Median and cubital veins in the forewing symmetrically forked, and the radial sector in the hind wing equally twice forked: no humeral angulation of hind wing. Mesothorax with a prominent midventral spine. Abdomen with conspicuous lateral expansion of the middle segments.

Type the following species.

Siphlonisca aerodromia sp. nov.

Length (♀) 19 mm, setae 20 mm additional; expanse of wings 37 mm. Abdomen 13 mm long and 2 mm wide, expanded to 4 mm wide on the 5th to 9th segments.

Color brown varied with paler. Head fawn-yellow above, marked with blackish on the sides of the vertical facial carina, and around the ocelli internally, and bearing a mark shaped like the zodiacal sign for Aries along the middle of the head, the open end of the sign being in front. Antennae pale, about as long as the head Thorax brown more or less blackish on the sides, and in the rear above, the top of the mesothorax somewhat rufescent and shining. Between the bases of the middle legs a stout, thornlike spine, inclined slightly to rear, arises from the mesosternum. Legs pale, the front femora being slightly darkened, and the tips of all tarsi indistinctly so.

Wings hyaline with brown veins, cross veins more or less bordered with brown in the costoradial strip, especially a few approximated cross veins near the bulla, and a line of others, similarly approximated, extending from that point posteriorly across the wing [pl. 2, fig. 1].

Abdomen with a definite pattern of brown and paler yellow (possibly, greenish in life), subcylindric, the lateral margins of segments 5 to 9 suddenly dilated into wide, flat expansions, which double the width; each of these expansions obtusely rounded anteriorly, and produced posteriorly at its hind angle into a broad, flat, triangular tooth. These expansions are dark brown, paler basally, where they abut on a black line on the lateral margin of the abdomen. On the pale dorsum there are submedian blackish ( )- marks on each segment, the marks increasing in size posteriorly, becoming streaks on segments 9 and 10 [pl. 2, fig. 2]. On the ventral surface there are corresponding small and distant paired dots as far as the 7th segment, diffuse on the 8th, and becoming elongate dashes on the 9th, and absent on the 10th. The 10th segment is short and cylindric, hardly surpassing the tip of the lateral teeth of the 9th. There is no ventral prolongation of the 9th sternite. Setae white, or slightly brownish at the extreme base.

A single female imago from Sacandaga Park, collected by C. P. Alexander, Johnstown, N. Y.

As the above description is going through the press, additional specimens representing both sexes, are received from Mr Alexander. These he collected at Sacandaga Park on June 6, 1909. Mr Alexander writes that they were abundant, and that they kept high in air where they were conspicuous by reason of the wide abdomen.

The male is of about the same size as the female, with white, nearly bare setae 25 mm long, and brown fore legs whose tarsi are 9 mm long The enlarged and smoothly rounded eyes of the male just meet each other above the head. The face is black, with the vertical nasal carina yellow, and also a spot behind the ocelli and between the compound eyes. Otherwise the coloration is as in the female. The segments of the fore tarsus of the male are of nearly equal length, the 5th being perhaps a trifle shorter than the others: in middle and hind tarsi, the four basal segments are of approximately equal length, while the 5th is as long as any two other segments. Unlike the female, which has blunt and flabellate claws on the fore tarsi, those of the male are on all tarsi sharply hooked and similar. In several of the specimens the radial sector of the hind wing has its second forks less equal than in the female described above, the lower fork being deeper than the upper.

The appendages of the male abdomen are strongly chitinized, the forceps base is longer than the 9th segment, widened distally, broadly truncated on each hind angle to receive the much narrower base of the forceps, and angularly excavate on the wrinkled but strongly chitinized hind margin in a broadly triangular rear notch. The forceps limbs are long and strongly divaricate and conspicuous. Each consists of four segments, of which the first, third and fourth are short and of about equal length and are together about equal in length to the second segment. The apical half of the forceps is transversely wrinkled, and it is wholly dark brown in color.

After studying the male I conclude that the features which chiefly distinguish this genus from Siphlurus are in both sexes the onisciform abdomen, and the midventral thoracic spines.

While the foregoing is passing through the printer's hands another species of Mayfly of the genus Potamanthus has been sent me by Dr Felt, collected on June 29, 1909 at Schenectady. It is larger than P. diaphanus, described in the report of the State Entomologist for 1907 [p. 193-94, and pl. 10, fig. 5], and is readily distinguished therefrom by the abbreviated middle caudal seta and by the form of the appendages in the male.

Potamanthus inequalis sp. nov.

Length of body 11 mm, of fore leg about 10 mm, of lateral setae 26 mm, of middle seta 15 mm, expanse of wings 24 mm. Color white, with fuscous head, pale yellowish thorax and translucent white abdomen. Legs white except the slightly infuscated tips of fore tarsi and tibiae, and the joinings of the segments of the same tarsi. Wings whitish hyaline, with pinkish iridescence. End segments of the abdomen of a dull satiny whiteness on the dorsal side. Setae white, with the joinings very faintly darker in color, the middle seta but little more than half as long as the laterals.

The male forceps is not remarkably different from that of P. diaphanus [loc. cit. fig. 5], but the inner appendages are very differently formed as shown in the drawing herewith presented.

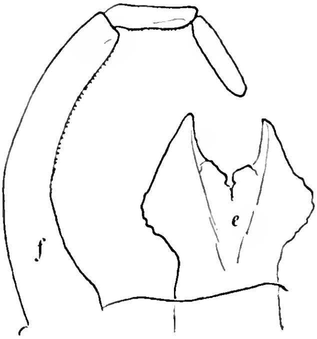


FIG. 22 Potamanthus inequalis n. sp.: *f*, forceps limb; *e*, inner appendages

The pinned submarginal skin of the same specimen is white: its fore femora are 10 mm long, and its setae (broken) are clothed with copious soft white pubescence.

Appendix B

CATALOGUE OF THE DESCRIBED SCOLYTIDAE OF AMERICA, NORTH OF MEXICO

BY J. M. SWAINE

The following catalogue is intended to include all names that have been proposed for species of Scolytidae occurring in America, north of Mexico, with citations of published articles referring thereto. The references were collected originally for our use, while working on the family Scolytidae. They include practically all the literature published on the North American species of the family.

Changes should, we believe, be made in the location of a few of the species here listed, and several of the genera may, with advantage, be divided. These changes require considerable discussion and illustration, and would perhaps be more effectively made in connection with the description of the large number of undescribed species of North American Scolytidae known to collectors. As a synonymic catalogue of the North American species of Scolytidae has been promised by the American authority on this family, I have reported the priority of the various genera and species just as found in the literature. The object of this paper is merely to present the references to that literature. The habitat and food plants have been compiled from the literature, the Cornell University collection and our own notes. References to several well known lists are not included. For convenience of reference the genera and species are arranged alphabetically.

As regards the conflicting names of Eichhoff, Zimmerman and Leconte, P. pullus Zimm., described in the Transactions of the American Entomological Society, 1868, volume 2, undoubtedly has precedence over P. cribripennis Eich., Berl. Ent. Zeit. March 1869. Though the contrary has been repeatedly stated, it seems perfectly clear to me that H. rufipes Eich. and H. salebrosus Eich. were described before H. opaculus Lec. and H. scabripennis Zimm., as will appear from the following: H. rufipes and H. tenuis were described by Eichhoff on page 147 of Berl. Ent. Zeit. for 1868, and H. salebrosus on page 146 of the same article. In the Transactions of the

American Entomological Society, 1868, volume 2, where the descriptions of H. opaculus and H. scabripennis appear, Dr Zimmerman begins his description of H. tenuis as follows: "H. tenuis [Hylastes tenuis Eich. Berl. Ent. Zeit. 1868, 147]." Also Leconte, in the same paper [*see* p. 169, 173] refers to pages 147 and 149 of Eichhoff's article just mentioned. There is therefore no question but that both Dr Zimmerman and Dr Leconte had Dr Eichhoff's pages 146 and 147 before them when their descriptions of H. opaculus and H. scabripennis were written.

In regard to the use of the names Ips, Tomicus, and Hylastes, perhaps a few words will be pardoned. The genus Ips was erected in 1775 by De Geer, Dermestes typographus Linné being the first species described. All the other species included by De Geer in the genus Ips have since been removed to other genera, therefore leaving typographus as type.

In 1802 Latreille described the genus Tomicus, including the single species, Hylesinus piniperda Fabr., which would therefore be the type.

In 1807 Latreille referred Dermestes typographus Linné to the genus Tomicus, and gave a description of the genus.

In 1836 Erichson erected the genus Hylastes with Bostrichus ater (= Hylesinus piniperda Fabr.) as the type.

Until recently Ips De Geer, 1775, seems to have been disregarded, and the name Ips has been applied to a genus of beetles of the family Nitidulidae. Tomicus Latr., 1802, has also been disregarded. Tomicus Latr., 1807, has been used for the allies of typographus and Hylastes Er., 1836, for the allies of ater. Ips De Geer, 1775, has therefore priority over Tomicus Latr., 1807, and Tomicus Latr., 1802, has priority over Hylastes Er., 1836.

The name Ips Fabricius, of the family Nitidulidae, dates from the year 1776 [Fabricius, Gen. Ins. p. 23].

If the above synonymy is correct, and I believe it to be, it is better to adopt it at once, even at the risk of temporary confusion.

Following Bedel [Faun. Col. Bassin Seine, Rhyn, 1888], Hylastes is dropped in this paper and the terms Ips and Tomicus are used as indicated above.

Geoffroy's name Scolytus dates from 1762, and therefore can not be accepted. In 1776, O. F. Muller [Zool. Dan. Prodr. 57], described Scolytus punctatus which is certainly not a scolytid: "Niger, thorace fossulato, elytris lineis quatuor elevatis, intervallo punctorum duplici serie." The name Scolytus should therefore give place to Eccoptogaster Herbst, 1793. The above is pointed out by C. L. Ganglbauer [Münch. Koleopt. Zeit. 1903, p. 311, footnote (sep.)] and has been followed by Trédl in his catalogue of the European Borkenkäfer. I have been unable to verify Dr Leconte's reference to Olivier, 1789 [Am. Phil. Soc. Proc. 1876. 15:371].

According to Gemminger and Harold, Cat. Col., the following names should be added to the synonymy:

Hylurgops glabratus *Zett.*
crenatus *Panz.* Fn. Germ. 15, 7
paykulli *Duftschm.* Fn Austr. 3:99
Hylastinus obscurus *Marsh*
crenatulus *Duftschm.* Fn. Austr. 3:104
fuscescens *Steph.* Ill. Brit. 3:365
piceus *Steph.* Ill. Brit. 3:365
Crypturgus pusillus Gyll.
aphodioides Villa. Col. Eur. duppl. Supl. 1833. p. 36
Hypothenemus eruditus West.
ruficollis Fabr. Syst. El. 2:388. Ferr. Berl. Ent. Zeit. 1868. p. 255
Trypodendron lineatus Oliv.
limbatum Payk. Fn. Suec. 3:144
marginicolle Dahl.
signatum Fabr. Ent. Syst. 1, 2:363
Duftschm. Fn. Austr. 3:95
Waringi Curtis, Ann. Nat. Hist. 1840. 5:279
Xyleborus dispar Fabr.
rufipes Latr. Dej. Cat. ed. 3. p. 332
Dryocoetes autographus Ratz.
var. micographus Oliv. Ent. 5, 78, p. 9, t. 2, f. 12
Ips pini Say.
vicinus Dej. Cat. ed. 3. p. 332
Xylecleptes bispinus Duft.
marginatus Megerle.
Eccoptogaster rugulosus Ratz.
haemorrhous Schmidberger, Kollar. Naturg. schadl. Ins. 1837. p. 271. Meg. Sturm. Cat. 1826. p. 194
flavicornis Géné. Dej. Cat. ed. 3. p. 332
punctatus Mus. Berol.
Phloeotribus frontalis Oliv.
dubius Eich., Berl. Ent. Zeit. 1868. p. 150
setulosus Eich. *loc. cit.* 149

Gemminger and Harold list the following:

Phloeotribus americanus Dej. Cat. ed. 3. p. 331, Amer. bor.

Cryphalus asperulus Eich., Berl. Ent. Zeit., 1871. p. 133, was renamed by Eichhoff in Rat. Tom., 1878, p. 153, as Stephanoderes cassiae; habitat given as "Asia (?)."

I wish to acknowledge my indebtedness to Prof. J. H. Comstock for the material he so kindly furnished, to Dr E. P. Felt for helpful criticism, and my especial obligation to Prof. A. D. McGillivray for his frequent assistance and advice.

Entomological Laboratory,
Cornell University, July 1, 1907

KEYS FOR DETERMINING THE GENERA OF THE IPIDAE (SCOLYTINAE) AND PLATYPODIDAE (PLATYPODINAE) OF AMERICA NORTH OF MEXICO

The arrangement of family and subfamily names in the following keys seems the most natural at present. Published keys have been freely used.

Cactopinus Schwz. (which has been omitted from the generic key) is distinguished from all other described North American Scolytidae by the sculpture of the pronotum: "Disk in both sexes, with a longitudinal, tuberculated, and distinctly elevated, median area which projects beyond the base of the thorax as a triangular lobe," forming a "hoodlike projection over the scutellum." [E. A. Schwarz. Psyche, v. 8, sup. 1, p. 11]

Families

a Head narrower than the prothorax; 1st tarsal segment shorter than the others united; eyes oblong or divided [*see* pl. 4, fig. 6; pl. 5, fig. 10, 11; pl. 8, fig. 21; pl. 9, fig. 25; pl. 11, fig. 36, 37] .... Ipidae[1]

aa Head broader than the prothorax; 1st tarsal segment as long as the others united; eyes round, subconvex [*see* pl. 3, fig. 1, 2] .... Platypodidae

The family Platypodidae is represented in America, north of Mexico, by one genus, Platypus Herbst.

Subfamilies of the Ipidae

a Anterior "tibiae produced at the upper apical angle beyond the tarsal insertion into a mucro or bifid process." (Blandford) [*see* pl. 3, fig. 5]

b Foretarsus with the 3d segment bilobed; upper or outer border of the foretibiae unarmed or with few very small teeth .... Eccoptogasterinae (Scolytini)

bb Foretarsus with the 3d segment not bilobed; the outer border of the foretibiae strongly dentate [*see* pl. 3, fig. 3] .... Erineophilinae

aa Foretibiae not produced at the upper or outer apical angle beyond the tarsal insertion into a mucro or bifid process [*see* pl. 4, fig. 6; pl. 5, fig. 10, 11]

---

[1] Ganglbauer. Munchener Koleopterologische Zeitschrift. 1903, band 1, 311.

b Head suboblong and prominent; pronotum nearly equably punctured, not more strongly roughened in front; tarsi with the 4th segment much smaller than the 3d, which is usually dilated and heartshaped or bilobed [pl. 7, fig. 20, pl. 8, fig. 21; pl. 9, fig. 25; pl. 10, fig. 26; pl. 11, fig. 31, 32, 36, 37] .... Hylesininae

bb Head globose, not visible from above, deeply immersed in the pronotum, which is prolonged and usually strongly roughened with stout, backward pointing spines in front, and smooth or punctured behind; 3d tarsal segment simple, 4th segment distinct [pl. 4, fig. 6, pl. 5, fig. 10-12; pl. 7, fig. 19] .... Ipinae (Tomicini)

Genera of the Eccoptogasterinae

a Foretibiae with the outer apical angle produced into a curved spine, outer border unarmed

b Venter of abdomen with the caudal portion bent abruptly dorsad [pl. 3, fig. 4] .... Eccoptogaster Herbst. (Scolytus Geoff.)

bb Venter of abdomen regularly curved, nearly horizontal. . Loganius Chap.

aa Foretibiae with the outer apical angle produced into a bifid spine, outer border near the base of the spine armed with a small tooth

b "Prothorax with a defined side margin." .... Bothrosternus Eich.

bb "Prothorax with no defined side margin, but usually with a fold above the femoral impression

c "Sutures of the club curved; rostrum narrower than the front; body oval." . . . . Pagiocerus Eich.

cc "Sutures of the club straight; rostrum scarcely narrower than the front; body oblong." (Blandford) .... Cnesinus Lec.

The subfamily Erineophilinae contains one genus, Erineophilus Hopk.

Genera of the Hylesininae

a Antennal funicle with less than 4 segments

b Antennal funicle with 2 segments; club not distinctly annulated........ Crypturgus Erich.

bb Antennal funicle with 3 segments; club annulated..... Dolurgus Eich.

aa Antennal funicle with more than 4 segments

b Antennal club not annulated, pubescent on both sides [pl. 9, fig. 24]

c Eyes completely divided......................... Polygraphus Erich.

cc Eyes not divided [pl. 10, fig. 26] .... Chramesus Lec.

bb Antennal club annulated [pl. 9, fig. 27; pl. 10, fig. 28-30]

c Antennal club lamellate, of 3 loosely adjoined segments [pl. 10, fig. 30] . . . . Phloeotribus Latr.

cc Antennal club not lamellate, segments closely connate [pl. 9, fig. 27; pl. 10, fig. 28, 29]

d Antennal club strongly compressed

e Antennal funicle with 7 segments............... Hylesinus Fabr.

ee Antennal funicle with 5 segments

f Front coxae not contiguous

g Antennal funicle with outer segments distinctly broader; coxae moderately distant [pl. 9, fig. 27].................. Phloeosinus Chap.

gg Antennal funicle with outer segments scarcely broader; coxae very narrowly separated........Chaetophloeus Lec.

ff Front coxae contiguous

g Eyes emarginate or sinuate in front; prosternum in front of coxae very short or obsolete; antennal club oval-elongate

h Antennal club with 3 segments; eyes emarginate in front; foretibiae with very few teeth on the outer margin...... Carphoborus Eich.

hh Antennal club with 4 segments; eyes sinuate rather than emarginate in front; foretibiae with a row of stout teeth on the outer margin...............Renocis Casey

gg Eyes entire; prosternum distinct in front of the coxae; antennal club subcircular [pl. 7, fig. 20; pl. 10, fig. 28]...... Dendroctonus Erich.

dd Antennal club not strongly compressed, subglobular or conical

e 1st, 2d and 5th ventral segments of the abdomen subequal in length, 3d and 4th segments shorter; forecoxae widely separated [pl. 11, fig. 34]

f Antennal club with the 1st and 2d segments subequal in length, each as long as segments 3 and 4 united [pl. 12, fig. 39]...... Hylastinus Bedel

ff Antennal club with the 1st segment much longer than the 2d, nearly as long as segments 2, 3 and 4 united.....Scierus Lec.

ee 1st and 5th ventral segments distinctly longer than the others; forecoxae narrowly separated or contiguous [pl. 11, fig. 33]

f Mesosternum protuberant; 3d tarsal segment dilated and bilobed; elytra separately rounded at the base [pl. 8, fig. 23; pl. 11, fig. 31, 35, 36].......................Hylurgops Lec.

ff Mesosternum not protuberant; 3d tarsal segment subequal in width to the 2d, emarginate rather than bilobed; bases of elytra in a nearly straight line not separately rounded [pl. 9, fig. 22; pl. 11, fig. 32, 37] Tomicus Latr., 1802.............. (Hylastes Erich.)

Genera of the Ipinae

a Antennal funicle with less than 6 segments

b Antennal club pubescent on both sides

c Antennal club annulated on both sides; eyes not completely divided

d Antennal funicle with only one segment [pl. 4, fig. 8]

e Body robust; foretibiae without transverse ridges on outer side.. Corthylus Erich.

ee Body slender; foretibiae with transverse ridges on the outer side [pl. 5, fig. 11]..............................Pterocyclon Eich.

dd Antennal funicle with more than 1 segment

e Prothorax wider than long..............Hypothenemus Westw.

ee Prothorax longer than wide

f Maxillary lobe pilose, without radiating spines on outer edge; woodborers [pl. 6, fig. 15]...............Gnathotrichus Eich.

ff Maxillary lobe, with radiating spines on the outer edge; bark borers [pl. 6, fig. 14] *g* Base of prothorax bordered by a fine, raised line; elytral declivity of the two sexes alike...... Pityophthorus Eich.

gg Base of prothorax without a raised border; teeth of elytral declivity much larger in the male than in the female...... Pityogenes Bedel

cc Antennal club not annulated; eyes completely divided; elytral declivity oblique, not excavated and not toothed [pl. 5, fig. 12, 13] Trypodendron Steph. (Xyloterus Erich.)

bb Antennal club not pubescent on both sides, almost entirely corneous and usually not at all annulated on the inner face; at most, the outer segments of the club show from the inner side but slightly at the distal extremity

c Antennal club obliquely truncate at the distal end of the outer surface, with the distal segments of the club confined to the truncate surface and telescoped so that the flat, pubescent, truncate surface appears concentrically annulated [pl. 6, fig. 18, ant.; pl. 13, fig. 42]

d Antennal funicle with 4 segments; elytral pubescence scalelike.... Cryphalus Erich.

dd Antennal funicle with 5 segments; elytral pubescence not scalelike

e Elytral declivity excavated and toothed........................ Ips DeG., in part (Tomicus Latr. 1807)

ee Elytral declivity not excavated, and without prominent teeth

f Caudal margin of prosternum extending into a long spinelike process which projects caudad between the forecoxae. Maxillary lobe with radiating spines on the outer edge, bark borers [pl. 6, fig. 14, 18]..................Dryocoetes Eich.

ff Caudal margin of the extremely short prosternum at most but slightly produced on the median line; maxillary lobe pilose, without radiating spines on the outer edge, borers in wood and nuts [pl. 6, fig. 15, 17]

g Tibiae with the outer edge straight, spinose; dorsum of prothorax not more strongly roughened in front than behind.. Coccotrypes Eich.

gg Tibiae with the outer edge curved, finely serrate; dorsum of prothorax much more strongly roughened in front than behind ....Xyleborus Eich.

cc Antennal club with the distal segments not telescoped to form a flat, truncate surface, distinct, and not confined to the distal extremity of the outer surface [pl. 6, fig. 16]

d Elytral declivity not deeply excavated, at most only slightly concave; 2d segment of the antennal club surrounding the 1st, which is nearly oval [pl. 12, fig. 38]..................Xylocleptes Ferr.

dd Elytral declivity deeply excavated and toothed; 2d segment of antennal club not nearly surrounding the 1st, the 1st suture being straight or angular [pl. 6, fig. 16]........................ Ips DeG., in part (Tomicus Latr. 1807)

aa Antennal funicle with 6 segments

b Antennal club distinctly annulated on both sides; elytra aculeate at the tip ....Micracis Lec.

bb Antennal club distinctly annulated on only 1 side; elytra not aculeate at the tip .... Thysanoes Lec.

MacDonald College, Quebec
October 15, 1908

Family SCOLYTIDAE

1837 Ratzeburg. Forstins. 1:156-68
1837 Kirby. Fauna. Am. Bor. p. 191
1856 Nordlinger. Nachtr. f. Ratzeb. Forstins. p. 17-45
1856 Perris. Ann. Ent. Soc. France, p. 173-245, pl. 5, fig. 299-323
1866 Lacordaire. Hist. Nat. Ins. Col. 7:349-55
1869 Chapuis. Syn. Scol.
1872 Gemminger & Harold. Cat. Col. bd. IX: 2669
1875 Lindermann, Beitr. Kentniss Borkenk. Russl. Bul. Mosc. 49, pt 1, p. 131-46
1876 Leconte. Am. Phil. Soc. Proc. 15:341-91
1876 Lindemann. Mon. Borkenk. Russl. Bul. Mosc. 52, pt 1, p. 158-87
1877 Perris. Larves des Coleopteres, p. 413
1877 Provancher. Faun. Ent. Can. 1:563-64
1878 Eichhoff. Rat. Tom. p. 6
1881 Eichhoff. Die Europ. Borkenk. p. 1-33
1883 Leconte & Horn. Col. N. A. p. 512-13
1888 Bedel. Faun. Col. Seine, p. 385
1889 Cholodkovsky. Gänge Borkenk. Hor. Ent. Ross. 22:262
1895 Reitter. Bestimmung. der Borkenk.
1895 Judeich-Nitsche. Forstins. 1:435-41
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 81-88
1898 Lowendal. De Danske Barkbiller
1899 Sharp. Camb. Nat. Hist. Insects. pt II, p. 294-95
1901 Barbey. Scol. l'Europ. Cent. 15, 35
1903 Ganglbauer. Munch. Koleopt. Zeit. 1:309, 310
1904 Comstock. Manual for the Study of Insects, p. 596-98
1905 Kellogg. American Insects, p. 298-300
1905 Nüsslin, Leitfaden der Forstinsectenkunde
1907 Trédl. Nahrungs. Verbreit. Borkenk. Europ. [Ent. Blätter, Nr. 1 mit 6]

Subfamily PLATYPODINAE

References are given under Platypus.

PLATYPUS Herbst

1793 Herbst. Die Kaefer. 5:128, gen. 34
1807 Latreille. Gen. Crust. et Ins. 3:277
1836 Erichson. Wieg. Archiv. 2:64
1839 Ratzeburg. Forstins. 1:230
1864 Eichhoff. Berl. Ent. Zeit. p. 17, 42, 43, 46
1866 Chapuis. Mon. Plat.
1866 Lacordaire. Hist. Nat. Ins. Col. 7:356, 357
1868 Leconte. Am. Ent. Soc. Trans. 2:150-51
1876 Leconte. Am. Phil. Soc. Proc. 15:342-43

1881 Eichhoff. Die Europ. Borkenk. 54, 305-7
1883 Leconte & Horn, Col. N. A. p. 513-14
1888 Bedel. Faun. Col. Seine, p. 385, 404, 421
1895 Judeich-Nitsche. Forstins. 1:441-42
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 89-95
1897 Hubbard. U. S. Div. Ent. Bul. 7, n. s. p. 14, 15
1901 Barbey. Scol. l'Europ. Cent. 15, 115

CYLINDRA III

1825 Illiger. Duftschmidt. Faun. Aust. 3:87
1866 Chapuis. Mon. Plat. p. 97
1888 Bedel. Faun. Col. Seine, p. 404

1 **compositus** Say

1828 Platypus. Say. Acad. Nat. Sci. Phila. Jour. 3:324; ed. Lec. 2:182
1836 Platypus. Erichson. Wieg. Archiv. 2:65
1866 Platypus. Chapuis. Mon. Plat. p. 163, fig. 75
1876 Platypus. Leconte. Am. Phil. Soc. Proc. 15:344
1878 Platypus. Schwarz. Am. Phil. Soc. Proc. 17:468
1889 Platypus. Schwarz. Ent. Soc. Wash. Proc. 1:149
1891 Platypus. Riley & Howard. Ins. Life, 3:418
1892 Platypus. Riley. Ins. Life, 5:17
1893 Platypus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 127; Bul. 32, p. 207
1894 Platypus. Hopkins. Can. Ent. 26:277
1895 Platypus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 93, 94, 106
1897 Platypus. Hubbard. U. S. Div. Ent. Bul. 7 n. s., p. 14
1904 Platypus. Hopkins. U. S. Div. Ent. Bul. 48, p. 39, 45
1904 Platypus. Hopkins. U. S. Dep't Agric. Yearbook, p. 384
1907 Platypus. Pierce. Neb. Zool. Lab. Studies No. 78, p. 289

parallelus Fabr.

1792 Bostrichus. Fabr. Syst. El. 2:384
1866 Platypus. Chapuis. Mon. Plat. p. 164, fig. 76
1876 (?)=compositus Say. Leconte. Am. Phil. Soc. Proc. 15:344

tremiferus Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 176, fig. 85
1876 (?)=compositus Say. Leconte. Am. Phil. Soc. Proc. 15:344

perfossus Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 176, fig. 86
1876 (?)=compositus Say. Leconte. Am. Phil. Soc. Proc. 15:344

rugosus Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 176, fig. 87
1876 (?)=compositus Say. Leconte. Am. Phil. Soc. Proc. 15:344

Habitat. United States south of Delaware bay and Illinois.

Food plants. Quercus, Acer, Fagus, Castanea, Ulmus, Tilia, Magnolia, Taxodium and many others.

2 **cylindrus** Fabr.

1793 Bostrichus. Fabr. Ent. Syst. 2:364
1801 Bostrichus. Fabr. Syst. El. 384, tab. II
1837 Platypus. Ratzeburg. Forstins. 1:188, t. X, fig. 13
1866[1] Platypus. Chapuis. Mon. Plat. p. 246, fig. 147
1881 Platypus. Eichhoff. Borkenk. p. 305, fig. 108, 109
1895 Platypus. Judeich-Nitsche. Forstins. 1:547
1901 Platypus. Barbey. Scol. l'Europ. Cent. 115
1907 Trédl. Nahrungs. Verbreit. Borkenk. Europ. 19

Habitat. Europe, Asia, America.

Food plants. Quercus, Castanea, Fagus, Fraxinus.

3 **flavicornis** Fabr.

1776 Bostrichus. Fabr. Gen. Ins. Mant. p. 212
1781 Bostrichus. Fabr. Spec. Ins. 1:67
1787 Bostrichus. Fabr. Mant. Ins. p. 36
1793 Bostrichus. Herbst. Kafer, 5:118
1793 Bostrichus. Fabr. Ent. Syst. 2:364
1801 Bostrichus. Fabr. Syst. El. 2:384
1808 Scolytus. Olivier. Ent. gen. 78, p. 4, t. 1, fig. 1.a, b
1866 Platypus. Chapuis. Mon. Plat. p. 154-56
1876 Platypus. Leconte. Am. Phil. Soc. Proc. 15:343
1878 Platypus. Schwarz. Am. Phil. Soc. Proc. 17:468
1886 Platypus. Lugger. Ent. Soc. Wash. Proc. 1:36
1894 Platypus. Hopkins. Can. Ent. 26:277
1895 Platypus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 93, 95, 104
1897 Platypus. Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 15
1900 Platypus. Smith. Cat. Ins. N. J. p. 361

bidentatus Dej.

1837 Platypus. Dej. Cat. ed. 3. p. 333
1866 = flavicornis Fabr. Chapuis. Mon. Plat. p. 155

disciporus Chap.

1865 Platypus. Chapuis. Mon. Plat. p. 219, fig. 123
1876 = flavicornis Fabr. Leconte. Am. Phil. Soc. Proc. 15:343

Habitat. Southern United States, Mexico.

Food plants. Many deciduous and coniferous trees.

4 **punctulatus** Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 100, fig. 110
1876 Platypus. Leconte. Am. Phil. Soc. Proc. 15:345

Habitat. Texas.

Food plants. (?)

5 **quadridentatus** Oliv.

1795 Scolytus. Olivier. Ent. 78. 3, pl. 1, fig. 3
1866 Platypus. Chapuis. Mon. Plat. p. 337

[1] For other references see Chapuis's Mon. Plat. p. 246.

1870 Platypus. Leconte. Am. Phil. Soc. Proc. 15:343, 344
1878 Platypus. Schwarz. Am. Phil. Soc. Proc. 17:468
1893 Platypus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 127; Bul. 32, p. 207
1894 Platypus. Hopkins. Can. Ent. 26:277
1897 Platypus. Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 15

blanchardi Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 185, fig. 96
1876 = quadridentatus Oliv. Leconte. Am. Phil. Soc. Proc. 15:344
Habitat. West Virginia, Florida, Texas.
Food plants. Many deciduous and coniferous trees.

6 **rugulosus** Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 192, fig. 103
1870 Platypus. Leconte. Am. Phil. Soc. Proc. 15:343, 344
1895 Platypus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 92, 95, 107
1905 Platypus. Hopkins. Ent. Soc. Wash. Proc. 7:71

reticulatus Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 194, fig. 104
1896 = rugulosus Chap. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 107

emarginatus Chap.

1866 Platypus. Chapuis. Mon. Plat. p. 199, fig. 109
1896 = rugulosus Chap. Blandford. Biol. Centr. Am. Col. 4. pt 6, p. 107
Habitat. Lower California, Mexico, Guatemala, Panama.
Food plants. (?)

Subfamily SCOLYTINAE

1837 Ratzeburg. Forstins. 1:157-230
1866 Lacordaire. Hist. Nat. Ins. Col. 7:355, 356, 357
1868 Zimmerman. Am. Ent. Soc. Trans. 2:141
1869 Chapuis. Syn. Scol.
1876 Leconte. Am. Phil. Soc. Proc. 15:342, 345
1878 Eichhoff. Rat. Tom. p. 6
1881 Eichhoff. Die Europ. Borkenk. p. 33
1883 Leconte & Horn. Col. N. A. p. 513, 514, 515
1888 Bedel. Faun. Col. Seine, p. 385. 386
1895 Judeich-Nitsche Forstins. 1:442
1895 Blandford. Biol. Centr. Am. Col. 4. pt 6, p. 81, 118-20

BOTHROSTERNUS Eich.

1868 Eichhoff. Berl. Ent. Zeit. p. 150
1869 Chapuis. Syn. Scol. p. 24
1873 Chapuis. Mem. Soc. Liège, p. 232
1883 Leconte & Horn. Col. N. A. p. 523
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 131, 132

7 **hubbardi** Sz.

1886 Bothrosternus. Schwarz. Ent. Am. 2:54
1896 (?) Bothrosternus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 131, 132
Habitat. Florida.
Food plant. (?) Hicoria.

CACTOPINUS Schwarz

1899 Schwarz. Psyche, vol. 8, sup. 1, p. 11

8 **hubbardi** Sz.

1899 Cactopinus. Schwarz. Psyche, vol. 8, sup. 1, p. 11
1899 Cactopinus. Schwarz. Ent. Soc. Wash. Proc. 4:368
Habitat. Arizona.
Food plant. Cereus giganteus.

CARPHOBORUS Eich.

1864 Eichhoff. Berl. Ent. Zeit. p. 27, 44, 46, tab. 1, fig. 8
1868 Leconte. Am. Ent. Soc. Trans. 2:172
1873 Chapuis. Mem. Soc. Liège, p. 248
1876 Leconte. Am. Phil. Soc. Proc. 15:383
1881 Eichhoff. Borkenk. p. 129
1883 Leconte & Horn. Col. N. A. p. 523
1895 Judeich-Nitsche. Forstins. 1:445, 446

9 **bicristatus** Chap.

1869 Carphoborus. Chapuis. Syn. Scol. p. 97
1873 Carphoborus. Chapuis. Mem. Soc. Liège, p. 249
1876 Carphoborus. Leconte. Am. Phil. Soc. Proc. 15:383, 384
1890 Carphoborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 726
1900 Carphoborus. Smith. Cat. Ins. N. J. p. 364
Habitat. Georgia ("Middle and Southern States," Chapuis).
Food plant. Pinus.

10 **bifurcus** Eich.

1868 Carphoborus. Eichhoff. Berl. Ent. Zeit. p. 147
1868 Dendroctonus. Zimmerman. Am. Ent. Soc. Trans. 2:148
1869 Dendroctonus. Chapuis. Syn. Scol. p. 97
1873 Carphoborus. Chapuis. Mem. Soc. Liège, p. 249
1876 Carphoborus. Leconte. Am. Phil. Soc. Proc. 15:383
1888 Carphoborus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Carphoborus. Packard. U. S. Ent. Com'n, 5th Rep't. p. 725, 726, fig. 255
1900 Carphoborus. Smith. Cat. Ins. N. J. p. 364
Habitat. District of Columbia, Tennessee, Gulf States.
Food plant. Pinus.

11 simplex Lec.

1876 Carphoborus. Leconte. Am. Phil. Soc. Proc. 15:383
1890 Carphoborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 725
Habitat. California.
Food plants. (?)

CHAETOPHLOEUS Leconte

1876 Leconte. Am. Phil. Soc. Proc. 15:382

12 hystrix Lec.

1858 Hylesinus. Leconte. Acad. Nat. Sci. Phila. Proc. p. 81
1868 Hylesinus. Leconte. Am. Ent. Soc. Trans. 2:171
1876 Chaetophloeus. Leconte. Am. Phil. Soc. Proc. 15:382
1892 Chaetophloeus. Blaisdell. Ins. Life, 5:36
Habitat. California.
Food plant. Rhus integrifolia.

CHRAMESUS Leconte

1868 Leconte. Am. Ent. Soc. Trans. 2:168
1876 Leconte. Am. Phil. Soc. Proc. 15:374
1883 Leconte & Horn. Col. N. A. p. 522
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 142, 169

RHOPALOPLEURUS Chapuis

1869 Chapuis. Syn. Scol. p. 46
1873 Chapuis. Mem. Soc. Liège, p. 254
1876 Leconte. Am. Phil. Soc. Proc. 15:374

13 hicoriae Lec.

1868 Chramesus. Leconte. Am. Ent. Soc. Trans. 2:168
1876 Chramesus. Leconte. Am. Phil. Soc. Proc. 15:375
1878 Chramesus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1886 Chramesus. Schwarz. Ent. Am. 2:54
1890 Chramesus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 296
1890 Chramesus. Smith. Ent. Am. 6:53, fig.
1891 Chramesus. Hamilton. Can. Ent. 23:65
1892 Chramesus. Hamilton. Ins. Life, 4:268
1893 Chramesus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 140 etc.; Bul. 32, p. 212
1893 Chramesus. Smith. N. J. Agric. Rep't, p. 537, fig. 95
1894 Chramesus. Hopkins. Can. Ent. 26:280
1895 Chramesus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 170
1895 Chramesus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1898 Chramesus. Chittenden. Ent. Soc. Wash. Proc. 4:78
1899 Chramesus. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 316
1900 Chramesus. Smith. Cat. Ins. N. J. p. 364
1906 Chramesus. Felt. N. Y. State Mus. Mem. 8, 2:336, 448–49, 502

lecontei Chap

1869 Rhopalopleurus. Chapuis. Syn. Scol. (?)
1873 Rhopalopleurus. Chapauis. Mem. Soc. Liège, p. 255
1876 =icoriae Lec. Leconte. Am. Phil. Soc. Proc. 15:375
Habitat. Canada, eastern, middle and western United States
Food plants. Hicoria, oak buds (?).

14 **chapuisii** Lec.

1876 Chramesus. Leconte. Am. Phil. Soc. Proc. 15:375
1886 Chramesus. Schwarz. Ent. Am. 2:54
Habitat. Louisiana.
Food plants. (?)

CNESINUS Leconte

1868 Leconte. Am. Ent. Soc. Trans. 2:171
1876 Leconte. Am. Phil. Soc. Proc. 15:378
1883 Leconte & Horn. Col. N. A. p. 523
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 132, 135

NEMOPHILUS Chapuis

1869 Chapuis. Syn. Scol. p. 27
1873 Chapuis. Mem. Soc. Liège, p. 235
1876 Leconte. Am. Phil. Soc. Proc. 15:378

15 **strigicollis** Lec.

1868 Cnesinus. Leconte. Am. Ent. Soc. Trans. 2:171
1876 Cnesinus. Leconte. Am. Phil. Soc. Proc. 15:378
1878 Cnesinus. Schwarz. Am. Phil. Soc. Proc. 17:468
1886 Cnesinus. Schwarz. Ent. Am. 2:54
1887 Cnesinus. Hamilton. Can. Ent. 19:66
1890 Cnesinus. Schwarz. Ins. Life, 3:87
1891 Cnesinus. Schwarz. Ent. Soc. Wash. Proc. 2:79
1895 Cnesinus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1895 Cnesinus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 136, 139
1899 Cnesinus. Hopkins. Ent. Soc. Wash. Proc. 4:343
1900 Cnesinus. Smith. Cat. Ins. N. J. p. 365
1907 Cnesinus. Hopkins. Ent. Soc. Wash. Proc. 8:113

strigillatus Chap.

1869 Nemophilus. Chapuis. Syn. Scol. p. 27
1873 Nemophilus. Chapuis. Mem. Soc. Liège. p. 235
1878 =strigicollis Lec. Leconte. Am. Phil. Soc. Proc. 15:378
Habitat. Pennsylvania, Illinois, South Carolina, West Virginia, North Carolina, Texas, Mexico.
Food plants. Toxylon pomiferum, Liquidambar, Smilax, Hickoria (pith of twigs), Pyrus (?).

COCCOTRYPES Eich.

1878 Eichhoff. Rat. Tom. p. 57, 308
1881 Eichhoff. Borkenk. p. 52, 74, 267
1883 Leconte & Horn. Col. N. A. p. 518
1894 Blandford. Ent. Soc. Lond. Trans. p. 98

16 **dactyliperda** Fabr. (?)

1801 Bostrichus. Fabricius. Syst. El. 2:387, 14
(?) Bostrichus. Lucas. Expl. Alg. p. 464, tab. 39, fig. 1
1837 Bostrichus. Dej. Cat. p. 332
(?) Bostrichus. Duft. Fn. Aust. 3:95, 12
1842 Bostrichus. Hornung. Stett. Ent. Zeit. p. 116 (2)
1854 Bostrichus. Bach. Kaef. 2:123, 130
1862 Bostrichus. Doebner. Zool. 2:184
1866 Bostrichus. Eichhoff. Berl. Ent. Zeit. p. 277
1867 Anisandros. Ferrari. Borkenk. p. 26
1874 Dryocoetes. Redtenb. Fn. Aust. ed. 3. 2:381
1878 Coccotrypes. Eichhoff. Rat. Tom. p. 58, 309
1881 Coccotrypes. Eichhoff. Borkenk. p. 52, 74, 267
1886 Coccotrypes. Schwarz. Ent. Am. 2:42
1889 Coccotrypes. Hamilton. Am. Ent. Soc. Trans. 16:159
1894 Coccotrypes. Hamilton. Am. Ent. Soc. Trans. 21:406

palmicola Horn.

1846 Bostrichus. Hornung. Stett. Ent. Zeit. p. 116, (2)
1881 (?) = dactyliperda Fabr. Eichhoff. Borkenk. p. 268
Habitat. Europe, Africa, America (carried in nuts).
Food plants. Dates, betel.

CORTHYLUS Erichson

1836 Erichson. Wieg. Archiv. 1:64
1868 Eichhoff. Berl. Ent. Zeit. p. 279
1869 Eichhoff. Berl. Ent. Zeit. p. 297
1876 Leconte. Am. Phil. Soc. Proc. 15:347
1878 Eichhoff. Rat. Tom. p. 66, 421
1883 Leconte & Horn. Col. N. A. p. 517
1897 Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 16
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 251–54

MORIZUS Ferrari

1867 Ferrari. Borkenk. p. 59, 69
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 251

17 **columbianus** Hopk.

1894 Corthylus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 36, p. 313–36, fig. 27–30
1894 Corthylus. Hopkins. Can. Ent. 26:277
1894 Corthylus. Hopkins. Ins. Life, 6:281, 282; 7:146

1895 Corthylus. Hopkins. Ent. Soc. Wash. Proc. 3:104, 107
1897 Corthylus. Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 17–18
1904 Corthylus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 253, 254
1906 Corthylus. Felt. N. Y. State Mus. Mem. 8, 2:702

Habitat. Virginia, West Virginia, Michigan (?), Massachusetts.

Food plants. Quercus alba, Fagus americana, Tilia, Acer, Liriodendron tulipifera.

18 punctatissimus Zimm.

1868 Crypturgus. Zimmerman. Am Ent. Soc. Trans. 2:144
1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:154
1876 Corthylus. Leconte. Am. Phil. Soc. Proc. 15:347
1878 Crypturgus. Eichhoff. Rat. Tom. p. 460
1883 Corthylus. Merriam. Am. Nat. 17:84–86, fig. 1–5
1890 Corthylus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 389, 390, fig. 144, 145
1890 Corthylus. Schwarz. Ins. Life, 3:178
1891 Corthylus. Schwarz. Ent. Soc. Wash. Proc. 2:109–15
1893 Corthylus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 127; Bul. 32, p. 207
1894 Corthylus. Hopkins. Ins. Life, 6:281; 7:145
1894 Corthylus. Hopkins. Can. Ent. 26:277
1895 Corthylus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1895 Corthylus. Hopkins. Ent. Soc. Wash. Proc. 3:104
1897 Corthylus. Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 16–17
1900 Corthylus. Smith. Cat. Ins. N. J. p. 361
1904 Corthylus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 253, 254
1905 Corthylus. Felt. N. Y. State Mus. Mem. 8, 1:50, 65–67, fig. 7
1906 Corthylus. Felt. N. Y. State Mus. Mem. 8, 2:732

Habitat. Eastern, middle, southern and western United States.

Food plants. Acer saccharum, Sassafras, Cornus, Carpinus, Corylus, Ostrya, Gaylussacia resinosa.

19 spinifer Sz.

1891 Corthylus. Schwarz. Ent. Soc. Wash. Proc. 2:114
1895 Corthylus. Hopkins. Ent. Soc. Wash. Proc. 3:104

Habitat. South Florida.

Food plant. Quercus.

CRYPHALUS Erichson

1836 Erichson. Wieg. Archiv. 1:64
1864 Eichhoff. Berl. Ent. Zeit. p. 34, 45, 46
1868 Leconte. Am. Ent. Soc. Trans. 2:151, 153
1876 Leconte. Am. Phil. Soc. Proc. 15:361
1881 Eichhoff. Borkenk. p. 45, 172
1878 Eichhoff. Rat. Tom. p. 121
1883 Leconte & Horn. Col. N. A. p. 518
1885 Goz. Rev'd. Ent. 4:278
1888 Bedel. Faun. Col. Seine. 6:306, 307

1895 Judeich-Nitsche. Forstins. 1:448, 451, fig.
1901 Barbey. Scol. l'Europ. Cent. p. 69
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 225

ERNOPORUS Thomson

1866 Thomson. Skand. Col. i:147; vii:360
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6. p. 226

20 **jalappae** Letz.

1844 Bostrichus. Letzner. Abh. Schles. Jahrb.
1848 Bostrichus. Letzner. Arb. Verand. Schles. Ges. p. 99
1867 Cryphalus (Ernoporus). Ferrari. Borkenk. p. 12, 14, 16, note 4
1878 Cryphalus. Eichhoff. Rat. Tom. p. 134
1881 Cryphalus. Eichhoff. Borkenk. p. 46, 74, 187
1883 Cryphalus. Schwarz. Ont. Ent. Soc. 14:30
1886 Cryphalus. Schwarz. Ent. Am. 2:42
1894 Cryphalus. Blandford. Ins. Life, 6:261
1894 Cryphalus. Hamilton. Am. Ent. Soc. Trans. 21:406
1901 Cryphalus. Schwarz. Ent. Soc. Wash. Proc. 4:432

Habitat. Mexico (?), exported to various countries, Europe, United States, etc.

Food plant. Jalap root.

21 **miles** Lec.

1878 Cryphalus. Leconte. Am. Phil. Soc. Proc. 17:433
1878 Cryphalus. Schwarz. Am. Phil. Soc. Proc. 17:468

Habitat. Florida.

Food plant. Pinus (?).

22 **mucronatus** Lec.

1879 Cryphalus. Leconte. U. S. Geol. Sur. Bul. 5:518
1886 Cryphalus. Schwarz. Ent. Am. 2:42

Habitat. Colorado.

Food plants.

23 **piceae** Ratz.

1837 Bostrichus. Ratzeburg. Forstins. 1:163
1854 Cryphalus. Bach. Kafer. 2:136
1862 Cryphalus. Doebner. Zool. 2:168
1874 Cryphalus. Redtb. Fn. Aust. ed. 3. 2:376
1878 Cryphalus. Eichhoff. Rat. Tom. p. 2, 122
1881 Cryphalus. Eichhoff. Borkenk. p. 45, 172–76, fig. 38, 39
1888 Cryphalus. Bedel. Faun. Col. Seine, 6:398, 414
1895 Tomicus. Judeich-Nitsche. Forstins. 1:492
1899 Cryphalus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 444
1901 Cryphalus. Barbey. Scol. l'Europ. Cent. p. 69, pl. 2, fig. 15; pl. 8, fig. 5
1906 Cryphalus. Felt. N. Y. State Mus. Mem. 8, 2:753
1907 Cryphalus. Tredl. Nahrungs. Verbreit. Borkenk. Europ. p. 12

asperatus abietis Ferr

1867 Cryphalus. Ferrari. Borkenk. p. 12, (7)
1878 =piceae Ratz. Eichhoff. Rat. Tom. p. 122
Habitat. France, Germany, Austria, Turkey, United States (West Virginia, New York), Canada.
Food plants. Pinaceae.

24 **rigidus** Lec.

1876 Cryphalus. Leconte. Am. Phil. Soc. Proc. 15:362
1878 Cryphalus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1886 Cryphalus. Schwarz. Ent. Am. 2:42
Habitat. Canada, Michigan.
Food plants.

25 **(?)robustus** Eich.

1871 Cryphalus. Eichhoff. Berl. Ent. Zeit. p. 131
1876 Cryphalus. Leconte. Am. Phil. Soc. Proc. 15:362
1878 Cryphalus. Eichhoff. Rat. Tom. p. 121
Habitat. "Am. Septent."
Food plants.

26 **striatulus** Mannh.

1853 Cryphalus. Mannerheim. Bul. Mosc. p. 235
1876 Cryphalus. Leconte. Am. Phil. Soc. Proc. 15:362
1878 Cryphalus. Eichhoff. Rat. Tom. p. 147
1894 Cryphalus. Schwarz. Ins. Life, 7:255
1894 Cryphalus. Hamilton. Am. Ent. Soc. Trans. 21:35
1901 Cryphalus. Felt. N. Y. Forest, Fish & Game Com'n Rept 7:516
1906 Cryphalus. Felt. N. Y. State Mus. Mem. 8, 2:376, 650, 673
Habitat. Alaska, Utah, New York.
Food plants. Picea engelmanni, Pinus, Abies, Tsuga.

27 **(?)terminalis** Mannh.

1843 Bostrichus. Mannerheim. Bul. Mosc. p. 298
1867 Ferrari. Borkenk. p. 75
1868 Bostrichus. Leconte. Am. Ent. Soc. Trans. 2:177
1885 Cryphalus (?) Henshaw. Col. N. A. p. 148
Habitat. California.
Food plants.

CRYPTURGUS Erichson

1836 Erichson. Wieg. Archiv. 1:60
1864 Eichhoff. Berl. Ent. Zeit. p. 33, 44, 46
1868 Zimmerman. Am. Ent. Soc. Trans. 2:142, 143
1876 Leconte. Am. Phil. Soc. Proc. 15:387
1877 Provancher. Faun. Ent. Can. 1:565
1878 Eichhoff. Rat. Tom. p. 72
1881 Eichhoff. Borkenk. p. 64, 165
1883 Leconte & Horn. Col. N. A. p. 523, 524
1888 Bedel. Faun. Col. Seine, 6:389, 395
1895 Judeich-Nitsche. Forstins. 1:448, 451
1901 Barbey. Scol. l'Europ. Cent. p. 68

28 alutaceus Sz.

1893 Crypturgus. Schwarz. Ins. Life. 5:288
1894 Crypturgus. Schwarz. Ent. Soc. Wash. Proc. 3:17
1899 Crypturgus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 448
1906 Crypturgus. Felt. N. Y. State Mus. Mem. 8. 2:753

Habitat. Maryland, West Virginia, Florida.

Food plants. Picea, Pinus palustris, Pinus inops.

29 atomus Lec.

1868 Crypturgus. Leconte. Am. Ent. Soc. Trans. 2:152
1876 Crypturgus. Leconte. Am. Phil. Soc. Proc. 15:387
1877 Crypturgus. Provancher. Faun. Ent. Can. 1:565
1878 Crypturgus. Eichhoff. Rat. Tom. p. 75
1886 (?) = pusillus Gyll. Schwarz. Ent. Am. 2:56
1889 = pusillus Gyll. Hamilton. Am. Ent. Soc. Trans. 16:159
1889 Crypturgus. Hamilton. Am. Ent. Soc. Trans. 16:159
1890 Crypturgus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 727, 825, 861, 872, fig. 256
1891 = pusillus Gyll. Hamilton. Ins. Life. 4:132
1894 = pusillus Gyll. Schwarz. Ent. Soc. Wash. Proc. 3:17
1898 Crypturgus. Blandford. Ent. News, 9:6
1900 = pusillus Gyll. Smith. Cat. Ins. N. J. p. 365
1904 Crypturgus. Hopkins. U. S. Div. Ent. Bul. 48, p. 26
1905 Crypturgus. Currie. U. S. Div. Ent. Bul. 53, p. 82
1906 Crypturgus. Felt. N. Y. State Mus. Mem. 8, 2:338, 359–60

Habitat. Canada, eastern United States.

Food plants. Pinus, Picea, Abies, Tsuga.

30 pusillus Gyll.

1813 Bostrichus. Gyllenhal. In. Suec. 3:371, (16)
1834 Bostrichus. Hartig. Convers. Lex. p. 110–12
1837 Bostrichus. Ratzeburg. Forstins. 1:162, t. 13, fig. 16
1839 Bostrichus. Ratzeburg. Forstins. 1:196–98, t. 13, fig. 16
1854 Crypturgus. Bach. Kaefer, 2:137
1856 Perris. Ann. Fr. p. 202
1862 Crypturgus. Doebner. Zool. 2:167
1864 Crypturgus. Eichhoff. Berl. Ent. Zeit. t. 1, fig. 12, (Ant.)
1867 Crypturgus. Eichhoff. Berl. Ent. Zeit. p. 404
1878 Crypturgus. Eichhoff. Rat. Tom. p. 73
1881 Crypturgus. Eichhoff. Borkenk. p. 165
1888 Crypturgus. Bedel. Faun. Col. Seine, 6:395, 412
1889 Crypturgus. Hamilton. Am. Ent. Soc. Trans. 16:159
1893 Crypturgus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 143 etc.; Bul. 32, p. 213
1894 Crypturgus. Schwarz. Ent. Soc. Wash. Proc. 3:17
1894 Crypturgus. Hamilton. Am. Ent. Soc. Trans. 21:407
1894 Crypturgus. Blandford. Ent. Soc. Lond. p. 82
1895 Tomicus. Judeich-Nitsche. Forstins. 1:527
1897 Crypturgus. Johnson. Penn. Agric. Rep't, p. 78–79, fig. 3

1898 Crypturgus. Blandford. Ent. News, 9:6
1899 Crypturgus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 346, 448, fig. 96
1900 Crypturgus. Smith. Cat. Ins. N. J. p. 365
1901 Crypturgus. Barbey. Scol. l'Europ. Cent. p. 68, pl. 2, fig. 13; pl. 7, fig. 5
1907 Crypturgus. Trèdl. Nahrungs. Verbreit. Borkenk. Europ., 11. [Entomol. Blätter, Nr. 1 mit 6]

Habitat. Europe, Japan, eastern United States.

Food plant. Pinaceae.

[1] DENDROCTONUS Erichson

1836 Erichson. Wieg. Archiv. 1:52
1864 Eichhoff. Berl. Ent. Zeit. p. 26, 44, 46
1866 Lacordaire. Ins. Col. 7:360
1868 Zimmerman. Am. Ent. Soc. Trans. 2:148, 149
1869 Chapuis. Syn. Scol. p. 34
1873 Chapuis. Mem. Soc. Liège, p. 242
1876 Leconte. Am. Phil. Soc. Proc. 15:384
1877 Provancher. Faun. Ent. Can. 1:572
1881 Eichhoff. Borkenk. p. 125
1883 Leconte & Horn. Col. N. A. p. 523
1890 Dietz. Am. Ent. Soc. Trans. 17:27
1895 Judeich-Nitsche. Forstins. 1:445, 446
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 143, 146
1901 Barbey. Scol. l'Europ. Cent. p. 55
1906 Felt. N. Y. State Mus. Mem. 8, 2:337

31 approximatus Dietz

1890 Dendroctonus. Dietz. Am. Ent. Soc. Trans. 17:28, 31
1902 Dendroctonus. Schwarz. Ent. Soc. Wash. Proc. 5:32
1902 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 281
1903 Dendroctonus. Hopkins. Can. Ent. 35:61
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, p. 44
1904 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 281
1905 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 56, p. 11
1905 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 7:81
1907 Dendroctonus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218
1908 Dendroctonus. Burke. Ent. Soc. Wash. Proc. 9:115

Habitat. Arizona.

Food plant. Pinus ponderosa.

---

[1] The recent work on the genus Dendroctonus by Dr A. D. Hopkins, entitled *The Genus Dendroctonus*, and published by the Bureau of Entomology of the United States Department of Agriculture, as Technical series no. 17, part 1, has been received too late to be inserted in this list.

The treatise referred to discusses the structure of these beetles in detail, giving a long series of very fine plates. Besides describing a number of new species and putting the synonymy of the various names in final shape, many new food plants are given, and the distribution of the various species is more exactly defined. Excellent figures of the various species are given.

The following new species are described from America north of Mexico: barberi Hopk., convexifrons, Hopk., arizonicus Hopk., jeffreyi Hopk., pseudotsugae Hopk., engelmanni Hopk., borealis Hopk., murrayana Hopk.

32 brevicomis Lec.

1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 386
1890 = frontalis Zimm. Dietz. Am. Ent. Soc. Trans. 17:28
1890 Dendroctonus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 722
1899 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 21, p. 13
1902 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 5:3
1902 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 281
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, p. 18
1904 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 281
1905 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 7:147, pl. 4
1905 Dendroctonus. Currie. U. S. Div. Ent. Bul. 53, p. 74
1906 Dendroctonus. Webb. U. S. Div. Ent. Bul. 58, pt 2, p. 20-22, 9 fig.

Habitat. Cascade and Rocky mountain region of United States.

Food plants. Pinus ponderosa, Pinus lambertiana.

33 frontalis Fabr.

1801 (?), Fabricius. Syst. El. 2:389
1868 Dendroctonus. Zimmerman. Am. Ent. Soc. Trans. 2:149
1868 Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:173
1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 386
1890 Dendroctonus. Dietz. Am. Ent. Soc. Trans. 17:28, 32
1890 Dendroctonus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 722
1892 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 2:353
1892 Dendroctonus. Hopkins. Science, July 29, 20:64
1893 Dendroctonus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 143; Bul. 32, p. 213
1893 Dendroctonus. Hopkins. Ins. Life, 5:187-89
1893 Dendroctonus. Riley. Ins. Life, 6:140
1893 Dendroctonus. Hopkins. Ins. Life, 6:126
1894 Dendroctonus. Hopkins. Can. Ent. 26:280
1896 Dendroctonus. Hopkins. Can. Ent. 28:250
1897 Dendroctonus. Chittenden. U. S. Div. Ent. Bul. 7. n. s. p. 72-75, fig. 43
1898 Dendroctonus. Schwarz. Ent. Soc. Wash. Proc. 4:81
1899 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 4:343
1899 Dendroctonus. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 315, 317, fig. 246
1899 Dendroctonus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 395
1899 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 21, p. 13, 14
1901 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 28, pl. XII
1902 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 270-75
1903 Dendroctonus. Hopkins. Can. Ent. 35:59
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, p. 41, 44, pl. 1, fig. 2; pl. VI, VII
1904 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 270-75
1905 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 7:80
1905 Dendroctonus. Currie. U. S. Div. Ent. Bul. 53, p. 100
1905 Dendroctonus. Felt. N. Y. State Mus. Mem. 8, 1:6

1908 Dendroctonus. Fiske. Ent. Soc. Wash. Proc. 9:24, 25, 26
1908 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 9:131
Habitat. Eastern and southern United States.
Food plants. Pinus, Picea.

34 **monticola** Hopk.

1905 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 56, p. 11
1908 Dendroctonus. Burke. Ent. Soc. Wash. Proc. 9:12, 115
Habitat. Western United States.
Food plants. Pinus lambertiana, P. monticola, P murrayana, P. ponderosa, Picea engelmanni.

35 **obesus** Mannh.

1843 Hylurgus. Mannerheim. Bul. Mosc. p. 296
1852 Hylurgus. Mannerheim. Bul. Mosc. p. 356
1868 Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:173
1873 Dendroctonus. Chapuis. Mem. Soc. Liège, p. 243
1876 = rufipennis Kirby. Leconte. Am. Phil. Soc. Proc. 15:385
1877 Dendroctonus. Provancher. Faun. Ent. Can. 1:573
1877 Dendroctonus. Provancher. Faun. Ent. Can. v. 1, Add. et Cor. p. 13
1894 = rufipennis Kirby. Hamilton. Am. Ent. Soc. Trans. 21:35
1899 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 21, p. 15
1902 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 5:3
1903 Dendroctonus. Hopkins. Can. Ent. 35:60

similis Lec.

1860 Dendroctonus. Leconte. Pac. R. R. Explor. Ins. p. 59
1868 =obesus Mannh. Leconte. Am. Ent. Soc. Trans. 2:173
1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 385
1877 = obesus Mannh. Provancher. Faun. Ent. Can. 1:373
1878 Dendroctonus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1878 = rufipennis Kirby. Provancher. Faun. Ent. Can. v. 1, Add. p. 13
1890 Dendroctonus. Dietz. Am. Ent. Soc. Trans. 17:28, 30
1890 Dendroctonus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 721, 722
1891 Dendroctonus. Cook & Davis. Mich. Agric. Exp. Sta. Bul. 73, p. 15
1894 = rufipennis Kirby. Hamilton. Am. Ent. Soc. Trans. 21:35
1903 = obesus Mannh. Hopkins. Can. Ent. 35:60
1907 Dendroctonus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218
Habitat. Canada, Oregon, Colorado, Virginia, Texas, New Mexico.
Food plants.

36 **piceaperda** Hopk.

1901 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 28, p. 16, pl. ii
1902 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 266-70, fig. 23, 24
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, p. 26
1904 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 266-70
1905 Dendroctonus. Currie. U. S. Div. Ent. Bul. 53, p. 82

1905 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 56, p. 10-11
1906 Dendroctonus. Felt. N. Y. State Mus. Mem. 8, 2:338, 379-85, 693, fig. 85
1906 Dendroctonus. Burke. Ent. Soc. Wash. Proc. 8:4, 5
1907 Dendroctonus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218
Habitat. New Brunswick to New York, New Mexico.
Food plants. *Picea canadensis, Picea mariana.*

37 **ponderosae** Hopk.

1902 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 32, p. 10
1902 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 275-81, fig. 1, 28, 29, 30
1903 Dendroctonus. Gillette. Col. Agric. Rep't, 24:118
1904 Dendroctonus. Hopkins. U. S. Dep't Agric. Yearbook, p. 275, 281
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, p. 44, pl. 1, fig. 1, pl. III, VIII, IX
1905 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 7:147, pl. IV
1905 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 56, p. 10-22, fig. 1, 5, 6
1905 Dendroctonus. Currie. U. S. Div. Ent. Bul. 53, p. 100
1906 Dendroctonus. Burke. Ent. Soc. Wash. Proc. 7:4
Habitat. Rocky mountain region.
Food plants. Pinus, Picea.

38 **punctatus** Lec.

1868 Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:173
1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 385
1886 Dendroctonus. Schwarz. Ent. Am. 2:56
1890 =rufipennis Kirby. Dietz. Am. Ent. Soc. Trans. 17:28
1890 Dendroctonus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 722
1894 =rufipennis Kirby. Hamilton. Am. Ent. Soc. Trans. 21:35
1897 =rufipennis Kirby. Johnson. Penn. Dep't Agric. An. Rep't, p. 73-77, fig. 2
1902 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 5:3
Habitat. New York, Quebec.
Food plants.

39 **rufipennis** Kirby

1837 Hylurgus. Kirby. Faun. Bor. Am. 4:195
1853 Hylurgus. Mannh. Bul. Mosc. p. 238, (217)
1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 385
1877 Dendroctonus. Provancher. Faun. Ent. Can. 1:573
1878 Dendroctonus. Provancher. Faun. Ent. Can. v. 1, Add. et Cor. p. 13, 14
1886 Dendroctonus. Schwarz. Ent. Am. 2:56
1890 Dendroctonus. Dietz. Am. Ent. Soc. Trans. 17:28
1890 Hylurgus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 814
1894 Dendroctonus. Schwarz. Ins. Life, 7:255
1894 Dendroctonus. Hamilton. Am. Ent. Soc. Trans. 21:36

1897 Dendroctonus. Johnson. Penn. Agric. Rep't, p. 73-77, fig. 2
1899 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 4:343
1899 Dendroctonus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 349, 393
1900 Dendroctonus. Smith. Cat. Ins. N. J. p. 364
1906 Dendroctonus. Felt. N. Y. State Mus. Mem. 8, 2:753
1907 Tredl. Nahrungs. Verbreit. Borkenk. Europ. 11 [Entomol. Blätter, Nr. 1 mit 6]

Habitat. Alaska, Canada, northern United States.

Food plants. Picea, Pinus.

40 simplex Lec.

1868 Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:173
1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 385
1878 Dendroctonus. Provancher. Faun. Ent. Can. v. 1, Add. et Cor. p. 13, 14
1886 Dendroctonus. Schwarz. Ent. Am. 2:56
1888 Dendroctonus. Schwarz. Ins. Life, 1:162
1889 = rufipennis Kirby. Schwarz. Ent. Soc. Wash. Proc. 1:175
1890 Dendroctonus. Dietz. Am. Ent. Soc. Trans. 17:28, 31
1890 Dendroctonus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 722
1899 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 4:343
1899 Dendroctonus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 394
1906 Dendroctonus. Felt. N. Y. State Mus. Mem. 8, 2:752
1907 Dendroctonus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218

Habitat. Canada to West Virginia, Colorado, California, New Mexico.

Food plants. Picea, Larix.

41 terebrans Oliv.

1795 Scolytus. Olivier. Ent. 4:78, p. 6, pl. 1, fig. 6, a-b
1841 Hylurgus. Harris. Inj. Ins. Mass. p. 72
1852 Hylurgus. Harris. Rep. Ins. Inj. Veg. p. 75-76
1858 Hylurgus. Fitch. Nox. Ins. N. Y. 4th Rep't, p. 728
1868 Dendroctonus. Lacordaire. Gen. Col. 7:361
1868 Dendroctonus. Zimmerman. Am. Ent. Soc. Trans. 2:149
1868 Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:173
1869 Dendroctonus. Chapuis. Syn. Scol. p. 35
1873 Dendroctonus. Chapuis. Mem. Soc. Liège, p. 243
1876 Dendroctonus. Leconte. Am. Phil. Soc. Proc. 15:384, 385
1876 Dendroctonus. Thomas. Nox. Ins. Ill. 1st Rep't, p. 146
1877 Dendroctonus. Provancher. Faun. Ent. Can. 1:572
1878 Dendroctonus. Provancher. Faun. Ent. Can. v. 1, Add. et Cor. p. 13, 14
1878 Dendroctonus. Schwarz. Am. Phil. Soc. Proc. 17:469
1880 Hylurgus. Saunders. Ont. Ent. Soc. 10:5
1883 Hylurgus. Saunders. Ont. Ent. Soc. 14:55
1886 Dendroctonus. Schwarz. Ent. Am. 2:56
1888 Dendroctonus. Schwarz. Ent. Soc. Wash. Proc. 1:80

1890 Dendroctonus. Dietz. Am. Ent. Soc. Trans. 17:28, 29
1890 Dendroctonus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 721, 858, fig. 250
1893 Dendroctonus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 143 etc.; Bul. 32, p. 213
1894 Dendroctonus. Hopkins. Can. Ent. 26:280
1895 Dendroctonus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1897 Dendroctonus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 146
1899 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 4:343
1899 Dendroctonus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 392, 415, 421
1899 Dendroctonus. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 317, fig. 247
1900 Dendroctonus. Smith. Cat. Ins. N. J. p. 364
1901 Dendroctonus. Felt. Forest, Fish & Game Com'n Rep't, 7:480-81, fig. 1, 2, 3
1901 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 28, pl. XII
1902 Dendroctonus. Felt. U. S. Div. Ent. Bul. 31, p. 64
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, pl. VII
1905 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 7:81, 145, 147, pl. IV
1906 Dendroctonus. Felt. N. Y. State Mus. Mem. 8, 2:333, 338, 342-45, 357, fig. 64, 65, 66
1907 Dendroctonus. Snow. Kan. Acad. Sci. Trans. 20, pt 2, p. 64

Habitat. Canada, United States.

Food plants. Pinus, Picea.

42 **valens** Lec.

1860 Dendroctonus. Leconte. Pac. R. R. Explor. Ins. v. 12, pt 2, p. 59
1868 =terebrans Oliv. Leconte. Am. Ent. Soc. Trans. 2:173
1873 Dendroctonus. Chapuis. Mem. Soc. Liège, p. 243
1876 =terebrans Oliv. Leconte. Am. Phil. Soc. Proc. 15:385
1877 =terebrans Oliv. Provancher. Faun. Ent. Can. 1:572
1895 =terebrans Oliv. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 146
1902 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 32, p. 12
1903 Dendroctonus. Gillette. Col. Agric. Rep't, 24:118-19
1903 Dendroctonus. Hopkins. Can. Ent. 35:61
1904 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 48, p. 19
1904 Dendroctonus. Powell. N. Y. Ent. Soc. Jour. 12:237-43
1905 Dendroctonus. Hopkins. Ent. Soc. Wash. Proc. 7:81, 147, pl. IV
1905 Dendroctonus. Currie. U. S. Div. Ent. Bul. 53, p. 74
1905 Dendroctonus. Hopkins. U. S. Div. Ent. Bul. 56, p. 11, 17
1908 Dendroctonus. Burke. Ent. Soc. Wash. Proc. 9:115

Habitat. Southern Canada, United States, Mexico.

Food plants. Pinus, Picea.

DOLURGUS Eichhoff

1868 Eichhoff. Berl. Ent. Zeit. p. 147
1873 Chapuis. Mem. Soc. Liège, p. 232

1876 Leconte. Am. Phil. Soc. Proc. 15:387
1878 Eichhoff. Rat. Tom. p. 83
1883 Leconte & Horn. Col. N. A. p. 524

43 **pumilus** Mannh.

1843 Hylastes. Mannerheim. Bul. Mosc. p. 297, (259)
1852 Hylastes. Mannerheim. Bul. Mosc. p. 356, (146)
1868 Dolurgus. Eichhoff. Berl. Ent. Zeit. p. 147
1868 Aphanarthrum. Leconte. Am. Ent. Soc. Trans. 2:152
1869 Dolurgus. Chapuis. Syn. Scol. p. 88
1873 Dolurgus. Chapuis. Mem. Soc. Liège, p. 232
1876 Dolurgus. Leconte. Am. Phil. Soc. Proc. 15:387, 437
1878 Dolurgus. Eichhoff. Rat. Tom. p. 83
1894 Dolurgus. Hamilton. Am. Ent. Soc. Trans. 21:35
1904 Dolurgus. Hopkins. U. S. Div. Ent. Bul. 48, p. 18
1905 Dolurgus. Currie. U. S. Div. Ent. Bul. 53, p. 73
Habitat. Alaska, Oregon.
Food plant. Picea sitchensis.

DRYOCOETES Eichhoff

1864 Eichhoff. Berl. Ent. Zeit. p. 38, 45, 46
1876 Leconte. Am. Phil. Soc. Proc. 15:358, 361
1877 Provancher. Faun. Ent. Can. 1:568
1878 Eichhoff. Rat. Tom. p. 283
1881 Eichhoff. Borkenk. p. 52, 261
1883 Leconte & Horn. Col. N. A. p. 518
1888 Bedel. Faun. Col. Seine, p. 396, 400
1895 Judeich-Nitsche. Forstins. 1:449, 451, fig.
1898 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 186, 189
1901 Barbey. Scol. l'Europ. Cent. p. 100
1906 Felt. N. Y. State Mus. Mem. 8, 2:337

44 **affaber** Mannh.

1852 Bostrichus. Mannerheim. Bul. Mosc. p. 359, (151)
1853 Bostrichus. Mannerheim. Bul. Mosc. 3:235, (212)
1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2:162
1876 Dryocoetes. Leconte. Am. Phil. Soc. Proc. 15:361
1878 Dryocoetes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1888 Dryocoetes. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Dryocoetes. Packard. U. S. Ent. Com'n, 5th Rep't, p. 810, 857, fig. 291
1893 Dryocoetes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 138; Bul. 32, p. 212
1895 Dryocoetes. Schwarz. Ent. Soc. Wash. Proc. 3:143
1906 Dryocoetes. Felt. N. Y. State Mus. Mem. 8, 2:752
Habitat. Alaska, British Columbia, Colorado, Lake Superior to Virginia, Quebec.
Food plants. Pinus, Picea, Abies.

45 **autographus** Ratz.

1837 Bostrichus. Ratzeburg. Forstins. 1:160, t. 13, fig. 6
1839 Bostrichus. Ratzeburg. Forstins. 1:194–95, t. 13, fig. 6
1848 Nördling. Stet. Ent. Zeit. p. 240
Ulrich. Dej. Cat. ed. 3. p. 332
1854 Bostrichus. Bach. Kaefer. p. 124, 130
1862 Bostrichus. Doebn. Zool. 2:179
1864 Dryocoetes. Eichhoff. Berl. Ent. Zeit. p. 39, t. i, fig. 18
1867 Dryocoetes. Ferrari. Borkenk. p. 27
1874 Dryocoetes. Redtenb. Fn. Aust. ed. 3, 2:380
1878 Dryocoetes. Eichhoff. Rat. Tom. p. 284
1881 Dryocoetes. Eichhoff. Borkenk. p. 261, 262
1888 Dryocoetes. Hamilton. Am. Ent. Soc. Trans. 16:159
1888 Dryocoetes. Bedel. Faun. Col. Seine, 6:400, 416
1890 Dryocoetes. Hamilton. Ent. Am. 6:44
1892 Dryocoetes. Hopkins. Ins. Life, 4:258
1893 Dryocoetes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 137; Bul. 32, p. 211
1894 Dryocoetes. Hamilton. Am. Ent. Soc. Trans. 21:35, 406
1894 Dryocoetes. Hopkins. Can. Ent. 26:279
1895 Dryocoetes. Schwarz. Ent. Soc. Wash. Proc. 3:143
1895 Tomicus. Judeich–Nitsche. Forstins. 1:454
1899 Dryocoetes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 445
1900 Dryocoetes. Smith. Cat. Ins. N. J. p. 363
1901 Dryocoetes. Barbey. Scol. l'Europ. Cent. p. 101, pl. III, fig. 20; pl. 15, fig. 1
1904 Dryocoetes. Schwarz. Harriman Alaska Exp. 8, Ins. pt 1, p. 185
1906 Dryocoetes. Felt. N. Y. State Mus. Mem. 8, 2:336, 337, 469, 650, 672, fig. 118
1907 Dryocoetes. Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 17 [Entomol. Blätter, Nr. 1 mit 6]

septentrionis Mannh.

1843 Bostrichus. Mannerheim. Bul. Mosc. p. 298, (261)
1853 Bostrichus. Mannerheim. Bul. Mosc. 3:325, (210)
1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2: 161
1876 Dryocoetes. Leconte. Am. Phil. Soc. Proc. 15:361
1877 Dryocoetes. Provancher. Faun. Ent. Can. 1:568
1878 Dryocoetes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1878 = autographus Ratz. Eichhoff. Rat. Tom. p. 284
1881 = autographus Ratz. Eichhoff. Borkenk. p. 262
1886 = autographus Ratz. Schwarz. Ent. Am. 2:42
1888 = autographus Ratz. Bedel. Faun. Col. Seine, 6:416
1889 = autographus Ratz. Hamilton. Am. Ent. Soc. Trans. 16:159
1893 = autographus Ratz. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 137; Bul. 32, p. 211
1907 Dryocoetes. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

semicastaneus Mannh.

1852 Bostrichus. Mannerheim. Bul. Mosc. p. 358
1876 =septentrionis Mannh. Leconte. Am. Phil. Soc. Proc. 15:361
1878 =autographus Ratz. Eichhoff. Rat. Tom. p. 284
1888 =autographus Ratz. Hamilton. Am. Ent. Soc. Trans. 16:159
1888 =autographus Ratz. Bedel. Faun. Col. Seine, 6:416

villosus Herbst.

1793 Bostrichus. Herbst. Kaefer. 5:121 (?)
1813 Bostrichus. Gyllenhal. In. Suec. 3:361
1878 =autographus Ratz. Eichhoff. Rat. Tom. p. 284
1881 =autographus Ratz. Eichhoff. Borkenk. p. 262
Habitat. Alaska, Canada, northern United States, New Mexico, Europe, Japan.
Food plants. Pinus, Picea, Abies.

46 eichhoffi Hopk.

1894 Dryocoetes. Hopkins. Can. Ent. 26:279
1903 Dryocoetes. Hopkins. U. S. Dep't Agric. Yearbook, p. 320
1906 Dryocoetes. Felt. N. Y. State Mus. Mem. 8, 2:336, 337
Habitat. New York, Montreal Island.
Food plant. Betula lutea.

47 granicollis Lec.

1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2:162
1876 Dryocoetes. Leconte. Am. Phil. Soc. Proc. 15:361
1878 Dryocoetes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1891 Dryocoetes. Schwarz. Ent. Soc. Wash. Proc. 2:79
1893 Dryocoetes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 138; Bul. 32, p. 212
1894 Dryocoetes. Hopkins. Can. Ent. 26:279
1897 Dryocoetes. Chittenden. U. S. Div. Ent. Bul. 7. n. s. p. 72
1899 Dryocoetes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 251, 346, 445
1900 Dryocoetes. Smith. Cat. Ins. N. J. p. 363
1906 Dryocoetes. Felt. N. Y. State Mus. Mem. 8, 2:720, 753
Habitat. Pennsylvania, District of Columbia, Virginia, West Virginia, Colorado.
Food plants. Picea, Castanea, Juglans cinerea.

ECCOPTOGASTER Herbst.

1793 Herbst. Die Kafer. 5:124
1837 Ratzeburg. Forstins. 1:168
1839 Ratzeburg. Forstins. 1:225
1868 Zimmerman. Am. Ent. Soc. Trans. 2:142
1903 Ganglbauer. Munch. Koleopt. Zeit. 1:311, footnote
1907 Trèdl. Nahrungs. Verbreit. Borkenk. Europ. [Entomol. Blätter, Nr. 1 mit. 6:5]

COPTOGASTER Illiger

1807 Illiger. Mag. für Ins. 6:321
1888 Bedel. Faun. Col. Seine, 6:386

SCOLYTUS Geoffroy

1762 Scolytus. Geoffroy. Hist. Ins. Envir. Paris. 1:309
1864 Eichhoff. Berl. Ent. Zeit. p. 31, 44, 46
1866 Lacordaire. Col. 7:386, 387
1869 Chapuis. Syn. Scol. p. 53
1873 Chapuis. Mem. Soc. Liège, p. 261
1876 Leconte. Am. Phil. Soc. Proc. 15:370, 371
1881 Eichhoff. Borkenk. p. 39, 148
1883 Leconte & Horn. Col. N. A. p. 520
1888 Bedel. Faun. Col. Seine, 6:386
1895 Judeich-Nitsche. Forstins. 1:443
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 120
1901 Barbey. Scol. l'Europ. Cent. p. 34

48 **californicus** Lec.

1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:165
1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 372
1886 Scolytus. Smith. Ent. Am. 2:127
1907 Scolytus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. California, New Mexico.

Food plants.

49 **fagi** Walsh

1867 Scolytus. Walsh. Pract. Ent. 2:58
1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:166
1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 372
1886 Scolytus. Smith. Ent. Am. 2:127
1890 Scolytus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 520, 611
1906 Scolytus. Felt. N. Y. State Mus. Mem. 8, 2:722

Habitat. Illinois, Texas.

Food plants. Celtis occidentalis, Fagus americana.

50 **muticus** Say

1826 Scolytus. Say. Acad. Nat. Sci. Phila. Jour. 3:323; ed. Lec. 2:182
1867 Scolytus. Walsh. Prac. Ent. 2:58
1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:166
1873 Scolytus. Riley. Ins. Inj. Mo. 5th Rep't, p. 105, 108
1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 372
1886 Scolytus. Smith. Ent. Am. 2:127
1890 Scolytus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 612
1892 Scolytus. Hopkins. Ins. Life. 4:257, 259
1893 Scolytus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 140 etc.; Bul. 32, p. 212
1894 Scolytus. Hopkins. Can. Ent. 26:280
1896 Scolytus. Klages. Ent. News, 7:11, 12, 282

1897 Scolytus. Klages. Ent. News, 8:90
1903 Scolytus. Hopkins. U. S. Dep't Agric. Yearbook, p. 320
1905 Scolytus. Hopkins. Ent. Soc. Wash. Proc. 7:145, pl. 4
1906 Scolytus. Felt. N. Y. State Mus. Mem. 8, 2:725
Habitat. Pennsylvania, Missouri.
Food plant. Celtis americana.

51 **praeceps** Lec.

1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 373
1899 Scolytus. Hopkins. U. S. Div. Ent. Bul. 21, p. 16
1904 Scolytus. Hopkins. U. S. Div. Ent. Bul. 48, p. 21
1905 Scolytus. Currie. U. S. Div. Ent. Bul. 53, p. 76
1907 Scolytus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217
Habitat. California, Idaho.
Food plant. Abies.

52 **quadrispinosus** Say

1826 Scolytus. Say. Acad. Nat. Sci. Phila. Jour. 3:323; ed. Lec. 2:182
1867 Scolytus. Walsh. Prac. Ent. 2:58
1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:165
1873 Scolytus. Riley. Inj. Ins. Mo. 5th Rep't, p. 105-7, sup. p. 54
1874 Scolytus. Le Baron. Nox. Ins. Ill. Rep't, p. 146
1876 Scolytus. Thomas. Nox. Ins. Ill. Rep't, p. 145
1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371
1883 Scolytus. Saunders. Ont. Ent. Soc. 14:51
1886 Scolytus. Smith. Ent. Am. 2:127
1890 Scolytus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 294, 860
1891 Scolytus. Hamilton. Ins. Life. 4:130
1892 Scolytus. Hopkins. Ins. Life, 4:258
1893 Scolytus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 139 etc.; Bul. 32, p. 212
1894 Scolytus. Hopkins. Can. Ent. 26:280
1894 Scolytus. Smith. Ent. News, 6:294
1895 Scolytus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1895 Scolytus. Smith. N. J. Agric. Exp. Sta. Rep't, p. 465-74
1896 Scolytus. Klages. Ent. News, 7:12
1896 Scolytus. Osborn. Iowa Agric. Exp. Sta. Bul. 33, p. 594, fig. 1
1899 Scolytus. Hopkins. Ent. Soc. Wash. Proc. 4:344
1899 Scolytus. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 304, 315, fig. 245
1900 Scolytus. Smith. Cat. Ins. N. J. p. 363
1901 Scolytus. Britton. Ct. Dep't Agric. Rep't, p. 267, pl. 8, fig. 2
1905 Scolytus. Gossard. Fla. Agric. Exp. Sta. Bul. 79, p. 309, 311
1905 Scolytus. Currie. U. S. Div. Ent. Bul. 53, p. 101
1905 Scolytus. Felt. N. Y. State Mus. Mem. 8, 1:257, 275-79
1906 Scolytus. Felt. N. Y. State Mus. Mem. 8, 2:336, 446, 502, 504, 505

caryae Riley

1867 Scolytus. Riley. Prairie Farmer, Feb. 2, Aug. 10, 1872
1867 Scolytus. Walsh. Prac. Ent. 2:58

1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:166
1873 Scolytus. Riley. Nox. Ins. Mo. 5:103-7, 108, fig. 38, 371; sup. p. 54
1876 =quadrispinosus Say. Leconte. Am. Phil. Soc. Proc. 15:371
1881 =quadrispinosus Say. Riley. U. S. Ent. Com'n Bul. 6, p. 54

Habitat. New York to Georgia and Missouri, Quebec.

Food plant. Hicoria.

53 **rugulosus** Ratz.

1837 Eccoptogaster. Ratzeburg. Forstins. 1:187, t. X, fig. 10
1839 Eccoptogaster. Ratzeburg. Forstins. 1:230, t. X, fig. 10
1869 Scolytus. Chapuis. Syn. Scol. p. 60, 21
1878 Scolytus. Leconte. Am. Phil. Soc. Proc. 17:626
1880 Scolytus. Riley. Am. Ent. 3:298
1881 Scolytus. Eichhoff. Borkenk. p. 157-58
1882 Scolytus. Penhallow. Houghton Farm Exp. Sta. Pub. ser. 3. 5:38
1884 Scolytus. Hagen. Can. Ent. 16:161-63
1884 Scolytus. Garman. Georgia Crop. Rep't, Aug. 16
1885 Scolytus. Hamilton. Can. Ent. 17:48
1886 Scolytus. Scudder. Can. Ent. 18:195
1886 Scolytus. Smith. Ent. Am. 2:127
1888 Scolytus. Schwarz. Ent. Soc. Wash. Proc. 1:30
1888 Scolytus. Bedel. Faun. Col. Seine, 6:388, 406
1889 Scolytus. Atkinson. S. C. Exp. Sta. Bul. 4. n. s. p. 79, 80
1889 Scolytus. Howard. Ent. Soc. Wash. Proc. 1:129
1889 Scolytus. Forbes. Ill. Hort. Soc. Trans. 5:23, 245
1889 Scolytus. Lintner. 4th Rep't, p. 103-7, fig. 41
1889 Scolytus. Hamilton. Am. Ent. Soc. Trans. 16:159
1890 Scolytus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 860
1891 Scolytus. Forbes. Ill. 6th Rep't, p. 1-20, pl. 1; Ill. Agric. Exp. Bul. 15, p. 469-78
1891 Scolytus. Riley & Howard. Ins. Life, 3:298
1893 Scolytus. Chittenden. Ins. Life, 5:250
1893 Scolytus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 140 etc.
1894 Scolytus. Hamilton. Am. Ent. Soc. Trans. 21:407
1894 Scolytus. Sturgis. Ct. Agric. Exp. Sta. Rep't, p. 142
1894 Scolytus. Murtfeldt. U. S. Div. Ent. Bul. 32. o. s. p. 40
1894 Scolytus. Smith. N. J. Agric. Exp. Sta. Rep't, p. 431, 565-72, fig. 43
1894 Scolytus. Troop. Ind. Agric. Exp. Sta. Bul. 53, p. 126-30, fig. 1-3
1894 Scolytus. Hopkins. Can. Ent. 26:280
1895 Scolytus. Ky. Dep't Agric. Rep't, p. 41
1895 Scolytus. Webster. Ohio Agric. Exp. Sta. Bul. 68, p. 23-25, fig. 3, 5, 6
1895 Scolytus. Sturgis. Ct. Dep't Agric. Rep't, p. 191
1895 Scolytus. Judeich-Nitsche. Forstins. 1:444, 486
1896 Scolytus. Klages. Ent. News, 7:12
1896 Scolytus. Lintner. 11th N. Y. Rep't, p. 270
1896 Scolytus. Ormerod. Rep't 1895, p. 76
1897 Scolytus. Britton. Ct. Exp. Rep't 1896, p. 240-44, 283, pl. 6
1897 Scolytus. Bogue. Okla. Agric. Exp. Sta. Bul. 26, p. 16-17, fig. 1-4
1897 Scolytus. Butz. Penn. Agric. Exp. Sta. Bul. 37, p. 26, fig. 6

1898 Scolytus. Ormerod. Hdbk. Ins. Orchard Fruits, p. 197–201, 2 fig.
1898 Scolytus. Chittenden. U. S. Div. Ent. Cir. 29
1898 Scolytus. Stedman. Mo. Agric. Exp. Sta. Bul. 44, p. 1–12, fig. 1–4
1898 Scolytus. Starnes. Ga. Agric. Exp. Sta. Bul. 42, p. 227, fig.
1898 Scolytus. Smith. N. J. Dep't Agric. Rep't, p. 385
1898 Scolytus. Baker. Ala. Agric. Exp. Sta. Bul. 90, p. 33–37, fig. 4–6
1899 Scolytus. Johnson. Ent. Soc. Wash. Proc. 4:344
1899 Scolytus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 295
1899 Scolytus. Petit. Mich. Agric. Exp. Sta. Bul. 175, p. 363–65, fig. 19
1899 Scolytus. Fletcher. Ont. Ent. Soc. 30:110
1899 Scolytus. Chittenden. U. S. Div. Ent. Bul. 19, p. 96, 97
1899 Scolytus. Webster. Ohio Agric. Exp. Sta. Bul. 112, p. 143–49
1899 Scolytus. Hopkins. Ent. Soc. Wash. Proc. 4:344
1899 Scolytus. Lugger. Minn. Agric. Sta. Bul. 66, p. 313–15, fig. 243
1900 Scolytus. Smith. Cat. Ins. N. J. p. 364
1900 Scolytus. Sherman. N. C. Bd Agric. Rep't, p. 98
1900 Scolytus. Lochhead. Ont. Ent. Soc. 31:72
1900 Scolytus. Lowe. N. Y. Agric. Exp. Sta. Bul. 180, p. 122–28
1900 Scolytus. Johnson. N. Y. Agric. Exp. Sta. Bul. 195, p. 393
1901 Scolytus. Quaintance. Md. Agric. Exp. Sta. Rep't, p. 103, fig. 20
1901 Scolytus. Barbey. Scol. l'Europ. Cent. p. 39, pl. 1, fig. 14; pl. 3, fig. 2
1903 Scolytus. Sherman. N. C. Agric. Exp. Sta. Bul. 186, p. 5–6, 10, 21, fig. 1
1903 Scolytus. Washburn. Minn. Agric. Exp. Sta. Bul. 84, p. 57, 81, 91, fig. 30
1904 Scolytus. Titus & Pratt. U. S. Div. Ent. Bul. 47, p. 20.
1904 Scolytus. Petit. Mich. Agric. Exp. Sta. Bul. 24, p. 34, 53–55, 59, fig. 53
1904 Scolytus. Starnes. Ga. Agric. Exp. Sta. Bul. 67, p. 253–54, fig. 11
1905 Scolytus. Chittenden. U. S. Dep't Agric. Yearbook, p. 346, 347, fig. 88
1905 Scolytus. Smith. Ga. State Bd Ent. Bul. 17, p. 87–89, fig. 14
1905 Scolytus. Currie. U. S. Div. Ent. Bul. 53, p. 13, 19, 20
1905 Scolytus. Gossard. Ohio Agric. Exp. Sta. Bul. 164, p. 19, 22
1905 Scolytus. Symons. Md. Agric. Exp. Sta. Bul. 101, p. 129–30, 146, fig. 4
1906 Scolytus. Felt. N. Y. State Mus. Mem. 8, 2:336, 453, 503
1907 Eccoptogaster. Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 6

Habitat. Europe, United States, Canada.

Food plants. Prunus, Pyrus, Crataegus.

54 **subscaber** Lec.

1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 373
1904 Scolytus. Hopkins. U. S. Div. Ent. Bul. 48, p. 21
1905 Scolytus. Currie. U. S. Div. Ent. Bul. 53, p. 76
1908 Scolytus. Burke. Ent. Soc. Wash. Proc. 9:115

Habitat. California to British Columbia, Utah.

Food plant. Abies.

55 **sulcatus** Lec.

1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:167
1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 373

Habitat. New York.

Food plants.

56 **unispinosus** Lec.

1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 372
1878 Scolytus. Leconte. Am. Phil. Soc. Proc. 17:626
1886 Scolytus. Smith. Ent. Am. 2:125-27
1890 Scolytus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 859, fig. 293
1894 Scolytus. Schwarz. Ins. Life, 7:255
1899 Scolytus. Hopkins. U. S. Div. Ent. Bul. 21, p. 16
1904 Scolytus. Hopkins. U. S. Div. Ent. Bul. 48, p. 20
1905 Scolytus. Currie. U. S. Div. Ent. Bul. 53, p. 76

Habitat. Pacific coast and Rocky mountain region of United States.

Food plants. Pseudotsuga mucronata, Larix occidentalis (?).

57 **ventralis Lec.**

1868 Scolytus. Leconte. Am. Ent. Soc. Trans. 2:167
1876 Scolytus. Leconte. Am. Phil. Soc. Proc. 15:371, 373

Habitat. Washington.

Food plants.

ERINEOPHILUS Hopkins

1902 Hopkins. Ent. Soc. Wash. Proc. 5:34

58 **schwarzi** Hopk.

1902 Erineophilus. Hopkins. Ent. Soc. Wash. Proc. 5:34-38, fig. 2

Habitat. Florida.

Food plant. Ficus.

GNATHOTRICHUS Eichhoff

1868 Eichhoff. Berl. Ent. Zeit. p. 275
1876 Leconte. Am. Phil. Soc. Proc. 15:350
1878 Eichhoff. Rat. Tom. p. 405
1883 Leconte & Horn. Col. N. A. p. 517
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 246

59 **asperulus** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:155
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:350
1878 Cryphalus. Eichhoff. Rat. Tom. p. 202
1886 Gnathotrichus. Schwarz. Ent. Am. 2:40
1888 Gnathotrichus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Gnathotrichus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 720
1906 Gnathotrichus. Felt. N. Y. State Mus. Mem. 8, 2:726

Habitat. Washington, D. C., Virginia.

Food plant. Pinus.

60 **materiarius** Fitch

1858 Tomicus. Fitch. Nox. Ins. N. Y. 4th Rep't, p. 40-42
1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:143

1868 Gnathotrichus. Eichhoff. Berl. Ent. Zeit. p. 275
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:350
1877 Cryphalus. Provancher. Faun. Ent. Can. 1:566
1878 Gnathotrichus Eichhoff. Rat. Tom. p. 406
1886 Gnathotrichus. Schwarz. Ent. Am. 2:40
1888 Gnathotrichus. Schwarz. Ent. Soc. Wash. Proc. 1:44, 80
1890 Gnathotrichus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 718–20, 816, fig. 249
1893 Gnathotrichus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 128; Bul. 32, p. 208
1894 Gnathotrichus. Hopkins. Can. Ent. 26:277
1895 Gnathotrichus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1897 Gnathotrichus. Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 30
1899 Gnathotrichus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 434, 442, fig. 11, 12
1901 Gnathotrichus. Felt. Forest, Fish & Game Com'n Rep't, 7:495–96
1904 Gnathotrichus. Hopkins. U. S. Div. Ent. Bul. 48, p. 15
1905 Gnathotrichus. Hopkins. Ent. Soc. Wash. Proc. 7:73
1905 Gnathotrichus. Garman. Ky. Agric. Exp. Sta. Bul. 120, p. 69
1905 Gnathotrichus. Currie. U. S. Div. Ent. Bul. 53, p. 70
1906 Gnathotrichus. Felt. N. Y. State Mus. Mem. 8, 2:339, 371–72, fig. 75
1907 Gnathotrichus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

corthyloides Eich.

1868 Gnathotrichus. Eichhoff. Berl. Ent. Zeit. p. 273
1876 = materiarius Fitch. Leconte. Am. Phil. Soc. Proc. 15:350
1878 = materiarius Fitch. Eichhoff. Rat. Tom. p. 406

Habitat. Eastern United States and Canada to Texas.

Food plants. Pinus, Picea.

61 **retusus** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:155
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:350
1878 Gnathotrichus. Eichhoff. Rat. Tom. p. 406, 511
1893 Gnathotrichus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 128; Bul. 32, p. 208
1894 Gnathotrichus. Hopkins. Can. Ent. 26:277
1906 Gnathotrichus. Felt. N. Y. State Mus. Mem. 8, 2:752
1907 Gnathotrichus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. Nevada, Arizona, California.

Food plant. Pinus.

62 **sulcatus** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:155
1876 = retusus Lec. Leconte. Am. Phil. Soc. Proc. 15:350
1878 = retusus Lec. (?) Eichhoff. Rat. Tom. p. 408, 512
1904 Gnathotrichus. Hopkins. U. S. Div. Ent. Bul. 48, p. 15
1905 Gnathotrichus. Hopkins. Ent. Soc. Wash. Proc. 7:73

1905 Gnathotrichus. Currie. U. S. Div. Ent. Bul. 53, p. 70
1907 Gnathotrichus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. Pacific coast and Rocky mountain region, Mexico.

Food plants. Pinus, Tsuga, Pseudotsuga, Abies, Picea, Thuja, Sequoia.

HYLASTINUS Bedel

1888 Bedel. Faun. Col. Seine, 6:388

63 obscurus Marsh.

1802 Hylesinus. Marsham. Ent. Brit. p. 57
1869 Hylesinus. Chapman. Ent. M. Mag. 6:7
1888 Hylastinus. Bedel. Faun. Col. Seine, 6:388, 390, 408
1894 Hylastinus. Riley & Howard. Ins. Life, 7:273
1894 Hylastes. Davis. Mich. Agric. Exp. Sta. Bul. 116, p. 41, 47
1896 Hylastes. Hopk. & Rumsey. W. Va. Agric. Bul. 44, p. 264
1899 Hylastes. Webster. Ohio Agric. Exp. Sta. Bul. 112
1900 Hylastinus. Fletcher. Ont. Ent. Soc. 31:67
1901 Hylastes. Webster. Ont. Ent. Soc. 32:64
1907 Hylastinus. Webster. U. S. Div. Ent. Bul. 67
1907 = trifolii Müller. Trédl. Nahrungs. Verbreit. Borkenk. Europ. p. 8, 20 [Entomol. Blätter, Nr 1 mit 6]

trifolii Müller

1807 Hylesinus. Müller. Mem. Soc. Deprtm. M. Tonerre, 1:47
1844 Hylastes. Schmitt. Stet. Ent. Zeit. p. 389–97
1864 Hylesinus. Taschenburg. Naturg. wirbell. Thiere, p. 272–73
1869 Hylastes. Chapuis. Syn. Scol. p. 22, 23, (79)
1873 Hylastes. Chapuis. Mem. Soc. Liege, p. 231
1878 Hylesinus. Riley. U. S. Dep't Agric. Rep't, p. 248
1880 Hylesinus. Riley. Am. Ent. 3:180
1881 Hylastes. Eichhoff. Borkenk. p. 97
1881 Hylastes. Saunders. Ont. Ent. Soc. p. 43–44, fig. 15
1881 Hylesinus. Lintner. N. Y. Agric. Soc. Rep't (1880), p. 16
1881 Hylesinus. Chase. Wis. Agric. Soc. Trans. 19:465
1882 Hylastes. Saunders. Ont. Ent. Soc. 12:43
1882 Hylastes. Lintner. 1st N. Y. Rep't, p. 247
1886 Hylesinus. Schwarz. Ent. Am. 2:55
1888 Hylesinus. Weed. Ohio Agric. Exp. Sta. Rep't, p. 133, fig. 1
1888 = obscurus Marsh. Bedel. Faun. Col. Seine, 6:391
1889 Hylastes. Hamilton. Am. Ent. Soc. Trans. 16:159
1889 Hylastes. Riley & Howard. Ins. Life, 1:218
1890 Hylesinus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 227, fig. 72
1891 Hylastes. Weed. Ohio State Bul. 4, no. 2, ser. 2, p. 53–55
1891 Hylesinus. Fletcher. Can. Exp. Farm Rep't
1892 Hylesinus. Smith. Ins. Life, 5:99
1893 Hylesinus. Webster. Ohio Agric. Exp. Sta. Bul. 51, p. 120
1893 Hylesinus. Webster. Ind. Acad. Soc. Proc. p. 84
1894 Hylastes. McCarthy. N. C. State Bul. 98

1894 Hylesinus. Webster. Ohio An. Rep't, xxxi, xxxvii
1894 Hylastes. Hamilton. Am. Ent. Soc. Trans. 21:406
1895 Hylesinus. Judeich-Nitsche. Forstins. 1:454, 488
1896 Hylastes. Webster. Ohio Agric. Exp. Sta. Bul. 68, p. 31-35, pl. III, fig. 2
1899 Hylesinus. Lochhead. Ont. Ent. Soc. 30, p. 71
1899 Hylesinus. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 317, fig. 248
1901 Hylastes. Barbey. Scol. l'Europ. Cent. p. 47, pl. 23, fig. 23
1907 =obscurus Marsh. Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 8

Habitat. Europe, United States, Canada.

Food plants. Trifolium pratense, T. medium, T. hybridum, Spartium scoparium, Ononis natrix, Ulex europeus.

HYLESINUS Fabricius

1801 Fabricius. Syst. El. 2:390
1836 Erichson. Wieg. Archiv. 2:56
1864 Eichhoff. Berl. Ent. Zeit. p. 29, 44, 46
1866 Lacordaire. Col. 7:362
1868 Zimmermann. Am. Ent. Soc. Trans. 2:148
1869 Chapuis. Syn. Scol. p. 29
1873 Chapuis. Mem. Soc. Liège, p. 237
1876 Leconte. Am. Phil. Soc. Proc. 15:378
1877 Provancher. Faun. Ent. Can. 1:571
1881 Eichhoff. Borkenk. p. 133
1883 Leconte & Horn. Col. N. A. p. 523
1888 Bedel. Faun. Col. Seine, 6:389, 392. (Hylosinus)
1895 Judeich-Nitsche. Forstins. 1:444, 445, fig.
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 142, 154
1901 Barbey. Scol. l'Europ. Cent. p. 59

64 aculeatus Say

1826 Hylesinus. Say. Acad. Nat. Sci. Phila. Jour. 3:322; ed. Lec. 2:181
1868 Hylesinus. Zimmermann. Am. Ent. Soc. Trans. 2:148
1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:379, 437
1877 Hylesinus. Provancher. Faun. Ent. Can. 1:571
1878 Hylesinus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1886 Hylesinus. Knaus. Ent. Am. 2:76
1889 Hylesinus. Schwarz. Ent. Soc. Wash. Proc. 1:140
1890 Hylesinus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 543
1891 Hylesinus. Davis. Ins. Life, 4:66
1893 Hylesinus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 142 etc.; Bul. 32, p. 213
1894 Hylesinus. Hopkins. Can. Ent. 26:280
1896 Hylesinus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:607
1900 Hylesinus. Smith. Cat. Ins. N. J. p. 365
1903 Meliobius. Hopkins. U. S. Dep't Agric. Yearbook, p. 320
1904 Hylesinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 20

1905 Hylesinus. Felt. N. Y. State Mus. Mem. 8, 1:257, 288
1905 Hylesinus. Currie. U. S. Div. Ent. Bul. 53, p. 75
1907 Hylesinus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218
1908 Hylesinus. Fiske. Ent. Soc. Wash. Proc. 9:24

pruinosus Eich.

1868 Hylesinus. Eichhoff. Berl. Ent. Zeit. p. 149
1868 (?) = aculeatus Say. Leconte. Am. Ent. Soc. Trans. 2:177
1869 Hylesinus. Chapuis. Syn. Scol. p. 32
1873 Hylesinus. Chapuis. Mem. Soc. Liege, p. 240
1876 = aculeatus Say. Leconte. Am. Phil. Soc. Proc. 15:379
1896 (?) = aculeatus Say. Eich. & Schwarz. U. S. Nat. Mus. Proc. 18:607

Habitat. Canada, United States (Atlantic to Pacific).
Food plant. Fraxinus.

65 **aspericollis** Lec.

1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:379, 380
1899 Hylesinus. Hopkins. U. S. Div. Ent. Bul. 21, p. 16
1904 Hylesinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 20
1905 Hylesinus. Currie. U. S. Div. Ent. Bul. 53, p. 75

Habitat. California, Oregon, Washington.
Food plant. Alnus rhombifolia.

66 **fasciatus** Lec.

1868 Hylesinus. Leconte. Am. Ent. Soc. Trans. 2:170
1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:379, 380

Habitat. Pennsylvania.
Food plants.

67 **granulatus** Lec.

1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:175
1876 Hylurgops. Leconte. Am. Phil. Soc. Proc. 15:390
1904 Hylesinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 19
1905 Hylesinus. Currie. U. S. Div. Ent. Bul. 53, p. 75
1905 Hylesinus. Burke. Ent. Soc. Wash. Proc. 7:89

Habitat. Oregon, Washington, California.
Food plant. Grand fir (Abies grandis)?

68 **imperialis** Eich.

1868 Hylesinus. Eichhoff. Berl. Ent. Zeit. p. 149
1868 Hylesinus. Leconte. Am. Ent. Soc. Trans. 2:169
1869 Hylesinus. Chapuis. Syn. Scol. p. 32 (aculeatus)
1873 Hylesinus. Chapuis. Mem. Soc. Liege, p. 240
1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:379
1896 Hylesinus. Eich. & Schwarz. U. S. Nat. Mus. Proc. 18:607

Habitat. Dakota, Arizona, Wisconsin, Georgia, New York.
Food plants.

69 **nebulosus** Lec.

1859 Hylesinus. Leconte. Acad. Nat. Sci. Phila. Proc. p. 285
1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:380
1894 Hylesinus. Hamilton. Am. Ent. Soc. Trans. 21:35
1904 Hylesinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 20
1905 Hylesinus. Currie. U. S. Div. Ent. Bul. 53, p. 75

Habitat. British Columbia to California, east to Idaho and Colorado.

Food plant. Pseudotsuga mucronata.

70 **sericeus** Mannh.

1843 Hylurgus. Mannerheim. Bul. Mosc. p. 296, (256)
1852 Hylurgus. Mannerheim. Bul. Mosc. p. 356, (144)
1852 Hylesinus. Mannerheim. Bul. Mosc. p. 385
1868 Hylesinus. Leconte. Am. Ent. Soc. Trans. 2:170
1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:379, 380
1892 Hylesinus. Schwarz. Ent. Soc. Wash. Proc. 2:239
1894 Hylesinus. Schwarz. Ins. Life, 7:254–56
1894 Hylesinus. Hamilton. Am. Ent. Soc. Trans. 21:35
1904 Hylesinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 20
1905 Hylesinus. Currie. U. S. Div. Ent. Bul. 53, p. 75

Habitat. Alaska to California.

Food plant. Shore pine.

HYLURGOPS Leconte

1876 Leconte. Am. Phil. Soc. Proc. 15:389
1883 Leconte & Horn. Col. N. A. p. 525
1888 Bedel. Faun. Col. Seine, p. 389, 408

71 **(?) cristatus** Mannh.

1853 Hylastes. Mannerheim. Bul. Mosc. p. 239, (220)
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:177
1876 (?) Hylurgops. Leconte. Am. Phil. Soc. Proc. 15:390
1894 Hylastes. Hamilton. Am. Ent. Soc. Trans. 21:36

Habitat. Alaska.

Food plants.

72 **(?) glabratus** Zett.

1828 Hylurgus. Zetterstedt. Fn. Ins. Lapp. p. 343
1838 Hylurgus. Zetterstedt. Ins. Lapp. 192, 5
1871 Hylastes. Salb. Berl. Ent. Zeit. p. 206
1881 Hylastes. Eichhoff. Borkenk. p. 91
1886 Hylastes. Schwarz. Ent. Am. 2:56
1888 Hylurgops. Hamilton. Am. Ent. Soc. Trans. 16:159
1888 Tomicus. Bedel. Faun. Col. Bassin Seine, Rynch. p. 390
1891 Hylastes. Hamilton. Ins. Life, 4:132
1893 Hylurgops. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 144 etc.; Bul. 32, p. 213

1894 Hylastes. Hamilton. Am. Ent. Soc. Trans. 21:406
1894 Hylurgops. Hopkins. Can. Ent. 26:280
1894 Hylastes. Blandford. Ent. Soc. Lond. p. 58
1895 Hylastes. Judeich-Nitsche. Forstins. 1:447, 523
1899 Hylurgops. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 449 etc.
1900 Hylurgops. Smith. Cat. Ins. N. J. p. 365
1901 =decumanus Er. Barbey. Scol. l'Europ. Cent. p. 45, pl. 1, fig. 21
1906 Hylurgops. Felt. N. Y. State Mus. Mem. 8, 2:649, 665-66, fig. 194
1907 Hylastes. Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 9

decumanus Er.

1836 Hylastes. Erichson. Wieg. Archiv. 2:51, 10
1837 Hylesinus. Ratzeburg. Forstins. 1:182; 1839, p. 222
1869 Hylastes. Chapuis. Syn. Scol. p. 20, 14; 1873, p. 228
1881 =glabratus Zett. Eichhoff. Borkenk. p. 92
1894 =glabratus Zett. Hamilton. Am. Ent. Soc. Trans. 21:407
1901 Hylastes. Barbey. Scol. l'Europ. Cent. p. 45, pl. 1, fig. 21
Habitat. Europe, Siberia, United States (?).
Food plant. Picea.

73 **pinifex** Fitch

1851 Hylastes. Fitch. N. Y. Agric. Soc. Trans. p. 43
1858 Hylastes. Fitch. Nox. Ins. N. Y. p. 729
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:176
1876 Hylurgops. Leconte. Am. Phil. Soc. Proc. 15:390
1877 Hylastes. Provancher. Faun. Ent. Can. 1:574
1878 Hylurgops. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1883 Hylurgops. Packard. U. S. Ent. Com'n, 3d Rep't, p. 280, pl. XXII
1886 =glabratus Zett. Schwarz. Ent. Am. 2:56
1888 Hylurgops. Schwarz. Ent. Soc. Wash. Proc. 1:80
1888 =glabratus Zett. Hamilton. Am. Ent. Soc. Trans. 16:159
1890 Hylurgops. Packard. U. S. Ent. Com'n, 5th Rep't, p. 709, 710, 722, 826, fig. 252, 254
1890 =glabratus Zett. Hamilton. Ent. Am. 6:44
1891 =glabratus Zett. Hamilton. Ins. Life, 4:132
1893 =glabratus Zett. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 144
1894 =glabratus Zett. Blandford. Ent. Soc. Lond. p. 58
1898 Hylastes. Blandford. Ent. News, 9:6
1900 Hylastes. Smith. Cat. Ins. N. J. p. 365
Habitat. Eastern United States and Canada.
Food plant. Pinus.

74 **rufipes** Eich.

1868 Hylastes. Eichhoff. Berl. Ent. Zeit. p. 147
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:177
1873 Hylastes. Chapuis. Mem. Soc. Liege, p. 231
1876 (?) Hylurgops. Leconte. Am. Phil. Soc. Proc. 15:390
1896 Hylastes. Eichhoff. U. S. Nat. Mus. Proc. 18:605, 606, 610

opaculus Lec.

1868 Hylesinus. Leconte. Am. Ent. Soc. Trans. 2:170
1876 Hylesinus. Leconte. Am. Phil. Soc. Proc. 15:379, 380
1878 Hylesinus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1879 Hylesinus. Riley. U. S. Dep't Agric. Ent. Rep't, p. 45
1884 Hylesinus. Harrington. Can. Ent. 16:218
1885 Hylesinus. Moffat. Ont. Ent. Soc. 15:23
1889 Hylesinus. Schwarz. Ent. Soc. Wash. Proc. 1:149, 176
1890 Hylesinus. Perkins. Vt. State Bd Agric. Rep't, p. 67, fig. 50
1890 Hylesinus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 227, 544, fig. 2
1890 Hylesinus. Caulfield. Ont. Ent. Soc. 21:75
1893 Hylesinus. Hopkins. W. Va. Agric. Sta. Bul. 31, p. 142 etc.; Bul. 32, p. 213
1895 Hylesinus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 = rufipes Eich. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:605, 606, 610
1898 Hylastes. Blandford. Ent. News, 9:5
1899 Hylesinus. Garman. Ky. Sta. Bul. 84, p. 60, 73–75
1900 Hylesinus. Smith. Cat. Ins. N. J. p. 365
1905 Hylesinus. Felt. N. Y. State Mus. Mem. 8, 1:257, 288

Habitat. New York, West Virginia and northward into Canada.

Food plants. Ulmus, Fraxinus.

75 **rugipennis** Mannh.

1843 Hylurgus. Mannerheim. Bul. Mosc. p. 297, (258)
1853 Hylastes. Mannerheim. Bul. Mosc. p. 238, (218)
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:176
1873 Hylastes. Chapuis. Mem. Soc. Liege, p. 228
1876 Hylurgops. Leconte. Am. Phil. Soc. Proc. 15:390
1894 Hylurgops. Am. Ent. Soc. Trans. 21:36
1904 Hylurgops. Schwarz. Harriman Rep't, Alaska Exp. pt 8; Insects, pt 1, p. 185
1904 Hylurgops. Hopkins. U. S. Div. Ent. Bul. 48, p. 19
1905 Hylurgops. Currie. U. S. Div. Ent. Bul. 53, p. 74
1905 Hylurgops. Hopkins. Ent. Soc. Wash. Proc. 7:81

Habitat. Alaska to California and New Mexico.

Food plants. Pinus, Picea, Abies, Pseudotsuga.

76 **subcostulatus** Mannh.

1853 Hylastes. Mannerheim. Bul. Mosc. p. 239, (219)
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:176
1876 Hylurgops. Leconte. Am. Phil. Soc. Proc. 15:390
1894 Hylurgops. Hamilton. Am. Ent. Soc. Trans. 21:36
1895 Hylastes. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 144, 146
1896 Hylurgus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606
1902 Hylurgops. Hopkins. U. S. Div. Ent. Bul. 32, p. 13
1905 Hylurgops. Currie. U. S. Div. Ent. Bul. 53, p. 74

alternans Chap.

1869 Hylastes. Chapuis. Syn. Scol. p. 22
1873 Hylastes. Chapuis. Mem. Soc. Liège, p. 230
1895 =subcostulatus Mannh. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 146
1896 =subcostulatus Mannh. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606

Habitat. Alaska to New Mexico, Pacific coast and Rocky Mountain region.

Food plant. Western pines.

HYPOTHENEMUS Westw.

1836 Westwood. Ent. Soc. Lond. Trans. 1:36
1836 Erichson. Wieg. Archiv. 1:61
1864 Eichhoff. Berl. Ent. Zeit. p. 34, 45, 56
1876 Leconte. Am. Phil. Soc. Proc. 15:355
1883 Leconte & Horn. Col. N. A. p. 517
1885 Gozman. Rev. d'Ent. 4:278
1896 Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 226

STEPHANODERES Eichhoff

1871 Eichhoff. Berl. Ent. Zeit. p. 132
1878 Eichhoff. Rat. Tom. p. 142
1881 Eichhoff. Borkenk. p. 46, 190
1896 Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608

HOMOEOCRYPHALUS Lindeman

1876 Lindeman. Bul. Mosc. 2:168
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 226

77 **dissimilis** Zimm.

1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:144
1876 Hypothenemus. Leconte. Am. Phil. Soc. Proc. 15:356
1878 Crypturgus. Eichhoff. Rat. Tom. p. 144
1878 Hypothenemus. Schwarz. Am. Phil. Soc. Proc. 17:468
1888 Hypothenemus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Hypothenemus. Smith. Ent. Am. 6:54
1890 Hypothenemus. Smith. Cat. Ins. N. J. p. 267
1893 Hypothenemus. Chittenden. Ent. Soc. Wash. Proc. 2:393
1893 Hypothenemus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 133; Bul. 32, p. 210
1895 Hypothenemus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1895 Hypothenemus. Chittenden. Ins. Life, 7:385
1896 Hypothenemus. Lintner. 11th N. Y. Rep't, p. 270
1899 Hypothenemus. Hopkins. Ent. Soc. Wash. Proc. 4:343
1900 Stephanoderes. Smith. Cat. Ins. N. J. p. 362
1905 Hypothenemus. Wenzel. Ent. News, 16:124

chapuisii Eich.

1871 Stephanoderes. Eichhoff. Berl. Ent. Zeit. p. 132
1876 (?)=erectus Lec. Leconte. Am. Phil. Soc. Proc. 15:356
1878 Stephanoderes. Eichhoff. Rat. Tom. p. 143
1896 =dissimilis Zimm. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608, 610

Habitat. Lake Superior and Quebec to Georgia, West Virginia, New York, New Jersey.

Food plants. Quercus, Pinus, Hicoria, Vitis, Prunus (wild), Ficus (dead twigs), Pyrus.

78 **erectus** Lec.

1876 Hypothenemus. Leconte. Am. Phil. Soc. Proc. 15:356
1890 Hypothenemus. Smith. Ent. Am. 6:54
1890 Hypothenemus. Smith. Cat. Ins. N. J. p. 267
1893 Hypothenemus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31:133
1896 Hypothenemus. Lintner. 11th N. Y. Rep't, p. 270
1896 Hypothenemus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608, 610
1900 Hypothenemus. Smith. Cat. Ins. N. J. p. 362

sculpturatus Eich.

1878 Stephanoderes. Eichhoff. Rat. Tom. p. 146
1896 =erectus Lec. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608, 610

Habitat. New Jersey, West Virginia, Texas.

Food plants. Quercus, Hicoria, Vitis, Lonicera, Ficus, Pyrus.

79 **eruditus** Westw.

1836 Tomicus (Hypothenemus). Westwood. Ent. Soc. Lond. Trans. 2:34, t. 7, fig. 1, a, g
1836 Erichson. Wieg. Archiv. p. 61
1863 Fairm. Gen. Col. p. 4, t. 33, fig. 161
1865 Tomicus. Scudder. Bost. Soc. Nat. Hist. Proc. 10:13–14
1867 Ferrari. Borkenk. p. 7
1878 =areccae Horn. Eichhoff. Rat. Tom. p. 165
1879 Hypothenemus. Sharp. Ent. Soc. Lond. Trans. p. 102
1884 Hypothenemus. Fauvel. Rev. d' Ent. 3:315, 390
1887 Hypothenemus. Hubbard. Ins. Orange, p. 173, pl. 14, fig. 1
1889 Hypothenemus. Hamilton. Am. Ent. Soc. Trans. 16:158
1889 Hypothenemus. Schwarz. Ent. Soc. Wash. Proc. 1:139
1890 Hypothenemus. Smith. Ent. Am. 6:54
1891 Hypothenemus. Schwarz. Ent. Soc. Wash. Proc. 2:74
1893 Hypothenemus. Chittenden. Ins. Life, 5:250
1893 Hypothenemus. Hopkins. W. Va. Agric. Exp. Sta. Bul 31, p. 132
1894 Hypothenemus. Blandford. Ins. Life, 6:261–63
1894 Hypothenemus. Reitter. Bestim. Tab. 75
1894 Hypothenemus. Hamilton. Am. Ent. Soc. Trans. 21:406
1895 Hypothenemus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 =crudiae Pan. (?) Eichhoff. U. S. Nat. Mus. Proc. 18:608

1896 Hypothenemus. Lintner. 11th N. Y. Rep't. p. 270
1900 = aveccae Horn. Smith. Cat. Ins. N. J. p. 362
1904 Hypothenemus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 229, 230
1905 = hispidulus Lec. Currie. U. S. Div. Ent. Bul. 53, p. 7

(?) **areccae** Horn

1842 Bostrichus. Hornung. Stet. Ent. Zeit. p. 117
1878 Stephanoderes. Eichhoff. Rat. Tom. p. 165, 166
1884 = eruditus Westw. Fauvel. Rev. d'Ent. 3:315, 390
1896 = eruditus Westw. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608
1900 Hypothenemus. Smith. Cat. Ins. N. J. p. 362
1904 = eruditus Westw. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 229, 230

boieldieui Perroud

1864 Bostrichus. Perroud. Ann. Soc. Linn. Lyon. p. 188
1878 = areccae Horn.(?). Eichhoff. Rat. Tom. p. 166
1904 = eruditus Westw. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 229, 230

Habitat. Mexico, United States, Canada, Panama, Nevis, Europe, Guinea, Sandwich Islands, New Caledonia.

Food plants. Oak, orange, fig, grape, sugar cane, nuts, Lonicera, Pyrus, Robinia.

80 **hispidulus** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:156
1876 Hypothenemus. Leconte. Am. Phil. Soc. Proc. 15:355
1878 Cryphalus. Eichhoff. Rat. Tom. p. 156
1878 Hypothenemus. Schwarz. Am. Phil. Soc. Proc. 17:468
1888 Hypothenemus. Hamilton. Am. Ent. Soc. Trans. 16:158
1890 (?) = dissimilis Zimm. Smith Ent. Am. 6:54
1894 Hypothenemus. Blandford. Ins. Life, 6:263
1894 = eruditus Westw. Hamilton. Am. Ent. Soc. Trans. 21:406
1896 = crudiae Pan. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608, 610
1900 = crudiae Pan. Smith. Cat. Ins. N. J. p. 362
1904 Hypothenemus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 230
1905 Stephanoderes. Currie. U. S. Div. Ent. Bul. 53, p. 7, 13

seriatus Eich.

1871 Stephanoderes. Eichhoff. Berl. Ent. Zeit. p. 133
1876 (?) = hispidulus Lec. Am. Phil. Soc. Proc. 15:356
1878 Stephanoderes. Eichhoff. Rat. Tom. p. 158 (New Orleans)

Habitat. Eastern, Middle and Southern States.

Food plants. Quercus, Hicoria.

81 **rotundicollis** Eich.

1878 Stephanoderes. Eichhoff. Rat. Tom. p. 145
1896 Stephanoderes. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608

Habitat. Amer. Septent (Tennessee).

Food plants.

82 **striatus** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:156
1876 Hypothenemus. Leconte. Am. Phil. Soc. Proc. 15:356
Habitat. Lower and Upper California; Illinois.
Food plants. (?)

Degeer

1775 DeGeer. Mem. Ins. 5:190
1884 Bergroth. Berl. Ent. Zeit. 28:230
1888 Bedel. Faun. Col. Seine, 6:396, 400
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 185, 188

BOSTRICHUS Fabr.

1777 Fabricius. Syst. Ent. p. 59
1836 Erichson. Wieg. Archiv. 1, p. 62
1868 Zimmerman. Am. Ent. Soc. Trans. 2:142, 146

TOMICUS Latreille (1807)

1807 Latreille. Gen. Crust & Ins. 2:276
1868 Leconte. Am. Ent. Soc. Trans. 2:162–64
1869 Lacordaire. Gen. Col. 9:382
1876 Leconte. Am. Phil. Soc. Proc. 15:346, 362
1877 Provancher. Faun. Ent. Can. 1:569
1879 Eichhoff. Rat. Tom. p. 220
1881 Eichhoff. Borkenk. p. 48, 211
1883 Leconte & Horn. Col. N. A. p. 518, 519
1895 Judeich-Nitsche. Forstins. 1:448, 449, 451, fig.
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 185, 186
1901 Barbey. Scol. l'Europ. Cent. p. 81

83 **avulsus** Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 402
1868 Bostrichus. Zimmerman. Am. Ent. Soc. Trans. 2:147
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 366
1878 Tomicus. Eichhoff. Rat. Tom. p. 255
1878 Tomicus. Schwarz. Am. Phil. Soc. Proc. 17:469
1893 Tomicus Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 139; Bul. 32, p. 212
1899 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 344, 422, 445
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 44
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 100
1906 Tomicus. Felt. N. Y. State Mus. Mem. 8, 2:752
Habitat. Southern United States.
Food plant. Pinus.

84 **balsameus** Lec.

1878 Tomicus. Leconte. Am. Phil. Soc. Proc. 17:625
1896 = punctipennis Lec. Eichhoff & Schwarz. U. S. Nat Mus. Proc. 18:609, 610

1901 Tomicus. Felt. N. Y. Forest, Fish and Game Com'n Rep't, 7:519-22, fig. 20
1902 Tomicus. Felt. U. S. Div. Ent. Bul. 31, p. 65
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 25
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 81
1906 Tomicus. Felt. N. Y. State Mus. Mem. 8, 2:338, 354, 374, 375-79, 386, 389, 673, fig. 80-84

Habitat. Maine and Quebec to Michigan and West Virginia.

Food plants. Abies, Picea, Pinus.

85 caelatus Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 402
1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:146
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1877 Xyleborus. Provancher. Faun. Ent. Can. 1:568
1878 Tomicus. Eichhoff. Rat. Tom. p. 274, 370
1878 Xyleborus. Schwarz. Am. Phil. Soc. Proc. 17:468, 666
1886 Xyleborus. Schwarz. Ent. Am. 2:41
1888 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 1:47, 80
1890 Xyleborus. Packard. U. S. Ent. Com'n 5th Rep't, p. 706, 710, 812, 825, fig. 277, 278
1893 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 139; Bul. 32, p. 212
1894 Xyleborus. Blandford. Ins. Life, 6:261
1894 Tomicus. Hopkins. Can. Ent. 26:280
1894 Tomicus. Schwarz. Ent. Soc. Wash. Proc. 3:16, 27
1895 Xyleborus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1899 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 258, 342, 446
1900 Ips. Smith. Cat. Ins. N. J. p. 363
1901 Tomicus. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:488-90, fig. 8
1902 Tomicus. Hopkins. U. S. Div. Ent. Bul. 32, p. 12
1906 Tomicus. Felt. N. Y. State Mus. Mem. 8, 2:338, 354-56, 374, 376, fig. 72

vicinus Lec.

1874 Xyleborus. Leconte. Am. Ent. Soc. Trans. 5:72
1876 =caelatus Eich. Leconte. Am. Phil. Soc. Proc. 15:360

xylographus Fitch

1858 Tomicus. Fitch. Nox. Ins. N. Y. 4th Rep't, p. 716
1886 =caelatus Eich. Schwarz. Ent. Am. 2:41
1906 =caelatus Eich. Felt. N. Y. State Mus. Mem. 8, 2:355

Habitat. Canada; United States, south to West Virginia.

Food plants. Pinus, Picea, Abies.

86 calligraphus Ger.

1824 Bostrichus. Germar. Ins. Nov. p. 461
1858 Tomicus. Fitch. Nox. Ins. N. Y. 4th Rep't, p. 721

1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:162
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363
1877 Tomicus. Provancher. Faun. Ent. Can. 1:570
1878 Tomicus. Schwarz. Am. Phil. Soc. Proc. 17:469, 643
1888 Tomicus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Tomicus. Packard. U. S. Ent. Com'n 5th Rep't, p. 711, 712, fig. 244, 245
1893 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 138; Bul 32, p. 212
1893 Tomicus. Garman. Ky. Agric. Exp. Sta. Bul. 47, p. 50-52
1894 Tomicus. Hopkins. Can. Ent. 26:279
1894 Tomicus. Garman. Ky. Agric. Rep't 1893, p. 127
1897 Tomicus. Johnson. Penn. Agric. Rep't, p. 109-10
1899 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 422
1900 Ips. Smith. Cat. Ins. N. J. p. 363
1901 Tomicus. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:482-85, fig. 4, 5
1902 Tomicus. Felt. U. S. Div. Ent. Bul. 31, p. 64
1902 Tomicus. Hopkins. U. S. Div. Ent. Bul. 32, p. 11
1903 Tomicus. Gillette. Col. Agric. Exp. Sta. Rep't 15, p. 116-17
1906 Tomicus. Felt. N. Y. State Mus. Mem. 8, 2:334, 338, 342, 345-51, 354, 356, 358, fig. 67, 68, 69

chloroticus Dej.

1837 Bostrichus. Dej. Cat. p. 332
1878 =calligraphus Ger. Eichhoff. Rat. Tom. p. 224

conformis Dej.

1837 Bostrichus. Dej. Cat. p. 332
1878 =calligraphus Ger. Eichhoff. Rat. Tom. p. 224

exesus Say

1826 Bostrichus. Say. Acad. Nat. Sci. Phila. Jour. 5:255; ed. Lec. 2:317
1841 Bostrichus. Harris. Ins. Mass. p. 74
1868 Bostrichus. Zimmerman. Am. Ent. Soc. Trans. 2:147
1876 =calligraphus Ger. Leconte. Am. Phil. Soc. Proc. 15:363
1878 =calligraphus Ger. Eichhoff. Rat. Tom. p. 224

praemorsus Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 401
1876 (?)=calligraphus Ger. Leconte. Am. Phil. Soc. Proc. 15:363
1876 =calligraphus Ger. Eichhoff. Stett. Ent. Zeit. 37:378
1878 =calligraphus Ger. Eichhoff. Rat. Tom. p. 224

Habitat. Atlantic region of United States to New Mexico, Canada.

Food plant. Pinus.

87 concinnus Mannh.

1852 Bostrichus. Mannerheim. Bul. Mosc. 2:358, (140)
1853 Bostrichus. Mannerheim. Bul. Mosc. 3:234, (209)

1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:164
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 367
1878 Xylocleptes. Leconte. Am. Phil. Soc. Proc. 17:625
1878 Tomicus. Eichhoff. Rat. Tom. p. 232
1886 Xylocleptes. Schwarz. Ent. Am. 2:42
1894 Xylocleptes. Hamilton. Am. Ent. Soc. Trans. 21:35
1895 Tomicus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 186, 188
1898 Tomicus. Blandford. Ent. News, 9:6
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 17
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 73
1905 Tomicus. Hopkins. Ent. Soc. Wash. Proc. 7:75

hirsutus Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 402
1878 =concinnus Mannh. Eichhoff. Rat. Tom. p. 233
1895 =concinnus Mannh. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 188
Habitat. Alaska to middle California.
Food plants. Pinus, Picea sitchensis.

88 confusus Lec.

1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:362, 364
1886 Tomicus. Schwarz. Ent. Am. 2:42
1890 Tomicus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 713
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 18
1905 Tomicus. Hopkins. Ent. Soc. Wash. Proc. 7:77
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 73

montanus Eich.

1881 Tomicus. Eichhoff. Borkenk. p. 219
1886 =confusus Lec. Schwarz. Ent. Am. 2:42
Habitat. Oregon, California, Arizona.
Food plants. Pinus edulis, P. monophylla.

89 decretus Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 402
1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:177
1878 Tomicus. Eichhoff. Rat. Tom. p. 272
Habitat. America Borealis.
Food plants.

90 emarginatus Lec.

1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 364
Habitat. Oregon.
Food plants.

91 grandicollis Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 402
1878 Tomicus. Eichhoff. Rat. Tom. p. 231
1898 Tomicus. Blandford. Ent. News, 9:6
1905 Tomicus. Hopkins. Ent. Soc. Wash. Proc. 7:77

cacographus Lec.

1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:162
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:362, 364
1878 =grandicollis Eich. (?) Eichhoff. Rat. Tom. p. 231
1878 Tomicus. Schwarz. Am. Phil. Soc. Proc. 17:469
1888 Tomicus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Tomicus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 713, fig. 246
1893 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 138; Bul. 32, p. 212
1893 Tomicus. Bruner. Neb. Hort. Rep't, p. 199, fig. 38
1893 Tomicus. Hopkins. Ins. Life, 6:129
1894 Tomicus. Bruner. Neb. Hort. Rep't, p. 187, fig. 38
1894 Tomicus. Hopkins. Can. Ent. 26:279
1894 Tomicus. Schwarz. Ent. Soc. Wash. Proc. 3:16, 27
1897 Tomicus. Johnson. Penn. Agric. Rep't, p. 79-80, 110
1898 =grandicollis Eich. Blandford. Ent. News, 9:6
1899 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 422
1900 Ips. Smith. Cat. Ins. N. J. p. 363
1901 Tomicus. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:485
1906 Tomicus. Felt. N. Y. State Mus. Mem. 8, 2:334, 338, 342, 354, 356-359, 374, fig. 73

pini (Say) Zimm.

1868 Bostrichus. Zimmerman. Am. Ent. Soc. Trans. 2:147
1876 =cacographus Lec. Leconte. Am. Phil. Soc. Proc. 15:364
1878 =grandicollis Eich. Eichhoff. Rat. Tom. p. 231

Habitat. Middle Atlantic, Southern and Western States; Quebec.
Food plants. Pinus, Picea.

92 **hudsonicus** Lec.

1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 366
1878 Tomicus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1894 Tomicus. Schwarz. Ins. Life, 7:255

Habitat. Hudson Bay region. Utah.
Food plant. Picea.

93 **integer** Eich.

1869 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 273
1878 Tomicus. Eichhoff. Rat. Tom. p. 226
1898 =plastographus Lec. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 186, 187
1903 Tomicus. Gillette. Col. Agric. Exp. Sta. Rep't 15, p. 117
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 18
1905 Tomicus. Hopkins. Ent. Soc. Wash. Proc. 7:75, 76, 77
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 73

Habitat. Rocky mountain region of United States, Mexico.
Food plants. P i n u s p o n d e r o s a, P. m o n t i c o l a.

94 interruptus Mannh.

1852 Bostrichus. Mannerheim. Bul. Mosc. p. 357, (147)
1853 Bostrichus. Mannerheim. Bul. Mosc. 234, (208)
1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:164
1868 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 274
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 366
1878 Tomicus. Eichhoff. Rat. Tom. p. 238
1878 Tomicus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
Habitat. Alaska, Hudson Bay region, Colorado.
Food plants.

95 (?) interpunctus Eich.

1878 Tomicus. Eichhoff. Rat. Tom. p. 241
1878 Tomicus. Eichhoff. Stett. Ent. Zeit. 39:390

tridens Eich.

1868 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 274
1878 =interpunctus Eich. Eichhoff. Rat. Tom. p. 241
Habitat. American Borealis (Sitka).
Food plants.

96 latidens Lec.

1874 Tomicus. Leconte. Am. Ent. Soc. Trans. 5:72
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 367
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 17
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 72
Habitat. Oregon, California, Colorado.
Food plant. Pinus lambertiana.

97 oregoni Eich.

1868 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 274
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:435
1878 Tomicus. Eichhoff. Rat. Tom. p. 250
1903 Tomicus. Hopkins. U. S. Div. Ent. Bul. 32, p. 10
1903 Tomicus. Gillette. Col. Agric. Exp. Sta. Rep't 15, p. 117
1904 Tomicus. Hopkins. U. S. Div. Ent. Bul. 48, p. 17, 44
1905 Tomicus. Hopkins. Ent. Soc. Wash. Proc. 7:77
1905 Tomicus. Currie. U. S. Div. Ent. Bul. 53, p. 73, 100
Habitat. Western United States.
Food plant. Pinus.

98 perturbatus Eich.

1868 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 274
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:435
1878 Tomicus. Eichhoff. Rat. Tom. p. 248
Habitat. American Borealis.
Food plants.

99 **pini** Say

1826 Bostrichus. Say. Acad. Nat. Sci. Phila. Jour. 5:257; ed. Lec. 2:319
1837 Tomicus. Kirby. Faun. Bor. Am. 4:191
1841 Tomicus. Harris. Ins. N. E. p. 74
1852 Tomicus. Harris. Rep't Ins. Inj. Veg. p. 78
1858 Tomicus. Fitch. Nox. Ins. N. Y. 4th Rep't, p. 722, 751
1868 Bostrichus. Zimmerman. Am. Ent. Soc. Trans. 2:147
1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:163
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 365
1877 Tomicus. Provancher. Faun. Ent. Can. 1:570
1878 Tomicus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1888 Tomicus. Schwarz. Ent. Soc. Wash. Proc. 1:80, 149, 175
1890 Tomicus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 713-14, 858, fig. 247
1893 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 139; Bul. 32, p. 212
1894 Tomicus. Hopkins. Can. Ent. 26:280
1899 Tomicus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 342, 343, 422, 445
1899 Tomicus. Hopkins. U. S. Div. Ent. Bul. 21, p. 16
1900 Ips. Smith. Cat. Ins. N. J. p. 363
1901 Tomicus. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:487-88, fig. 7
1903 Tomicus. Gillette. Col. Agric. Rep't, 24:117
1906 Tomicus. Felt. N. Y. State Mus. Mem. 8, 2:334, 338, 351-54, 359, 376, fig. 70, 71

dentatus Sturm.

1826 Tomicus. Sturm. Cat. p. 76, t. 4, fig. 30
1876 =pini Say. Leconte. Am. Phil. Soc. Proc. 15:426

pallipes Sturm.

1826 Tomicus. Sturm. Cat. p. 76
1876 =pini Say. Leconte. Am. Phil. Soc. Proc. 15:426

praefrictus Eich.

1867 Tomicus. Eichhoff. Berl. Ent. Zeit. p. 401
1876 =pini Say. Leconte. Am. Phil. Soc. Proc. 15:365

Habitat. Eastern United States and Canada, Montana (?), Colorado (?).

Food plants. Pinus, Picea, Larix.

100 **plastographus** Lec.

1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:163
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:362, 364
1895 Tomicus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 186, 187
1898 Tomicus. Blandford. Ent. News, 9:6
1903 Tomicus. Gillette. Col. Agric. Exp. Sta. Rep't 15, p. 117
1904 Tomicus. Powell. N. Y. Ent. Soc. 12:237-43

1905 Tomicus. Hopkins. Ent. Soc. Wash. Proc. 7:75, 76
1907 Tomicus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217
Habitat. California, New Mexico.
Food plant. Pinus radiata.

101 **rectus** Lec.

1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 365
Habitat. Oregon, Arizona, New Mexico.
Food plants.

102 (?) **spinifer** Eich.

1878 Tomicus. Eichhoff. Rat. Tom. p. 499
1878 Tomicus. Eichhoff. Stet. Ent. Zeit. 39:390
Habitat. America Borealis (California) (?)
Food plants.

103 (?) **terminatus** Mannh.

1885 Tomicus (?). Henshaw. Col. N. A. p. 148

104 **tridens** Mannh.

1852 Bostrichus. Mannerheim. Bul. Mosc. p. 357, (148)
1853 Bostrichus. Mannerheim. Bul. Mosc. p. 273
1868 Tomicus. Leconte. Am. Ent. Soc. Trans. 2:164
1876 Tomicus. Leconte. Am. Phil. Soc. Proc. 15:363, 366
1878 Tomicus. Eichhoff. Rat. Tom. p. 240
1894 Tomicus. Hamilton. Am. Ent. Soc. Trans. 21:36
Habitat. Alaska.
Food plants.

LOGANIUS Chapuis

1869 Chapuis. Syn. Scol. p. 52
1873 Chapuis. Mem. Soc. Liège, p. 260
1894 Schwarz. Ent. Soc. Wash. Proc. 3:44
1896 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 128

105 **ficus** Sz.

1894 Loganius. Schwarz. Ent. Soc. Wash. Proc. 3:44
1894 Loganius. Ashmead. Ent. Soc. Wash. Proc. 3:33
Habitat. Florida.
Food plant. Ficus aurea.

MICRACIS Leconte

1868 Leconte. Am. Ent. Soc. Trans. 2:164–65
1876 Leconte. Am. Phil. Soc. Proc. 15:367–68
1878 Eichhoff. Rat. Tom. p. 302
1883 Leconte & Horn. Col. N. A. p. 519

106 asperulus Lec.

1878 Micracis. Leconte. Am. Phil. Soc. Proc. 17:626
1878 Micracis. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1900 Micracis. Smith. Cat. Ins. N. J. p. 363
Habitat. Pennsylvania, New York, Virginia.
Food plant. Quercus.

107 hirtellus Lec.

1876 Micracis. Leconte. Am. Phil. Soc. Proc. 15:368, 369
1890 Micracis. Packard. U. S. Ent. Com'n, 5th Rep't, p. 671
1892 Micracis. Blaisdell. Ins. Life, 5:36
Habitat. California.
Food plants. Umbellularia californica, Salix.

108 nanula Lec.

1876 Micracis. Leconte. Am. Phil. Soc. Proc. 15:368, 369
1878 Micracis. Schwarz. Am. Phil. Soc. Proc. 17:469
Habitat. Florida.
Food plants. (?).

109 rudis Lec.

1876 Micracis. Leconte. Am. Phil. Soc. Proc. 15:368, 369
1878 Micracis. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1890 Micracis. Packard. U. S. Ent. Com'n, 5th Rep't, p. 612
1891 Micracis. Schwarz. Ent. Soc. Wash. Proc. 2:74
1895 Micracis. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1906 Micracis. Felt. N. Y. State Mus. Mem. 8, 2:725
Habitat. Michigan.
Food plants. Celtis occidentalis, Robinia pseudacacia, Hicoria.

110 opacicollis Lec.

1878 Micracis. Leconte. Am. Phil. Soc. Proc. 17:625
1878 Micracis. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1900 (?) = asperula Lec. Smith. Cat. Ins. N. J. p. 363
1906 Micracis. Felt. N. Y. State Mus. Mem. 8, 2:702
Habitat. New Jersey, New York.
Food plants. Castanea dentata, Quercus, Hamamelis.

111 suturalis Lec.

1868 Micracis. Leconte. Am. Ent. Soc. Trans. 2:165
1868 Micracis. Shimer. Am. Ent. Soc. Trans. 2:viii
1876 Micracis. Leconte. Am. Phil. Soc. Proc. 15:368
1878 Micracis. Eichhoff. Rat. Tom. p. 303
1878 Micracis. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1890 Micracis. Packard. U. S. Ent. Com'n, 5th Rep't, p. 660
1891 Micracis. Hamilton. Can. Ent. 23:65
1891 Micracis. Hamilton. Ins. Life, 4:131
1891 Micracis. Riley & Howard. Ins. Life, 4:94

1892 Micracis. Hamilton. Ins. Life, 4:268
1893 Micracis. Chittenden. Ent. Soc. Wash. Proc. 2:394
1895 Micracis. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1900 Micracis. Smith. Cat. Ins. N. J. p. 363
1906 Micracis. Felt. N. Y. State Mus. Mem. 8, 2:715

aculeatus Lec.

1868 Micracis. Leconte. Am. Ent. Soc. Trans. 2:165
1878 Micracis. Eichhoff. Rat. Tom. p. 304
1881 Micracis. Leconte. Am. Ent. Soc. Trans. 9:xxii
1891 Micracis. Hamilton. Can. Ent. 23:65
1891 Micracis. Riley. Ins. Life, 4:94
1892 Micracis. Hamilton. Ins. Life, 4:268
1893 = suturalis Lec. Chittenden. Ent. Soc. Wash. Proc. 2:394
1906 Micracis. Felt. N. Y. State Mus. Mem. 8, 2:715

Habitat. Massachusetts and New York to Michigan, Kansas and Louisiana.

Food plants. Zanthoxylum clava-herculis, Hicoria, Cercis canadensis, Fraxinus, Quercus, Juglans nigra, Benzoin aestivale, Salix Sassafras, Robinia, Corylus.

PAGIOCERUS Eich.

1868 Eichhoff. Berl. Ent. Zeit. p. 148
1869 Chapuis. Syn. Scol. p. 26
1873 Chapuis. Mem. Soc. Liège, p. 234
Blandford. Biol. Centr. Am. Col. pt 6, p. 49
1907 Hopkins. Ent. Soc. Wash. Proc. 8:112

112 **rimosus** Eich.

1868 Pagiocerus. Eichhoff. Berl. Ent. Zeit. p. 148
1869 Pagiocerus. Chapuis. Syn. Scol. p. 26
1873 Pagiocerus. Chapuis. Mem. Soc. Liège, p. 234
Pagiocerus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 49
1907 Pagiocerus. Hopkins. Ent. Soc. Wash. Proc. 8:113

Habitat. Cuba, Columbia, Brazil, Chile, Mexico, Guatemala, Panama, Florida.

Food plants. Anona glabra, A. cherimolia (Mexico), "coru" (Columbia, S. A.), Persea barbonia (Florida).

PHLOEOSINUS Chapuis

1869 Chapuis. Syn. Scol. p. 37
1873 Chapuis. Mem. Soc. Liege, p. 245
1876 Leconte. Am. Phil. Soc. Proc. 15:381
1881 Eichhoff. Borkenk. p. 131
1883 Leconte & Horn. Col. N. A. p. 523
1888 Bedel. Faun. Col. Seine, 6:389, 393
1894 Blandford. Ent. Soc. Lond. p. 68
1897 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 143, 160
1901 Barbey. Scol. l'Europ. Cent. p. 58

113 **cristatus** Lec.

1868 Phloeosinus. Leconte. Am. Ent. Soc. Trans. 2:170
1876 Phloeosinus. Leconte. Am. Phil. Soc. Proc. 15:381
1893 Phloeosinus. Riley & Howard. Ins. Life, 5:262
1897 Phloeosinus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 160
1903 Phloeosinus. Hopkins. U. S. Bur. For. Bul. 38, p. 39, 40, fig. 4
Habitat. California.
Food plants. Cupressus, Sequoia sempervirens(?).

114 **cupressi** Hopk.

1903 Phloeosinus. Hopkins. U. S. Bur. For. Bul. 38, p. 35-38, fig. 2, 3
1904 Phloeosinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 45
1905 Phloeosinus. Currie. U. S. Div. Ent. Bul. 53, p. 100
Habitat. California.
Food plants. Cupressus, Sequoia sempervirens.

115 **dentatus** Say

1825 Hylurgus. Say. Acad. Nat. Sci. Phila. Jour. 3:258; ed. Lec. 2:319
1852 Hylurgus. Harris. Rep't Ins. Inj. Veg. p. 77
1858 Fitch. Nox. Ins. 4th Rep't, p. 750; N. Y. Agric. Soc. Trans. 1857
1876 Phloeosinus. Leconte. Am. Phil. Soc. Proc. 15:381
1886 Phloeosinus. Knaus. Ent. Am. 2:77
1886 Phloeosinus. Schwarz. Ent. Am. 2:56
1890 Phloeosinus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 904-6, fig. 299
1890 Phloeosinus. Riley & Howard. Ins. Life, 2:350
1893 Phloeosinus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 142; Bul. 32, p. 213
1894 Phloeosinus. Hopkins. Can. Ent. 26:280
1896 Phloeosinus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608, 610
1897 Phloeosinus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 160
1900 Phloeosinus. Smith. Cat. Ins. N. J. p. 365
1901 Phloeosinus. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:522-23, fig. 25, 26
1904 Phloeosinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 25
1905 Phloeosinus. Currie. U. S. Div. Ent. Bul. 53, p. 81
1906 Phloeosinus. Felt. N. Y. State Mus. Mem. 8, 2:336, 337, 338, 391-93, fig. 90, 91, 92

graniger Eich.

1868 (?) Dendroctonus. Eichhoff. Berl. Ent. Zeit. p. 147
1868 (?) Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:177
1869 Phloeosinus. Chapuis. Syn. Scol. p. 39, 95
1873 Phloeosinus. Chapuis. Mem. Soc. Liège, p. 247
1876 Phloeosinus. Leconte. Am. Phil. Soc. Proc. 15:382, 436, 437
1886 Phloeosinus. Schwarz. Ent. Am. 2:56
1892 Phloesosinus. Hopkins. Ins. Life, 4:258
1896 =dentatus Say. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608, 610
1897 Phloeosinus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 160

haagii Eich.

1868 (?) Dendroctonus. Eichhoff. Berl. Ent. Zeit. p. 148
1868 (?) Dendroctonus. Leconte. Am. Ent. Soc. Trans. 2:177
1869 Phloeosinus. Chapuis. Syn. Scol. p. 38
1873 Phloeosinus. Chapuis. Mem. Soc. Liège, p. 247
1876 Phloeosinus. Leconte. Am. Phil. Soc. Proc. 15:382, 436, 437
1886 (?) = dentatus Say. Schwarz. Ent. Am. 2:56
1896 = dentatus Say. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:610
1896 (?) = punctatus Lec. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:608
1897 Phloeosinus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 160

serratus Lec.

1868 Phloeosinus. Leconte. Am. Ent. Soc. Trans. 2:170
1876 Phloeosinus. Leconte. Am. Phil. Soc. Proc. 15:381
1886 (?) = dentatus Say. Schwarz. Ent. Am. 2:56
1889 Phloeosinus. Schwarz. Ent. Soc. Wash. Proc. 1:176
1897 Phloeosinus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 160
1900 = dentatus Say. Smith. Cat. Ins. N. J. p. 365
1907 Phloeosinus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218

Habitat. Eastern and middle United States and Canada, New Mexico.

Food plants. Juniperus, Thuja.

116 punctatus Lec.

1876 Phloeosinus. Leconte. Am. Phil. Soc. Proc. 15:381, 382
1886 Phloeosinus. Schwarz. Ent. Am. 2:55
1902 Phloeosinus. Fowler. Cal. Rep't Agric. Exp. Sta. p. 80
1903 Phloeosinus. Hopkins. Can. Ent. 35:60
1903 Phloeosinus. Hopkins. U. S. Bur. For. Bul. 38, p. 35
1904 Phloeosinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 18
1905 Phloeosinus. Currie. U. S. Div. Ent. Bul. 53, p. 73

Habitat. Lake Superior and Rocky mountain regions.

Food plants. Libocedrus decurrens, Chamaecyparis lawsoniana (Giant arbor-vitae).

117 sequoiae Hopk.

1903 Phloeosinus. Hopkins. U. S. Bur. For. Bul. 38, p. 33–35, fig. 1, pl. 12
1904 Phloeosinus. Hopkins. U. S. Div. Ent. Bul. 48, p. 18, 45
1905 Phloeosinus. Currie. U. S. Div. Ent. Bul. 53, p. 74

Habitat. California, Washington.

Food plants. Sequoia sempervirens, Giant arbor-vitae.

PHLOEOTRIBUS Latreille

1796 Latreille. Prec. car. gener. Ins. 50
1836 Erichson. Wieg. Archiv. 1:56
1864 Eichhoff. Berl. Ent. Zeit. p. 29, 44, 46

1868 Zimmerman. Am. Ent. Soc. Trans. 2: 147, 148
1868 Leconte. Am. Ent. Soc. Trans. 2:168
1869 Chapuis. Syn. Scol. p. 43
1873 Chapuis. Mem. Soc. Liége, p. 251
1876 Leconte. Am. Phil. Soc. Proc. 15:376
1881 Eichhoff. Borkenk. p. 39, 147
1883 Leconte & Horn. Col. N. A. p. 522
1888 Bedel. Faun. Col. Seine, 6:389, 394
1901 Barbey. Scol. l'Europ. Cent. p. 65

118 **frontalis** Oliv.

1795 Scolytus. Olivier. Ent. 4, no. 78, p. 13, pl. 2, fig. 20
1801 Bostrichus. Fabricius. Syst. El. 2:389
1868 Phloeotribus. Zimmerman. Am. Ent. Soc. Trans. 2:148
1876 Phloeotribus. Leconte. Am. Phil. Soc. Proc. 15:377
1890 Phloeotribus. Packard. U. S. Ent. Com'n 5th Rep't p. 612
1893 Phloeotribus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 142; Bul. 32, p. 213
1893 Phloeotribus. Chittenden. Ins. Life, 5:249
1894 Phloeotribus. Riley. Ins. Life, 6:227
1894 Phloeotribus. Hopkins. Can. Ent. 26:280
1895 Phloeotribus. Schwarz. Ent. Soc. Wash. Proc. 3:146
1896 Phloeotribus. Ashmead. Am. Ent. Soc. Trans. 23:233
1898 Phloeotribus. Chittenden. Ent. Soc. Wash. Proc. 4:78
1900 Phloeotribus. Smith. Cat. Ins. N. J. p. 364
1903 Phloeophthorus. Hopkins. U. S. Dep't Agric. Yearbook, p. 320
1905 Phloeophthorus. Hopkins. Ent. Soc. Wash. Proc. 7:78
1906 Phloeotribus. Felt. N. Y. State Mus. Mem. 8, 2:336, 725

granicollis Eich.

1868 Phloeophthorus. Eichhoff. Berl. Ent. Zeit. p. 149
1868 Phloeophthorus. Leconte. Am. Ent. Soc. Trans. 2:177
1873 Phloeotribus. Chapuis. Mem. Soc. Liège, p. 251
1876 =frontalis Fabr. Leconte. Am. Phil. Soc. Proc. 15:377

Habitat. Atlantic States to Iowa and Tennessee.

Food plants. Morus, Celtis occidentalis, Broussonetia papyrifera.

119 **liminaris** Harris

1852 Tomicus. Harris. Rep't Inj. Ins. Veg. p. 78
1863 Tomicus. Harris. Inj. Ins. ed. ult. 88
1868 Phloeotribus. Leconte. Am. Ent. Soc. Trans. 2:148
1873 Phloeosinus. Chapuis. Mem. Soc. Liège, p. 247
1876 Phloeotribus. Leconte. Am. Phil. Soc. Proc. 15:377
1878 Phloeotribus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1882 Phloeosinus. Linden. Buf. Soc. Bul. 4:61
1888 Phloeotribus. Schwarz. Ent. Soc. Wash. Proc. 1:113, 149
1890 Phloeotribus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 227, 530

1890 Phloeotribus. Caulfield. Ont. Soc. Ent. 21:75
1891 Phloeotribus. Webster. Ins. Life, 3:452
1893 Phloeotribus. Lintner. 9th N. Y. Rep't, p. 305 (8
1893 Phloeotribus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 141 etc.; Bul. 32, p. 213
1894 Phloeotribus. Fletcher. Ottawa House Com'n, p. 7
1895 Phloeotribus. Cockerell. N. M. Agric. Exp. Bul. 15, p. 69
1896 Phloeotribus. Lintner. 11th N. Y. Rep't, p. 270
1896 Phloeotribus. Fletcher. Ottawa House Com'n, p. 18
1900 Phloeotribus. Smith. Cat. Ins. N. J. p. 304
1903 Phloeophthorus. Hopkins. U. S. Dep't Agric. Yearbook, p. 320
1905 Phloeophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 19
1906 Phloeotribus. Felt. N. Y. Mus. Mem. 8, 2:336, 428, 452
1907 Phloeotribus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. New York to Tennessee, eastern Canada, New Mexico.

Food plants. *Prunus persica*, *P. armeniaca*, *P. cerasus*, *P. serotina*, *Pyrus malus*.

120 puberulus Lec.

1879 Phloeotribus. Leconte. U. S. Geol. Sur. Bul. 5:519

Habitat.

Food plants.

PITYOGENES Bedel

1888 Bedel. Faun. Col. Seine, 6:397, 401

121 carinulatus Lec.

1874 Cryphalus Leconte. Am. Ent. Soc. Trans. 5:70
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:352
1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:624
1892 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:168
1894 Pityogenes. Schwarz. Ins. Life. 7:255
1904 Pityogenes. Hopkins. U. S. Div. Ent. Bul. 48, p. 17, 44

hamatus Lec.

1874 Xyleborus. Lec. Am. Ent. Soc. Trans. 5:72
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 361
1878 = carinulatus Lec. Leconte. Am. Phil. Soc. Proc. 17:624
1907 Pityophthorus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. California to Washington, South Dakota and Colorado.

Food plants. *Pinus ponderosa*, *Picea engelmanni*, (Jeffrey pine).

122 fossifrons Lec.

1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:353
1896 Pityogenes. Schwarz. U. S. Nat. Mus. Proc. 18:609

Habitat. Vancouver island.

Food plants.

123 **plagiatus** Lec.

1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2:161
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:361
1878 Xyleborus. Eichhoff. Rat. Tom. p. 280
1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:623
1892 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:168
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 129; Bul. 32, p. 208
1894 Pityophthorus. Hopkins. Can. Ent. 26:278
1899 Pityogenes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 342, 427, 429
1906 Pityogenes. Felt. N. Y. State Mus. Mem. 8, 2:752
Habitat. Maryland, New York, West Virginia.
Food plant. Pinus.

124 **punctipennis** Lec.

1878 Xyleborus. Leconte. Am. Phil. Soc. Proc. 17:624, 666
1886 Xyleborus. Schwarz. Ent. Am. 2:42
1896 Pityogenes. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
Habitat. Michigan.
Food plants.

125 **sparsus** Lec.

1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2:160
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:360
1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:624
1878 Pityophthorus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1888 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Pityophthorus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 720
1891 Pityophthorus. Hamilton. Ins. Life, 4:132
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 130; Bul. 32, p. 208
1894 Pityophthorus. Hamilton. Am. Ent. Soc. Trans. 21:406
1895 Pityophthorus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 Pityogenes. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609
1899 Pityogenes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 446
1900 Pityophthorus. Smith. Cat. Ins. N. J. p. 362
1905 Pityogenes. Currie. U. S. Div. Ent. Bul. 53, p. 80
1906 Pityogenes. Felt. N. Y. State Mus. Mem. 8, 2:752
Habitat. Eastern United States and Canada.
Food plant. Pinus.

PITYOPHTHORUS Eich.

1864 Eichhoff. Berl. Ent. Zeit. 8:39, 45, 46
1871 Eichhoff. Berl. Ent. Zeit. 15:137
1876 Leconte. Am. Phil. Soc. Proc. 15:347, 349, 350
1878 Eichhoff. Rat. Tom. p. 173
1881 Eichhoff. Borkenk. p. 49, 192
1883 Leconte & Horn. Col. N. A. p. 517

1888 Bedel. Faun. Col. Seine, 6:396, 398
1891 Blandford. Ent. Mo. Mag. 2:15 17
1895 Judeich-Nitsche. Forstins. 1:448, 451, fig.
1901 Barbey. Scol. l'Europ. Cent. p. 74

126 annectens Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:622
1889 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:164
1890 Pityophthorus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 715
1892 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:167
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751
Habitat. Florida.
Food plant. Pinus echinata.

127 cariniceps Lec.

1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:353
1893 Pityophthorus. Chittenden. Ent. Soc. Wash. Proc. 2:393
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 130; Bul. 32, p. 209
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 443
1901 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 28, pl. 8
1904 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 48, p. 24
1905 Pityophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 80
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:650, 674
Habitat. Maine to Michigan and West Virginia, Quebec.
Food plants. Picea, Pinus strobus.

128 comatus Zimm.

1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:143
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:355
1878 Cryphalus. Eichhoff. Rat. Tom. p. 136
Habitat. South Carolina.
Food plants.

129 concentralis Eich.

1878 Pityophthorus. Eichhoff. Rat. Tom. p. 188
1889 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:163
1899 Pityophthorus. Henshaw. Ent. Am. 5:132
1891 Pityophthorus. Beutenmüller. N. Y. Micro. Soc. Jour. 7:50
Habitat. Florida, Cuba.
Food plant. Rhus metopium.

130 coniperda Sz.

1895 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 3:144-45
1902 Pityophthorus. Harrington. Ont. Ent. Soc. 3:117
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751
Habitat. Ontario, Michigan, New York, Pennsylvania, Virginia.
Food plant. Pinus, in cones.

131 confinus Lec.

1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:354
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 130; Bul. 32, p. 209
1894 Pityophthorus. Hopkins. Can. Ent. 26:278
1899 (?) = bisulcatus Eich. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 284, 344, 443
1904 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 48, p. 16
1905 Pityophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 71
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751

Habitat. California, Washington, Idaho, New Mexico, West Virginia.

Food plant. Pinus.

132 consimilis Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:622, 665
1889 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:164
1891 Pityophthorus. Schwarz. Ins. Life, 3:357
1891 Pityophthorus. Riley & Howard. Ins. Life, 4:123
1891 Pityophthorus. Beutenmüller. N. Y. Micro. Soc. Jour. 7:50
1892 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:167
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 130; Bul. 32, p. 209
1894 Pityophthorus. Ashmead. Ent. Soc. Wash. Proc. 3:33
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:503, 737; Pityogenes, p. 482

Habitat. Florida; Washington, D. C.; New York (Ithaca); Michigan (Detroit, Marquette); Quebec.

Food plants. All species of the genus Rhus; Nyssa sylvatica.

133 deletus Lec.

1879 Pityophthorus. Leconte. U. S. Geol. Sur. Bul. 5:519

Habitat. Colorado.

Food plants.

134 digestus Lec.

1874 Cryphalus. Leconte. Am. Ent. Soc. Trans. 5:71
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:355
1892 Pityophthorus. Blaisdell. Ins. Life, 5:36

Habitat. California (Mojave desert).

Food plant. Rhus integrifolia.

135 lautus Eich.

1871 Pityophthorus. Eichhoff. Berl. Ent. Zeit. p. 135
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:354
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 190
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 131; Bul. 32, p. 209

1898 Pityophthorus. Blandford. Ent. News, 9:6
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751
Habitat. Texas, West Virginia.
Food plant. Pinus.

136 **nitidulus** Mannh.

1843 Bostrichus. Mannh. Bul. Mosc. p. 298, (263)
1852 Bostrichus. Mannh. Bul. Mosc. p. 359, (152)
1853 Bostrichus. Mannh. Bul. Mosc. p. 273
1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:157
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:354
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 173
1894 Pityophthorus. Schwarz. Ins. Life, 7:255
1894 Pityophthorus. Hamilton. Am. Ent. Soc. Trans. 21:35
1903 Pityophthorus. Gillette. Col. Exp. Sta. Rep't, 15:118
1904 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 48, p. 17
1905 Pityophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 72
1905 Pityophthorus. Schwarz. Harriman Alaska Exped. Rep't, Insects, pt 1, p. 185
1907 Pityophthorus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

atratulus Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:156
1876 =nitidulus Mannh. Leconte. Am. Phil. Soc. Proc. 15:354
1878 =cribripennis Eich. Eichhoff. Rat. Tom. p. 175
Habitat. Coast and Cascade region, Alaska to California; Utah; New Mexico.
Food plants. Picea sitchensis, Pseudotsuga mucronata, Pinus flexilis (shore pine), Picea engelmanni.

137 **obliquus** Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:432–33, 468
Habitat. Michigan (Marquette).
Food plants.

138 **opaculus** Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:623
Habitat. Michigan.
Food plants.

139 **pilosus** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:154
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:351
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 199

pilosulus Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:156
Habitat. Middle California.
Food plants.

140 pruinosus Eich.

1878 Pityophthorus. Eichhoff. Stet. Ent. Zeit. 39:390
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 198
1896 Pityophthorus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
1903 Pityophthorus. Hopkins. U. S. Dep't Agric. Yearbook, p. 318

querciperda Sz.

1888 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:56
1890 Pityophthorus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 93
1896 = pruinosus Eich. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
1900 Pityophthorus. Smith. Cat. Ins. N. J. p. 362
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:702

Habitat. New York to Florida.

Food plant. Quercus.

141 puberulus Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:157
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:354
1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:665
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 202
1888 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Pityophthorus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 812
1890 Pityophthorus. Smith. Cat. Ins. N. J. p. 267
1891 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:65
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 131; Bul. 32, p. 209
1895 Pityophthorus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 Pityophthorus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 443
1900 Pityophthorus. Smith. Cat. Ins. N. J. p. 362
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:752

infans Eich.

1871 Pityophthorus. Eichhoff. Berl. Ent. Zeit. p. 135
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 187
1896 = puberulus Lec. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610

Habitat. District of Columbia, Michigan, New York, West Virginia.

Food plant. Pinus.

142 pubipennis Lec.

1857 Tomicus. Leconte. Pac. R. R. Expl. Sur. Ins. p. 59
1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:154, 156
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:351
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 197
1890 Pityophthorus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 93

1904 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 48, p. 16
1904 Pityophthorus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 243
1905 Pityophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 71

Habitat. Pacific coast, California to Oregon; Guatemala (San Geronimo).

Food plant. Quercus.

143 **pulchellus** Eich.

1868 Pityophthorus. Eichhoff. Berl. Ent. Zeit. p. 275
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:352, 435
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 181
1896 Pityophthorus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 442
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:752

hirticeps Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:623, 665
1888 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 131; Bul. 32, p. 209
1896 (?)=pulchellus. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 442
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751

Habitat. Michigan (Marquette), Pennsylvania, West Virginia, Virginia.

Food plants. Pinus, P i c e a m a r i a n a (?).

144 **pulicarius** Zimm.

1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:144
1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:155, 157
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:353
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 195
1878 Pityophthorus. Schwarz. Am. Phil. Soc. Proc. 17:468
1889 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:163
1890 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:231
1890 Pityophthorus. Smith. Cat. Ins. N. J. p. 267
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 442
1900 Pityophthorus. Smith. Cat. Ins. N. J. p. 362
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751

Habitat. New Jersey, West Virginia, South Carolina, Florida, Illinois.

Food plant. Pinus.

145 **pullus** Zimm.

1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:143
1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:155
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:352

1878 =bisulcatus Eich. Eichhoff. Rat. Tom. p. 186
1878 Pityophthorus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1887 Pityophthorus. Schwarz. Ent. Am. 3:20
1888 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Pityophthorus. Smith. Cat. Ins. N. J. p. 267
1892 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:168
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 129; Bul. 32, p. 208
1898 Pityophthorus. Blandford. Ent. News, 9:5
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 344, 442
1900 Pityophthorus. Smith. Cat. Ins. N. J. p. 362
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751

bisulcatus Eich.

1868 Pityophthorus. Eichhoff. Berl. Ent. Zeit. p. 274
1876 (?)=pullus. Leconte. Am. Phil. Soc. Proc. 15:352, 435
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 185

cribripennis Eich.

1868 Pityophthorus. Eichhoff. Berl. Ent. Zeit. p. 274
1871 Pityophthorus. Eichhoff. Berl. Ent. Zeit. p. 137
1876 =nitidulus Mannh. Leconte. Am. Phil. Soc. Proc. 15:354, 435
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 175
1896 =pullus Zimm. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:609, 610
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 437, 442
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:751

Habitat. Michigan, West Virginia, New York.

Food plant. Pinus.

146 puncticollis Lec.

1874 Cryphalus. Leconte. Am. Ent. Soc. Trans. 5:71
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:354
1904 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 48, p. 16
1905 Pityophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 72
1907 Pityophthorus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. New Mexico to northern Washington.

Food plants. Pinus, Picea sitchensis.

147 minutissimus Zimm.

1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:143
1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:154
1876 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 15:351
1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:665
1878 =pusillus Harr. Eichhoff. Rat. Tom. p. 200
1888 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 1:56, 113
1890 Pityophthorus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 93, 221
1892 Pityophthorus. Schwarz. Ent. Soc. Wash. Proc. 2:168

1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 129; Bul. 32, p. 208
1894 Pityophthorus. Hopkins. Can. Ent. 26:277
1898 Pityophthorus. Chittenden. Ent. Soc. Wash. Proc. 4:78
1900 Pityophthorus. Smith. Cat. Ins. N. J. p. 362
1904 Pityophthorus. Hopkins. U. S. Div. Ent. Bul. 48, p. 24
1905 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 1:257, 295
1905 Pityophthorus. Currie. U. S. Div. Ent. Bul. 53, p. 80

pusillus Harris.

1837 Tomicus. Harris. Nat. Hist. Soc. Hartford Trans. p. 82
1876 = minutissimus Zimm. Leconte. Am. Phil. Soc. Proc. 15:351
1878 Pityophthorus. Eichhoff. Rat. Tom. p. 200
Habitat. New England, North Atlantic, Middle and Southern States, Quebec.
Food plants. Quercus, Cornus, Hamamelis virginiana.

148 pusio Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:623
1878 Pityophthorus. Hubbard & Schwarz. Am. Phil .Soc. Proc. 17:643
Habitat. Michigan.
Food plants.

149 seriatus Lec.

1878 Pityophthorus. Leconte. Am. Phil. Soc. Proc. 17:433
1878 Pityophthorus. Schwarz. Am. Phil. Soc. Proc. 17:468
Habitat. Florida.
Food plant. Pinus.

150 tomentosus Eich.

1878 Pityophthorus. Eichhoff. Rat. Tom. p. 201
1878 Pityophthorus. Eichhoff. Stet. Ent. Zeit. 39:390
Habitat. America Borealis.

151 tuberculatus Eich.

1878 Pityophthorus. Eichhoff. Mem. Soc. Liege, 8:498
1893 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 132; Bul. 32, p. 209
1899 Pityophthorus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 443
1906 Pityophthorus. Felt. N. Y. State Mus. Mem. 8, 2:753
Habitat. West Virginia (?), California.
Food plant. Picea mariana (?).

POLYGRAPHUS Erichson

1836 Erichson. Wieg. Archiv. 1:57
1864 Eichhoff. Berl. Ent. Zeit. p. 32, 45, 46
1866 Lacordaire. Hist. Nat. Ins. Col. 7:365
1868 Leconte. Am. Ent. Soc. Trans. 2:169
1876 Leconte. Am. Phil. Soc. Proc. 15:374, 375, 376
1877 Provancher. Faun. Ent. Can. 1:570

1881 Eichhoff. Borkenk. p. 37, 122
1883 Leconte & Horn. Col. N. A. p. 521
1895 Judeich-Nitsche. Forstins. 1:445, 446
1896 Blandford. Ent. Soc. Lond. p. 74
1901 Barbey. Scol. l'Europ. Cent. p. 55

152 (?) brevicornis Kirby

1837 Apate (Lepisomus). Kirby. Faun. Bor. Am. 4:194
1868 Apate (Lepisomus). Leconte. Am. Ent. Soc. Trans. 2:177
1876 Polygraphus (?). Leconte. Am. Phil. Soc. Proc. 15:376
1885 Polygraphus. Henshaw. Col. N. A. p. 149
Habitat. Hudson bay region.
Food plants.

153 rufipennis Kirby

1837 Apate (Lepisomus). Kirby. Faun. Bor. Am. 4:193, tab. 8, fig. 2
1853 Hylesinus. Mannerheim. Bul. Mosc. p. 237
1868 Polygraphus. Leconte. Am. Ent. Soc. Trans. 2:169
1876 Polygraphus. Leconte. Am. Phil. Soc. Proc. 15:376
1877 Polygraphus. Provancher. Faun. Ent. Can. 1:570
1889 Polygraphus. Schwarz. Ent. Soc. Wash. Proc. 1:149, 176
1890 Polygraphus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 721–22, 814, fig. 251
1892 Polygraphus. Hopkins. Ins. Life, 4:257
1893 Polygraphus. Hopkins. Ins. Life, 5:188; 6:129
1893 Polygraphus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 141 etc.; Bul. 32, p. 212
1894 Polygraphus. Hamilton. Am. Ent. Soc. Trans. 21:35
1894 Polygraphus. Hopkins. Can. Ent. 26:280
1897 Polygraphus. Johnson. Penn. Agric. Rep't, pt 2, p. 72–73, fig. 1
1907 Polygraphus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

nigriceps Kirby

1837 Apate (Lepisomus). Kirby. Faun. Bor. Am. 4:194
1876 = rufipennis Kirby. Leconte. Am. Phil. Soc. Proc. 15:376

saginatus Mannh.

1853 Polygraphus. Mannerheim. Bul. Mosc. p. 237
1876 = rufipennis Kirby. Leconte. Am. Phil. Soc. Proc. 15:376
Habitat. Northern and eastern United States, Canada.
Food plants. Pinus, Picea, Abies.

PTEROCYCLON Eich.

1868 Eichhoff. Berl. Ent. Zeit. 12:276, 277
1869 Eichhoff. Berl. Ent. Zeit. p. 290
1878 Eichhoff. Rat. Tom. p. 437
1898 Blandford. Ent. News, 9:6
1904 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 270, 288

? MONARTHRUM Kirsch

1866 Kirsch. Berl. Ent. Zeit. 9:213. (Description referred to Corthylus)
1868 Kirsch. Berl. Ent. Zeit. p. 214
1876 Leconte. Am. Phil. Soc. Proc. 15:347, 348
1883 Leconte & Horn. Col. N. A. p. 517

154 **dentiger** Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:154
1876 Monarthrum. Leconte. Am. Phil. Soc. Proc. 15:348-49
1878 Cryphalus. Eichhoff. Rat. Tom. p. 449
1893 Monarthrum. Chittenden. Ent. Soc. Wash. Proc. 2:393
Habitat. Middle California.
Food plant. Quercus agrifolia

155 **fasciatus** Say

1825 Bostrichus. Say. Acad. Nat. Sci. Phila. Jour. 5:255, ed. Lec. 2:318
1836 Corthylus. Erichson. Wieg. Archiv. 2:64, 79
1867 Corthylominus. Ferrari. Tomicides, p. 48
1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:143
1869 Pterocyclon. Eichhoff. Berl. Ent. Zeit. p. 298, 299
1876 Monarthrum. Leconte. Am. Phil. Soc. Proc. 15:348
1878 Monarthrum. Leconte. Am. Phil. Soc. Proc. 17:665
1878 Pterocyclon. Eichhoff. Rat. Tom. p. 442
1880 Monarthrum. Comstock. U. S. Agric. Rep't, p. 274-75
1890 Monarthrum. Packard. U. S. Ent. Com'n, 5th Rep't, p. 328, 520
1893 Monarthrum. Chittenden. Ent. Soc. Wash. Proc. 2:391
1893 Monarthrum. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 128; Bul. 32, p. 208
1894 Monarthrum. Hopkins. Can. Ent. 26:277
1895 Monarthrum. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1897 Monarthrum. Howard. U. S. Div. Ent. Bul. 7, p. 85
1897 Monarthrum. Hubbard. U. S. Div. Ent. Bul. 7, p. 26-28
1899 Monarthrum. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 308, fig. 238
1899 Monarthrum. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 347, 442
1900 Monarthrum. Smith. Cat. Ins. N. J. p. 361
1904 Pterocyclon. Hopkins. U. S. Div. Ent. Bul. 48, p. 45
1905 Monarthrum. Garman. Ky. Agric. Exp. Sta. Bul. 120, p. 68-74, fig. 3
1906 Monarthrum. Felt. N. Y. State Mus. Mem. 8, 2:751

simile Eich.

1868 Pterocyclon. Eichhoff. Berl. Ent. Zeit. p. 277
1876 = fasciatum Say. Leconte. Am. Phil. Soc. Proc. 15:348
Habitat. Lake Superior and Quebec to Florida.
Food plants. Many trees, both deciduous and coniferous. (Bores in wine casks.)

156 **gracile** Eich.

1878 Pterocyclon. Eichhoff. Rat. Tom. p. 444

fasciatus Say (var.)

1828 Bostrichus. Say. Acad. Nat. Sci. Phila. Jour. 5:253
1868 Cryphalus. Zimmerman. Am. Ent. Soc. Trans. 2:143
1878 =gracile Eich. Eichhoff. Rat. Tom. p. 444

Habitat. America Borealis (Tennessee, Pennsylvania, Carolina).
Food plants. (?)

157 **mali** Fitch

1855 Tomicus. Fitch. N. Y. Rep't Nox. Ins. 2: no. 5
1856 Tomicus. Fitch. N. Y. Rep't Nox. Ins. 3: no. 5, 8–9
1868 Crypturgus. Zimmerman. Am. Ent. Soc. Trans. 2:143
1876 Monarthrum. Leconte. Am. Phil. Soc. Proc. 15:349
1878 Monarthrum. Leconte. Am. Phil. Soc. Proc. 17:665
1878 Pterocyclon. Eichhoff. Rat. Tom. p. 447–49
1878 Monarthrum. Schwarz. Am. Phil. Soc. Proc. 17:468
1888 Monarthrum. Schwarz. Ent. Soc. Wash. Proc. 1:48
1888 Monarthrum. Fletcher. Ont. Ent. Soc. 18:15
1890 Monarthrum. Packard. U. S. Ent. Com'n, 5th Rep't, p. 94
1893 Monarthrum. Chittenden. Ent. Soc. Wash. Proc. 2:392
1893 Monarthrum. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 128; Bul. 32, p. 208
1894 Monarthrum. Hopkins. W. Va. Agric. Exp. Sta. Bul. 35, p. 295, fig. 8
1894 Monarthrum. Hopkins. Can. Ent. 26:277
1896 Monarthrum. Lintner. 11th N. Y. Rep't, p. 270
1897 Monarthrum. Howard. U. S. Div. Ent. Bul. 7. n. s. p. 85
1897 Monarthrum. Hubbard. U. S. Div. Ent. Bul. 7. n. s. p. 27, 28
1897 Monarthrum. Chittenden. U. S. Div. Ent. Bul. 7. n. s. p. 79
1899 Monarthrum. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 347, 442
1899 Monarthrum. Lugger. Minn. Agric. Exp. Sta. Bul. 66, p. 306–10, fig. 239
1900 Monarthrum. Smith. Cat. Ins. N. J. p. 361
1901 Monarthrum. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:517–18, fig. 17
1904 Pterocyclon. Hopkins. U. S. Div. Ent. Bul. 48, p. 45
1904 Monarthrum. Hopkins. U. S. Dep't Agric. Yearbook, p. 384
1905 Monarthrum. Felt. N. Y. State Mus. Mem. 8, 1:257, 289–92
1905 Monarthrum. Garman. Ky. Agric. Exp. Sta. Bul. 120, p. 68, fig. 4
1906 Monarthrum. Felt. N. Y. State Mus. Mem. 8, 2:336, pl. 67, fig. 1
1906 Pterocyclon. Blandford. Biol, Centr. Am. Col. 4, pt 6, p. 269, 270, 271, 279

longulum Eich.

1868 Pterocyclon. Eichhoff. Berl. Ent. Zeit. p. 278
1876 =mali Fitch. Eichhoff. Stet. Ent. Zeit. 36:378
1876 =mali Fitch. Leconte. Am. Phil. Soc. Proc. 15:349
1878 =mali Fitch. Eichhoff. Rat. Tom. p. 448
1904 =mali Fitch. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 279

Habitat. Eastern United States and Canada.
Food plants. Many trees, both deciduous and coniferous.

158 **scutellare** Lec.

1860 Corthylus. Leconte. Pac. R. R. Expl. & Sur. 12, pt 2. p. 59, (35)
1867 Corthylominus. Ferrari. Rat. Tom. p. 49
1876 Monarthrum. Leconte. Am. Phil. Soc. Proc. 15:348
1878 Corthylus. Eichhoff. Rat. Tom. p. 447
1893 Monarthrum. Chittenden. Ent. Soc. Wash. Proc. 2:392

cavus Lec.

1868 Cryphalus. Leconte. Am. Ent. Soc. Trans. 2:153
1876 = scutellare Lec. Leconte. Am. Phil. Soc. Proc. 15:348
1878 Cryphalus. Eichhoff. Rat. Tom. p. 451
Habitat. California.
Food plant. Quercus agrifolia.

RENOCIS Casey

1886 Casey. Cal. Acad. Sci. Bul. 2:257

159 **heterodoxus** Casey

1886 Renocis. Casey. Cal. Acad. Sci. Bul. 2, p. 258, pl. 7, fig. 20.

SCIERUS Leconte

1876 Leconte. Am. Phil. Soc. Proc. 15:390
1883 Leconte & Horn. Col. N. A. p. 525

160 **annectens** Lec.

1876 Leconte. Am. Phil. Soc. Proc. 15:390
1888 Scierus. Bedel. Faun. Col. Seine, 6:388
1901 Scierus. Hopkins. U. S. Div. Ent. Bul. 28, p. 33
Habitat. Anticosti, British Columbia, Maine.
Food plant. Picea.

TOMICUS Latr.

1802 Latreille. Hist. Nat. Crust. & Ins. 3:203
1887 Bedel. Faun. Col. Seine, 6:388, 389
1896 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 143

HYLASTES Erichson

1836 Erichson. Wieg. Archiv. 2:47
1856 Perris. Ann. Soc. Ent. France, p. 223-30, pl. 5, fig. 321-23
1864 Eichhoff. Berl. Ent. Zeit. p. 23, 44, 46
1868 Leconte. Am. Ent. Soc. Trans. 2:174
1869 Chapuis. Syn. Scol. p. 16
1873 Chapuis. Mem. Soc. Liege, p. 224
1876 Leconte. Am. Phil. Soc. Proc. 15:387-88
1877 Provancher. Faun. Ent. Can. 1:574
1881 Eichhoff. Borkenk. p. 35, 76
1883 Leconte & Horn. Col. N. A. p. 521
1887 Bedel. Faun. Col. Seine, 6:388, 389, (Tomicus Latr.)

1895 Judeich-Nitsche. Forstins. 1:445, 446, fig.
1896 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 143
1901 Barbey. Scol. l'Europ. Cent. p. 41

161 exilis Chap.

1869 Hylastes. Chapuis. Syn. Scol. p. 76
1873 Hylastes. Chapuis. Mem. Soc. Liège, p. 228
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388, 389

Habitat. Florida.

Food plants. (?)

162 longus Lec.

1870 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388, 389
1907 Hylastes. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218

Habitat. Colorado, New Mexico.

Food plants. (?)

163 macer Lec.

1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:175
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388
1894 Hylastes. Schwarz. Ins. Life, 7:255

Habitat. California, Utah, Nebraska.

Food plant. Picea engelmanni

164 nigrinus Mannh.

1852 Hylurgus. Mannerheim. Bul. Mosc. 356, 385, (143)
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:174
1873 Hylastes. Chapuis. Mem. Soc. Liège, p. 226
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388
1894 Hylastes. Hamilton. Am. Ent. Soc. Trans. 21:36

Habitat. Alaska to California.

Food plants. (?)

165 porculus Er.

1836 Hylastes. Erichson. Wieg. Archiv. 2:49
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:149, 174
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388, 389
1877 Hylastes. Provancher. Faun. Ent. Can. 1, Add. et cor. p. 28
1878 Hylastes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1878 Hylastes. Schwarz. Am. Phil. Soc. Proc. 17:469
1888 Hylastes. Schwarz. Ent. Soc. Wash. Proc. 1:80
1890 Hylastes. Packard. U. S. Ent. Com'n, 5th Rep't, p. 724
1896 Hylastes. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:605, 606, 610
1898 Hylastes. Blandford. Ent. News, 9:5
1899 Hylastes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 448
1900 Hylastes. Smith. Cat. Ins. N. J. p. 365
1905 Hylastes. Skinner. Ent. News, 16:248
1906 Hylastes. Felt. N. Y. State Mus. Mem. 8, 2:752

carbonarius Fitch

1851 Hylastes. Fitch. Nox. Ins. N. Y. 4th Rep't, p. 730
1876 =porculus Er. Leconte. Am. Phil. Soc. Proc. 15:389

cavernosus Zimm.

1868 Hylastes. Zimmerman. Am. Ent. Soc. Trans. 2:149, 174
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388, 389
1877 Hylastes. Provancher. Faun. Ent. Can. 1:574. Add. et cor. p. 28
1878 Hylastes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1894 Hylastes. Hamilton. Am. Ent. Soc. Trans. 21:36
1896 =porculus Er. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606, 610
1899 Hylastes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 345, 347, 356
1900 =porculus Er. Smith. Cat. Ins. N. J. p. 365

granosus Chap.

1869 Hylastes. Chapuis. Syn. Scol. p. 73
1873 Hylastes. Chapuis. Mem. Soc. Liège, p. 225
1876 =porculus Er. Leconte. Am. Phil. Soc. Proc. 15:389
1896 =porculus Er. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606, 610

Habitat. Atlantic states, Colorado, Michigan, eastern Canada, Alaska.

Food plant. Pinus.

166 porosus Lec.

1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:175
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388
1902 Hylastes. Hopkins. U. S. Div. Ent. Bul. 32, p. 13

Habitat. Nevada, California.

Food plants. Roots of pines.

167 salebrosus Eich.

1868 Hylastes. Eichhoff. Berl. Ent. Zeit. p. 146
1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:177
1876 (?) =porculus Er. Leconte. Am. Phil. Soc. Proc. 15:389
1896 Hylastes. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606, 607, 610
1898 =scabripennis Zimm. Blandford. Ent. News, 9:5

scabripennis Zimm.

1868 Hylastes. Zimmerman. Am. Ent. Soc. Trans. 2:149
1876 =porculus Er. Leconte. Am. Phil. Soc. Proc. 15:389
1896 =salebrosus Eich. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606, 607, 610
1898 Hylastes. Blandford. Ent. News, 9:5

Habitat. Atlantic states and eastern Canada.

Food plants.

168 **scobinosus** Eich.

1868 Hylastes. Eichhoff. Berl. Ent. Zeit. p. 146
1869 Hylastes. Chapuis. Syn. Scol. p. 73
1873 Hylastes. Chapuis. Mem. Soc. Liège, p. 225
1876 =cavernosus Zimm. Leconte. Am. Phil. Soc. Proc. 15:389
1896 Hylastes. Eichhoff & Schwarz. U. S. Nat. Mus. Proc. 18:606, 607, 610
Habitat. Carolina, Norfolk sound.
Food plants. (?)

169 **tenuis** Eich.

1868 Hylastes. Eichhoff. Berl. Ent. Zeit. p. 147
1868 Hylurgus. Zimmerman. Am. Ent. Soc. Trans. 2:149
1873 Hylastes. Chapuis. Mem. Soc. Liège, p. 227
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388, 389
1878 Hylastes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 15:469
1888 Hylastes. Schwarz. Ent. Soc. Wash. Proc. 1:80
1895 Hylastes. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1899 Hylastes. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 345, 449
1906 Hylastes. Felt. N. Y. State Mus. Mem. 8, 2:752

gracilis Lec.

1868 Hylastes. Leconte. Am. Ent. Soc. Trans. 2:174
1876 Hylastes. Leconte. Am. Phil. Soc. Proc. 15:388
1899 =tenuis Zimm. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 449
1907 Hylastes. Fall & Cockerell. Am. Ent. Soc. Trans. 33:218
Habitat. Atlantic states, California, Quebec.
Food plant. Pinus.

THYSANOES Leconte

1876 Leconte. Am. Phil. Soc. Proc. 15:369
1883 Leconte & Horn. Col. N. A. p. 519, 520

170 **fimbricornis** Lec.

1876 Thysanoes. Leconte. Am. Phil. Soc. Proc. 15:370
1889 Thysanoes. Schwarz. Ent. Soc. Wash. Proc. 1:165
1890 Thysanoes. Packard. U. S. Ent. Com'n, 5th Rep't, p. 293
1894 Thysanoes. Schwarz. Ent. Soc. Wash. Proc. 3:45
1906 Thysanoes. Felt. N. Y. State Mus. Mem. 8, 2:716
Habitat. Pennsylvania.
Food plant. Hicoria.

TRYPODENDRON Stephens

1830 Stephens. Ill. Brit. Ent. 3:353
1864 Eichhoff. Berl. Ent. Zeit. p. 30, 45, 46
1877 Provancher. Faun. Ent. Can. 1:566
1878 Eichhoff. Rat. Tom. p. 412
1881 Eichhoff. Borkenk. p. 201
1888 Bedel. Faun. Col. Seine, 6:306, 403
1895 Judeich-Nitsche. Forstins. 1:449-51
1901 Barbey. Scol. l'Europ. Cent. p. 110

XYLOTERUS Erichson

1836 Erichson. Wieg. Archiv. 1:60
1876 Leconte. Am. Phil. Soc. Proc. 15:357
1883 Leconte & Horn. Col. N. A. p. 517-18

171 **lineatus** Oliv.

1795 Bostrichus. Olivier. Ent. 4:77, p. 18, tab. 3, fig. 23, a, b
1813 Bostrichus. Gyllenhal. In. Suec. 3:367
1834 Bostrichus Hartig. Forstl. Convers. Lexicon, p. 13, 110
1839 Xyloterus. Ratzeburg. Forstins. 1:199 202, t. 13, fig. 11
1864 Xyloterus. Eichhoff. Berl. Ent. Zeit. tab. 1, fig. 11
1871 Xyloterus. Eichhoff. Berl. Ent. Zeit. p. 137
1876 Xyloterus. Eichhoff. Stet. Ent. Zeit. 36:378
1881 Trypodendron. Eichhoff. Borkenk. p. 298-305
1888 Trypodendron. Bedel. Faun. Col. Seine, 6:404, 421
1894 Xyloterus. Hamilton. Am. Ent. Soc. Trans. 21:36, 406
1899 Trypodendron. Ormerod. Rep't, 1898, p. 92
1901 Trypodendron. Barbey. Scol. l'Europ. Cent. p. 112, pl. 3, fig. 35; pl. 15, fig. 6
1907 Xyloterus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217
1907 Xyloterus Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 19

bivittata Kirby

1837 Apate. Kirby. Faun. Bor. Am. 4:192, pl. 8, fig. 5
1853 Xyloterus. Mannerheim. Bul. Mosc. p. 236
1871 = lineatus Oliv. Eichhoff. Berl. Ent. Zeit. p. 137
1876 Xyloterus. Leconte. Am. Phil. Soc. Proc. 15:357, 426
1876 = lineatus Ratz. (?) Oliv. Eichhoff. Stet. Ent. Zeit. 36:378
1877 Trypodendron. Provancher. Faun. Ent. Can. 1:567
1878 Xyloterus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:643
1881 = lineatus Ratz. (?) Oliv. Eichhoff. Borkenk. p. 299
1888 Xyloterus. Schwarz. Ent. Soc. Wash. Proc. 1:80
1889 Xyloterus. Hamilton. Am. Ent. Soc. Trans. 16:158
1890 Xyloterus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 720, 812, 823, fig. 276
1891 Xyloterus. Riley & Howard. Ins. Life, 3:435.
1893 Xyloterus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 134; Bul. 32, p. 210
1894 Xyloterus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 35, p. 295, fig. 10
1894 Xyloterus. Hopkins. Can. Ent. 26:278
1894 = lineatus Oliv. Hamilton. Am. Ent. Soc. Trans. 21:35, 406
1895 = lineatus Oliv. Riley & Howard. Ins. Life, 7:419
1897 Xyloterus. Hubbard. U. S. Div. Ent. Bul. 7:28
1899 = lineatus Oliv. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 444, 449
1901 Xyloterus. Felt. Forest, Fish & Game Com'n Rep't, 7:495, fig. 10
1904 Trypodendron. Hopkins. U. S. Div. Ent. Bul. 48, p. 16
1905 Trypodendron. Currie. U. S. Div. Ent. Bul. 53, p. 71

1905 Xyloterus. Schwarz. Harriman Alaska Exped. Rep't 8, Insects, pt 1, p. 185
1906 Xyloterus. Felt. N. Y. State Mus. Mem. 8, 2:335, 339, 369-70, pl. 70, fig. 2

cavifrons Mannh.

1843 Bostrichus. Mannerheim. Bul. Mosc. p. 297, (260)
1852 Bostrichus. Mannerheim. Bul. Mosc. p. 359, (153)
1852 Xyloterus. Mannerheim. Bul. Mosc. p. 385
1853 Xyloterus. Mannerheim. Bul. Mosc. p. 236
1868 = bivittatus Kirby. Leconte. Am. Ent. Soc. Trans. 2:158
1876 = bivittatus Kirby. Leconte. Am. Phil. Soc. Proc. 15:357
1878 = bivittatus Kirby. Eichhoff. Rat. Tom. p. 417
1881 = lineatus Oliv. Eichhoff. Borkenk. p. 299

melanocephalus Fabr.

1793 Bostrichus. Fabricius. Ent. Syst. 2:368
1801 Bostrichus. Fabricius. Syst. El. 2:21, 394
1881 = lineatus Oliv. Eichhoff. Borkenk. p. 299

rufitarsus Kirby

1837 Apate. Kirby. Faun. Bor. Am. 4:193
1868 Apate. Leconte. Am. Ent. Soc. Trans. 2:177
1876 = bivittatus. Kirby. Leconte. Am. Phil. Soc. Proc. 15:426
1878 (?) = lineatus Ratz. Eichhoff. Rat. Tom. p. 417
1888 = lineatus Oliv. Hamilton. Am. Ent. Soc. Trans. 16:158

vittiger Eich.

1881 Trypodendron. Eichhoff. Borkenk. p. 299
1886 = lineatus Oliv. Schwarz. Ent. Am. 2:41

Habitat. Central and Northern Europe, Siberia, Canada, Eastern, Northern and Western United States, New Mexico.

Food plants. Pinus, Picea, Abies, Tsuga, Juniperus, Larix, Betula.

172 politus Say

1828 Bostrichus. Say. Acad. Nat. Sci. Jour. 5:256; ed. Lec. 2:318
1868 Xyloterus. Leconte. Am. Ent. Soc. Trans. 2:159
1876 Xyloterus. Leconte. Am. Phil. Soc. Proc. 15:357, 358
1878 Xyloterus. Eichhoff. Rat. Tom. p. 420
1878 Xyloterus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1886 Xyloterus. Fletcher. Ont. Ent. Soc. 17:32
1889 Xyloterus. Schwarz. Ent. Soc. Wash. Proc. 1:149
1890 Xyloterus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 387
1890 Xyloterus. Schwarz. Ins. Life, 3:87
1891 Xyloterus. Schwarz. Ent. Soc. Wash. Proc. 2:77
1893 Xyloperus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 134; Bul. 32, p. 210
1894 Xyloterus. Hopkins. Can. Ent. 26:278
1895 Xyloperus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378

1897 Xyloterus. Hubbard. U. S. Div. Ent. Bul. 7, p. 28
1899 Xyloterus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 444
1900 Xyloteres. Smith. Cat. Ins. N. J. p. 362.
1901 Xyloterus. Felt. N. Y. Forest, Fish & Game Com'n Rep't, 7:516–17, fig. 16
1905 Xyloterus. Felt. N. Y. State Mus. Mem. 8, 1:257, 292–293
1906 Xyloterus. Felt. N. Y. State Mus. Mem. 8, v. 2, pl. 70, fig. 4, 5

Habitat. Eastern United States and Canada.

Food plants. Quercus, Fagus, Acer, Betula, Hicoria, Fraxinus, Castanea, Magnolia, Alnus, Picea, Pinus.

173 **retusus** Lec.

1868 Xyloterus. Leconte. Am. Ent. Soc. Trans. 2:158
1876 Xyloterus. Leconte. Am. Phil. Soc. Proc. 15:357
1878 Xyloterus. Eichhoff. Rat. Tom. p. 420
1893 Xyloterus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 134; Bul. 32, p. 210
1894 Xyloterus. Hopkins. Can. Ent. 26:278
1897 Xyloterus. Hubbard. U. S. Div. Ent. Bul. 7, p. 29

Habitat. Canada, West Virginia.

Food plant. Populus grandidentata.

174 **scabricollis** Lec.

1868 Xyloterus. Leconte. Am. Ent. Soc. Trans. 2:158
1876 Xyloterus. Leconte. Am. Phil. Soc. Proc. 15:357, 358
1878 Trypodendron. Provancher. Faun. Ent. Can. 1, Add. et cor. p. 13
1878 =unicolor Eich. (?) Eichhoff. Rat. Tom. p. 419
1893 Xyloterus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 134; Bul. 32, p. 210
1897 Xyloterus. Hubbard. U. S. Div. Ent. Bul. 7, p. 29
1899 Xyloterus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 444
1900 Xyloteres. Smith. Cat. Ins. N. J. p. 362
1905 Xyloterus. Skinner. Ent. News, 16:248
1906 Xyloterus. Felt. N. Y. Mus. Mem. 8, 2:752
1907 Xyloterus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. District of Columbia, West Virginia, New York, New Mexico, Quebec.

Food plants. Pinus, Hamamelis virginiana, Tsuga.

175 **unicolor** Eich.

1871 Xyloterus. Eichhoff. Berl. Ent. Zeit. p. 136
1876 Xyloterus. Leconte. Am. Phil. Soc. Proc. 15:358
1878 Trypodendron. Eichhoff. Rat. Tom. p. 419
1893 =politus Say. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 134; Bul. 32, p. 210
1894 (?) =politus Say. Hopkins. Can. Ent. 26:278
1900 Xyloteres. Smith. Cat. Ins. N. J. p. 362

Habitat.

Food plants.

XYLEBORUS Eich.

1864 Eichhoff. Berl. Ent. Zeit. p. 37, 45, 56
1868 Zimmerman. Am. Ent. Soc. Trans. 2:142, 144
1868 Leconte. Am. Ent. Soc. Trans. 2:151, 159-62
1876 Leconte. Am. Phil. Soc. Proc. 15:358
1877 Provancher. Faun. Ent. Can. 1:567
1878 Eichhoff. Rat. Tom. p. 315, 316
1881 Eichhoff. Borkenk. p. 53, 268
1883 Leconte & Horn. Col. N. A. p. 518
1888 Bedel. Faun. Col. Seine, 6:397, 402
1894 Blandford. Ent. Soc. Lond. p. 100
1895 Judeich-Nitsche. Forstins. 1:449, 451
1895 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 192-97
1901 Barbey. Scol. l'Europ. Cent. p. 104

176 (?) affinis Eich.

1867 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 401
1878 Xyleborus. Eichhoff. Rat. Tom. p. 372-74
1893 Xyleborus. Blandford. Kew Bul. p. 1-46
1894 Xyleborus. Riley. Ins. Life, 6:227
1895 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 3:171
1895 Xyleborus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 195, 196, 216
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 20, 21
1898 Xyleborus. Blandford. Ent. News, 9:3
1904 Xyleborus. Titus & Pratt. U. S. Div. Ent. Bul. 47, p. 7
1904 Xyleborus. Hopkins. U. S. Dep't Agric. Yearbook, p. 383
1905 Xyleborus. Currie. U. S. Div. Ent. Bul. 53, p. 7

Habitat. United States (?), Mexico, Guatemala, Nicaragua, Panama, West Indies, Columbia, Brazil, Peru, Argentina, Mauritius.

Food plants. Sugar cane (?), Liriodendron (?).

177 celsus Eich.

1867 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 400
1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:145
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359-60
1878 Xyleborus. Eichhoff. Rat. Tom. p. 399
1878 Xyleborus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1890 Xyleborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 92, 297
1893 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 135; Bul. 32, p. 211
1895 Xyleborus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 Xyleborus. Hopkins. Can. Ent. 28:249, 250
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 22, 24
1900 Xyleborus. Smith. Cat. Ins. N. J. p. 363
1904 Xyleborus. Hopkins. U. S. Dep't Agric. Yearbook, p. 384
1904 Xyleborus. Hopkins. U. S. Div. Ent. Bul. 48, p. 39
1906 Xyleborus. Felt. N. Y. State Mus. Mem. 8, 2:427, 446-48, 504, fig. 102-5

biographus Lec.

1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2:160
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360 (♂)
1878 =celsus Eich. (?) Eichhoff. Rat. Tom. p. 399, 400
1878 Xyleborus. Schwarz. Am. Phil. Soc. Proc. 17:468, 666
1896 =celsus Eich. Hopkins. Can. Ent. 28:249
1906 Xyleborus. Felt. N. Y. State Mus. Mem. 8, 2:447

Habitat. Middle Atlantic, Central and Southern states.

Food plant. Hicoria.

178 dispar Fabr.

1792 Apate. Fabricius. Ent. Syst. 1:2, p. 363
1793 Bostrichus. Herbst. Col. 113, pl. 48, fig. 2, k
1801 Apate. Fabricius. Syst. Elent. 2:382
1813 Bostrichus. Gyllenhal. Ins. Suec. 3:10, 363
1837 Bostrichus. Ratzeburg. Forstins. 1:169, taf. 13, fig. 13, 14
1839 Bostrichus. Ratzeburg. Forstins. 1:204-8, taf. 13, fig. 13, 14
1843 Bostrichus. Klingelh. Stet. Ent. Zeit. 4:78
1844 Bostrichus. Hartig. Allgemeine Forst. Jagdz. 13:73, 74
1848 Bostrichus. Noerdl. Stet. Ent. Zeit. p. 249
1854 Bostrichus. Bach. Kaef. 2:124, 131
1862 Bostrichus. Doeb. Zool. 2:183
1863 Fairm. Gen. Col. 4, t. 34, fig. 165, 166
1864 Bostrichus. Bach. Nat. u. Offenb. 10:52, fig. 7, 8
1864 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 38, t. 1, fig. 13-16
1867 Asinandrus. Ferrari. Borkenk. p. 26, (24)
1874 Asinandrus. Redtenb. Fn. Aust. ed. 3, 2:382
1878 Xyleborus. Eichhoff. Rat. Tom. p. 320-23
1878 Xyleborus. Schoch. M. T. schw. ent. Ges. 5:367
1881 Xyleborus. Eichhoff. Borkenk. p. 53, 67, 68, 73, 269
1887 Xyleborus. Fletcher. Ont. Ent. Soc. 17:14
1888 Xyleborus. Bedel. Faun. Col. Seine, 6:403, 420
1889 Xyleborus. Riley. Ins. Life, 2:145
1890 Xyleborus. Riley & Howard. Ins. Life, 2:279
1890 Xyleborus. Ormerod. Rep't 1889. p. 92
1890 Xyleborus. Ormerod. Man. Inj. Ins. p. 330-34, fig.
1890 Xyleborus. Schwarz. Ins. Life, 3:41
1891 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 2:64
1892 Xyleborus. Riley. Ins. Life, 5:17
1894 Xyleborus. Hopkins. Can. Ent. 26:278
1894 Xyleborus. Bellevoye. Soc. Rein. Bul. 3:89-111
1895 Xyleborus. Riley & Howard. Ins. Life, 7:419
1895 Tomicus. Judeich-Nitsche. Forstins. 1:549-51
1895 Xyleborus. Chittenden. Ins. Life, 7:385
1895 Xyleborus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 22, 23
1898 Xyleborus. Ormerod. Ins. Orchard Fruits, Handbook, p. 185-92
1900 Xyleborus. Smith. Cat. Ins. N. J. p. 362
1901 Xyleborus. Barbey. Scol. l'Europ. Cent. p. 104, pl. 3, fig. 25, 26; pl. 15, fig. 5

1904 Xyleborus. Chapman. Ent. Soc. Lond. Trans. p. 100-2
1906 Xyleborus. Felt. N. Y. State Mus. Mem. 8, 2:446, fig. 103
1907 Asinandrus. Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 18

brevis Panz. ♂

1793 Bostrichus. Panz. Fn. Germ. p. 34, fig. 20
Bostrichus. Panz. Crit. Rev. 1:118 (*var* pallida)
1878 =dispar Fabr. Eichhoff. Rat. Tom. p. 321

pyri Peck

1817 Scolytus. Peck. Mass. Agric. Jour. 4:205-7
1819 Scolytus. Peck. Mass. Agric. Jour. 5:307-13
1843 Tomicus. Mass. Ploughman. June 17, v. 2, no. 38
1843 Tomicus. New England Farmer, p. 21
Tomicus. Downing's Horticulturist, 2:365-67
1852 Tomicus. Harris. Ins. Inj. Veg. p. 80
1863 Tomicus. Harris. Inj. Ins. p. 91
1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:144
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:358-60
1877 Xyleborus. Provancher. Faun. Ent. Can. 1:567
1878 Xyleborus. Eichhoff. Rat. Tom. p. 323
1886 Xyleborus. Schwarz. Ent. Am. 2:41
1887 Xyleborus. Schwarz. Ent. Am. 3:20
1889 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 1:138
1890 Xyleborus. Forbes. Psyche, 5:295
1890 =dispar. Riley & Howard. Ins. Life, 2:279
1891 Xyleborus. Cook. Mich. Agric. Exp. Sta. Rep't. p. 130-31, fig. 4
1893 Xyleborus. Harvey. Me. Agric. Exp. Sta. Rep't, p. 176-78
1893 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 135; Bul. 32, p. 210
1896 Xyleborus. Lintner. 11th N. Y. Rep't, p. 270
1897 =dispar. Hubbard. U. S. Div. Ent. Bul. 7, p. 22, 23
1898 =dispar Fabr. Ormerod. Ins. Orchard Fruits, Handbook, p. 185
1900 =dispar Fabr. Smith. Cat. Ins. N. J. p. 362
1902 Xyleborus. Lochhead. Ont. Ent. Soc. 33:109
1904 Xyleborus. Titus & Pratt. U. S. Div. Ent. Bul. 47, p. 20
1905 Xyleborus. Currie. U. S. Div. Ent. Bul. 53, p. 13, 20

tachygraphus Sahlb.

1834 Bostrichus. Sahlb. Diss. Ins. Fenn. p. 52
1878 =dispar Fabr. Eichhoff. Rat. Tom. p. 321, 323

thoracicus Panz. ♀

1793 Bostrichus. Panz. Fn. Germ. p. 34, fig. 18
Bostrichus. Panz. Crit. Rev. 1:118
1878 =dispar Fabr. Eichhoff. Rat. Tom. p. 321

ratzeburgii Kolen. ♀

1846 Bostrichus. Kolenati. Mel. Ent. 3:30, 115, t. 14, fig. 11
1867 Bostrichus. Ferrari. Borkenk. p. 27, note 2
1878 =dispar Fabr. Eichhoff. Rat. Tom. p. 321, 323

Habitat. Canada, eastern and middle United States, Europe, Asia Minor, Siberia.

Food plants. Fruit trees, Betula, Fagus, Quercus, Tsuga, and, in Europe, many others.

179 **fuscatus** Eich.

1867 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 400
1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:145
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1878 Xyleborus. Eichhoff. Rat. Tom. p. 386
1878 Xyleborus. Schwarz. Am. Phil. Soc. Proc. 17:468
1878 Xyleborus. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1890 Xyleborus. Schwarz. Ins. Life, 3:87
1890 Xyleborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 93.
1891 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 2:78
1893 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 135; Bul. 32, p. 210
1894 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 3:16
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 21, 22
1898 Xyleborus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 197, 217
1900 Xyleborus. Smith. Cat. Ins. N. J. p. 363
1906 Xyleborus. Felt. N. Y. State Mus. Mem. 8, 2:752

planicollis Zimm.

1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:145
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:360, 361
1878 Xyleborus. Eichhoff. Rat. Tom. p. 391
1891 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 2:79
1897 (?) =fuscatus. Eich. Hubbard. U. S. Div. Ent. Bul. 7, p. 20, 22
1898 (?) =fuscatus Eich. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 217

Habitat. New Jersey to Texas, Guatemala, Columbia.

Food plants. Quercus, Hicoria, Castanea, J u g l a n s c i n e r e a, Pinus, (wine and vinegar casks).

180 **impressus** Eich.

1867 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 400
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1878 Xyleborus. Eichhoff. Rat. Tom. p. 389
1890 Xyleborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 718

Habitat. Georgia, New Jersey, Massachusetts.

Food plant. Pinus.

181 **inermis** Eich.

1867 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 401
1878 Xyleborus. Eichhoff. Rat. Tom. p. 370-72

1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 20
1898 Xyleborus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 217
1904 Xyleborus. Hopkins. U. S. Dep't Agric. Yearbook, p. 383
Habitat. Cuba, "Insula Americana, Civitates unitae, Tennessee, St Catharina."
Food plants. Probably those given for "pubescens."

182 **obesus** Lec.

1868 Xyleborus. Leconte. Am. Ent. Soc. Trans. 2:159
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1878 Xyleborus. Eichhoff. Rat. Tom. p. 323, 324
1887 Xyleborus. Schwarz. Ent. Am. 3:20
1888 (?) = pyri Peck. Schwarz. Ent. Soc. Wash. Proc. 1:45
1890 Xyleborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 520
1893 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 135; Bul. 32, p. 211
1894 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 35, p. 295, fig. 12
1894 Xyleborus. Hopkins. Can. Ent. 26:278
1896 Xyleborus. Lintner. 11th N. Y. Rep't, p. 270
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 23
1900 Xyleborus. Smith. Cat. Ins. N. J. p. 363
1904 Xyleborus. Hopkins. U. S. Dep't Agric. Yearbook, p. 383
1906 Xyleborus. Felt. N. Y. State Mus. Mem. 8, 2:722
Habitat. Canada to Virginia.
Food plants. Quercus, Fagus, Tsuga, Pyrus.

183 **pini** Eich.

1867 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 401
1876 = xylographus Say. Leconte. Am. Phil. Soc. Proc. 15:360
1878 = xylographus. Say. Eichhoff. Rat. Tom. p. 369, 370
1896 Xyleborus. Eichhoff & Schwarz. U. S. Nat. Musc. Proc. 18:609, 610
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 20
Habitat. "Carolina."
Food plants.

184 (?) **propinquus** Eich.

1868 Xyleborus. Eichhoff. Berl. Ent. Zeit. p. 281
1878 Xyleborus. Eichhoff. Rat. Tom. p. 367
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 20
1898 Xyleborus. Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 166, 213, 214
Habitat. Tennessee (?), Mexico, Guatemala, Nicaragua.
Food plants.

185 **pubescens** Zimm.

1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:145
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1878 (?) = inermis Eich. Eichhoff. Rat. Tom. p. 371
1878 Xyleborus. Schwarz. Am. Phil. Soc. Proc. 17:468
1886 Xyleborus. Schwarz. Ent. Am. 2:41

1888 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 1:45
1890 Xyleborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 710-11
1890 Xyleborus. Schwarz. Ins. Life, 3:87
1890 Xyleborus. Riley & Howard. Ins. Life, 3:167
1891 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 2:78
1892 Xyleborus. Riley & Howard. Ins. Life, 4:402
1893 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 137; Bul. 32, p. 211
1894 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 35, p. 296, fig. 14
1894 Xyleborus. Hopkins. Can. Ent. 26:279
1894 (?)=perforans Woll. Hopkins. Ins. Life, 7:148
1894 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 3:16
1895 Xyleborus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Rep't, p. 133-35
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 19-22
1897 Xyleborus. Howard. U. S. Div. Ent. Bul. 7, p. 85
1898 Xyleborus. Blandford. Ent. News, 9:4
1899 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 445
1900 Xyleborus. Smith. Cat. Ins. N. J. p. 363
1904 Xyleborus. Titus & Pratt. U. S. Div. Ent. Bul. 47, p. 57
1905 Xyleborus. Wenzel. Ent. News, 16:124
1906 Xyleborus. Felt. N. Y. State Mus. Mem. 8, 2:396, 702, 720

Habitat. New York, West Virginia, Wisconsin and southward.

Food plants. Citrus aurantium, Quercus, Tilia americana, Prosopis juliflora, Populus, Juglans cinerea, Castanea, Magnolia, Pinus, Prunus cerasus.

186 retusicollis Zimm.

1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:146
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1878 (?)=affinis Eich. Eichhoff. Rat. Tom. p. 372
1886 Xyleborus. Schwarz. Ent. Am. 2:41
1890 Xyleborus. Packard. U. S. Ent. Com'n, 5th Rep't, p. 93
1895 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 3:171
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 20

Habitat. Maryland.

Food plant Quercus.

187 tachygraphus Zimm.

1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:144
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:358, 360
1878 Xyleborus. Eichhoff. Rat. Tom. p. 323
1891 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 2:62
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 23
1897 Xyleborus. Chittenden. U. S. Div. Ent. Bul. 7, p. 79

Habitat. New York, middle and Southern states.

Food plants. Liriodendron tulipifera, Acer, Fagus, Cercis canadensis, Rhus.

188 xylographus Say

1826 Bostrichus. Say. Nat. Sci. Phila. Jour. 5:256; ed. Lec. 2:318
1857 Xyleborus. Fitch. Nox. Ins. 4th Rep't, p. 716–20
1868 Xyleborus. Zimmerman. Am. Ent. Soc. Trans. 2:145
1876 Xyleborus. Leconte. Am. Phil. Soc. Proc. 15:359, 360
1878 Xyleborus. Eichhoff. Rat. Tom. p. 369
1878 Xyleborus. Schwarz. Am. Phil. Soc. Proc. 17:468, 666
1883 Xyleborus. Saunders. Ont. Ent. Soc. 14:55
1886 Xyleborus. Schwarz. Ent. Am. 2:41
1889 Xyleborus. Schwarz. Ent. Soc. Wash. Proc. 1:149
1893 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 31, p. 136
1894 Xyleborus. Hopkins. Can. Ent. 26:278
1894 Xyleborus. Hamilton. Am. Ent. Soc. Trans. 21:406
1895 Xyleborus. Hamilton. Am. Ent. Soc. Trans. 22:346, 378
1896 Xyleborus. Hubbard. Ent. Soc. Wash. Proc. 3:318
1896 Xyleborus. Lintner. 11th N. Y. Rep't, p. 270
1897 Xyleborus. Hubbard. U. S. Div. Ent. Bul. 7, p. 24–26
1898 =saxeseni Ratz. Ormerod. Ins. Orchard Fruits, Handbook, p. 192
1898 Xyleborus. Hopkins. Can. Ent. 30:21–29, pl. 2, 3
1899 Xyleborus. Hopkins. W. Va. Agric. Exp. Sta. Bul. 56, p. 258, 347
1899 Xyleborus. Luggar. Minn. Agric. Exp. Sta. Bul. 66, p. 311–13, fig. 241
1900 Xyleborus. Smith. Cat. Ins. N. J. p. 363
1903 Xyleborus. Washburn. Minn. Agric. Exp. Sta. Bul. 84, p. 60, 82, 91, fig. 36
1905 Xyleborus. Skinner. Ent. News, 16:248
1907 Xyleborus. Bremner. Can. Ent. 39:195–96
1907 Xyleborus. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

aesculi Ferrari ♂

1867 Xyleborus. Ferrari. Borkenk. p. 22, note 2
1878 =saxeseni Ratz. Eichhoff. Rat. Tom. p. 362
1898 =xylographus Say. Hopkins. Can. Ent. 30:28

decolor Boield. ♂

1859 Bostrichus. Boieldieu. Ann. Soc. Ent. Fr. p. 473
1866 Bostrichus. Perris. Ann. Soc. Ent. Fr.
1867 Bostrichus. Ferrari. Borkenk. p. 21, 22, note 2
1876 =saxeseni Ratz. Eichhoff. Stet. Ent. Zeit. 36:378
1878 =saxesenii Ratz. Eichhoff. Rat. Tom. p. 362
1898 =xylographus Say. Hopkins. Can. Ent. 30:29

dohrnii Woll. ♀

1854 Tomicus. Wollaston. Ins. Mad. p. 290
(?) Tomicus. Wollaston. Cat. Col. Ins. Can. p. 253
1878 =saxeseni Ratz. Eichhoff. Rat. Tom. p. 362
1898 =xylographus Say. Hopkins. Can. Ent. 30:28

dryographus Ferrari

1867 Xyleborus. Ferrari. Borkenk. p. 20, 3 et 22, note 2 (ex parte ♀)
1878 = saxeseni Ratz. Eichhoff. Rat. Tom. p. 362, 363
1898 = xylographus Say. Hopkins. Can. Ent. 30:28

saxeseni Ratz.

1837 Bostrichus. Ratzeburg. Forstins. 1:167
1839 Bostrichus. Ratzeburg. Forstins. 1:204
1846 Bostrichus. Wiesmann. Stet. Ent. Zeit. p. 24
1848 Bostrichus. Noerdl. Stet. Ent. Zeit. p. 246. ♂
1854 Bostrichus. Bach. Kaefer, 2:126, 134
1862 Bostrichus. Doebn. Zool. 2:182
1867 Xyleborus. Ferrari. Borkenk. p. 21
(?) Tomicus. Thomson. Scand. Col. 7:370
1876 Xyleborus. Eichhoff. Stet. Ent. Zeit. 36:378
1878 Xyleborus. Schoch. M. T. schw. ent. Ges. 5:367
1878 Xyleborus. Eichhoff. Rat. Tom. p. 361
1881 Xyleborus. Eichhoff. Borkenk. p. 279–82
1886 Xyleborus. Schwarz Ent. Am. 2:41
1888 Xyleborus. Bedel. Faun. Col. Seine, 6:402, 403, 419
1894 Xyleborus. Bellevoye. Soc. Reims Bul. 3:89–111
1895 Tomicus. Judeich-Nitsche. Forstins. 1:545
1896 = xylographus Say. Eichoff & Schwarz. U. S. Nat. Mus. Proc. 18:609
1897 = xylographus Say. Hubbard. U. S. Div. Ent. Bul. 7, p. 24
1898 Xyleborus Ormerod. Ins. Orchard Fruits, Handbook, p. 192, fig.
1898 = xylographus Say. Hopkins. Can. Ent. 30:21, 22
1901 Xyleborus. Barbey. Scol. l'Europ. Cent. p. 107, pl. 3, fig. 30
1904 Xyleborus. Titus & Pratt. U. S. Div. Ent. Bul. 47, p. 20
1904 Xyleborus. Hopkins. U. S. Div. Ent. Bul. 48, p. 16
1905 Xyleborus. Currie. U. S. Div. Ent. Bul. 53, p. 71
1907 Xyleborus. Trèdl. Nahrungs. Verbreit. Borkenk. Europ. p. 19

subdepressus Rey

1883 Xyleborus. Rey. Rev. d'Ent. 2:142
1898 = xylographus Say. Hopkins. Can. Ent. 30:28

Habitat. Eastern and western United States, Canada, Europe, Japan.

Food plants. Pinus, Hicoria, Quercus, Fagus, Acer, Tsuga, Picea, Prunus, Pyrus in America; Castanea, Betula, Tilia, Populus, Ulmus, Alnus, Sorbus, Aesculus, Abies, Larix, Prunus and Pyrus in Europe.

XYLOCLEPTES Ferrari

1867 Ferrari. Borkenk. p. 37
1878 Eichhoff. Rat. Tom. p. 216
1881 Eichhoff. Borkenk. p. 210
1883 Leconte & Horn. Col. N. A. p. 518

1888 Bedel. Faun. Col. Seine, 6:396, 399
1895 Judeich-Nitsche. Forstins. 1:440, 451
1898 Blandford. Biol. Centr. Am. Col. 4, pt 6, p. 185, 188
1901 Barbey. Scol. l'Europ. Cent. p. 80

189 (?) **bispinus** Duft

1825 Bostrichus. Duft. Fn. Aust. 3:92, 7
1837 Bostrichus. Ratzeburg. Forstins. 1:155, t. 13, fig. 5
1839 Bostrichus. Ratzeburg. Forstins. 1:189, t. 13, fig. 5
1849 Bostrichus. Bach. Verh. nat. Ver. Rheinl. p. 161
1849 Bostrichus. Bach. Stet. Ent. Zeit. p. 161, 200
1854 Bostrichus. Bach. Kaef. 2:129
1862 Bostrichus. Doebner. Zool. 2:178
1864 Bostrichus. Bach. Nat. u. Offenb. p. 51, fig. 6
1867 Xylocleptes. Ferrari. Borkenk. p. 40
1874 Xylocleptes. Redtenb. Fn. Aust. ed. 3. 2:378
1878 Xylocleptes. Eichhoff. Rat. Tom. p. 216, fig. 61
1881 Xylocleptes. Eichhoff. Borkenk. p. 210
1886 Xylocleptes. Schwarz. Ent. Am. 2:42
1888 Xylocleptes. Bedel. Faun. Col. Seine, 6:399, 415
1901 Xylocleptes. Barbey. Scol. l'Europ. Cent. p. 80, pl. 2, fig. 27; pl. 10, fig. 1

retusus Oliv.

1778 Scolytus. Olivier. Ent. 4:10, tab. 2, fig. 14, a, b
1878 = bispinus Duft. Eichhoff. Rat. Tom. p. 217

Habitat. Europe, United States (?).
Food plant. Clematis.

190 **cucurbitae** Lec.

1879 Xylocleptes. Leconte. U. S. Geol. Sur. Bul. 5:519
1886 Xylocleptes. Schwarz. Ent. Am. 2:42
1897 Xylocleptes. Cockerell. N. Y. Ent. Soc. Jour. 5:150
1907 Xylocleptes. Fall & Cockerell. Am. Ent. Soc. Trans. 33:217

Habitat. Utah, New Mexico.
Food plant. Cucurbita foetidissima.

191 **decipiens** Lec.

1878 Xylocleptes. Leconte. Am. Phil. Soc. Proc. 17:624
1878 Xylocleptes. Hubbard & Schwarz. Am. Phil. Soc. Proc. 17:666
1886 Xylocleptes. Schwarz. Ent. Am. 2:42
1893 Xylocleptes. Chittenden. Ent. Soc. Wash. Proc. 2:394
1896 Xylocleptes. Lintner. 11th N. Y. Rep't, p. 270
1906 Xylocleptes. Felt. N. Y. State Mus. Mem. 8, 2:715

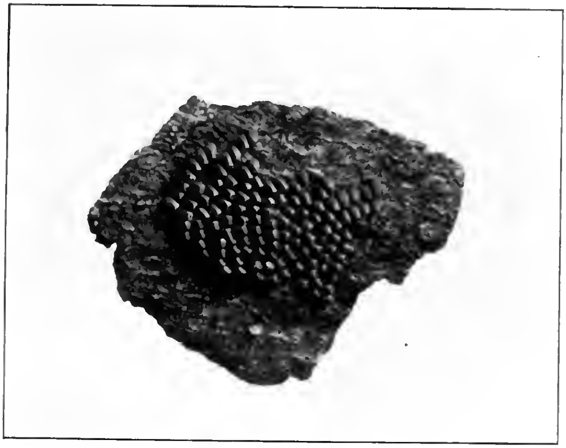
Habitat. Virginia, Michigan, New York (Ithaca).
Food plants. Hicoria, Pyrus, Acer.

EXPLANATION OF PLATES

PLATE 1

1 Snow-white linden moth; eggs, slightly enlarged. (Original)
2 Adult moths. (Author's illustration)

Plate I



I

2

Snow-white linden moth

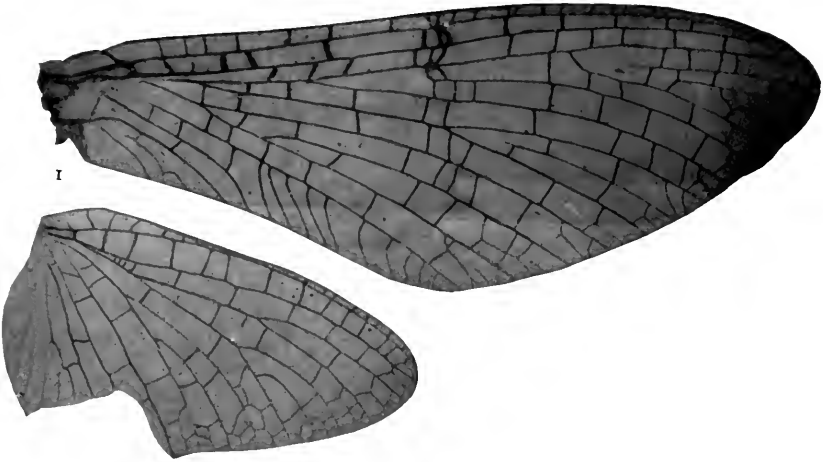
PLATE 2

Siphlonisca aerodromia Ndm.

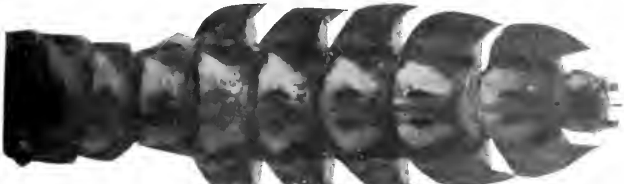
1 Wings

2 Dorsal view of abdomen of female

Plate 2



1



2

Siphlonisca aerodromia Ndm.

PLATE 3

1 Platypus compositus Say, dorsum of head and prothorax. (Enlarged)

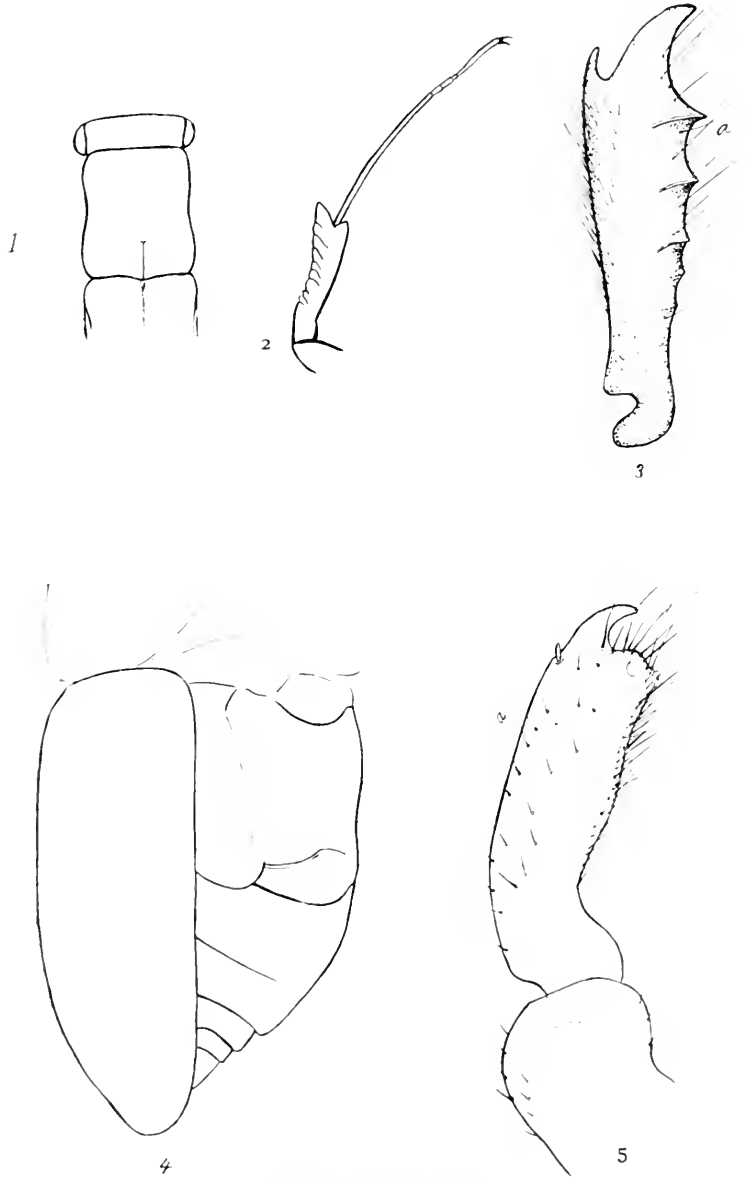
2 Platypus compositus Say, fore leg. (Greatly enlarged)

3 Erineophilus schwarzi Hopk., foretibia; *a,* outer border, after Hopkins. (Greatly enlarged)

4 Eccoptogaster rugulosus Ratz., side view of abdomen. (Enlarged)

5 Eccoptogaster rugulosus Ratz., foretibia; *a,* outer border. (Greatly enlarged)

Plate 3



Scolytid structures

PLATE 4

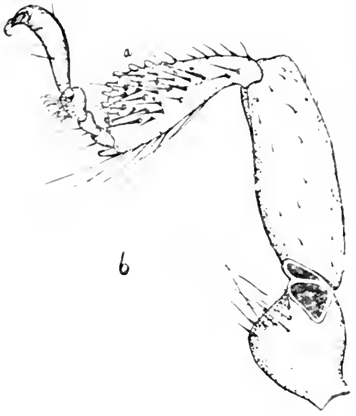
6 Pityophthorus minutissimus Zimm., fore leg; *a,* outer border. (Greatly enlarged)

7 Pityogenes undes. sp., antenna. (Greatly enlarged)

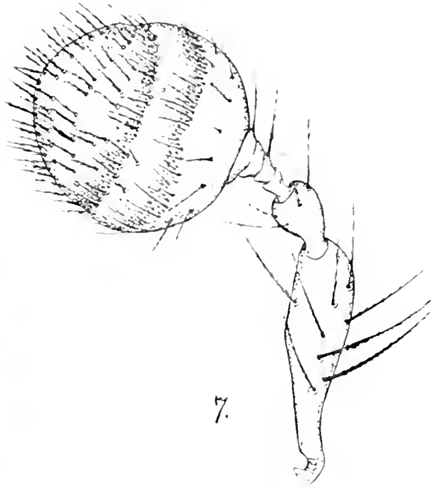
8 Pterocyclon mali Fitch, antenna. (Greatly enlarged)

9 Pityophthorus minutissimus Zimm., antenna. (Greatly enlarged)

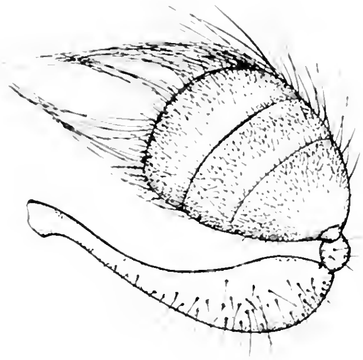
Plate 4



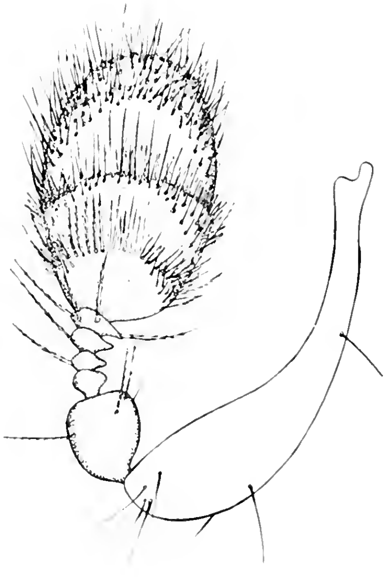
6



7.



8



9

Scolytid structures

PLATE 5

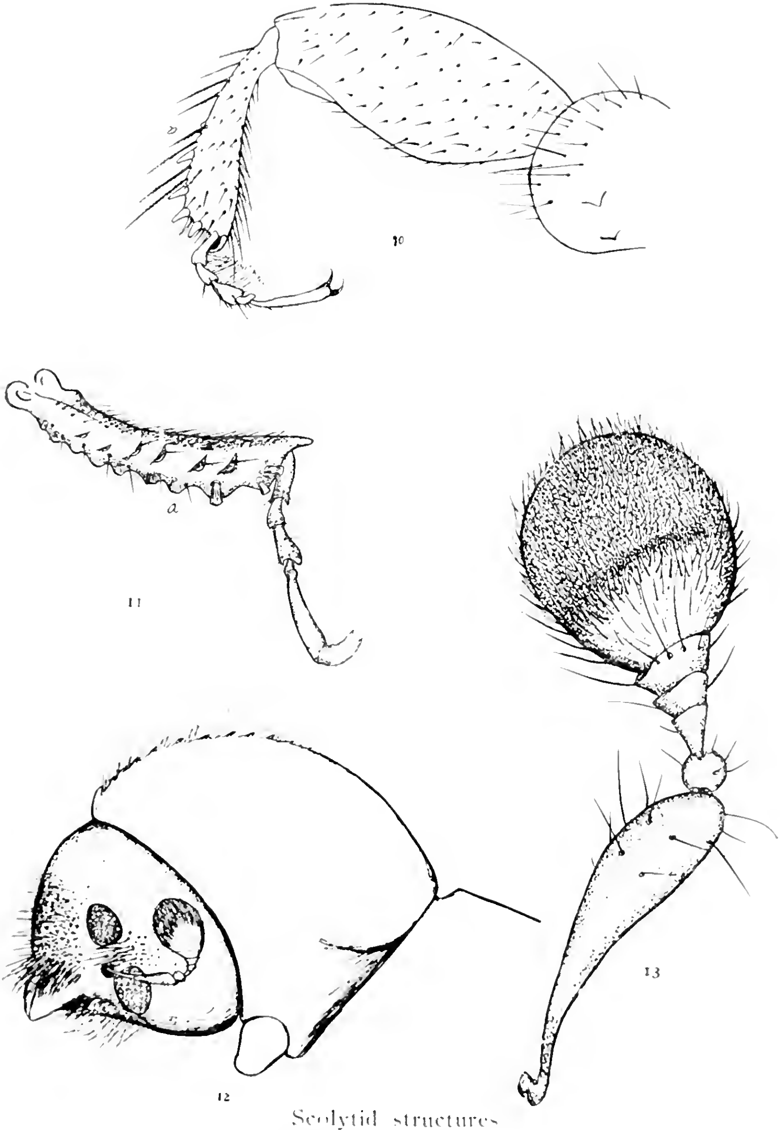
10 Pityogenes undes. sp., fore leg; *a*, outer border. (Greatly enlarged)

11 Pterocyclon mali Fitch, foretibia and tarsus; *a*, outer border. (Greatly enlarged)

12 Trypodendron politus Say, side view of head and prothorax, showing divided eye. (Enlarged)

13 Trypodendron politus Say, antenna. (Greatly enlarged)

Plate 5



Scolytid structures

PLATE 6

14 Ips (Tomicus) pini Say, distal portion of maxilla. (Greatly enlarged)

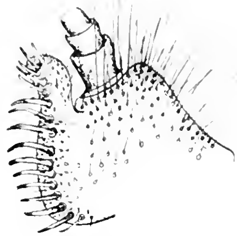
15 Xyleborus undes. sp., *a*, distal portion of maxilla. (Greatly enlarged)

16 Ips pini Say, antenna (outer face). (Greatly enlarged)

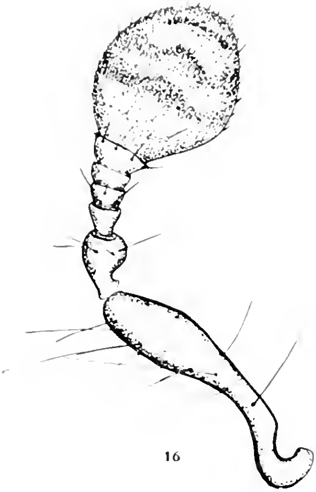
17 Xyleborus undes. sp. *a*, ventral view of prosternum. (Enlarged)

18 Dryocoetes autographus Ratz., ventral view of prosternum; *Ant.*, antenna (outer face); *Gs.*, gular suture; *C.*, forecoxa; *Ps.*, prosternum. (Enlarged)

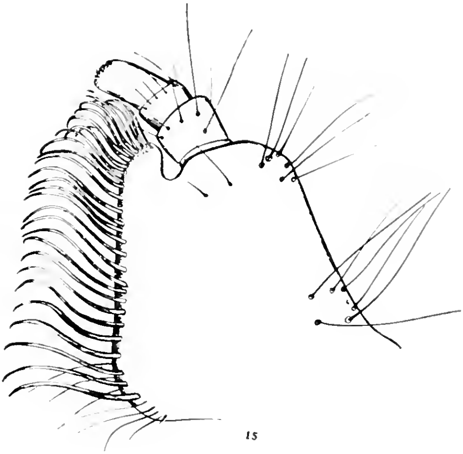
Plate 6



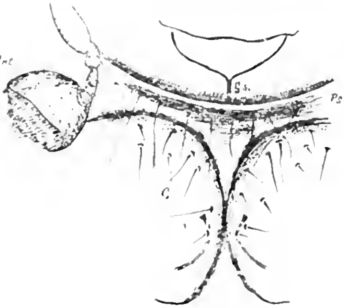
14



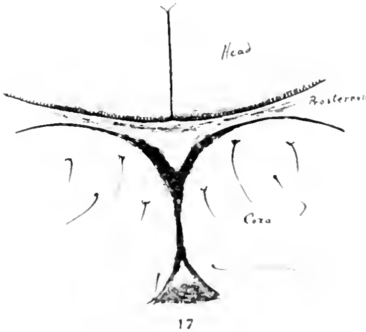
16



15



18



17

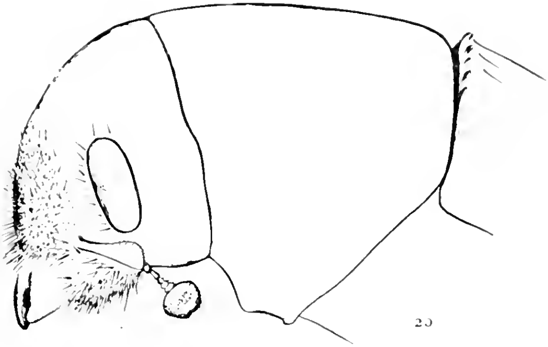
Scolytid structures

PLATE 7

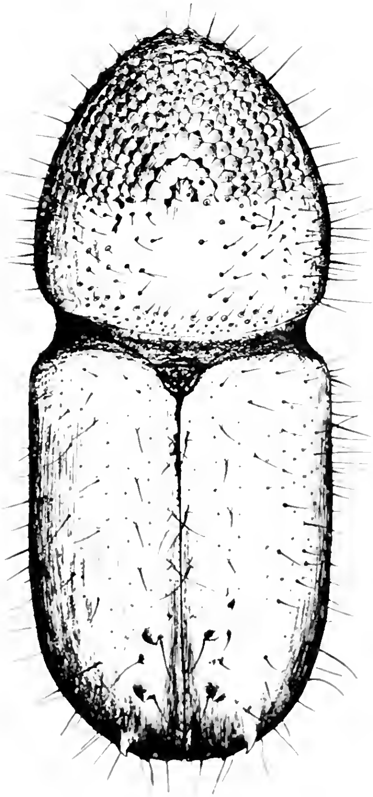
19 Pityogenes undes. sp., dorsum of male. (Enlarged)

20 Dendroctonus terebrans Oliv., side view of head and prothorax. (Enlarged)

Plate 7



20



19

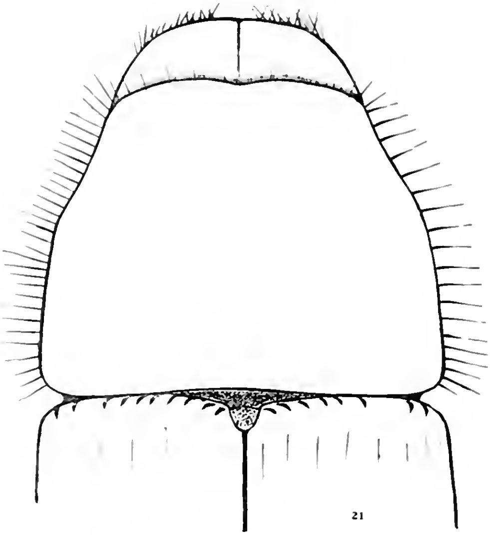
Scolytid structures

PLATE 8

21 Dendroctonus terebrans Oliv., dorsum of head and prothorax. (Enlarged)

23 Hylurgops glabratus Zett., cephalic aspect of mesosternum; *pro.*, protuberance of mesosternum. (Enlarged)

Plate 8



21

23

Scolytid structures

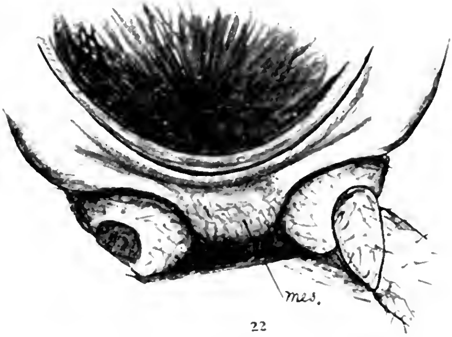
22 Hylastes undes. sp., cephalic view of mesosternum; *mes.*, mesosternum. (Enlarged)

24 Chramesus icoriae Lec., antenna. (Greatly enlarged)

25 Chramesus icoriae Lec., dorsum. (Enlarged)

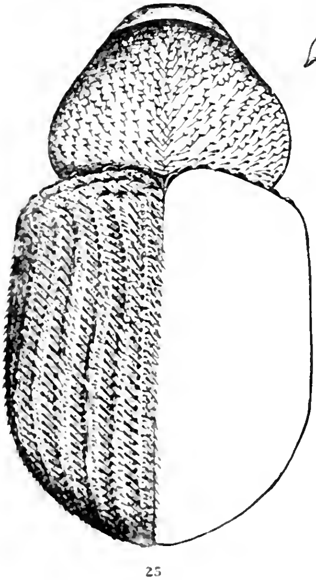
27 Phloeosinus dentatus Say, antenna. (Greatly enlarged)

Plate 9

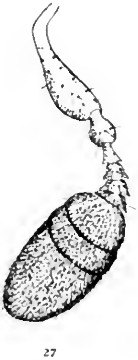


22

24



25



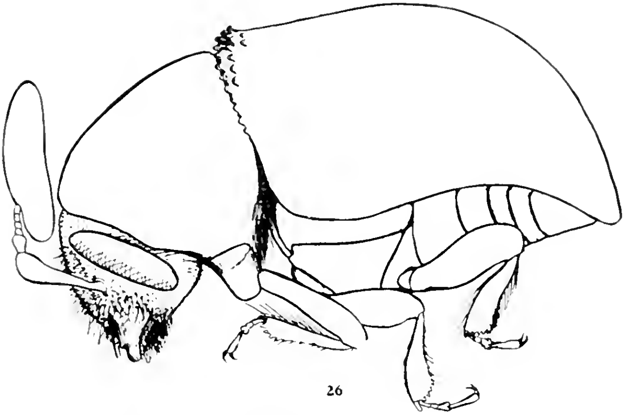
27

Scolytid structures

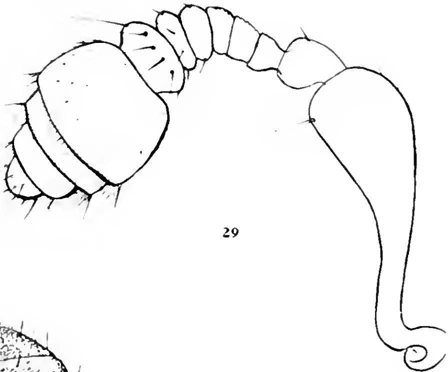
PLATE 10

26 *Chramesus icoriae* Lec., lateral view. (Enlarged)
28 *Dendroctonus terebrans* Oliv., antenna. (Greatly enlarged)
29 *Hylurgops glabratus* Zett., antenna. (Greatly enlarged)
30 *Phloeotribus liminaris* Harris, antennal funicle and club. (Greatly enlarged)

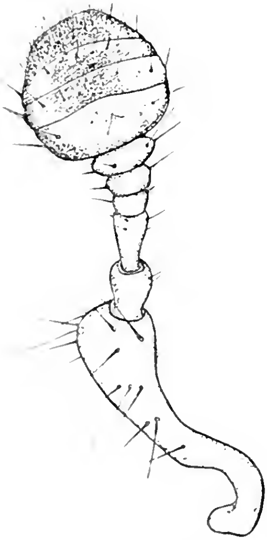
Plate 10



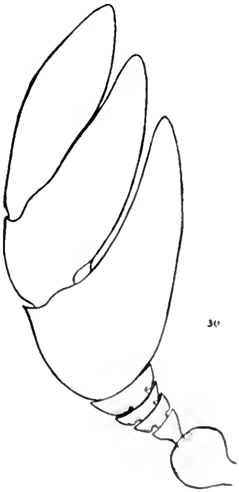
26



29



28



30

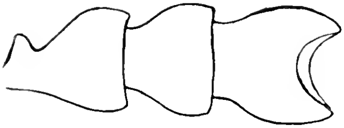
Scolytid structures

PLATE 11

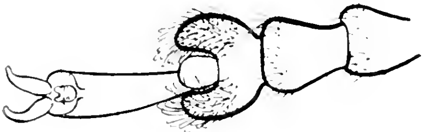
18:

31 *Hylurgops glabratus* Zett., foretarsus. (Greatly enlarged)
32 Hylastes undes. sp., first three segments of foretarsus. (Greatly enlarged)
33 *Hylurgops glabratus* Zett., venter of abdomen. (Enlarged)
34 *Hylesinus aculeatus* Say, venter of abdomen. (Enlarged)
35 *Hylurgops glabratus* Zett., mesosternum; *C.*, coxal cavity; *pro.*, protuberance of mesosternum. (Enlarged)
36 *Hylurgops glabratus* Zett., pronotum and base of elytra. (Enlarged)
37 Hylastes undes. sp., pronotum and base of elytra. (Enlarged)

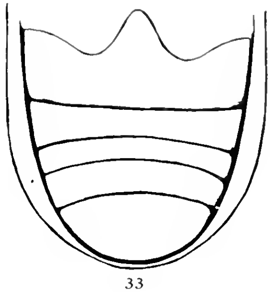
Plate 11



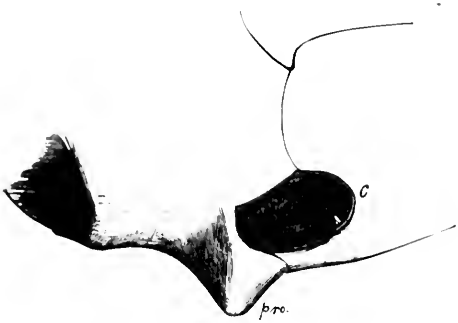
32



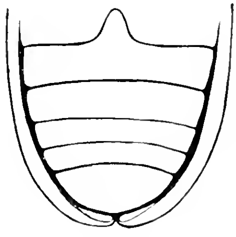
31



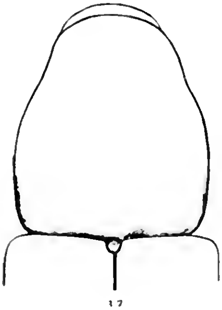
33



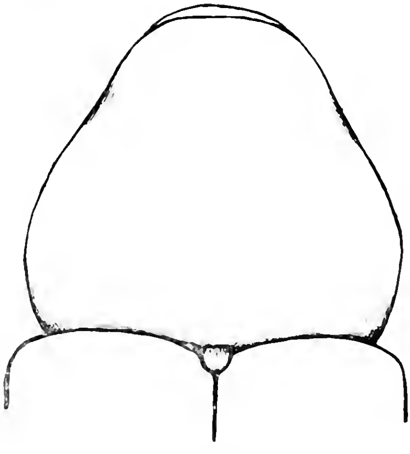
35



34



37



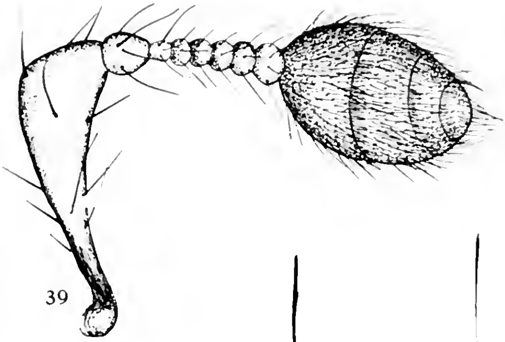
36

Scolytid structures

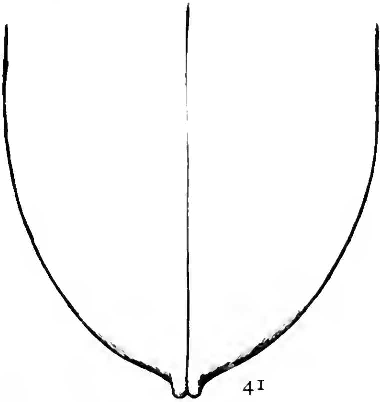
PLATE 12

38 Xylocleptes undes. sp, antenna. (Greatly enlarged)
39 Hylastinus obscurus Marsh, antenna. (Greatly enlarged)
40 Ips pini Say, declivity of elytra. (Enlarged)
41 Micracis opacicollis Lec., declivity of elytra. (Enlarged)

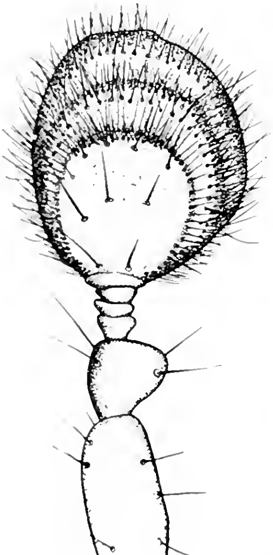
Plate 12



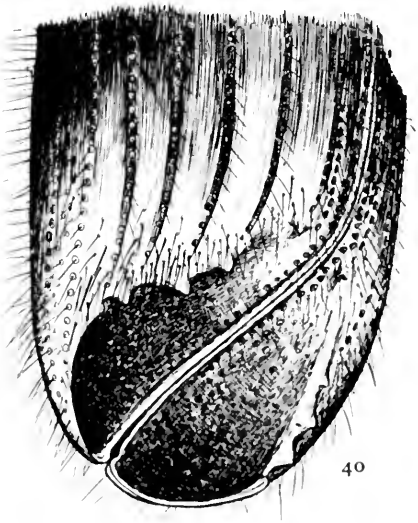
39



41



38



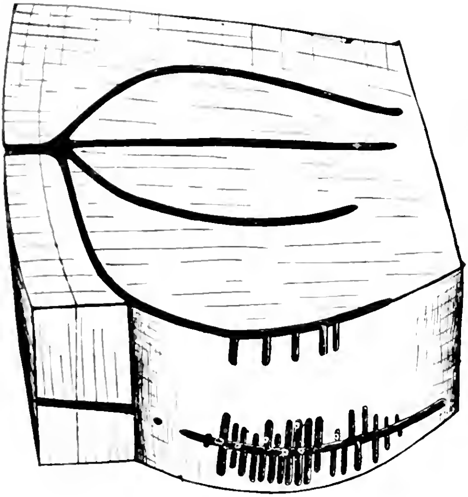
40

Scolytid structures

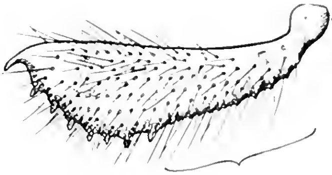
PLATE 13

42 Xyleborus undes. sp., *a*, antennal funicle and club. (Greatly enlarged)
43 Polygraphus rufipennis Kirby, left aspect of head showing divided eye. (Enlarged)
44 Xyleborus undes. sp., *a*, foretibia. (Greatly enlarged)
45 Pterocyclon mali Fitch, work in oak
46 Micracis opacicollis Lec., work in chestnut twig

Plate 13

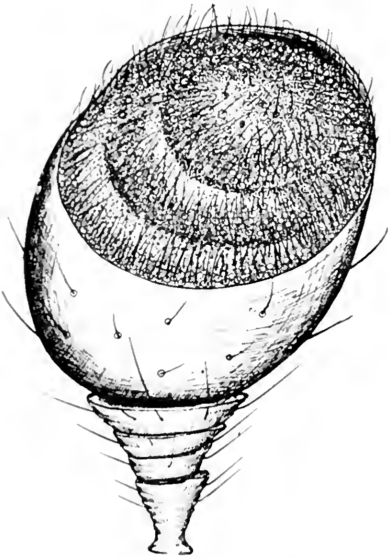


45

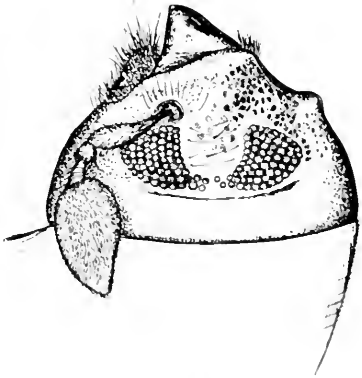


44

46



42



43

Scolytid work and structures

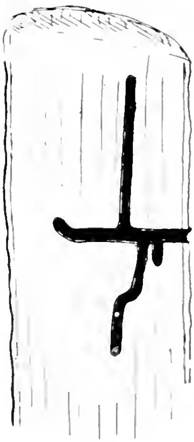
PLATE 14

47, 48 Xyleborus undes. sp., *a*. work in maple branch
50 Pityogenes undes. sp., work in white pine

Plate 14

50

48



47

Scolytid work

PLATE 15

49 *Pityophthorus minutissimus* Zimm., work in oak

190

Plate 15

49

Pityophthorus work in oak

PLATE 16

PLATE 17

52 *Hylesinus aculeatus* Say, work in ash

Plate 17

52

Hylesinus work in ash

INDEX

ERRATA

Page 24, line 3 from bottom, for a m p e l o p h i a, read a m p e l o p h i l a.

Appendix 5

Botany

Museum bulletin 131

131 Report of the State Botanist 1908

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y. under the act of July 16, 1894

No. 450 ALBANY, N. Y. July 1, 1909

New York State Museum

John M. Clarke, Director

Charles H. Peck, State Botanist

Museum bulletin 131

REPORT OF THE STATE BOTANIST 1908

New York State Education Department
Science Division, February 15, 1909

Hon. Andrew S. Draper LL.D.
Commissioner of Education

SIR: I have the honor to communicate herewith for publication as a bulletin of the State Museum, the annual report of the State Botanist for the fiscal year ending September 30, 1908.

Very respectfully
JOHN M. CLARKE
Director

State of New York
Education Department
COMMISSIONER'S ROOM

Approved for publication this 15th day of February 1909

A. S. Draper
Commissioner of Education

Education Department Bulletin

Published fortnightly by the University of the State of New York

Entered as second-class matter June 24, 1908, at the Post Office at Albany, N. Y., under the act of July 16, 1894

No. 450 ALBANY, N. Y. July 1, 1909

New York State Museum

John M. Clarke, *Director*
Charles H. Peck, *State Botanist*

Museum bulletin 131

REPORT OF THE STATE BOTANIST 1908

Dr John M. Clarke, Director of the State Museum:

The following report of work done in the botanical department of the State Museum for the year 1908 is respectfully submitted.

Since the date of my last report specimens of plants for the State herbarium have been collected in the counties of Albany, Dutchess, Erie, Niagara, Rensselaer, Rockland, Saratoga and Steuben. Specimens have been received from correspondents and others that were collected in the counties of Albany, Chenango, Clinton, Columbia, Dutchess, Erie, Franklin, Kings, Monroe, Niagara, Oneida, Onondaga, Orleans, Otsego, Rensselaer, Richmond, Rockland, Steuben, Suffolk, Sullivan, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming.

The number of species of plants of which specimens have been added to the herbarium is 152. Of these, 88 were not before represented therein. A list of the added species is given under the caption "Species added to the herbarium." The number of those who have contributed specimens of plants, either as direct contributions or as specimens sent or brought to the office of the State Botanist for identification or other information, is 71. In the latter case the names of those persons only are included whose specimens were in such condition or of such value as to make them worthy of preservation. A list of the contributors and their respective contributions is given under the heading "Contributors and their contributions."

The number of species which have not before been reported and which may be considered as additions to our State flora is 63.

Of these, 10 are described as new species. These are all fungi. Their names and descriptions with localities, time of collecting, also the names of the other species added to the flora, with remarks, localities and other information may be found under the title "Species not before reported." Noticeable varieties or interesting forms of species already reported are sometimes found, singular variations in habitat or extensions of range observed or new hosts of parasitic fungi are discovered. Such and other similar facts are recorded under the title "Remarks and observations."

Among the specimens sent by correspondents for identification, it sometimes happens that no description can be found that will match some one or more of them. In such a case it becomes necessary to consider them the types of new species and to give them names and write descriptions of them. Eight species and one variety have been found among the specimens received the past season from places beyond our State limits. Names and descriptions of these may be found under the title "New extralimital species." According to the ruling of the International Botanical Congress held at Vienna in 1905 all new species of plants published in and after 1908 must be described in Latin in order to be recognized as valid species. In accordance with this rule Latin descriptions of the new species published in this report follow the English descriptions.

The custom of giving colored illustrations of natural size and, as far as practicable, nontechnical descriptions of such mushrooms as have, upon actual trial, been found to be edible, has been continued. Owing to the scarcity of mushrooms only four species have been added to our list of edible mushrooms the past year. This makes the number of New York edible mushrooms now known and figured 195. Descriptions of the four added species are given under the title "Edible fungi." Illustrations of these are given on plates 115 and 116. Two new species of New York mushrooms and two extralimital species are illustrated on plates U and V.

Specimens of plants sent or brought to the office of the State Botanist for identification or for other information are always welcome, for in this way not only is the desired information obtained by the person seeking it but also interesting and valuable plant specimens are sometimes added to the museum collections. The number of identifications made in such cases the past year is 1640. The number of persons for whom identifications have been made is 127.

Unfortunately, the information sought by means of these sendings and the value of the specimens sent are both lost by neglect of proper precautions in transmission. Soft, fleshy or fragile specimens of fungi are placed in a letter and mailed without any protection. Consequently they are generally crushed and spoiled beyond recognition. They are sometimes sent in a thin strawboard box or a mere paper wrapper and the result is the same. Such frail specimens should be wrapped in soft tissue paper (not in cotton) and packed closely enough to prevent jostling, in a firm cardboard box or a thin wooden box or other receptacle firm enough to protect them. It is well in sending fleshy perishable specimens of larger size to wrap each one separately before putting them in the mailing receptacle. Good sound specimens of both mature and immature age should be selected for sending. Specimens that have a sodden or water-soaked appearance or are visibly infested by insect larvae or are affected by incipient decay should never be sent, for they are almost sure to be completely spoiled before reaching their destination. Even in sending sound specimens long distances, it is well, as far as possible, to time the sending so that it will not be necessary for it to lie in the post office over Sunday. When the transmission would require more than three days it would be better to write full descriptive notes of the characters of the fresh plants, then dry the specimens and send both together. It is better not to cut, split or mutilate the specimens in any way before sending them.

Revised descriptions of the New York species of the genus Lentinus and of Entoloma have been prepared. They may be found under their respective headings, "New York species of Lentinus" and "New York species of Entoloma." Similar brief monographs of certain genera of mushrooms have previously been published and have been so well received by students of mycology and acknowledged by them to be such a valuable part of the reports that it is thought well to continue them. They furnish in compact and convenient form a ready means of obtaining a knowledge of the number and characters of our New York species and their generic relations. The descriptions are preceded in each genus by a "key" which is intended to facilitate the tracing of each species to its description.

In many parts of our State the season just passed has been strangely adverse to the mushroom crop. Rain was not lacking in the early part of the season, but the prevailing low temperature apparently prevented the development of mushrooms that otherwise would doubtless have appeared. Later in the season when the prevailing temperature was more favorable, the necessary rain and moisture were lacking. This unfavorable condition continued so late in the season that those species which usually appear in August and September either failed entirely to appear or appeared much later in the season. Reports state that very large crops of the common mushroom, Agaricus campester L. have appeared in a few localities in November. This is nearly or quite two months later than its usual time. The light fall rains, which were unusually late, gave the mycelium its first opportunity to develop. These rains were followed by exceptionally fine mild and sunny weather which was very favorable to the development and spread of the mycelium or "spawn." The result was a very abundant crop of mushrooms in those places where a rich soil aided the favorable weather conditions.

The new species and varieties of fungi described by the State Botanist are now so numerous and the periodicals, reports and bulletins containing these descriptions are so many and so scattered and the inquiries concerning the place where one and another of them can be found are so frequent that it has seemed quite desirable that a list of these species be given with the places of their publication. This has been prepared and will doubtless be of aid to all interested in mycology. The names are arranged alphabetically and the most obvious synonymy is given. This list may be found under the title "List of species and varieties of fungi described by C. H. Peck, State Botanist, with bibliographic locations cited and some of the most obvious synonyms given."

Mr S. H. Burnham has performed the necessary clerical duties of the office, disinfecting, mounting, labeling and arranging specimens, assisting in the identification of specimens, attending to the official correspondence of the office and giving information to callers during my absence in the field. He has also made contributions to the herbarium of specimens collected on Saturday half holidays.

CHARLES H. PECK
State Botanist

Albany, December 29, 1908

PLANTS ADDED TO THE HERBARIUM

New to the herbarium

Aecidium importatum *Henn.*
Amanita glabriceps *Pk.*
A. porphyria *Fr.*
Aster vittatus *Bu.*
Botrytis plebeja *Fres.*
Brassica japonica *Sieb.*
Calicium alboatrum *Floerk.*
Celtis crassifolia *Lam.*
Cephalozia lunulaefolia *Dum.*
Cercospora rudbeckiae *Pk.*
Clitocybe comitialis *Pers.*
Collybia hirticeps *Pk.*
Cololejeunea biddlecomiae (*Aust.*)
Commelina communis *L.*
Crataegus admiranda *S.*
C. barbara *S.*
C. bella *S.*
C. boothiana *S.*
C. brachyloba *S.*
C. celsa *S.*
C. cerasina *S.*
C. clintoniana *S.*
C. conferta *S.*
C. congestiflora *S.*
C. cruda *S.*
C. dayana *S.*
C. finitima *S.*
C. foliata *S.*
C. gloriosa *S.*
C. gracilis *S.*
C. implicata *S.*
C. limosa *S.*
C iuminosa *S.*
C. notabilis *S.*
C. oblita *S.*
C. placiva *S.*
C. promissa *S.*
C. pulchra *S.*
C. radiata *S.*
C. robusta *S.*
C. slavini *S.*
C. strigosa *S.*
C. tortuosa *S.*
C. xanthophylla *S.*
Dacryomyces corticioides *E. & E.*
Diaporthe atropuncta *Pk.*
Diplodina robiniae *Pk.*
Fusarium aurantiacum *Cd.*
Geoglossum alveolatum *Durand*
Gloeosporium medicaginis *E. & K.*
Gonatobotrys lateritia *Pk.*
Hygrophorus sphaerosporus *Pk.*
Hymenula musae *Pat.*
Hypholoma fragile *Pk.*
Lactarius peckii *Burl.*
Lecanora fuscata (*Schrad.*) *Th. Fr.*
Leptosphaeria inquinans *Pk.*
Leucolejeunea clypeata (*Schw.*)
Lophocolea macouni *Aust.*
L. minor *Nees*
Massariovalsa sudans (*B. & C.*) *Sacc.*
Melanconis modonia *Tul.*
Mnium orthorrhynchium *B. & S.*
Myxosporium castaneum *Pk.*
Nardia crenuliformis (*Aust.*) *Lindb.*
Nectria sambuci *E. & E.*
Neottiella polytrichi (*Schum.*) *Mass.*
Pellia endiviaefolia (*Dicks.*) *Dum.*
Phoma corni *Fckl.*
P. lagenariae (*Thuem.*) *Sacc.*
Phyllosticta orbicula *E. & E.*
Polyporus arcularis (*Batsch*) *Fr.*
P. delectans *Pk.*
P. trabeus *Rostk.*
Puccinia agrostidis *Plow.*
P. albiperidia *Arth.*
P. campanulae *Carm.*
P. phlei-pratensis *E. & H.*
Pucciniastrum potentillae *Kom.*
Rhinotrichum curtisii *Berk.*
Solanum rostratum *Dunal*
Sorosporium saponariae *Rud.*
Sphenolobus hellerianus (*Nees*)
Sporodesmium pluriseptatum (*K. & H.*)
Tricholoma subcinereum *Pk.*
Trichothecium candidum *Wallr.*
Uromyces caricinus *E. & E.*
U. scirpi (*Cast.*) *Burr.*
Volutella cucurbitina *Pk.*

Not new to the herbarium

Amanita muscaria *L.*
Aralia nudicaulis *L.*
Arisaema stewardsonii *Britton*
A. triphyllum (*L.*) *Torr.*
Asplenium filix-foemina (*L.*) *Bernh.*
Aster cord. polycephalus *Porter*
Boletinus porosus (*Berk.*) *Pk.*
Botrychium virginianum (*L.*) *Sw.*
Botrytis cinerea *Pers.*
Carex deflexa *Hornem.*
Celastrus scandens *L.*
Cephalanthus occidentalis *L.*
Cerastium nutans *Raf.*
Cladosporium herbarum (*Pers.*) *Lk.*
Claytonia virginica *L.*
Corallorrhiza maculata *Raf.*
Cyphella fasciculata (*Schw.*)
Cystopus candidus (*Pers.*) *Lev.*
C. portulacae (*DC.*) *Lev.*
Dentaria laciniata *Muhl.*
Desmodium grandiflorum (*Walt.*) *DC.*
Epicoccum neglectum *Desm.*
Erysiphe polygoni *DC.*
Eupatorium sessilifolium *L.*
Eutypella cerviculata (*Fr.*) *Sacc.*
Fagus americana *Sweet*
Fragaria americana (*Port.*) *Britton*
Galium erectum *Huds.*
Hydrangea arborescens *L.*
Hydrophyllum virginicum *L.*
Hypericum boreale (*Britt.*) *Bickn.*
Hypoderma desmazieri *Duby*
Hypomyces inaequalis *Pk.*
Irpex obliquus (*Schrad.*) *Fr.*
Lactarius minusculus *Burl.*
L. parvulus *Pk.*
Lepiota procera *Scop.*
Leptothyrium periclymeni *Desm.*
Lycopodium inundatum *L.*
Marasmius scorodonius *Fr.*
M. subnudus (*Ellis*) *Pk.*
Microsphaera alni (*Wallr.*) *Salm.*
Panax quinquefolium *L.*
Peltandra virginica (*L.*) *Kunth*
Pentstemon digitalis (*Sweet*) *Nutt.*
Phyllachora graminis (*Pers.*) *Fckl.*
Phyllosticta labruscae *Thuem.*
Polyporus chioneus *Fr.*
P. pubescens (*Schum.*) *Fr.*
Prenanthes trifoliolata (*Cass.*) *Fern.*
Prunus cuneata *Raf.*
Puccinia andropogonis *Schw.*
P. podophylli *Schw.*
Rhus canadensis *Marsh.*
Salix pedicellaris *Pursh*
Sanguisorba minor *Scop.*
Saponaria vaccaria *L.*
Staphylea trifolia *L.*
Thaspium barbinode (*Mx.*) *Nutt.*
Tsuga canadensis (*L.*) *Carr.*
Ustilago rabenhorstiana *Kuehn*
Veratrum viride *Ait.*
Viola cucullata *Ait.*
Xyris caroliniana *Walt.*

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Miss H. C. Anderson, Lambertville, N. J.

Boletus subaureus *Pk.*
Coprinus comatus *Fr.*
Lactarius deceptivus *Pk.*
Polyporus sulphureus (*Bull.*) *Fr.*

Mrs E. B. Blackford, Boston, Mass.

Hebeloma gregarium *Pk.*
Pleurotus griseus *Pk.*

Miss G. S. Burlingham, Brooklyn

Peckiella hyalina (*Schw.*) *Sacc.*

Miss R. W. Farrington, Lakewood, N. J.

Schizaea pusilla *Pursh*

Mrs L. L. Goodrich, Syracuse
Claudopus nidulans *(Pers.) Pk.*

Mrs C. W. Harris, Brooklyn
Arenaria groenlandica *(Retz) Spreng.*

Mrs C. A. Hunt, Saint Helena, Cal.
Amanitopsis velosa *Pk.*

Mrs H. H. Murdock, Schenectady
Corallorhiza maculata *Raf.*

Miss E. A. Perine, Albany
Amanita glabriceps *Pk.*

Miss L. B. Sage, Norwich
Clitocybe laccata decurrens *Scop.*
Collybia platyphylla *Fr.*
Phallus impudicus *L.*
Russula brevipes *Pk.*
R. constans *Karst.*
R. obscura *Romell*

Miss T. L. Smith, Worcester, Mass.
Hydnum ochraceum *Pers.*
Merulius ravenelii *Berk.*
Polyporus hispidus *(Bull.) Fr.*

Miss M. L. Sutliff, Sacramento, Cal.
Polyporus volvatus *Pk.*

Miss A. Van Horne, Montreal, Can.
Clavaria purpurea *Fr.*
Pholiota lutea *Pk.*

Mrs O. D. Vaughan, Ballston Spa
Adiantum capillaris-veneris *L.*
A. emarginatum *Hook.*
Ailanthus glandulosus *Desf.*
Calochortus albus *Benth.*
Cheilanthes californica *(Nutt.) Mett.*
Cotula coronopifolia *L.*
Evernia vulpina *(L.) Ach.*
Gymnogramma triangularis *Kaulf.*
Limnanthes dichotomus *Benth.*
Nemophila menziesii *H. & A.*
Orthocarpus purpurascens *Benth.*
Pellaea andromedaefolia *Fee*
Polypodium falcatum *Kellogg*
Polystichum aculeatum angulare *(Willd.)*
Pteris aquilina lanuginosa *Hook.*
Sequoia sempervirens *Endl.*
Viola pedunculata *T. & G.*
Woodwardia radicans *(L.) Sm.*

Mrs M. S. Whetstone, Minneapolis, Minn.
Clitocybe ochropurpurea *Berk.*
Panaeolus subbalteatus *B. & Br.*
Paxillus panuoides *Fr.*
Scleroderma tenerum *B. & C.*

F. H. Ames, Brooklyn
Amanita radicata *Pk.*
Hypholoma candolleanum *Fr.*
Lactarius corrugis *Pk.*
Nyctalis asterophora *Fr.*
Pholiota duroides *Pk.*
Polyporus flavovirens *B. & R.*

G. F. Atkinson, Ithaca

Eccilia acus *W. G. Sm.*
Hebeloma pascuensis *Pk.*

G. G. Atwood, Albany

Diaporthe parasitica *Murr.*

H. J. Banker, Greencastle, Ind.

Polyporus schweinitzii *Fr.*
Polyporus underwoodii *Murr.*
Poria vitellina (*Schw.*) *Sacc.*

H. W. Barratt, Poughkeepsie

Coprinus squamosus *Morg.*
Hypholoma sublateritium (*Schaeff.*)
Tricholoma sordidum (*Schum.*) *Fr.*

E. Bartholomew, Stockton, Kan.

Daedalea ambigua *Berk.*
Hypnum erinaceus *Bull.*
Irpex mollis *B. & C.*
Peniophora bartholomaei *Pk.*
Polyporus picipes *Fr.*

C. E. Bessey, Lincoln, Neb.

Galera besseyi *Pk.*

F. S. Boughton, Pittsford

Lepiota cepaestipes *Sow.*
Pholiota vermiflua *Pk.*
Tricholoma subcinereum *Pk.*

C. W. Boyd, Tupper Lake

Lentinus lepideus *Fr.*

F. J. Braendle, Washington, D. C.

Boletus albellus *Pk.*
Clavaria grandis *Pk.*
Cortinarius distans *Pk.*
Tricholoma melaleucum (*Pers.*) *Fr.*

S. H. Burnham, Sandy Hill

Arisaema stewardsonii *Britton*
Boletinus cavipes (*Opat.*) *Kalchb.*
B. porosus (*Berk.*) *Pk.*
Clitocybe illudens *Schw.*
Collybia hirticeps *Pk.*
Fomes connatus *Fr.*
Hymenochaete agglutinans *Ellis*
Leptosphaeria inquinans *Pk.*
Leptothyrium periclymeni (*Desm.*) *Sacc.*
Lophocolea minor *Nees*
Lycopodium inundatum *L.*
Massariovalsa sudans (*B. & C.*) *Sacc.*
Neottiella polytrichi (*Schum.*) *Mass.*
Phoma corni *Fckl.*
Pleurotus applicatus *Batsch*
Pluteus tomentosulus *Pk.*
Polyporus borealis (*Wahl.*) *Fr.*
P. delectans *Pk.*
Polystictus planus *Pk.*
Salix myrtilloides *L.*
Sanguisorba minor *Scop.*
Sorosporium saponariae *Rud.*
Thelia lescurii *Sull.*
Tremella frondosa *Fr.*
Xyris caroliniana *Walt.*

T. Cant, Clarksville
Gymnosporangium globosum *Farl.*

T. T. Clohessy, Utica
Hypomyces viridis *(A. & S.) Karst.*

G. D. Cornell, Coopers Plains
Cortinarius validipes *Pk.*
Mycena leaiana *Berk.*

S. Davis, Boston, Mass.
Cortinarius torvus *Fr.*
Eccilia apiculata *Fr.*
E. subacus *Pk.*
E. watsoni *Pk.*
Entoloma luteum *Pk.*
E. nigricans *Pk.*
Galera hypnorum *(Batsch) Fr.*
Hygrophorus coloratus *Pk.*
H. obconicus *Pk.*
H. prat. cinereus *Fr.*
Inocybe albodisca *Pk.*
I. flocculosa *(Berk.) Sacc.*
I. geophylla *Fr.*
I. intricata *Pk.*
I. subdecurrens *E. & E.*
Leptoglossum fumosum *Pk.*
Leptonia abnormis *Pk.*
L. serrulata *(Pers.) Fr.*
Omphalia scyphoides *Fr.*
Pholiota rufidula *Kalchb.*
Pluteolus callistus *Pk.*

J. Dearness, London, Can.
Boletinus paluster *Pk.*
Commelina communis *L.*

C. H. Demetrio, Emma, Mo.
Sterigmatocystis ochracea *(Wilh.) van Tiegh.*

P. Dowell, Port Richmond
Dryopteris clint. x goldiana *Dow.*
Dryopteris clint. x intermedia *Dow.*
Dryopteris cristata x spinulosa *(Milde) C. Chr.*

E. J. Durand, Ithaca
By exchange
Geoglossum alveolatum *Durand*
Mitrula cucullata *(Batsch) Fr.*

F. S. Earle, Herradura, Cuba
Gymnosporangium nelsoni *Arth.*

C. E. Fairman, Lyndonville
Collybia amabilipes *Pk.*
C. lignaria *Pk.*
Omphalia pyxidata *(Bull.) Fr.*
Polyporus cuticularis *(Batsch) Fr.*

E. P. Felt, Albany
Aecidium importatum *Henn.*

W. G. Farlow, Cambridge, Mass.

Collybia lacunosa *Pk.*
Puccinia cyani (*Schleich.*) *Pass.*
Pucciniastrum potentillae *Kom.*

A. O. Garrett, Salt Lake City, Utah

Hendersonia diplod. divergens *Pk.*
Phallus imperialis *Schulz.*

N. M. Glatfelter, St Louis, Mo.

Clavaria aurea *Schaeff.*
Clavaria gracilis *Pers.*
Entoloma cyaneum *Pk.*

P. W. Graff, Bridgeport, Conn.

Calvatia rubroflava *Cragin*

C. Guillet, Worcester, Mass.

Amanita muscaria *L.*
Lactarius aquifluus *Pk.*
Lactarius vellereus *Fr.*

C. C. Hanmer, East Hartford, Conn.

Clitocybe dealbata deformata *Pk.*
Fomes everhartii (*E. & G.*)
Omphalia chrysophylla *Fr.*

M. E. Hard, Chillicothe, O.

Armillaria nardosmia *Ellis*
Flammula fusus *Batsch*
Steccherinum adustulum *Banker*
Tricholoma sordidum (*Schum.*) *Fr.*

F. D. Heald, Austin, Tex.

Trichosporium maydis (*Gar.*) *Sacc.*
Urnula geaster *Pk.*

A. P. Hitchcock, New Lebanon

Excrescences of Castanea dentata (*Marsh.*) *Borkh.*

C. H. Kaufman, Ann Arbor, Mich.

Clitocybe nebularis (*Batsch*) *Fr.*
C. parilis *Fr.*
Fomes everhartii (*E. & G.*)
F. fraxineus (*Bull.*) *Fr.*
F. fraxinophilus *Pk.*
Hebeloma testaceum (*Batsch*) *Fr.*
Polyporus caesius (*Schrad.*) *Fr.*
Polyporus fumosus (*Pers.*) *Fr.*
P. griseus *Pk.*
P. guttulatus *Pk.*
P. hispidellus *Pk.*
P. hypococcineus *Berk.*
P. pallidus *S. & K.*
P. semipileatus *Pk.*
Trametes pini (*Brot.*) *Fr.*

F. D. Kern, Lafayette, Ind.

Gymnosporangium betheli *Kern*
G. inconspicuum *Kern*
Gymnosporangium nelsoni *Arth.*
G. speciosum *Pk.*
Gyromitra brunnea *Underw.*

C. C. Laney, Rochester

Crataegus admiranda *S.*
C. asperifolia *S.*
C. barbara *S.*
C. bella *S.*
C. boothiana *S.*
C. brachyloba *S.*
C. celsa *S.*
C. cerasina *S.*
C. clintoniana *S.*
C. cognata *S.*
C. conferta *S.*
C. congestiflora *S.*
C. cruda *S.*
C. dayana *S.*
C. finitima *S.*
C. foliata *S.*
Crataegus genialis *S.*
C. gloriosa *S.*
C. gracilis *S.*
C. luminosa *S.*
C. notabilis *S.*
C. placiva *S.*
C. plana *S.*
C. promissa *S.*
C. pulchra *S.*
C. radiata *S.*
C. robusta *S.*
C. slavini *S.*
C. strigosa *S.*
C. suavis *S.*
C. tortuosa *S.*
C. xanthophylla *S.*

W. H. Leibelsperger, Fleetwood, Pa.
Boletinus grisellus *Pk.*

C. G. Lloyd, Cincinnati, O.
Lycoperdon pusillum *Batsch*

J. Mickleborough, Brooklyn
Diaporthe parasitica *Murr.*
Myxosporium castaneum *Pk.*

G. E. Morris, Waltham, Mass.
Boletinus cavipes *(Opat.) Kalchb.*
B. grisellus *Pk.*
Clitocybe cyathiformis *Fr.*
Collybia uniformis *Pk.*
Entoloma suave *Pk.*
Hygrophorus serotinus *Pk.*
Leotia lubrica *(Scop.) Pers.*
Mycena caesia *Pk.*
Pholiota praecox sylvestris *Pk.*
Pilosace eximia *Pk.*
Pluteus leoninus coccineus *Cke.*
Psathyrella graciloides *Pk.*
Psilocybe uda *(Pers.) Fr.*
Stropharia umbonatescens *Pk.*

G. E. Morris & S. Davis, Mass.
Clavaria pallescens *Pk.*
Clitocybe amethystina *(Bolt.)*
Entoloma variabile *Pk.*
Flammula squalida *Pk.*
Leptonia flavobrunnea *Pk.*
L. serrulata *Pers.*

W. A. Murrill, New York
By exchange
Boletus ananas *B. & C.*

C. H. North, Dannemora
Clitopilus caespitosus *Pk.*

A. B. Owens, Remsen
Xylaria polymorpha *(Pers.) Grev.*

R. Ruedemann, Albany
Xylaria polymorpha (*Pers.*) *Grev.*

F. J. Seaver, New York
Fomes fraxinophilus *Pk.*

C. L. Shear, Washington, D. C.
Pholiota comosa *Fr.*
Pistillaria bartholomaei *E. & E.*

H. S. Sizer, Bainbridge
Solanum rostratum *Dunal*

A. A. Smith, Neversink
Phoma uvicola *B. & C.*

P. Spaulding, Washington, D. C.
Hypoxylon morsei *B. & C.*
Polystictus versicolor (*L.*) *Fr.*

E. B. Sterling, Trenton, N. J.
Agaricus approximans *Pk.*
A. placomyces *Pk.*
A. subrufescens *Pk.*
Amanita elongata *Pk.*
A. frostiana *Pk.*
A. pantherina *Fr.*
A. radicata *Pk.*
Amanitopsis volvata (*Pk.*) *Sacc.*
Calvatia rubroflava *Cragin*
Cantharellus tubaeformis *Fr.*
Clitocybe multiceps *Pk.*
Collybia platyphylla repens *Fr.*
Hypholoma sublat. caperatum *Pk.*
Inocybe unicolor *Pk.*
Lactarius lignyotus *Fr.*
Lepiota cristata *A. & S.*
Lycoperdon gemmatum *Batsch*
Panaeolus semilanceatus *Pk.*
Paxillus hirsutus *Pk.*
Polyporus hispidus (*Bull.*) *Fr.*
Stropharia umbonatescens *Pk.*

D. R. Sumstine, Wilkinsburg, Pa.
Cyathus striatus (*Huds.*) *Hoffm.*
Ustilago residua *Clint.*

K. F. Symonds, Utica
Amanita multisquamosa *Pk.*
Boletus ornatipes *Pk.*
Hygrophorus sphaerosporus *Pk.*

C. Thom, Storrs, Conn.
Coremium claviforme (*Bainier*)

J. M. Van Hook, Bloomington, Ind.
Hydnum pulcherrimum *B. & C.*
Pluteus leoninus coccineus *Cke.*

F. B. Wheeler, Syracuse
Lentinus tigrinus (*Bull.*) *Fr.*

E. A. White, Amherst, Mass.
Lentinus ursinus *Fr.*

H. P. Whitlock, Albany
Pentstemon digitalis *(Sweet) Nutt.*

T. E. Wilcox, Washington, D. C.

Boletus affinis *Pk.*
B. albellus *Pk.*
B. auriporus *Pk.*
B. caespitosus *Pk.*
B. griseus *Frost*
B. modestus *Pk.*
B. retipes *B. & C.*
B. sanguineus *With.*
Boletus subtomentosus *L.*
B. vermiculosus *Pk.*
Naucoria platysperma *Pk.*
Phylloporus rhodoxanthus *(Schw.) Bres.*
Psilocybe subericaea *Fr.*
Rhizopogon rubescens *Tul.*
Tricholoma portentosum *Fr.*

and five colored lithographic plates of fungi

B. C. Williams, Newark
Tricholoma sordidum *(Schum.) Fr.*

D. B. Young, Albany
Verpa digitaliformis *Pers.*

J. A. Young, Guilderland Center
Veratrum viride *Ait.*

SPECIES NOT BEFORE REPORTED

Aecidium importatum Henn.

Living leaves of peltandra, Peltandra virginica (L.) Kunth. West Nyack, Rockland co. June 1907. E. P. Felt. June 1908. C. H. Peck. The species is peculiar in developing only on the midrib and on the basal part of the principal veins. It occurs chiefly on the lower surface, but sometimes sparingly on the upper surface also.

Amanita glabriceps n. sp.

PLATE U, FIG. 1–4

Pileus thin, ovate or oval becoming broadly convex or centrally depressed, glabrous, rarely adorned when young with a few patches of the ruptured volva, viscid when moist, often finely striate on the margin, white or yellowish white, sometimes slightly brownish in the center, flesh white under the separable cuticle; lamellae thin, crowded, free, unequal, white; stem long, slender, stuffed, glabrous or floccose-squamulose, bulbous, white, the thin flabby annulus sometimes ruptured and partly adhering to the margin of the pileus, sometimes disappearing with age, the bulb margined by the remains of the definitely circumscissile volva; spores globose, .0003 of an inch in diameter.

Pileus 2–4 inches broad; stem 3–6 inches long, 3–6 lines thick.

Among fallen leaves in woods. Coopers Plains, Steuben co. August. C. H. Peck. Sand Lake, Rensselaer co. Miss E. A. Perine.

This species is closely related to Amanita phalloides Fr. from which it is separated by its more slender habit, its thinner pileus with the margin often striate, its longer slender stem with a webby pith and a more narrow bulb margined by the remains of the more definitely circumscissile volva. Amanita phalloides striatula Pk. [N. Y. State Mus. Bul. 54, p. 961] is a small variety of this species rather than of A. phalloides.

Pileus tenuis, ovatus vel ovalis, mox convexus vel centro depressus, glaber, juventate volvae ruptae fragmentis rare ornatus, viscidus, margine saepe striatus, albus flavidoalbusve, aliquando centro leviter fuscus, carne sub cute separabile alba; lamellae tenues, confertae, liberae, inaequales, albae; stipes gracilis, elongatus, farctus, glaber vel floccoso-squamulosus, bulbosus, albus, annulo tenui, aliquando rupto et partim adhaerente ad marginem pilei, quandoque omnino evanescente, bulbo volvae reliquis persistentibus marginato; sporis globosis, 8 μ in diam.

Amanita porphyria Fr.

Woods. Sand Lake, Rensselaer co. and Menands, Albany co.

Aster vittatus Bu.

Rocky places. Near Corning. August.

Botrytis plebeja Fres.

Living leaves of the common red currant, Ribes vulgare Lam. Menands, Albany co. September. It develops on the lower surface of the leaves on large brown spots. Usually one or two spots occur on a leaf. They are on the margin.

Brassica japonica Sieb.

Introduced. Sometimes cultivated as a salad; but it seeds itself and persists in gardens. Coopers Plains, Steuben co. August. It is called pepper grass or California pepper grass.

Calicium alboatrum Floerk.

Decaying wood of red oak, Quercus rubra L. Catskill mountains. September.

Celtis crassifolia Lam.

Near Saugerties, Ulster co. May and October.

Cephalozia lunulaefolia Dumort.

Decaying wood. Near Little Moose lake, Herkimer co. September. Miss C. C. Haynes.

Cercospora rudbeckiae n. sp.

Spots irregular, unequal, sometimes confluent, brownish or greenish brown; hyphae hypophyllous, cespitose, .003–.004 of an inch long, .0002–.00024 broad, flexuous, sparingly septate; spores subcylindric or tapering upward .0008–.0036 of an inch long, .0002–.00024 broad, 1–3-septate, colored nearly like the hyphae.

Living leaves of the tall cone flower, Rudbeckia laciniata L. Near Painted Post, Steuben co. August.

Spots similar to those of Ramularia rudbeckiae Pk. but hyphae much longer, denser and colored.

Maculae irregulares, inaequales, subconfluentes, brunneae vel virido-brunneae; hyphae hypophyllae, caespitosae, 75–100 x 5–6 μ, flexuosae, leviter septatae; sporis subcylindraceis vel sursum attenuatis, 1–3-septatis, 20–90 x 5–6 μ.

Clitocybe comitialis Pers.

Under balsam fir trees. Fulton Chain, Herkimer co. October. This is related to Clitocybe clavipes Pers. from which it may be separated by its smaller size, thinner cap, closer and less decurrent gills. It is rare both in this country and in Europe.

Collybia hirticeps Pk.

Half buried decaying twigs or branches of hemlock, Tsuga canadensis (L.) Carr. Vaughns, Washington co. August. S. H. Burnham.

Cololejeunea biddlecomiae (Aust.) Evans

Decaying wood. First lake, Herkimer co. September. Miss C. C. Haynes.

Commelina communis L.

Waste places. Albany. August. J. Dearness. Introduced and perhaps escaped from cultivation.

Dacryomyces corticioides E. & E.

Decaying pine wood. Alcove, Albany co. October. C. L. Shear.

Diaporthe atropuncta n. sp.

Perithecia valsoid, scattered or 3–6 in a cluster, nestling in the inner bark, minute, subglobose, black, surrounded by no black line; ostiola short, naked, black, surrounded by the slightly elevated ruptured epidermis; asci oblong or subcylindric, .004–.0044 of an inch long, .0004-.0005 broad, 8-spored; spores commonly distichous, hyaline, uniseptate, .001–.0014 of an inch long, .00028–.0003 broad.

Bark of basswood, Tilia americana L. Alcove, Albany co. April. C. L. Shear.

Related to Diaporthe farinosa Pk. but it has no farinose disk and its spores are much larger.

Perithecia subvalsea, 3–6 in caespite vel sparsa, minuta, subglobosa, in cortice nidulantia, nigra, nulla linea nigra limitata; ostiola brevia, glabra, nigra, epidermide leviter elevata rupta circumdata; asci oblongi vel subcylindrici, 100–120 x 10–12 μ; sporae subdistichae, uniseptatae, hyalinae, 25–35 x 7–8 μ.

Diplodina robiniae n. sp.

Perithecia minute, sunk in the wood, scattered or clustered, erumpent, sometimes circumscribed by a black line, pallid becoming blackish; spores oblong fusiform, straight, uniseptate, hyaline, .0004–.0006 of an inch long, .00016–.0002 broad.

Dead branches of locust, Robinia pseudacacia L. Barrytown, Dutchess co. June.

Related to Diplodina coronilla Brun.

Perithecia minuta, in ligno insculpta, sparsa aggregatave, erumpentia, aliquando linea nigra circumscripta, pallida vel nigricantia; sporae oblongo-fusiformes, rectae, uniseptatae, hyalinae, 10–12 x 4–5 μ.

Fusarium aurantiacum Cd.

Summer crookneck squash, Cucurbita pepo L. Menands, Albany co. September. A single fruit of this squash which had been laid aside for its seeds developed this fungus and four others on its surface. All were in sufficient quantity to make good herbarium specimens. The four other species are Botrytis cinerea Pers., Sporodesmium pluriseptatum (K. & H.) Pk., Phoma lagenariae (Thuem.) Sacc. and Volutella cucurbitina Pk. The last three species appear to develop most freely on the warts of the squash.

Geoglossum alveolatum Durand

Decayed wood. Fall creek near Ithaca. July. E. J. Durand.

Gloeosporium medicaginis E. & E.

Living and languishing leaves and stems of alfalfa, Medicago sativa L. Menands, Albany co. August.

Gonatobotrys lateritia n. sp.

Effused, forming thin brick-red patches; hyphae erect, .0003–.0004 of an inch thick, septate, with a few globose or oval nodules, the terminal one .0012–.0016 of an inch long, obscurely dentigerous; spores elliptic, .0003–.0005 of an inch long, .00024–.0003 broad.

On some decaying species of Poria. Star Lake, St Lawrence co. August.

Effusa lateritias maculas formans; hyphae erectae, crass. 8–10 μ, septatae, nodulis paucis globosis ovalibusve nodulo terminali obscure dentigero, long. 30–40 μ; sporae ellipsoideae, 8–12 x 6–8 μ.

Hygrophorus sphaerosporus Pk.

Utica. August. K. F. Symonds.

Hymenula musae Pat.

Banana rind. Menands, Albany co. September.

Hypholoma fragile n. sp.

PLATE V, FIG. 1–7

Pileus thin, fragile, conic or subcampanulate, becoming convex, obtuse or subumbonate, floccose squamulose when young, with the margin slightly appendiculate with fragments of the veil, glabrous when mature, yellowish, grayish or subochraceous, the center sometimes a little darker; lamellae thin, narrow, close, adnate, whitish or pallid becoming purplish brown; stem slender, stuffed or hollow, glabrous or minutely floccose, white; spores .0003–.0004 of an inch long, .00016–.0002 broad.

Pileus 6–12 lines broad; stem 1–2 inches long, 1–1.5 lines thick.

Decaying wood or among fallen leaves. Star Lake, St Lawrence co. and near Painted Post, Steuben co. August.

Pileus tenuis, fragilis, conicus vel subcampanulatus, in maturitate convexus, obtusus vel subumbonatus, primus floccoso-squamulosus et margine leviter appendiculatus veli fragmentis, demum glaber, flavescens, griseus vel subochraceus, aliquando centro coloratior; lamellae tenues, angustatae, confertae, adnatae, albidae pallidaeve demum purpureo-brunneae; stipes gracilis, farctus, cavusve, glaber vel minute floccosus, albus; sporae 8–10 x 4–5 μ.

Lactarius peckii Burl.

Damp ground near Smithtown, Suffolk co. August.

Lecanora fuscata (Schrad.) Th. Fr.

Rocks. Haverstraw, Rockland co. C. F. Austin.

Leptosphaeria inquinans n. sp.

Perithecia densely gregarious, subcarbonaceous, nestling in the bark, covered by the epidermis which is pierced by the minute black ostiolum, globose, ¾ mm broad, black; asci cylindraceous or sub-clavate; spores distichous or crowded, cylindric, obtuse, generally curved, 3-septate, colored, the terminal cells subhyaline, .0006–.00096 of an inch long, .00016–.00024 broad, often oozing out and forming black spots on the matrix.

Bark of sugar maple, Acer saccharum L. Vaughns, Washington co. April. S. H. Burnham.

Before the exudation of the spores the bark is minutely dotted by the black ostiola. The spores are similar to those of Hendersonia brunaudiana S. & R.

Perithecia dense gregaria, subcarbonacea, epidermide ostiolis nigris perforata tecta, globosa, ¾ mm lat., nigra; asci cylindraceo-clavulati; sporae distichae vel confertae, cylindraceae, obtusae, plerumque curvae, 3-septatae, coloratae, loculis extimis subhyalinis, 16–24 x 4–6 μ.

Leucolejeunea clypeata (Schw.) Evans

Rocks. Dresden, Washington co. August.

Lophocolea macouni Aust.

Decaying wood in a cedar swamp. Jordanville, Herkimer co. C. F. Austin.

Lophocolea minor Nees

Ground. Kenwood, Albany co. November. S. H. Burnham.

Massariovalsa sudans (B. & C.) Sacc.

Bark of red maple, Acer rubrum L. Shushan, Washington co. May. S. H. Burnham and F. Dobbin.

Our specimens agree much better with the figure of the species given in North American Pyrenomycetes, plate 30, than with the published descriptions of it.

Melanconis modonia Tul.

Bark of chestnut, Castanea dentata (Marsh.) Borkh. Alcove, Albany co. November. C. L. Shear.

Mnium orthorrhynchum B. & S.

Eagle Rock gorge near Chilson lake, Essex co. June. Mrs C. W. Harris.

Monilia angustior (Sacc.) Reade

This fungus which attacks the immature fruit of chokecherry, Prunus virginiana L., was reported under the name

Monilia peckiana var. angustior Sacc. in the 39th Report of the New York State Museum, page 49, but it has recently been raised to specific rank of which it certainly seems worthy. Professor Reade finds that the fungus attacks also the stems, petioles and principal veins of the leaves of the chokecherry.

Myxosporium castaneum n. sp.

Acervuli gregarious, obicular, 1/3–2/3 mm broad, nestling in the bark, surrounded by the ruptured epidermis, pallid or grayish; spores oblong or elliptic, hyaline, .00024–.0004 of an inch long, .00012–.00016 broad, sporophores filiform, equal to or longer than the spores.

Dead branches of chestnut, Castanea dentata (Marsh.) Borkh. Queens co. March. J. Mickleborough.

This fungus is sometimes associated with the conidial form of Diaporthe parasitica Murr. from which it may be distinguished by the paler color of the acervuli and the larger size of the spores.

Acervuli gregarii, orbiculares, lat. 1/3–2/3 mm in cortice nidulantes, epidermide rupta circumscripti, pallidi vel subgrisei; sporae oblongae vel ellipsoideae, hyalinae, 6–10 x 3–4 μ, basidia filiformia, sporis aequalia vel longiora.

Nardia crenuliformis (Aust.) Lindb.

Rocks in rivulets. Rockland co. November. C. F. Austin.

Nectria sambuci E. & E.

Dead stems of sweet elder, Sambucus canadensis L. Wells, Hamilton co. September.

Neottiella polytrichi (Schum.) Mass.

On hair cap mosses. Glenmont, Albany co. November. S. H. Burnham.

Pellia endiviaefolia (Dicks.) Dumort.

Banks of ditches near Syracuse. October. L. M. Underwood.

Phoma corni Fckl.

Dead twigs of round leaved cornel, Cornus circinata L'Her. Rensselaer lake, Albany co. April. S. H. Burnham.

Phoma lagenariae (Thuem.) Sacc.

Rind of summer crookneck squash, Cucurbita pepo L. Menands, Albany co. September. The perithecia in our specimens become black with age; the spores exude and form whitish masses. They are .0003-.0006 of an inch long, .00016-.0002 broad (8-16 x 4-5 μ).

Phyllosticta orbicula E. & E.

Living or languishing leaves of horse-radish, Radicula armoracia (L.) Robins. Menands, Albany co. October.

Pleurotus applicatus (Batsch) Fr.

Decaying wood and bark. Old Forge, Herkimer co. C. H. Peck. On beech bark. Vaughns, Washington co. S. H. Burnham. Alcove, Albany co. C. L. Shear.

Specimens of Pleurotus atropellitus Pk. were erroneously referred to Agaricus applicatus Batsch in the 22d Report of the New York State Cabinet, page 78.

Pleurotus griseus Pk.

In the 44th Report of the New York State Museum, page 35 this mushroom was described under the name Pleurotus atrocaeruleus griseus. Having observed it for many years and having received specimens of it from correspondents who collected it in widely separated localities, and finding it constant in its characters, I am persuaded that it is worthy of specific distinction. I have never seen specimens of it showing any blue color nor even bluish tints.

Polyporus arcularius (Batsch) Fr.

Decaying wood. Lyndonville, Orleans co. C. E. Fairman.

Polyporus delectans Pk.

Decaying wood. Vaughns, Washington co. October. S. H. Burnham.

Polyporus trabeus Rostk.

Decaying wood of poplar. Gansevoort, Saratoga co. October. Our specimens were found growing with Polyporus caesius Fr. on the same prostrate trunk and in close proximity to it. They are nearly the same size, but more glabrous and with no bluish tints.

Puccinia agrostidis Plow.

Stems of white bent grass, Agrostis alba L. Wells, Hamilton co. September. Both the uredo and the telial forms were growing on the stems.

Puccinia albiperidia Arth.

Leaves and culms of Carex crinita Lam. Wells, Hamilton co. September. The aecial form inhabits living leaves of gooseberry, Ribes cynosbati L.

Puccinia campanulae Carm.

Living radical leaves of harebell, Campanula rotundifolia L. Near Ithaca. March. Edna Porter.

Puccinia cyani (Schleich.) Pass.

Living leaves and stems of bluebottle, Centaurea cyanus L. Menands, Albany co. C. H. Peck. Shelter island, Suffolk co. W. G. Farlow. This species was formerly considered a variety of Puccinia suaveolens (Pers.) Rostk. but is now raised to specific rank.

Puccinia phlei-pratensis E. & H.

Culms and sheaths of timothy, Phleum pratensis L. Wells, Hamilton co. September.

Pucciniastrum potentillae Kom.

Living leaves of three-toothed cinquefoil, Potentilla tridentata Ait. Berlin mountain, Rensselaer co. September. W. G. Farlow.

Rhinotrichum curtisii Berk.

Decaying wood of poplar. Gansevoort, Saratoga co. August. This species is closely related to R. ramosissimum B. & C. from which it differs in color. Its spores are very variable, being subglobose, ellipsoid or obovate.

Solanum rostratum Dunal

Afton, Chenango co. September. H. S. Sizer. Probably introduced from the west.

Sorosporium saponariae Rud.

In flowers and flower buds of field chickweed. Cerastium arvense L. Helderberg mountains. June. S. H. Burnham. So far as known this is its first discovery in this country.

Sphenolobus hellerianus (Nees) Steph.

Decaying wood. Altamont, Albany co. May.

Sporodesmium pluriseptatum (K. & H.) Pk.

Rind of summer crookneck squash, Cucurbita pepo L. Menands, Albany co. September.

This is Sporodesmium mucosum var. pluriseptatum Karst. & Har. but it differs so decidedly from S. mucosum that it is far more satisfactory to give it specific rank than varietal. The spores in our specimens exceed in size and in the number of septa the spores of the typical variety even and therefore intensify the difference between it and S. mucosum. In our specimens they are 40–80 μ long and 3–8-septate with usually more than two longitudinal septa. The fungus forms black velvety patches ¼ to ½ inch in diameter.

Tricholoma subcinereum n. sp.

Pileus thin, plane or centrally depressed, subglabrous, whitish pale cinereous or grayish brown, the center sometimes a little darker and with a slight pruinose appearance, flesh white, odor strong, taste slightly and tardily acrid; lamellae thin, close, slightly sinuate, white; stem central or eccentric, equal or slightly thickened toward the base, solid, silky-fibrillose, whitish or brown externally, brownish within; spores broadly elliptic, .0003–.00036 of an inch long, .00024–.00028 broad.

Pileus 1.5–2.5 inches broad; stem 1.5–3 inches long, 3–7 lines thick.

Ground or buried wood in a cellar. Pittsford, Monroe co. June. F. S. Boughton.

A singular species suggestive in some of its characters of Tricholoma humile, T. schumacheri and T. subpulverulentum. The forms with whitish pileus sometimes become grayish brown in drying.

Pileus tenuis, planus vel centro depressus, subglaber, albidus pallido-cinereus vel griseo-brunneus, aliquando in centro magis coloreus et leviter pruinosus, carne alba, odore pungente, flavore leve tardeque acre; lamellae tenues, confertae, leviter sinuatae, albae; stipes centralis eccentricusve aequalis vel basi leviter incrassatus, solidus, sericeo-fibrillosus, albidus vel extus brunneus, intus brunnescens; sporae late ellipsoideae, 8–9 x 6–7 μ.

Trichothecium candidum Wallr.

On a drying specimen of Polyporus hispidus (Bull.) Fr. Albany. September.

Uromyces caricinus E. & E.

Leaves and culms of Carex scoparia Schk. Alcove, Albany co. July. C. L. Shear.

Uromyces scirpi (Cast.) Burr.

Leaves of river bulrush, Scirpus fluviatilis (Torr.) Gray. Clayton, Jefferson co. September. The aecial form occurs on leaves of poison hemlock, Cicuta maculata L.

Volutella cucurbitina n. sp.

Sporodochia orbicular, crowded in orbicular patches which are sometimes confluent, purplish brown becoming brown with age or in drying, adorned with slender subulate blackish setae, .0024–.0048 of an inch long, .00012–.00015 broad; spores oblong, obtuse, hyaline, .0004–.0009 of an inch long, .00016–.0002 broad, sporophores very short or obsolete.

Rind of summer crookneck squash, Cucurbita pepo L. Menands, Albany co. September.

Sporodochia orbicularia, in maculis orbicularibus dense conferta, interdum confluentia, oculo inermi brunneo-purpurea, in aetate brunnescentia, setis gracilibus subulatis nigris, 60–120 x 3–4 μ ornata; sporae oblongae, obtusis, hyalinis, 10–22 x 4–5 μ, sporophoris brevissimis obsoletisve.

REMARKS AND OBSERVATIONS

Brachysporium obovatum (Berk.) Sacc.

Bark of hop hornbeam, Ostrya virginiana (Mill.) K. Koch. Lyndonville, Orleans co. March. C. E. Fairman. A form not fully agreeing with the description of the type. It grows in tufts instead of velvety patches and the spores are often oblong instead of obovate and the septa vary from one to three.

Castanea dentata (Marsh.) Borkh.

This valuable tree has been attacked by a destructive fungus, Diaporthe parasitica Murr. In the parks of Brooklyn and New York city and in the country around these cities many trees have been injured or killed by it and many have been cut in consequence of the attack and its destructive effects. Numerous articles have been published concerning this disease and various experiments tried, designed to check or overcome the ravages of the fungus, but none of them has been successful or satisfactory. The fungus attacks the tree in wounds or abrasions of the bark and by killing the inner vital part of the bark in which it lives and spreads, it kills the tree in two or three years. It apparently does not otherwise affect the wood which may still be utilized after the death of the tree. The disease has been reported to have extended as far north as Dutchess county and a special trip was made to that region for its investigation, but no signs of its presence were found. Nor was it found in Albany, Rensselaer and Steuben counties in which it has been sought. On the other hand wherever the chestnut trees in these and other counties have been observed by myself the past season, they have generally appeared to be in good health and vigor and unusually full of fruit. A correspondent who is interested in the study and observance of the disease reports that he did not find it in the Catskill mountain region. It is therefore improbable that it has spread far in our State, if at all, either north or west of the limits assigned to it last year. It is more likely that the pessimistic views concerning its rapid spread and destructive consequences, entertained by some writers, will scarcely be realized. Unusually destructive outbreaks of parasitic fungi are apt to be dependent on unusual climatic conditions and therefore to be of short duration.

Cephalanthus occidentalis L.

Most of our botanies describe the leaves of this shrub as opposite or in whorls of three. A form occurs near Saugerties, Ulster co. in which there are four leaves in a whorl.

Epicoccum neglectum Desm.

On fruit of cucumber, Cucumis sativa L. Menands, Albany co. October. The patches or areas of this fungus at first appear to be pale brown but with age they become very black.

Eupatorium sessilifolium L.

Near Saugerties, Ulster co. September. This species is rare in the eastern and northeastern parts of the State.

Hydrangea arborescens L.

Near Coopers Plains and abundant near Lindley, Steuben co. G. D. Cornell. Also near Painted Post. C. H. Peck. Fruiting specimens were collected in August.

Hypoderma desmazieri Duby

On leaves of pitch pine, Pinus rigida Mill. Menands, Albany co. August. In these specimens the infested leaves were still on the tree and in some cases they were still green at the base, appearing as if the fungus was the cause of the partial death of the leaves.

Lycopodium inundatum L.

Rensselaer lake, Albany co. S. H. Burnham. September. This species is common in the cold bogs and marshes in the northern and eastern parts of the State, but would scarcely be expected to grow so near Albany. Xyris caroliniana Walt. was found growing in company with it.

Microsphaera alni (Wallr.) Salm.

Leaves of cream vetchling, Lathyrus ochroleucus Hook. Very abundant on hillsides south of Corning. August.

Panax quinquefolia L.

Woods. Rensselaer co. June. Fruit ripe the last week in August.

The demand for the root of this plant has been so great and the price so remunerative in recent years that the plant has been nearly exterminated in our State. It is therefore very gratifying to know that there is even a limited station only a few miles from Albany. This place is so well fitted for its growth that most of the plants are very vigorous and bear four leaves at the top of the stem instead of three, the usual number. The roots also are of unusual size and bear two to four branches, each of which is as large as the unbranched root of ordinary plants. Only enough specimens have been taken to properly represent this interesting form in the State herbarium. It is very desirable that the plant may continue to occupy this favorable locality for many years.

Phyllosticta labruscae Thuem.

Living leaves of Boston ivy, Ampelopsis tricuspidata S. & Z. Menands, Albany co. July and August. A new host plant for this parasitic fungus, which usually attacks leaves of grapevines.

Phycomyces nitens (Ag.) Kunze

Decaying specimens of the oak loving collybia, Collybia dryophila (Bull.) Fr. Star Lake, St Lawrence co. August. This is a form having spores .0016 of an inch (40 μ) or more in length.

Psathyrella graciloides Pk.

Split Rock, Onondaga co. September. G. E. Morris. This is a rare species found in our State but once before.

Uromyces hyperici (Schw.) Curt.

Leaves of northern St Johnswort, Hypericum boreale (Britton) Bickn. Griffin, Hamilton co. September.

Urnula geaster Pk.

This species was described from mature specimens collected near Austin, Tex. Fresh specimens, recently received from the same locality and sent by Mr F. D. Heald, show that the character "urceolate or cupulate" in the original description [N. Y. State Mus. Rep't 46, p. 39. 1893. Bot. ed.] is erroneous. The recent specimens show both the mature and the immature condition. The unopened plant has a closed receptacle, ellipsoidal, hollow, tapering downward into a solid fleshy tough stem and furnished at the apex with a slight blunt umbo. The plants grow in clusters about the base of old stumps. They take their origin several inches below the surface. The whole exterior is of a uniform brown color and covered with a minute velvety tomentum, but the flesh within is white both in the stem and in the receptacle.

The whole plant is 2–5 inches long and 1–2 inches broad in its widest part. The stem is .25–2 inches long and 3–5 lines thick. In opening, the receptacle splits longitudinally into 4–6 rays which curve gracefully outward revealing the whitish or subochraceous hymenium. The chinks first appear at or near the middle of the receptacle and extend each way; downward to or nearly to the stem and upward to and through the umbo. The spores sometimes contain a single large nucleus, sometimes several small ones of unequal size. The paraphyses are moniliform, at least in the upper part.

This species has been made the type of a new genus, Choriactis, chiefly because the cells of the receptacle are wholly parenchymatous instead of being mostly prosenchymatous, as in the receptacle of Urnula craterium, the type species of the genus Urnula. To ignore all the plainly perceptible and easily ascertainable generic characters of a plant as large as this and give more weight to a slight difference in the cellular structure of the receptacle than to them, certainly does not seem scientific or reasonable. And the absurdity of it is emphasized when, as in this case, this slight difference is made the chief reason not only for the establishment of a new genus but for removing that genus with its one species to the family Pezizaceae with which it has little else in common. If such a course is to be followed it would be necessary to examine with a compound microscope all similar plants before it would be possible to refer them to their proper genera and families.

In the species under consideration all the generic characters ascribed by Fries to the genus Urnula are shown except one, namely "ore rotundo rimose dehiscens," (splitting open in a rounded mouth). In Sylloge, this part of the Friesian generic description was modified or extended by adding after "rotundo," "vel laciniato" (or laciniate). There is also added under the description of Urnula craterium (Schw.) Fr. the remark, "Passim laciniatum dehiscit." From this it appears that even the type species of the genus Urnula sometimes splits longitudinally. The gross difference then between the generic character assigned by Fries to the genus Urnula and the species described as Urnula geaster comes so near the vanishing point that it seems superfluous to separate the two plants generically.

Verpa digitaliformis Pers.

At the base of sand banks. Karner, Albany co. May. D. B. Young. A rare species in our State and remarkable in this case for growing in sandy soil.

NEW EXTRALIMITAL SPECIES OF FUNGI

Agaricus approximans

PLATE V, FIG. 8–14

Pileus thin, conic or campanulate, often obtusely umbonate, squamulose except the umbo, often radiately rimose, whitish, with brownish squamules and blackish brown or fuscous umbo, flesh white, unchangeable, taste sweet, agreeable; lamellae thin, close, free, white becoming brown or blackish brown; stem equal or tapering upward, stuffed or hollow, whitish, sometimes brownish below the white annulus; spores .0002–.00024 of an inch long, .00014–.00016 broad.

Pileus 1–2 inches broad; stem 1–1.5 inches long, 2–3 lines thick.

Gregarious or sometimes two united at the base. On manure. Near Trenton, N. J. September. E. B. Sterling.

Growing with A g a r i c u s p l a c o m y c e s Pk. from which it differs in its smaller size, campanulate pileus and brown umbo. It is one of the few species in which the color of the lamellae changes from white to brown without any intervening pink color. From similar species of Lepiota it may be distinguished by its brown spores and brown mature lamellae.

Pileus tenuis, conicus vel campanulatus, saepe obtuse umbonatus, squamulosus praeter umbonem, saepe radiate rimosus, albidus, squamulis brunnescentibus et umbone brunneo-nigro fuscove, carne alba, immutabile, sapore dulce, grata; lamellae tenues, confertae, liberae, albae deinde brunneae vel nigrescentes; stipes aequalis vel sursum attenuatus, farctus cavusve, albidus, annulo albo; sporae 5–6 x 3.5–4 μ.

Pileus 2.5–5 cm latus; stipes 2.5–4 cm longus, 4–6 mm crassus.

Amanita elongata

Pileus thin, conic or ovate becoming broadly convex, glabrous, even or striate on the margin, yellow or orange, sometimes more deeply colored in the center, flesh white; lamellae close, free, white; stem long, slender, flexuous, white or whitish at the top, pallid below, slightly thickened at the base, slightly radicating, the annulus pale yellow; spores broadly elliptic, .0003–.0004 of an inch long, .00024–.0003 broad.

Pileus 1–2 inches broad; stem 3–6 inches long, 2–4 lines thick. Damp grassy ground in the borders of woods. Pennsylvania. July. E. B. Sterling.

Pileus tenuis, conicus ovatusve, deinde late convexus, glaber, in margine levis striatusve, luteus aurantiacusve, saepe in centro coloratior, carne alba; lamellae confertae, liberae, albae; stipes elongatus, gracilis, flexuosus, apice albus albidusve, deorsum pallidus, basi leviter incrassatus, subradicatus, annulo flavido; sporae 8–10 x 6–8 μ.

Pileus 2.5–5 cm latus; stipes 7.5–15 cm longus, 4–8 mm crassus.

Boletinus glandulosus

Pileus fleshy, convex becoming nearly plane, viscid, subumbonate, chestnut or brown, flesh pallid; tubes medium size, angular, adnate or slightly decurrent, brown becoming blackish brown, the dissepiments everywhere dotted with minute compact tufts of elongated slightly irregular blackish cells, .0008–.0016 of an inch long, .00016–.0002 broad; stem subequal, viscid, solid, annulate, yellowish brown; spores oblong, .0004–.0005 of an inch long, .00016–.0002 broad.

Pileus 1.5–3 inches broad; stem 1–2 inches long, 4–6 lines thick. New Brunswick. G. U. Hay.

The dense blackish dots on the tube walls appear at first sight like glands and suggest the specific name. They furnish a singular character which belongs to no other known species of the genus and serves as a ready mark of distinction for this species.

Pileus carneus, convexus deinde subplanus, viscidus, subumbonatus, subcastaneus brunneusve, carne pallida; tubuli angulares, adnati vel leviter decurrentes, brunnei deinde nigro-brunnei; dissepimentis ubique punctatis cum caespitibus minutis loculorum elongatorum, leviter irregularum, nigrescentum, 20–40 x 4–5 μ; stipes subaequalis, viscidus, solidus, annulatus, flavo-brunneus; sporae oblongae, 10–12 x 4–5 μ.

Pileus 3.5–7.5 cm latus; stipes 2.5–5 cm longus, 8–12 mm crassus.

Clavaria pallescens

Club simple, loosely cespitose or sometimes gregarious, about 1 inch tall, clavate, obtuse, generally terete, soft, fragile, stuffed or hollow, pale buff fading to whitish, more persistent lemon-yellow within; stem distinct, short, glabrous, 1–2 lines long, pale yellow;

spores white, oblong or ellipsoid, .00035–.0005 of an inch long, .00024–.0003 broad.

Dry gravelly soil near clumps of lamb kill, Kalmia angustifolia L. South Acton, Mass. October. S. Davis and G. E. Morris.

Allied to Clavaria ligula Fr. from which it may be separated by its smaller size, pallescent color externally and lemon-yellow color within, glabrous pale yellow stem and its broader spores. It is apparently a rare species.

Clava simplex, laxe caespitosa vel aliquando gregaria, in altitudine uncialis, clavata, obtusa, plerumque teres, mollis, fragilis, farcta cavave, ochroleuca, pallescens, intus citrina; stipes distinctus, brevis (2–4 mm) citrinus; sporae albae, oblongae vel ellipsoideae, 6–8 x 9–12 μ.

Galera besseyi

PLATE V, FIG. 15–20

Pileus thin, ovate or oval, rarely subglobose, obtuse, glabrous, never expanding, isabelline or pale dingy ochraceous, the margin abruptly contracted and closely embracing the stem; lamellae thin, close, ascending, adnate, ferruginous brown; stem slender, slightly flexuous, hollow, glabrous, even or slightly striate, colored like the pileus; spores broadly ellipsoid, .00055–.00065 of an inch long, .0004–.0005 broad.

Pileus 2.5–6 lines long, 2–5 lines broad; stem 1–2 inches long, .5–1 line thick.

Sandy soil. Garden of the Gods, El Paso co., Col. August 1908. C. E. Bessey and E. A. Bessey.

This is a well marked and readily recognized species, having two very peculiar and interesting characters. The permanently closed pileus and the abruptly contracted amplexicaul margin are features not found in any other known species. The persistently clasping margin, surrounding the top of the stem like a sheath, strongly emphasizes the generic character, "margin at first straight, appressed to the stem." Being an inhabitant of an arid region we may suppose the persistently closed pileus to be a character designed to promote the conservation of moisture in the pileus till the spores can be fully developed. That it is not due in this instance to an unusually dry season and therefore an unusual occurrence may be inferred from the fact that rain had preceded the discovery but a short time, for water was seen in the surface cavities of adjacent rocks. We must therefore conclude that it is a permanent character.

The color of the young lamellae is not known. The mycelium binds together a mass of sand at the base of the stem. This adheres to the stem when carefully taken up and gives it the appearance of being bulbous. This most distinct and remarkable species may very appropriately commemorate the name of the illustrious botanist, C. E. Bessey, who with his son, E. A. Bessey, discovered it.

Pileus tenuis, ovatus ovalisve, rare subglobosus, obtusus, glaber, nunquam expansus, isabellinus vel subochraceus, in margine abrupte contractus et stipitem amplexans; lamellae tenues, confertae, ascendentes, adnatae, ferrugineo-brunneae; stipes gracilis, subflexuosus, glaber, levis vel substriatus, pileo in colore similis; sporae ellipsoideae, 14–16 x 10–12 μ.

Pileus 5–12 mm longus, 4–10 mm latus; stipes 2.5–5 cm longus, 1–2 mm crassus.

Hygrophorus obconicus

Pileus fleshy, thick in the center, obconic, convex or nearly plane becoming depressed in the center, involute on the margin, glabrous, pruinose, white or whitish, with the center yellowish, becoming pale alutaceous with age, flesh white; lamellae thick, distant, ventricose, very decurrent, white; stem straight or flexuous, equal or tapering downward, brittle, stuffed, white; spores subglobose, .00016–.00024 of an inch long, .00016–.0002 broad.

Pileus 6–12 lines broad; stem 10–12 lines long, 3–5 lines thick.

Cespitose. Among sphagnum in swamps. Stow, Mass. September. S. Davis.

This is allied to H. pratensis albus Sacc. from which it may be separated by its habitat, color and smaller spores.

Pileus carneus, centro crassus, convexus vel subplanus, deinde centro depressus, glaber, pruinosus, albus albidusve, disco flavido vel griseo-flavido, in maturitate pallido-alutaceus, carne alba; lamellae crassae, distantes, ventricosae, valde decurrentes, albae; stipes rectus vel flexuosus, aequalis vel deorsum attenuatus, fragilis, farctus, albus; sporae subglobosae, 4–6 x 4–5 μ.

Pileus 1.5–2.5 cm latus; stipes 2–2.5 cm longus, 6–10 mm crassus.

Inocybe intricata

Pileus thin, conic or convex becoming expanded, umbonate, fibrillose, radiately rimose, pale brown or tawny brown, shining, the umbo generally darker, flesh white; lamellae close, adnate or sinuate adnate, white or whitish becoming tawny; stem fragile, flexuous, pruinose, stuffed or hollow, sometimes slightly bulbous, whitish, brownish below; spores coarsely nodulose, .0004–.0005 of an inch long, .00024–.0003 broad; cystidia .002–.003 of an inch long, .0008–.0012 broad.

Pileus 4–5 lines broad; stem 1.5–2 inches long, .5–1 line thick.

Dark vegetable humus under deciduous trees. Stow, Mass. July and August. S. Davis.

The species belongs to the section Rimosi. It is variable. It differs from I. umboninota Pk. in its paler color of the pileus, its stuffed or hollow stem and its larger spores. From I. rimosa (Bull.) Karst. it is separated by its nodulose spores and from I. asterospora Quel. by its smaller size, paler shining pileus and its stuffed or hollow stem with no reddish tint. It is also peculiar in having a slight webby veil when very young.

Pileus tenuis, conicus convexusve, deinde expansus, umbonatus, fibrillosus, radiate rimosus, pallido-brunneus, fulvo-brunneus, nitidus, umbone plerumque nigro-brunneo, carne alba; lamellae confertae, adnatae sinuato-adnataeve, albae albidaeve, deindae fulvae; stipes fragilis, flexuosus, pruinosus, fractus fistulosusve, interdum leviter bulbosus, sursum albidus, deorsum brunnescens; sporae sparsim nodulosae, 10–12 x 6–8 μ, cystidia 55–80 x 20–30 μ.

Pileus 8–10 mm latus; stipes 3–5 cm longus, 1–2 mm crassus.

Panaeolus semilanceatus

Pileus thin, conic-ovate, umbonate, grayish brown; lamellae ascending, black when mature; stem slender, glabrous, hollow, brown; spores ellipsoid, compressed, variable in size, black, .0005–.0007 of an inch long, .0003–.0005 broad.

Pileus 4–6 lines long, 3–4 broad; stem 1.5–2.5 inches long, .5–.75 of an inch thick.

Dawson, British America. September 1905. Communicated by E. B. Sterling.

Similar to Psilocybe semilanceata Fr. in size and shape, but differing in color and spore character.

Pileus tenuis, conicus ovatusve, umbonatus, griseo-brunneus; lamellae ascendentes, in maturitate atrae; stipes gracilis, glaber, fistulosus, fuscus; sporae ellipsoideae, compressae, in magnitudine variabiles, atrae, 12–18 x 8–12 μ.

Pileus 8–12 mm longus, 6–8 mm latus; stipes 4–6 cm longus, 1–1.5 mm crassus.

Hendersonia diplodioides divergens var. nov.

Spores very large, irregular, straight or curved, oblong, subpyriform or elliptic, 1-5-septate, commonly 3-5-septate, .0012-.0016 of an inch long, .0005-.0006 broad.

Dead stems of Sambucus. Red Butte Canyon, Utah. July. A. O. Garrett.

Differs from the type chiefly in its spores.

Sporae maximae, irregulares, rectae vel curvae, oblongae, subpyriformes, vel ellipsoideae, 1-5-septatae, plerumque 3-septatae, 30-40 x 12-24 μ.

EDIBLE FUNGI

Tricholoma sordidum (Schum.) Fr.

SORDID TRICHOLOMA

PLATE 115

Pileus thin, campanulate or convex becoming plane or centrally depressed, subumbonate, glabrous, sometimes wavy or irregular on the margin, hygrophanous, dark brown or subviolaceous when moist, pallid or subalutaceous when dry, flesh white, taste sweetish, then disagreeable; lamellae thin, subdistant, sinuate, adnate or subdecurrent, violaceous when young, then whitish or smoky brownish, sometimes tinged with pink; stem equal or slightly thickened at the base, stuffed or occasionally hollow in large specimens, colored like or a little paler than the pileus, sometimes fibrillose striate; spores pinkish, .0003 of an inch long, .0002 broad.

The sordid tricholoma in this part of our country is most often found in greenhouses. The figures of it in plate 115 were drawn from specimens collected by H. W. Barratt in Poughkeepsie. They were found growing in a greenhouse devoted to the cultivation of violets. Specimens of it were received a little later from B. C. Williams of Newark, Wayne co. These were collected in a greenhouse devoted to the cultivation of carnations. The species is related to the naked tricholoma, Tricholoma nudum (Bull.) Fr. with which it was for a time confused, but from which it may be distinguished by its tougher hygrophanous cap. In Europe it is said to grow on manure and in rich cultivated soil in gardens.

The cap is thin except in the center where it sometimes has a prominence called an umbo. It has a moist appearance and a dark lilac or violaceous color before maturity, but when old it changes color as the moisture escapes and becomes pallid, grayish or reddish brown.

The young gills are also violaceous but with age they assume a pallid or smoky hue sometimes tinged with pink.

The stem is nearly equal in diameter throughout its entire length but sometimes it is a little thickened at the base. It may be solid or stuffed with a pith or in large specimens it may be hollow. It is similar in color to the pileus but may be a little paler. Often several stems are united at the base, and then the caps are frequently so crowded that they become irregular or wavy on the margin and sometimes they may be eccentric. The stems are slightly fibrillose striate and white within. The pinkish tint of the spores and the slightly decurrent lamellae are characters suggestive of the genus Clitopilus.

On account of its slight toughness and the somewhat disagreeable flavor of the flesh this species would not be considered a first-class mushroom, but with proper preparation it makes a very good dish and is harmless. The collector of the Poughkeepsie specimens gives the following as his method of cooking this mushroom. Put them in a covered dish with a little water, having previously seasoned them with a little salt and pepper. Put in an oven and after roasting them, not before, add a little butter. He adds, "we roasted some this morning and pronounce them first-rate."

Pholiota duroides Pk.

HARDISH PHOLIOTA

PLATE 116, FIG. 1–7

N. Y. State Mus. Bul. 122, p.148

Pileus thin, convex becoming nearly plane, glabrous or slightly rimose squamose in the center, creamy white or sometimes ochraceous buff either wholly or in the center only, flesh white, taste mild; lamellae thin, close, narrow, adnexed, sometimes broadly sinuate and having a decurrent tooth, whitish becoming brown or rusty brown; stem equal or nearly so, stuffed or hollow, glabrous, whitish, the annulus thick and cottony, often lacerated and evanescent, white; spores broadly elliptic, .00024–.00028 of an inch long, .00016–.0002 broad.

The hardish pholiota is related to the hard pholiota, *Pholiota dura* (Bolt.) Fr. but it may be separated from it by its different colors, softer substance and specially by its smaller spores. These are more brown than the spores of the early pholiota, Pholiota praecox (Pers.) Fr., and this makes it doubtful whether the species would not better be placed in the genus Stropharia.

The cap is 1-2 inches broad and convex or nearly flat on the upper surface which is smooth and nearly white or sometimes yellow in the center or wholly ochraceous buff. The gills are rather narrow and closely placed side by side. When young they are whitish but with advancing age they become dark rusty brown. The stem is 1-2 inches long and 2-4 lines thick. It is white and adorned near the top by a thick cottony white collar which is sometimes torn or ragged and sometimes disappears as the plant grows old. It grows in rocky uncultivated places and may be found in August and September. It was discovered in Massachusetts but has been found near Syracuse in this State. Its scarcity detracts somewhat from its importance as an edible species.

Phylloporus rhodoxanthus (Schw.) Bres.

YELLOW RED PHYLLOPORUS

PLATE 116, FIG. 8-11

Pileus fleshy, compact, convex or pulvinate, sometimes becoming plane or depressed in the center when old, minutely flocculose or subtomentose, dry, occasionally rimose, reddish, yellowish red, brownish red or tawny brown, flesh white or whitish; lamellae moderately broad, subdistant, adnate or decurrent, distinct or slightly anastomosing near the stem, golden yellow, the interspaces somewhat venose; stem straight or flexuous, equal or narrowed toward the base, solid or stuffed, reddish or red above and yellow below; spores oblong or subfusiform, .0004-.0005 of an inch long, .00016-.0002 broad.

The yellow red phylloporus is variable in the color of the cap and stem and in the character of the gills. It has been referred by mycologists to various genera and described under various names. Agaricus rhodoxanthus, Agaricus pelletieri, Gomphidius rhodoxanthus, Clitocybe pelletieri, Flammula tammii, Flammula paradoxa, Paxillus tammii and Paxillus rhodoxanthus have all been applied to one or another form of this protean species. Because it does not agree well with the characters of any of the genera mentioned a new genus was instituted which might receive this and kindred species. Its name is Phylloporus and indicates the fact that in Europe a form occurs in which the gills are connected by transverse partitions in such a way as to form pores. This form appears to be wanting in this country, but forms sometimes occur here in which the gills are more or less connected near their inner extremity. The color of the gills is a beautiful bright chrome yellow or golden yellow. They are not easily separable from the flesh of the cap. This is the chief objection to placing this species in the genus Paxillus.

The stem is usually a little shorter than the horizontal diameter of the cap. It is commonly central but occasionally it is eccentric. It is solid or stuffed and more or less variegated with red and yellow. The cap is 2–4 inches broad, the stem 1.5–3 inches long and 3–5 lines thick.

The mode of growth is either solitary, gregarious or cespitose. It is found in woods and bushy places growing among mosses, grasses or fallen leaves and is generally most plentiful in showery weather in July, August and September. The resemblance of forms having a tawny brown or yellowish brown cap to Boletus subtomentosus L. is quite marked and has been noticed by several writers.

Cantharellus minor Pk.

SMALL CHANTARELLE

PLATE 116, FIG. 12–17

Pileus thin, convex or nearly plane, often centrally depressed or umbilicate, glabrous, yellow, flesh whitish or pale yellow; lamellae distant, decurrent, sparingly branched, yellow; stem slender, subflexuous, subequal, smooth, solid when young, then stuffed or hollow, yellow, often with a whitish mycelium at the base; spores .00025–.0003 of an inch long, .00016–.0002 broad.

The small chantarelle is almost exactly like the chantarelle, Cantharellus cibarius Fr. in color, but in its much smaller size and more slender appearance, its stem being proportionately longer, it is easily recognized at a glance as a distinct species. But detailed examination sustains the superficial appearance by showing the cap to be very much thinner and often umbilicate or centrally depressed, the gills broader in proportion to the size of the plant and much less branched, the stem slender, elongated, usually flexuous and stuffed or hollow, and the spores smaller. The cap is often wavy or irregular on the margin and the stem may be hollow in the upper part and solid in the lower. The cap is 6–12 lines broad, the stem 1–1.5 inches long and 1–2 lines thick. It grows in thin woods and in open places and appears in June and July. It is gregarious or subcespitose and is sometimes associated with the chantarelle craterellus, Craterellus cantharellus (Schw.) Fr. Although of excellent flavor its small size detracts from its importance as an edible mushroom, but sometimes in wet showery weather it appears in sufficient abundance to make it available for the table.

NEW YORK SPECIES OF LENTINUS

Lentinus Fr.

Pileus fleshy coriaceous, tough, hard in fleshy species when old, persistent; hymenophorum continuous with the stem or with the base of the sessile pileus; lamellae thin, unequal, serrate or lacerate-dentate on the edge; stem when present, central, eccentric or lateral.

Wood-inhabiting fungi, variable in form, hard or tough in texture and easily recognizable by the uneven or serrate-dentate edge of the lamellae.

KEY TO THE SPECIES

Pileus with a distinct stem....................1
Pileus sessile or with a very short stem....................6
1 Pileus squamose or squamulose....................2
1 Pileus glabrous....................5
2 Stem 3 lines thick or more....................3
2 Stem less than 3 lines thick....................4
3 Pileus squamose, lamellae sinuate....................lepideus
3 Pileus squamulose, lamellae not sinuate....................spretus
4 Margin of the pileus even....................tigrinus
4 Margin of the pileus sulcate....................sulcatus
5 Plant cespitose, stem sulcate....................cochleatus
5 Plant not cespitose, stem not sulcate....................umbilicatus
6 Mature pileus hairy, sessile....................ursinus
6 Mature pileus glabrous, very short stemmed....................7
7 Stem red or chestnut color....................haematopus
7 Stem whitish, nearly obsolete....................suavissimus

Lentinus lepideus Fr.

SCALY LENTINUS

Pileus fleshy, compact, tough, hard when dry, convex or nearly plane, sometimes slightly depressed in the center, often irregular, the cuticle cracking and forming brownish spotlike scales, white or pale ochraceous, flesh white; lamellae subdistant, broad, sinuate, decurrent, transversely lacerate and dentate serrate on the edge, white; stem short, hard, solid, often pointed at the base, more or less adorned with recurved scales sometimes furnished when young with an imperfect evanescent annulus, white or whitish; spores ellipsoidal, .0004-.0005 of an inch long, .0002-.00024 broad.

Pileus 2-4 inches broad; stem 1-2.5 inches long, 3-6 lines thick.

Single or cespitose. Decaying wood of coniferous trees. Often on and injurious to railroad ties, fence posts and bridge timbers. Common. May to October.

The pileus is occasionally umbonate. The scales may be brown or almost black. The stem is sometimes eccentric. It often emerges from cracks in the wood and is then pointed at the base.

Lentinus spretus Pk.

SPURNED LENTINUS

N. Y. State Mus. Bul. 105, p.24.

Pileus thin, tough, convex becoming nearly plane, obtuse or umbonate, rimose squamulose, grayish brown or pale alutaceous, sometimes more highly colored in the center, flesh white; lamellae close, rather narrow, decurrent, whitish, serrate dentate on the edge, sometimes lacerate; stem equal or sometimes narrowed toward the base, sometimes thickened, solid, subsquamose, often eccentric, whitish, often brownish toward the base; spores white, oblong, .0003-.0004 of an inch long, .00016-.0002 broad.

Pileus 2-5 inches broad; stem 1-3 inches long, 3-6 lines thick.

Decaying wood of pine. Warren and Rensselaer counties. July to September.

This species is closely related to Lentinus lepideus Fr. from which it may be separated by its more slender habit, thinner pileus, smaller scales, and more decurrent lamellae without a sinus, and specially by its smaller spores. The dimensions ascribed to the spores of L. lepideus by European authors vary. It is possible therefore that L. spretus may have been confused by them with the preceding species.

Lentinus tigrinus (Bull.) Fr.

SPOTTED LENTINUS

Pileus thin, subcoriaceous, convex or nearly plane, umbilicate, spotted with innate hairy blackish scales, whitish; lamellae narrow, close, unequal, decurrent, toothed on the edge, white; stem slender, solid, hard, squamulose, whitish, sometimes brownish toward the base; spores ellipsoid, .0002–.0003 of an inch long, .0001–.00016 broad.

Pileus 1–1.5 inches broad; stem 1–1.5 inches long, 1–2 lines thick.

Decaying wood. A small but attractive species.

There is a common form in which the lamellae are obliterated or overrun by a mass of mycelium or compact tomentum. This was at first thought to be a diseased or abnormal state of the species and was characterized as transforming the lamellae to a "woody mass" or "spongy mass." This form was later thought to be a distinct species and was described under the name Lentodium squamulosum Morg. But since the two forms are sometimes found growing together on the same stump or log and as they both produce spores of the same character it seems better to consider them both forms of one species. We may suppose this abnormal form to develop the hyphae of the hymenium in excessive abundance and that these hyphae bear spores directly without the intervention of basidia. The abnormal form might in such a case be considered in the light of a conidial state of the species.

Lentinus sulcatus Berk.

Panus fulvidus Bres.

SULCATE LENTINUS

Pileus fleshy, thin, tough, conic becoming hemispheric or convex, cracking on the surface and forming irregular scales, virgate toward the margin, sulcate on the margin, reddish or tawny, often darker in the center; lamellae subdistant, rounded behind or emarginate, slightly adnexed, obscurely dentate on the edge, white or pallid; stem central, short, solid, sometimes narrowed downward, pruinose or slightly furfuraceous, white or pallid; spores oblong, .0005–.0007 of an inch long, .00024–.0003 broad.

Pileus 8–12 lines broad; stem 6–10 lines long, 1.5–3 lines thick.

Crevices of dry wood or old fence rails. Essex county. June.

A rare species and found but once in our State. In the dried specimens the margin of the pileus is distinctly sulcate and the grooves are paler than the intervening ridges.

Lentinus cochleatus Fr.

SHELL LENTINUS

Pileus thin, tough, flaccid, irregular, often lobed on the margin, plane, centrally depressed or infundibuliform, glabrous, rufescent or brownish flesh color when moist, paler when dry; lamellae rather broad, close, decurrent, serrate on the edge, whitish tinged with flesh color; stem central, eccentric or lateral, usually crowded and united in a tuft, solid, glabrous, sulcate, colored like or paler than the pileus; spores minute, subglobose, .00016–.0002 of an inch in diameter.

Pileus .5–2 inches broad; stem 1.5–3 inches long, 2–4 lines thick.

On and about old stumps or growing from decaying wood buried in the ground. Adirondack region. July and August.

The species is easily recognized by its tufted mode of growth and its grooved stem. The plants sometimes emit an agreeable odor.

Lentinus umbilicatus Pk.

UMBILICATE LENTINUS

N. Y. State Mus. Rep't 28, p.51, pl.1, fig.15–19

Pileus fleshy but thin, tough, glabrous, deeply umbilicate, hygrophanous, brownish tan color when moist, paler when dry; lamellae close, adnate or decurrent, serrate on the edge, whitish; stem short, slender, glabrous, nearly even, tough, stuffed or hollow, central or eccentric, colored like the pileus.

Pileus 6–12 lines broad; stem 8–12 lines long, 1–1.5 lines thick.

Ground and decaying wood. Gregarious. Hamilton and Essex counties. July and August.

This small species resembles Lentinus cochleatus Fr. in texture and color, but it is a much smaller plant, gregarious in its mode of growth and without furrows on the stem. It is closely related to Lentinus omphalodes Fr. from which it has been separated on account of its hollow stem without elongated furrows or lacunae and its darker color.

Lentinus ursinus Fr.

BEAR LENTINUS

Pileus fleshy, tough, sessile, dimidiate, often imbricated, even or sometimes costate corrugate on the margin, at first whitish and glabrous then reddish brown and hairy or tomentose toward the base, taste acrid; lamellae broad, lacerate dentate on the edge, whitish; spores minute, globose, uninucleate, rough, hyaline, .00016 of an inch in diameter.

Pileus 2–3 inches broad.

Decaying wood. Rensselaer and Warren counties. August and September.

This species is remarkable for the change that takes place, as it matures, in its color and ornamentation, and for the hot peppery taste of the flesh. Sometimes the pileus is costate corrugate on the margin in our specimens though such a character is not attributed to the European plant, neither is the acrid flavor.

Lentinus haematopus Berk.

RED STEMMED LENTINUS

Pileus 1¼–1¾ inches broad, umbilicate or depressed, ochraceous, quite smooth; lamellae decurrent, margin lacerated; stem 1–2 lines high, blood-red, almost laccate at the base, ¼ inch thick.
North America, locality unknown. [Grevillea, 1:33. 1872]

Pileus thin, plane or centrally depressed, lobed on the margin, glabrous, pale yellow or cream color; lamellae decurrent, dentate serrate, white; stem short, firm, eccentric, glabrous, blood-red; spores unknown.

Pileus 1.5–2 inches broad; stem 2–3 lines long, about 2 lines thick.

Prostrate trunk of striped maple, Acer pennsylvanicum L. Essex county. Gansevoort, Saratoga co. July.

This rare species has been found but twice in our State, so far as is known. The original description is so brief and unsatisfactory that it has been quoted and a fuller description, derived from our specimens, added. The essential characters of the original description are so peculiar and the agreement of our specimens with them is so close that we do not doubt their specific unity.

Lentinus suavissimus Fr.

SWEET SCENTED LENTINUS

Pileus thin, tough, convex and umbilicate or centrally depressed, glabrous, even or striate on the margin, whitish or yellowish, flesh white, odor agreeable, resembling the odor of melilot; lamellae denticulate, decurrent, sometimes wavy and anastomosing at the base, whitish or yellowish; stem very short or obsolete, central, eccentric or almost lateral, white or whitish; spores minute, .0002–.00024 of an inch long, .0001–.00012 broad.

Pileus 6–15 lines broad; stem about 1 line long, 1 line thick.

Dead trunks and branches of willow, Salix discolor Muhl. Fulton, Hamilton and Essex counties. July and September.

Rare and variable. It has been collected three times in our State, each time on willow. Its odor is strong but agreeable and perceptible at a distance of several feet.

Specimens formerly referred to Lentinus lecomtei Fr., L. strigosus Schw. and L. pelliculosus Schw. are believed to be erroneous determinations. Therefore descriptions of these species are omitted.

NEW YORK SPECIES OF ENTOLOMA

Entoloma Fr.

Pileus subcarneous, margin at first incurved; hymenophorum continuous with the stem; veil not distinct; lamellae sinuate-adnexed or seceding; stem fleshy, fibrous or waxy, soft; spores pink, typically angular.

This genus corresponds to Tricholoma of the white spored series. The species are terrestrial and occur chiefly during showery weather in summer and early autumn. They may be divided into four subgenera or sections.

KEY TO THE SECTIONS

Pileus thin, subsilky when dry, hygrophanous................Nolanidea
Pileus flocculose or squamulose, dry........................Leptonidea
Pileus glabrous, moist or viscid, not hygrophanous....................1
1 Pileus conic or subcampanulate................................Conoidea
1 Pileus convex or nearly plane.................................Genuina

Genuina

Pileus glabrous, moist or viscid, not hygrophanous. Large or medium in size with pileus usually convex or becoming so and stem stout.

KEY TO THE SPECIES

Pileus even, not umbonate....................................sinuatum
Pileus centrally wrinkled, umbonate..........................grande

Entoloma sinuatum Fr.

SINUATE ENTOLOMA

Pileus fleshy, convex becoming expanded or centrally depressed, glabrous, moist, even, spreading or wavy on the margin, yellowish white, flesh white; lamellae slightly adnexed, very broad, close, pallid becoming pinkish or rufescent; stem stout, equal, firm, solid, fibrillose becoming glabrous, white; spores subglobose, angular, .0003-.0004 of an inch in diameter.

Pileus 2-3 inches broad; stem 3-5 inches long, 5-6 lines thick.

Rare. West Shokan, Ulster co. August. Snyders, Rensselaer co. July.

Entoloma grande Pk.

GRAND ENTOLOMA

N. Y. State Mus. Rep't 50, p.101

Pileus fleshy, thin toward the margin, convex becoming nearly plane, generally umbonate and centrally rugosely wrinkled, moist in wet weather, glabrous, yellowish white becoming brownish or grayish brown, flesh white, odor and flavor farinaceous; lamellae broad, subdistant, slightly adnexed becoming free or nearly so, often wavy or eroded on the edge, whitish becoming pinkish; stem equal, solid, slightly fibrous externally, mealy at the top, white; spores subglobose, angular, .0003-.0004 of an inch in diameter.

Pileus 4-6 inches broad; stem 4-6 inches long, 8-12 lines thick.

Woods. Menands, Albany co. August.

The flavor is at first farinaceous and agreeable but it leaves an unpleasant burning sensation in the mouth for a long time. It is therefore probably an unwholesome species and should not be used as food.

Conoidea subg. nov.

Small species with the pileus subpersistently conic or campanulate and stem slender, long and hollow. Small slender species growing in damp shaded places, in vegetable mold, among mosses or in bogs and swamps. The lamellae are rather broad, ascending and often wavy or eroded on the edge. The species appear to be peculiar to this country.

KEY TO THE SPECIES

Pileus salmon color .... salmoneum
Pileus not salmon color 1

1 Pileus brown or blackish brown.............................peckianum
1 Pileus some other color...2
2 Pileus persistently pale yellow, cuspidate................cuspidatum
2 Pileus destitute of these characters................................3
3 Pileus yellow or smoky yellow.....................................luteum
3 Pileus pale yellow becoming darker with age..................variabile
3 Pileus grayish brown ....minus

Entoloma salmoneum Pk.

SALMON ENTOLOMA

N. Y. State Mus. Rep't 24, p.65, pl.4, fig.6-9

Pileus thin, conic or campanulate, subacute or with a minute papilla or small cusp at the apex, glabrous, moist, salmon color, the margin sometimes uneven or lobed; lamellae broad, subdistant, ventricose, salmon color; stem slender, equal, glabrous, hollow, colored like the pileus; spores subglobose, angular, .0004-.0005 of an inch in diameter.

Pileus 8-15 lines broad; stem 3-6 inches long, 1-2 lines thick. Gregarious. Damp ground in dense woods, specially under spruce and balsam fir trees or among mosses. Rensselaer county and Adirondack region. July and August.

Entoloma cuspidatum Pk.

CUSPIDATE ENTOLOMA

N. Y. State Mus. Rep't 24, p.64, pl.2, fig.14-18

Pileus thin, conic or campanulate, moist, shining, glabrous, with a distinct cusp at the apex, pale yellow, the thin margin exceeding the lamellae, often irregular or slightly lobed; lamellae ascending, broad, subdistant, narrowed toward the stem, adnexed, often eroded or subdenticulate on the edge, pale yellow becoming flesh color; stem equal, hollow, glabrous, slightly fibrous, colored like the pileus; spores subglobose, angular, .0004-.0005 of an inch in diameter.

Pileus 8-12 lines broad; stem 3-5 inches long, 1-2 lines thick. Swamps and sphagnous marshes. Rensselaer county and Adirondack region. Also on Fishers island. C. C. Hanmer. August and October.

Closely allied to E. salmoneum Pk. from which it scarcely differs except in color and in the more fully and commonly developed cusp of the pileus. In both, the moist pileus is sometimes striatulate, the position of the lamellae being faintly shown through the thin margin of the pileus. In both species the plants usually become darker in drying.

Entoloma peckianum Burt

PECK ENTOLOMA

N. Y. State Mus. Rep't 54, p.146, pl.F, fig.9-16

Pileus thin, conic becoming very convex or subcampanulate, moist, brown or blackish and shining, paler after the escape of the moisture, umbonate, obscurely roughened by the matted ends of minute fibrils; lamellae ascending, subclose, broad, abruptly rounded behind, adnexed, whitish becoming pink; stem slender, equal, hollow, fibrillose striate, pale brown, often with white mycelium at the base, white within; spores angular, uninucleate, .0004-.0005 of an inch long, .0003-.0004 broad.

Pileus 8-15 lines broad; stem 2-4 inches long, 1-2 lines thick.

In sphagnous marshes. Floodwood, Franklin co. August.

In drying the pileus assumes a black color.

Entoloma luteum Pk.

YELLOW ENTOLOMA

N. Y. State Mus. Rep't 54, p.146, pl.F, fig.1-8

Pileus thin, conic or subcampanulate, obtuse or subumbonate, moist, sometimes squamulose at the apex, yellow or smoky yellow, a little paler after the escape of the moisture, sometimes tinged with green; lamellae ascending, moderately close, broad, whitish becoming pale salmon color; stem slender, equal, hollow, slightly fibrillose striate, colored like the pileus, with white mycelium at the base; spores subquadrate, angular, .0004-.0005 of an inch in diameter.

Pileus 6-10 lines broad; stem 3-4 inches long, 1-2 lines thick.

Mossy ground in woods. Floodwood, Franklin co. August.

The squamules of the center of the pileus, when present, are so minute that they may be easily overlooked. To the naked eye the pileus appears to be glabrous.

Entoloma variabile Pk.

VARIABLE ENTOLOMA

N. Y. State Mus. Rep't 54, p.145, pl.F, fig.17-27

Pileus thin, conic, ovate or subcampanulate, umbonate, obtuse or subumbilicate, moist, slightly fibrillose, pale yellow when young, becoming reddish brown with age, either wholly or in the center only; lamellae ascending, moderately close, broad in front, often eroded on the edge, white or whitish, becoming pale salmon color; stem long, slender, equal, hollow, slightly fibrillose striate, whitish or pallid sometimes becoming reddish brown with age, often with a whitish mycelium at the base; spores subglobose, angular, uninucleate, .0004-.0005 of an inch in diameter.

Pileus 8-15 lines broad; stem 3-5 inches long, 1-2 lines thick.

In sphagnous marshes. Floodwood, Franklin co. August.

Remarkable for the variability in the shape and color of the pileus. Specimens sometimes appear as if they had been sun scorched.

Entoloma minus Pk.

SMALLER ENTOLOMA

N. Y. State Mus. Bul. 116, p.23

Pileus very thin, subconic or hemispheric becoming convex, glabrous, grayish brown, darker in the center; lamellae thin, close, at first ascending, sinuate, adnexed, whitish becoming flesh color; stem slender, glabrous, hollow, white; spores subglobose, angular, .0003-.0004 of an inch in diameter.

Pileus 8-12 lines broad; stem 1-1.5 inches long, about 1 line thick.

Ground in woods. East Schaghticoke, Rensselaer co. August.

A small rare species which departs somewhat from the general character of this subgenus, but agrees better with it than with any other.

Leptonidea

Pileus flocculose or squamulose, dry.

KEY TO THE SPECIES

Pileus umbonate .... jubatum
Pileus not umbonate 1
1 Pileus white .... sericellum
1 Pileus not white 2
2 Pileus with violaceous tints .... cyaneum
2 Pileus not having violaceous tints 3
3 Pileus minutely scabrous .... scabrinellum
3 Pileus squamulose .... dysthales
3 Pileus silky, yellowish green .... flavoviride

Entoloma jubatum Fr.

CRESTED ENTOLOMA

Pileus somewhat fleshy, campanulate becoming expanded, umbonate, dry, villose squamulose or fibrillose, grayish brown or mouse color; lamellae close, ventricose, slightly adnexed, easily separating from the stem, smoky brown; stem equal, fibrous, stuffed or hollow, fragile, brownish; spores irregular, subelliptic, .0004–.0005 of an inch long, .00024–.0003 broad.

Pileus 1–2 inches broad; stem 1–2 inches long, 2–3 lines thick.

Ground under white birch trees. West Albany. September. Very rare.

Entoloma sericellum Fr.

SLIGHTLY SILKY ENTOLOMA

Pileus thin, convex becoming plane or centrally depressed, dry, silky, squamulose or nearly glabrous, white or yellowish, the margin at first inflexed and floccose; lamellae broad, subdistant, adnate, easily separating from the stem, flesh color; stem equal, hollow, fibrillose becoming glabrous, somewhat waxy, white; spores irregular, angular, .0003–.0005 of an inch long, .00024–.0003 broad.

Pileus .5–1 inch broad; stem 1–2 inches long, about 1 line thick.

Ground. Catskill mountains. July.

A rare species found but once in our limits. It may be distinguished from Entoloma speculum Fr., a somewhat similar white species, by its dry silky pileus.

Entoloma cyaneum Pk.

VIOLACEOUS ENTOLOMA

N. Y. State Mus. Rep't 26, p.55

Pileus convex, dry, minutely squamulose, brown or brownish violaceous; lamellae close, whitish becoming tinged with pink; stem equal or slightly thickened downward, hollow, squamulose and violaceous at the top; spores angular, .0003 of an inch long, .00024 broad.

Pileus 1–1.5 inches broad; stem 1.5–2 inches long, 1–1.5 lines thick.

Decaying wood and old mossy logs. Catskill mountains and Worcester, Otsego co. June and July. Rare.

Entoloma scabrinellum Pk.

SLIGHTLY SCABROUS ENTOLOMA

N. Y. State Mus. Rep't 33, p.19

Pileus thin, convex or nearly plane, papillate or with a small umbo, minutely scabrous, dark brown, the thin incurved margin slightly surpassing the lamellae; lamellae broad, close, rounded behind, ventricose, adnexed, floccose on the edge, whitish becoming pink; stem equal, fibrillose, pruinose at the top, paler than the pileus; spores irregular, uninucleate, .0003-.0004 of an inch long, .0002-.0003 broad.

Pileus 6-10 lines broad; stem about 1 inch long and 1 line thick.

Shaded gravelly soil. Wading River, Suffolk co. September.

A rare species, found but once. Its hairy roughness is scarcely visible to the naked eye.

Entoloma flavoviride Pk.

YELLOWISH GREEN ENTOLOMA

N. Y. State Mus. Rep't 41, p.64

Pileus thin, broadly conic becoming convex, sometimes concave by the upcurving of the margin, yellowish green, slightly silky and shining; lamellae broad, subdistant, ventricose, slightly adnexed or free, cinereous becoming pinkish; stem equal, hollow, fibrillose striate, whitish; spores angular, uninucleate, .00045-.0005 of an inch long, .0003-.0004 broad.

Pileus 6-12 lines broad; stem 1-2.5 inches long, 1-2 lines thick.

Low swampy woods. Karner, Albany co. August.

The species is readily recognized by its peculiar yellowish green pileus.

Entoloma dysthales Pk.

STUNTED ENTOLOMA

N. Y. State Mus. Rep't 32, p.28

Pileus thin, submembranaceous, subconic becoming convex or expanded, obtuse, furfuraceous or squamulose, striate, brown becoming paler with age; lamellae broad, subdistant, ventricose, brown or grayish brown, becoming flesh color; stem slender, equal, hollow, squamulose, brownish; spores irregular, oblong-elliptic, usually uninucleate, .0006-.00065 of an inch long, .0003-.00034 broad.

Pileus 3-6 lines broad; stem 1-1.5 inches long, about 1 line thick.

Damp ground in woods. Catskill mountains. July.

The stunted entoloma has a peculiar starved or deformed appearance which is suggestive of the specific name. To the naked eye the pileus and stem appear to be clothed with minute scales, but under a good lens these are seen to be jointed matted filaments which seem to form a kind of tufted tomentum. In some specimens this tomentum is more dense than in others.

Nolanidea

Pileus thin, hygrophanous, subsilky when dry, often wavy and irregular. The hygrophanous pileus is the principal feature that distinguishes the species of this subgenus from the others.

KEY TO THE SPECIES

Young lamellae yellowish	flavifolium
Young lamellae some other color	1
1 Fresh plant having an alkaline odor	nidorosum
1 Fresh plant not having an alkaline odor	2
2 Taste farinaceous	3
2 Taste not farinaceous	4
3 Margin of pileus even	griseum
3 Margin of pileus striate or striatulate	sericeum
4 Pileus whitish or yellowish white	grayanum
4 Pileus some other color	5
5 Pileus umbonate	6
5 Pileus not umbonate	rhodopolium
6 Stem 1-2 lines thick, brown or brownish	strictius
6 Stem 2-4 lines thick, white or whitish	clypeatum

Entoloma flavifolium Pk.

YELLOW GILLED ENTOLOMA

N. Y. State Mus. Bul. 105, p.21, pl.S, fig.9-15

Pileus thin, firm, broadly convex or nearly plane, glabrous, hygrophanous, watery white and sometimes striatulate on the margin when moist, white when the moisture has disappeared, flesh colored like the surface of the pileus, taste mild or slightly and tardily acrid; lamellae thin, close, rounded behind, adnexed, slightly eroded on the edge, pale yellow becoming pinkish; stem firm, equal, silky fibrillose, stuffed or hollow, whitish, with a white mealiness at the top; spores subglobose, slightly angular, bright pink, .0003-.0004 of an inch broad, apiculate at one end.

Pileus 1-2 inches broad; stem 1.5-2 inches long, 2-4 lines thick.

Among fallen leaves in dense woods. Port Henry, Essex co. August. Scarce.

The species is well marked by the yellow lamellae. Sometimes the margin of the pileus is wavy or irregular and the center tinged with brown when moist.

Entoloma nidorosum Fr.

STRONG SCENTED ENTOLOMA

Pileus thin, convex becoming nearly plane or centrally depressed, glabrous, hygrophanous, pallid or grayish brown when moist, silky and shining when dry, fragile, odor alkaline; lamellae broad, subdistant, emarginate, nearly free, sometimes wavy, pallid becoming flesh color; stem equal, glabrous, stuffed, pruinose or mealy at the top, whitish; spores irregular, angular, .0003-.0004 of an inch long, .00024-.0003 broad.

Pileus 1-3 inches broad; stem 2-3 inches long, 2-3 lines thick.

Woods. Shokan, Ulster co. September.

In our specimens the stem is solid and the lamellae are adnate, characters not agreeing well with the description of the species.

Entoloma griseum Pk.

GRAYISH ENTOLOMA

N. Y. State Mus. Bul. 75, p.14

Pileus fleshy, firm, broadly campanulate or convex, obtuse or slightly umbonate, glabrous, often irregular, hygrophanous, grayish brown when moist, paler when dry, flesh whitish, odor and taste farinaceous; lamellae adnexed, emarginate, decurrent with a tooth, about 2 lines broad, pale pink; stem equal or slightly tapering upward, silky-fibrillose, pruinose at the apex, stuffed or hollow, grayish white; spores subglobose, angular, .0003 of an inch in diameter.

Pileus 1-3 inches broad; stem 1-2 inches long, 3-5 lines thick.

Under spruce and balsam fir trees. Lake Pleasant, Hamilton co. August.

This species may be separated from E. grayanum Pk. by its darker color, narrower gills and different place of growth.

Entoloma sericeum Fr.

SILKY ENTOLOMA. MEADOW ENTOLOMA

Pileus fleshy but thin, convex becoming nearly plane, sometimes minutely umbilicate, glabrous, hygrophanous, brownish when moist, paler silky and shining when dry, incurved on the margin, odor and taste farinaceous; lamellae rather broad, subdistant, adnexed, grayish becoming salmon color; stem short, equal, hollow, fibrillose, colored like or paler than the pileus; spores subglobose, angular, .0003-.0004 of an inch long, .00024-.0003 broad.

Pileus 1-2 inches broad; stem 1-2 inches long, 1-2 lines thick.

Meadows and pastures. West Albany. June. Very rare. Found but once.

Entoloma grayanum Pk.

GRAY ENTOLOMA

N. Y. State Mus. Rep't. 24, p.64

Pileus fleshy, convex becoming nearly plane, often wavy or irregular on the margin, glabrous, hygrophanous, watery white or yellowish white when moist, shining and whitish when dry; lamellae close, adnexed, whitish becoming pink; stem equal, firm, solid, white; spores subglobose, angular, .0003 of an inch in diameter.

Pileus 1.5-2 inches broad; stem 2-3 inches long, 3-5 lines thick.

Old wood roads and pastures. Rensselaer and Essex counties. August to October. Not common.

Entoloma rhodopolium Fr.

ROSY ENTOLOMA

Pileus thin, fleshy, fragile, subcampanulate, nearly plane or slightly depressed in the center, fibrillose when young, soon glabrous, hygrophanous, brownish and striatulate on the margin when moist, silky, shining and livid isabelline when dry, flesh white; lamellae subdistant, sinuate, adnate, white becoming rosy; stem equal or tapering upward, hollow, pruinose or mealy at the top, white; spores angular, .0003-.0004 of an inch long, .00024-.0003 broad.

Pileus 1.5-3 inches broad; stem 1.5-4 inches long, 2-3 lines thick.

Woods. Albany county and Adirondacks. August and September.

Entoloma rhodopolium umbilicatum Pk. [N. Y. State Mus. Rep't 38, p.109] is not a good entoloma and has been published in the 40th report, page 53 under the name Clitopilus subvilis Pk.

Entoloma clypeatum L.

SHIELD ENTOLOMA

Pileus fleshy but thin, fragile, campanulate, then expanded, umbonate or sometimes obtuse, glabrous, hygrophanous, lurid or brown when moist, gray and somewhat shining when dry, sometimes virgate and spotted, flesh white; lamellae broad, ventricose, subdistant, rounded behind, adnexed, seceding, serrulate on the edge, dingy flesh color; stem equal, fragile, fibrillose, stuffed or hollow, slightly pruinose at the top, white or grayish; spores irregular, subangular, .0003–.0004 of an inch in diameter.

Pileus 1.5–3 inches broad; stem 2–3 inches long, 2–4 lines thick.

Grassy places, sometimes among sphagnum. Albany, Rensselaer and Steuben counties. Spring and autumn.

Entoloma strictius irregulare Pk. in the 53d Report of the New York State Museum, page 856, plate D, figures 8–15, appears now to belong to this species rather than to E. strictius.

Entoloma strictius Pk.

STRICT ENTOLOMA

N. Y. State Cab. Rep't 23, p.88, pl.2, fig.6–9

Pileus submembranous, broadly convex or expanded, umbonate, glabrous, shining, hygrophanous, grayish brown and generally striatulate on the margin when moist, paler when dry; lamellae broad, rounded behind, adnexed or nearly free, whitish becoming flesh color; stem straight, equal or slightly tapering upward, silky fibrillose or glabrous, hollow, colored like or a little paler than the pileus, often a dense mycelioid tomentum at the base; spores angular, .0004–.0005 of an inch long, .0003–.0004 broad.

Pileus 1–2 inches broad; stem 2–4 inches long, 1–2 lines thick.

Damp places in woods or their borders. June to October.

The regular pileus and usually straight stem give a beautiful and symmetrical appearance to this species.

Entoloma graveolens Pk. [N. Y. State Mus. Rep't 53, p.844 and 54, p.165] has been omitted. It is closely allied to

Tricholoma personatum Fr. and probably will eventually form with it, Tricholoma nudum (Bull.) Fr. and T. sordidum (Schum.) Fr. a distinct genus.

The following extralimital species are represented in the herbarium: Entoloma deminutivum Pk., E. modestum Pk., E. murinum Pk., E. nigricans Pk. and E. suave Pk. These are from Massachusetts and it is probable that some of them may yet be found in our State.

LIST OF SPECIES AND VARIETIES OF FUNGI DESCRIBED BY C. H. PECK, STATE BOTANIST, WITH BIBLIOGRAPHIC LOCATIONS CITED AND SOME OF THE MOST OBVIOUS SYNONYMS GIVEN

Acalyptospora populi *Pk.*
N. Y. State Mus. Rep't 35, p.139. 1884

Acanthostigma scopula *C. & P.*
N. Y. State Mus. Bul. 2, p.22–23. May 1887
Grev. 6:13. Sept. 1887. (Name) (As Sphaeria (Villosae) scopula *C. & P.*)
N. Y. State Mus. Rep't 32, p.51. 1879
Grev. 15:82. Mar. 1887. (As Lasiosphaeria (Echinosphaeria) scopula *C. & P.*)

Acremonium flexuosum *Pk.*
N. Y. State Mus. Rep't 32, p.44. 1879
N. Y. State Mus. Bul. 2, p.19, pl.1, fig.16–18. 1887

Acrospermum album *Pk.*
N. Y. State Mus. Rep't 32, p.38. 1879
N. Y. State Mus. Bul. 2, p.24. 1887

Aecidium abundans *Pk.*
Bot. Gaz. 3:34. Apr. 1878

Aecidium anisacanthi *Pk.*
Torr. Bot. Club Bul. 10, p.75. July 1883

Aecidium auriellum *Pk.*
Torr. Bot. Club Bul. 10, p.74–75. July 1883

Aecidium bigeloviae *Pk.*
Bot. Gaz. 3:34. Apr. 1878

Aecidium brandegei *Pk.*
Bot. Gaz. 3:34. Apr. 1878

Aecidium gaurinum *Pk.*
Bot. Gaz. 4:218–19. Oct. 1879

Aecidium gerardiae *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.68. July 1873
N. Y. State Mus. Rep't 25, p.92. 1873

Aecidium giliae *Pk.*
Bot. Gaz. 4:230–31. Nov. 1879

Aecidium gracilens *Pk.*
Bot. Gaz. 4:128. Feb. 1879

Aecidium hemisphaericum *Pk.*
Bot. Gaz. 3:34. Apr. 1878. (Puccinia hemisphaerica (*Pk.*) *E. & E.* in Sylloge 17)

Aecidium hydrophylli *Pk.* (Puccinia hydrophylli *P. & C.*)

Aecidium intermixtum *Pk.*
Bot. Gaz. 4:231. Nov. 1879

Aecidium isomerinum *Pk.*
Torr. Bot. Club Bul. 10, p.75. July 1883

Aecidium jamesianum *Pk.*
Bot. Gaz. 5:34-35. Mar. 1880
Aecidium limonii *Pk.*
N. Y. State Cab. Rep't 23, p.60-61. 1872. Bot. ed.
N. Y. State Mus. Rep't 24, p.106, 108. 1872. (Note) (Uromyces limonii (*DC.*) *Lev.*)
Aecidium lupini *Pk.*
N. Y. State Mus. Rep't 46, p.33. 1893. Bot. ed.
Aecidium macrosporum *Pk.*
N. Y. State Cab. Rep't 23, p.61. 1872. Bot. ed.
N. Y. State Mus. Rep't 24, p.106, 108. 1872. (Note)
Aecidium mariae-wilsoni *Pk.*
N. Y. State Mus. Rep't 24, p.92, 107-8. 1872
Aecidium monoicum *Pk.*
Bot. Gaz. 4:230. Nov. 1879
Aecidium oenotherae *Pk.*
N. Y. State Cab. Rep't 23, p.60. 1872. Bot. ed.
N. Y. State Mus. Rep't 24, p.107-8. 1872. (Note) (Puccinia peckii (*DeToni*) *Kellerm.* in Sylloge 17)
Aecidium osmorrhizae *Pk.* (Puccinia osmorrhizae *C. & P.*)
Aecidium parryi *Pk.*
Am. Nat. 8:215. Apr. 1874
Aecidium phaceliae *Pk.*
Torr. Bot. Club Bul. 11, p.50. May 1884
Aecidium polemonii *Pk.*
Bot. Gaz. 4:230. Nov. 1879
Aecidium polygalinum *Pk.*
Bot. Gaz. 6:275. Oct. 1881
Aecidium porosum *Pk.*
Bot. Gaz. 3:34. April 1878
Aecidium psoraleae *Pk.*
Am. Nat. 8:215. Apr. 1874
Aecidium sarcobati *Pk.*
Bot. Gaz. 6:240. July 1881
Aecidium xanthoxyli *Pk.*
Bot. Gaz. 6:275. Oct. 1881
Aethalium geophilum *Pk.* (Illosporium humigenum *Pk. & Sacc.*)
Agaricus abruptibulbus *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
N. Y. State Mus. Rep't 46, p.55. 1893. Bot. ed. (As Agaricus arvensis *Schaeff. var.* abruptus *Pk.*)
N. Y. State Mus. Rep't 48, p.141. 1896. Bot. ed.
Mushrooms and their Use, p.29-30. May 1897
N. Y. State Mus. Mem. 4, p.163-64, pl.59, fig.8-14. 1900. (As Agaricus abruptus *Pk.*)
Agaricus abruptus *Pk.* (Agaricus abruptibulbus *Pk.*)
Agaricus arvensis abruptus *Pk.* (Agaricus abruptibulbus *Pk.*)
Agaricus brunnescens *Pk.*
Torr. Bot. Club Bul. 27, p.16. Jan. 1900

Agaricus californicus *Pk.*
Torr. Bot. Club Bul. 22, p.203–4. May 1895
Agaricus campestris *L. var.* griseus *Pk.*
N. Y. State Mus. Rep't 44, p.38. 1891. Bot. ed.
Mushrooms and their Use, p.27. May 1897
Agaricus chlamydopus *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
Torr. Bot. Club Bul. 31, p.181. Apr. 1904. (As Agaricus cothurnatus *Pk.*)
Agaricus cothurnatus *Pk.* (Agaricus chlamydopus *Pk.*)
Agaricus (Psalliota) diminutivus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.53. July 1873
N. Y. State Mus. Rep't 26, p.59. 1874
N. Y. State Mus. Rep't 36, p.49. 1884
N. Y. State Mus. Rep't 54, p.184–85, pl.74, fig.1–8. 1901
Agaricus haemorrhoidarius *Schulz. var.* fumosus *Pk.*
N. Y. State Mus. Rep't 54, p.184, pl.75, fig.9–13. 1901
Agaricus halophilus *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
Torr. Bot. Club Bul. 26, p.66–67. Feb. 1899. (As Agaricus maritimus *Pk.*)
Agaricus johnsonianus *Pk.* (Pholiota johnsoniana *Pk.*)
Agaricus magniceps *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
Torr. Bot. Club Bul. 26, p.67–68. Feb. 1899. (As Agaricus magnificus *Pk.*)
Agaricus magnificus *Pk.* (Agaricus magniceps *Pk.*)
Agaricus maritimus *Pk.* (Agaricus halophilus *Pk.*)
Agaricus micromegethus *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
N. Y. State Mus. Bul. 116, p.44, pl.107, fig.1–6. 1907
N. Y. State Mus. Rep't 54, p.152. 1901. (As Agaricus pusillus *Pk.*)
Agaricus pattersonae *Pk.*
Torr. Bot. Club Bul. 34, p.347–48. July 1907
Agaricus pilosporus *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
Torr. Bot. Club Bul. 31, p.181. Apr. 1904. (As Agaricus sphaerosporus *Pk.*)
Agaricus (Psalliota) placomyces *Pk.*
N. Y. State Mus. Rep't 29, p.40. 1878
N. Y. State Mus. Rep't 36, p.48. 1884
N. Y. State Mus. Rep't 48, p.142–43, pl.9, fig.7–12. 1896. Bot. ed.
Mushrooms and their Use, p.31–32. fig. May 1897
Agaricus praerimosus *Pk.*
N. Y. State Mus. Bul. 94, p.36. 1905
Torr. Bot. Club Bul. 25, p.325. June 1898. (As Agaricus tabularis *Pk.*)
Agaricus pusillus *Pk.* (Agaricus micromegethus *Pk.*)
Agaricus (Psalliota) rodmani *Pk.*
N. Y. State Mus. Rep't 36, p.45–46. 1884
N. Y. State Mus. Rep't 48, p.137–38, pl.9, fig.1–6. 1896. Bot. ed.

N. Y. State Mus. Rep't 49, p.62. 1896. Bot. ed. (Note)
Mushrooms and their Uses, p.28. fig. May 1897
Agaricus rutilescens *Pk.*
Torr. Bot. Club Bul. 31, p.180–81. Apr. 1904
Agaricus solidipes *Pk.*
Torr. Bot. Club Bul. 31, p.180. Apr. 1904
Agaricus sphaerosporus *Pk.* (Agaricus pilosporus *Pk.*)
Agaricus sterlingii *Pk.*
Torr. Bot. Club Bul. 29, p.73. Feb. 1902
Agaricus subrufescens *Pk.*
N. Y. State Mus. Rep't 46, p.25–26. 1893. Bot. ed.
N. Y. State Mus. Rep't 48, p.138–40, pl.7. 1896. Bot. ed.
Mushrooms and their Use, p.30. May 1897
Agaricus tabularis *Pk.* (Agaricus praerimosus *Pk.*)
Agaricus variabilis *Pk.*
McIlvaine's "One Thousand Am. Fungi," p.346–47, pl.XCI, fig.1. 1900
Ailographum subconfluens *Pk.*
N. Y. State Mus. Rep't 28, p.70. 1876. (Aulographum subconfluens *Pk.*)
Amanita abrupta *Pk.*
Torr. Bot. Club Bul. 24, p.138. Mar. 1897
Amanita calyptrata *Pk.*
Torr. Bot. Club Bul. 27, p.14. Jan. 1900
Amanita calyptrata *Pk. var.* albescens *Pk.*
N. Y. State Mus. Rep't 53, p.840, pl.A, fig.1–5. 1900
Amanita candida *Pk.*
Torr. Bot. Club Bul. 24, p.137–38. Mar. 1897
Agaricus (Amanita) chlorinosmus *Pk.*
Torr. Bot. Club Bul. 6, p.278–79. Dec. 1878
Bot. Gaz. 4:137. Mar. 1879
Amanita crenulata *Pk.*
Torr. Bot. Club Bul. 27, p.15. Jan. 1900
N. Y. State Mus. Bul. 94, p.19. 1905. (Note)
Agaricus (Amanita) frostianus *Pk.*
N. Y. State Mus. Rep't 33, p.44. 1880
N. Y. State Mus. Rep't 48, p.215. 1896. Bot. ed. (Note)
N. Y. State Cab. Rep't 23, p.69. 1872. Bot. ed. (As Agaricus (Amanita) muscarius *L. var.* minor *Pk.*)
Amanita frostiana pallidipes *Pk.*
N. Y. State Mus. Rep't 53, p.855. 1900
Amanita magnivelaris *Pk.*
N. Y. State Mus. Rep't 50, p.96. 1897
Amanita multisquamosa *Pk.*
N. Y. State Mus. Rep't 53, p.840, pl.B, fig.1–7. 1900
Agaricus (Amanita) muscarius *L. var.* albus *Pk.*
N. Y. State Mus. Rep't 33, p.44. 1880
N. Y. State Mus. Rep't 46, p.53. 1893. Bot. ed.
N. Y. State Mus. Rep't 48, p.215. 1896. Bot. ed.
Agaricus (Amanita) muscaria *L. var.* major *Pk.*
N. Y. State Cab. Rep't 23, p.69. 1872. Bot. ed

N. Y. State Mus. Rep't 33, p.46–47. 1880 (As Amanita strobiliformis *Vitt.*)

Amanita muscaria minor *Pk.* (Amanita frostiana *Pk.*)

Amanita muscarius *L. var.* umbrinus *Pk.*

N. Y. State Mus. Rep't 33, p.45. 1880

Agaricus (Amanita) nivalis *Pk.*

N. Y. State Mus. Rep't 33, p.48. 1880. (Not Amanita nivalis *Grev.*)

Myc. Jour. 3:32. Mar. 1887. (Amanitopsis nivalis (*Pk.*) *Sacc.*)

Amanita phalloides striatula *Pk.*

N. Y. State Mus. Bul. 54, p.961. 1902

Amanita prairiicola *Pk.*

Torr. Bot. Club Bul. 24, p.138. Mar. 1897. (Amanita praticola *Sacc. & Syd.* in Sylloge 14)

Amanita radicata *Pk.*

Torr. Bot. Club Bul. 27, p. 609–10. Dec. 1900

N. Y. State Mus. Bul. 94, p.19. 1905. (Note)

Agaricus (Amanita) russuloides *Pk.*

Buf. Soc. Nat. Sci. Bul. 1, p.41. July 1873

N. Y. State Mus. Rep't 25, p.72–73. 1873

N. Y. State Mus. Rep't 33, p.43. 1880

N. Y. State Mus. Bul. 105, p.30. 1906. (Note)

Agaricus (Amanita) spretus *Pk.*

N. Y. State Mus. Rep't 32, p.24. 1879

N. Y. State Mus. Rep't 33, p.42. 1880

Amanita submaculata *Pk.*

Torr. Bot. Club Bul. 27, p.609. Dec. 1900

Amanitopsis parcivolvata *Pk.*

Torr. Bot. Club Bul. 27, p.610. Dec. 1900

Amanitopsis pulverulenta *Pk.*

N. Y. State Mus. Bul. 116, p.17. 1907

Amanitopsis pusilla *Pk.*

N. Y. State Mus. Rep't 50, p.96. 1897

Amanitopsis vaginata *Roze var.* livida (*Pers.*) *Pk.*

N. Y. State Mus. Rep't 48, p.160, pl.17, fig.5–9. 1896. Bot. ed.

Mushrooms and their Use, p.45. May 1897

Amanitopsis vaginata crassivolvata *Pk.*

Torr. Bot. Club Bul. 29, p.562–63. Sept. 1902

Amanitopsis velosa *Pk.*

Torr. Bot. Club Bul. 22, p.485. Dec. 1895. (As Amanitopsis villosa *Pk.* in Sylloge 14)

Agaricus (Amanita) volvatus *Pk.*

N. Y. State Mus. Rep't 24, p.59. 1872

N. Y. State Mus. Rep't 33, p.47. 1880

N. Y. State Mus. Bul. 67, p.35. 1903. (Note) (Amanitopsis volvata (*Pk.*) *Sacc.*)

Amanitopsis volvata elongata *Pk.*

N. Y. State Mus. Rep't 53, p.856, pl.A, fig.6–10. 1900

Annularia sphaerospora *Pk.*

Torr. Bot. Club Bul. 33, p.216. Apr. 1906

Anthostoma ellisii *Sacc. var.* exudans *Pk.*
N. Y. State Mus. Rep't 40, p.67. 1887
Aposphaeria aranea *Pk.*
N. Y. State Mus. Rep't 42, p.30. 1889. Bot. ed.
Appendicularia *Pk.*
N. Y. State Mus. Rep't 38, p.95. 1885. (Appendiculina *Pk.* in Sylloge 8)
Appendicularia entomophila *Pk.*
N. Y. State Mus. Rep't 38, p.96, pl.3, fig.1-4. 1885. (Appendiculina entomophila *Pk.*) (Stigmatomyces entomophilus (*Pk.*) *Thaxt.* in Sylloge 14)
Arcyria macrospora *Pk.*
N. Y. State Mus. Rep't 34, p.43. 1881
Bot. Gaz. 19:89-91, pl.IX, fig.1, 3; pl. X, fig.9. Mar. 1894
Armillaria appendiculata *Pk.*
Torr. Bot. Club Bul. 24, p.140. Mar. 1897
Armillaria macrospora *Pk.*
Torr. Bot. Club Bul. 27, p.610-11. Dec. 1900
Armillaria magnivelaris *Pk.* (Armillaria ponderosa *Pk.*)
Armillaria mellea *Vahl var.* albida *Pk.*
N. Y. State Mus. Rep't 46, p.54. 1893. Bot. ed.
Mushrooms and their Use, p.50. May 1897
Armillaria mellea *Vahl var.* bulbosa *Pk.*
N. Y. State Mus. Rep't 46, p.53-54. 1893. Bot. ed.
N. Y. State Mus. Rep't 48, p.167. 1896. Bot. ed.
Mushrooms and their Use, p.50. May 1897
Armillaria mellea *Vahl var.* exannulata *Pk.*
N. Y. State Mus. Rep't 46, p.54. 1893. Bot. ed.
N. Y. State Mus. Rep't 48, p.167. 1896. Bot. ed.
Mushrooms and their Use, p.50. May 1897
Armillaria mellea *Vahl var.* nigripes *Pk.*
H. A. Reid's "History of Pasadena, Cal." p.619. 1895. (Name)
Armillaria mellea *Vahl var.* radicata *Pk.*
N. Y. State Mus. Rep't 44, p.38. 1891. Bot. ed.
N. Y. State Mus. Rep't 46, p.54. 1893. Bot. ed.
N. Y. State Mus. Rep't 48, p.167. 1896. Bot. ed.
Mushrooms and their Use, p.50. May 1897
Agaricus (Armillaria) ponderosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.42. July 1873
N. Y. State Mus. Rep't 26, p.50-51. 1874
N. Y. State Mus. Rep't 43, p.41. 1890. Bot. ed.
N. Y. State Mus. Rep't 29, p.66. 1878. (As Agaricus (Armillaria) magnivelaris *Pk.*)
Armillaria solidipes *Pk.*
Torr. Bot. Club Bul. 27, p.611. Dec. 1900
Armillaria ventricosa (*Pk.*) *Pk.*
Torr. Bot. Club Bul. 34, p.104. Feb. 1907
Torr. Bot. Club Bul. 23, p.414. Oct. 1896. (As Lentinus ventricosus *Pk.*)

Armillaria viscidipes *Pk.*
N. Y. State Mus. Rep't 44, p.16, pl.2, fig. 1-3. 1891. Bot. ed.
N. Y. State Mus. Rep't 46, p.54. 1893. Bot. ed. (Note)
Ascochyta cassandrae *Pk.*
N. Y. State Mus. Rep't 38, p.94. 1885
Ascochyta colorata *Pk.*
N. Y. State Mus. Rep't 38, p.94, pl.2, fig.9-10. 1885
Ascomyces extensus *Pk.*
N. Y. State Mus. Rep't 39, p.50, pl.1, fig.1-3. 1886. (Taphrina extensa (*Pk.*) *Sacc.*)
Ascomyces letifer *Pk.*
N. Y. State Mus. Rep't 40, p.66. 1887. (Taphrina letifera (*Pk.*) *Sacc.*)
Ascomyces rubrobrunneus *Pk.*
N. Y. State Mus. Rep't 40, p.67. 1887. (Taphrina rubrobrunnea (*Pk.*) *Sacc.*)
Ascomycetella *Pk.*
Torr. Bot. Club Bul. 8, p.49-50. May 1881. (Cookella *Sacc.*)
Ascomycetella quercina *Pk.*
Torr. Bot. Club Bul. 8, p.50, pl.VII, fig.1-10. May 1881. (Cookella quercina (*Pk.*) *Sacc.*)
Ascophanus humosoides *Pk.*
N. Y. State Mus. Bul. 2, p.22. 1887
N. Y. State Mus. Rep't 32, p.46. 1879. (As Peziza (Humaria) humosoides *Pk.*)
Ascophanus tetraonalis *Pk.*
N. Y. State Mus. Bul. 2, p.22. 1887
N. Y. State Mus. Rep't 32, p.46. 1879. (As Peziza (Humaria) tetraonalis *Pk.*)
Aspergillus aviarius *Pk.*
N. Y. State Mus. Rep't 44, p.25, pl.4, fig.9-12. 1891. Bot. ed.
Aspergillus clavellus *Pk.*
N. Y. State Mus. Rep't 34, p.49, pl.2, fig.1-5. 1881
Aspergillus fimetarius *Pk.*
N. Y. State Mus. Rep't 42, p.32. 1889. Bot. ed.
Aspergillus fuliginosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.69. July 1873
N. Y. State Mus. Rep't 26, p.79. 1874
Aspergillus subgriseus *Pk.*
Torr. Bot. Club Bul. 22, p.210. May 1895
Asterina nuda *Pk.*
N. Y. State Mus. Rep't 38, p.102, pl.2, fig.11-15. 1885. (Asterella nuda *Pk.* in Sylloge 9)
Asterodon setiger *Pk.* (Hydnochaete setigera *Pk.*)
Asteroma pringlei *Pk.*
Bot. Gaz. 7:55. May 1882
Asterosporium betulinum *Pk.*
N. Y. State Mus. Rep't 33, p.26, pl.1, fig.4-5. 1880
Asterula tracyi *Pk.*
N. Y. State Mus. Rep't 47, p.26. 1894. Bot. ed.

Aulographum subconfluens *Pk.* (for Ailographum subconfluens *Pk.*)
Badhamia magna *Pk.*
N. Y. State Mus. Rep't 31, p.56. 1879
N. Y. State Mus. Rep't 24, p.84. 1872. (As Dictydium magnum *Pk.*)
Barya parasitica *Fckl. var.* caespitosa *Pk.*
N. Y. State Mus. Rep't 43, p.33-34, pl.4, fig.13-17. 1890. Bot. ed.
Battarrea attenuata *Pk.*
Torr. Bot. Club Bul. 22, p.208. May 1895
Bispora effusa *Pk.*
N. Y. State Mus. Rep't 44, p.27, pl.4, fig.15-17. 1891. Bot. ed.
Bolbitius fragilis *Fr. var.* albipes *Pk.*
H. A. Reid's "History of Pasadena, Cal." p.620. 1895. (Name)
Bolbitius glatfelteri *Pk.*
Torr. Bot. Club Bul. 30, p.97. Feb. 1903
Bolbitius nobilis *Pk.*
N. Y. State Mus. Rep't 24, p.71-72, pl.2, fig.1-4. 1872
Boletinus appendiculatus *Pk.*
Torr. Bot. Club Bul. 23, p.418. Oct. 1896
Boletinus borealis *Pk.*
Torr. Bot. Club Bul. 22, p.206. May 1895
Boletinus castanellus *Pk.*
Torr. Bot. Club Bul. 27, p.613. Dec. 1900
Boletinus decipiens (*B. & C.*) *Pk.*
N. Y. State Mus. Bul. 8, p.78-79. 1889. (Boletus decipiens *B. & C.*)
Boletinus grisellus *Pk.*
N. Y. State Mus. Mem. 4, p.169, pl.52, fig.13-19. 1900
Boletinus paluster *Pk.*
N. Y. State Mus. Bul. 8, p.78. 1889
N. Y. State Cab. Rep't 23, p.132, pl.6, fig.4-7. 1872. Bot. ed. (As Boletus paluster *Pk.*)
Boletinus pictus *Pk.*
N. Y. State Mus. Bul. 8, p.77. 1889
N. Y. State Mus. Bul. 25, p.681-82, pl.61, fig.1-5. 1899
N. Y. State Mus. Mem. 4, p.168, pl.61, fig.1-5. 1900
N. Y. State Cab. Rep't 23, p.128. 1872. Bot. ed. (As Boletus pictus *Pk.*)
N. Y. State Mus. Rep't 26, p.90. 1874. (Note)
Boletinus porosus (*Berk.*) *Pk.*
N. Y. State Mus. Bul. 8, p.79-80. 1889
Boletinus porosus (*Berk.*) *Pk. var.* opacus *Pk.*
N. Y. State Mus. Bul. 8, p.80. 1889
N. Y. State Mus. Bul. 2, p.32. 1887. (As Paxillus porosus *Berk.*)
Boletus acidus *Pk.*
N. Y. State Mus. Bul. 105, p.15-16, pl.T. 1906
Boletus affinis *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.59. July 1873
N. Y. State Mus. Rep't 25, p.81. 1873
N. Y. State Mus. Bul. 8, p.135-36. 1889

N. Y. State Mus. Rep't 46, p.56. 1893. Bot. ed. (Note)
N. Y. State Mus. Rep't 49, p.64, pl.48, fig.6-13. 1896. Bot. ed.
N. Y. State Mus. Mem. 4, p.174-75, pl.66, fig.7-11. 1900

Boletus affinis *Pk. var.* maculosus *Pk.*
N. Y. State Mus. Rep't 32, p.57. 1879
N. Y. State Mus. Bul. 8, p.136. 1889
N. Y. State Mus. Rep't 49, p.64, pl.48, fig.14-16. 1896. Bot. ed.
N. Y. State Mus. Mem. 4, p.175, pl.66, fig.12-14. 1900

Boletus albellus *Pk.*
N. Y. State Mus. Rep't 41, p.77. 1888
N. Y. State Mus. Bul. 8, p.149-50. 1889

Boletus albus *Pk.*
N. Y. State Cab. Rep't 23, p.130. 1872. Bot. ed.
N. Y. State Mus. Rep't 32, p.57. 1879. (Note)
N. Y. State Mus. Bul. 2, p.64. 1887
N. Y. State Mus. Bul. 8, p.95-96. 1889

Boletus amabilis *Pk.*
Torr. Bot. Club Bul. 27, p.612-13. Dec. 1900

Boletus americanus *Pk.*
N. Y. State Mus. Bul. 2, p.62-63. 1887
N. Y. State Mus. Bul. 8, p.92-94. 1889

Boletus ampliporus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.60. July 1873
N. Y. State Mus. Rep't 26, p.67-68. 1874
N. Y. State Mus. Bul. 8, p.76. 1889. (Boletinus cavipes (*Opat.*) *Kalchb.*)

Boletus atkinsoni *Pk.*
N. Y. State Mus. Bul. 94, p.20, pl.R. 1905

Boletus auripes *Pk.*
N. Y. State Mus. Rep't 50, p.107-8. 1897

Boletus auriporus *Pk.*
N. Y. State Cab. Rep't 23, p.133. 1872. Bot. ed.
N. Y. State Mus. Bul. 8, p.110. 1889

Boletus badiceps *Pk.*
Torr. Bot. Club Bul. 27, p.18. Jan. 1900

Boletus bicolor *Pk.*
N. Y. State Mus. Rep't 24, p.78, pl.2, fig.5-8. 1872
N. Y. State Mus. Bul. 8, p.108. 1889
N. Y. State Mus. Bul. 54, p.973-74, pl.81, fig.6-11. 1902

Boletus brevipes *Pk.*
N. Y. State Mus. Rep't 38, p.110. 1885. (For Boletus viscosus *Frost*)
N. Y. State Mus. Bul. 2, p.65-66. 1887
N. Y. State Mus. Bul. 8, p.97-98. 1889
N. Y. State Mus. Rep't 49, p.63-64, pl.48, fig.1-5. 1896. Bot. ed.
N. Y. State Mus. Mem. 4, p.174, pl.66, fig.1-6. 1900

Boletus caespitosus *Pk.*
Torr. Bot. Club Bul. 27, p.17. Jan. 1900

Boletus chrysenteron *Fr. var.* albocarneus *Pk.*
N. Y. State Mus. Rep't 54, p.185-86, pl.76, fig.21-25. 1901

Boletus chrysenteron deformatus *Pk.*
N. Y. State Mus. Bul. 54, p.966. 1902
Boletus clintonianus *Pk.*
N. Y. State Cab. Rep't 23, p.128–29, pl.5, fig.1–5. 1872. Bot. ed.
N. Y. State Mus. Bul. 2, p.60–61. 1887
N. Y. State Mus. Bul. 8, p.88. 1889
N. Y. State Mus. Bul. 25, p.682, pl.61, fig.6–10. 1899
N. Y. State Mus. Mem. 4, p.170–71, pl.63. 1900
Boletus crassipes *Pk.*
Torr. Bot. Club Bul. 27, p.19. Jan. 1900
Boletus dictyocephalus *Pk.*
N. Y. State Mus. Bul. 8, p.111–12. 1889
Boletus eccentricus *Pk.*
Torr. Bot. Club Bul. 27, p.18. Jan. 1900
Boletus edulis *Bull. var.* clavipes *Pk.*
N. Y. State Mus. Bul. 8, p.133. 1889
N. Y. State Mus. Rep't 51, p.309–10, pl.54. 1898
N. Y. State Mus. Mem. 4, p.173–74, pl.65. 1900
Boletus elbensis *Pk.*
N. Y. State Cab. Rep't 23, p.129. 1872. Bot. ed.
N. Y. State Mus. Bul. 2, p.60. 1887
N. Y. State Mus. Bul. 8, p.85–86. 1889
Boletus eximius *Pk.*
Myc. Jour. 3:54. May 1887
N. Y. State Mus. Bul. 8, p.134–35. 1889
N. Y. State Mus. Bul. 54, p.976–77, pl.80, fig.6–12. 1902
Boletus felleus *Bull. var.* obesus *Pk.*
N. Y. State Mus. Bul. 8, p.154. 1889
Boletus fistulosus *Pk.*
Torr. Bot. Club Bul. 24, p.144–45. Mar. 1897
Boletus flavipes *Pk.* (Boletus subglabripes *Pk.*)
Boletus flexuosipes *Pk.*
N. Y. State Mus. Bul. 8, p.130. 1889
Boletus fraternus *Pk.*
Torr. Bot. Club Bul. 24, p.145. Mar. 1897
Boletus frustulosus *Pk.*
Torr. Bot. Club Bul. 24, p.146. Mar. 1897
Boletus fulvus *Pk.*
Torr. Bot. Club Bul. 27, p.19. Jan. 1900
Boletus fumosipes *Pk.*
N. Y. State Mus. Rep't 50, p.108. 1897
Boletus glabellus *Pk.*
N. Y. State Mus. Rep't 41, p.76. 1888
N. Y. State Mus. Bul. 8, p.108–9. 1889
Boletus gracilis *Pk.*
N. Y. State Mus. Rep't 24, p.78. 1872
N. Y. State Mus. Bul. 8, p.152. 1889
Boletus gracilis *Pk. var.* laevipes *Pk.*
N. Y. State Mus. Rep't 38, p.110. 1885
N. Y. State Mus. Bul. 8, p.152. 1889

Boletus granulatus albidipes *Pk.*
N. Y. State Mus. Rep't 54, p.168. 1901
Boletus hemichrysus *B. & C. var.* mutabilis *Pk.*
N. Y. State Mus. Bul. 8, p.104. 1889
Boletus hirtellus *Pk.*
N. Y. State Mus. Bul. 8, p.94-95. 1889
N. Y. State Mus. Rep't 39, p.42. 1886. (Boletus subaureus *Pk.* in part)
N. Y. State Mus. Bul. 2, p.63-64. 1887
Boletus illudens *Pk.*
N. Y. State Mus. Rep't 50, p.108-9. 1897
N. Y. State Mus. Bul. 25, p.672. 1899. (Note)
Boletus indecisus *Pk.*
N. Y. State Mus. Rep't 41, p.76-77. 1888
N. Y. State Mus. Bul. 8, p.153. 1889
Boletus inflexus *Pk.*
Torr. Bot. Club Bul. 22, p.207. May 1895
Boletus isabellinus *Pk.*
Torr. Bot. Club Bul. 24, p.146. Mar. 1897
Boletus leprosus *Pk.*
N. Y. State Mus. Bul. 8, p.135. 1889
Boletus leptocephalus *Pk.*
Torr. Bot. Club Bul. 25, p.371. July 1898
Boletus miniato-olivaceus *Frost var.* sensibilis *Pk.*
N. Y. State Mus. Bul. 8, p.107. 1889
N. Y. State Mus. Rep't 32, p.33. 1879. (As Boletus sensibilis *Pk.*)
Boletus modestus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.59-60. July 1873
N. Y. State Mus. Rep't 25, p.81-82. 1873
N. Y. State Mus. Rep't 32, p.57. 1879. (Note)
N. Y. State Mus. Bul. 8, p.128. 1889
Boletus morgani *Pk.*
Torr. Bot. Club Bul. 10, p.73, pl.XXXV. July 1883
N. Y. State Mus. Bul. 8, p.121-22. 1889
Boletus multipunctus *Pk.*
N. Y. State Mus. Bul. 54, p.952, pl.K, fig. 19-22. 1902
Boletus nebulosus *Pk.*
N. Y. State Mus. Rep't 51, p.292-93. 1898
N. Y. State Mus. Bul. 75, p.24. 1904. (Note)
Boletus nigrellus *Pk.*
N. Y. State Mus. Rep't 29, p.44-45. 1878
N. Y. State Mus. Bul. 8, p.155. 1889
N. Y. State Mus. Bul. 116, p.33-34. 1907. (Note)
Boletus nobilis *Pk.*
N. Y. State Mus. Bul. 94, p.20, 48, pl.91. 1905
Boletus ornatipes *Pk.*
N. Y. State Mus. Rep't 29, p.67. 1878
N. Y. State Mus. Bul. 8, p.125-26. 1889
N. Y. State Mus. Bul. 54, p.975-76, pl.80, fig.1-5. 1902

N. Y. State Cab. Rep't 23, p.132. 1872. Bot. ed. (As Boletus retipes *B. & C.*)
Boletus paluster *Pk.* (Boletinus paluster *Pk.*)
Boletus parvus *Pk.*
Torr. Bot. Club Bul. 24, p.145–46. Mar. 1897
Boletus peckii *Frost var.* laevipes *Pk.*
N. Y. State Mus. Bul. 8, p.125. 1889
Boletus pictus *Pk.* (Boletinus pictus *Pk.*)
Boletus punctipes *Pk.*
N. Y. State Mus. Rep't 32, p.32–33. 1879
N. Y. State Mus. Bul. 2, p.64. 1887
N. Y. State Mus. Bul. 8, p.95. 1889
N. Y. State Mus. Rep't 44, p.36. 1891. Bot. ed. (Note)
Boletus purpureus fumosus *Pk.*
Torr. Bot. Club Bul. 29, p.554–55. Sept. 1902
Boletus rimosellus *Pk.*
N. Y. State Mus. Bul. 8, p.127. 1889
Boletus roseotinctus *Pk.*
Torr. Bot. Club Bul. 27, p.612. Dec. 1900
Boletus roxanae *Frost var.* auricolor *Pk.*
N. Y. State Mus. Bul. 8, p.115. 1889
Boletus rubinellus *Pk.*
N. Y. State Mus. Rep't 32, p.33. 1879
N. Y. State Mus. Bul. 2, p.15, pl.2, fig.20–22. 1887
N. Y. State Mus. Bul. 8, p.101–2. 1889
Boletus rubropunctus *Pk.*
N. Y. State Mus. Rep't 50, p.109. 1897
N. Y. State Mus. Bul. 94, p.47, pl.90. 1905
Boletus rugosiceps *Pk.*
N. Y. State Mus. Bul. 94, p.20–21, pl.Q, fig.6–10. 1905
N. Y. State Mus. Bul. 116, p.45. 1907
Boletus scaber *Fr.* areolatus *Pk.*
N. Y. State Mus. Bul. 8, p.149. 1889
N. Y. State Mus. Rep't 48, p.200. 1896. Bot. ed.
Boletus scaber *Fr. var.* gracilipes *Pk.; var.* mutabilis *Pk.*
N. Y. State Mus. Bul. 8, p.149. 1889
Boletus scabripes *Pk.*
Torr. Bot. Club Bul. 29, p.555. Sept. 1902
Boletus sensibilis *Pk.* (Boletus miniato-olivaceus sensibilis *Pk.*)
Boletus separans *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.59. July 1873
N. Y. State Mus. Rep't 25, p.81. 1873
N. Y. State Mus. Bul. 8, p.132. 1889
Boletus speciosus *Frost var.* brunneus *Pk.*
N. Y. State Mus. Rep't 43, p.39. 1890. Bot. ed.
Boletus spectabilis *Pk.*
N. Y. State Cab. Rep't 23, p.128, pl.6, fig.1–3. 1872. Bot. ed.
N. Y. State Mus. Rep't 32, p.56. 1879. (Note)
N. Y. State Mus. Bul. 2, p.59–60. 1887

N. Y. State Mus. Bul. 8, p.84-85. 1889
N. Y. State Mus. Mem. 4, p.171-72, pl.62. 1900
Boletus sphaerosporus *Pk.*
Torr. Bot. Club Bul. 12, p.33, pl.XLIX, fig.1-2. Apr. 1885
N. Y. State Mus. Bul. 8, p.89-90. 1889
Boletus subaureus *Pk.*
N. Y. State Mus. Rep't 39, p.42. 1886. (In part)
N. Y. State Mus. Bul. 2, p.63-64. 1887. (In part)
N. Y. State Mus. Bul. 8, p.94. 1889
N. Y. State Mus. Mem. 4, p.169-70, pl.61, fig.6-13. 1900
Boletus subglabripes *Pk.*
N. Y. State Mus. Bul. 8, p.112. 1889
N. Y. State Mus. Rep't 51, p.308-9, pl.55, fig.1-7. 1898
N. Y. State Mus. Mem. 4, p.172-73, pl.64, fig. 1-7. 1900
N. Y. State Mus. Rep't 39, p.42. 1886. (As Boletus flavipes *Pk.*)
Boletus subglabripes *Pk. var.* corrugis *Pk.*
N. Y. State Mus. Bul. 8, p.112. 1889
N. Y. State Mus. Rep't 51, p.309, pl.55, fig.8-10. 1898
N. Y. State Mus. Mem. 4, p.173, pl.64, fig.8-10. 1900
Boletus subluteus *Pk.*
N. Y. State Mus. Bul. 2, p.62. 1887
N. Y. State Mus. Bul. 8, p.91-92. 1889
N. Y. State Mus. Rep't 48, p.196, pl.33, fig.1-6. 1896. Bot. ed.
Mushrooms and their Use, p.69-70. fig. May 1897
Boletus subpunctipes *Pk.*
N. Y. State Mus. Bul. 116, p.19. 1907
Boletus subsanguineus *Pk.*
Torr. Bot. Club Bul. 27, p.17-18. Jan. 1900
Boletus subvelutipes *Pk.*
N. Y. State Mus. Bul. 8, p.142-43. 1889
Boletus tabacinus *Pk.*
Torr. Bot. Club Bul. 23, p.418. Oct. 1896
Boletus underwoodii *Pk.*
Torr. Bot. Club Bul. 24, p.145. Mar. 1897
Boletus variipes *Pk.*
N. Y. State Mus. Rep't 41, p.76. 1888
N. Y. State Mus. Bul. 8, p.133-34. 1889
Boletus variipes *Pk. var.* albipes *Pk.; var.* pallidipes *Pk.; var.* tenuipes *Pk.*
N. Y. State Mus. Rep't 41, p.76. 1888
N. Y. State Mus. Bul. 8, p.134. 1889
Boletus vermiculosus *Pk.*
N. Y. State Cab. Rep't 23, p.130-31. 1872. Bot. ed.
N. Y. State Mus. Bul. 8, p.141-42. 1889
Boletus vermiculosus *Pk. var.* spraguei (*Frost*) *Pk.*
N. Y. State Mus. Bul. 8, p.142. 1889. (For Boletus spraguei *Frost*)
Botrytis ceratioides *Pk.*
N. Y. State Mus. Rep't 35, p.139-40. 1884
Bovista spinulosa *Pk.* (Mycenastrum spinulosum *Pk.*)
Bovista subterranea *Pk.*
Bot. Gaz. 4:216-17. Oct. 1879

Bulgaria bicolor *Pk.* (Peziza orbicularis *Pk.*)
Bulgaria deligata *Pk.* (Peziza leucobasis *Pk.*)
Bulgaria rufa magna *Pk.*
N. Y. State Mus. Bul. 105, p.31. 1906
Bulgaria spongiosa *Pk.*
Bot. Gaz. 6:240-41. July 1881
Bot. Gaz. 5:35. Mar. 1880. (As Peziza spongiosa *Pk.*) (Pulparia spongiosa (*Pk.*) *Sacc.*)
Caeoma aberrans *Pk.*
Torr. Bot. Club Bul. 22, p.210. May 1895
Caeoma cheilanthis *Pk.*
Torr. Bot. Club Bul. 10, p.62. June 1883
Caeoma comandrae *Pk.*
Torr. Bot. Club Bul. 11, p.50. May 1884
Caliciopsis *Pk.*
N. Y. State Mus. Rep't 33, p.32. 1880
Torr. Bot. Club Bul. 9, p.62. May 1882
Caliciopsis pinea *Pk.*
N. Y. State Mus. Rep't 33, p.32, pl.2, fig.11-15. 1880
Torr. Bot. Club Bul. 9, p.62, pl.XXIV, fig.8-12. May 1882
Cantharellus aurantiacus pallidus *Pk.*
N. Y. State Mus. Rep't 49, p.30. 1896. Bot. ed.
N. Y. State Mus. Rep't 50, p.131. 1897. (Note)
Cantharellus brevipes *Pk.*
N. Y. State Mus. Rep't 33, p.21, pl.1, fig.18-20. 1880
N. Y. State Mus. Bul. 2, p.38. 1887
N. Y. State Mus. Rep't 51, p.298. 1898. (Note)
Cantharellus bryophilus *Pk.*
Harriman Alaska Exped. 5:46-47. 1904
Cantharellus candidus *Pk.*
Torr. Bot. Club Bul. 25, p.323-24. June 1898
Cantharellus cibarius albipes *Pk.*
N. Y. State Mus. Bul. 67, p.37. 1903
Cantharellus cibarius *Fr. var.* confertifolius *Pk.*
N. B. Nat. Hist. Soc. Bul. 21, p.116. 1903. (Name)
Cantharellus cibarius longipes *Pk.*
N. Y. State Mus. Bul. 75, p.24. 1904
Cantharellus cibarius multiramus *Pk.*
N. Y. State Mus. Rep't 53, p.856. 1900
Cantharellus cibarius *Fr. var.* plicatellus *Pk.; var.* simplex *Pk.*
N. B. Nat. Hist. Soc. Bul. 21, p.116. 1903. (Name)
Cantharellus cinereus bicolor *Pk.*
N. Y. State Mus. Rep't 50, p.131. 1897
Cantharellus dichotomus *Pk.*
N. Y. State Cab. Rep't 23, p.123. 1872. Bot. ed. (As C. dichotomus)
N. Y. State Mus. Bul. 67, p.46-47, pl.84, fig.8-21. 1903
N. Y. State Mus. Bul. 2, p.36-37. 1887. (As Cantharellus umbonatus *Fr. var.* dichotomus *Pk.*)
N. Y. State Mus. Bul. 28, p.204. 1899

Cantharellus dichotomus *Pk. var.* brevior *Pk.*
N. Y. State Cab. Rep't 23, p.123, pl.4, fig.6–9. 1872. Bot. ed.
N. Y. State Mus. Bul. 2, p.36. 1887. (As Cantharellus umbonatus *Fr. var.* brevior *Pk.*)
Cantharellus infundibuliformis *Scop. var.* luteolus *Pk.*
N. Y. State Mus. Bul. 2, p.41–42. 1887
N. Y. State Cab. Rep't 23, p.122. 1872. Bot. ed. (As Cantharellus lutescens *Bull.*)
Cantharellus infundibuliformis *Scop. var.* subcinereus *Pk. var.;* typicus *Pk.*
N. Y. State Mus. Bul. 2, p.41–42. 1887
Cantharellus minor *Pk.*
N. Y. State Cab. Rep't 23, p.122. 1872. Bot. ed.
N. Y. State Mus. Bul. 2, p.40. 1887
Cantharellus morgani *Pk.*
Bot. Gaz. 7:43. Apr. 1882
Cantharellus pruinosus *Pk.*
N. Y. State Mus. Rep't 28, p.51. 1876
N. Y. State Mus. Bul. 2, p.42–43. 1887
Cantharellus pulchrifolius *Pk.*
Torr. Bot. Club Bul. 29, p.71. Feb. 1902
Cantharellus rosellus *Pk.*
N. Y. State Mus. Rep't 42, p.24, pl.1, fig.6–8. 1889. Bot. ed.
Cantharellus sphaerosporus *Pk.*
Torr. Bot. Club. Bul. 25, p.323. June 1898
Cantharellus umbonatus brevior *Pk.* (Cantharellus dichotomus brevior *Pk.*)
Cantharellus umbonatus dichotomus *Pk.* (Cantharellus dichotomus *Pk.*)
Cantharellus umbonatus *Fr. var.* subcaeruleus *Pk.*
N. Y. State Mus. Bul. 2, p.36. 1887
Caryospora minor *Pk.*
N. Y. State Mus. Rep't 44, p.29, pl.4, fig.18–21. 1891. Bot. ed.
Cellulosporium *Pk.*
Bot. Gaz. 4:171. June 1879. (Cytosporium *Pk.* in Sylloge 3)
Cellulosporium sphaerosporum *Pk.*
Bot. Gaz. 4:171. June 1879. (Cytosporium sphaerosporum *Pk.*)
Cenangium acuum *C. & P.* (Peziza pinastri *C. & P.*)
Cenangium balsameum *Pk.*
N. Y. State Mus. Rep't 38, p.101. 1885
Cenangium balsameum *Pk. var.* abietinum *Pk.*
N. Y. State Mus. Rep't 43, p.40. 1890. Bot. ed.
Cenangium betulinum *Pk.*
N. Y. State Mus. Rep't 35, p.143. 1884. (Scleroderris betulina (*Pk.*) *Sacc.*)
Cenangium cassandrae *Pk.*
N. Y. State Mus. Rep't 31, p.48. 1879
Cenangium deformatum *Pk.* (Karschia deformata *Pk.*)
Cenangium pezizoides *Pk.*
N. Y. State Mus. Rep't 31, p.48. 1879
Cenangium platascum *Pk.*
Bot. Gaz. 4:231. Nov. 1879. (Blitrydium platascum (*Pk.*) *Sacc.*)

Ceratium hydnoides *A. & S. var.* ramosissimum *Pk.; var.* subreticulatum *Pk.*
N. Y. State Mus. Rep't 47, p.25. 1894. Bot. ed.
Cercospora acalyphae *Pk.*
N. Y. State Mus. Rep't 34, p.48. 1881
Cercospora acetosellae *Ellis var.* maculosa *Pk.*
N. Y. State Mus. Rep't 40, p.64-65. 1887
Cercospora ampelopsidis *Pk.*
N. Y. State Mus. Rep't 30, p. 55, 1878
Cercospora boehmeriae *Pk.*
N. Y. State Mus. Rep't 34, p.48. 1881
Cercospora callae *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.52. 1878
Cercospora caulophylli *Pk.*
N. Y. State Mus. Rep't 33, p.30. 1880
Cercospora clavata (*Ger.*) *Pk.*
N. Y. State Mus. Rep't 34, p. 48. 1881. (Helminthosporium clavatum *Ger.*)
Cercospora comari *Pk.*
N. Y. State Mus. Rep't 38, p.101, pl.1, fig.1-3. 1885
Cercospora daturae *Pk.*
N. Y. State Mus. Rep't 35, p.140-41. 1884
Cercospora elongata *Pk.*
N. Y. State Mus. Rep't 33, p.29, pl.1, fig.21-23. 1880
Cercospora eupatorii *Pk.*
N. Y. State Mus. Rep't 33, p.29. 1880
Cercospora gentianae *Pk.*
N. Y. State Mus. Rep't 41, p.80. 1888
Cercospora griseëlla *Pk.*
N. Y. State Mus. Rep't 33, p.29-30. 1880
Cercospora lepidii *Pk.*
N. Y. State Mus. Rep't 35, p.140. 1884
Cercospora leptosperma *Pk.*
N. Y. State Mus. Rep't 30, p.55. 1878
Cercospora longispora *Pk.*
N. Y. State Mus. Rep't 35, p.141. 1884
Cercospora rhuina *C. & E. var.* nigromaculans *Pk.*
N. Y. State Mus. Rep't 42, p.33. 1889. Bot. ed.
Cercospora sanguinariae *Pk.*
N. Y. State Mus. Rep't 33, p.29. 1880
Cercospora smilacis *Pk.*
N. Y. State Mus. Rep't 33, p.29, pl.2, fig. 1-3. 1880. (As Cercospora smilacis *Thuem.*) (Cercospora smilacina *Sacc.* in Sylloge 4:476. 1886)
Cercospora squalidula *Pk.*
N. Y. State Mus. Rep't 33, p.29. 1880
Cercospora symplocarpi *Pk.*
N. Y. State Mus. Rep't 30, p.55. 1878
Cercospora tenuis *Pk.*
N. Y. State Mus. Rep't 47, p.23. 1894 Bot. ed.

Cercospora tiliae Pk.
    Bot. Gaz. 6:277. Oct. 1881. (Cercospora microsora *Succ.*)
Cercospora varia *Pk.*
    N. Y. State Mus. Rep't 35, p.141. 1884
Cercospora venturioides *Pk.*
    N. Y. State Mus. Rep't 34, p.47-48. 1881
Cercosporella reticulata *Pk.*
    N. Y. State Mus. Rep't 34, p.47, pl.2, fig.14-16. 1881
Cercosporella veratri *Pk.*
    N. Y. State Mus. Rep't 44, p.27, pl.4, fig. 7 8. 1891. Bot. ed.
Chaetomium contortum *Pk.*
    N. Y. State Mus. Rep't 49, p.24. 1896. Bot. ed.
Chaetomium lanosum *Pk.*
    N. Y. State Mus. Rep't 28, p.64. 1876
Chaetomium melioloides *C. & P.*
    N. Y. State Mus. Rep't 27, p.106. 1875
Chaetophoma setigera *Pk.*
    N. Y. State Mus. Rep't 46, p.40. 1893. Bot. ed.
Chaetosphaeria longipila *Pk.*
    N. Y. State Mus. Rep't 42, p.35. 1889. Bot. ed.
Cheiromyces tinctus *Pk.*
    Bot. Gaz. 5:35. Mar. 1880
Chilonectria callista *(B. & C.) Pk.*
    N. Y. State Mus. Rep't 34, p.58. 1881
    N. Y. State Mus. Rep't 28, p.77. 1876. (Brief desc.) (As Sphaeria callista *B. & C.*)
Chondrioderma crustaceum *Pk.*
    N. Y. State Mus. Rep't 31, p.56. 1879
    Buf. Soc. Nat. Sci. Bul. 1, p.63. July 1873. (As Diderma crustaceum *Pk.*)
    N. Y. State Mus. Rep't 26, p.74. 1874
Chromosporium atrorubrum *Pk.*
    Torr. Bot. Club Bul. 25, p.327. June 1898. (C. atrobrunneum *Pk.* in Sylloge 16)
Cintractia affinis *Pk.*
    N. Y. State Mus. Bul. 67, p.28-29. 1903
Cladosporium brevipes *Pk.*
    N. Y. State Mus. Rep't 40, p.64. 1887
Cladosporium letiferum *Pk.*
    N. Y. State Mus. Rep't 40, p.64. 1887
Cladosporium zeae *Pk.*
    N. Y. State Mus. Rep't 46, p.34. 1893. Bot. ed.
Clasterosporium pedunculatum *Pk.* (Helminthosporium attenuatum *C. & P.*)
Claudopus greigensis *Pk.*
    N. Y. State Mus. Rep't 39, p.68. 1886
    N. Y. State Mus. Rep't 24, p.69-70. 1872. (As Agaricus (Crepidotus) greigensis *Pk.*)
Claudopus nidulans *(Pers.) Pk.*
    N. Y. State Mus. Rep't 39, p.67-68. 1886

Clavaria acris *Pk.*
N. Y. State Mus. Rep't 54, p.155, pl.11, fig.37-39. 1901
Clavaria albida *Pk.*
N. Y. State Mus. Rep't 41, p.79. 1888
Clavaria amethystinoides *Pk.*
Torr. Bot. Club Bul. 34, p.102. Feb. 1907
Clavaria bicolor *Pk.* (Clavaria vestitipes *Pk.*)
Clavaria botrytoides *Pk.*
N. Y. State Mus. Bul. 94, p.21, 49, pl.93, fig.5-7. 1905
Clavaria circinans *Pk.*
N. Y. State Mus. Rep't 39, p.43, pl.1, fig.21-22. 1886
Clavaria clavata *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.62. July 1873
N. Y. State Mus. Rep't 25, p.83, pl.1, fig.9. 1873
Clavaria conjuncta *Pk.*
N. Y. State Mus. Bul. 105, p.16, 42-43, pl.102. 1906
Clavaria corynoides *Pk.*
N. Y. State Mus. Rep't 31, p.39. 1879
Clavaria crassipes *Pk.*
N. Y. State Mus. Bul. 67, p.27. 1903
Clavaria densa *Pk.*
N. Y. State Mus. Rep't 41, p.79. 1888
Clavaria densissima *Pk.*
Torr. Bot. Club Bul. 30, p.98-99. Feb. 1903
Clavaria divaricata *Pk.*
N. Y. State Mus. Bul. 2, p.11. 1887
N. Y. State Mus Rep't 54, p.171. 1901. (Note)
Clavaria exigua *Pk.*
N. Y. State Mus. Rep't 54, p.155. 1901
Clavaria fellea *Pk.*
N. Y. State Mus. Rep't 51, p.292. 1898
Clavaria fumigata *Pk.*
N. Y. State Mus. Rep't 31, p.38. 1879
Clavaria gracillima *Pk.*
N. Y. State Mus. Rep't 28, p.53, pl.1, fig.9. 1876
Clavaria grandis *Pk.*
Torr. Bot. Club Bul. 29, p.73. Feb. 1902
Clavaria herveyi *Pk.*
N. Y. State Mus. Rep't 45, p.24. 1893. Bot. ed.
Clavaria longicaulis *Pk.*
Torr. Bot. Club Bul. 25, p.371-72. July 1898
Clavaria macouni *Pk.*
N. Y. State Mus. Rep't 47, p.24. 1894. Bot. ed.
Clavaria muscoides *L. var.* obtusa *Pk.*
N. Y. State Mus. Rep't 47, p.25. 1894. Bot. ed.
Clavaria myceliosa *Pk.*
Torr. Bot. Club Bul. 31, p.182. Apr. 1904
Clavaria nebulosa *Pk.*
Torr. Bot. Club Bul. 25, p.326. June 1898

Clavaria ornatipes *Pk.*
N. Y. State Mus. Bul. 122, p.18, 160. 1908
N. Y. State Mus. Rep't 24, p. 82. 1872. (As Clavaria trichopus *Pers.*)
Clavaria pinophila *Pk.*
N. Y. State Mus. Rep't 35, p.136. 1884
Clavaria pistillaris umbonata *Pk.*
N. Y. State Mus. Mem. 4, p.178, pl.66, fig.15-17. 1900
Clavaria platyclada *Pk.*
Torr. Bot. Club Bul. 23, p.419. Oct. 1896
N. Y. State Mus. Rep't 50, p.114. 1897. (Note)
Clavaria pulchra *Pk.*
N. Y. State Mus. Rep't 28, p.53, pl.1, fig.10. 1876
Clavaria pusilla *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.62. July 1873
N. Y. State Mus. Rep't 25, p.83. 1873
Clavaria similis *Pk.*
N. Y. State Mus. Rep't 43, p.24. 1890. Bot. ed. (Clavaria peckii *Sacc.* in Sylloge 9)
Clavaria spathulata *Pk.*
N. Y. State Mus. Rep't 27, p. 100, pl.2, fig.20-21. 1875
Clavaria stricta *Pers. var.* fumida *Pk.*
N. Y. State Mus. Rep't 41, p.86. 1888
Clavaria tsugina *Pk.*
N. Y. State Mus. Bul. 67, p.27-28. 1903
Clavaria typhuloides *Pk.*
N. Y. State Mus. Rep't 30, p.49, pl.2, fig.12-14. 1878
Clavaria vestitipes *Pk.*
N. Y. State Mus. Bul. 116, p. 34. 1907
N. Y. State Mus. Bul. 54, p.954. 1902. (As C. bicolor *Pk.*)
Clavaria xanthosperma *Pk.*
N. Y. State Mus. Bul. 94, p.21. 1905
Agaricus (Clitocybe) adirondackensis *Pk.*
N. Y. State Cab. Rep't 23, p.77. 1872. Bot. ed.
N. Y. State Mus. Rep't 54, p.163, 174-75, pl.69, fig.1-13. 1901
Clitocybe albidula *Pk.*
N. Y. State Mus. Rep't 46, p.23. 1893. Bot. ed.
Agaricus (Clitocybe) albissimus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.45. July 1873
N. Y. State Mus. Rep't 26, p.53. 1874
N. Y. State Mus. Rep't 54, p.163.. 1901. (Note)
Clitocybe amethystina *(Bolt.)* *Pk.*
N. Y. State Mus. Bul. 116, p.40-41, pl.106, fig.1-6. 1907
N. Y. State Mus. Rep't 48, p.176, pl.25, fig.23-27. 1896. Bot. ed. (As Clitocybe laccata amethystina *Bolt.*)
Agaricus (Clitocybe) anisarius *Pk.*
N. Y. State Mus. Rep't 32, p.26. 1879
Agaricus (Clitocybe) apertus *Pk.*
N. Y. State Mus. Rep't 30, p.38. 1878
Clitocybe basidiosa *Pk.* (Hygrophorus basidiosus *Pk.*)

Clitocybe caespitosa *Pk.*
N. Y. State Mus. Rep't 41, p.61. 1888
Agaricus (Clitocybe) carnosior *Pk.*
N. Y. State Cab. Rep't 23, p.70. 1872. Bot. ed.
Buf. Soc. Nat. Sci. Bul. 4, p.175. Apr. 1882. (As Clitocybe clavipes (*Pers.*) *Fr.*)
Clitocybe centralis *Pk.*
N. Y. State Mus. Rep't 53, p.841, pl.C, fig.16–20. 1900
Agaricus (Clitocybe) compressipes *Pk.*
N. Y. State Mus. Rep't 33, p.18–19. 1880
Agaricus (Clitocybe) connexus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.45. July 1873
N. Y. State Mus. Rep't 26, p.53. 1874
Clitocybe dealbata deformata *Pk.*
N. Y. State Mus. Bul. 67, p. 35–36. 1903
Clitocybe eccentrica *Pk.*
Torr. Bot. Club Bul. 25, p.321. June 1898
N. Y. State Mus. Bul. 25, p.648. 1899. (Note)
Agaricus (Clitocybe) ectypoides *Pk.*
N. Y. State Mus. Rep't 24, p.61. 1872
Clitocybe fellea *Pk.*
N. Y. State Mus. Rep't 51, p.284, pl.B, fig.8–11. 1898
Agaricus (Clitocybe) flavidellus *Pk.*
N. Y. State Mus. Rep't 30, p.38. 1878
Clitocybe fuscipes *Pk.*
N. Y. State Mus. Rep't 44, p.17. 1891. Bot. ed.
Agaricus (Clitocybe) gerardianus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.46. July 1873
N. Y. State Mus. Rep't 26, p.54. 1874
N. Y. State Mus. Bul. 28, p.196. 1899
N. Y. State Mus. Rep't 45, p.37. 1893. Bot. ed. (As Omphalia gerardiana *Pk.*)
Agaricus (Clitocybe) hoffmani *Pk.*
N. Y. State Mus. Rep't 24, p.60–61. 1872
Clitocybe laccata *Scop. var.* pallidifolia *Pk.*
N. Y. State Mus. Rep't 43, p.38. 1890. Bot. ed.
N. Y. State Mus. Rep't 48, p.176, pl.25, fig.19–22. 1896. Bot. ed.
Mushrooms and their Use, p. 58. May 1897
N. Y. State Mus. Bul. 28, p.196. 1899
Clitocybe laccata *Scop. var.* striatula *Pk.*
N. Y. State Mus. Rep't 48, p.176, pl.25, fig.14–18. 1896. Bot. ed.
Mushrooms and their Use, p.58. May 1897
N. Y. State Mus. Bul. 28, p.196. 1899
Agaricus (Clitocybe) leptolomus *Pk.*
N. Y. State Mus. Rep't 32, p.26. 1879
Agaricus (Clitocybe) maculosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.45. July 1873
N. Y. State Mus. Rep't 26, p.53–54. 1874
N. Y. State Mus. Rep't 54, p.174, pl.69, fig.14–21. 1901

Clitocybe marginata *Pk.*
Torr. Bot. Club Bul. 29, p.558. Sept. 1902
Agaricus (Clitocybe) marmoreus *Pk.*
N. Y. State Mus. Rep't 24, p.61. 1872
Clitocybe media *Pk.*
N. Y. State Mus. Rep't 42, p.18, pl.1, fig.9–12. 1889. Bot. ed.
N. Y. State Mus. Rep't 48, p.173–74, pl.23, fig.1–7. 1896. Bot. ed.
Mushrooms and their Use, p.54, 56–57. fig. May 1897
Clitocybe morbifera *Pk.*
Torr. Bot. Club Bul. 25, p.321–22. June 1898
Clitocybe multiceps *Pk.*
N. Y. State Mus. Rep't 43, p.17–18. 1890. Bot. ed.
N. Y. State Mus. Bul. 67, p.36. 1903. (Note)
Clitocybe multiformis *Pk.*
N. Y. State Mus. Mem. 4, p.141, pl.47, fig.1–9. 1900
Clitocybe nobilis *Pk.*
Torr. Bot. Club Bul. 34, p.97. Feb. 1907
Agaricus (Clitocybe) patuloides *Pk.*
N. Y. State Mus. Rep't 32, p.25. 1879
N. Y. State Mus. Rep't 54, p.163–64, pl.E. 1901
N. Y. State Mus. Rep't 44, p.56–57. 1891. Bot. ed. (As Tricholoma patulum *Fr.*)
Agaricus (Clitocybe) peltigerinus *Pk.*
N. Y. State Mus. Rep't 30, p.38. 1878
Clitocybe piceina *Pk.*
Torr. Bot. Club Bul. 31, p.178. Apr. 1904
Agaricus (Clitocybe) pinophilus *Pk.*
N. Y. State Mus. Rep't 31, p.32. 1879
Agaricus (Clitocybe) poculum *Pk.*
N. Y. State Cab. Rep't 23, p.77. 1872. Bot. ed.
Clitocybe pulcherrima *Pk.*
Myc. Jour. 14:1. Jan. 1908
Clitocybe pusilla *Pk.*
Torr. Bot. Club Bul. 22, p.199. May 1895
Clitocybe regularis *Pk.*
N. Y. State Mus. Bul. 54, p.948, pl.K, fig. 1–7. 1902
Clitocybe revoluta *Pk.*
N. Y. State Mus. Rep't 46, p.23–24. 1893. Bot. ed.
Clitocybe robusta *Pk.*
N. Y. State Mus. Rep't 49, p.17. 1896. Bot. ed.
Clitocybe subconcava *Pk.*
N. Y. State Mus. Rep't 54, p.948–49, pl.K, fig.8–13. 1902
Clitocybe subcyathiformis *Pk.*
N. Y. State Mus. Bul. 122, p.18, 136–37, 158, pl.110, fig.1–6. 1908
Clitocybe subditopoda *Pk.*
N. Y. State Mus. Rep't 42, p.18–19. 1889. Bot. ed.
Agaricus (Clitocybe) subhirtus *Pk.*
N. Y. State Mus. Rep't 32, p.25. 1879
N. Y. State Mus. Bul. 2, p.11. 1887

Clitocybe subsimilis *Pk.* and *var.* monstrosa *Pk.*
N. Y. State Mus. Rep't 41, p.61. 1888
Clitocybe subsocialis *Pk.*
Torr. Bot. Club Bul. 23, p.411. Oct. 1896
Agaricus (Clitocybe) subzonalis *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.46. July 1873
N. Y. State Mus. Rep't 26, p.54. 1874
Clitocybe sulphurea *Pk.*
N. Y. State Mus. Rep't 41, p.62. 1888
Clitocybe tarda *Pk.* (Clitopilus tardus *Pk.*)
Clitocybe tarda pallidior *Pk.*
Torr. Bot. Club Bul. 24, p.140–41. Mar. 1897. (Clitopilus tardus pallidior *Pk.*)
Clitocybe tortilis gracilis *Pk.*
N. Y. State Mus. Bul. 67, p.36. 1903
Agaricus (Clitocybe) truncicola *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.46. July 1873
N. Y. State Mus. Rep't 26, p.54. 1874
Agaricus (Clitocybe) vilescens *Pk.*
N. Y. State Mus. Rep't 33, p.19. 1880
N. Y. State Mus. Rep't 50, p.128. 1897. (Note)
Agaricus (Clitopilus) albogriseus *Pk.*
N. Y. State Mus. Rep't 31, p.33. 1879
N. Y. State Mus. Rep't 42, p.43. 1889. Bot. ed.
Clitopilus caespitosus *Pk.*
N. Y. State Mus. Rep't 41, p.65. 1888
N. Y. State Mus. Rep't 42, p.45. 1889. Bot. ed.
N. Y. State Mus. Bul. 122, p.131. 1908. (Note)
Clitopilus conissans *Pk.* (Psilocybe conissans *Pk.*)
Clitopilus erythrosporus *Pk.*
N. Y. State Mus. Rep't 41, p.64. 1888
N. Y. State Mus. Rep't 42, p.44. 1889. Bot. ed.
Clitopilus irregularis *Pk.*
Torr. Bot. Club Bul. 26, p.65. Feb. 1899
Agaricus (Clitopilus) micropus *Pk.*
N. Y. State Mus. Rep't 31, p.33. 1879
N. Y. State Mus. Rep't 42, p.43. 1889. Bot. ed.
N. Y. State Mus. Bul. 54, p.970, pl.78, fig.1–12. 1902
Agaricus (Clitopilus) noveboracensis *Pk.*
N. Y. State Cab. Rep't 23, p.89. 1872. Bot. ed.
N. Y. State Mus. Rep't 42, p.45–46. 1889. Bot. ed.
Clitopilus noveboracensis *Pk. var.* brevis *Pk.*
N. Y. State Mus. Rep't 42, p.37, 45. 1889. Bot. ed.
Clitopilus noveboracensis subviolaceus *Pk.*
N. Y. State Mus. Rep't 54, p.165. 1901
Clitopilus noveboracensis *Pk. var.* tomentosipes *Pk.*
N. Y. State Mus. Bul. 2, p.27. 1887
Clitopilus noveboracensis umbilicatus *Pk.*
N. Y. State Mus. Rep't 54, p.165. 1901

Agaricus (Clitopilus) pascuensis *Pk.*
N. Y. State Mus. Rep't 39, p.39-40. 1886
N. Y. State Mus. Rep't 42, p.41-42. 1889. Bot. ed.
Agaricus (Clitopilus) seymourianus *Pk.*
N. Y. State Mus. Rep't 24, p.66. 1872
N. Y. State Mus. Rep't 42, p.46. 1889. Bot. ed.
Clitopilus socialis *Pk.*
N. Y. State Mus. Bul. 25, p.648-49. 1899
Clitopilus sphaerosporus *Pk.*
Torr. Bot. Club Bul. 31, p.179. Apr. 1904
Clitopilus squamulosus *Pk.*
N. Y. State Mus. Bul. 105, p.16, pl.S, fig.5-8. 1906
Clitopilus subplanus *Pk.*
N. Y. State Mus. Bul. 122, p.18-19, 159. 1908
Clitopilus subvilis *Pk.*
N. Y. State Mus. Rep't 40, p.53-54. 1887
N. Y. State Mus. Rep't 42, p.43-44. 1889. Bot. ed.
N. Y. State Mus. Rep't 38, p.109. 1885. (As Agaricus (Entoloma) rhodopolius *Fr. var.* umbilicatus *Pk.*)
Clitopilus tardus *Pk.*
N. Y. State Mus. Rep't 54, p.167. 1901
Torr. Bot. Club Bul. 24, p.140. Mar. 1897. (As Clitocybe tarda *Pk.*)
Clitopilus underwoodii *Pk.*
N. Y. State Mus. Rep't 49, p.18. 1896. Bot. ed.
Agaricus (Clitopilus) unitinctus *Pk.*
N. Y. State Mus. Rep't 38, p.86. 1885
N. Y. State Mus. Rep't 42, p.42. 1889. Bot. ed.
Clitopilus unitinctus *Pk. var.* albidus *Pk.*
N. Y. State Mus. Rep't 42, p.42. 1889. Bot. ed.
Agaricus (Clitopilus) woodianus *Pk.*
N. Y. State Mus. Rep't 24, p.65. 1872
N. Y. State Mus. Rep't 42, p.44. 1889. Bot. ed.
Colletotrichum caudatum *Pk.*
Saccardo's Sylloge 4:315. 1886. (Name) (Ellisiella caudata (*Pk.*) *Sacc.*)
Colletotrichum rudbeckiae Pk.
N. Y. State Mus. Bul. 54, p.956. 1902
Collybia alba *Pk.*
N. Y. State Mus. Rep't 41, p.62-63. 1888
N. Y. State Mus. Rep't 49, p.46. 1896. Bot. ed.
Agaricus (Collybia) abundans Pk.
N. Y. State Mus. Rep't 29, p.38. 1878
N. Y. State Mus. Rep't 49, p.45. 1896. Bot. ed.
Collybia albipilata *Pk.*
N. Y. State Mus. Rep't 49, p.40. 1896. Bot. ed.
Collybia albogrisea *Pk.*
Torr. Bot. Club Bul. 22, p.199. May 1895
N. Y. State Mus. Rep't 49, p.54. 1896. Bot. ed. (Note)

Collybia alcalinolens *Pk.*
N. Y. State Mus. Bul. 2, p.6. 1887
N. Y. State Mus. Rep't 49, p.52. 1896. Bot. ed.
Agaricus (Collybia) amabilipes *Pk.*
Bot. Gaz. 4:216. Oct. 1879
N. Y. State Mus. Rep't 49, p.55. 1896. Bot. ed. (Note)
N. Y. State Mus. Bul. 94, p.21. 1905. (Note)
Collybia aquosa *Bull. var.* adnatifolia *Pk.*
N. Y. State Mus. Bul. 2, p.25-26. 1887
N. Y. State Mus. Rep't 49, p.55. 1896. Bot. ed. (Note)
Agaricus (Collybia) atratoides *Pk.*
N. Y. State Mus. Rep't 32, p.27. 1879
N. Y. State Mus. Rep't 49, p.53. 1896. Bot. ed.
Collybia brunnescens *Pk.*
Torr. Bot. Club Bul. 33, p.214. Apr. 1906
Collybia campanella *Pk.*
N. Y. State Mus. Bul. 116, p.19. 1907
Ottawa Nat. 23:59-60. July 1907. (Name) (As Collybia stipitaria campanulata *Pk.*)
Collybia cirrata *Schum. var.* rufescens *Pk.*
N. Y. State Mus. Rep't 49, p.41. 1896. Bot. ed.
Agaricus (Collybia) coloreus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.46. July 1873
N. Y. State Mus. Rep't 26, p.54-55. 1874
N. Y. State Mus. Rep't 49, p.50-51. 1896. Bot. ed.
Collybia colorea *Pk. var.* rubescentifolia *Pk.*
N. Y. State Mus. Rep't 49, p.51. 1896. Bot. ed.
N. Y. State Mus. Rep't 39, p.38. 1886. (As Agaricus (Tricholoma) rubescentifolius *Pk.*)
N. Y. State Mus. Rep't 41, p.83. 1888. (As Collybia rubescentifolia *Pk.*)
N. Y. State Mus. Rep't 44, p.64. 1891. Bot. ed. (Note)
Collybia confluens campanulata *Pk. var.* niveipes *Pk.*
N. Y. State Mus. Bul. 54, p.963. 1902
Collybia cremoracea *Pk.* (Collybia esculentoides *Pk.*)
Agaricus (Collybia) delicatellus *Pk.*
N. Y. State Mus. Rep't 30, p.39. 1878
N. Y. State Mus. Rep't 49, p.46. 1896. Bot. ed.
Agaricus (Collybia) esculentoides *Pk.*
N. Y. State Mus. Rep't 39, p.39. 1886
N. Y. State Mus. Rep't 49, p.45-46. 1896. Bot. ed.
N. Y. State Mus. Rep't 32, p.26. 1879. (As Agaricus (Collybia) cremoraceus *Pk.*)
N. Y. State Mus. Bul. 2, p.12. 1887
Collybia esculentoides *Pk. var.* ochroleuca *Pk.*
N. Y. State Mus. Rep't 49, p.45. 1896. Bot. ed.
N. Y. State Mus. Rep't 46, p.24. 1893. Bot. ed. (As Collybia ochroleuca *Pk.*

Collybia expallens *Pk.*
N. Y. State Mus. Rep't 44, p.18. 1891. Bot. ed.
N. Y. State Mus. Rep't 49, p.52–53. 1896. Bot. ed.
Agaricus (Collybia) familia *Pk.*
N. Y. State Cab. Rep't 23, p.79–80. 1872. Bot. ed.
N. Y. State Mus. Rep't 44, p.35. 1891. Bot. ed. (Note)
N. Y. State Mus. Rep't 49, p.47–48. 1896. Bot. ed.
N. Y. State Mus. Bul. 75, p.28–29, pl.84, fig.1–7. 1904
Collybia fuliginella *Pk.*
N. Y. State Mus. Rep't 40, p.53. 1887
N. Y. State Mus. Rep't 49, p.36–37. 1896. Bot. ed.
Agaricus (Collybia) fuscolilacinus *Pk.*
N. Y. State Mus. Rep't 39, p.38–39. 1886
N. Y. State Mus. Rep't 49, p.53. 1896. Bot. ed.
Collybia hirticeps *Pk.*
Torr. Bot. Club Bul. 34, p.98. Feb. 1907
Agaricus (Collybia) hygrophoroides *Pk.*
N. Y. State Mus. Rep't 32, p.26–27. 1879
N. Y. State Mus. Bul. 2, p.12, pl.2, fig.23–26. 1887
N. Y. State Mus. Rep't 49, p.51. 1896. Bot. ed.
Collybia lacunosa *Pk.*
N. Y. State Mus. Rep't 44, p.64. 1891. Bot. ed.
N. Y. State Mus. Bul. 122, p.132. 1908. (Note)
Buf. Soc. Nat. Sci. Bul. 1, p.43. July 1873. (As Agaricus (Tricholoma) lacunosus *Pk.*)
N. Y. State Mus. Rep't 26, p.51. 1874
Agaricus (Collybia) lentinoides *Pk.*
N. Y. State Mus. Rep't 32, p.27. 1879
N. Y. State Mus. Rep't 49, p.51–52. 1896. Bot. ed.
Collybia lentinoides *Pk. var.* flaviceps *Pk. var.* rufipes *Pk.*
N. Y. State Mus. Rep't 41, p.83. 1888
Collybia lignarius *Pk.*
N. Y. State Mus. Rep't 54, p.145. 1901
Collybia luxurians *Pk.*
Torr. Bot. Club Bul. 24, p.141. Mar. 1897
Collybia microspora *Pk.*
Torr. Bot. Club Bul. 22, p.486. Dec. 1895
Agaricus (Collybia) myriadophyllus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.47. July 1873
N. Y. State Mus. Rep't 25, p.75. 1873
N. Y. State Mus. Rep't 49, p.50. 1896. Bot. ed.
Collybia nigrodisca *Pk.*
N. Y. State Mus. Rep't 50, p.98. 1897
Collybia ochroleuca *Pk.* (Collybia esculentoides ochroleuca *Pk.*)
Collybia radicata *Relh. var.* furfuracea *Pk.*
N. Y. State Mus. Rep't 45, p.31. 1893. Bot. ed.
N. Y. State Mus. Rep't 49, p.35. 1896. Bot. ed.
N. Y. State Mus. Rep't 51, p.305, pl.52, fig.9–11. 1898

N. Y. State Mus. Bul. 28, p.196. 1899
N. Y. State Mus. Mem. 4, p.144, pl.48, fig.9-11. 1900

Collybia radicata *Relh. var.* pusilla *Pk.*
N. Y. State Mus. Rep't 45, p.31. 1893. Bot. ed.
N. Y. State Mus. Rep't 49, p.35. 1896. Bot. ed.
N. Y. State Mus. Rep't 51, p.305, pl.52, fig.12-14. 1898
N. Y. State Mus. Bul. 28, p.196. 1899
N. Y. State Mus. Mem. 4, p.144, pl.48, fig.12-14. 1900

Collybia rubescentifolia *Pk.* (Collybia colorea rubescentifolia *Pk.*)

Collybia rugosodisca *Pk.* (Omphalia rugosodisca *Pk.*)

Agaricus (Collybia) simillimus *Pk.*
N. Y. State Mus. Rep't 24, p.62. 1872
N. Y. State Mus. Rep't 42, p.19. 1889. Bot. ed. (Note)
N. Y. State Mus. Rep't 49, p.48. 1896. Bot. ed. (As Collybia acervata *Fr.*)

Agaricus (Collybia) spinulifer *Pk.*
N. Y. State Mus. Rep't 24, p.62, pl.1, fig.4-9. 1872
N. Y. State Mus. Rep't 49, p.48-49. 1896. Bot. ed.

Collybia stipitaria campanulata *Pk.* (Collybia campanella *Pk.*)

Agaricus (Collybia) stipitarius *Fr. var.* setipes *Pk.*
N. Y. State Mus. Rep't 38, p.109. 1885
N. Y. State Mus. Rep't 49, p.42. 1896. Bot. ed.

Collybia strictipes *Pk.*
N. Y. State Mus. Rep't 41, p.62. 1888
N. Y. State Mus. Rep't 49, p.44. 1896. Bot. ed.

Collybia subsulphurea *Pk.*
Torr. Bot. Club Bul. 34, p.345. July 1907

Agaricus (Collybia) succosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.46-47. July 1873
N. Y. State Mus. Rep't 25, p.74-75. 1873
N. Y. State Mus. Rep't 49, p.39-40. 1896. Bot. ed. (As Mycena succosa *Pk.* in Sylloge 5)

Collybia umbonata *Pk.*
Torr. Bot. Club Bul. 31, p.178-79. Apr. 1904

Collybia uniformis *Pk.*
N. Y. State Mus. Rep't 50, p.98. 1897
N. Y. State Mus. Bul. 67, p.37, pl.M, fig.7-16. 1903. (Note)

Collybia velutipes spongiosa *Pk.*
Harriman Alaska Exped. 5:48. 1904

Agaricus (Collybia) zonatus *Pk.*
N. Y. State Mus. Rep't 24, p.61-62. 1872
N. Y. State Mus. Rep't 49, p.42-43. 1896. Bot. ed.

Colpoma juniperinum *C. & P.*
N. Y. State Mus. Rep't 26, p.84. 1874. (Name)
Buf. Soc. Nat. Sci. Bul. 3, p.36. Nov. 1875
N. Y. State Mus. Rep't 29, p.63. 1878

Colpoma lacteum *Pk.*
N. Y. State Mus. Rep't 28, p.69-70. 1876

Comatricha aequalis *Pk.*
N. Y. State Mus. Rep't 31, p.42. 1879
N. Y. State Mus. Rep't 46, p.57. 1893. Bot. ed. (As Stemonitis aequalis (*Pk.*) *Mass.*)
Col. College Pub., Sci. Ser. 12:34. Sept. 1907. (As Comatricha nigra (*Pers.*) *Schroet. var.* aequalis *Pk.*)
Comatricha longa *Pk.*
N. Y. State Mus. Rep't 43, p.24–25, pl.3, fig.1–5. 1890. Bot. ed.
Comatricha nigra aequalis *Pk.* (Comatricha aequalis *Pk.*)
Comatricha subcaespitosa *Pk.*
N. Y. State Mus. Rep't 43, p.25, pl.3, fig.6–9. 1890. Bot. ed.
Coniophora puteana *Fr. var.* rimosa *Pk.; var.* tuberculosa *Pk.*
N. Y. State Mus. Rep't 44, p.36–37. 1891. Bot. ed.
Coniophora subochracea *Pk.*
N. Y. State Mus. Rep't 50, p.114. 1897
Coniosporium culmigenum *Berk. var.* minor *Pk.*
N. Y. State Mus. Rep't 43, p.29. 1890. Bot. ed.
Coniosporium polytrichi *Pk.*
N. Y. State Mus. Rep't 43, p.29. 1890. Bot. ed.
Coniothecium celtidis *Pk.*
N. Y. State Mus. Rep't 54, p.157. 1901
Coniothecium intricatum *Pk.*
N. Y. State Mus. Rep't 49, p.22. 1896. Bot. ed.
Coniothecium rubi *Pk.*
N. Y. State Mus. Rep't 48, p.15–16. 1896. Bot. ed.
Coniothecium saccharinum *Pk.*
N. Y. State Mus. Rep't 49, p.21–22. 1896. Bot. ed.
Coniothecium sociale *Pk.*
N. Y. State Mus. Rep't 54, p.156. 1901
Coniothyrium minutulum *Pk.*
Bot. Gaz. 5:33. Mar. 1880. (Aposphaeria minutula (*Pk.*) *Sacc.*)
Coniothyrium staphyleae *Pk.*
N. Y. State Mus. Rep't 39, p.46. 1886
Coniothyrium valsoideum *Pk.*
N. Y. State Mus. Rep't 38, p.97. 1885
Coprinus angulatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.54. July 1873
N. Y. State Mus. Rep't 26, p.60–61. 1874
N. Y. State Mus. Rep't 31, p.54. 1879. (Revised desc.)
Coprinus apiculatus *Pk.*
Torr. Bot. Club Bul. 22, p.206. May 1895
Coprinus aquatilis *Pk.*
N. Y. State Mus. Rep't 27, p.96. 1875
Coprinus arenatus *Pk.*
N. Y. State Mus. Rep't 46, p.27. 1893. Bot. ed.
Coprinus atramentarius *Fr. var.* silvestris *Pk.*
N. Y. State Mus. Rep't 48, p.145. 1896. Bot. ed.
Mushrooms and their Use, p.35. May 1897

Coprinus brassicae *Pk.*
N. Y. State Mus. Rep't 43, p.18, pl.2, fig.9–14. 1890. Bot. ed.
Coprinus calyptratus *Pk.*
Torr. Bot. Club Bul. 22, p. 205–6. May 1895
Coprinus comatus *Fr. var.* breviceps *Pk.*
N. Y. State Mus. Rep't 49, p.29–30. 1896. Bot. ed.
Coprinus ebulbosus *Pk.*
Torr. Bot. Club Bul. 22, p.491. Dec. 1895. (Desc.)
N. Y. State Mus. Rep't 44, p. 20. 1891. Bot. ed. (As Coprinus picaceus *Fr. var.* ebulbosus *Pk.*)
Coprinus fimetarius *Fr. var.* silvicola *Pk.*
N. Y. State Mus. Rep't 43, p.38. 1890. Bot. ed.
Coprinus insignis *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.54. July 1873
N. Y. State Mus. Rep't 26, p.60. 1874
Coprinus jonesii *Pk.*
Torr. Bot. Club Bul. 22, p.206. May 1895
Coprinus laceratus *Pk.*
Torr Bot. Club Bul. 26, p.68–69. Feb. 1899
Coprinus laniger *Pk.*
Torr. Bot. Club Bul. 22, p.491. Dec. 1895
Coprinus macrosporus *Pk.*
N. Y. State Mus. Rep't 31, p.35. 1879
Coprinus micaceus *Fr. var.* granularis *Pk.*
N. Y. State Mus. Rep't 47, p.42. 1894. Bot. ed.
Coprinus picaceus ebulbosus *Pk.* (Coprinus ebulbosus *Pk.*)
Coprinus plumbeus *Pk.*
N. Y. State Mus. Rep't 29, p.42. 1878
Coprinus pulchrifolius *Pk.*
N. Y. State Mus. Rep't 29, p.41–42. 1878
Coprinus quadrifidus *Pk.*
N. Y. State Mus. Rep't 50, p.106–7. 1897
Coprinus rotundosporus *Pk.*
N. Y. State Mus. Rep't 31, p.35. 1879
Coprinus semilanatus *Pk.*
N. Y. State Mus. Rep't 24, p.71, pl.4, fig.15–18. 1872
Coprinus seymouri *Pk.*
N. Y. State Mus. Rep't 28, p.49–50. 1876
Coprinus silvaticus *Pk.*
N. Y. State Mus. Rep't 24, p.71, pl.4, fig.10–14. 1872
Coprinus variegatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.54. July 1873
N. Y. State Mus. Rep't 25, p.79. 1873
Cordyceps nigriceps *Pk.*
Torr. Bot. Club Bul. 27, p.21. Jan. 1900
Corticium basale *Pk.*
N. Y. State Mus. Rep't 43, p.23. 1890. Bot. ed.
Corticium bicolor *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.62. July 1873
N. Y. State Mus. Rep't 26, p.72. 1874

Corticium kalmiae *Pk.*
N. Y. State Mus. Rep't 46, p.29. 1893. Bot. ed.
Corticium mutatum *Pk.*
N. Y. State Mus. Rep't 43, p.23. 1890. Bot. ed.
Corticium rhodellum *Pk.*
N. Y. State Mus. Rep't 42, p.28. 1889. Bot. ed. (Peniophora rhodella *(Pk.) Sacc.*)
Corticium subaurantiacum *Pk.*
N. Y. State Mus. Rep't 43, p.23. 1890. Bot. ed.
Corticium subincarnatum *Pk.*
N. Y. State Mus. Rep't 42, p.28. 1889. Bot. ed.
Corticium suffocatum *Pk.*
N. Y. State Mus. Rep't 30, p.48. 1878
Cortinarius (Telamonia) adustus *Pk.*
N. Y. State Mus. Rep't 42, p.22. 1889. Bot. ed.
Cortinarius albidifolius *Pk.*
N. Y. State Mus. Rep't 41, p.72. 1888
Cortinarius albidus *Pk.*
N. Y. State Mus. Rep't 44, p.20, pl.3, fig.1-4. 1891. Bot. ed.
Cortinarius (Myxacium) amarus *Pk.*
N. Y. State Mus. Rep't 32, p.30. 1879. (As Phlegmacium)
N. Y. State Mus. Bul. 2, p.14. 1887. (As Myxacium)
N. Y. State Mus. Bul. 75, p.24. 1904. (Note)
N. Y. State Mus. Bul. 105, p.31. 1906. (Note)
Cortinarius (Inoloma) annulatus *Pk.*
N. Y. State Mus. Rep't 43, p.19, pl.2, fig.1-4. 1890. Bot. ed
Cortinarius (Inoloma) asper *Pk.*
N. Y. State Mus. Rep't 24, p.72-73, pl.1, fig.1-3. 1872
N. Y. State Mus. Rep't 27, p.114. 1875. (Note)
Cortinarius (Dermocybe) aureifolius *Pk.*
N. Y. State Mus. Rep't 38, p.89. 1885
Cortinarius (Inoloma) autumnalis *Pk.*
N. Y. State Cab. Rep't 23, p.109. 1872. Bot. ed.
Cortinarius badius *Pk.*
N. Y. State Mus. Rep't 41, p.73. 1888
Cortinarius balteatus *Fr. var.* bulbosus *Pk.*
N. Y. State Mus. Rep't 41, p.71. 1888
Cortinarius (Dermocybe) basalis *Pk.*
N. Y. State Mus. Rep't 33, p.20. 1880
Cortinarius braendlei *Pk.*
Torr. Bot. Club Bul. 32, p.79. Feb. 1905
Cortinarius brevipes *Pk.*
N. Y. State Mus. Rep't 41, p.71. 1888
Cortinarius brevissimus *Pk.*
N. Y. State Mus. Rep't 41, p.71-72. 1888
Cortinarius (Inoloma) caespitosus *Pk.*
N. Y. State Mus. Rep't 42, p.21-22. 1889. Bot. ed.
Cortinarius (Inoloma) canescens *Pk.*
N. Y. State Mus. Rep't 42, p.21. 1889. Bot. ed.

Cortinarius (Dermocybe) castanellus *Pk.*
N. Y. State Mus. Rep't 29, p.43. 1878
Cortinarius (Telamonia) castaneoides *Pk.*
N. Y. State Cab. Rep't 23, p.111, pl.4, fig.10–15. 1872. Bot. ed.
Cortinarius (Inoloma) catskillensis *Pk.*
N. Y. State Cab. Rep't 23, p.109. 1872. Bot. ed.
Cortinarius (Inoloma) clintonianus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.55. July 1873
N. Y. State Mus. Rep't 26, p.61–62. 1874
Cortinarius (Phlegmacium) coloratus *Pk.*
N. Y. State Cab. Rep't 23, p.105–6. 1872. Bot. ed.
Cortinarius (Phlegmacium) communis *Pk.*
N. Y. State Cab. Rep't 23, p.106. 1872. Bot. ed.
N. Y. State Mus. Rep't 30, p.70–71. 1878. (Note)
Cortinarius (Phlegmacium) copakensis *Pk.*
N. Y. State Mus. Rep't 31, p.35. 1879
Cortinarius (Phlegmacium) corrugatus *Pk.*
N. Y. State Mus. Rep't 24, p.72. 1872
N. Y. State Mus. Rep't 32, p.55. 1879. (Note)
N. Y. State Mus. Bul. 25, p.674, pl.57, fig.6–11. 1899
N. Y. State Mus. Mem. 4, p.161–62, pl.58, fig.8–10. 1900
N. Y. State Mus. Bul. 105, p.31. 1906. (Note)
Cortinarius corrugatus subsquamosus *Pk.*
N. Y. State Mus. Bul. 25, p.655, 674, pl.57, fig.12–13. 1899
N. Y. State Mus. Mem. 4, p.161, pl.58, fig.11–15. 1900
Cortinarius (Telamonia) distans *Pk.*
N. Y. State Cab. Rep't 23, p.111. 1872. Bot. ed.
Cortinarius elatior pallidifolius *Pk.*
N. Y. State Mus. Rep't 54, p.151, pl.G, fig.22–26. 1901
Cortinarius (Inoloma) erraticus *Pk.*
N. Y. State Mus. Rep't 42, p.21. 1889. Bot. ed.
Cortinarius flavifolius *Pk.*
N. Y. State Mus. Rep't 41, p.72. 1888
Cortinarius (Telamonia) furfurellus *Pk.*
N. Y. State Mus. Rep't 32, p.31. 1879
Cortinarius (Hydrocybe) fuscoviolaceus *Pk.*
N. Y. State Mus. Rep't 27, p.96. 1875
Cortinarius (Phlegmacium) glutinosus *Pk.*
N. Y. State Mus. Rep't 43, p.18. 1890. Bot. ed.
(Cortinarius) Telamonia gracilis *Pk.;* and *var.* brevipes *Pk.*
N. Y. State Mus. Bul. 2, p.8. 1887
Cortinarius griseus *Pk.*
N. Y. State Mus. Rep't 41, p.72–73. 1888
Cortinarius heliotropicus *Pk.*
N. Y. State Mus. Bul. 94, p.22, pl.P, fig.1–7. 1905
Cortinarius intrusus *Pk.*
Torr. Bot. Club Bul. 23, p.416–17. Oct. 1896
Cortinarius (Phlegmacium) lanatipes *Pk.*
N. Y. State Mus. Rep't 42, p.20–21. 1889. Bot. ed.

Cortinarius (Phlegmacium) lapidophilus *Pk.*
N. Y. State Mus. Rep't 31, p.36. 1879
Cortinarius (Telamonia) lignarius *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.56. July 1873
N. Y. State Mus. Rep't 26, p.62. 1874
Cortinarius (Inoloma) lilacinus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.55. July 1873
N. Y. State Mus. Rep't 26, p.61. 1874
Cortinarius (Phlegmacium) longipes *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.55. July 1873
N. Y. State Mus. Rep't 26, p.61. 1874
Cortinarius (Phlegmacium) luteofuscus *Pk.*
N. Y. State Cab. Rep't 23, p.106. 1872. Bot. ed.
Cortinarius (Dermocybe) lutescens *Pk.*
N. Y. State Mus. Rep't 42, p.22. 1889. Bot. ed.
Cortinarius (Dermocybe) luteus *Pk.*
N. Y. State Mus. Rep't 43, p.19. 1890. Bot. ed.
Cortinarius maculipes *Pk.*
N. Y. State Mus. Rep't 54, p.150. 1901
Cortinarius (Inoloma) modestus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.55. July 1873
N. Y. State Mus. Rep't 26, p.62. 1874
Cortinarius morrisii *Pk.*
Torr. Bot. Club Bul. 32, p.79-80. Feb. 1905
Cortinarius muscigenus *Pk.*
N. Y. State Mus. Rep't 41, p.71. 1888
Cortinarius muscosus (*Fr.*) *Pk.*
N. Y. State Mus. Rep't 54, p.152. 1901. (Cortinarius collinatus muscosus *Fr.*)
Cortinarius (Telamonia) nigrellus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.56. July 1873
N. Y. State Mus. Rep't 26, p.62. 1874
Cortinarius obliquus *Pk.*
N. Y. State Mus. Bul. 54, p.951, pl.L, fig.1-5. 1902
Cortinarius (Inoloma) ochraceus *Pk.*
N. Y. State Cab. Rep't 23, p.109. 1872. Bot. ed.
Cortinarius (Phlegmacium) olivaceus *Pk.*
N. Y. State Mus. Rep't 24, p.72. 1872
Cortinarius (Phlegmacium) ophiopus *Pk.*
N. Y. State Mus. Rep't 30, p.43. 1878
Cortinarius (Hydrocybe) pallidus *Pk.*
N. Y. State Mus. Rep't 42, p.22-23. 1889. Bot. ed.
Cortinarius (Telamonia) paludosus *Pk.*
N. Y. State Mus. Rep't 43, p.19. 1890. Bot. ed.
(Cortinarius) Hydrocybe praepallens *Pk.*
N. Y. State Mus. Bul. 2, p.9. 1887
Cortinarius (Hydrocybe) pulcher *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.56. July 1873
N. Y. State Mus. Rep't 26, p.63. 1874

Cortinarius (Inoloma) pulchrifolius *Pk.*
N. Y. State Mus. Rep't 33, p.20. 1880
N. Y. State Mus. Rep't 46, p.56. 1893. Bot. ed. (Note)
Cortinarius punctifolius *Pk.*
Torr. Bot. Club Bul. 30, p.96. Feb. 1903
Cortinarius (Hydrocybe) regularis *Pk.*
N. Y. State Mus. Rep't 30, p.43. 1878
Cortinarius rimosus *Pk.*
N. Y. State Mus. Rep't 48, p.12. 1896. Bot. ed.
Cortinarius (Inoloma) robustus *Pk.*
N. Y. State Mus. Rep't 29, p.42. 1878
Cortinarius rubripes *Pk.*
N. Y. State Mus. Bul. 105, p.16–17. 1906
Cortinarius (Inoloma) rubrocinereus *Pk.*
N. Y. State Mus. Rep't 33, p.20. 1880
Cortinarius (Dermocybe) sericipes *Pk.*
N. Y. State Mus. Rep't 33, p.20. 1880
(Cortinarius) Dermocybe simulans *Pk.*
N. Y. State Mus. Bul. 2, p.8. 1887
Cortinarius (Myxacium) sphaerosporus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.55. July 1873
N. Y. State Mus. Rep't 26, p.61. 1874
Cortinarius (Phlegmacium) sphagnophilus *Pk.*
N. Y. State Mus. Rep't 29, p.42. 1878
N. Y. State Mus. Rep't 53, p.857. 1900. (Note)
Cortinarius (Myxacium) splendidus *Pk.*
N. Y. State Mus. Rep't 29, p. 42. 1878
Cortinarius (Inoloma) squamulosus *Pk.*
N. Y. State Cab. Rep't 23, p.108, pl.3, fig.1–3. 1872. Bot. ed.
Cortinarius subflexipes *Pk.*
N. Y. State Mus. Rep't 41, p.73. 1888
Cortinarius sublateritius *Pk.*
N. Y. State Mus. Rep't 54, p.151. 1901
Cortinarius submarginalis *Pk.*
N. Y. State Mus. Bul. 54, p.950–51, pl.L, fig.6–10. 1902
Cortinarius torvus nobilis *Pk.*
N. Y. State Mus. Rep't 54, p.167–68, pl.I, fig.5–11. 1901
Cortinarius (Myxacium) tricolor *Pk.*
N. Y. State Cab. Rep't 23, p.107. 1872. Bot. ed. (Cortinarius berlesianus *Sacc. & Cub.*)
Cortinarius validipes *Pk.*
N. Y. State Mus. Bul. 116, p.20. 1907
Cortinarius (Hydrocybe) vernalis *Pk.*
N. Y. State Cab. Rep't 23, p.112. 1872. Bot. ed.
Cortinarius virgatus *Pk.*
Torr. Bot. Club Bul. 22, p.203. May 1895
Cortinarius whiteae *Pk.*
Torr. Bot. Club Bul. 29, p.560–61. Sept. 1902

Coryneum clavaesporium *Pk.*
N. Y. State Mus. Rep't 24, p.87. 1872
N. Y. State Mus. Rep't 30, p.75. 1878. (As Exosporium tiliae *Link*) (Exosporium clavisporum (*Pk.*) *Sacc.*)
Coryneum pustulatum *Pk.*
N. Y. State Mus. Rep't 33, p.26, pl.1, fig.1-3. 1880
Coryneum triseptatum *Pk.*
N. Y. State Mus. Rep't 27, p.102. 1875
Coryneum tumoricola *Pk.*
N. Y. State Mus. Rep't 40, p.63. 1887
Craterellus caespitosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.61. July 1873
N. Y. State Mus. Rep't 25, p.82. 1873
N. Y. State Mus. Bul. 2, p.48. 1887. (Note)
Craterellus cantharellus (*Schw.*) *Fr. var.* intermedius *Pk.*
N. Y. State Mus. Bul. 116, p.34-35. 1907
Craterellus corrugis *Pk.*
Torr. Bot. Club Bul. 26, p.69-70. Feb. 1899
Craterellus dubius *Pk.*
N. Y. State Mus. Rep't 31, p.38. 1879
N. Y. State Mus. Rep't 32, p.36. 1879. (Note)
N. Y. State Mus. Bul. 2, p.45-46. 1887
Craterellus pogonati *Pk.*
Torr. Bot. Club Bul. 33, p.218-19. Apr. 1906
Craterellus subundulatus *Pk.*
N. Y. State Mus. Bul. 67, p.27. 1903
Torr. Bot. Club Bul. 22, p.492. Dec. 1895. (As Thelephora subundulata *Pk.*)
Craterium obovatum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.64. July 1873
N. Y. State Mus. Rep't 26, p.75. 1874
N. Y. State Mus. Rep't 31, p.56. 1879. (As Badhamia rubiginosa *Chev.*)
Crepidotus cinnabarinus *Pk.*
Torr. Bot. Club Bul. 22, p.489. Dec. 1895
Crepidotus croceitinctus *Pk.*
N. Y. State Mus. Rep't 39, p.72. 1886
Crepidotus distans *Pk.*
N. Y. State Mus. Rep't 44, p.20, pl.2, fig.4-7. 1891. Bot. ed.
Agaricus (Crepidotus) dorsalis *Pk.*
N. Y. State Mus. Rep't 24, p.69. 1872
N. Y. State Mus. Rep't 39, p.73. 1886
Agaricus (Crepidotus) fulvotomentosus *Pk.*
N. Y. State Mus. Rep't 26, p.57. 1874
N. Y. State Mus. Rep't 39, p.73. 1886
Crepidotus greigensis *Pk.* (Claudopus greigensis *Pk.*)
Agaricus (Crepidotus) haerens *Pk.*
N. Y. State Mus. Rep't 35, p.132-33. 1884
N. Y. State Mus. Rep't 39, p.70. 1886
N. Y. State Mus. Rep't 40, p.75. 1887. (Note)

Agaricus (Crepidotus) herbarum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.53. July 1873
N. Y. State Mus. Rep't 26, p.56. 1874
N. Y. State Mus. Rep't 39, p.72. 1886
Crepidotus latifolius *Pk.*
Torr. Bot. Club Bul. 26, p.66. Feb. 1899
Crepidotus malachius *B. & C. var.* plicatilis *Pk.*
N. Y. State Mus. Rep't 39, p.71. 1886
Crepidotus puberulus *Pk.*
So. Cal. Acad. Sci. Proc. 1, p.382. June 1897. (Name)
Torr. Bot. Club Bul. 25, p.324. June 1898
Crepidotus sepiarius *Pk.*
Torr. Bot. Club Bul. 25, p.324–25. June 1898
Crepidotus subversutus *Pk.*
H. A. Reid's "History of Pasadena, Cal." p.621. 1895. (Name)
Agaricus (Crepidotus) tiliophilus *Pk.*
N. Y. State Mus. Rep't 35, p.133. 1884
N. Y. State Mus. Rep't 39, p.70–71. 1886
Agaricus (Crepidotus) versutus *Pk.*
N. Y. State Mus. Rep't 30, p.70. 1878
N. Y. State Mus. Rep't 39, p.72–73. 1886
Cronartium comandrae *Pk.*
Bot. Gaz. 4:128. Feb. 1879. (Cronartium asclepiadeum (*Willd.*) *Fr. var.* Thesii *Berk.*)
Cryptophallus *Pk.*
Torr. Bot. Club Bul. 24, p.147. Mar. 1897
Crytophallus albiceps *Pk.*
Torr. Bot. Club Bul. 24, p.147. Mar. 1897
Cryptoporus *Pk.*
Torr. Bot. Club Bul. 7, p.104. Oct. 1880. (A section of genus Polyporus) (Crytoporus (*Pk.*) *Shear* in Sylloge 17)
Cryptospora caryae *Pk.*
N. Y. State Mus. Rep't 38, p.106, pl.2, fig.28–31. 1885
Cryptospora suffusa *Tul. var.* nuda *Pk.*
N. Y. State Mus. Rep't 46, p.58. 1893. Bot. ed.
Cryptosporium cerasinum *Pk.*
N. Y. State Mus. Rep't 54, p.156. 1901
Cryptosporium scirpi *Pk.*
N. Y. State Mus. Rep't 25, p.84. 1873. (Septoria peckii *Sacc.*)
Cucurbitaria alnea *Pk.*
N. Y. State Mus. Rep't 28, p.75. 1876. (Otthia alnea (*Pk.*) *Sacc.*)
Cucurbitaria erratica *Pk.*
Torr. Bot. Club Bul. 34, p.349. July 1907
Cucurbitaria longitudinalis *Pk.*
N. Y. State Mus. Rep't 33, p.34, pl.2, fig.23–26. 1880
Cucurbitaria seriata *Pk.*
N. Y. State Mus. Rep't 28, p.75. 1876. (Otthia seriata (*Pk.*) *Sacc.*)
Cylindrocolla dendroctoni *Pk.*
Millspaugh's "Prel. Cat. Flora W. Va." p.516–17. June 1892

N. Y. State Mus. Rep't 46, p.40. 1893. Bot. ed.
"Flora of W. Va.", Field Columb. Mus. Pub. 9:99. 1896
Cylindrosporium acori *Pk.*
N. Y. State Mus. Rep't 46, p.32. 1893. Bot. ed.
Cyphella arachnoidea *Pk.*
N. Y. State Mus. Rep't 44, p.22–23. 1891. Bot. ed.
Cyphella candida *Pk.*
N. Y. State Mus. Rep't 27, p.99. 1875
Cyphella caricina *Pk.*
N. Y. State Mus. Rep't 33, p.22. 1880
Cytospora grandis *Pk.*
N. Y. State Mus. Rep't 40, p.60. 1887
Cytosporella macrospora *Pk.*
Torr. Bot. Club Bul. 30, p.99. Feb. 1903
Cytosporium *Pk.*
Saccardo's Sylloge 3:470. 1884. (For Cellulosporium *Pk.*)
Dacryomyces conglobatus *Pk.*
N. Y. State Mus. Rep't 32, p.37. 1879
N. Y. State Mus. Bul. 2, p.27–28, pl.1, fig.1–4. 1887. (Note)
Dacryomyces minor *Pk.*
N. Y. State Mus. Rep't 30, p.49. 1878
Dactylium sublutescens *Pk.*
N. Y. State Mus. Rep't 30, p.57. 1878. (Trichothecium sublutescens (*Pk.*) *Sacc.*)
Daedalea confragosa *Pers. var.* cookei (*Berk.*) *Pk.*
N. Y. State Mus. Rep't 30, p.74. 1878
Daedalea confragosa *Pers. var.* crataegi (*Berk.*) *Pk.*
N. Y. State Mus. Rep't 30, p.73. 1878
Daedalea confragosa *Pers. var.* polyporoidea *Pk.*
Torr. Bot. Club Bul. 29, p.553. Sept. 1902. (Name)
Daedalea confragosa *Pers. var.* klotschii (*Berk.*) *Pk.; var.* proxima (*Berk.*) *Pk.*
N. Y. State Mus. Rep't 30, p.74. 1878
Daedalea confragosa *Pers. var.* rubescens (*A. & S.*) *Pk.*
N. Y. State Mus. Rep't 30, p.73–74. 1878
Daedalea confragosa *Pers. var.* tricolor (*Fr.*) *Pk.*
N. Y. State Mus. Rep't 30, p.74. 1878
Daedalea extensa *Pk.*
N. Y. State Mus. Rep't 44, p.21. 1891. Bot. ed.
Daedalea sulphurella *Pk.*
N. Y. State Mus. Rep't 44, p.21. 1891. Bot. ed.
Daedalea unicolor *Fr. var.* fumosa *Pk.*
N. Y. State Mus. Rep't 47, p.42. 1894. Bot. ed.
Deconica bryophila *Pk.*
N. Y. State Mus. Rep't 46, p.26–27. 1893. Bot. ed.
N. Y. State Mus. Rep't 49, p.29. 1896. Bot. ed.
Deconica bulbosa *Pk.*
N. Y. State Mus. Rep't 46, p.27. 1893. Bot. ed.
Deconica semistriata *Pk.*
N. Y. State Mus. Rep't 51, p.291. 1898

Deconica subviscida *Pk.*
N. Y. State Mus. Rep't 41, p.70. 1888
Dematium parasiticum *Pk.*
N. Y. State Mus. Rep't 43, p.30, pl.3, fig.14-18. 1890. Bot. ed.
Dendrodochium pallidum *Pk.*
Torr. Bot. Club Bul. 11, p.50. May 1884
Dendrophoma cephalanthi *Pk.*
N. Y. State Mus. Rep't 39, p.45. 1886
Dendrophoma tiliae *Pk.*
N. Y. State Mus. Rep't 39, p.45. 1886
Dermatea acericola *Pk.* (Pezicula acericola *Pk.*)
Dermatea cinnamomea *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.24. Sept. 1875
N. Y. State Mus. Rep't 28, p.67. 1876
Dermatea inclusa *Pk.*
N. Y. State Mus. Rep't 30, p.62. 1878
Dermatea minuta *Pk.* (Pezicula minuta *Pk.*)
Dermatea phyllophila *Pk.*
N. Y. State Mus. Rep't 31, p.24, 47. 1879
Dermatea xanthoxyli *Pk.*
N. Y. State Mus. Rep't 31, p.47. 1879
Dermocybe simulans *Pk.* (Cortinarius simulans *Pk.*)
Diachaea splendens *Pk.*
N. Y. State Mus. Rep't 30, p.50, pl.2, fig.1-4. 1878
Diachaea subsessilis *Pk.*
N. Y. State Mus. Rep't 31, p.41-42. 1879
Diaporthe binoculata (*Ell.*) *Sacc. var.* magnoliae-acuminatae *Pk.*
Saccardo's Sylloge XI:307. 1895
N. Y. State Mus. Rep't 44, p.28. 1891. Bot. ed. (As Diaporthe binoculata *Ell.*)
Diaporthe cylindrospora *Pk.*
N. Y. State Mus. Rep't 38, p.104. 1885
Diaporthe (Chorostate) farinosa *Pk.*
N. Y. State Mus. Rep't 40, p.69-70. 1887
Diaporthe marginalis *Pk.*
N. Y. State Mus. Rep't 39, p.52, pl.2, fig.1-5. 1886
Diaporthe neilliae *Pk.*
N. Y. State Mus. Rep't 39, p.52, pl.2, fig.6-9. 1886
Diaporthe robusta *Pk.*
N. Y. State Mus. Rep't 48, p.16. 1896. Bot. ed.
Diaporthe sparsa *Pk.*
N. Y. State Mus. Rep't 39, p.52. 1886. (Diaporthe peckii *Sacc.* in Sylloge 9)
Diaporthe tuberculosa *Sacc. var.* dispersa *Pk.*
N. Y. State Mus. Rep't 44, p.28. 1891. Bot. ed.
Diatrype adusta *C. & P.*
N. Y. State Mus. Rep't 29, p.58. 1878. (Anthostoma adustum (*C. & P.*) *Sacc.*)
Diatrype angulare *Pk.*
Bot. Gaz. 5:36. Mar. 1880. (Valsaria angularis (*Pk.*) *Sacc.*)

Diatrype anomala *Pk.*
N. Y. State Mus. Rep't 28, p.72. 1876. (Cryptosporella anomala (*Pk.*) *Sacc.*)
Diatrype betulina *Pk.*
N. Y. State Mus. Rep't 25, p.101–2, pl.1, fig.27–31. 1873. (Diatrypella betulina (*Pk.*) *Sacc.*)
Diatrype brunnea *C. & P.*
Buf. Soc. Nat. Sci. Bul. 4, p.229. Apr. 1882. (Name) (Valsaria quadrata (*Schw.*) *Sacc.*)
Diatrype discoidea *C. & P.*
N. Y. State Mus. Rep't 28, p.71. 1876. (Diatrypella discoidea *C. & P.*)
Diatrype elliptica *Pk.*
N. Y. State Mus. Rep't 28, p.87. 1876
N. Y. State Mus. Rep't 25, p.102. 1873. (As Melanconis elliptica *Pk.*) (Pseudovalsa lanciformis (*Fr.*) *C. & D. var.* elliptica *Pk.*)
Diatrype moroides *C. & P.*
N. Y. State Mus. Rep't 26, p.86. 1874. (Name)
N. Y. State Mus. Rep't 29, p.63. 1878. (Valsaria moroides (*C. & P.*) *Sacc.*)
Diatrype nigrospora *Pk.*
N. Y. State Mus. Rep't 33, p.33. 1880. (Valsaria nigrospora (*Pk.*) *Berl. & Vogl.*)
Diatrype platasca *Pk.*
N. Y. State Mus. Rep't 27, p.109. 1875. (Diaporthe platasca (*Pk.*) *Sacc.*)
Diatrype verrucoides *Pk.*
N. Y. State Mus. Rep't 32, p.50. 1879
Diatrypella frostii *Pk.*
Bot. Gaz. 3:35. Apr. 1878
Diatrypella underwoodii *Pk.*
N. Y. State Mus. Rep't 46, p.39. 1893. Bot. ed.
Dictydium magnum *Pk.* (Badhamia magna *Pk.*)
Diderma crustaceum *Pk.* (Chondrioderma crustaceum *Pk.*)
Diderma farinaceum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.63. July 1873
N. Y. State Mus. Rep't 26, p.74. 1874
N. Y. State Mus. Rep't 31, p.58. 1879. (As Chondrioderma spumarioides *Fr. var.* carcerina *Rost.*)
Diderma flavidum *Pk.*
N. Y. State Mus. Rep't 28, p.54. 1876
N. Y. State Mus. Rep't 31, p.55. 1879. (As Physarum contextum *Pers.*)
Didymium angulatum *Pk.*
N. Y. State Mus. Rep't 31, p.41. 1879
Didymium connatum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.64. July 1873
N. Y. State Mus. Rep't 26, p.74. 1874
N. Y. State Mus. Rep't 31, p.55. 1879. (As Physarum polymorphum (*Mont.*) *Rost.*)

Didymium eximium *Pk.*
N. Y. State Mus. Rep't 31, p.41. 1879
Didymium flavidum *Pk.* (Physarum flavidum *Pk.*)
Didymium oxalinum *Pk.*
N. Y. State Mus. Rep't 28, p.54. 1876
N. Y. State Mus. Rep't 31, p.57. 1879. (Note)
Didymium subroseum *Pk.* (Physarum albicans *Pk.*)
Didymosphaeria (Amphisphaeria) atrogrisea *C. & P.*
Grev. 17:92. June 1889
Didymosphaeria typhae *Pk.*
N. Y. State Mus. Rep't 38, p.104. 1885
Didymosporium effusum *Schw. var.* distinctum *Pk.*
N. Y. State Mus. Rep't 43, p.27. 1890. Bot. ed.
Dinemasporium acerinum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.65. July 1873
N. Y. State Mus. Rep't 26, p.77. 1874
Diplodia asparagi *Pk.*
N. Y. State Mus. Rep't 40, p.60. 1887
Diplodia lignicola *Pk.*
N. Y. State Mus. Rep't 25, p.86. 1873. (Diplodiella lignicola (*Pk.*) *Sacc.*)
Diplodia liriodendri *Pk.*
N. Y. State Mus. Rep't 44, p.24. 1891. Bot. ed.
Diplodia multicarpa *Pk.*
N. Y. State Mus. Rep't 44, p.24. 1891. Bot. ed.
Diplodia petiolaris *Pk.*
N. Y. State Mus. Rep't 25, p.86. 1873
Diplodia pinea *Kx. var.* corticola *Pk.*
N. Y. State Mus. Rep't 38, p.98. 1885
Diplodia subtectoides *Pk.*
N. Y. State Mus. Rep't 48, p.14. 1896. Bot. ed.
Diplodia thujina *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.52. 1878
Diplodia valsoides *Pk.*
N. Y. State Mus. Rep't 25, p.86. 1873. (Botryodiplodia valsoides (*Pk.*) *Sacc.*)
Diplodina quercina *Pk.*
N. Y. State Mus. Rep't 50, p.115. 1897
Diplosporium breve *Pk.*
N. Y. State Mus. Rep't 44, p.26. 1891. Bot. ed.
Discella albomaculans *Pk.*
N. Y. State Mus. Rep't 35, p.137. 1884
Discella arida *Pk.*
N. Y. State Mus. Rep't 30, p.53. 1878
Discella canadensis *Pk.*
N. Y. State Mus. Rep't 30, p.52. 1878
Discella discoidea *C. & P.*
N. Y. State Mus. Rep't 28, p.58, pl.1, fig.34-37. 1876. (Discula peckiana *Sacc.*)

Discella hysteriella *Pk.*
N. Y. State Mus. Rep't 35, p.137. 1884
Discella kalmiae *Pk.*
N. Y. State Mus. Rep't 29, p.49. 1878. (Discula kalmiae (*Pk.*) *Sacc.*)
Discella macrosperma *Pk.*
N. Y. State Mus. Rep't 29, p.49. 1878. (Discula macrosperma (*Pk.*) *Sacc.*)
Discella platani *Pk.*
N. Y. State Mus. Rep't 29, p.49. 1878. (Discula platani (*Pk.*) *Sacc.*)
Discella variabilis *Pk.*
Bot. Gaz. 5:34. Mar. 1880. (Discula variabilis (*Pk.*) *Sacc.*).
Discosia magna *Pk.*
N. Y. State Mus. Rep't 47, p.21. 1894. Bot. ed.
Dothidea clavispora *C. & P.*
N. Y. State Mus. Rep't 29, p.63. 1878
N. Y. State Mus. Rep't 30, p.76. 1878. (Note)
Buf. Soc. Nat. Sci. Bul. 3, p.34. Nov. 1875. (As Hysterium clavisporum *C. & P.*)
N. Y. State Mus. Rep't 28, p.69. 1876. (Note)
Dothidea dalibardae *Pk.*
N. Y. State Mus. Rep't 27, p.109, pl.1, fig.7-9. 1875. (Phyllachora dalibardae (*Pk.*) *Sacc.*)
Dothidea dasylirii *Pk.*
Bot. Gaz. 7:57. May 1882. (Phyllachora dasylirii (*Pk.*) *Sacc.*)
Dothidea episphaeria *Pk.*
N. Y. State Mus. Rep't 30, p.64. 1878. (Phyllachora episphaeria (*Pk.*) *Sacc.*)
Dothidea kalmiae *Pk.*
N. Y. State Mus. Rep't 25, p.102. 1873. (Dothidella kalmiae (*Pk.*) *Sacc.*)
Dothidea osmundae *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.64. 1878. (Dothidella osmundae (*P. & C.*) *Sacc.*)
Dothidea pringlei *Pk.*
Bot. Gaz. 7:57. May 1882. (Auerswaldia pringlei (*Pk.*) *Sacc.*)
Dothidea rimincola (Schw.) *Pk.*
N. Y. State Mus. Rep't 30, p.64. 1878. (For Hysterium rimincolum *Schw.*)
Dothidella alni *Pk.*
N. Y. State Mus. Rep't 40, p.71. 1887
Dothiorella aberrans *Pk.*
Torr. Bot. Club Bul. 34, p.103. Feb. 1907
Dothiorella celtidis *Pk.*
N. Y. State Mus. Rep't 44, p.23. 1891. Bot. ed.
Eccilia cinericola *Pk.*
Torr. Bot. Club Bul. 34, p.347. July 1907
Eccilia nigricans *Pk.*
Torr. Bot. Club. Bul. 22, p.201. May 1895

Eccilia nivea *Pk.*
N. Y. State Mus. Rep't 49, p.18. 1896. Bot. ed.
Eccilia sphagnophila *Pk.*
N. Y. State Mus. Rep't 54, p.147, pl.I, fig.20-23. 1901
Eccilia subacus *Pk.*
Torr. Bot. Club Bul. 34, p.100. Feb. 1907
Eccilia unicolor *Pk.*
Torr. Bot. Club Bul. 34, p.99-100. Feb. 1907
Agaricus (Eccilia) watsoni *Pk.*
N. Y. State Mus. Rep't 28, p.48. 1876
Agaricus (Entoloma) cuspidatus *Pk.*
N. Y. State Mus. Rep't 24, p.64-65, pl.2, fig.14-18. 1872
N. Y. State Mus. Rep't 54, p.147. 1901. (Note)
Agaricus (Entoloma) cyaneus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.49. July 1873
N. Y. State Mus. Rep't 26, p.55. 1874
N. Y. State Mus. Rep't 44, p.36. 1891. Bot. ed. (Note)
Entoloma deminutivum *Pk.*
Torr. Bot. Club Bul. 34, p.99. Feb. 1907
Agaricus (Entoloma) dysthales *Pk.*
N. Y. State Mus. Rep't 32, p.28. 1879
Entoloma ferruginans *Pk.*
Torr. Bot. Club Bul. 22, p.200-1. May 1895
Entoloma flavifolium *Pk.*
N. Y. State Mus. Bul. 105, p.21-22, pl.S, fig.9-15. 1906
Entoloma flavoviride *Pk.*
N. Y. State Mus. Rep't 41, p.64. 1888
Entoloma grande *Pk.*
N. Y. State Mus. Rep't 50, p.101-2. 1897
Entoloma graveolens *Pk.*
N. Y. State Mus. Rep't 53, p.844, pl.D, fig.1-7. 1900
N. Y. State Mus. Rep't 54, p.165-66. 1901
Agaricus (Entoloma) grayanus *Pk.*
N. Y. State Mus. Rep't 24, p.64. 1872
Entoloma griseum *Pk.*
N. Y. State Mus. Bul. 75, p.14. 1904
Entoloma luteum *Pk.*
N. Y. State Mus. Rep't 54, p.146-47, pl.F, fig.1-8. 1901
Entoloma minus *Pk.*
N. Y. State Mus. Bul. 116, p.23-24. 1907
Entoloma modestum *Pk.*
Torr. Bot. Club Bul. 34, p.347. July 1907
Entoloma murinum *Pk.*
Torr. Bot. Club Bul. 34, p.98-99. Feb. 1907
Entoloma nidorosum *Fr. var.* solidipes *Pk.*
N. Y. State Mus. Rep't 46, p.24. 1893. Bot. ed.
Entoloma nigricans *Pk.*
Torr. Bot. Club Bul. 29, p.72. Feb. 1902
Entoloma rhodopolius umbilicatus *Pk.* (Clitopilus subvilis *Pk.*)

Agaricus (Entoloma) salmoneus *Pk.*
N. Y. State Mus. Rep't 24, p.65, pl.4, fig.6–9. 1872
N. Y. State Mus. Rep't 54, p.147. 1901. (Note)
Agaricus (Entoloma) scabrinellus *Pk.*
N. Y. State Mus. Rep't 33, p.19. 1880
Agaricus (Entoloma) strictior *Pk.*
N. Y. State Cab. Rep't 23, p.88, pl.2, fig.6–9. 1872. Bot. ed.
N. Y. State Mus. Rep't 27, p.114. 1875. (Note)
Entoloma strictius irregulare *Pk.*
N. Y. State Mus. Rep't 53, p. 856–57, pl.D, fig.8–15. 1900
Entoloma strictius *Pk.*, isabellinum *Pk.*
N. Y. State Mus. Bul. 2, p.27. 1887
Entoloma suave *Pk.*
Myc. Jour. 14:2. Jan. 1908
Entoloma variabile *Pk.*
N. Y. State Mus. Rep't 54, p.145–46, pl.F, fig.17–27. 1901
Entyloma saniculae *Pk.*
N. Y. State Mus. Rep't 38, p.100, pl.1, fig.7–9. 1885
Epichloe hypoxylon *Pk.*
N. Y. State Mus. Rep't 27, p.108. 1875. (Hypocrella hypoxylon (*Pk.*) *Sacc.*)
Erysiphe euphorbiae *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.70. July 1873
N. Y. State Mus. Rep't 26, p.80. 1874
Erysiphella *Pk.*
N. Y. State Mus. Rep't 28, p.63. 1876
Erysiphella aggregata *Pk.*
N. Y. State Mus. Rep't 28, p.63, pl.2, fig.1–3. 1876
Eutypella longirostris *Pk.*
N. Y. State Mus. Rep't 43, p.34, pl.4, fig.8–12. 1890. Bot. ed.
Excipula equiseti *Pk.*
N. Y. State Mus. Rep't 26, p.77. 1874. (Amerosporium equiseti (*Pk.*) *Sacc.*)
Excipula lanuginosa *Pk.*
N. Y. State Mus. Rep't 30, p.52, pl.1, fig.14–18. 1878. (Cyphina lanuginosa (*Pk.*) *Sacc.*)
Excipula leucotricha *Pk.*
N. Y. State Mus. Rep't 29, p.49. 1878. (Amerosporium leucotrichum (*Pk.*) *Sacc.*)
Excipulina obscura *Pk.*
Torr. Bot. Club Bul. 22, p.209. May 1895
Exoascus unilateralis *Pk.*
N. Y. State Mus. Rep't 51, p.295. 1898
Exobasidium andromedae *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.63. July 1873
N. Y. State Mus. Rep't 26, p.73. 1874
Exobasidium azaleae *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.63. July 1873
N. Y. State Mus. Rep't 26, p.72. 1874

Exobasidium cassandrae *Pk.*
N. Y. State Mus. Rep't 29, p.46. 1878
Exobasidium cassiopes *Pk.*
N. Y. State Mus. Rep't 45, p.24. 1893. Bot. ed.
Fistulina firma *Pk.*
Torr. Bot. Club Bul. 26, p.70. Feb. 1899
Fistulina hepatica *Fr. var.* monstrosa *Pk.*
Torr. Bot. Club Bul. 27, p.21. Jan. 1900
Flammula aliena *Pk.*
Torr. Bot. Club Bul. 26, p.65–66. Feb. 1899
Flammula alnicola marginalis *Pk.*
N. Y. State Mus. Rep't 54, p.167, pl.G, fig.8–14. 1901
Flammula anomala *Pk.*
Torr. Bot. Club Bul. 22, p.202. May 1895
Flammula betulina *Pk.*
Torr. Bot. Club Bul. 34, p.100. Feb. 1907
Flammula braendlei *Pk.*
Torr. Bot. Club Bul. 31, p.180. Apr. 1904
Flammula condensa *Pk.*
Torr. Bot. Club Bul. 33, p.217. Apr. 1906
Flammula decurrens *Pk.*
Torr. Bot. Club Bul. 22, p.489. Dec. 1895
Flammula eccentrica *Pk.*
Torr. Bot. Club Bul. 31, p.179–80. Apr. 1904
Flammula edulis *Pk.*
Torr. Bot. Club Bul. 24, p.142. Mar. 1897
Flammula expansa *Pk.*
N. Y. State Mus. Bul. 116, p.24. 1907
Flammula fulvella *Pk.*
Fur Seal Invest. Rep't pt.3, p.584. 1899
Flammula granulosa *Pk.*
Torr. Bot. Club Bul. 29, p.561. Sept. 1902
Agaricus (Flammula) hallianus *Pk.*
N. Y. State Cab. Rep't 23, p.90–91. 1872. Bot. ed.
N. Y. State Mus. Rep't 50, p.140–41. 1897
Flammula highlandensis *Pk.*
N. Y. State Mus. Rep't 50, p.138–39. 1897
N. Y. State Mus. Rep't 24, p.67–68. 1872. (As Agaricus (Naucoria) highlandensis *Pk.*)
N. Y. State Mus. Rep't 41, p.84. 1888. (Note)
Flammula highlandensis *Pk.,* form ascophora *Pk.*
N. Y. State Mus. Rep't 50, p.139. 1897
N. Y. State Mus. Rep't 24, p.68, pl.3, fig.1–6. 1872. (As Agaricus (Hebeloma) ascophorus *Pk.*)
Flammula magna *Pk.*
N. Y. State Mus. Rep't 50, p.103–4, 142. 1897
Flammula multiflora *Pk.*
Torr. Bot. Club Bul. 32, p.79. Feb. 1905
Flammula pulchrifolia *Pk.*
N. Y. State Mus. Bul. 122, p.21, 160. 1908

Flammula pusilla *Pk.*
N. Y. State Mus. Bul. 67, p. 26–27, pl.M, fig.35–41. 1903
Flammula rigida *Pk.*
N. Y. State Mus. Rep't 50, p.104, 141. 1897
Flammula squalida *Pk.*
N. Y. State Mus. Rep't 44, p.19. 1891. Bot. ed.
N. Y. State Mus. Rep't 50, p.137–38. 1897
Flammula subfulva *Pk.*
N. Y. State Mus. Rep't 41, p.68. 1888
N. Y. State Mus. Rep't 50, p.136. 1897
Flammula underwoodii *Pk.*
Torr. Bot. Club Bul. 23, p.415. Oct. 1896
Flammula velata *Pk.*
Torr. Bot. Club Bul. 30, p.96. Feb. 1903
Flammula viscida *Pk.*
N. Y. State Mus. Rep't 51, p.290. 1898
Fomes (*see* Polyporus)
Fomes albogriseus *Pk.*
Torr. Bot. Club Bul. 30, p.97. Feb. 1903
Fomes carneus *Nees var.* granularis *Pk.; var.* subzonatus *Pk.*
N. Y. State Mus. Rep't 54, p.169. 1901
Fuligo ochracea *Pk.*
N. Y. State Mus. Rep't 31, p.56. 1879
N. Y. State Mus. Rep't 28, p.55. 1876. (As Licea ochracea *Pk.*)
Fusarium laxum *Pk.*
N. Y. State Mus. Bul. 67, p.30. 1903
Fusarium sclerodermatis *Pk.*
N. Y. State Mus. Rep't 43, p.31. 1890. Bot. ed.
N. Y. State Mus. Bul. 116, p.35. 1907. (As Fusarium sclerodermatis *Oud.*)
Fusarium viticolum *Thum. var.* uvicolum *Pk.*
N. Y. State Mus. Rep't 46, p.35. 1893. Bot. ed.
Fusicladium destruens *Pk.*
N. Y. State Mus. Rep't 43, p.30, pl.3, fig.19–22. 1890. Bot. ed.
N. Y. State Mus. Rep't 44, p.37. 1891. Bot. ed. (Note)
Fusisporium parasiticum *Pk.*
N. Y. State Mus. Rep't 29, p.53. 1878. (Fusarium peckii *Sacc.* in Sylloge 4)
Fusisporium phyllogenum *C. & P.*
N. Y. State Mus. Rep't 29, p.53. 1878. (Fusarium phyllogenum (*C. & P.*) *Sacc.*)
Fusisporium rimosum *Pk.*
N. Y. State Mus. Rep't 30, p.58. 1878. (Fusarium rimosum (*Pk.*) *Sacc.*)
Fusisporium tenuissimum *Pk.*
N. Y. State Mus. Rep't 34, p.48–49. 1881. (Fusarium tenuissimum (*Pk.*) *Sacc.*)
Galera alba *Pk.*
Torr. Bot. Club Bul. 24, p.143. Mar. 1897

Galera angusticeps *Pk.*
Torr. Bot. Club Bul. 24, p.143. Mar. 1897
Galera bryophila *Pk.*
N. Y. State Mus. Rep't 54, p.149-50, pl.G, fig.15-21. 1901
Galera callista *Pk.* (Pluteolus callistus *Pk.*)
Galera capillaripes *Pk.*
Torr. Bot. Club Bul. 26, p.66. Feb. 1899
N. Y. State Mus. Bul. 94, p.32. 1905. (Note)
Agaricus (Galera) coprinoides *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.52. July 1873
N. Y. State Mus. Rep't 26, p.59. 1874
N. Y. State Mus. Rep't 46, p.69. 1893. Bot. ed.
N. Y. State Mus. Rep't 29, p.66. 1878. (As Agaricus (Galera) plicatellus *Pk.*)
Galera expansa Pk. (Pluteolus expansus *Pk.*)
Galera flava *Pk.*
N. Y. State Mus. Rep't 45, p.19. 1893. Bot. ed.
N. Y. State Mus. Rep't 46, p.68-69. 1893. Bot. ed.
Galera fragilis *Pk.*
Torr. Bot. Club Bul. 24, p.144. Mar. 1897
Galera hypnorum *Batsch var.* nigripes *Pk.*
N. Y. State Mus. Rep't 46, p.67. 1893. Bot. ed.
Galera hypnorum umbonata *Pk.*
N. Y. State Mus. Bul. 25, p.655. 1899
Galera inculta *Pk.*
N. Y. State Mus. Rep't 41, p.69. 1888
N. Y. State Mus. Rep't 46, p.65-66. 1893. Bot. ed.
Galera kellermani *Pk.*
Myc. Jour. 12:148, pl.89. July 1906
Galera lateritia albicolor *Pk.*
N. Y. State Mus. Bul. 25, p.655. 1899
Galera plicatellus *Pk.* (Galera coprinoides *Pk.*)
Galera reticulata *Pk.*
N. Y. State Mus. Rep't 54, p.150. 1901
Galera rufipes *Pk.*
N. Y. State Mus. Rep't 42, p.20, pl.2, fig.11-15. 1889. Bot. ed.
N. Y. State Mus. Rep't 46, p.68. 1893. Bot. ed.
Galera semilanceata *Pk.*
Torr. Bot. Club. Bul. 23, p.415. Oct. 1896
Galera sphagnorum *Pers. var.* velata *Pk.*
N. Y. State Mus. Rep't 46, p.67. 1893. Bot. ed.
Agaricus (Galera) sulcatipes *Pk.*
N. Y. State Mus. Rep't 35, p.132. 1884
N. Y. State Mus. Rep't 46, p.65. 1893. Bot. ed.
Galera tenera *Schaeff.*, form minor *Pk.*
N. Y. State Mus. Rep't 46, p.64. 1893. Bot. ed.
Galera tenera *Schaeff. var.* obscurior *Pk.*
N. Y. State Mus. Rep't 50, p.130. 1897

Agaricus (Galera) teneroides *Pk.*
N. Y. State Mus. Rep't 29, p.39. 1878
N. Y. State Mus. Rep't 46, p.55, 64. 1893. Bot. ed.
Galera versicolor *Pk.*
Torr. Bot. Club Bul. 24, p.143-44. Mar. 1897
Gelatinosporium *Pk.*
N. Y. State Mus. Rep't 25, p.84. 1873
Gelatinosporium abietinum *Pk.*
N. Y. State Mus. Rep't 25, p.84. 1873
Gelatinosporium betulinum *Pk.*
N. Y. State Mus. Rep't 25, p.84. 1873
Gelatinosporium fulvum *Pk.*
N. Y. State Mus. Rep't 38, p.97. 1885
Geoglossum flavum *Pk.*
Buf. Soc. Nat. Sci. Bul. 3, p.21. Sept. 1875. "was inadvertently written for Geoglossum luteum Pk., under which latter name it is recorded in Hedwegia, Jan. 1875 and figured in Mycographia, pl.111, fig.12."
Geoglossum glutinosum *Pk.*
N. Y. State Mus. Rep't 25, p.97. 1873. (Brief desc.) (Geoglossum peckianum *Cke.*)
Geoglossum irregulare *Pk.* (Mitrula vitellina irregularis *Pk.*)
Geoglossum luteum *Pk.*
N. Y. State Mus. Rep't 24, p.94, pl.3, fig.20-24. 1872. (Leptoglossum luteum (*Pk.*) *Sacc.*) (*See* Geoglossum flavum *Pk.*)
Geoglossum luteum fumosum *Pk.* (Leptoglossum fumosum *Pk.*)
Geoglossum microsporum *C. & P.*
N. Y. State Mus. Rep't 25, p.97. 1873. (Leptoglossum microsporum (*C. & P.*) *Sacc.*) (Not Leptoglossum tremellosum (*Cke.*) *Sacc.*)
Geoglossum simile *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.70. July 1873
N. Y. State Mus. Rep't 25, p.97. 1873
N. Y. State Mus. Rep't 29, p.54. 1878. (As Geoglossum glabrum *Pers.*) (Geoglossum ophioglossoides (*L.*) *Sacc.*)
Geoglossum velutipes *Pk.*
N. Y. State Mus. Rep't 28, p.65. 1876
Geopyxis hicksii *Pk.*
N. Y. State Mus. Rep't 46, p.38. 1893. Bot. ed.
Geopyxis nebulosoides *Pk.*
Torr. Bot. Club Bul. 32, p.80-81. Feb. 1905
Gloeosporium allantoideum *Pk.*
N. Y. State Mus. Rep't 45, p.21. 1893. Bot. ed.
Gloeosporium fraxineum *Pk.*
N. Y. State Mus. Rep't 35, p.137. 1884
Gloeosporium hepaticae *Pk.*
N. Y. State Mus. Rep't 33, p.26. 1880
Gloeosporium irregulare *Pk.*
N. Y. State Mus. Rep't 42, p.31. 1889. Bot. ed.
Gloeosporium laportae *Pk.*
N. Y. State Mus. Rep't 33, p.26. 1880

Gloeosporium leptospermum *Pk.*
N. Y. State Mus. Rep't 43, p.32. 1890. Bot. ed.
Gloeosporium melanconioides *Pk.*
N. Y. State Mus. Rep't 53, p.848. 1900
Gloeosporium mirabile *Pk.*
N. Y. State Mus. Rep't 39, p.57. 1886
N. Y. State Mus. Rep't 25, p.87. 1873. (As Septoria mirabilis *Pk.*)
Gloeosporium populinum *Pk.*
N. Y. State Mus. Rep't 45, p.20-21. 1893. Bot. ed.
Gloeosporium salicinum *Pk.*
N. Y. State Mus. Rep't 33, p.26. 1880
N. Y. State Mus. Rep't 38, p.99. 1885. (Note) Septogloeum salicinum (*Pk.*) *Sacc.*)
Gloeosporium trifolii *Pk.*
N. Y. State Mus. Rep't 33, p.26. 1880
Glomerularia *Pk.*
N. Y. State Mus. Rep't 32, p.43. 1879
Glomerularia corni *Pk.*
N. Y. State Mus. Rep't 32, p.43. 1879
N. Y. State Mus. Bul. 2, p.28, pl.2, fig.10-14. 1887. (Note)
Godronia cassandrae *Pk.*
N. Y. State Mus. Rep't 39, p.50, pl.1, fig.16-20. 1886
Gomphidius flavipes *Pk.*
N. Y. State Mus. Rep't 54, p.153, pl.I, fig.1-4. 1901
Gomphidius furcatus *Pk.*
N. Y. State Mus. Bul. 25, p.649. 1899
Gomphidius nigricans *Pk.*
N. Y. State Mus. Rep't 48, p.12. 1896. Bot. ed.
Gomphidius oregonensis *Pk.*
Torr. Bot. Club Bul. 25, p.326. June 1898
Gomphidius vinicolor *Pk.*
N. Y. State Mus. Rep't 51, p.291-92. 1898
Gonatobotryum tenellum *Pk.*
N. Y. State Mus. Bul. 2, p.17. 1887
N. Y. State Mus. Rep't 32, p.41. 1879. (As Spondylocladium tenellum *Pk.*)
Grandinia burtii *Pk.*
N. Y. State Mus. Rep't 53, p.847. 1900
Grandinia coriaria *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.61. July 1873
N. Y. State Mus. Rep't 26, p.71. 1874
Grandinia membranacea *Pk. & Clint.*
N. Y. State Mus. Rep't 32, p.35. 1879
N. Y. State Mus. Bul. 2, p.16. 1887
Grandinia rudis *Pk.*
N. Y. State Mus. Rep't 30, p.47. 1879
Grandinia virescens *Pk.*
N. Y. State Mus. Rep't 30, p.47. 1878
N. Y. State Mus. Rep't 54, p.171. 1901

Granularia rudis *Pk.*
Torr. Bot. Club Bul. 29, p.277, pl.17, fig.21–23. May 1902
Graphium gracile *Pk.*
N. Y. State Mus. Rep't 34, p.50, pl.1, fig.11–13. 1881
Graphium sorbi *Pk.*
N. Y. State Mus. Rep't 40, p.65. 1887
Guepinia biformis *Pk.*
Torr. Bot. Club Bul. 27, p.20. Jan. 1900
Gymnascella *Pk.*
N. Y. State Mus. Rep't 35, p.143. 1884
Gymnascella aurantiaca *Pk.*
N. Y. State Mus. Rep't 35, p.143–44. 1884. (Gymnoascus aurantiacus (*Pk.*) *Sacc.*)
Gymnosporangium clavipes *C. & P.*
N. Y. State Mus. Rep't 25, p.89. 1873
N. Y. State Mus. Rep't 26, p.91. 1874. (Note)
Grev. 3:190. June 1875. (Note)
Quekett Micros. Club Jour. 2:263, pl.18, fig. 3. 1871. (As Podisoma gymnosporangium *Bon. var.* clavipes *C. & P.*)
Gymnosporangium speciosum *Pk.*
Bot. Gaz. 4:217. Oct. 1879
Gymnosporangium variabile *Pk.*
N. Y. State Mus. Rep't 33, p.27. 1880. (Coniosporium variabile (*Pk.*) *Sacc.*)
Gyromitra esculenta crispa *Pk.*
N. Y. State Mus. Rep't 51, p.299. 1898
Hadrotrichum lineare *Pk.*
N. Y. State Mus. Rep't 38, p.101, pl.1, fig.4–6. 1885
Haematomyces faginea *Pk.*
N. Y. State Mus. Rep't 43, p.33, pl.4, fig.5–7. 1890. Bot. ed.
Haematomyces orbicularis *Pk.*
N. Y. State Mus. Rep't 31, p.47. 1879
Haplographium apiculatum *Pk.*
N. Y. State Mus. Rep't 28, p.62, pl.1, fig.28–33. 1876
N. Y. State Mus. Rep't 34, p.57. 1881. (Note)
Haplosporella commixta *Pk.*
Torr. Bot. Club Bul. 33, p.219. Apr. 1906
Haplosporella pini *Pk.*
N. Y. State Mus. Rep't 40, p.60. 1887
Haplosporella symphoricarpi *Pk.*
N. Y. State Mus. Rep't 47, p.22. 1894. Bot. ed.
Haplosporella tiliae *Pk.*
N. Y. State Mus. Rep't 49, p.23. 1896. Bot. ed.
Hebeloma albidulum *Pk.*
N. Y. State Mus. Rep't 54, p.148. 1901
Hebeloma album *Pk.*
N. Y. State Mus. Rep't 54, p.147–48, pl.G, fig.1–7. 1901
Hebeloma ascophorus *Pk.* (Flammula highlandensis ascophora *Pk.*)

Agaricus (Hebeloma) colvini *Pk.*
N. Y. State Mus. Rep't 28, p.49. 1876
Hebeloma colvini *Pk.* *var.* velatum *Pk.*
N. Y. State Mus. Rep't 48, p.19–20. 1896. Bot. ed.
Agaricus (Hebeloma) excedens *Pk.*
N. Y. State Mus. Rep't 24, p.68–69. 1872
Hebeloma foedatum *Pk.*
Torr. Bot. Club Bul. 22, p.202. May 1895
Agaricus (Hebeloma) fragilior *Pk.*
N. Y. State Mus. Rep't 27, p.95. 1875
Agaricus (Hebeloma) fuscodiscus *Pk.*
N. Y. State Mus. Rep't 27, p.95, pl.1, fig.3–6. 1875
Hebeloma gregarium *Pk.*
N. Y. State Mus. Rep't 49, p.18–19. 1896. Bot. ed.
Agaricus (Hebeloma) griseoscabrosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.51. July 1873
N. Y. State Mus. Rep't 26, p.57. 1874
Agaricus (Hebeloma) illicitus *Pk.*
N. Y. State Mus. Rep't 24, p.68, pl.4, fig.1–5. 1872
"Flora of Colo.," Dep't Int. Pub. (Washington) 4:164. 1874
Agaricus (Hebeloma) infidus *Pk.*
N. Y. State Mus. Rep't 27, p.95. 1875
Agaricus (Hebeloma) mutatus *Pk.*
N. Y. State Mus. Rep't 24, p.69. 1872
Agaricus (Hebeloma) pallidomarginatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.50–51. July 1873
N. Y. State Mus. Rep't 25, p.78. 1873
Hebeloma palustre *Pk.*
N. Y. State Mus. Bul. 25, p.649. 1899
Agaricus (Hebeloma) parvifructus *Pk.*
N. Y. State Mus. Rep't 38, p.88. 1885
Hebeloma pascuense *Pk.*
N. Y. State Mus. Rep't 53, p.844–45, pl.C, fig.21–27. 1900
Agaricus (Hebeloma) sarcophyllus *Pk.*
N. Y. State Cab. Rep't 23, p.96, pl.1, fig.7–11. 1872. Bot. ed.
Hebeloma sociale *Pk.*
N. Y. State Mus. Bul. 75, p.15. 1904
Agaricus (Hebeloma) sordidulus *Pk.*
N. Y. State Mus. Rep't 38, p.88. 1885
Agaricus (Hebeloma) stellatosporus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.51. July 1873
N. Y. State Mus. Rep't 26, p.57. 1874
Hebeloma subochraceum *Pk.* (Inocybe subochracea *Pk.*)
Helicomyces mirabilis *Pk.*
N. Y. State Mus. Rep't 34, p.46, pl.2, fig.6–10. 1881
Helicosporium cinereum *Pk.*
N. Y. State Mus. Rep't 33, p.28, pl.2, fig.4–6. 1880
Helicosporium ellipticum *Pk.*
N. Y. State Mus. Rep't 27, p.103, pl.2, fig.9–12. 1875

Helicosporium olivaceum *Pk.*
N. Y. State Mus. Rep't 27, p.102. 1875
Helicosporium tiliae *Pk.*
Torr. Bot. Club Bul. 34, p.103. Feb. 1907
Helminthosporium absinthii *Pk.*
N. Y. State Mus. Rept 30, p.54–55, pl.2, fig.28–30. 1878. (Cercospora absinthii (*Pk.*) *Sacc.*)
Helminthosporium arbusculoides *Pk.*
N. Y. State Mus. Rep't 34, p.51. 1881
Helminthosporium attenuatum *C. & P.*
Grev. 4:69. Dec. 1875
N. Y. State Mus. Rep't 29, p.50. 1878
Buf. Soc. Nat. Sci. Bul. 1, p.69. July 1873. (As Clasterosporium pedunculatum *Pk.*)
N. Y. State Mus. Rep't 25, p.93, pl.1, fig.16–18. 1873
Helminthosporium episphaericum *C. & P.*
N. Y. State Mus. Rep't 29, p.52, pl.2, fig.18–20. 1878
Helminthosporium septemseptatum *Pk.*
Torr. Bot. Club Bul. 6, p.13. Feb. 1875
N. Y. State Mus. Rep't 34, p.51. 1884. (Note)
Helminthosporium urticae *Pk.*
N. Y. State Mus. Rep't 28, p.68. 1876
Helotium (Pelastea) affinissimum *Pk.*
N. Y. State Mus. Rep't 33, p.32. 1880. (Phialea affinissima (*Pk.*) *Sacc.*)
Helotium albopunctum *Pk.*
N. Y. State Mus. Rep't 31, p.47. 1879. (Pezizella albopuncta (*Pk.*) *Sacc.*)
Helotium bryogenum *Pk.*
N. Y. State Mus. Rep't 30, p.61. 1878
Helotium caricinellum *Pk.*
N. Y. State Mus. Rep't 30, p.61, pl.1, fig.5–8. 1878
Helotium episphaericum *Pk.*
N. Y. State Mus. Rep't 40, p.66. 1887
Helotium fastidiosum *Pk.*
N. Y. State Mus. Rep't 27, p.107–8. 1875
Helotium fraternum *Pk.*
N. Y. State Mus. Rep't 32, p.47–48. 1879
N. Y. State Mus. Bul. 2, p.21, pl.1, fig.12–15. 1887
Helotium gracile *C. & P.*
N. Y. State Mus. Rep't 26, p.83. 1874. (Phialea gracilis (*Pk.*) *Sacc.*)
Helotium hydrogenum *Pk.*
N. Y. State Mus. Rep't 29, p.56. 1878
Helotium limonium *C. & P.*
N. Y. State Mus. Rep't 26, p.83. 1874
Helotium macrosporum *Pk.*
N. Y. State Mus. Rep't 26, p.82. 1874
Helotium mycetophilum *Pk.*
N. Y. State Mus. Rep't 43, p.33. 1890. Bot. ed

Helotium palustre *Pk.*
N. Y. State Mus. Rep't 32, p.48. 1879
Helotium pileatum *Pk.*
N. Y. State Mus. Rep't 28, p.67, pl.1, fig.11-14. 1876
N. Y. State Mus. Rep't 32, p.58. 1879. (Note)
Helotium rugipes *Pk.*
N. Y. State Mus. Rep't 26, p.82. 1874. (Lanzia rugipes (*Pk.*) *Sacc.*)
Helotium saprophyllum *C. & P.*
N. Y. State Mus. Rep't 29, p.55. 1878
Helotium thujinum *Pk.*
N. Y. State Mus. Rep't 26, p.82. 1874
N. Y. State Mus. Rep't 29, p.70. 1878. (Note) (Pitya thujina *Pk.* in Sylloge 8)
Helotium vibrisseoides *Pk.*
N. Y. State Mus. Rep't 32, p.48. 1879
N. Y. State Mus. Bul. 2, p.28, pl.2, fig.7-9. 1887. (As Gorgoniceps turbinata (*Phill.*) *Sacc.*) (Gorgoniceps vibrisseoides (*Pk.*) *Sacc.* in Sylloge 8)
Helvella adhaerens *Pk.*
N. Y. State Mus. Bul. 54, p.956, pl.L, fig.11-15. 1902
Helvella brevissima *Pk.*
Torr. Bot. Club Bul. 30, p.100. Feb. 1903
Helvella gracilis *Pk.*
N. Y. State Mus. Rep't 24, p.94. 1872
Buf. Soc. Nat. Sci. Bul. 3, p.21. Sept. 1875
N. Y. State Mus. Rep't 31, p.59. 1879. (Note)
Helvella macropus brevis *Pk.*
Torr. Bot. Club Bul. 29, p.74. Feb. 1902
Helvella nigra *Pk.*
Torr. Bot. Club Bul. 26, p.70-71. Feb. 1899
Helvella palustris *Pk.*
N. Y. State Mus. Rep't 33, p.31, pl.2, fig.16-18. 1880
Helvella sphaerospora *Pk.*
N. Y. State Mus. Rep't 29, p.106. 1875
N. Y. State Mus. Rep't 31, p.59. 1879. (Note)
N. Y. State Mus. Rep't 47, p.43. 1894. Bot. ed. (As Gyromitra sphaerospora (*Pk.*) *Sacc.*)
N. Y. State Mus. Bul. 51, p.299, pl.B, fig.21-25. 1898. (Note)
Helvella stevensii *Pk.*
Torr. Bot. Club Bul. 31, p.182. Apr. 1904
Hendersonia abnormalis *Pk.*
N. Y. State Mus. Rep't 33, p.23. 1880. (Camarosporium abnorme (*Pk.*) *Sacc.*)
Hendersonia cerei *Pk.*
Bot. Gaz. 7:55. May 1882. (Camarosporium cerei (*Pk.*) *Sacc.*)
Hendersonia coluteae *Pk. & Clint.*
N. Y. State Mus. Rep't 33, p.23-24. 1880. (Camarosporium coluteae (*P. & C.*) *Sacc.*)

Hendersonia platani *Pk.*
N. Y. State Mus. Rep't 25, p.86-87. 1873
Buf. Soc. Nat. Sci. Bul. 4, p.199. Apr. 1882. (As Hendersonia desmazierii *Mont.*)
Hendersonia sambuci *Pk.*
N. Y. State Mus. Rep't 25, p.87. 1873. (Hendersonia pubentis *Cke.*)
Herpotrichia leucostoma *Pk.*
N. Y. State Mus. Bul. 2, p.23-24. 1887
N. Y. State Mus. Rep't 32, p.51. 1879. (As Sphaeria (Byssisedae) albidostoma *Pk.*) (Herpotrichia albidostoma (*Pk.*) *Sacc.*)
Hexagona favoloides *Pk.*
Torr. Bot. Club Bul. 10, p.73-74. July 1883
Heydenia fungicola *Pk.*
Torr. Bot. Club Bul. 22, p.493. Dec. 1895
Hydnochaete *Pk.*
N. Y. State Mus. Rep't 50, p.113. 1897. (Hydnochaete *Bres.* 1896)
Hydnochaete setigera *Pk.*
N. Y. State Mus. Rep't 50, p.113-14. 1897
N. Y. State Mus. Bul. 28, p.221. 1889. (As Asterodon setiger *Pk.*)
Hydnum albidum *Pk.*
N. Y. State Mus. Bul. 2, p.10-11. 1887
N. Y. State Mus. Rep't 51, p.310, pl.56, fig.1-7. 1898
N. Y. State Mus. Mem. 4, p.175-76, pl.67, fig.1-7. 1900
Hydnum albonigrum *Pk.*
N. Y. State Mus. Rep't 50, p.110. 1897
Hydnum arachnoideum *Pk.*
N. Y. State Mus. Rep't 44, p.21-22. 1891. Bot. ed.
Hydnum aurantiacum *A. & S. var.* pulchrispineum *Pk.*
N. Y. State Mus. Rep't 54, p.171. 1901
Hydnum balsameum *Pk.*
N. Y. State Mus. Bul. 75, p.15. 1904
Hydnum blackfordae *Pk.*
Torr. Bot. Club Bul. 33, p.218. Apr. 1906
Hydnum caput-ursi *Fr. var.* brevispineum *Pk.*
N. Y. State Mus. Bul. 25, p.656. 1899
Hydnum carbonarium *Pk.*
N. Y. State Mus. Rep't 40, p.55. 1887
Hydnum combinans *Pk.*
N. Y. State Mus. Rep't 53, p.846-47. 1900
Hydnum confluens *Pk.*
N. Y. State Mus. Rep't 26, p.71. 1874
Hydnum conigenum *Pk.*
Torr. Bot. Club Bul. 30, p.97-98. Feb. 1903
Hydnum cyaneotinctum *Pk.*
Torr. Bot. Club Bul. 30, p.98. Feb. 1903
N. Y. State Mus. Bul. 105, p.22-23. 1906. (Note)
Hydnum fasciatum *Pk.*
N. Y. State Mus. Rep't 41, p.78-79. 1888

Hydnum graveolens *Delast. var.* inaequale *Pk.*
N. Y. State Mus. Rep't 40, p.75. 1887
Hydnum graveolens subzonatum *Pk.*
N. Y. State Mus. Bul. 75, p.24-25. 1904
Hydnum kauffmani *Pk.*
Torr. Bot. Club Bul. 34, p.348. July 1907
Hydnum populinum *Pk.*
N. Y. State Mus. Rep't 53, p.846. 1900
(Hydnum repandum *L. var.* rufescens (*Pers.*) *Pk.*
N. Y. State Mus. Rep't 48, p.206, pl.38, fig.7-10. 1896. Bot. ed.
Mushrooms and their Use, p.76. May 1897. (For Hydnum rufescens *Pers.*)
Hydnum rimulosum *Pk.*
N. Y. State Mus. Rep't 49, p.20. 1896. Bot. ed.
Hydnum scabripes *Pk.*
N. Y. State Mus. Rep't 48, p.13. 1896. Bot. ed.
Hydnum separans *Pk.*
N. Y. State Mus. Rep't 50, p.112. 1897
Hydnum serratum *Pk.*
N. Y. State Mus. Rep't 50, p.112-13. 1897
Hydnum spongiosipes *Pk.*
N. Y. State Mus. Rep't 50, p.111. 1897
Hydnum subfuscum *Pk.*
N. Y. State Mus. Rep't 40, p.55. 1887
Hydnum sulcatipes *Pk.*
Torr. Bot. Club Bul. 34, p.101-2. Feb. 1907
Hydnum sulphurellum *Pk.*
N. Y. State Mus. Rep't 31, p.38. 1879
Hydnum umbilicatum *Pk.*
N. Y. State Mus. Bul. 54, p. 953, pl.K, fig.14-18. 1902
N. Y. State Mus. Rep't 54, p.171. 1901. (As a form of Hydnum rufescens *Pers.*)
Hydnum vellereum *Pk.*
N. Y. State Mus. Rep't 50, p.110-11. 1897
Hydrocybe praepallens *Pk.* (Cortinarius praepallens *Pk.*)
Hygrophorus albipes *Pk.*
Torr. Bot. Club Bul. 25, p.323. June 1898
Hygrophorus amygdalinus *Pk.*
Torr. Bot. Club Bul. 25, p.322. June 1898
Hygrophorus basidiosus *Pk.*
N. Y. State Mus. Bul. 116, p.57-58. 1907
N. Y. State Mus. Bul. 2, p.5-6. 1887. (As Clitocybe basidiosa *Pk.*)
Hygrophorus borealis *Pk.*
N. Y. State Mus. Rep't 26, p.64. 1874
N. Y. State Mus. Bul. 116, p.55. 1907
Hygrophorus burnhami *Pk.*
N. Y. State Mus. Bul. 116, p.24, 56-57. 1907
Hygrophorus cantharellus *Schw. var.* flava *Pk.*
N. Y. State Mus. Rep't 43, p.39. 1890. Bot. ed.

N. Y. State Mus. Rep't 54, pl.76, fig.19-20. 1901
N. Y. State Mus. Bul. 116, p.60. 1907
Hygrophorus cantharellus *Schw. var.* flaviceps *Pk.*
N. Y. State Mus. Rep't 43, p.39. 1890. Bot. ed.
N. Y. State Mus. Rep't 54, pl.76, fig.17-18. 1901
N. Y. State Mus. Bul. 116, p.60. 1907
Hygrophorus cantharellus *Schw. var.* flavipes *Pk.*
N. Y. State Mus. Rep't 43, p.39. 1890. Bot. ed.
N. Y. State Mus. Rep't 54, p.175, pl.76, fig.16. 1901
N. Y. State Mus. Bul. 116, p.60. 1907
Hygrophorus cantharellus *Schw. var.* roseus *Pk.*
N. Y. State Cab. Rep't 23, p.114. 1872. Bot. ed. (As rosea)
N. Y. State Mus. Rep't 54, p.175, pl.76, fig.15. 1901. (As roseus)
N. Y. State Mus. Bul. 116, p.60. 1907
Hygrophorus chlorophanus *Fr. var.* coccineus *Pk.*
N. Y. State Mus. Rep't 25, p.79. 1873
Hygrophorus coloratus *Pk.*
N. Y. State Mus. Bul. 122, p.21-22, 159. 1908
Hygrophorus congelatus *Pk.* (Hygrophorus miniatus congelatus *Pk.*)
Hygrophorus cuspidatus *Pk.*
Torr. Bot. Club Bul. 24, p.141. Mar. 1897
Hygrophorus davisii *Pk.*
Torr. Bot. Club Bul. 33, p.214. Apr. 1906
Hygrophorus elegantulus *Pk.*
Torr. Bot. Club Bul. 22, p.200. May 1895
Hygrophorus glutinosus *Pk.* (Hygrophorus rubropunctus *Pk.*)
Hygrophorus immutabilis *Pk.*
N. Y. State Mus. Rep't 51, p.292. 1898
N. Y. State Mus. Bul. 116, p.60. 1907
Hygrophorus laricinus *Pk.*
N. Y. State Mus. Mem. 4, p.146-47, pl. 51, fig.1-12. 1900
N. Y. State Mus. Bul. 116, p.62. 1907
Hygrophorus laurae decipiens *Pk.*
N. Y. State Mus. Bul. 94, p.39, 46, pl.88, fig.8-11. 1905
N. Y. State Mus. Bul. 116, p.49. 1907
Hygrophorus laurae *Morg. var.* unicolor *Pk.*
N. Y. State Mus. Bul. 54, p.968, pl.77, fig.13-14. 1902
N. Y. State Mus. Bul. 116, p.49. 1907
Hygrophorus marginatus *Pk.*
N. Y. State Mus. Rep't 28, p.50. 1876
N. Y. State Mus. Bul. 28, p.201. 1899. (Note)
N. Y. State Mus. Bul. 116, p.60-61. 1907
Hygrophorus mephiticus *Pk.*
Torr. Bot. Club Bul. 33, p.213-14. Apr. 1906
Hygrophorus miniatus *Fr. var.* congelatus *Pk.*
N. Y. State Mus. Bul. 116, p.61. 1907
N. Y. State Cab. Rep't 23, p.114. 1872. Bot. ed. (Hygrophorus congelatus *Pk.*)

Hygrophorus miniatus sphagnophilus *Pk.*
N. Y. State Mus. Rep't 53, p.856. 1900
N. Y. State Mus. Bul. 116, p.61. 1907
Hygrophorus miniatus *Fr. var.* sublutens *Pk.*
N. Y. State Mus. Rep't 41, p.84. 1888
N. Y. State Mus. Bul. 116, p.61. 1907
N. Y. State Mus. Rep't 48, p.183, pl.28, fig.9-10. 1896. Bot. ed. (As *var.* lutescens *Pk.*)
Mushrooms and their Use, p.62. May 1897
Hygrophorus minutulus *Pk.*
N. Y. State Mus. Bul. 2, p.9-10. 1887
N. Y. State Mus. Bul. 116, p.65. 1907
Hygrophorus morrisii *Pk.*
Torr. Bot. Club Bul. 26, p.64. Feb. 1899
Hygrophorus nigridius *Pk.*
Torr. Bot. Club Bul. 22, p.211. May 1895
Hygrophorus pallidus *Pk.*
Torr. Bot. Club Bul. 29, p.69. Feb. 1902
Hygrophorus paludosus *Pk.*
Torr. Bot. Club Bul. 29, p.70. Feb. 1902
Hygrophorus parvulus *Pk.*
N. Y. State Mus. Rep't 28, p.50, pl.1, fig.20-24. 1876
N. Y. State Mus. Bul. 116, p.59. 1907
Hygrophorus purus *Pk.*
N. Y. State Mus. Rep't 26, p.63. 1874
N. Y. State Mus. Bul. 116, p.64. 1907
Hygrophorus pusillus *Pk.*
Torr. Bot. Club Bul. 29, p.69-70. Feb. 1902
Hygrophorus ruber *Pk.*
N. Y. State Mus. Bul. 116, p.32. 1907
Hygrophorus rubropunctus *Pk.*
N. Y. State Mus. Bul. 116, p.49-50. 1907
N. Y. State Mus. Bul. 54, p.950. 1902. (As Hygrophorus glutinosus *Pk.*)
Hygrophorus serotinus *Pk.*
N. Y. State Mus. Bul. 116, p.32-33. 1907
Hygrophorus sordidus *Pk.*
Torr. Bot. Club Bul. 25, p.322. June 1898
Hygrophorus speciosus *Pk.*
N. Y. State Mus. Rep't 29, p.43. 1878
N. Y. State Mus. Mem. 4, p.148, pl.51, fig.21-28. 1900
N. Y. State Mus. Bul. 116, p.51-52. 1907
Hygrophorus sphaerosporus *Pk.*
Torr. Bot. Club Bul. 22, p.486-87. Dec. 1895
Hygrophorus subrufescens *Pk.*
N. Y. State Mus. Bul. 67, p.23, pl.M, fig.1-6. 1903
N. Y. State Mus. Bul. 116, p.58. 1907
Hygrophorus subviolaceus *Pk.*
N. Y. State Mus. Rep't 53, p.842, pl.C, fig.11-15. 1900
N. Y. State Mus. Bul. 116, p.52. 1907

Hygrophorus virgatulus *Pk.*
N. Y. State Mus. Rep't 26, p.64. 1874
N. Y. State Mus. Bul. 116, p.48. 1907
Hymenochaete abnormis *Pk.*
N. Y. State Mus. Rep't 42, p.28, pl.1, fig.13-16. 1889. Bot. ed.
Hymenochaete multispinulosa *Pk.*
Bot. Gaz. 7:54. May 1882
Hymenochaete simulans (*B. & R.*) *Pk.*
N. Y. State Mus. Rep't 49, p.20. 1896. Bot. ed. (For Corticium simulans *Berk. & Rav.*)
Hymenochaete spreta *Pk.*
N. Y. State Mus. Rep't 30, p.47-48. 1878
Hymenochaete tenuis *Pk.*
N. Y. State Mus. Rep't 40, p.57. 1887
Hymenogaster anomalus *Pk.*
N. Y. State Mus. Bul. 116, p.31-32. 1907
Hymenula galii *Pk.*
N. Y. State Mus. Rep't 49, p.20-21. 1896. Bot. ed.
Hymenula hysterioides *Pk.*
N. Y. State Mus. Rep't 33, p.22. 1880
Hymenula lychnidis *Pk.*
Bot. Gaz. 7:54. May 1882
Hymenula olivacea *Pk.*
N. Y. State Mus. Rep't 31, p.39. 1879
Hypholoma aggregatum *Pk.*
N. Y. State Mus. Rep't 46, p.26. 1893. Bot. ed.
Hypholoma aggregatum sericeum *Pk.*
N. Y. State Mus. Bul. 54, p.965, 972-73, pl.79, fig.8-14. 1902
Hypholoma ambiguum *Pk.*
Torr. Bot. Club Bul. 25, p.325-26. June 1898
Hypholoma atrofolium *Pk.*
Torr. Bot. Club Bul. 23, p.417. Oct. 1896
Hypholoma cutifractum *Pk.*
Torr. Bot. Club Bul. 22, p.490. Dec. 1895
Agaricus (Hypholoma) hirtosquamulosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.53. July 1873
N. Y. State Mus. Rep't 25, p.79. 1873
Agaricus (Hypholoma) hymenocephalus *Pk.*
N. Y. State Mus. Rep't 31, p.34-35. 1879
Agaricus (Hypholoma) incertus *Pk.*
N. Y. State Mus. Rep't 29, p.40-41. 1878
N. Y. State Mus. Bul. 25, p.676-77, pl.58, fig.13-20. 1899
N. Y. State Mus. Mem. 4, p.165-66, pl.60, fig.1-9. 1900
Hypholoma longipes *Pk.*
Torr. Bot. Club Bul. 22, p.204. May 1895
Agaricus (Hypholoma) madeodiscus *Pk.*
N. Y. State Mus. Rep't 38, p.88. 1885
Agaricus (Hypholoma) modestus *Pk.*
N. Y. State Mus. Rep't 32, p.29-30. 1879

Agaricus (Hypholoma) nitidipes *Pk.*
N. Y. State Mus. Rep't 35, p.133. 1884
Hypholoma ornella *Pk.* (Pholiota ornella *Pk.*)
Agaricus (Hypholoma) perplexus *Pk.*
N. Y. State Cab. Rep't 23, p.99. 1872. Bot. ed.
N. Y. State Mus. Rep't 31, p.54. 1879. (Note)
N. Y. State Mus. Rep't 49, p.61-62, pl.47, fig.11-13. 1896. Bot. ed.
N. Y. State Mus. Mem. 4, p.166-67, pl.60, fig.10-17. 1900
Mushrooms and their Use, p.32-33. fig. May 1897
Agaricus (Hypholoma) phyllogenus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.54. July 1873
N. Y. State Mus. Rep't 26, p.60. 1874
Agaricus (Hypholoma) saccharinophilus *Pk.*
N. Y. State Mus. Rep't 25, p.78. 1873
Hypholoma squalidellum *Pk.* (Psilocybe squalidella *Pk.*)
Hypochnus subviolaceus *Pk.*
N. Y. State Mus. Rep't 47, p.25. 1894. Bot. ed.
Hypocrea apiculata *C. & P.*
N. Y. State Mus. Rep't 29, p.57. 1878. (Clintoniella apiculata (*C. & P.*) *Sacc.*)
Hypocrea aurantiaca *Pk.*
N. Y. State Mus. Rep't 51, p.295. 1898
Hypocrea chromosperma *C. & P.*
N. Y. State Mus. Rep't 29, p.56-57. 1878
Hypocrea latizonata *Pk.*
Ellis & Everh. "N. Am. Pyrenomycetes," p.79-80. 1892
Hypocrea patella *C. & P.*
N. Y. State Mus. Rep't 29, p.57. 1878
Hypoderma lineare *Pk.*
N. Y. State Mus. Rep't 30, p.76. 1878
Buf. Soc. Nat. Sci. Bul. 1, p.71. July 1873. (As Rhytisma lineare *Pk.*)
N. Y. State Mus. Rep't 25, p.100, pl.1, fig.24-26. 1873
Hypomyces (*see* Peckiella)
Hypomyces banningii *Pk.*
Bot. Gaz. 4:139. Mar. 1879. (Peckiella banningiae (*Pk.*) *Sacc.* in Sylloge 9)
Hypomyces boletinus *Pk.*
N. Y. State Mus. Bul. 75, p.15. 1904
Hypomyces camphorati *Pk.*
N. Y. State Mus. Bul. 105, p.23. 1906
Hypomyces inaequalis *Pk.*
Torr. Bot. Club Bul. 25, p.328. June 1898
N. Y. State Mus. Bul. 94, p.32. 1905. (Note)
Hypomyces polyporinus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.71. July 1873
N. Y. State Mus. Rep't 26, p.84. 1874. (Peckiella polyporina (*Pk.*) *Sacc.*)
Hypomyces purpureus *Pk.*
Torr. Bot. Club Bul. 25, p.327. June 1898

Hypomyces transformans *Pk.*
N. Y. State Mus. Rep't 29, p.57. 1878. (Peckiella transformans (*Pk.*) *Sacc.*)
Hypomyces volemi *Pk.*
Torr. Bot. Club Bul. 27, p.20. Jan. 1900
Hypomyces xylophila *Pk.*
Torr. Bot. Club Bul. 11, p.28. Mar. 1884. (Peckiella xylophila (*Pk.*) *Sacc.*)
Hypoxylon howeianum *Pk.*
N. Y. State Mus. Rep't 24, p.98. 1872
Hypoxylon suborbiculare *Pk.*
N. Y. State Mus. Rep't 30, p.63–64. 1878
Hysterium clavisporum *C. & P.* (Dothidea clavispora *C. & P.*)
Hysterium exaridum *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.36. Nov. 1875
N. Y. State Mus. Rep't 29, p.63. 1878. (Lophodermium exaridum *C. & P.* in Sylloge 2)
Hysterium gerardi *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.33. Nov. 1875. (Hysterographium gerardi (*C. & P.*) *Sacc.*)
Hysterium hyalinum *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.33. Nov. 1875. (Gloniella hyalina (*C. & P.*) *Sacc.*)
Hysterium macrosporium *Pk.*
N. Y. State Mus. Rep't 26, p.83. 1874
Hysterium thuiarum *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.33. Nov. 1875
Hysterium truncatulum *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.33. Nov. 1875
N. Y. State Mus. Rep't 30, p.63. 1878. (Note)
Hysterium variabile *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.33. Nov. 1875. (Hysterographium variabile (*C. & P.*) *Sacc.*)
Hysterium viticolum *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.33. Nov. 1875. (Hysterographium viticolum (*C. & P.*) *Sacc.*)
Illosporium humigenum *Pk. & Sacc.*
Saccardo's Sylloge 4:660. 1886
N. Y. State Mus. Rep't 39, p.49. 1886
N. Y. State Mus. Rep't 28, p.54. 1876. (As Aethalium geophilum *Pk.*)
N. Y. State Mus. Rep't 31, p.57. 1879. (As Hyphelia terrestris *Fr.*)
Inocybe agglutinata *Pk.*
N. Y. State Mus. Rep't 41, p.67. 1888
Inocybe albodisca *Pk.*
N. Y. State Mus. Rep't 51, p.290. 1898
Inocybe castanea *Pk.*
N. Y. State Mus. Bul. 75, p.16, pl.O, fig.1–8. 1904
Agaricus (Inocybe) comatellus *Pk.*
N. Y. State Mus. Rep't 38, p.87, pl.2, fig. 5–8. 1885

Inocybe decipientoides *Pk.*
  Torr. Bot. Club Bul. 34, p.100–1. Feb. 1907
Inocybe desquamans *Pk.*
  Torr. Bot. Club Bul. 33, p.216. Apr. 1906
Inocybe diminuta *Pk.*
  N. Y. State Mus. Bul. 105, p.23. 1906
Agaricus (Inocybe) eutheloides *Pk.*
  N. Y. State Mus. Rep't 32, p.29. 1879
  N. Y. State Mus. Bul. 2, p.13. 1887
Inocybe excoriata *Pk.*
  N. Y. State Mus. Bul. 75, p.16–17, pl.O, fig.14–19. 1904
Inocybe fallax *Pk.*
  N. Y. State Mus. Bul. 75, p.17, pl.O, fig.20–25. 1904
Inocybe fibrillosa *Pk.*
  N. Y. State Mus. Rep't 41, p.65–66. 1888
Agaricus (Inocybe) geophyllus *Sow. var.* lilacinus *Pk.*
  N. Y. State Mus. Rep't 26, p.90. 1874
Agaricus (Inocybe) infelix *Pk.*
  N. Y. State Mus. Rep't 32, p.29. 1879
  N. Y. State Mus. Bul. 2, p.13. 1887
Inocybe infelix *Pk. var.* brevipes *Pk.*
  N. Y. State Mus. Bul. 2, p.13. 1887
Agaricus (Inocybe) maritimoides *Pk.*
  N. Y. State Mus. Rep't 38, p.87. 1885
Inocybe nigridisca *Pk.*
  N. Y. State Mus. Rep't 41, p.67. 1888
Agaricus (Inocybe) nodulosporus *Pk.*
  N. Y. State Mus. Rep't 32, p.28. 1879
Agaricus (Inocybe) paludinellus *Pk.*
  N. Y. State Mus. Rep't 31, p.34. 1879
Inocybe radiata *Pk.*
  Torr. Bot. Club Bul. 22, p.488–89. Dec. 1895
  N. Y. State Mus. Bul. 105, p.24. 1906. (Note)
Inocybe rigidipes *Pk.*
  N. Y. State Mus. Rep't 51, p.289–90. 1898
Inocybe serotina *Pk.*
  N. Y. State Mus. Bul. 75, p.17–18. 1904
Inocybe squamosodisca *Pk.*
  N. Y. State Mus. Bul. 75, p.18, pl.O, fig.10–13. 1904
Inocybe sterlingii *Pk.*
  Torr. Bot. Club Bul. 33, p.217. Apr. 1906
Inocybe strigosa *Pk.*
  N. Y. State Mus. Bul. 2, p.33. 1887
  Buf. Soc. Nat. Sci. Bul. 1, p.56. July 1873. (As Paxillus strigosus *Pk.*)
  N. Y. State Mus. Rep't 26, p.63. 1874
  N. Y. State Mus. Rep't 32, p.56. 1879. (Note)
Agaricus (Inocybe) subexilis *Pk.*
  N. Y. State Mus. Rep't 38, p.87–88. 1885

Inocybe subfulva *Pk.*
N. Y. State Mus. Rep't 41, p.66. 1888
Inocybe subochracea *Pk.*
Buf. Soc. Nat. Sci. Bul. 4, p.178. Apr. 1878. (Name)
N. Y. State Mus. Bul. 28, p.209. 1899. (Name)
N. Y. State Cab. Rep't 23, p.95-96. 1872. Bot. ed. (As Agaricus (Hebeloma) subochraceus *Pk.*)
Inocybe subochracea burtii *Pk.*
N. Y. State Mus. Rep't 54, p.167, pl.H, fig.23-29. 1901
Inocybe subtomentosa *Pk.*
N. Y. State Mus. Rep't 48, p.11. 1896. Bot. ed.
Agaricus (Inocybe) umboninotus *Pk.*
N. Y. State Mus. Rep't 38, p.87. 1885
Inocybe unicolor *Pk.*
N. Y. State Mus. Rep't 50, p.104-5. 1897
Inocybe violaceifolia *Pk.*
N. Y. State Mus. Rep't 41, p.66. 1888
Irpex ambiguus *Pk.*
N. Y. State Mus. Rep't 40, p.55. 1887
Irpex fuscoviolaceus *Fr. var.* lenzitoides *Pk.*
N. B. Nat. Hist. Soc. Bul. 21, p.118. 1903. (Name)
Irpex nodulosus *Pk.*
N. Y. State Mus. Rep't 41, p.79. 1888
Irpex rimosus *Pk.*
N. Y. State Mus. Rep't 43, p.22. 1890. Bot. ed.
Irpex viticola *C. & P.*
N. Y. State Mus. Rep't 34, p.43. 1881
Isaria fulvipes *Pk.*
N. Y. State Mus. Rep't 32, p.39-40. 1879
Isaria penicilliformis *Pk.*
N. Y. State Mus. Rep't 51, p.294. 1898
Isaria tenuipes *Pk.*
N. Y. State Mus. Rep't 31, p.44. 1879
Karschia deformata *Pk.*
N. Y. State Mus. Rep't 39, p.57. 1886
N. Y. State Mus. Rep't 28, p.68. 1876 (As Cenangium deformatum *Pk.*) (Phaeangella deformata *(Pk.) Sacc. & D. Sacc.* in Sylloge 18)
Laccaria ochropurpurea *(Berk.) Pk.*
N. Y. State Mus. Rep't 48, p.177. 1896. Bot. ed.
N. Y. State Mus. Rep't 50, p.128-29. 1897
N. Y. State Mus. Bul. 116, p.41-42, pl.106, fig. 7-11. 1907. (For Clitocybe ochropurpurea *Berk.*)
Laceripedes *Pk.*
Torr. Bot. Club Bul. 10, p.73. July 1883. (Section of genus Boletus)
N. Y. State Mus. Bul. 8, p.120-21. 1889
Lachnella bicolor *Pk.*
N. Y. State Mus. Rep't 54, p.157. 1901
Lachnella citrina *Pk.*
N. Y. State Mus. Rep't 46, p.35. 1893. Bot. ed.

Lactarius affinis *Pk.*
N. Y. State Cab. Rep't 23, p.116. 1872. Bot. ed.
N. Y. State Mus. Rep't 38, p.121–22. 1885
Lactarius albidus *Pk.*
N. Y. State Mus. Rep't 38, p.126. 1885
Lactarius alpinus *Pk.*
N. Y. State Mus. Rep't 27, p.96–97. 1875
N. Y. State Mus. Rep't 38, p.123–24. 1885
Lactarius aquifluus *Pk.*
N. Y. State Mus. Rep't 28, p.50–51. 1876
N. Y. State Mus. Rep't 32, p.56. 1879. (Note)
N. Y. State Mus. Rep't 50, p.130. 1897
N. Y. State Mus. Rep't 38, p.124. 1885. (As Lactarius helvus *Fr. var.* aquifluus *Pk.*)
Lactarius aquifluus brevissimus *Pk.*
N. Y. State Mus. Rep't 51, p.298. 1898
Lactarius atroviridis *Pk.*
N. Y. State Mus. Rep't 42, p.23. 1889. Bot. ed.
Lactarius brevis *Pk.*
N. Y. State Mus. Bul. 94, p.33, pl.Q, fig.1–5. 1905
N. Y. State Mus. Bul. 105, p.33. 1906. (Note)
Lactarius chelidonium *Pk.*
N. Y. State Mus. Rep't 24, p.74. 1872
N. Y. State Mus. Rep't 32, p.56. 1879. (Note)
N. Y. State Mus. Rep't 38, p.116. 1885
N. Y. State Mus. Bul. 25, p.677–78, pl.59, fig.1–6. 1899
N. Y. State Mus. Mem. 4, p.150–51, pl.53, fig.1–6. 1900
Lactarius cilicioides *Fr. var.* albus *Pk.*
N. Y. State Mus. Rep't 38, p.119. 1885
Lactarius cinereus *Pk.*
N. Y. State Mus. Rep't 24, p.73. 1872
N. Y. State Mus. Rep't 38, p.122. 1885
Lactarius colorascens *Pk.*
N. Y. State Mus. Bul. 94, p.33. 1905
Lactarius corrugis *Pk.*
N. Y. State Mus. Rep't 32, p.31. 1879
N. Y. State Mus. Rep't 38, p.130–31. 1885
Lactarius deceptivus *Pk.*
N. Y. State Mus. Rep't 38, p.125. 1885
N. Y. State Mus. Rep't 54, p.177–78, pl.70, fig.7–11. 1901
Lactarius distans *Pk.*
N. Y. State Cab. Rep't 23, p.117. 1872. Bot. ed.
N. Y. State Mus. Bul. 25, p.656, 678–79, pl.59, fig.7–11. 1899
N. Y. State Mus. Mem. 4, p.151–52, pl.53, fig.7–11. 1900
N. Y. State Mus. Rep't 38, p.129–30. 1885. (As Lactarius hygrophoroides *B. & C.*)
Lactarius foetidus *Pk.*
N. Y. State Mus. Bul. 54, p.949. 1902

Lactarius fumosus *Pk.*
N. Y. State Mus. Rep't 24, p.74. 1872
N. Y. State Mus. Rep't 38, p.128. 1885. (As Lactarius fuliginosus *Fr.*)
(Lactarius fuliginosus *Fr. var.* fumosus *Pk.* in Sylloge 5)
Lactarius gerardii *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.57. July 1873
N. Y. State Mus. Rep't 26, p.65. 1874
N. Y. State Mus. Rep't 38, p.129. 1885
N. Y. State Mus. Bul. 25, p.679, pl.59, fig.12–16. 1899
N. Y. State Mus. Mem. 4, p.152–53, pl.53, fig.12–16. 1900
Lactarius griseus *Pk.*
N. Y. State Cab. Rep't 23, p.120. 1872. Bot. ed.
N. Y. State Mus. Rep't 38, p.122–23. 1885
Lactarius helvus aquifluus *Pk.* (Lactarius aquifluus *Pk.*)
Lactarius hibbardae *Pk.*
Myc. Jour. 14:2. Jan. 1908
Lactarius lignyotus *Fr. var.* tenuipes *Pk.*
N. Y. State Mus. Rep't 38, p.129. 1885
Lactarius luteolus *Pk.*
Torr. Bot. Club Bul. 23, p.412. Oct. 1896
N. Y. State Mus. Bul. 67, p.23, 43, pl.83, fig.7–11. 1903
Lactarius maculatus *Pk.*
N. Y. State Mus. Rep't 41, p.74. 1888
N. Y. State Mus. Rep't 38, p.117. 1885. (As Lactarius uvidus *Fr. var.* magnus *Pk.*)
Lactarius mutabilis *Pk.*
N. Y. State Mus. Rep't 43, p.20, pl.1, fig.1–4. 1890. Bot. ed.
Lactarius paludinellus *Pk.*
N. Y. State Mus. Rep't 38, p.133. 1885
Lactarius parvus *Pk.*
N. Y. State Mus. Rep't 29, p.44. 1878
N. Y. State Mus. Rep't 38, p.127. 1885
Lactarius platyphyllus *Pk.*
N. Y. State Cab. Rep't 23, p.118. 1872. Bot. ed.
N. Y. State Mus. Rep't 38, p.131. 1885
Lactarius regalis *Pk.* (Lactarius resimus regalis *Pk.*)
Lactarius resimus *Fr. var.* regalis *Pk.*
N. Y. State Mus. Rep't 38, p.118. 1885
N. Y. State Mus. Rep't 39, p.57. 1886. (Note)
Buf. Soc. Nat. Sci. Bul. 1, p.57. July 1873. (As Lactarius regalis *Pk.*)
N. Y. State Mus. Rep't 26, p.64. 1874
Lactarius rimosellus *Pk.*
N. Y. State Mus. Bul. 105, p.24, 37, pl.95, fig.1–6. 1906
Lactarius rufulus *Pk.*
Torr. Bot. Club Bul. 34, p.346. July 1907
Lactarius salmoneus *Pk.*
Torr. Bot. Club Bul. 25, p.369. July 1898
Lactarius sordidus *Pk.*
N. Y. State Cab. Rep't 23, p.119, pl.2, fig.10–12. 1872. Bot. ed.
N. Y. State Mus. Rep't 38, p.120. 1885

Lactarius sordidus *Pk.* *var.* hirsutus *Pk.*
N. Y. State Mus. Rep't 32, p.56. 1879
Lactarius subdulcis oculatus *Pk.*
N. Y. State Mus. Bul. 67, p.37, 45, pl.83, fig.20-24. 1903
Lactarius subinsulsus *Pk.*
N. Y. State Mus. Rep't 43, p.19-20. 1890. Bot. ed.
Lactarius subpurpureus *Pk.*
N. Y. State Mus. Rep't 29, p.43-44. 1878
N. Y. State Mus. Rep't 32, p.56. 1879. (Note)
N. Y. State Mus. Rep't 38, p.115-16. 1885
N. Y. State Mus. Rep't 54, p.176-77, pl.70, fig.1-6. 1901
Lactarius subvellereus *Pk.*
Torr. Bot. Club Bul. 25, p.369. July 1898
Lactarius subvelutinus *Pk.*
N. Y. State Mus. Bul. 75, p.18-19. 1904
Lactarius sumstinei *Pk.*
Torr. Bot. Club Bul. 32, p.78. Feb. 1905
Lactarius trivialis *Fr.* *var.* gracilis *Pk.*; *var.* maculatus *Pk.*
N. Y. State Mus. Rep't 38, p.121. 1885
Lactarius uvidus magnus *Pk.* (Lactarius maculatus *Pk.*)
Lactarius varius *Pk.*
N. Y. State Mus. Rep't 38, p.126-27. 1885
Lactarius volemus *Fr.* *var.* subrugosus *Pk.*
N. Y. State Mus. Rep't 38, p.130. 1885
N. Y. State Mus. Rep't 48, p.187, pl.30, fig.6. 1896. Bot. ed.
Mushrooms and their Use, p.64. May 1897
Lactarius xanthogalactus *Pk.*
Torr. Bot. Club Bul. 34, p.346. July 1907
Laestadia aesculi *Pk.*
N. Y. State Mus. Rep't 39, p.51, pl.2, fig.15-19. 1886
Lasiosphaeria intricata *Pk.*
N. Y. State Mus. Bul. 2, p.23. 1887
N. Y. State Mus. Rep't 32, p.51. 1879. (As Sphaeria (Villosae) intricata *Pk.*)
Lasiosphaeria scopula *C. & P.* (Acanthostigma scopula *C. & P.*)
Lecythea macrosora *Pk.*
Bot. Gaz. 5:35. Mar. 1880. (Uredo macrosora *Pk.* in Sylloge 7)
Lecythea speciosa *Pk.*
Bot. Gaz. 3:34. Apr. 1878. (Uredo speciosa *Pk.* in Sylloge 7)
Lentinus americanus *Pk.*
Torr. Bot. Club Bul. 29, p.72. Feb. 1902
Lentinus magnus *Pk.*
Torr. Bot. Club Bul. 23, p.413-14. Oct. 1896
Lentinus microspermus *Pk.*
Torr. Bot. Club Bul. 33, p.216. Apr. 1906
Lentinus obconicus *Pk.*
Torr. Bot. Club Bul. 33, p.215. Apr. 1906
Lentinus spretus *Pk.*
N. Y. State Mus. Bul. 105, p.24. 1906

Lentinus umbilicatus *Pk.*
N. Y. State Mus. Rep't 28, p.51–52, pl.1, fig.15–19. 1876
N. Y. State Mus. Bul. 28, p.206. 1899. (Note)
Lentinus underwoodii *Pk.*
Torr. Bot. Club Bul. 23, p.414. Oct. 1896
Lentinus ventricosus *Pk.* (Armillaria ventricosa (*Pk.*) *Pk.*)
Lenzites betulina radiata *Pk.*
N. Y. State Mus. Bul. 54, p.965. 1902
Lenzites betulina rufozonata *Pk.*
N. Y. State Mus. Rep't 50, p.131. 1897
Lenzites sepiaria *Fr. var.* porosa *Pk.*
"Flora of Col."; Dep't Int. Pub. (Washington) 4:164. 1874
Lenzites vialis *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.59. July 1873
N. Y. State Mus. Rep't 26, p.67. 1874
Leotia punctipes *Pk.*
Torr. Bot. Club Bul. 34, p.102–3. Feb. 1907
Lepiota acerina *Pk.*
N. Y. State Mus. Rep't 51, p.283. 1898
Lepiota adnatifolia *Pk.*
N. Y. State Mus. Bul. 54, p.947. 1902
Agaricus (Lepiota) alluviinus *Pk.*
N. Y. State Mus. Rep't 35, p.157. 1884
Agaricus (Lepiota) americanus *Pk.*
N. Y. State Cab. Rep't 23, p.71. 1872. Bot. ed.
N. Y. State Mus. Rep't 25, p.108. 1873. (Note)
N. Y. State Mus. Rep't 32, p.54. 1879. (Note)
N. Y. State Mus. Rep't 35, p.159–60. 1884
N. Y. State Mus. Rep't 49, p.56–57, pl.44, fig.6–10. 1896. Bot. ed.
N. Y. State Mus. Mem. 4, p.136–37, pl.44, fig.11–16. 1900
Lepiota arenicola *Pk.*
N. Y. State Mus. Rep't 41, p.59. 1888
N. Y. State Mus. Rep't 51, p.298. 1898. (Note)
Lepiota brunnescens *Pk.*
Torr. Bot. Club Bul. 31, p.177. Apr. 1904
Lepiota coerulescens *Pk.*
Torr. Bot. Club Bul. 26, p.63. Feb. 1899
Agaricus (Lepiota) cristatellus *Pk.*
N. Y. State Mus. Rep't 31, p.31. 1879
N. Y. State Mus. Rep't 35, p.163. 1884
Lepiota earlei *Pk.*
Torr. Bot. Club Bul. 25, p.368–69. July 1898
Lepiota eriophora *Pk.*
Torr. Bot. Club Bul. 30, p.95. Feb. 1903
N. Y. State Mus. Bul. 116, p.25. 1907. (Note)
Lepiota farinosa *Pk.*
N. Y. State Mus. Rep't 43, p.35. 1890. Bot. ed.
Lepiota felinoides *Pk.*
Torr. Bot. Club Bul. 27, p.610. Dec. 1900

Lepiota fulvodisca *Pk.*
Torr. Bot. Club Bul. 22, p.198-99. May 1895
Agaricus (Lepiota) fuscosquameus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.41. July 1873
N. Y. State Mus. Rep't 26, p.50. 1874
N. Y. State Mus. Rep't 35, p.156-57. 1884
Lepiota glatfelteri *Pk.*
Torr. Bot. Club Bul. 31, p.177-78. Apr. 1904
Lepiota gracilis *Pk.*
Torr. Bot. Club Bul. 26, p.63. Feb. 1899
Lepiota granulosa *Batsch var.* albida *Pk.*
N. Y. State Mus. Rep't 41, p.82. 1888
Lepiota longistriata *Pk.*
Torr. Bot. Club Bul. 25, p.368. July 1898
Lepiota maculans *Pk.*
Torr. Bot. Club Bul. 32, p.77. Feb. 1905
Agaricus (Lepiota) morgani *Pk.*
Bot. Gaz. 4:137-38. Mar. 1879
Lepiota mutata *Pk.*
Torr. Bot. Club Bul. 23, p.411. Oct. 1896
Agaricus (Lepiota) naucinoides *Pk.*
N. Y. State Mus. Rep't 29, p.66. 1878. (Brief desc.)
N. Y. State Mus. Rep't 35, p.160-61. 1884
N. Y. State Mus. Rep't 48, p.162-64, pl.19. 1896. Bot. ed.
Mushrooms and their Use, p.46-48. fig. May 1897
N. Y. State Mus. Rep't 50, p.81. 1897. (Note)
N. Y. State Mus. Rep't 54, p.162. 1901. (Note)
N. Y. State Cab. Rep't 23, p.72. 1872. Bot. ed. (As Agaricus (Lepiota naucinus *Fr.*)
Lepiota naucinoides *Pk.* squamosa *Pk.*
N. Y. State Mus. Rep't 48, p.163. 1896. Bot. ed.
Lepiota nudipes *Pk.*
Torr. Bot. Club Bul. 33, p.213. Apr. 1906
Agaricus (Lepiota) oblitus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.41-42. July 1873
N. Y. State Mus. Rep't 26, p.50. 1874
N. Y. State Mus. Rep't 35, p.163-64. 1884
Lepiota pulveracea *Pk.*
N. Y. State Mus. Rep't 54, p.144. 1901
Agaricus (Lepiota) pusillomyces *Pk.*
N. Y. State Mus. Rep't 28, p.48, pl.1, fig.1-3. 1876
N. Y. State Mus. Rep't 35, p.162-63. 1884
Agaricus (Lepiota) rubropunctus *Pk.*
N. Y. State Mus. Rep't 35, p.155-56. 1884
Lepiota rugulosa *Pk.*
Torr. Bot. Club Bul. 27, p.15. Jan. 1900
Lepiota solidipes *Pk.*
N. Y. State Mus. Bul. 25, p.647. 1899
Lepiota sublilacea *Pk.*
Torr. Bot. Club Bul. 24, p.139. Mar. 1897

Lepiota xylophila *Pk.*
Torr. Bot. Club Bul. 34, p.97. Feb. 1907
Leptoglossum fumosum *Pk.*
N. Y. State Mus. Bul. 116, p.25. 1907
N. Y. State Mus. Rep't 43, p.40. 1890. Bot. ed. (As Geoglossum luteum *Pk. var.* fumosum *Pk.*)
Leptoglossum latum *Pk.*
Torr. Bot. Club Bul. *22*, p.201. May 1895
Leptonia abnormis *Pk.*
Myc. Jour. 14:2-3. Jan. 1908
Leptonia aeruginosa *Pk.*
Torr. Bot. Club Bul. *26*, p.65. Feb. 1899
Leptonia albinella *Pk.*
N. Y. State Mus. Bul. *2*, p.6-7. 1887
Leptonia edulis *Pk.*
Torr. Bot. Club Bul. *22*, p.201. May 1895
Agaricus (Leptonia) foliomarginatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.49. July 1873
N. Y. State Mus. Rep't *26*, p.56. 1874. (Leptonia marginata *Pk.* in Sylloge 5)
Leptonia grisea *Pk.*
N. Y. State Mus. Rep't 45, p.19. 1893. Bot. ed.
Leptonia hortensis *Pk.*
N. Y. State Mus. Bul. 67, p.26. 1903
Leptonia parva *Pk.*
N. Y. State Mus. Rep't 45, p.18-19. 1893. Bot. ed.
Agaricus (Leptonia) serrulatus *Pers. var.* pallida *Pk.*
N. Y. State Mus. Rep't 39, p.57. 1886
Leptonia subserrulata *Pk.*
N. Y. State Mus. Rep't 51, p.288. 1898
Leptonia transformata *Pk.*
N. Y. State Mus. Bul. 116, p.32. 1907
Agaricus (Leptonia) undulatellus *Pk.*
N. Y. State Mus. Rep't 31, p.33. 1879
Leptosphaeria asparagi *Pk.*
N. Y. State Mus. Rep't 40, p.70. 1887
Leptosphaeria corallorhizae *Pk.*
N. Y. State Mus. Rep't 38, p.105, pl.2, fig.20-23. 1885
Leptosphaeria eutypoides *Pk.*
N. Y. State Mus. Rep't 38, p.105. 1885
Leptosphaeria kalmiae *Pk.*
N. Y. State Mus. Rep't 39, p.53, pl.2, fig.10-14. 1886
Leptosphaeria lycopodiicola *Pk.*
N. Y. State Mus. Rep't 38, p.105, pl.2, fig.16-19. 1885
Leptosphaeria lythri *Pk.*
Torr. Bot. Club Bul. 33, p.220-21. Apr. 1906
Leptosphaeria substerilis *Pk.*
N. Y. State Mus. Bul. 105, p.24 25. 1906

Leptosphaeria variegata *Pk.*
N. Y. State Mus. Bul. 67, p.31-32. 1903
Leptostroma lineare *Pk.*
N. Y. State Mus. Rep't 30, p.51. 1878. (Leptostroma lineatum *Sacc.*)
Leptothyrium chromospermum *Pk.*
Bot. Gaz. 5:33. Mar. 1880
Leptothyrium spartinae *Pk.*
N. Y. State Mus. Rep't 47, p.25. 1894. Bot. ed.
Licea caespitosa *Pk.* (Perichaena caespitosa *Pk.*)
Licea ochracea *Pk.* (Fuligo ochracea *Pk.*)
Locellina starnesii *Pk.*
Torr. Bot. Club Bul. 29, p.72-73. Feb. 1902
Lophiostoma magnatum *C. & P.*
N. Y. State Mus. Rep't 26, p.86. 1874. (Name)
Grev. 4:180. pl.68, fig.4. June 1876. (Name)
N. Y. State Mus. Rep't 29, p.64. 1878
Lophiostoma obtectum *Pk.*
N. Y. State Mus. Rep't 30, p.65. 1878. (Lophidium obtectum (*Pk.*) *Sacc.*)
Lophiostoma prominens *Pk.*
N. Y. State Mus. Rep't 31, p.50. 1879
Lophiostoma scrophulariae *Pk.*
N. Y. State Mus. Rep't 28, p.76. 1876. (Lophiotrema scrophulariae (*Pk.*) *Sacc.*)
Lophiostoma spiraeae *Pk.*
N. Y. State Mus. Rep't 28, p.76. 1876. (Lophiotrema spiraeae (*Pk.*) *Sacc.*)
Lophiostoma triseptatum *Pk.*
N. Y. State Mus. Rep't 28, p.76. 1876
Lophiostoma turritum *C. & P.*
N. Y. State Mus. Rep't 26, p.86. 1874. (Name)
Grev. 4:180. pl.68, fig.3. June 1876. (Name)
N. Y. State Mus. Rep't 29, p.64. 1878
Lophiotrema parasiticum *Pk.*
N. Y. State Mus. Rep't 40, p.71. 1887
Lophiotrema spiraeae (*Pk.*) *Sacc. var.* adultum *Pk.*
N. Y. State Mus. Rep't 38, p.111. 1885
Lophiotrema vestitum *Pk.*
N. Y. State Mus. Rep't 40, p.71. 1887
Lophodermium petiolicolum *Fckl. var.* acerinum *Pk.*
N. Y. State Mus. Rep't 38, p.111. 1885
Lycoperdon atropurpureum *Vitt. var.* hirtellum *Pk.; var.* stellare *Pk.*
Alb. Inst. Trans. 9:303. 1879.
N. Y. State Mus. Rep't 32, p.66. 1879
Lycoperdon bellii *Pk.*
Torr. Bot. Club Bul. 22, p.209. 1895
Lycoperdon coloratum *Pk.*
N. Y. State Mus. Rep't 29, p.46. 1878
Alb. Inst. Trans. 9:313-14. 1879
N. Y. State Mus. Rep't 32, p.71-72. 1879

Lycoperdon frostii *Pk.*
Bot. Gaz. 4:139. Mar.1879
Alb. Inst. Trans. 9:301. 1879
Lycoperdon glabellum *Pk.*
N. Y. State Mus. Rep't 31, p.39. 1879
Alb. Inst. Trans. 9:304. 1879
N. Y. State Mus. Rep't 32, p.66–67. 1879
Lycoperdon pachydermum *Pk.*
Bot. Gaz. 7:54–55. May 1882
Lycoperdon pedicellatum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.63. July 1873
N. Y. State Mus. Rep't 26, p.73. 1874
Alb. Inst. Trans. 9:306. 1879
N. Y. State Mus. Rep't 32, p.68. 1879
Lycoperdon rimulatum *Pk.*
Wis. Acad. Sci. Trans. 7:117, pl.IX, fig.3. 1888
N. Y. State Mus. Rep't 49, p.21. 1896. Bot. ed. (Note) (As Lycoperdon simulatum *Pk.* in Sylloge 7)
Lycoperdon separans *Pk.* (Lycoperdon wrightii separans *Pk.*)
Lycoperdon subincarnatum *Pk.*
N. Y. State Mus. Rep't 24, p.83–84. 1872
Alb. Inst. Trans. 9:311–12. 1879
N. Y. State Mus. Rep't 32, p.70–71. 1879
N. Y. State Mus. Bul. 122, p.135, pl.114, fig.1–6. 1908
Lycoperdon warnei *Pk.* (Secotium warnei *Pk.*)
Lycoperdon wrightii *B. & C. var.* atropunctum *Pk.*
Alb. Inst. Trans. 9:305. 1879
N. Y. State Mus. Rep't 32, p.67. 1879
Lycoperdon wrightii *B. & C. var.* calvescens (*B. & C.*) *Pk.*
Alb. Inst. Trans. 9:315–16. 1879
N. Y. State Mus. Rep't 32, p.67. 1879
Lycoperdon wrightii *B. & C. var.* separans *Pk.*
Alb. Inst. Trans. 9:305. 1879
N. Y. State Mus. Rep't 32, p.67. 1879
N. Y. State Mus. Rep't 26, p.73. 1874. (As Lycoperdon separans *Pk.*) (Lycoperdon cruciatum *Rostk.*)
Lycoperdon wrightii *B. & C. var.* typicum *Pk.*
Alb. Inst. Trans. 9:305. 1879
N. Y. State Mus. Rep't 32, p.67. 1879
Macrophoma curvispora *Pk.*
Torr. Bot. Club Bul. 27, p.21. Jan. 1900. (Gloeosporium malicorticis *Cordley*)
Macrophoma philodendri *Pk.;* and *var.* maculicola *Pk.*
N. Y. State Mus. Rep't 46, p.38. 1893. Bot. ed.
Macrophoma tiliacea *Pk.*
Torr. Bot. Club Bul. 34, p.348. July 1907
Macrophoma versabilis *Pk.*
N. Y. State Mus. Rep't 46, p.30–31. 1893. Bot. ed.
Macrosporium amaranthi *Pk.*
Torr. Bot. Club Bul. 22, p.493. Dec. 1895

Macrosporium chartarum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.60. July 1873
N. Y. State Mus. Rep't 25, p.93. 1873
Macrosporium clematidis *Pk.*
Torr. Bot. Club Bul. 22, p.493. Dec. 1895
Macrosporium meliloti *Pk.*
N. Y. State Mus. Rep't 33, p.28. 1880
Macrosporium polytrichi *Pk.*
N. Y. State Mus. Rep't 43, p.31. 1890. Bot. ed.
Macrosporium saponariae *Pk.*
N. Y. State Mus. Rep't 28, p.62-63. 1876
Macrosporium transversum *Pk.*
N. Y. State Mus. Rep't 35, p.139. 1884
Marasmius acerinus *Pk.*
N. Y. State Mus. Bul. 25, p.648. 1899
Marasmius albiceps *Pk.*
N. Y. State Mus. Rep't 43, p.21, pl.2, fig.15-18. 1890. Bot. ed.
Marasmius anomalus *Pk.*
N. Y. State Mus. Rep't 24, p.76. 1872
Marasmius badiceps *Pk.*
Torr. Bot. Club Bul. 24, p.142. Mar. 1897
Torr. Bot. Club Bul. 22, p.487. Dec. 1895. (As Marasmius badius *Pk.*)
Marasmius badius *Pk.* (Marasmius badiceps *Pk.*)
Marasmius biformis *Pk.*
N. Y. State Mus. Bul. 67, p.25. 1903
Marasmius caespitosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.58. July 1873
N. Y. State Mus. Rep't 26, p. 65-66. 1874
Marasmius campanulatus *Pk.*
N. Y. State Cab. Rep't 23, p.126. 1872. Bot. ed.
N. Y. State Mus. Bul. 105, p. 34. 1906. (As Marasmius siccus *Schw.*)
Marasmius copelandi *Pk.*
Torr. Bot. Club Bul. 31, p.182. Apr. 1904
Marasmius decurrens *Pk.* (Marasmius resinosus *Pk.*)
Marasmius elongatipes *Pk.*
Buf. Soc. Nat. Sci. Bul. 4, p.181. Apr. 1882
Buf. Soc. Nat. Sci. Bul. 1, p 58. July 1873. (As Marasmius longipes *Pk.*)
N. Y. State Mus. Rep't 26, p.66. 1874
Marasmius filopes *Pk.*
N. Y. State Mus. Rep't 24, p.77, pl.4, fig.27-29. 1872
Marasmius glabellus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.58. July 1873
N. Y. State Mus. Rep't 26, p.66. 1874
Marasmius gregarius *Pk.*
Torr. Bot. Club Bul. 23, p.413. Oct. 1896
Marasmius leptopus *Pk.*
N. Y. State Mus. Bul. 67, p.25-26. 1903
Marasmius longipes *Pk.* (Marasmius elongatipes *Pk.*)
Marasmius longistriatus *Pk.*
N. Y. State Mus. Bul. 105, p.25, pl.S, fig.1-4. 1906

Marasmius minutissimus *Pk.*
N. Y. State Mus. Rep't 27, p.97, pl.2, fig.27–28. 1875
Marasmius minutus *Pk.*
N. Y. State Mus. Rep't 27, p.97. 1875
Marasmius papillatus *Pk.*
N. Y. State Mus. Rep't 24, p.76–77. 1872
Marasmius phyllophilus *Pk.*
N. Y. State Mus. Bul. 116, p.26. 1907
Marasmius plicatulus *Pk.*
Torr. Bot. Club Bul. 24, p.142. Mar. 1897
Marasmius polyphyllus *Pk.*
N. Y. State Mus. Rep't 51, p.286. 1898
Marasmius pulcherripes *Pk.*
N. Y. State Mus. Rep't 24, p.77, pl.4, fig.19–22. 1872
Marasmius ramulinus *Pk.*
N. Y. State Mus. Rep't 51, p.286. 1898
Marasmius resinosus *Pk.*
Saccardo's Sylloge 5:522. 1887
N. Y. State Mus. Rep't 24, p.77. 1872. (As Marasmius decurrens *Pk.*)
Marasmius resinosus candidissimus *Pk.* (Marasmius resinosus niveus *Pk.*)
Marasmius resinosus niveus *Pk.*
N. Y. State Mus. Bul. 67, p.38. 1903
N. Y. State Mus. Bul. 94, p.40. 1905. (As Marasmius resinosus *Pk.* *var.* candidissimus *Pk.*)
Marasmius salignus *Pk.*
N. Y. State Mus. Rep't 35, p.135. 1884
N. Y. State Mus. Rep't 45, p.32. 1893. Bot. ed.
N. Y. State Mus. Bul. 105, p.34. 1906. (Note)
N. Y. State Mus. Rep't 42, p.19. 1889. Bot. ed. (As Omphalia tubaeformis *Pk.*)
Marasmius salignus *Pk.* *var.* major *Pk.*
N. Y. State Mus. Rep't 41, p.85. 1888
Marasmius semihirtipes *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.57–58. July 1873
N. Y. State Mus. Rep't 25, p.79–80. 1873
Marasmius straminipes *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.59. July 1873
N. Y. State Mus. Rep't 26, p.66. 1874
Marasmius striatipes *Pk.*
N. Y. State Mus. Rep't 24, p.76. 1872
Marasmius subnudus (*Ellis*) *Pk.*
N. Y. State Mus. Rep't 51, p.287–88. 1898. (Marasmius peronatus subnudus *Ellis*)
Marasmius subpilosus *Pk.*
Torr. Bot. Club Bul. 30, p.95. Feb. 1903
Marasmius subtomentosus *Pk.*
Torr. Bot. Club Bul. 22, p.487. Dec. 1895
Marasmius subvenosus *Pk.*
N. Y. State Cab. Rep't 23, p.125, pl.6, fig.15–21. 1872. Bot. ed.

Marasmius sutliffae *Pk.*
Torr. Bot. Club Bul. 32, p.78. Feb. 1905
Marasmius thujinus *Pk.*
N. Y. State Mus. Bul. 67, p.26. 1903
Marasmius tomentosipes *Pk.*
Torr. Bot. Club Bul. 29, p.71. Feb. 1902
N. Y. State Mus. Bul. 67, p.25. 1903. (Note)
Marasmius umbonatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.58. July 1873
N. Y. State Mus. Rep't 25, p.80. 1873
Marasmius vialis *Pk.*
N. Y. State Mus. Rep't 51, p.287. 1898
Marsonia potentillae helleri *Pk.*
Torr. Bot. Club Bul. 33, p.219. Apr. 1906
Marsonia quercus *Pk.*
N. Y. State Mus. Rep't 38, p.99. 1885
Massariella curreyi *Tul. var.* americana *Pk.*
N. Y. State Mus. Rep't 47, p.24. 1894. Bot. ed.
Massariella xanthoxyli *Pk.*
N. Y. State Mus. Rep't 46, p.36. 1893. Bot. ed.
Massospora *Pk.*
N. Y. State Mus. Rep't 31, p.44. 1879
Massospora cicadina *Pk.*
N. Y. State Mus. Rep't 31, p.19–20, 44. 1879
N. Y. State Mus. Rep't 54, p.172. 1901. (Note)
Melanconis elliptica *Pk.* (Diatrype elliptica *Pk.*)
Melanconium americanum *Pk. & Clint.*
N. Y. State Mus. Rep't 31, p.43. 1879
Melanconium cerasinum *Pk.*
N. Y. State Mus. Rep't 33, p.26–27. 1880
Melanconium coloratum *Pk.*
Torr. Bot. Club Bul. 10, p.74. July 1883. (Myxosporium coloratum (*Pk.*) *Sacc.*)
Melanconium dimorphum *Pk.*
N. Y. State Mus. Rep't 40, p.62. 1887
Melanconium foliicolum *Pk.*
N. Y. State Mus. Rep't 42, p.31. 1889. Bot. ed.
Melanconium intermedium *Pk.*
N. Y. State Mus. Rep't 30, p.53. 1878
Melanconium pallidum *Pk.*
N. Y. State Mus. Rep't 29, p.49, pl.1, fig.7–8. 1878
Melanconium populinum *Pk.*
Torr. Bot. Club Bul. 10, p.74. July 1883
Melanconium tiliae *Pk.*
N. Y. State Mus. Rep't 42, p.31. 1889. Bot. ed.
Melanconium typhae *Pk.*
Bot. Gaz. 6:275. Oct. 1881
Melasmia imitans *Pk.*
Torr. Bot. Club Bul. 22, p.209–10. May 1895

Meliola balsamicola *Pk.*
N. Y. State Mus. Rep't 34, p.52, pl.1, fig.22–27. 1881. (Zukalia ? balsamicola *Pk.* in Sylloge 9)
Melogramma effusum *Pk.*
N. Y. State Mus. Rep't 47, p.26. 1894. Bot. ed.
Melogramma superficialis *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.57–58. 1878. (Fenestella superficialis (*P. & C.*) *Sacc.*)
Merulius irpicinus *Pk.*
N. Y. State Mus. Rep't 47, p.18–19. 1894. Bot. ed.
Merulius lacrymans *Fr. var.* terrestris *Pk.*
N. Y. State Mus. Rep't 49, p.31. 1896. Bot. ed. (*var.* terrestris *Ferry* 1895)
Merulius pruni *Pk.*
N. Y. State Mus. Bul. 105, p.25. 1906
Merulius rubellus *Pk.*
Bot. Gaz. 7:44. Apr. 1882
Merulius (Resupinati) subaurantiacus *Pk.*
N. Y. State Mus. Rep't 38, p.93. 1885
Merulius sulcatus *Pk.*
Bot. Gaz. 4:138–39. Mar. 1879
Merulius tenuis *Pk.*
N. Y. State Mus. Rep't 47, p.19. 1894. Bot. ed.
N. Y. State Mus. Rep't 41, p.78. 1888. (As Merulius himantioides *Fr.*)
Merulius ulmi *Pk.*
N. Y. State Mus. Bul. 105, p.26. 1906
Metasphaeria myricae *Pk.*
N. Y. State Mus. Rep't 38, p.105, pl.2, fig.24–27. 1885
Metasphaeria nuda *Pk.*
N. Y. State Mus. Rep't 44, p.29. 1891. Bot. ed.
Metasphaeria taxicola *Pk.*
N. Y. State Mus. Rep't 39, p.58. 1886
N. Y. State Mus. Rep't 24, p.99. 1872. (As Sphaeria taxicola *Pk.*)
Microglossum contortum *Pk.*
Torr. Bot. Club Bul. 25, p.328. June 1898
Microglossum obscurum *Pk.*
Torr. Bot. Club Bul. 26, p.71. Feb. 1899
Micropera nemopanthis *Pk.*
N. Y. State Mus. Rep't 46, p.31. 1893. Bot. ed.
Microsphaera abbreviata *Pk.*
N. Y. State Mus. Rep't 28, p.64, pl.2, fig.4–5. 1876
Microsphaera ceanothi (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 39, p.50. 1886. (Erysiphe ceanothi *Schw.*)
Microsphaera densissima (*Schw.*) *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1):171. June 1872. (Erysiphe densissima *Schw.*)
Microsphaera diffusa *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1):13. Jan. 1872
N. Y. State Mus. Rep't 25, p.95. 1873

Microsphaera erineophila *Pk.*
Torr. Bot. Club Bul. 10, p.75. July 1883
Microsphaera extensa *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :12. Jan. 1872
N. Y. State Mus. Rep't 25, p.95. 1873
Microsphaera friesii *Lev. var.* castaneae *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :13. Jan. 1872
Microsphaera friesii *Lev. var.* syringae (*Schw.*) *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :12. Jan. 1872. (Erysiphe syringae *Schw.*)
Microsphaera friesii *Lev. var.* vaccinii (*Schw.*) *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :12-13. Jan. 1872. (Erysiphe vaccinii *Schw.*)
Microsphaera nemopanthis *Pk.*
N. Y. State Mus. Rep't 38, p.102. 1885
Microspaera penicillata *Lev. var.* alni (*Tul.*) *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :171. June 1872. (Erysiphe alni *Tul.*)
Microsphaera pulchra *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :12. Jan. 1872
N. Y. State Mus. Rep't 25, p.95. 1873
Microsphaera vaccinii *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :13. Jan. 1872
N. Y. State Cab. Rep't 23, p.65. 1872. Bot. ed.
Milleria *Pk.*
N. Y. State Mus. Rep't 31, p.40. 1879. (Testicularia *Klotz.*)
Milleria herbatica *Pk.*
N. Y. State Mus. Rep't 31, p.40. 1879. (Testicularia cyperi *Klotz.*)
Mitrula gracilis *Karst. var.* flavipes *Pk.*
N. Y. State Mus. Rep't 49, p.32. 1896. Bot. ed.
Mitrula vitellina *Sacc. var.* irregularis *Pk.*
N. Y. State Mus. Rep't 48, p.130-31, pl.5, fig.8-14. 1896. Bot. ed. (Desc.)
•N. Y. State Mus. Rep't 32, p.45. 1879. (As Geoglossum irregulare *Pk.*)
N. Y. State Mus. Bul. 2, p.28, pl.1, fig.5-7. 1887. (Note) (Geoglossum vitellinum *Bres.*)
Mitruliopsis *Pk.*
Torr. Bot. Club Bul. 30, p.100. Feb. 1903
Mitruliopsis flavida *Pk.*
Torr. Bot. Club Bul. 30, p.100. Feb. 1903
Mollisia pallidior *Pk.*
N. Y. State Mus. Bul. 116, p.37. 1907
N. Y. State Mus. Rep't 32, p.47. 1879. (As Peziza (Mollisia) typhae *Pk.*)
Monilia aurantiaca *Pk. & Sacc.*
N. Y. State Mus. Rep't 42, p.32. 1889. Bot. ed.
Monilia avenae *Pk.*
Torr. Bot. Club Bul. 33, p.219. Apr. 1906
Monilia candida *Pk.*
N. Y. State Mus. Rep't 27, p.106. 1875. (Monilia mycophila *Sacc.*)

Monilia effusa *Pk.*
N. Y. State Mus. Rep't 42, p.32. 1889. Bot. ed.
Monilia harknessii *Pk.*
N. Y. State Mus. Rep't 34, p.49. 1881
Monotospora biseptata *Pk.*
N. Y. State Mus. Rep't 28, p.62, pl.1, fig.5-8. 1876
Buf. Soc. Nat. Sci. Bul. 4, p.211. Apr. 1882. (Helminthosporium obovatum *Berk.*) (Brachysporium obovatum (*Berk.*) *Sacc.*, forma americana *Sacc.*)
Monotospora triseptata *Pk.*
N. Y. State Mus. Rep't 24, p.94, pl.1, fig.14-17. 1872. (Brachysporium apicale (*B. & Br.*) *Sacc.*)
Morchella angusticeps *Pk.*
N. Y. State Mus. Rep't 32, p.44-45. 1879
N. Y. State Mus. Bul. 2, p.19-20, pl.1, fig.19-20. 1887
N. Y. State Mus. Rep't 48, p.125, pl.4, fig.5-9. 1896. Bot. ed.
Mushrooms and their Use, p.17-19. fig. May 1897
Morchella bispora *Sor. var.* truncata *Pk.*
N. Y. State Mus. Rep't 46, p.38. 1893. Bot. ed.
Morchella esculenta *Fr. var.* longipes *Pk.*
N. Y. State Mus. Rep't 28, p.87. 1876
Morchella punctipes *Pk.*
Torr. Bot. Club Bul. 30, p.99-100. Feb. 1903
Mucor inaequalis *Pk.*
N. Y. State Mus. Rep't 26, p.79. 1874
N. Y. State Mus. Rep't 34, p.31-32, pl.3, fig.16-18. 1881
Mucronella minutissima *Pk.*
N. Y. State Mus. Rep't 44, p.22. 1891. Bot. ed.
Mucronella minutissima conferta *Pk.*
N. Y. State Mus. Bul. 54, p.966. 1902
Mucronella ulmi *Pk.*
N. Y. State Mus. Rep't 54, p.154. 1901
Mycena albogrisea *Pk.*
N. Y. State Mus. Bul. 116, p.27. 1907
Agaricus (Mycena) amabillissimus *Pk.*
N. Y. State Mus. Rep't 39, p.39. 1886
Agaricus (Mycena) atroalboides *Pk.*
N. Y. State Mus. Rep't 27, p.93. 1875
Mycena caesia *Pk.*
Torr. Bot. Club Bul. 22, p.486. Dec. 1895
Mycena capillaripes *Pk.*
N. Y. State Mus. Rep't 41, p.63. 1888
Agaricus (Mycena) clavicularis *Fr. var.* albus *Pk.*; *var.* cinereus *Pk.*; and *var.* filipes *Pk.*
N. Y. State Mus. Rep't 38, p.109. 1885
Agaricus (Mycena) constans *Pk.*
N. Y. State Mus. Rep't 27, p.93. 1875
Mycena crystallina *Pk.*
N. Y. State Mus. Rep't 41, p.63-64. 1888

Mycena cyaneobasis *Pk.*
N. Y. State Mus. Rep't 51, p.284-85, pl.B, fig.1-7. 1898
Agaricus (Mycena) delectabilis *Pk.*
N. Y. State Mus. Rep't 27, p.93-94, pl.1, fig.22-25. 1875
Mycena denticulata *Pk.*
Torr. Bot. Club Bul. 32, p.77. Feb. 1905
Mycena elegantula *Pk.*
Torr. Bot. Club Bul. 22, p.199-200. May 1895
Agaricus (Mycena) galericulatus *Scop. var.* expansus *Pk.; var.* longipes *Pk.*
N. Y. State Mus. Rep't 26, p.90. 1874
Mycena hemisphaerica *Pk.*
N. Y. State Mus. Rep't 46, p.24. 1893. Bot. ed.
Agaricus (Mycena) immaculatus *Pk.*
N. Y. State Mus. Rep't 38, p.84-85. 1885
Agaricus (Mycena) latifolius *Pk.*
N. Y. State Cab. Rep't 23, p.81-82, pl.6, fig.8-14. 1872. Bot. ed.
N. Y. State Mus. Rep't 54, p.164. 1901. (Note)
Agaricus (Mycena) leptophyllus *Pk.*
N. Y. State Mus. Rep't 24, p.63. 1872
Agaricus (Mycena) luteopallens *Pk.*
N. Y. State Mus. Rep't 32, p.27. 1879
N. Y. State Mus. Bul. 2, p.12. 1887
Agaricus (Mycena) minutulus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.47. July 1873
N. Y. State Mus. Rep't 25, p.75-76. 1873
Agaricus (Mycena) miratus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.48. July 1873
N. Y. State Mus. Rep't 26, p.55. 1874
Agaricus (Mycena) odorifer *Pk.*
N. Y. State Mus. Rep't 30, p.39. 1878
Agaricus (Mycena) paluster *Pk.*
N. Y. State Cab. Rep't 23, p.82, pl.5, fig.6-11. 1872. Bot. ed.
Agaricus (Mycena) praelongus *Pk.*
N. Y. State Cab. Rep't 23, p.81. 1872. Bot. ed.
Agaricus (Mycena) pulcherrimus *Pk.*
N. Y. State Cab. Rep't 23, p.83. 1872. Bot. ed.
Agaricus (Mycena) purpureofuscus *Pk.*
N. Y. State Mus. Rep't 38, p.85. 1885
Agaricus (Mycena) radicatellus *Pk.*
N. Y. State Mus. Rep't 31, p.32. 1879
Agaricus (Mycena) roseocandidus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.47-48. July 1873
N. Y. State Mus. Rep't 25, p.76. 1873
Mycena rugosoides *Pk.*
N. Y. State Mus. Bul. 67, p.22-23, pl.M, fig.17-34. 1903
Mycena strobilinoidea *Pk.*
N. Y. State Mus. Rep't 45, p.23. 1893. Bot. ed.
Agaricus (Mycena) subcaeruleus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.47. July 1873
N. Y. State Mus. Rep't 25, p.75. 1873

Agaricus (Mycena) subincarnatus *Pk.*
N. Y. State Cab. Rep't 23, p.83. 1872. Bot. ed.
Agaricus (Mycena) vexans *Pk.*
N. Y. State Mus. Rep't 38, p.85. 1885
Mycenastrum spinulosum *Pk.*
Bot. Gaz. 6:240. July 1881
N. Y. State Mus. Bul. 54, p.957. 1902. (Note)
Bot. Gaz. 4:170. June 1879. (As Bovista spinulosa *Pk.*)
Myriadoporus *Pk.*
Torr. Bot. Club Bul. 11, p.27. Mar. 1884
N. Y. State Mus. Rep't 41, p.85. 1888. (Note)
Myriadoporus adustus *Pk.*
Torr. Bot. Club Bul. 11, p.27. Mar. 1884
Myriadoporus induratus *Pk.*
Millspaugh's "Prel. Cat. Flora W. Va." p.505. June 1892
N. Y. State Mus. Rep't 31, p.37. 1879. (As Polyporus (Resupinati) induratus *Pk.*)
Myrothecium fungicola *Pk.*
N. Y. State Mus. Rep't 26, p.79. 1874
N. Y. State Mus. Rep't 32, p.57. 1879. (Note)
Myxormia populina *Pk.*
N. Y. State Mus. Rep't 25, p.109. 1873. (Note)
N. Y. State Mus. Rep't 24, p.88. 1872. (As Torula populina *Pk.*)
Myxosporium necans *Pk.*
N. Y. State Mus. Bul. 122, p.23, 160. 1908
Naematelia atrata *Pk.*
N. Y. State Mus. Rep't 24, p.83. 1872
Napicladium gramineum *Pk.*
N. Y. State Mus. Rep't 46, p.34. 1893. Bot. ed.
Naucoria autumnalis *Pk.* (Pholiota autumnalis *Pk.*)
Agaricus (Naucoria) bellulus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.51. July 1873
N. Y. State Mus. Rep't 26, p.58. 1874
Agaricus (Naucoria) contrarius *Pk.*
N. Y. State Mus. Rep't 30, p.41. 1878
Agaricus (Naucoria) curvomarginatus *Pk.*
N. Y. State Cab. Rep't 23, p.92–93, pl.2, fig.1–5. 1872. Bot. ed.
Agaricus (Naucoria) discomorbidus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.52. July 1873
N. Y. State Mus. Rep't 26, p.58. 1874
Agaricus (Naucoria) elatior *Pk.*
N. Y. State Mus. Rep't 39, p.41. 1886
Naucoria firma *Pk.*
N. Y. State Mus. Rep't 54, p.148, pl.II, fig.10–16. 1901
Agaricus (Naucoria) fulvus *Pk.*
N. Y. State Cab. Rep't 23, p.92. 1872. Bot. ed.
Agaricus (Naucoria) geminellus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.51–52. July 1873
N. Y. State Mus. Rep't 26, p.58. 1874
Naucoria highlandensis *Pk.* (Flammula highlandensis *Pk.*)

Agaricus (Naucoria) lenticeps *Pk.*
N. Y. State Mus. Rep't 31, p.34. 1879
Agaricus (Naucoria) lignicola *Pk.*
N. Y. State Cab. Rep't 23, p.91-92. 1872. Bot. ed.
Naucoria paludosa *Pk.*
N. Y. State Mus. Rep't 41, p.68. 1888
Naucoria platysperma *Pk.*
So. Cal. Acad. Sci. Proc. 1, p.383. June 1897. (Name)
Torr. Bot. Club Bul. 25, p.324. June 1898
Agaricus (Naucoria) pruinatipes *Pk.*
N. Y. State Mus. Rep't 29, p.39. 1878
Naucoria scirpicola *Pk.*
N. Y. State Mus. Rep't 42, p.19-20, pl.2, fig.6-10. 1889. Bot. ed.
Naucoria sororia *Pk.*
Torr. Bot. Club Bul. 34, p.101. Feb. 1907
Naucoria tabacina bicolor *Pk.*
Torr. Bot. Club Bul. 34, p.347. July 1907
Naucoria uliginosa *Pk.*
N. Y. State Mus. Rep't 54, p.149, pl.H, fig.1-9. 1901
Naucoria unicolor *Pk.*
N. Y. State Mus. Rep't 41, p.68-69. 1888
Agaricus (Naucoria) vernalis *Pk.*
N. Y. State Cab. Rep't 23, p.91. 1872. Bot. ed.
Nectria apocyni *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.71. July 1873
N. Y. State Mus. Rep't 26, p.84-85. 1874
Nectria balsamea *C. & P.*
N. Y. State Mus. Rep't 26, p.84. 1874. (Name)
Buf. Soc. Nat. Sci. Bul. 4, p.225. Apr. 1882. (Name) (Chilonectria rosellinii (*Carest.*) *Sacc.*)
Grev. 12:81. Mar. 1884. (Desc.)
Nectria celastri (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 26, p.84. 1874. (For Sphaeria celastri *Schw.*)
Nectria mycetophila *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.71. July 1873
N. Y. State Mus. Rep't 26, p.85. 1874. (Nectriella mycetophila (*Pk.*) *Sacc.*)
Nidula microcarpa *Pk.*
Torr. Bot. Club Bul. 29, p.272, pl.17, fig.1-6; pl.18, fig.14, 15, 17. May 1902
Nidularia candida *Pk.*
N. Y. State Mus. Rep't 45, p.24. 1893. Bot. ed.
Torr. Bot. Club Bul. 29, p.271-72, pl. 16, fig.17-20. May 1902
Harriman Alaska Exped. 5:41. 1904. (Note)
Nodularia *Pk.*
N. Y. State Mus. Rep't 24, p.96. 1872
Nodularia acericola *Pk.* (Pezicula acericola *Pk.*)

Nodularia balsamicola *Pk.*

N. Y. State Mus. Rep't 24, p.96, pl.4, fig.23–26. 1872

Buf. Soc. Nat. Sci. Bul. 4, p.190. Apr. 1882. (Corticium amorphum (*Pers.*) *Fr.*)

Agaricus (Nolanea) clintonianus *Pk.*

N. Y. State Mus. Rep't 24, p.67. 1872

Agaricus (Nolanea) conicus *Pk.*

N. Y. State Mus. Rep't 24, p.66. 1872

Agaricus (Nolanea) delicatulus *Pk.*

N. Y. State Mus. Rep't 24, p.66–67. 1872

Nolanea fibrillosa *Pk.*

N. Y. State Mus. Rep't 54, p.147, pl.I, fig.12–19. 1901

Agaricus (Nolanea) fuscofolius *Pk.*

Buf. Soc. Nat. Sci. Bul. 1, p.49. July 1873

N. Y. State Mus. Rep't 26, p.56. 1874

Agaricus (Nolanea) fuscogrisëllus *Pk.*

N. Y. State Mus. Rep't 39, p.40. 1886

Nolanea suaveolens *Pk.*

N. Y. State Mus. Bul. 122, p.23, 159. 1908

Odontia acerina *Pk.*

N. Y. State Mus. Rep't 53, p.847. 1900

Odontia fimbriata *Pers. var.* rimosa *Pk.*

N. Y. State Mus. Rep't 40, p.76. 1887

Odontia hydnoidea (*Schw.*) *Pk.*

N. Y. State Mus. Bul. 67, p.39. 1903. (Note) (For Phlebia hydnoidea *Schw.*)

Odontia rimosissima *Pk.*

N. Y. State Mus. Rep't 50, p.114. 1897

N. Y. State Mus. Rep't 53, p.847. 1900. (Note)

Odontia tenuis *Pk.*

N. Y. State Mus. Rep't 44, p.22. 1891. Bot. ed.

N. Y. State Mus. Rep't 53, p.847. 1900. Bot. ed.

Oedocephalum intermixtum *Pk.*

N. Y. State Mus. Rep't 50, p.116. 1897

Oidium albipes *Pk.*

N. Y. State Mus. Rep't 30, p.57. 1878. (Oöspora albipes (*Pk.*) *Sacc.*)

Oidium corticale *Pk.*

N. Y. State Mus. Rep't 27, p.105, pl.2, fig.7–8. 1875. (Torula corticalis (*Pk.*) *Sacc.*)

Oidium destruens *Pk.*

N. Y. State Mus. Rep't 32, p.41–42. 1879. (Monilia lindhartiana *Sacc.*)

Oidium irregulare *Pk.*

N. Y. State Mus. Rep't 33, p.29. 1880. (Note) (Ovularia isarioides *Sacc.*)

Oligonema brevifilum *Pk.*

N. Y. State Mus. Rep't 31, p.42. 1879

Conn. Acad. Arts & Sci. Trans. 10:488–89. pl.LXI, fig.25. Mar. 1900. (As Oligonema flavidum brevifilum *Pk.*)

Oligonema flavidum *Pk.*
N. Y. State Mus. Rep't 31, p.42, 56. 1879
Buf. Soc. Nat. Sci. Bul. 1, p.65. July 1873. (As Perichaena flavida *Pk.*)
N. Y. State Mus. Rep't 26, p.76. 1874
Ombrophila albiceps *Pk.*
N. Y. State Mus. Rep't 42, p.34, pl.2, fig.1-5. 1889. Bot. ed.
Omphalia albidula *Pk.*
N. Y. State Mus. Rep't 49, p.17. 1896. Bot. ed.
Omphalia aurantiaca *Pk.*
Torr. Bot. Club Bul. 25, p.323. June 1898
Agaricus (Omphalia) austini *Pk.*
N. Y. State Mus. Rep't 28, p.48. 1876
N. Y. State Mus. Rep't 45, p.42. 1893. Bot. ed.
Omphalia campanella sparsa *Pk.*
N. Y. State Mus. Bul. 54, p.964. 1902
Omphalia chrysea *Pk.* (Omphalia chrysophylla chrysea *Pk.*)
Omphalia chrysophylla *Fr. var.* chrysea *Pk.*
N. Y. State Mus. Rep't 45, p.36. 1893. Bot. ed.
N. Y. State Cab. Rep't 23, p.85. 1872. Bot. ed. (As Agaricus (Omphalia) chryseus *Pk.*)
Omphalia clavata *Pk.*
N. Y. State Mus. Rep't 51, p.285. 1898
Omphalia corticola *Pk.*
N. Y. State Mus. Rep't 44, p.18, pl.2, fig.8-12. 1891. Bot. ed.
N. Y. State Mus. Rep't 45, p.40-41. 1893. Bot. ed.
Omphalia curvipes *Pk.*
Torr. Bot. Club Bul. 34, p.345-46. July 1907
Omphalia eximia *Pk.*
Torr. Bot. Club Bul. 25, p.370. July 1898
Agaricus (Omphalia) fibula *Bull. var.* conicus *Pk.*
N. Y. State Mus. Rep't 38, p.109. 1885
N. Y. State Mus. Rep't 45, p.40. 1893. Bot. ed.
Agaricus (Omphalia) fibuloides *Pk.*
N. Y. State Mus. Rep't 24, p.63. 1872
N. Y. State Mus. Rep't 45, p.39. 1893. Bot. ed.
Omphalia gerardiana *Pk.* (Clitocybe gerardiana *Pk.*)
Agaricus (Omphalia) lilacifolius *Pk.*
N. Y. State Mus. Rep't 29, p.66. 1878
N. Y. State Mus. Rep't 45, p.34. 1893. Bot. ed.
N. Y. State Mus. Rep't 24, p.63, pl.1, fig.10-13. 1872. (As Agaricus (Omphalia) lilacinus *Pk.*)
Omphalia lilacina *Pk.* (Omphalia lilacifolia *Pk.*)
Omphalia luteola *Pk.*
Torr. Bot. Club Bul. 23, p.411-12. Oct. 1896
Agaricus (Omphalia) montanus *Pk.*
N. Y. State Mus. Rep't 27, p.94. 1875.
N. Y. State Mus. Rep't 45, p.37-38. 1893. Bot. ed. (Mycena montana *Pk.* in Sylloge 5)

Agaricus (Omphalia) oculus *Pk.*
N. Y. State Cab. Rep't 23, p.84-85. 1872. Bot. ed.
N. Y. State Mus. Rep't 45, p.34-35. 1893. Bot. ed.
Agaricus (Omphalia) olivarius *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.48. July 1873
N. Y. State Mus. Rep't 25, p.76. 1873
N. Y. State Mus. Rep't 45, p.35. 1893. Bot. ed.
Omphalia papillata *Pk.*
N. Y. State Mus. Rep't 51, p.285. 1898
Omphalia pubescentipes *Pk.*
Torr. Bot. Club Bul. 24, p.141-42. Mar. 1897
Omphalia pusillissima *Pk.*
N. Y. State Mus. Bul. 116, p.27. 1907
Omphalia pyxidata *Bull. var.* furcata *Pk.*
H. A. Reid's "History of Pasadena, Cal." p.620. 1895. (Name)
Agaricus (Omphalia) rhododendri *Pk.*
N. Y. State Mus. Rep't 27, p.94, pl.2, fig.15-19. 1875
N. Y. State Mus. Rep't 45, p.41-42. 1893. Bot. ed.
Agaricus (Omphalia) rugosodiscus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.48. July 1873
N. Y. State Mus. Rep't 26, p.55. 1874
N. Y. State Mus. Rep't 45, p.34. 1893. Bot. ed.
N. Y. State Mus. Rep't 31, p.54. 1879. (As Agaricus (Collybia) rugosodiscus *Pk.*)
Omphalia scabriuscula *Pk.* (Omphalia umbellifera scabriuscula *Pk.*)
Omphalia semivestipes *Pk.*
Torr. Bot. Club Bul. 22, p.200. May 1895
Harriman Alaska Exped. 5:47. 1904. (Note)
Omphalia serotina *Pk.*
Torr. Bot. Club Bul. 34, p.98. Feb. 1907
Omphalia sphagnophila *Pk.*
Harriman Alaska Exped. 5:47. 1904
Omphalia striipilea *Fr. var.* albogrisea *Pk.*
N. Y. State Mus. Rep't 43, p.38. 1890. Bot. ed.
Omphalia subclavata *Pk.*
Torr. Bot. Club Bul. 27, p.612. Dec. 1900
Omphalia subgrisea *Pk.*
N. Y. State Mus. Rep't 41, p.63. 1888
N. Y. State Mus. Rep't 45, p.32. 1893. Bot. ed. (Note)
Omphalia tubaeformis *Pk.* (Marasmius salignus *Pk.*)
Omphalia umbellifera *(L.) Fr. var.* alpina *Pk.*
N. Y. State Mus. Rep't 40, p.75. 1887
Omphalia umbellifera *(L.) Fr. var.* scabriuscula *Pk.*
N. Y. State Mus. Rep't 45, p.38. 1893. Bot. ed.
N. Y. State Cab. Rep't 23, p.85. 1872. Bot. ed. (As Agaricus (Omphalia) scabriusculus *Pk.*)
Omphalia vestita *Pk.*
Torr. Bot. Club Bul. 34, p.345. July 1907

Oöspora cucumeris *Pk.*
N. Y. State Mus. Rep't 41, p.80. 1888
Ophiobolus subolivaceus *Pk.*
N. Y. State Mus. Rep't 46, p.36. 1893. Bot. ed.
Panaeolus alveolatus *Pk.*
N. Y. State Mus. Rep't 54, p.153, pl.H, fig.30–36. 1901
Panaeolus digressus *Pk.*
Torr. Bot. Club Bul. 22, p.205. May 1895
Agaricus (Panaeolus) epimyces *Pk.*
N. Y. State Mus. Rep't 35, p.133–34. 1884
Panaeolus intermedius *Pk.*
Torr. Bot. Club Bul. 22, p.205. May 1895
Panaeolus retirugis elongatus *Pk.*
N. Y. State Mus. Rep't 50, p.130. 1897
Agaricus (Panaeolus) solidipes *Pk.*
N. Y. State Cab. Rep't 23, p.101, pl.4, fig.1–5. 1872. Bot. ed.
Panus betulinus *Pk.*
Torr. Bot. Club Bul. 23, p.413. Oct. 1896
Panus meruliiceps *Pk.*
Torr. Bot. Club Bul. 32, p.78–79. Feb. 1905
Panus nigrifolius *Pk.*
Torr. Bot. Club Bul. 25, p.370–71. July 1898
Panus salicinus *Pk.*
N. Y. State Mus. Rep't 24, p.77–78. 1872
Patellaria fenestrata *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.26. Sept. 1875. (Brief desc.)
N. Y. State Mus. Rep't 28, p.68. 1876. (Blitrydium fenestratum (*C. & P.*) *Sacc.*)
Patellaria fusispora *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.26. Sept. 1875. (Brief desc.)
N. Y. State Mus. Rep't 28, p.67–68. 1876. (Karschia fusispora (*C. & P.*) *Sacc.*)
Patellaria hamamelidis *Pk.*
N. Y. State Mus. Rep't 33, p.32, pl.2, fig.7–10. 1880. (Dermatella hamamelidis (*Pk.*) *Durand* in Sylloge 18)
Patellaria indigotica *C. & P.*
N. Y. State Mus. Rep't 25, p.98. 1873. (Lecanidion indigoticum (*C. & P.*) *Sacc.*)
Patellaria leptosperma *Pk.*
N. Y. State Mus. Rep't 30, p.62. 1878
N. Y. State Mus. Rep't 31, p.59. 1879. (Note) Lecanidion leptospermum (*Pk.*) *Sacc.*)
Patellaria pusilla *Pk.*
N. Y. State Mus. Rep't 32, p.48. 1879
N. Y. State Mus. Bul. 2, p.22. 1887. (Lecanidion pusillum (*Pk.*) *Sacc.*)
Paxillus hirsutus *Pk.*
Bot. Gaz. 4:169. June 1879
Paxillus involutus simplex *Pk.*
N. Y. State Mus. Rep't 53, p.857. 1900

Paxillus panuoides *Fr. var.* pezizoides (*Pers.*) *Pk.*
N. Y. State Mus. Bul. 2, p.32. 1887. (Gomphus pezizoides *Pers.*)
Paxillus simulans *Pk.*
N. Y. State Mus. Bul. 2, p.30. 1887
Paxillus strigosus *Pk.* (Inocybe strigosa *Pk.*)
Peckia clintonii *Pk.*
N. Y. State Mus. Rep't 29, p.47, pl.2, fig.6-9. 1878
Peckia sarraceniae *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.47. 1878
Peckiella hymenii *Pk.*
N. Y. State Mus. Bul. 116, p.28-29. 1907
Peckiella hymenioides *Pk.*
Torr. Bot. Club Bul. 34, p.102. Feb. 1907
Penicillium candidum *Link var.* subcandidum *Pk.*
N. Y. State Mus. Rep't 47, p.22. 1894. Bot. ed.
Penicillium pallidofulvum *Pk.*
N. Y. State Mus. Bul. 67, p.30. 1903
Peniophora disciformis borealis *Pk.*
Harriman Alaska Exped. 5:43. 1904
Peniophora neglecta *Pk.*
N. Y. State Mus. Rep't 40, p.76. 1887
N. Y. State Mus. Rep't 33, p.22. 1880. (As Stereum neglectum *Pk.*) (Peniophora cinerescens (*Schw.*) *Sacc.*)
Peniophora unicolor *Pk.*
N. Y. State Mus. Rep't 43, p.23-24. 1890. Bot. ed.
Perichaena caespitosa *Pk.*
N. Y. State Mus. Rep't 31, p.57. 1879. (Name)
Buf. Soc. Nat. Sci. Bul. 1, p.64. July 1873. (As Physarum caespitosum *Pk.*)
N. Y. State Mus. Rep't 26, p.75. 1874
N. Y. State Mus. Rep't 28, p.85. 1876. (As Licea caespitosa *Pk.*)
Perichaena flavida *Pk.* (Oligonema flavidum *Pk.*)
Perichaena ochrospora *Pk.*
N. Y. State Mus. Rep't 32, p.40. 1879
Periconia albiceps *Pk.*
N. Y. State Mus. Rep't 32, p.40. 1879
N. Y. State Mus. Bul. 2, p.17. 1887
Periconia azaleae *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.69. July 1873
N. Y. State Mus. Rep't 25, p.93. 1873. (Sporocybe azaleae (*Pk.*) *Sacc.*)
Periconia corticalis *C. & P.*
N. Y. State Mus. Rep't 29, p.52. 1878. (Sporocybe corticalis (*C. & P.*) *Sacc.*)
Periconia geophila *Pk.*
Torr. Bot. Club Bul. 11, p.50. May 1884. (Sporocybe geophila (*Pk.*) *Sacc.*)
Periconia parasitica *Pk.*
N. Y. State Mus. Rep't 33, p.28. 1880. (Sporocybe parasitica (*Pk.*) *Sacc.*)

Periconia sphaerophila *Pk.*
N. Y. State Mus. Rep't 34, p.50, pl.2, fig.17–20. 1881. (Sporocybe sphaerophila (*Pk.*) *Sacc.*)
Periconia tenuissima *Pk.*
N. Y. State Mus. Rep't 46, p.33–34. 1893. Bot. ed.
Periconia truncata *C. & P.*
N. Y. State Mus. Rep't 29, p.51–52. 1878. (Sporocybe truncata (*C. & P.*) *Sacc.*)
Peridermium balsameum *Pk.*
N. Y. State Mus. Rep't 27, p.104, pl.2, fig.24–26. 1875
N. Y. State Mus. Rep't 31, p.23. 1879. (Note)
Peridermium cerebrum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.68. July 1873
N. Y. State Mus. Rep't 25, p.91. 1873
Peridermium decolorans *Pk.*
N. Y. State Mus. Rep't 27, p.104–5, pl.1, fig.19–21. 1875
N. Y. State Mus. Bul. 25, p.672. 1899
N. Y. State Mus. Rep't 33, p.38. 1880. (As Peridermium abietinum decolorans (*Pk.*) *Thüm.*)
Peridermium filamentosum *Pk.*
Bot. Gaz. 7:56–57. May 1882
Peridermium pyriforme *Pk.*
Torr. Bot. Club Bul. 6, p.13. Feb. 1875
Peronospora geranii *Pk.*
N. Y. State Mus. Rep't 28, p.63. 1876. (Plasmopara geranii (*Pk.*) *Berl. & DeToni*)
Peronospora simplex *Pk.*
N. Y. State Mus. Rep't 31, p.45. 1879. (Plasmopara entospora (*Roze & Cornu*) *Schroet.*)
Pestalozzia (?) camptosperma *Pk.*
N. Y. State Mus. Rep't 39, p.48, pl.1, fig.10–11. 1886. (Monochaetia camptosperma (*Pk.*) *Sacc.* in Sylloge 18)
Pestalozzia consocia *Pk.*
N. Y. State Mus. Rep't 39, p.48, pl.1, fig.8–9. 1886. (Monochaetia consocia (*Pk.*) *Sacc.*)
Pestalozzia stevensonii *Pk.*
Torr. Bot. Club Bul. 6, p.135–36. Feb. 1877
N. Y. State Mus. Rep't 34, p.45. 1881. (Note) (Pestalozzia strobilicola *Speg.* 1879)
Pezicula acericola *Pk.*
N. Y. State Mus. Bul. 28, p.232. 1899. (Name)
N. Y. State Mus. Rep't 25, p.98. 1873. (As Nodularia acericola *Pk.*)
Buf. Soc. Nat. Sci. Bul. 4, p.220. Apr. 1882. (As Dermatea acericola *Pk.*)
Pezicula acericola *Pk. var.* gregaria *Pk.*
N. Y. State Mus. Rep't 40, p.77. 1887
Pezicula minuta *Pk.*
N. Y. State Mus. Bul. 2, p.21–22. 1887
N. Y. State Mus. Rep't 32, p.48. 1879. (As Dermatea minuta *Pk.*)

Peziza aberrans *Pk.*
Torr. Bot. Club Bul. 6, p.14. Feb. 1875. (Belonidium aberrans (*Pk.*) *Sacc.*)
Peziza adusta *C. & P.*
Buf. Soc. Nat. Sci. Bul. 2, p.290. Mar. 1875
N. Y. State Mus. Rep't 27, p.107. 1875. (Humaria adusta *C. & P.* in Sylloge 8)
Peziza agrostina *Pk.*
N. Y. State Mus. Rep't 29, p.55. 1878. (Trichopeziza agrostina (*Pk.*) *Sacc.*)
Peziza albumina *C. & P.*
N. Y. State Mus. Rep't 26, p.81–82. 1874. (Helotium albumineum *C. & P.* in Sylloge 8)
Peziza (Cupulares) amplispora *C. & P.*
Cooke's Mycographia, p.167, fig.288. Apr. 1877
Buf. Soc. Nat. Sci. Bul. 2, p.288. Mar.1875. (As Peziza repanda *Wahl. var.* amplispora *C. & P.*) (Geopyxis amplispora *C. & P.* in Sylloge 8)
Peziza (Calloria) assimilis *C. & P.*
Grev. 1:6. pl.1, fig.6. July 1872. (Orbilia assimilis (*C. & P.*) *Sacc.*)
Peziza (Tapesia) balsamicola *Pk.*
N. Y. State Mus. Rep't 34, p.51–52, pl.1, fig.14–21. 1881. (Tapesia balsamicola *Pk.* in Sylloge 8)
Peziza bronca *Pk.*
N. Y. State Mus. Rep't 29, p.54, pl.2, fig.10–12. 1878
Peziza (Dasyscyphae) capitata *Pk.*
N. Y. State Mus. Rep't 30, p.60. 1878. (Trichopeziza capitata (*Pk.*) *Sacc.*)
Peziza cariosa *Pk.*
N. Y. State Mus. Rep't 24, p.95–96. 1872. (Pyrenopeziza cariosa (*Pk.*) *Sacc.*)
Peziza (Dasyscyphae) chamaeleontina *Pk.*
N. Y. State Mus. Rep't 30, p.60–61. 1878. (Dasyscypha chamaeleontina (*Pk.*) *Sacc.*)
Peziza corneola *C. & P.*
Buf. Soc. Nat. Sci. Bul. 2, p.298. Mar. 1875. (Name)
N. Y. State Mus. Rep't 28, p.66. 1876. (Heterosphaeria linariae (*Rab.*) *Rehm*)
Peziza corrugata *C. & P.*
N. Y. State Mus. Rep't 26, p.82. 1874. (Durella corrugata (*C. & P.*) *Sacc.*)
Peziza convoluta *Pk.*
Torr. Bot. Club Bul. 30, p.101. Feb. 1903
Peziza (Humaria) deligata *Pk.*
N. Y. State Mus. Rep't 30, p.61. 1878. (Humaria deligata *Pk.* in Sylloge 8)
Peziza (Dasyscyphae) distincta *Pk.*
N. Y. State Mus. Rep't 30, p.60, pl.1, fig.9–13. 1878. (Trichopeziza distincta (*Pk.*) *Sacc.*)

Peziza dudleyi *Pk.*
N. Y. State Mus. Rep't 47, p.23. 1894. Bot. ed.
Peziza echinosperma *Pk.*
N. Y. State Mus. Rep't 24, p.95, pl.3, fig.10-13. 1872. (Humaria echinosperma *Pk.* in Sylloge 8)
Peziza (Mollisia) enterochroma *Pk.*
N. Y. State Mus. Rep't 32, p.47. 1879. (Ombrophila enterochroma (*Pk.*) *Sacc.*)
Peziza (Mollisia) floriformis *Pk.*
N. Y. State Mus. Rep't 33, p.31. 1880. (Pezizella floriformis (*Pk.*) *Sacc.*)
Peziza (Humaria) gallinacea *Pk.*
N. Y. State Mus. Rep't 31, p.46. 1879. (Humaria gallinacea *Pk.* in Sylloge 8)
Peziza (Macropodes) hesperidea *C. & P.*
Grev. 1:5. pl.1, fig.1. July 1872. (Geopyxis hesperidea *C. & P.* in Sylloge 8)
Peziza humosoides *Pk.* (Ascophanus humosoides *Pk.*)
Peziza (Humaria) hydrophila *Pk.*
N. Y. State Mus. Rep't 34, p.51. 1881. (Humaria hydrophila *Pk.* in Sylloge 8)
Peziza imperialis *Pk.*
N. Y. State Mus. Rep't 29, p.54, pl.1, fig.13-15. 1878. (Sarcoscypha imperialis *Pk.* in Sylloge 8)
Peziza kalmiae *Pk.*
N. Y. State Mus. Rep't 25, p.99. 1873. (Pezicula kalmiae (*Pk.*) *Sacc.*)
Peziza (Mollisia) lacerata *C. & P.*
Grev. 1:6. July 1872. (Pyrenopeziza lacerata (*C. & P.*) *Sacc.*)
Peziza leucobasis *Pk.*
N. Y. State Mus. Bul. 2, p.20, pl.2, fig.1-3. 1887
N. Y. State Mus. Rep't 32, p.49. 1879. (As Bulgaria deligata *Pk.*) (Pyronema leucobasis *Pk.* in Sylloge 8)
Peziza longipes *C. & P.*
Buf. Soc. Nat. Sci. Bul. 2, p.295. Mar. 1875. (Phialea longipes (*C. & P.*) *Sacc.*)
Peziza (Dasyscyphae) longipila *Pk.*
N. Y. State Mus. Rep't 32, p.46. 1879
N. Y. State Mus. Bul. 2, p.20-21, pl.2, fig.15-19. 1887. (Dasyscypha longipila (*Pk.*) *Sacc.*)
Peziza (Dasyscyphae) luteodisca *Pk.*
N. Y. State Mus. Rep't 33, p.31. 1880. (Dasyscypha luteodisca (*Pk.*) *Sacc.*)
Peziza multipuncta *Pk.*
N. Y. State Mus. Rep't 33, p.31. 1880. (Name) (Pyrenopeziza multipuncta (*Pk.*) *Sacc.* in Sylloge 8. (Desc.))
Peziza (Dasyscyphae) myricacea *Pk.*
N. Y. State Mus. Rep't 30, p.59. 1878. (Trichopeziza myricacea (*Pk.*) *Sacc.*)

Peziza odorata *Pk.*
Torr. Bot. Club Bul. 23, p.420. Oct. 1896
Peziza orbicularis *Pk.*
N. Y. State Mus. Bul. 2, p.20, pl.2, fig.4–6. 1887
N. Y. State Mus. Rep't 32, p.49. 1879. (As Bulgaria bicolor *Pk.*) (Discina orbicularis *Pk.* in Sylloge 8)
Peziza ovilla *Pk.*
N. Y. State Mus. Rep't 28, p.66. 1876. (Neottiella ovilla *Pk.* in Sylloge 8)
Peziza pallidula *C. & P.*
Buf. Soc. Nat. Sci. Bul. 2, p.288. Mar. 1875. (Geopyxis pallidula *C. & P.* in Sylloge 8)
Peziza (Sarcoscypha) pellita *C. & P.*
Grev. 1:5. pl.1, fig.3. July 1872
N. Y. State Mus. Rep't 25, p.98. 1873. (Lachnea pellita *C. & P.* in Sylloge 8)
Peziza pinastri *C. & P.*
Buf. Soc. Nat. Sci. Bul. 2, p.297. Mar. 1875
N. Y. State Mus. Rep't 29, p.55. 1878. (Name)
Grev. 7:40. Dec. 1878. (As Cenangium acuum *C. & P.*) (Mollisia pinastri *(C. & P.) Sacc.*)
Peziza (Mollisia) planodisca *Pk. & Clint.*
N. Y. State Mus. Rep't 31, p. 46. 1879. (Pezizella planodisca *P. & C.* in Sylloge 8)
Peziza repanda amplispora *C. & P.* (Peziza amplispora *C. & P.*)
Peziza rubra *Pk.*
N. Y. State Mus. Rep't 24, p.95, pl.2, fig.19–21. 1872. (Humaria araneosa *Bull.*)
Peziza scirpina *Pk.*
N. Y. State Mus. Rep't 28, p.67. 1876. (Mollisia scirpina (*Pk.*) *Sacc.*)
Peziza (Mollisia) singularis *Pk.*
N. Y. State Mus. Rep't 35, p.142. 1884. (Mollisia singularis *Pk.* in Sylloge 8)
Peziza solenia *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.70–71. July 1873
N. Y. State Mus. Rep't 25, p.99. 1873
N. Y. State Mus. Rep't 29, p.70. 1878. (Note) (Solenopeziza solenia *(Pk.) Sacc.*)
Peziza (Mollisia) sphaerella *Pk. & Clint.*
N. Y. State Mus. Rep't 32, p.47. 1879
Peziza spongiosa *Pk.* (Bulgaria spongiosa *Pk.*)
Peziza subatra *C. & P.*
N. Y. State Mus. Rep't 28, p.66–67. 1876. (Pyrenopeziza subatra *(C. & P.) Sacc.*)
Peziza subcarnea *C. & P.*
Buf. Soc. Nat. Sci. Bul. 2, p.295. Mar. 1875
N. Y. State Mus. Rep't 27, p.107. 1875. (Phialea subcarnea *(C. & P.) Sacc.*)
Peziza subcinerea *C. & P.*
Buf. Soc. Nat. Sci. Bul. 3, p.23. Sept. 1875. (Name)

Peziza (Dasyscypha) subochracea *C. & P.*
Grev. 1:6. pl.1, fig.4. July 1872. (Trichopeziza subochracea (*C. & P.*) *Sacc.*)
Peziza (Cupulares) subvernalis *Pk.*
N. Y. State Mus. Rep't 33, p.31. 1880
Peziza (Dasyscyphae) sulphurella *Pk.*
N. Y. State Mus. Rep't 30, p.59–60. 1878. (Dasyscypha sulphurella (*Pk.*) *Sacc.*)
Peziza tetraonalis *Pk.* (Ascophanus tetraonalis *Pk.*)
Peziza thalictri *Pk.*
N. Y. State Mus. Rep't 29, p.55. 1878. (Pyrenopeziza thalictri (*Pk.*) *Sacc.*)
Peziza tiliae *Pk.*
N. Y. State Mus. Rep't 24, p.96. 1872. (Trichopeziza tiliae (*Pk.*) *Sacc.*)
Peziza typhae *Pk.* (Mollisia pallidior *Pk.*)
Peziza unicisa *Pk.*
N. Y. State Mus. Rep't 26, p.81. 1874. (Otidea leporina (*Batsch*) *Fckl.*)
Peziza (Dasyscyphae) urticina *Pk.*
N. Y. State Mus. Rep't 32, p.46. 1879
N. Y. State Mus. Bul. 2, p.21. 1887. (Trichopeziza urticina (*Pk.*) *Sacc.*)
Peziza (Mollisia) vincta *C. & P.*
Grev. 1:6. July 1872. (Tapesia vincta (*C. & P.*) *Sacc.*)
Peziza (Dasyscyphae) viridicoma *Pk.*
N. Y. State Mus. Rep't 31, p.46. 1879. (Trichopeziza viridicoma (*Pk.*) *Sacc.*)
Peziza vulcanalis *Pk.*
U. S. Geol. Sur. Terr. Rep't 6, p.792. 1873
"Flora of Col."; Dep't Int. Pub. (Washington) 4:164. Mar. 1874
N. Y. State Mus. Rep't 31, p.46. 1879. (Note) (Geopyxis vulcanalis *Pk.* in Sylloge 8)
Peziza (Cochleatae) warnei *Pk.*
N. Y. State Mus. Rep't 30, p.59, pl.1, fig.19–21. 1878. (Discina warnei *Pk.* in Sylloge 8)
Phacidium brunneolum *Pk.*
N. Y. State Mus. Rep't 31, p.48. 1879
Phacidium sparsum *Pk.*
Bot. Gaz. 5:35–36. Mar. 1880
Phallogaster whitei *Pk.*
N. Y. State Mus. Bul. 116, p.31. 1907
Phallus ravenelii *B. & C. var.* minor *Pk.*
N. Y. State Mus. Rep't 46, p.37. 1893. Bot. ed.
Phellorina californica *Pk.*
N. Y. State Mus. Rep't 43, p.35–36. 1890. Bot. ed.
Phlebia acerina *Pk.*
N. Y. State Mus. Rep't 42, p.27. 1889. Bot. ed.

Phlebia pileata *Pk.*
N. Y. State Mus. Rep't 29, p.45–46. 1878
Agaricus (Pholiota) acericola *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.50. July 1873
N. Y. State Mus. Rep't 25, p.77. 1873
N. Y. State Mus. Bul. 122, p.155–56. 1908
Pholiota aeruginosa *Pk.*
N. Y. State Mus. Rep't 43, p.35. 1890. Bot. ed.
Agaricus (Pholiota) aggericola *Pk.*
N. Y. State Mus. Rep't 24, p.67. 1872
N. Y. State Mus. Bul.122, p.146. 1908
N. Y. State Mus. Bul. 28, p.208. 1899. (As Pholiota aggerata *Pk.*)
N. Y. State Mus. Rep't 30, p.40. 1878. (As Agaricus (Pholiota) indecens *Pk.*)
Pholiota aggericola retirugis *Pk.*
N. Y. State Mus. Rep't 54, p.167. 1901
N. Y. State Mus. Bul. 122, p.146. 1908
Agaricus (Pholiota) albocrenulatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.49–50. July 1873
N. Y. State Mus. Rep't 25, p.77. 1873
N. Y. State Mus. Bul. 122, p.149. 1908
Agaricus (Pholiota) angustipes *Pk.*
N. Y. State Mus. Rep't 30, p.40. 1878
N. Y. State Mus. Rep't 50, p.129–30. 1897. (Note)
N. Y. State Mus. Bul. 122, p.145. 1908
Pholiota anomala *Pk.*
Torr. Bot. Club Bul. 22, p.202. May 1895
Pholiota appendiculata *Pk.* (Pholiota ornella *Pk.*)
Pholiota autumnalis *Pk.*
N. Y. State Mus. Bul. 122, p.156–57. 1908
N. Y. State Cab. Rep't 23, p.92. 1872. Bot. ed. (As Agaricus (Naucoria) autumnalis *Pk.*)
Agaricus (Pholiota) cerasinus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.50. July 1873
N. Y. State Mus. Rep't 26, p.57. 1874
N. Y. State Mus. Bul. 122, p.155. 1908
Agaricus (Pholiota) comosus *Fr. var.* albus *Pk.*
N. Y. State Mus. Rep't 38, p.86. 1885
N. Y. State Mus. Bul. 122, p.153. 1908
Pholiota detersibilis *Pk.* (Pholiota erinaceëlla *Pk.*)
Agaricus (Pholiota) discolor *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.50. July 1873
N. Y. State Mus. Rep't 25, p.78. 1873
N. Y. State Mus. Rep't 44, p.36. 1891. Bot. ed. (Note)
N. Y. State Mus. Bul. 122, p.156. 1908
Pholiota discolor caespitosa *Pk.*
N. Y. State Mus. Bul. 122, p.156. 1908. (Name)
Pholiota discolor Pk. *var.* minor *Pk.*
N. Y. State Mus. Rep't 46, p.55. 1893. Bot. ed.

Pholiota duroides *Pk.*
N. Y. State Mus. Bul. 122, p.24, 148-49, 159-60. 1908
Agaricus (Pholiota) erinaceëllus *Pk.*
N. Y. State Mus. Rep't 30, p.70. 1878
N. Y. State Mus. Bul. 122, p.152. 1908
N. Y. State Mus. Rep't 28, p.49. 1876. (As Agaricus (Pholiota) detersibilis *Pk.*)
Pholiota filaris (*Fr.*) *Pk.*
N. Y. State Mus. Bul. 122, p.144. 1908. (Pholiota togularis filaris *Fr.*)
Pholiota fulvosquamosa *Pk.*
Torr. Bot. Club Bul. 30, p.95-96. Feb. 1903
Pholiota howeana *Pk.*
N. Y. State Mus. Bul. 122, p.147. 1908
Buf. Soc. Nat. Sci. Bul. 1, p.53. July 1873. (As Agaricus (Stropharia) howeanus *Pk.*)
N. Y. State Mus. Rep't 26, p.59-60. 1874
Pholiota indecens *Pk.* (Pholiota aggericola *Pk.*)
Pholiota johnsoniana *Pk.*
N. Y. State Mus. Bul. 122, p.147. 1908
N. Y. State Cab. Rep't 23, p.98, pl.3, fig.4-6. 1872. Bot. ed. (As Agaricus (Psalliota) johnsonianus *Pk.*)
N. Y. State Mus. Rep't 41, p.84. 1888. (As Stropharia johnsoniana *Pk.*)
N. Y. State Mus. Rep't 54, p.168. 1901. (Note)
Agaricus (Pholiota) limonellus *Pk.*
N. Y. State Mus. Rep't 31, p.33-34. 1879
N. Y. State Mus. Bul. 122, p.150. 1908
Pholiota lutea *Pk.*
N. Y. State Mus. Rep't 51, p.288-89. 1898
N. Y. State Mus. Bul. 122, p.155. 1908
Agaricus (Pholiota) luteofolius *Pk.*
N. Y. State Mus. Rep't 27, p.94. 1875
N. Y. State Mus. Bul. 122, p.154-55. 1908
Pholiota marginella *Pk.*
N. Y. State Mus. Rep't 51, p.289, pl.B, fig.12-20. 1898
N. Y. State Mus. Bul. 122, p.157-58. 1908
Pholiota minima *Pk.*
N. Y. State Mus. Rep't 41, p.65. 1888
N. Y. State Mus. Bul. 122, p.143. 1908
Pholiota ornella *Pk.*
N. Y. State Mus. Bul. 122, p.151-52. 1908
N. Y. State Mus. Rep't 34, p.42. 1881. (As Agaricus (Hypholoma) ornellus *Pk.*)
N. Y. State Mus. Bul. 94, p.33-34, pl.P, fig.8-17. 1905. (As Pholiota appendiculata *Pk.*)
Pholiota praecox (*Pers.*) *Fr. var.* sylvestris *Pk.*
N. Y. State Mus. Rep't 49, p.60, pl.46, fig.13-17. 1896. Bot. ed.
N. Y. State Mus. Mem. 4, p.160, pl.57, fig.9-11. 1900
Harriman Alaska Exped. 5:46. 1904. (Note)
N. Y. State Mus. Bul. 122, p.148. 1908

Pholiota rugosa *Pk.*
N. Y. State Mus. Rep't 50, p.102–3. 1897
N. Y. State Mus. Bul. 122, p.144. 1908
Pholiota sabulosa *Pk.*
Torr. Bot. Club Bul. 23, p.414–15. Oct. 1896
Agaricus (Pholiota) squarrosoides *Pk.*
N. Y. State Mus. Rep't 31, p.33. 1879
N. Y. State Mus. Rep't 54, p.183, pl.73, fig.6–10. 1901
N. Y. State Mus. Bul. 122, p.150–51. 1908
Pholiota squarrosoides *Pk. var.* faginea *Pk.*
N. Y. State Mus. Rep't 54, p.183, pl.73, fig.11–15. 1901
N. Y. State Mus. Bul. 122, p.151. 1908
Agaricus (Pholiota) temnophyllus *Pk.*
N. Y. State Cab. Rep't 23, p.90. 1872. Bot. ed.
N. Y. State Mus. Bul. 122, p.146. 1908
Agaricus (Pholiota) vermifluus *Pk.*
N. Y. State Mus. Rep't 31, p.34. 1879
N. Y. State Mus. Bul. 75, p.32, pl.86, fig.12–20. 1904
N. Y. State Mus. Bul. 122, p.147–48. 1908
Phoma albifructa *Pk.*
N. Y. State Mus. Rep't 38, p.95. 1885. (Macrophoma albifructa (*Pk.*) *Berl. & Vogl.*)
Phoma albistrata
Bot. Gaz. 5:33–34. Mar. 1880. (Coniothyrium albistratum (*Pk.*) *Sacc.*)
Phoma allantella *Pk.*
N. Y. State Mus. Rep't 43, p.26. 1890. Bot. ed.
Phoma callospora *Pk. & Clint.*
N. Y. State Mus. Bul. 2, p.16. 1887
N. Y. State Mus. Rep't 32, p.38. 1879. (As Sphaeropsis pulchrispora *P. & C.*) (Macrophoma pulchrispora (*P. & C.*) *Berl. & Vogl.*)
Phoma castanea *Pk.*
N. Y. State Mus. Rep't 40, p.59. 1887
Phoma clintonii *Pk.*
N. Y. State Mus. Rep't 39, p.45. 1886
Phoma colorata *Pk.*
Bot. Gaz. 5:34. Mar. 1880. (Coniothyrium coloratum (*Pk.*) *Sacc.*)
Phoma cornina *Pk.*
N. Y. State Mus. Bul. 2, p.16. 1887
N. Y. State Mus. Rep't 32, p.38–39. 1879. (As Sphaeropsis cornina *Pk.*) (Macrophoma cornina (*Pk.*) *Sacc.*)
Phoma elevata *Pk.*
N. Y. State Mus. Rep't 38, p.95. 1885. (Aposphaeria elevata (*Pk.*) *Berl. & Vogl.*)
Phoma elliptica *Pk.*
N. Y. State Mus. Rep't 27, p.101. 1875
Phoma exocarpina *Pk.*
N. Y. State Mus. Rep't 46, p.38. 1893. Bot. ed.
Phoma hysteriellum *Pk. & Clint.*
N. Y. State Mus. Rep't 33, p.23. 1880. (Phoma hysteropsis *P. & C.* in Sylloge 3)

Phoma magnifructa *Pk.*
N. Y. State Mus. Rep't 40, p.59. 1887. (Macrophoma magnifructa (*Pk.*) *Sacc.*)
Phoma majanthemi *Pk.*
N. Y. State Mus. Rep't 39, p.44-45. 1886
Phoma menispermi *Pk.*
N. Y. State Mus. Rep't 24, p.85. 1872
Phoma populi *Pk.*
N. Y. State Mus. Rep't 40, p.59. 1887
Phoma pruni *Pk.*
N. Y. State Mus. Rep't 38, p.95. 1885
Phoma stercoraria *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.51. 1878
Phoma strobilina *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.51. 1878
Buf. Soc. Nat. Sci. Bul. 4, p.197. Apr. 1882. (Phoma lineolatum *Desm.*)
Phoma verbascicola (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 29, p.70. 1878. (For Sphaeria verbascicola *Schw.*)
Phragmidium mucronatum *Link var.* americanum *Pk.*
N. Y. State Mus. Rep't 28, p.86. 1876
Phyllosticta astragali *Pk.*
Bot. Gaz. 6:275. Oct. 1881
Phyllosticta bicolor *Pk.*
N. Y. State Mus. Rep't 43, p.26. 1890. Bot. ed.
Phyllosticta caryae *Pk.*
N. Y. State Mus. Rep't 40, p.57. 1887
Phyllosticta crataegi *Pk.* (Phyllosticta rubra *Pk.*)
Phyllosticta dioscoreae *Cke. var.* grisea *Pk.*
N. Y. State Mus. Rep't 46, p.30. 1893. Bot. ed.
Phyllosticta epigaeae *Pk.*
N. Y. State Mus. Rep't 38, p.94. 1885
Phyllosticta faginea *Pk.*
N. Y. State Mus. Rep't 40, p.58. 1887
Phyllosticta fatiscens *Pk.*
N. Y. State Mus. Rep't 40, p.58-59. 1887
Phyllosticta grisea *Pk.*
N. Y. State Mus. Bul. 67, p.29. 1903
Phyllosticta hamamelidis *Pk.*
N. Y. State Mus. Rep't 39, p.44. 1886
Phyllosticta hibisci *Pk.*
N. Y. State Mus. Rep't 42, p.29. 1889. Bot. ed.
Phyllosticta lantanoides *Pk.*
N. Y. State Mus. Rep't 38, p.94. 1885
Phyllosticta limitata *Pk.*
N. Y. State Mus. Rep't 50, p.115. 1897
Phyllosticta ludwigiae *Pk.*
N. Y. State Mus. Rep't 44, p.23, pl.4, fig.22-23. 1891. Bot. ed.
Phyllosticta lycopersici *Pk.*
N. Y. State Mus. Rep't 40, p.57. 1887

Phyllosticta mitellae *Pk.*
N. Y. State Mus. Rep't 39, p.44. 1886
Phyllosticta nesaeae *Pk.*
N. Y. State Mus. Rep't 34, p.44. 1881
Phyllosticta pallidior *Pk.*
N. Y. State Mus. Bul. 105, p.26-27. 1906
Phyllosticta populina *Sacc. var.* parva *Pk.*
N. Y. State Mus. Rep't 40, p.58. 1887
Phyllosticta prini *Pk.*
N. Y. State Mus. Rep't 43, p.26. 1890. Bot. ed.
Phyllosticta rubra *Pk.*
Saccardo's Sylloge 10:108. 1892
N. Y. State Mus. Rep't 35, p.138. 1884. (As Phyllosticta crataegi *Pk.*)
Phyllosticta silenes *Pk.*
N. Y. State Mus. Rep't 43, p.26. 1890. Bot. ed.
Phyllosticta spermoides *Pk.*
N. Y. State Mus. Rep't 40, p.58. 1887
Phyllosticta tumoricola *Pk.*
N. Y. State Mus. Rep't 40, p.57-58. 1887
Phyllosticta vagans *Pk.*
N. Y. State Mus. Rep't 40, p.58. 1887
Phyllosticta variabilis *Pk.*
N. Y. State Mus. Rep't 35, p.138. 1884
Physalacria *Pk.*
Torr. Bot. Club Bul. 9, p.1-2. Jan. 1882
Physalacria inflata (*Schw.*) *Pk.*
Torr. Bot. Club Bul. 9, p.2, pl.IX, fig.1-5. Jan. 1882. (For Leotia inflata *Schw.*)
Physarella *Pk.*
Torr. Bot. Club Bul. 9, p.61. May 1882
Physarella mirabilis *Pk.*
Torr. Bot. Club Bul. 9, p.61-62, pl.XXIV, fig.1-7. May 1882
N. Y. State Mus. Rep't 33, p.22-23. 1880. (As Physarum mirabile *Pk.*)
Physarum albicans *Pk.*
N. Y. State Mus. Rep't 30, p.50, pl.2, fig.5-8. 1878
N. Y. State Mus. Rep't 31, p.55. 1879
N. Y. State Mus. Rep't 28, p.54. 1876. (As Didymium subroseum *Pk.*)
Conn. Acad. Arts & Sci. Trans. 10:467. Mar. 1900. (As Physarum albicans subroseum *Pk.*)
Physarum atrorubrum *Pk.*
N. Y. State Mus. Rep't 31, p.40. 1879
Physarum caespitosum *Pk.* (Perichaena caespitosa *Pk.*)
Physarum citrinellum *Pk.*
N. Y. State Mus. Rep't 31, p.57. 1879
Physarum flavidum *Pk.*
N. Y. State Mus. Rep't 31, p.55. 1879
N. Y. State Mus. Rep't 28, p.54. 1876. (As Didymium flavidum *Pk.*)
Physarum inaequale *Pk.*
N. Y. State Mus. Rep't 31, p.40-41. 1879

Physarum luteolum *Pk.*
    N. Y. State Mus. Rep't 30, p.50, pl.2, fig.15–18. 1878
Physarum mirabile *Pk.* (Physarella mirabilis *Pk.*)
Physarum multiplex *Pk.*
    Torr. Bot. Club Bul. 11, p.50. May 1884
Physarum ornatum *Pk.*
    N. Y. State Mus. Rep't 31, p.40. 1879
Physarum pulcherripes *Pk.*
    Buf. Soc. Nat. Sci. Bul. 1, p.64. July 1873
    N. Y. State Mus. Rep't 26, p.75. 1874
Pileolaria effusa *Pk.*
    Bot. Gaz. 7:55–56. May 1882. (Uromyces(?) effusus (*Pk.*) *DeToni*)
Pilidium graminicola *Pk.*
    N. Y. State Mus. Rep't 40, p.62. 1887
Agaricus (Pilosace) eximius *Pk.*
    N. Y. State Mus. Rep't 24, p.70. 1872
    N. Y. State Mus. Bul. 75, p.25. 1904. (Note)
Pistillaria alnicola *Pk.*
    N. Y. State Mus. Rep't 42, p.29, pl.2, fig.22–24. 1889. Bot. ed.
Pistillaria batesii *Pk.*
    Myc. Jour. 14:3. Jan. 1908
Pistillaria viticola *Pk.*
    N. Y. State Mus. Rep't 42, p.28, pl.2, fig.25–27. 1889. Bot. ed.
Plasmopara viburni *Pk.*
    N. Y. State Mus. Rep't 43, p.28–29. 1890. Bot. ed.
Plectania rimosa *Pk.*
    Torr. Bot. Club Bul. 30, p.100. Feb. 1903
Pleospora magnifica *Pk.*
    Torr. Bot. Club Bul. 33, p.221. Apr. 1906
Pleospora shepherdiae *Pk.*
    N. Y. State Mus. Rep't 40, p.71. 1887
Agaricus (Pleurotus) abscondens *Pk.*
    N. Y. State Mus. Rep't 31, p.32. 1879
    N. Y. State Mus. Rep't 39, p.60–61. 1886. (As Pleurotus lignatilis *Fr.*)
Pleurotus atrocaeruleus *Fr. var.* griseus *Pk.*
    N. Y. State Mus. Rep't 44, p.35–36. 1891. Bot. ed.
Pleurotus atropellitus *Pk.*
    N. Y. State Mus. Rep't 39, p.65–66. 1886
Pleurotus campanulatus *Pk.*
    N. Y. State Mus. Rep't 44, p.19, pl.2, fig.13–15. 1891. Bot. ed.
Pleurotus elongatipes *Pk.*
    Myc. Jour. 14:1–2. Jan. 1908
Pleurotus minutus *Pk.*
    N. Y. State Mus. Bul. 54, p.949. 1902
Pleurotus pubescens *Pk.*
    N. Y. State Mus. Rep't 44, p.18–19. 1891. Bot. ed.
Agaricus (Pleurotus) serotinoides *Pk.*
    N. Y. State Cab. Rep't 23, p.86–87. 1872. Bot. ed.
    N. Y. State Mus. Rep't 31, p.54. 1879
    N. Y. State Mus. Rep't 39, p.62–63. 1886. (As Pleurotus serotinus *Fr.*)

Pleurotus similis *Pk.*
N. Y. State Mus. Rep't 53. p.841-42. 1900
Pleurotus spathulatus (*Pers.*) *Pk.*
N. Y. State Mus. Rep't 39, p.63-64. 1886
Agaricus (Pleurotus) subareolatus *Pk.*
N. Y. State Mus. Rep't 30, p.39. 1878
N. Y. State Mus. Rep't 39, p.61. 1886
N. Y. State Mus. Rep't 54, p.164. 1901. (Note)
Agaricus (Pleurotus) sulfureoides *Pk.*
N. Y. State Cab. Rep't 23, p.86. 1872. Bot. ed.
N. Y. State Mus. Rep't 39, p.60. 1886. (As Pleurotus sulphureoides *Pk.*)
Pleurotus terrestris *Pk.*
N. Y. State Mus. Bul. 116, p.29. 1907
Pleurotus ulmarius *Fr. var.* acericola *Pk.; var.* populicola *Pk.*
N. Y. State Mus. Rep't 39, p.60. 1886
Pleurotus ulmarius *Bull. var.* verticalis *Pk.*
N. Y. State Mus. Rep't 48, p.178. 1896. Bot. ed.
Pleurotus umbonatus *Pk.*
Torr. Bot. Club Bul. 32, p.77. Feb. 1905
Plicatellae *Pk.*
N. Y. State Mus. Rep't 46, p.68. 1893. Bot. ed. (Section of genus Galera)
Plicatura *Pk.*
N. Y. State Mus. Rep't 24, p.75-76. 1872
Plicatura alni *Pk.* (Trogia alni *Pk.*)
Pluteolus aleuriatus gracilis *Pk.*
N. Y. State Mus. Rep't 54, p.149. 1901
Pluteolus callistus *Pk.*
N. Y. State Mus. Rep't 46, p.60. 1893. Bot. ed.
Buf. Soc. Nat. Sci. Bul. 1, p.52. July 1873. (As Agaricus (Galera) callistus *Pk.*)
N. Y. State Mus. Rep't 26, p.59. 1874
N. Y. State Mus. Rep't 32, p.55. 1879. (Note)
Pluteolus coprophilus *Pk.*
N. Y. State Mus. Rep't 46, p.59. 1893. Bot. ed.
Pluteolus expansus *Pk.*
N. Y. State Mus. Rep't 46, p.59-60. 1893. Bot. ed.
Buf. Soc. Nat. Sci. Bul. 1, p.52. July 1873. (As Agaricus (Galera) expansus *Pk.*)
N. Y. State Mus. Rep't 26, p.58. 1874
Pluteolus expansus *Pk. var.* terrestris *Pk.*
N. Y. State Mus. Rep't 46, p.60. 1893. Bot. ed.
Pluteolus luteus *Pk.*
Torr. Bot. Club Bul. 22, p.203. May 1895
Agaricus (Pluteus) admirabilis *Pk.*
N. Y. State Mus. Rep't 24, p.64. 1872
N. Y. State Mus. Rep't 28, p.85. 1876. (Note)
N. Y. State Mus. Rep't 38, p.137-38. 1885
Pluteus admirabilis *Pk. var.* fuscus *Pk.*
N. Y. State Mus. Rep't 38, p.138. 1885

Pluteus cervinus *Schaeff. var.* albipes *Pk.*
N. Y. State Mus. Rep't 38, p.135. 1885
N. Y. State Mus. Rep't 54, p.181, pl.74, fig.13. 1901
Pluteus cervinus *Schaeff. var.* albus *Pk.*
N. Y. State Mus. Rep't 38, p.135. 1885
N. Y. State Mus. Rep't 54, p.181, pl.74, fig.14-19. 1901
Pluteus grandis *Pk.*
N. Y. State Mus. Bul. 105, p.27. 1906
Agaricus (Pluteus) granularis *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.49. July 1873
N. Y. State Mus. Rep't 26, p.55-56. 1874
N. Y. State Mus. Rep't 38, p.135-36. 1885. (Pluteus regularis *Pk.* in Sylloge 5 by error)
Agaricus (Pluteus) longistriatus *Pk.*
N. Y. State Mus. Rep't 30, p.40. 1878
N. Y. State Mus. Rep't 38, p.137. 1885
Pluteus stercorarius *Pk.*
Torr. Bot. Club Bul. 22, p.488. Dec. 1895
Agaricus (Pluteus) sterilomarginatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.48. July 1873
N. Y. State Mus. Rep't 25, p.77. 1873
N. Y. State Mus. Rep't 38, p.136-37. 1885
Agaricus (Pluteus) tomentosulus *Pk.*
N. Y. State Mus. Rep't 32, p.27-28. 1879
N. Y. State Mus. Rep't 38, p.136. 1885
Podaxon warnei *Pk.* (Secotium warnei *Pk.*)
Podisoma gymnosporangium clavipes *C. & P.* (Gymnosporangium clavipes *C. & P.*)
Podosphaera biuncinata *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1) :11. Jan. 1872
N. Y. State Mus. Rep't 25, p.94-95. 1873
Polyporus abietinus *Fr. var.* irpiciformis *Pk.*
N. Y. State Mus. Rep't 42, p.38-39. 1889. Bot. ed.
Polyporus abortivus *Pk.*
Bot. Gaz. 6:274. Oct. 1881
N. Y. State Mus. Rep't 38, p.90-91. 1885. (Note)
N. Y. State Mus. Rep't 54, p.169. 1901. (Note) (As Polyporus distortus *Schw.*)
Polyporus abortivus *Pk. var.* subglobosus *Pk.*
Bot. Gaz. 6:274. Oct. 1881
Polyporus admirabilis *Pk.*
Torr. Bot. Club Bul. 26, p.69. Feb. 1899
N. Y. State Mus. Rep't 54, p.154. 1901. (Note)
Polyporus (Placodermei) albellus *Pk.*
N. Y. State Mus. Rep't 30, p.45. 1878
Polyporus albiceps *Pk.*
Torr. Bot. Club Bul. 27, p.19. Jan. 1900
Polyporus anceps *Pk.*
Torr. Bot. Club Bul. 22, p.207. May 1895

Polyporus attenuatus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.61. July 1873
N. Y. State Mus. Rep't 26, p.70. 1874. (Poria attenuata *Pk.* in Sylloge 6)
Polyporus aurantiacus *Pk.*
N. Y. State Mus. Rep't 26, p.69. 1874
Polyporus (Inodermei) balsameus *Pk.*
N. Y. State Mus. Rep't 30, p.46. 1878. (Polystictus balsameus *Pk.* in Sylloge 6)
Polyporus bartholomaei *Pk.*
Torr. Bot. Club Bul. 23, p.418–19. Oct. 1896
Polyporus burtii *Pk.*
Torr. Bot. Club Bul. 24, p.146–47. Mar. 1897
Polyporus caeruleoporus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.60. July 1873
N. Y. State Mus. Rep't 26, p.68. 1874
N. Y. State Mus. Rep't 32, p.57. 1879. (Note)
N. Y. State Mus. Rep't 41, p.85. 1888. (Note)
Polyporus circinatus *Fr. var.* dualis *Pk.*
N. Y. State Mus. Rep't 49, p.30. 1896. Bot. ed.
N. Y. State Mus. Rep't 30, p.44. 1878. (As Polyporus (Anodermei) dualis *Pk.*)
Torr. Bot. Club. Bul. 29, p.554. Sept. 1902. (As Polyporus schweinitzii dualis *Pk.*)
Polyporus circinatus *Fr. var.* proliferus *Pk.*
N. Y. State Mus. Rep't 46, p.56. 1893. Bot. ed.
Polyporus crispellus *Pk.*
N. Y. State Mus. Rep't 38, p.91. 1885
Polyporus delectans *Pk.*
Torr. Bot. Club Bul. 11, p.26–27. Mar. 1884
Cinn. Soc. Nat. Hist. Jour. 8:99. pl.1. July 1885
Polyporus dualis *Pk.* (Polyporus circinatus dualis *Pk.*)
Polyporus epileucus *Fr. var.* candidus *Pk.*
N. Y. State Mus. Rep't 38, p.91. 1885
Polyporus (Physisporus) fimbriatellus *Pk.*
N. Y. State Mus. Rep't 38, p.91–92. 1885. (Poria fimbriatella *Pk.* in Sylloge 6)
Polyporus flavidus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.61. July 1873
N. Y. State Mus. Rep't 26, p.68. 1874
N. Y. State Mus. Rep't 33, p.37. 1880. (As Polyporus peckianus *Cke.*)
Polyporus (Anodermei) fragrans *Pk.*
N. Y. State Mus. Rep't 30, p.45. 1878
N. Y. State Mus. Rep't 49, p.30. 1896. Bot. ed. (Note)
Polyporus fraxinophilus *Pk.*
Bot. Gaz. 7:43–44 Apr. 1882
N. Y. State Mus. Rep't 35, p.136. 1884. (Fomes fraxinophilus (*Pk.*) *Sacc.*)
Polyporus glomeratus *Pk.*
N. Y. State Mus. Rep't 24, p.78–79. 1872

Polyporus (Physisporus) griseoalbus *Pk.*
N. Y. State Mus. Rep't 38, p.91. 1885. (Poria griseoalba *Pk.* in Sylloge 6)
Polyporus griseus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.60. July 1873
N. Y. State Mus. Rep't 26, p.68. 1874
Polyporus guttulatus *Pk.*
N. Y. State Mus. Rep't 33, p.37. 1880
N. Y. State Mus. Rep't 26, p.69. 1874. (As Polyporus maculatus *Pk.*)
Polyporus hispidellus *Pk.*
N. Y. State Mus. Bul. 25, p.649-50. 1899
Polyporus hispidoides *Pk.* (Polyporus schweinitzii hispidoides *Pk.*)
Polyporus humilis *Pk.*
N. Y. State Mus. Rep't 26, p.69. 1874
Polyporus (Merisma) immitis *Pk.*
N. Y. State Mus. Rep't 35, p.135. 1884
Polyporus induratus *Pk.* (Myriadoporus induratus *Pk.*)
Polyporus (Merisma) lactifluus *Pk.*
Torr. Bot. Club Bul. 8, p.50-51. May 1881
Polyporus (Physisporus) laetificus *Pk.*
N. Y. State Mus. Rep't 38, p.91. 1885. (Poria laetifica *Pk.* in Sylloge 5)
Polyporus macouni *Pk.*
Bot. Gaz. 4:169-70. June 1879
Polyporus maculatus *Pk.* (Polyporus guttulatus *Pk.*)
Polyporus marginellus *Pk.*
N. Y. State Mus. Rep't 42, p.26. 1889. Bot. ed. (Poria marginella *Pk.* in Sylloge 6)
Polyporus morgani *Frost var.* velutipes *Pk.*
N. Y. State Mus. Rep't 32, p.35. 1879
Polyporus mutans *Pk.*
N. Y. State Mus. Rep't 41, p.77. 1888. (Poria mutans *Pk.* in Sylloge 6)
Polyporus (Physisporus) odorus *Pk.*
N. Y. State Mus. Rep't 38, p. 92. 1885. (Poria odora *Pk.* in Sylloge 6)
Polyporus (Physisporus) ornatus *Pk.*
N. Y. State Mus. Rep't 38, p.92. 1885. (Poria ornata *Pk.* in Sylloge 6)
Polyporus parvulus *Klotsch var.* deformatus *Pk.*
N. Y. State Mus. Rep't 32, p.33-34. 1879
Polyporus perplexus *Pk.*
N. Y. State Mus. Rep't 49, p.19. 1896. Bot. ed.
Polyporus piceinus *Pk.* (Trametes piceinus *Pk.*)
Polyporus pineus *Pk.*
N. Y. State Mus. Rep't 41, p.78. 1888. (Poria pinea *Pk.* in Sylloge 6)
Polyporus (Inodermei) planus *Pk.*
N. Y. State Mus. Rep't 31, p.37. 1879. (Polystictus planus *Pk.* in Sylloge 6)
Polyporus radiculosus *Pk.*
N. Y. State Mus. Rep't 40, p.54-55. 1887. (Poria radiculosa *Pk.* in Sylloge 6)
Polyporus resinosus *Schrad. var.* incurvus *Pk.*
N. Y. State Mus. Rep't 49, p.31. 1896. Bot. ed.

Polyporus schweinitzii hispidoides *Pk.*
N. Y. State Mus. Rep't 39, p.42. 1886
N. Y. State Mus. Rep't 49, p.30–31. 1896. Bot. ed.
N. Y. State Mus. Rep't 33, p.21. 1880. (As Polyporus (Anodermei) hispidoides *Pk.*)
Polyporus semipileatus *Pk.*
N. Y. State Mus. Rep't 34, p.43. 1881
Polyporus (Resupinati) semitinctus *Pk.*
N. Y. State Mus. Rep't 31, p.37. 1879. (Poria semitincta *Pk.* in Sylloge 6)
Polyporus simillimus *Pk.*
N. Y. State Mus. Rep't 32, p.34. 1879
N. Y. State Mus. Rep't 54, p.168. 1901. (Note)
N. Y. State Mus. Bul. 105, p.34. 1906. (Note)
Polyporus splendens *Pk.* (Polyporus subsericeus *Pk.*)
Polyporus (Physisporus) subacidus *Pk.*
N. Y. State Mus. Rep't 38, p.92–93. 1885. (Poria subacida *Pk.* in Sylloge 6)
Polyporus (Physisporus) subacidus *Pk. var.* stalactiticus *Pk.; var.* tenuis *Pk.* and *var.* tuberculosus *Pk.*
N. Y. State Mus. Rep't 38, p.93. 1885
Polyporus (Physisporus) subacidus *Pk. var.* vesciculosus (*B. & C.*) *Pk.*
N. Y. State Mus. Rep't 38, p.93. 1885. (For Polyporus vesciculosus *B. & C.*)
Polyporus (Resupinati) subiculosus *Pk.*
N. Y. State Mus. Rep't 31, p.37. 1879. (Poria subiculosa *Pk.* in Sylloge 6)
Polyporus subsericeus *Pk.*
N. Y. State Mus. Rep't 33, p.37. 1880
Buf. Soc. Nat. Sci. Bul. 1, p.61. July 1873. (As Polyporus splendens *Pk.*)
N. Y. State Mus. Rep't 26, p.68–69. 1874
N. Y. State Mus. Rep't 32, p.34. 1879. (Note)
Polyporus sulphurellus *Pk.*
N. Y. State Mus. Rep't 42, p.27. 1889. Bot. ed. (Poria sulphurella *Pk.* in Sylloge 6)
Polyporus sulphureus *Fr. var.* glomeratus *Pk.*
N. Y. State Mus. Rep't 48, p.203–4. 1896. Bot. ed.
Polyporus sulphureus semialbinus *Pk.*
N. Y. State Mus. Bul. 105, p.34. 1906
Polyporus undosus *Pk.*
N. Y. State Mus. Rep't 34, p.42–43. 1881
Polyporus variiformis *Pk.* (Trametes variiformis *Pk.*)
Polyporus variiformis *Pk. var.* interruptus *Pk.; var.* nodulosus *Pk.* and *var.* resupinatus *Pk.*
N. Y. State Mus. Rep't 42, p.26. 1889. Bot. ed.
Polyporus versicolor *Fr. var.* albomarginatus *Pk.*
N. Y. State Mus. Rep't 49, p.31. 1896. Bot. ed.
Polyporus versicolor *Fr. var.* carneiporus *Pk.*
N. Y. State Mus. Rep't 47, p.42. 1894. Bot. ed.

Polyporus volvatus *Pk.*
N. Y. State Mus. Rep't 27, p.98, pl.2, fig.3-6. 1875
N. Y. State Mus. Rep't 30, p.25-26. 1878. (Note)
N. Y. State Mus. Rep't 32, p.57. 1879. (Note)
Torr. Bot. Club Bul. 7, p.102-5, fig.1-3. Oct. 1880
N. Y. State Mus. Rep't 40, p.75. 1887. (Note)
N. Y. State Mus. Bul. 122, p.134. 1908. (Note) (Cryptoporus volvatus (*Pk.*) *Shear*)
Polyporus volvatus *Pk.* *var.* obvolvatus (*B. & C.*) *Pk.*
Torr. Bot. Club Bul. 7, p.105. Oct. 1880. (For Polyporus obvolvatus *B. & C.*)
Polyporus volvatus *Pk.* *var.* typicus *Pk.*
Torr. Bot. Club Bul. 7, p.105. Oct. 1880
Polystictus zonatus *Fr.* *var.* imperfectus *Pk.*
N. Y. State Mus. Rep't 49, p.31. 1896. Bot. ed.
Polystictus versicolor *Fr.* *var.* fumosiporus *Pk.*
N. Y. State Mus. Rep't 43, p.39. 1890. Bot. ed.
Poria attenuata *Pk.* (Polyporus attenuatus *Pk.*)
Poria attenuata *Pk.* *var.* subincarnata *Pk.*
N. Y. State Mus. Rep't 48, p.20. 1896. Bot. ed.
Poria aurea *Pk.*
N. Y. State Mus. Rep't 43, p.21-22. 1890. Bot. ed.
N. Y. State Mus. Rep't 51, p.299. 1898. (Note)
Poria mutans *Pk.* (Polyporus mutans *Pk.*)
Poria mutans *Pk.* *var.* tenuis *Pk.*
N. Y. State Mus. Rep't 43, p.39. 1890. Bot. ed.
Poria myceliosa *Pk.*
N. Y. State Mus. Bul. 54, p.952-53. 1902
Poria setigera *Pk.*
N. Y. State Mus. Rep't 51, p.293. 1898
Poronia macrospora *Pk.*
Torr. Bot. Club Bul. 33, p.220. Apr. 1906
Porothelium papillatum *Pk.*
N. Y. State Mus. Rep't 40, p.55-56. 1887
Protomyces conglomeratus *Pk.*
N. Y. State Mus. Rep't 32, p.39. 1879
N. Y. State Mus. Bul. 2, p.16-17. 1887
Protomyces erythronii *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.67. July 1873
N. Y. State Mus. Rep't 25, p.90. 1873
Protomyces fuscus *Pk.*
N. Y. State Mus. Rep't 33, p.27-28. 1880
Protomyces martindalei *Pk.*
Torr. Bot. Club Bul. 5, p.2-3. Jan. 1874
Protomyces polysporus *Pk.*
N. Y. State Mus. Rep't 34, p.45-46. 1881. (Entyloma polysporum (*Pk.*) *Farl.*)
Psathyra conica *Pk.*
N. Y. State Mus. Rep't 54, p.153, pl.H, fig.17-22. 1901

Psathyra microsperma *Pk.*
Torr. Bot. Club Bul. 26, p.68. Feb. 1899
Psathyra multipedata *Pk.*
Torr. Bot. Club Bul. 32, p.80. Feb. 1905
Agaricus (Psathyra) polytrichophilus *Pk.*
N. Y. State Mus. Rep't 30, p.42. 1878
Psathyra silvatica *Pk.*
N. Y. State Mus. Rep't 42, p.20. 1889. Bot. ed.
Psathyra umbonata *Pk.*
N. Y. State Mus. Rep't 50, p.106. 1897
Psathyra vestita *Pk.*
N. Y. State Mus. Bul. 105, p.28. 1906
Psathyrella angusticeps *Pk.*
Torr. Bot. Club Bul. 33, p.217-18. Apr. 1906
Psathyrella bartholomaei *Pk.*
Torr. Bot. Club Bul. 22, p.490-91. Dec. 1895
Psathyrella betulina *Pk.*
Torr. Bot. Club Bul. 34, p.101. Feb. 1907
Psathyrella caespitosa *Pk.*
Torr. Bot. Club Bul. 34, p.348. July 1907
Psathyrella debilis *Pk.*
Torr. Bot. Club Bul. 23, p.418. Oct. 1896
Psathyrella gracillima *Pk.*
Torr. Bot. Club Bul. 23, p.417. Oct. 1896
Agaricus (Psathyrella) graciloides *Pk.*
N. Y. State Mus. Rep't 30, p.42-43, pl.1, fig.1-4. 1878
Psathyrella hirta *Pk.*
N. Y. State Mus. Rep't 50, p.107. 1897
Psathyrella leucostigma *Pk.*
Torr. Bot. Club Bul. 22, p.490. Dec. 1895
Psathyrella minima *Pk.*
N. Y. State Mus. Rep't 41, p.70-71. 1888
Agaricus (Psathyrella) odoratus *Pk.*
N. Y. State Mus. Rep't 24, p.70-71. 1872
Psathyrella tenera *Pk.*
N. Y. State Mus. Rep't 47, p.18. 1894. Bot. ed.
Pseudopeziza pyri *Pk.*
N. Y. State Mus. Rep't 44, p.30. 1891. Bot. ed
Agaricus (Psilocybe) arenulinus *Pk.*
N. Y. State Mus. Rep't 30, p.42. 1878
Agaricus (Psilocybe) atomatoides *Pk.*
N. Y. State Mus. Rep't 29, p.41. 1878
Agaricus (Psilocybe) caerulipes *Pk.*
N. Y. State Mus. Rep't 38, p.89. 1885
Agaricus (Psilocybe) camptopus *Pk.*
N. Y. State Mus. Rep't 31, p.35. 1879
Psilocybe castanella *Pk.*
N. Y. State Mus. Bul. 2, p.7. 1887

Psilocybe conissans *Pk.*

N. Y. State Mus. Bul. 122, p.131–32. 1908

N. Y. State Mus. Rep't 41, p.64–65. 1888. (As Clitopilus conissans *Pk.*)

N. Y. State Mus. Rep't 42, p.45. 1889. Bot. ed.

Agaricus (Psilocybe) elongatipes *Pk.*

N. Y. State Mus. Rep't 29, p.40. 1878

Psilocybe fuscofulva *Pk.*

N. Y. State Mus. Bul. 2, p.7. 1887

Agaricus (Psilocybe) limicola *Pk.*

N. Y. State Mus. Rep't 24, p.70, pl.2, fig.9–13. 1872

Agaricus (Psilocybe) limophilus *Pk.*

N. Y. State Mus. Rep't 30, p.42. 1878

Psilocybe obscura *Pk.*

Torr. Bot. Club Bul. 24, p.144. Mar. 1897

Psilocybe sabulosa *Pk.*

Torr. Bot. Club Bul. 24, p.144. Mar. 1897

Psilocybe senex *Pk.*

N. Y. State Mus. Rep't 41, p.70. 1888

Psilocybe squalidella *Pk.*

N. Y. State Mus. Rep't 46, p.56. 1893. Bot. ed.

N. Y. State Mus. Rep't 29, p.40. 1878. (As Agaricus (Hypholoma) squalidellus *Pk.*)

Psilocybe squalidella *Pk. var.* caespitosa *Pk.*

N. Y. State Mus. Rep't 46, p.55–56. 1893. Bot. ed.

Psilocybe squalidella *Pk. var.* deformata *Pk.*

N. Y. State Mus. Rep't 49, p.29. 1896. Bot. ed.

Psilocybe unicolor *Pk.*

N. Y. State Mus. Rep't 53, p.845. 1900

Pterula divaricata *Pk.*

N. Y. State Mus. Rep't 32, p.36. 1879

Pterula setosa *Pk.*

N. Y. State Mus. Rep't 27, p.105. 1875

N. Y. State Mus. Rep't 46, p.57. 1893. Bot. ed. (As Hirsutella setosa (*Pk.*) *Pat.*) (Lachnocladium setosum *Pk.* in Sylloge 6)

Puccinia aberrans *Pk.*

Bot. Gaz. 4:217–18. Oct. 1879

Puccinia acrophila *Pk.*

Bot. Gaz. 6:227. June 1881

Puccinia acuminata *Pk.*

N. Y. State Cab. Rep't 23, p.57. 1872. Bot. ed.

N. Y. State Mus. Rep't 25, p.119–20, pl.2, fig.29–29a. 1873

Puccinia angustata *Pk.*

Buf. Soc. Nat. Sci. Bul. 1, p.67. July 1873

N. Y. State Mus. Rep't 25, p.123, pl.2, fig.40. 1873

Puccinia arnicalis *Pk.*

Bot. Gaz. 6:227. June 1881

Puccinia asteris *Duby var.* purpurascens *C. & P.*

N. Y. State Mus. Rep't 25, p.118, pl.2, fig.23a. 1873

Puccinia atropuncta *Pk. & Clint.*
Bot. Gaz. 4:171. June 1879
Puccinia balsamorrhizae *Pk.*
Torr. Bot. Club Bul. 11, p.49. May 1884
Bot. Gaz. 6:276. Oct. 1881. (As Trichobasis balsamorrhizae *Pk.*) (Uredo balsamorrhizae *Pk.* in Sylloge 7)
Puccinia boisduvaliae *Pk.*
Bot. Gaz. 7:45. Apr. 1882
Puccinia brandegei *Pk.*
Bot. Gaz. 7:44-45. Apr. 1882
Puccinia brickelliae *Pk.*
Torr. Bot. Club Bul. 12, p.34-35. Apr. 1885
Puccinia calochorti *Pk.*
Bot. Gaz. 6:228. June 1881
Puccinia cladophila *Pk.*
Bot. Gaz. 4:127. Feb. 1879
Puccinia clarkiae *Pk.*
Torr. Bot. Club Bul. 11, p.49. May 1884
Puccinia clintonii *Pk.*
N. Y. State Mus. Rep't 28, p.61. 1876
Puccinia comandrae *Pk.*
Torr. Bot. Club Bul. 11, p.49. May 1884
Puccinia compositarum *Schlect. var.* nabali *Pk.*
N. Y. State Mus. Rep't 25, p.113. 1873
Puccinia cryptotaeniae *Pk.*
N. Y. State Cab. Rep't 23, p.56. 1872. Bot. ed.
Buf. Soc. Nat. Sci. Bul. 1, p.66. July 1873
N. Y. State Mus. Rep't 25, p.114-15, pl.2, fig.12. 1873
Puccinia gayophyti *Pk.*
Bot. Gaz. 7:56. May 1882
Puccinia gerardii *Pk.*
N. Y. State Mus. Rep't 24, p.91. 1872
N. Y. State Mus. Rep't 25, p.118, pl.2, fig.24. 1873. (Puccinia asteris *Duby* in Sylloge 7)
Puccinia globosipes *Pk.*
Torr. Bot. Club Bul. 12, p.34, pl.XLIX, fig.9-10. Apr. 1885
Puccinia graminis *Pers. var.* brevicarpa *Pk.*
N. Y. State Mus. Rep't 25, p.122, pl.2, fig.36a. 1873
Puccinia grindeliae *Pk.*
Bot. Gaz. 4:127. Feb. 1879
Puccinia hydrophylli *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.54. 1878
Buf. Soc. Nat. Sci. Bul. 1, p.68. July 1873. (As Aecidium hydrophylli *Pk.*)
N. Y. State Mus. Rep't 26, p.78. 1874
Puccinia hysteriformis *Pk.*
Bot. Gaz. 6:276. Oct. 1881
Puccinia intermixta *Pk.*
Bot. Gaz. 4:218. Oct. 1879

Puccinia jonesii *Pk.*
Bot. Gaz. 6:226–27. June 1881
Puccinia linearis *Pk.* (Puccinia striatula *Pk.*)
Puccinia malvastri *Pk.*
Torr. Bot. Club Bul. 12, p.35. Apr. 1885
Puccinia menthae *Pers. var.* americana *Pk.*
N. Y. State Mus. Rep't 25, p.115–16, pl.2, fig.15. 1873
Puccinia mertensiae *Pk.*
Bot. Gaz. 6:227–28. June 1881
Puccinia minutula *Pk.*
N. Y. State Mus. Rep't 24, p.91. 1872
N. Y. State Mus. Rep't 25, p.117, pl.2, fig.21. 1873. (Puccinia virgaureae (*DC.*) *Lib.*)
Puccinia mirabilissima *Pk.*
Bot. Gaz. 6:226. June 1881
Puccinia nigrescens *Pk.*
Bot. Gaz. 3:35. Apr. 1878. (Puccinia salviae-lanceolatae *Bubak* in Sylloge 17)
Puccinia obscura *Schroet. var.* vernalis *Pk.*
N. Y. State Mus. Rep't 43, p.28. 1890. Bot. ed.
Puccinia obtecta *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.66. July 1873
N. Y. State Mus. Rep't 25, p.121, pl.2, fig.33–33a. 1873
Puccinia orbicula *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.53–54. 1878
Puccinia osmorrhizae *C. & P.*
N. Y. State Mus. Rep't 29, p.73. 1878. (Name)
N. Y. State Mus. Rep't 24, p.92, 107–8. 1872. (As Aecidium osmorrhizae *Pk.*)
Puccinia pentstemonis *Pk.*
Torr. Bot. Club Bul. 12, p.35. Apr. 1885
Puccinia physalidis *Pk.*
Bot. Gaz. 4:218. Oct. 1879
Puccinia physostegiae *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.50, pl.2, fig.25–26. 1878
Puccinia plumbaria *Pk.*
Bot. Gaz. 6:226. June 1881
Puccinia porteri *Pk.*
"Flora of Col."; Dep't Int. Pub. (Washington) 4:164. 1874
Puccinia pringlei *Pk.*
Bot. Gaz. 6:275–76. Oct. 1881
Puccinia pulchella *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.66. July 1873
N. Y. State Mus. Rep't 25, p.111, pl.2, fig.1–1a. 1873
Puccinia simplex *Pk.*
N. Y. State Mus. Rep't 34, p.45. 1881
Puccinia solidaginis *Pk.*
Torr. Bot. Club Bul. 11, p.49. May 1884

Puccinia spreta *Pk.*
N. Y. State Mus. Rep't 29, p.67. 1878. (Nov. nom.)
N. Y. State Mus. Rep't 31, p.59. 1879
N. Y. State Mus. Rep't 25, p.115, pl.2, fig.14. 1873. (As Puccinia tiarellae *B. & C.*) (Puccinia heucherae (*Schw.*) *Diet.* in Sylloge 17)
Puccinia striatula *Pk.*
N. Y. State Mus. Rep't 33, p.38. 1880
Buf. Soc. Nat. Sci. Bul. 1, p.67. July 1873. (As Puccinia linearis *Pk.*)
N. Y. State Mus. Rep't 25, p.121, pl.2, fig.35. 1873
Puccinia tripustulata *Pk.*
N. Y. State Mus. Rep't 24, p.91, pl.3, fig.14–16. 1872
N. Y. State Mus. Rep't 25, p.113–14, pl.2, fig.9. 1873. (Puccinia peckiana *Howe* in Sylloge 7)
Puccinia troximontis *Pk.*
Bot. Gaz. 6:227. June 1881
Puccinia tumidipes *Pk.*
Torr. Bot. Club Bul. 12, p.34, pl.XLIX, fig.3–8. Apr. 1885
Puccinia viguierae *Pk.*
Torr. Bot. Club Bul. 12, p.35. Apr. 1885
Pyrenochaeta collabens *Pk.*
N. Y. State Mus. Rep't 48, p.13. 1896. Bot. ed.
Pyrenophora depressa *Pk.*
Torr. Bot. Club Bul. 11, p.28. Mar. 1884
Pyrenophora fenestrata *Pk.*
Torr. Bot. Club Bul. 11, p. 28. Mar. 1884
Ramularia albomaculata *Pk.*
N. Y. State Mus. Rep't 32, p.42. 1879
N. Y. State Mus. Bul. 2, p.17–18. 1887
Ramularia angustata *Pk.*
N. Y. State Mus. Rep't 32, p.42. 1879
N. Y. State Mus. Bul. 2, p.18. 1887
Ramularia aquatilis *Pk.*
N. Y. State Mus. Rep't 35, p.142. 1884
Ramularia barbareae *Pk.*
N. Y. State Mus. Rep't 40, p.63–64. 1887
Ramularia brunnea *Pk.*
N. Y. State Mus. Rep't 30, p.55. 1878
Ramularia celastri *Pk.*
N. Y. State Mus. Rep't 33, p.30. 1880. (Ramularia celastri *Ell. & Mart.* (1882) is a synonym.)
Ramularia cylindriopsis *Pk.*
N. Y. State Mus. Rep't 50, p.116–17. 1897
Ramularia destruens *Pk.*
N. Y. State Mus. Rep't 44, p.26, pl.4, fig.4–6. 1891. Bot. ed.
Ramularia diervillae *Pk.*
N. Y. State Mus. Rep't 38, p.99, pl.1, fig.16–18. 1885
Ramularia dulcamarae *Pk.*
N. Y. State Mus. Rep't 33, p.30. 1880

Ramularia effusa *Pk.*
N. Y. State Mus. Rep't 32, p.42. 1879
N. Y. State Mus. Bul. 2, p.17. 1887
Ramularia fragariae *Pk.*
N. Y. State Mus. Rep't 32, p.43. 1879
N. Y. State Mus. Rep't 34, p.30-31, pl.3, fig.12-15. 1881. (Ramularia tulasnei *Sacc.*)
Ramularia graminicola *Pk.*
N. Y. State Mus. Rep't 44, p.26-27, pl.4, fig.1-3. 1891. Bot. ed.
Ramularia hamamelidis *Pk.*
N. Y. State Mus. Rep't 35, p.141-42. 1884
Ramularia impatientis *Pk.*
N. Y. State Mus. Rep't 34, p.47. 1881
Ramularia junci *Pk.*
N. Y. State Mus. Rep't 44, p.26. 1891. Bot. ed.
Ramularia lineola *Pk.*
N. Y. State Mus. Rep't 32, p.43. 1879
N. Y. State Mus. Bul. 2, p.18. 1887
Ramularia mitellae *Pk.*
N. Y. State Mus. Rep't 33, p.30. 1880
Ramularia multiplex *Pk.*
N. Y. State Mus. Rep't 38, p.99. 1885
Ramularia nemopanthis *C. & P.*
N. Y. State Mus. Rep't 29, p.52. 1878
Ramularia norvegica *Pk.*
N. Y. State Mus. Rep't 32, p.43. 1879. (Ramularia arvensis *Sacc.*)
Ramularia plantaginis *Pk.*
N. Y. State Mus. Rep't 32, p.43. 1879. (Ramularia plantaginis *Ell. & Mart.* (1882) is a synonym.)
Ramularia plantaginis *Pk. var.* nigromaculans *Pk.*
N. Y. State Mus. Rep't 40, p.76. 1887
Ramularia prini *Pk.*
N. Y. State Mus. Rep't 38, p.99, pl.1, fig.19-21. 1885
Ramularia ranunculi *Pk.*
N. Y. State Mus. Rep't 35, p.141. 1884
Ramularia rudbeckiae *Pk.*
N. Y. State Mus. Rep't 34, p.47. 1881
Ramularia rufomaculans *Pk.*
N. Y. State Mus. Rep't 34, p.46-47. 1881
Ramularia sambucina *Pk.*
N. Y. State Mus. Rep't 34, p.47. 1881
Ramularia spiraeae *Pk.*
N. Y. State Mus. Rep't 34, p.46. 1881
Ramularia vaccinii *Pk.*
N. Y. State Mus. Rep't 35, p.141. 1884
Rhabdospora rhoina *Pk.*
N. Y. State Mus. Rep't 47, p.22. 1894. Bot. ed.
Rhabdospora subgrisea *Pk.*
N. Y. State Mus. Rep't 38, p.98. 1885

Rhabdospora xanthii *Pk.*
N. Y. State Mus. Rep't 39, p.47. 1886
Rhinotrichum subalutaceum *Pk.*
N. Y. State Mus. Rep't 34, p.51. 1881
Rhinotrichum sumstinei *Pk.*
Torr. Bot. Club Bul. 34, p.103. Feb. 1907
Rhytidhysterium prosopidis *Pk.*
N. Y. State Mus. Rep't 46, p.39–40. 1893. Bot. ed.
Rhytisma linearis *Pk.* (Hypoderma lineare *Pk.*)
Rhytisma sparsa *Pk. & Clint.*
Bot. Gaz. 4:171. June 1879. (Cocconia sparsa (*P. & C.*) *Sacc.*)
Roestelia aurantiaca *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.68. July 1873
N. Y. State Mus. Rep't 25, p.91, pl.1, fig.10–12. 1873
Roestelia ellisii *Pk.*
Torr. Bot. Club Bul. 6, p.13. Feb. 1875. (Aecidial form of Gymnosporangium biseptatum *Ellis* in Sylloge 7)
Roestelia interveniens *Pk.*
Torr. Bot. Club Bul. 10, p.74. July 1883
Rosellinia linderae *Pk.*
N. Y. State Mus. Rep't 49, p.24. 1896. Bot. ed.
Russula abietina *Pk.*
N. Y. State Mus. Rep't 54, p. 145, 180–81, pl.72, fig.1–11. 1901
N. Y. State Mus. Bul. 116, p.97. 1907
Russula aeruginascens *Pk.*
N. Y. State Mus. Rep't 53, p.843. 1900
N. Y. State Mus. Bul. 116, p.75. 1907. (As Russula variata *Banning*)
Russula albella *Pk.*
N. Y. State Mus. Rep't 50, p.101. 1897
N. Y. State Mus. Bul. 116, p.92–93. 1907
Russula albida *Pk.*
N. Y. State Mus. Bul. 2, p.10. 1887
N. Y. State Mus. Bul. 105, p.38, pl.96. 1906
N. Y. State Mus. Bul. 116, p.92. 1907
Russula albidula *Pk.*
Torr. Bot. Club Bul. 25, p.370. July 1898
Russula anomala *Pk.*
N. Y. State Mus. Rep't 50, p.99. 1897
N. Y. State Mus. Bul. 116, p.91. 1907
Russula atropurpurea *Pk.* (Russula squalida *Pk.*)
Russula basifurcata *Pk.*
N. Y. State Mus. Rep't 38, p.90. 1885
N. Y. State Mus. Bul. 116, p.73–74. 1907
Russula brevipes *Pk.*
N. Y. State Mus. Rep't 43, p.20, pl.2, fig.5–8. 1890. Bot. ed.
N. Y. State Mus. Rep't 54, 178–79, pl.71, fig.1–5. 1901
N. Y. State Mus. Bul. 116, p.72. 1907
Russula crustosa *Pk.*
N. Y. State Mus. Rep't 39, p.41–42. 1886
N. Y. State Mus. Bul. 67, p.45–46, pl.84, fig.1–7. 1903
N. Y. State Mus. Bul. 116, p.77–78. 1907

Russula densifolia *Secr. var.* paxilloides *Pk.*
N. Y. State Mus. Bul. 75, p.20. 1904
N. Y. State Mus. Bul. 116, p.70. 1907

Russula earlei *Pk.*
N. Y. State Mus. Bul. 67, p.24, pl.N, fig.5–10. 1903
N. Y. State Mus. Bul. 116, p.42, 83. 1907

Russula flaviceps *Pk.*
N. Y. State Mus. Rep't 53, p.843, pl.C, fig.6–10. 1900
N. Y. State Mus. Bul. 116, p.96. 1907

Russula foetens granulata *Pk.* (Russula granulata *Pk.*)

Russula foetentula *Pk.*
N. Y. State Mus. Bul. 116, p.85. 1907

Russula granulata *Pk.*
N. Y. State Mus. Rep't 53, p.843–44, pl.C, fig.1–5. 1900
N. Y. State Mus. Rep't 116, p.84–85. 1907
N. Y. State Mus. Rep't 39, p.57. 1886. (As Russula foetens *Fr. var.* granulata *Pk.*)

Russula integra rubrotincta *Pk.*
N. Y. State Mus. Rep't 54, p.164. 1901
N. Y. State Mus. Bul. 116, p.92. 1907

Russula luteobasis *Pk.*
Torr. Bot. Club Bul. 31, p.179. Apr. 1904

Russula magnifica *Pk.*
N. Y. State Mus. Bul. 67, p.24, pl.N, fig.1–4. 1903
N. Y. State Mus. Bul. 116, p.71. 1907

Russula mariae *Pk.*
N. Y. State Mus. Rep't 24, p.74–75. 1872
N. Y. State Mus. Rep't 50, p.131–32. 1897
N. Y. State Mus. Bul. 75, p.29–30, pl.85, fig.1–8. 1904
N. Y. State Mus. Bul. 116, p.81. 1907

Russula modesta *Pk.*
N. Y. State Mus. Bul. 116, p.78. 1907

Russula nigrescentipes *Pk.*
Torr. Bot. Club Bul. 33, p.214–15. Apr. 1906

Russula nigrodisca *Pk.*
Fur Seal Invest. Rep't Pt. 3, p.583–84. 1899

Russula ochrophylla *Pk.*
N. Y. State Mus. Rep't 50, p.100–1. 1897
N. Y. State Mus. Rep't 51, p.307–8, pl.53, fig.8–12. 1898
N. Y. State Mus. Mem. 4, p.154–55, pl.54, fig.8–11. 1900
N. Y. State Mus. Bul. 116, p.80–81. 1907

Russula ochrophylla *Pk. var.* albipes *Pk.*
N. Y. State Mus. Rep't 50, p.100. 1897
N. Y. State Mus. Rep't 51, p.308, pl.53, fig.13–14. 1898
N. Y. State Mus. Mem. 4, p.155, pl.54, fig.12–14. 1900
N. Y. State Mus. Bul. 116, p.81. 1907

Russula palustris *Pk.*
N. Y. State Mus. Rep't 53, p.842. 1900
N. Y. State Mus. Bul. 116, p.94. 1907

Russula pectinatoides *Pk.*
N. Y. State Mus. Bul. 116, p.43, 90, pl.105, fig.6-10. 1907
Russula polyphylla *Pk.*
Torr. Bot. Club Bul. 25, p.370. July 1898
Russula puellaris umbonata *Pk.*
Torr. Bot. Club Bul. 29, p.557. Sept. 1902. (Name)
Russula pulverulenta *Pk.*
Torr. Bot. Club Bul. 29, p.70. Feb. 1902
Russula pusilla *Pk.*
N. Y. State Mus. Rep't 50, p.99-100. 1897
N. Y. State Mus. Bul. 116, p.95-96. 1907
N. Y. State Mus. Bul. 122, p.138, pl.110, fig.7-14. 1908
Russula rugulosa *Pk.*
N. Y. State Mus. Rep't 54, p.145, 179-80, pl.72, fig.12-18. 1901
N. Y. State Mus. Bul. 116, p.88. 1907
Russula simillima *Pk.*
N. Y. State Mus. Rep't 24, p.75. 1872
N. Y. State Mus. Bul. 116, p.90-91. 1907
Russula sordida *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.57. July 1873
N. Y. State Mus. Rep't 26, p.65. 1874
N. Y. State Mus. Rep't 41, p.85. 1888. (Note)
N. Y. State Mus. Bul. 105, p.39-40, pl.98. 1906
N. Y. State Mus. Bul. 116, p.69-70. 1907
Russula squalida *Pk.*
N. Y. State Mus. Bul. 116, p.80. 1907
N. Y. State Mus. Rep't 41, p.75. 1888. (As Russula atropurpurea *Pk.*)
N. Y. State Mus. Rep't 54, p.164. 1901. (Note)
Russula subdepallens *Pk.*
Torr. Bot. Club Bul. 23, p.412-13. Oct. 1896
Russula subsordida *Pk.*
N. Y. State Mus. Bul. 105, p.28, 40-41, pl.99. 1906
N. Y. State Mus. Bul. 116, p.69. 1907
Russula subvelutina *Pk.*
Torr. Bot. Club Bul. 33, p.215. Apr. 1906
Russula uncialis *Pk.*
N. Y. State Mus. Bul. 2, p.10. 1887
N. Y. State Mus. Bul. 116, p.43-44, 89, pl.107, fig.7-12. 1907
Russula ventricosipes *Pk.*
Torr. Bot. Club Bul. 29, p.70-71. Feb. 1902
Russula viridella *Pk.*
N. Y. State Mus. Bul. 105, p.28, 41, pl.100. 1906
N. Y. State Mus. Bul. 116, p.76. 1907
Saccharomyces betulae *Pk. & Pat.*
N. Y. State Mus. Rep't 44, p.30, pl.2, fig.16-17. 1891. Bot. ed.
Sacidium lignarium *Pk.*
N. Y. State Mus. Rep't 42, p.30. 1889. Bot. ed.
Sarcoscypha dawsonensis *Pk.*
Torr. Bot. Club Bul. 33, p.220. Apr. 1906

Scleroderma verrucosum maculatum *Pk.*
  N. Y. State Mus. Rep't 53, p.848-49, pl.B, fig.8-12. 1900
Sclerotinia infundibuliformis *Pk.*
  Torr. Bot. Club Bul. 23, p.420. Oct. 1896
Secotium decipiens *Pk.*
  Torr. Bot. Club Bul. 22, p.492. Dec. 1895
Secotium warnei *Pk.*
  Torr. Bot. Club Bul. 9, p.2-4, pl.IX, fig.6-11. Jan. 1882
  N. Y. State Mus. Bul. 67, p.28. 1903. (Note)
  Torr. Bot. Club Bul. 6, p.77. Feb. 1876. (As Lycoperdon warnei *Pk.*)
  Alb. Inst. Trans. 9:318. 1879. (As Podaxon warnei *Pk.*)
Sepedonium brunneum *Pk.*
  N. Y. State Mus. Rep't 32, p.44. 1879
  N. Y. State Mus. Bul. 2, p.19. 1887
Sepedonium cervinum *Ditm. var.* subincarnatum *Pk.*
  N. Y. State Mus. Rep't 32, p.44. 1879
Sepedonium macrosporium *Pk.*
  Torr. Bot. Club Bul. 30, p.99. Feb. 1903
Septocylindrium ranunculi *Pk.*
  N. Y. State Mus. Rep't 34, p.46. 1881
Septocylindrium scirpinum *Pk.*
  N. Y. State Mus. Rep't 45, p.23. 1893. Bot. ed.
Septogloeum apocyni *Pk.*
  N. Y. State Mus. Rep't 34, p.45, pl.1, fig.1-2. 1881
Septomyxa carpini *Pk.*
  N. Y. State Mus. Rep't 44, p.24, pl.4, fig.13-14. 1891. Bot. ed.
Septomyxa persicina *(Fres.) Sacc. var.* nigricans *Pk.*
  N. Y. State Mus. Rep't 47, p.21. 1894. Bot. ed.
Septonema bicolor *Pk.*
  N. Y. State Mus. Rep't 28, p.60. 1876
  N. Y. State Mus. Rep't 31, p.58. 1879. (As Sporidesmium peziza *C. & E.*)
Septonema dichaenoides *Pk. & Clint.*
  N. Y. State Mus. Rep't 30, p.53. 1878
Septonema episphaericum *Pk.*
  N. Y. State Mus. Rep't 44, p.27. 1891. Bot. ed.
Septoria acerina *Pk.*
  N. Y. State Mus. Rep't 25, p.87. 1873
Septoria astragalicola *Pk.*
  Torr. Bot. Club Bul. 12, p.33-34. Apr. 1885
Septoria atropurpurea *Pk.*
  N. Y. State Mus. Rep't 33, p.25. 1880
Septoria besseyi *Pk.*
  Torr. Bot. Club Bul. 6, p.77. Feb. 1876
Septoria betulicola *Pk.*; and *var.* marginalis *Pk.*
  N. Y. State Mus. Rep't 34, p.44. 1881
Septoria brevis *Pk.*
  N. Y. State Mus. Rep't 40, p.61. 1887
Septoria canadensis *Pk.*
  N. Y. State Mus. Rep't 32, p.39. 1879

Septoria cannabina *Pk.*
N. Y. State Mus. Rep't 35, p.137. 1884
Septoria centaureicola *Brun. var.* brevispora *Pk.*
N. Y. State Mus. Rep't 48, p.14. 1896. Bot. ed.
Septoria cerasina *Pk.*
N. Y. State Mus. Rep't 29, p.48. 1878
Septoria conspecia *Pk.*
Bot. Gaz. 5:34. Mar. 1880
Septoria corylina *Pk.*
N. Y. State Mus. Rep't 34, p.44. 1881
Septoria corylina *Pk. var.* permaculata *Pk.*
N. Y. State Mus. Rep't 39, p.57. 1886
Septoria dalibardae *Pk.*
N. Y. State Mus. Rep't 38, p.97. 1885
Septoria dentariae *Pk.*
N. Y. State Mus. Rep't 38, p.97. 1885
Septoria dentariae *Pk. var.* arida *Pk.*
N. Y. State Mus. Rep't 48, p.20. 1896. Bot. ed.
Septoria diervillae *Pk.*
N. Y. State Mus. Rep't 38, p.98. 1885
Septoria difformis *C. & P.*
N. Y. State Mus. Rep't 29, p.48–49. 1878
Septoria emaculata *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.48. 1878
Septoria erigeronis *Pk.*
N. Y. State Mus. Rep't 24, p.87. 1872
Buf. Soc. Nat. Sci. Bul. 4, p.201. Apr. 1882. (As Septoria erigerontis *Pk.*) (Septoria erigerontis *B. & C.* is a synonym.)
Septoria fumosa *Pk.*
N. Y. State Mus. Rep't 38, p.98. 1885
Septoria fusca *Pk.*
N. Y. State Mus. Rep't 40, p.60. 1887
Septoria hedeomina *Pk.*
N. Y. State Mus. Rep't 33, p.25. 1880. (Rhabdospora hedeomina (*Pk.*) *Sacc.*)
Septoria incréscens *Pk.*
N. Y. State Mus. Rep't 33, p.25. 1880
Septoria irregulare *Pk.*
Bot. Gaz. 5:34. Mar. 1880
Septoria lactucae *Pk.*
Bot. Gaz. 4:170. June 1879
Saccardo's Sylloge 3:551. 1884. (Septoria lactucae *Pass.*)
Septoria lobeliae *Pk.*
N. Y. State Mus. Rep't 24, p.87–88. 1872
Septoria lythrina *Pk.*
N. Y. State Mus. Rep't 33, p.25. 1880
Septoria microsperma *Pk.*
N. Y. State Mus. Rep't 34, p.44–45, pl.1, fig.3–5. 1881
Septoria mirabilis *Pk.* (Gloeosporium mirabile *Pk.*)

Septoria musiva *Pk.*
N. Y. State Mus. Rep't 35, p.138. 1884
Septoria osmorrhizae *Pk.*
N. Y. State Mus. Rep't 39, p.46. 1886
Septoria ostryae *Pk.*
N. Y. State Mus. Rep't 33, p.25. 1880
Septoria pastinacina *Pk.*
N. Y. State Mus. Rep't 33, p.24-25. 1880
Septoria peraphylli *Pk.*
N. Y. State Mus. Rep't 45, p.24-25. 1893. Bot. ed.
Septoria podophyllina *Pk.*
Bot. Gaz. 4:170. June 1879
Septoria polygalae *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.48. 1878
Septoria populicola *Pk.*
N. Y. State Mus. Rep't 40, p.61. 1887
Septoria pteridis *Pk.*
N. Y. State Mus. Rep't 44, p.24. 1891. Bot. ed.
Septoria punicei *Pk.*
N. Y. State Mus. Rep't 38, p.97. 1885
Septoria rubi *B. & C. var.* alba *Pk.*
N. Y. State Mus. Rep't 34, p.57. 1881
Septoria salicina *Pk.*
N. Y. State Mus. Rep't 25, p.87. 1873
Septoria sambucina *Pk.*
N. Y. State Mus. Rep't 28, p.58. 1876
Septoria scrophulariae *Pk.*
N. Y. State Mus. Rep't 28, p.57. 1876
Septoria sicyi *Pk.*
N. Y. State Mus. Rep't 35, p.137. 1884
Septoria solidaginicola *Pk.*
N. Y. State Mus. Rep't 40, p.61. 1887
Septoria trichostematis *Pk.*
N. Y. State Mus. Rep't 42, p.30. 1889. Bot. ed.
Septoria trillii *Pk.*
Bot. Gaz. 4:170-71. June 1879
Septoria violae *West. var.* oligocarpa *Pk.*
N. Y. State Mus. Rep't 43, p.40. 1890. Bot. ed.
Septoria waldsteiniae *Pk. & Clint.*
N. Y. State Mus. Rep't 31, p.43. 1879
Septosporium equiseti *Pk.*
Millspaugh's "Prel. Cat. Flora W. Va." p. 516. June 1892. (Name)
N. Y. State Mus. Rep't 45, p.25. 1893. Bot. ed.
Solenia anomala *Pers. var.* orbicularis *Pk.*
N. Y. State Mus. Rep't 47, p.42. 1894. Bot. ed.
Solenia anomaloides *Pk.*
Torr. Bot. Club Bul. 25, p.326. June 1898
Solenia filicina *Pk.*
N. Y. State Mus. Rep't 28, p.52-53. 1876

Solenia villosa *Fr. var.* polyporoidea *Pk.*
N. Y. State Mus. Rep't 41, p.86. 1888
Sorosporium astragali *Pk.*
Bot. Gaz. 4:218. Oct. 1879
Sorosporium atrum *Pk.*
Bot. Gaz. 5:35. Mar. 1880
Sorosporium desmodii *Pk.*
Bot. Gaz. 3:35. Apr. 1878
Sparassis herbstii *Pk.*
Torr. Bot. Club Bul. 22, p.207-8. May 1895
Spathularia flavida rugosa *Pk.* (Spathularia rugosa *Pk.*)
Spathularia rugosa *Pk.*
N. Y. State Mus. Rep't 50, p.118-19. 1897
N. Y. State Mus. Rep't 51, p.300. 1898. (Note)
N. Y. State Mus. Rep't 39, p.58. 1886. (As Spathularia flavida *Pers. var.* rugosa *Pk.*)
Sphaerella alnicola *Pk.*
N. Y. State Mus. Rep't 40, p.68-69. 1887
Sphaerella arbuticola *Pk.*
Torr. Bot. Club. Bul. 10, p.75. July 1883
Sphaerella chimaphilae *Pk.* (Sphaerella chimaphilina *Pk.*)
Sphaerella chimaphilina *Pk.*
Saccardo's Sylloge 11:297. 1895
N. Y. State Mus. Rep't 47, p.24. 1894. Bot. ed. (As Sphaerella chimaphilae *Pk.*)
Sphaerella colorata *Pk.*
N. Y. State Mus. Rep't 29, p.62-63, pl.2, fig.15-17. 1878
Sphaerella conigena *Pk.*
N. Y. State Mus. Rep't 33, p.34. 1880
Saccardo's Sylloge 9:649. 1891. (As Sphaerella conigena *Pk.*)
Saccardo's Sylloge Add. 1-4:75. 1886. (As Sphaerella conicola *Pk.*)
Sphaerella conigena *Pk.*
N. Y. State Mus. Rep't 38, p.104. 1885. (Sphaerella peckii *Sacc.*)
Sphaerella cypripedii *Pk.*
N. Y. State Mus. Rep't 51, p.296. 1898
Sphaerella depressa *Pk.*
N. Y. State Mus. Rep't 33, p.34. 1880. (Laestadia depressa (*Pk.*) *Berl. & Vogl.*)
Sphaerella fraxinea *Pk.*
N. Y. State Mus. Rep't 35, p.145. 1884
Sphaerella gaultheriae *C. & P.*
Grev. 7:42. Dec. 1878
Sphaerella impatientis *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.67. 1878
Sphaerella indistincta *Pk.*
N. Y. State Mus. Rep't 28, p.81. 1876
Sphaerella lycopodii *Pk.*
N. Y. State Mus. Rep't 30, p.51, pl.1, fig.12-15. 1886
Sphaerella megastoma *Pk.*
Bot. Gaz. 4:231. Nov. 1879. (Physalospora megastoma (*Pk.*) *Sacc.*)

Sphaerella minutissima *Pk.*
N. Y. State Mus. Rep't 40, p.68. 1887
Sphaerella orbicularis *Pk.*
N. Y. State Mus. Rep't 28, p.81. 1876
Sphaerella pontederiae *Pk.*
N. Y. State Mus. Rep't 40, p.69. 1887
Sphaerella rubina *Pk.*
N. Y. State Mus. Rep't 48, p.16. 1896. Bot. ed.
Sphaerella sarracenia (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 29, p.70. 1878. (For Sphaeria sarracenia *Schw.*)
Sphaerella septorioides *Pk.*
N. Y. State Mus. Rep't 32, p.52. 1879
Sphaerella spleniata *C. & P.*
N. Y. State Mus. Rep't 25, p.105. 1873
N. Y. State Mus. Rep't 33, p.38. 1880. (Note)
Sphaeria albidostoma *Pk.* (Herpotrichia leucostoma *Pk.*)
Sphaeria altipeta *Pk.*
Bot. Gaz. 5:36. Mar. 1880. (Rhynchostoma altipetum (*Pk.*) *Sacc.*)
Sphaeria arceuthobii *Pk.*
N. Y. State Mus. Rep't 27, p.111, pl.1, fig.10-14. 1875. (Wallrothiella arceuthobii (*Pk.*) *Sacc.*)
Sphaeria (Villosae) caesariata *C. & P.*
N. Y. State Mus. Rep't 29, p.60. 1878. (Lasiosphaeria caesariata (*C. & P.*) *Sacc.*)
Sphaeria canina *Pk.*
N. Y. State Mus. Rep't 28, p.78-79. 1876. (Philocopra canina (*Pk.*) *Sacc.*)
Sphaeria (Obtectae) ceanothina *Pk.*
N. Y. State Mus. Rep't 29, p.62. 1878. (Physalospora ceanothina (*Pk.*) *Sacc.*)
Sphaeria (Byssisedae) clavariina *Pk.*
N. Y. State Mus. Rep't 32, p.51. 1879
Sphaeria (Villosae) clintonii *Pk.*
N. Y. State Mus. Rep't 30, p.65, pl.2, fig.19-23. 1878. (Acanthostigma clintonii (*Pk.*) *Sacc.*)
Sphaeria coryli *Batsch var.* spiralis *Pk.*
N. Y. State Mus. Rep't 34, p.57. 1881. (Gnomoniella coryli (*Batsch*) *Sacc.*)
Sphaeria coulteri *Pk.*
U. S. Geol. Sur. Terr. Rep't 6, p.792. 1873
Torr. Bot. Club Bul. 10, p.127-28. Dec. 1883. (Desc.) (As Neopeckia) (Neopeckia coulteri (*Pk.*) *Sacc.*)
Sphaeria (Caulicolae) curvicolla *Pk.*
N. Y. State Mus. Rep't 31, p.50-51. 1879. (Gnomoniella curvicolla (*Pk.*) *Sacc.*)
Sphaeria desmodii *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.72. July 1873
N. Y. State Mus. Rep't 26, p.87. 1874. (Diaporthe desmodii (*Pk.*) *Sacc.*)

Sphaeria eccentrica *C. & P.*

N. Y. State Mus. Rep't 25, p.105. 1873. (Gnomoniella eccentrica (*C. & P.*) *Sacc.*)

Sphaeria (Caulicolae) exercitalis *Pk.*

N. Y. State Mus. Rep't 30, p.66. 1878. (Diaporthe exercitalis (*Pk.*) *Sacc.*)

Sphaeria (Denudatae) exigua *C. & P.*

N. Y. State Mus. Rep't 30, p.65. 1878. (Zignoella exigua (*C. & P.*) *Sacc.*)

Sphaeria eximia *Pk.*

N. Y. State Mus. Rep't 28, p.78, pl.2, fig.14–17. 1876

N. Y. State Mus. Rep't 31, p.60. 1879. (As Sordaria amphicornis *Ellis*)

Sphaeria (Caulicolae) fulgida *C. & P.*

Grev. 6:15. Sept. 1877. (Brief desc.)

N. Y. State Mus. Rep't 29, p.62. 1878. (Ophiobolus fulgidus (*C. & P.*) *Sacc.*)

Sphaeria hirtissima *Pk.*

N. Y. State Mus. Rep't 28, p.78. 1876. (Rosellinia hirtissima (*Pk.*) *Sacc.*)

Sphaeria humulina *Pk.* (Zignoella humulina *Pk.*)

Sphaeria (Denudatae) interstitialis *C. & P.*

N. Y. State Mus. Rep't 29, p.61. 1878. (Teichospora interstitialis (*C. & P.*) *Sacc.*)

Sphaeria intricata *Pk.* (Lasiosphaeria intricata *Pk.*)

Sphaeria (Villosae) leonina *C. & P.*

N. Y. State Mus. Rep't 29, p.60. 1878. (Chaetosphaeria leonina (*C. & P.*) *Sacc.*)

Sphaeria lichenalis *Pk.*

Bot. Gaz. 5:36. Mar. 1880. (Pleospora lichenalis (*Pk.*) *Sacc.*)

Sphaeria marciensis *Pk.*

N. Y. State Mus. Rep't 31, p.51. 1879. (Leptosphaeria marcyensis (*Pk.*) *Sacc.*)

Sphaeria (Obtectae) melantera *Pk.*

N. Y. State Mus. Rep't 29, p.62. 1878

Buf. Soc. Nat. Sci. Bul. 4, p.234. Apr. 1882. (As Sphaeria hendersoniae *Ellis*) (Clypeosphaeria hendersoniae (*Ellis*) *Sacc.*)

Sphaeria (Caulicolae) minutella *Pk.*

N. Y. State Mus. Rep't 29, p. 62. 1878. (Physalospora minutella (*Pk.*) *Sacc.*)

Sphaeria mirabilis *Pk.*

N. Y. State Mus. Rep't 28, p.80, pl.2, fig.18–21. 1876. (Gnomoniella mirabilis (*Pk.*) *Sacc.*)

Sphaeria monosperma *Pk.*

N. Y. State Mus. Rep't 28, p.79, pl 2, fig.36–39. 1876. (Julella monosperma (*Pk.*) *Sacc.*)

Sphaeria (Villosae) mutans *C. & P.*

N. Y. State Mus. Rep't 26, p.87. 1874. (Name)

N. Y. State Mus. Rep't 29, p.64. 1878. (Rosellinia mutans (*C. & P.*) *Sacc.*)

Sphaeria (Caulicolae) onosmodina *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.67. 1878. (Didymella onosmodina (*P. & C.*) *Sacc.*)
Sphaeria parnassiae *Pk.*
N. Y. State Mus. Rep't 27, p.111. 1875. (Didymosphaeria parnassiae (*Pk.*) *Sacc.*)
Sphaeria petiolophila *Pk.*
N. Y. State Mus. Rep't 35, p.144–45. 1884. (Gnomonia petiolophila (*Pk.*) *Berl. & Vogl.*)
Sphaeria phaeostromoides *Pk.*
N. Y. State Mus. Rep't 28, p.77, pl.2, fig.30–35. 1876. (Chaetosphaeria phaeostromoides (*Pk.*) *Sacc.*)
Sphaeria (Pertusae) phileura *C. & P.*
Grev. 5:55. pl.81, fig.6. Dec. 1876. (Amphisphaeria phileura (*C. & P.*) *Sacc.*)
Sphaeria (Villosae) pulchriseta *Pk.*
N. Y. State Mus. Rep't 31, p.50. 1879. (Acanthostigma pulchrisetum (*Pk.*) *Sacc.*)
Sphaeria (Caulicolae) racemula *C. & P.*
N. Y. State Mus. Rep't 26, p.87. 1874. (Name)
N. Y. State Mus. Rep't 29, p.65. 1878. (Diaporthe racemula (*C. & P.*) *Sacc.*)
Sphaeria ramulicola *Pk.*
N. Y. State Mus. Rep't 25, p.104. 1873. (Leptosphaeria ramulicola (*Pk.*) *Sacc.*)
Sphaeria (Denudatae) recessa *C. & P.*
N. Y. State Mus. Rep't 29, p.61. 1878. (Melanopsamma recessa (*C. & P.*) *Sacc.*)
Sphaeria rubefaciens *Pk.*
N. Y. State Mus. Rep't 28, p.79–80. 1876. (Ceratostoma rubefaciens (*Pk.*) *Sacc.*)
Sphaeria (Denudatae) salebrosa *C. & P.*
N. Y. State Mus. Rep't 29, p.61. 1878. (Amphisphaeria salebrosa (*C. & P.*) *Sacc.*)
Sphaeria (Caulicolae) scapophila *Pk.*
N. Y. State Mus. Rep't 30, p.66–67, pl.2, fig.24–27. 1878. (Leptosphaeria scapophila (*Pk.*) *Sacc.*)
Sphaeria scopula *C. & P.* (Acanthostigma scopula *C. & P.*)
Sphaeria (Caulicolae) semen *C. & P.*
N. Y. State Mus. Rep't 26, p.87. 1874. (Name)
N. Y. State Mus. Rep't 29, p.65. 1878. (Metasphaeria semen (*C. & P.*) *Sacc.*)
Sphaeria (Caulicolae) smilacinina *Pk.*
N. Y. State Mus. Rep't 29, p.62. 1878. (Anthostomella smilacinina (*Pk.*) *Sacc.*)
Sphaeria (Caulicolae) sorghophila *Pk.*
N. Y. State Mus. Rep't 31, p.51. 1879. (Leptosphaeria sorghophila (*Pk.*) *Sacc.*)
Sphaeria (Obtectae) sphaerellula *Pk.*
N. Y. State Mus. Rep't 30, p.66. 1878. (Didymella sphaerellula (*Pk.*) *Sacc.*)

Sphaeria (Denudatae) squalidula *C. & P.*
N. Y. State Mus. Rep't 29, p.61. 1878. (Wallrothiella squalidula (*C. & P.*) *Sacc.*)
Sphaeria staphylina *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.72. July 1873
N. Y. State Mus. Rep't 26, p.86–87. 1874. (Metasphaeria staphylina (*Pk.*) *Sacc.*)
Sphaeria (Caulicolae) subconica *C. & P.*
N. Y. State Mus. Rep't 26, p.87. 1874. (Name)
N. Y. State Mus. Rep't 29, p.65. 1878. (Leptosphaeria subconica (*C. & P.*) *Sacc.*)
Sphaeria subcorticalis *Pk.*
N. Y. State Mus. Rep't 28, p.77–78. 1876. (Trichosphaeria subcorticalis (*Pk.*) *Sacc.*)
Sphaeria (Ceratostomae) subdenudata *Pk.*
N. Y. State Mus. Rep't 32, p.52. 1879. (Ceratostoma subdenudatum *Pk.* in Sylloge 9)
Sphaeria taxicola *Pk.* (Metasphaeria taxicola *Pk.*)
Sphaeria thujina *Pk.*
N. Y. State Mus. Rep't 27, p.110. 1875. (Amphisphaeria thujina (*Pk.*) *Sacc.*)
Sphaeria valsoides *Pk.*
N. Y. State Mus. Rep't 28, p.78. 1876. (Sordaria valsoides (*Pk.*) *Sacc.*)
Sphaeria (Caulicolae) viridella *Pk.*
N. Y. State Mus. Rep't 30, p.66. 1878. (Leptosphaeria viridella (*Pk.*) *Sacc.*)
Sphaeria (Villosae) viridicoma *C. & P.*
N. Y. State Mus. Rep't 26, p.87. 1874. (Name)
N. Y. State Mus. Rep't 29, p.64. 1878. (Lasiosphaeria viridicoma (*C. & P.*) *Sacc.*)
Sphaerographium lantanoides *Pk.*
N. Y. State Mus. Rep't 38, p.96–97. 1885
Sphaeronema acerinum *Pk.*
N. Y. State Mus. Rep't 24, p.86. 1872
Sphaeronema aurantiacum *Pk.*
N. Y. State Mus. Rep't 30, p.51, pl.2, fig.9–11. 1878. (Zythia aurantiaca (*Pk.*) *Sacc.*)
Sphaeronema caespitosum *Pk.*
N. Y. State Mus. Rep't 25, p.85. 1873. (Sphaeronema peckii *Sacc. & Syd.* in Sylloge 14)
Sphaeronema conforme *Pk.*
N. Y. State Mus. Rep't 28, p.56. 1876
Sphaeronema coryli *Pk.*
N. Y. State Mus. Rep't 24, p.85. 1872
Sphaeronema fraxini *Pk.*
N. Y. State Mus. Rep't 29, p.71. 1878. (Sphaerographium fraxini (*Pk.*) *Sacc.*)
Sphaeronema lonicerae *Pk.*
N. Y. State Mus. Rep't 46, p.31. 1893. Bot. ed.

Sphaeronema magnoliae *Pk.*
N. Y. State Mus. Rep't 26, p.76. 1874
Sphaeronema minutissimum *Pk.*
N. Y. State Mus. Rep't 25, p.85. 1873
Sphaeronema pallidum *Pk.*
N. Y. State Mus. Rep't 25, p.85. 1873
Sphaeronema persicae (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 34, p.57. 1881. (For Sporocybe persicae *Schw.*)
Sphaeronema pruinosum *Pk.*
N. Y. State Mus. Rep't 24, p.85. 1872
N. Y. State Mus. Bul. 122, p.135. 1908. (Note) (Sphaeronema pruinosum *B. & C.* is a synonym.)
Sphaeropsis abundans *Pk.*
N. Y. State Mus. Rep't 33, p.24. 1880
Sphaeropsis alnicola *Pk.*
N. Y. State Mus. Rep't 38, p.95. 1885
Sphaeropsis anomala *Pk.*
N. Y. State Mus. Rep't 24, p.86. 1872. (Sphaeropsis peckii *Sacc.*)
Sphaeropsis biformis *Pk.*
N. Y. State Mus. Rep't 28, p.56. 1876
Sphaeropsis celastrina *Pk.*
N. Y. State Mus. Rep't 33, p.24. 1880
Sphaeropsis cerasina *Pk.*
N. Y. State Mus. Rep't 33, p.24. 1880
Sphaeropsis clintonii *Pk.*
N. Y. State Mus. Rep't 28, p.55. 1876
Sphaeropsis cornina *Pk.* (Phoma cornina *Pk.*)
Sphaeropsis ellisii *Sacc. var.* laricis *Pk.*
N. Y. State Mus. Rep't 44, p.23. 1891. Bot. ed.
Sphaeropsis fertilis *Pk.*
Torr. Bot. Club Bul. 25, p.327. June 1898
Sphaeropsis gallae (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 29, p.47. 1878. (For Sphaeria gallae *Schw.*) (Sphaeropsis gallae (*Schw.*) *B. & C.* in Sylloge 3)
Sphaeropsis juniperi *Pk.*
N. Y. State Mus. Rep't 39, p.45–46. 1886
Sphaeropsis linderae *Pk.*
N. Y. State Mus. Rep't 39, p.45. 1886
Sphaeropsis linearis *Pk.*
N. Y. State Mus. Rep't 25, p.86. 1873
Sphaeropsis maculans *Pk.*
N. Y. State Mus. Rep't 39, p.46. 1886
Sphaeropsis malorum *Pk.*
N. Y. State Mus. Rep't 34, p.36, pl.4, fig.16–21. 1881. (As Sphaeropsis malorum *Berk.*)
N. Y. State Mus. Rep't 31, p.20–21. 1879. (Note)
N. Y. State Mus. Rep't 40, p.76. 1887. (Name) (As Sphaeropsis malorum *Pk.*)
Sphaeropsis menispermi *Pk.*
N. Y. State Mus. Rep't 24, p.86. 1872

Sphaeropsis pallida *Pk.*
N. Y. State Mus. Rep't 39, p.46. 1886
Sphaeropsis pericarpii *Pk.*
N. Y. State Mus. Rep't 25, p.85. 1873
Sphaeropsis phomatella *Pk.*
N. Y. State Mus. Rep't 33, p.24. 1880
Sphaeropsis platani *Pk.*
N. Y. State Mus. Rep't 25, p.85. 1873
Sphaeropsis propullans (*Schw.*) *Pk.*
N. Y. State Mus. Rep't 29, p.47. 1878. (For Sphaeria propullans *Schw.*)
Sphaeropsis pulchrispora *Pk. & Clint.* (Phoma callospora *P. & C.*)
Sphaeropsis quercina *Pk.*
N. Y. State Mus. Rep't 25, p.86. 1873
Sphaeropsis raui *Pk.*
Bot. Gaz. 3:34. Apr. 1878. (Macrophoma raui (*Pk.*) *Berl. & Vogl.*)
Sphaeropsis sambuci *Pk.*
N. Y. State Mus. Rep't 28, p.56. 1876
Sphaeropsis seriatus *Pk.*
N. Y. State Mus. Rep't 33, p.24. 1880
Sphaeropsis smilacina *Pk.*
N. Y. State Mus. Rep't 33, p.24. 1880. (Macrophoma smilacina (*Pk.*) *Berl. & Vogl.*)
Sphaeropsis sphaerospora *Pk.*
N. Y. State Mus. Rep't 39, p.46. 1886
Sphaeropsis syringae *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.52. 1878. (n. sp.) (Sphaeria syringae *Fr.*) (Sphaeropsis syringae (*Fr.*) *P. & C.* in Sylloge 3)
Sphaeropsis tiliacea *Pk.*
N. Y. State Mus. Rep't 39, p.45. 1886
Sphaeropsis typhina *Pk.*
N. Y. State Mus. Rep't 32, p.38. 1879
N. Y. State Mus. Bul. 2, p.16. 1887
Sphaerotheca pannosa *Lev. var.* ribis *Pk.*
N. Y. State Mus. Rep't 39, p.58. 1886
Sphaerotheca pruinosa *C. & P.*
Trimen's Jour. Bot. 10(n.s.1):11. Jan. 1872
N. Y. State Mus. Rep't 25, p.94. 1873
N. Y. State Mus. Rep't 43, p.40. 1890. Bot. ed. (Note)
Sphaerulina sambucina *Pk.*
N. Y. State Mus. Rep't 38, p.106. 1885
Spondylocladium tenellum *Pk.* (Gonatobotryum tenellum *Pk.*)
Sporidesmium minutissimum *Pk.*
Bot. Gaz. 5:34. Mar. 1880
Sporidesmium moriforme *Pk.*
N. Y. State Mus. Rep't 25, p.89. 1873
Sporocybe abietina *Pk.*
N. Y. State Mus. Rep't 31, p.45. 1879. (Periconia abietina (*Pk.*) *Sacc.*)
Sporocybe cellare *Pk.*
N. Y. State Mus. Rep't 42, p.33. 1889. Bot. ed.

Sporocybe nigriceps *Pk.*
    N. Y. State Mus. Rep't 34, p.49–50. 1881. (Periconia nigriceps (*Pk.*) *Sacc.*)
Sporotrichum anthophilum *Pk.*
    N. Y. State Mus. Bul. 105, p.28. 1906
Sporotrichum cinereum *Pk.*
    N. Y. State Mus. Rep't 43, p.29. 1890. Bot. ed. (Sporotrichum peckii *Sacc.*)
Sporotrichum entomophilum *Pk.*
    N. Y. State Mus. Rep't 50, p.116. 1897
Sporotrichum larvatum *Pk.* (Sporotrichum larvicolum *Pk.*)
Sporotrichum larvicolum *Pk.*
    N. Y. State Mus. Bul. 2, p.18. 1887
    N. Y. State Mus. Rep't 32, p.44. 1879. (As Sporotrichum larvatum *Pk.*)
Sporotrichum lecanii *Pk.*
    N. Y. State Mus. Rep't 44, p.25. 1891. Bot. ed.
Sporotrichum parasiticum *Pk.*
    N. Y. State Mus. Rep't 45, p.22. 1893. Bot. ed.
Sporotrichum poae *Pk.*
    N. Y. State Mus. Bul. 67, p.29. 1903
Stachybotrys elongata *Pk.*
    N. Y. State Mus. Rep't 43, p.29–30, pl.3, fig.10–13. 1890. Bot. ed.
Stagonospora chenopodii *Pk.*
    N. Y. State Mus. Rep't 40, p.60. 1887
Steganosporium acerinum *Pk.*
    Torr. Bot. Club Bul. 25, p.326–27. June 1898
Stegia caricis *Pk.*
    N. Y. State Mus. Rep't 49, p.23–24. 1896. Bot. ed.
Stemonitis herbatica *Pk.*
    Buf. Soc. Nat. Sci. Bul. 1, p.64–65. July 1873
    N. Y. State Mus. Rep't 26, p.75–76. 1874
    N. Y. State Mus. Rep't 31, p.58. 1879. (Note)
Stemonitis morgani *Pk.*
    Bot. Gaz. 5:33. Mar. 1880
Stereum ambiguum *Pk.*
    N. Y. State Mus. Rep't 47, p.19–20. 1894. Bot. ed.
Stereum balsameum *Pk.*
    N. Y. State Mus. Rep't 27, p.99. 1875
    N. Y. State Mus. Rep't 30, p.75. 1878. (Note)
Stereum balsameum *Pk.*, form reflexum *Pk.*
    N. Y. State Mus. Rep't 47, p.26. 1894. Bot. ed.
Stereum burtianum *Pk.*
    N. Y. State Mus. Bul. 75, p.21, pl.O, fig.30–34. 1904
Stereum complicatum *Fr. var.* laceratum *Pk.*
    N. Y. State Mus. Rep't 46, p.57. 1893. Bot. ed.
Stereum neglectum *Pk.* (Peniophora neglecta *Pk.*)
Stereum populneum *Pk.*
    N. Y. State Mus. Rep't 47, p.19. 1894. Bot. ed.

Stereum pulverulentum *Pk.*
Torr. Bot. Club Bul. 27, p.20. Jan. 1900
Stereum radiatum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.62. July 1873
N. Y. State Mus. Rep't 26, p.72. 1874
Stereum radiatum *Pk. var.* reflexum *Pk.*
N. Y. State Mus. Rep't 49, p.31. 1896. Bot. ed.
Stereum spadiceum plicatum *Pk.*
N. Y. State Mus. Rep't 50, p.132. 1897
Stictis (Propolis) cylindricarpa *Pk.*
N. Y. State Mus. Rep't 30, p.63. 1878. (Propolis cylindricarpa (*Pk.*) *Sacc.*)
Stictis filicina *Pk.*
N. Y. State Mus. Rep't 29, p.56. 1878
Stictis fulva *Pk.*
Bot. Gaz. 5:36. Mar. 1880. (Propolis fulva (*Pk.*) *Sacc.*)
Stictis quercina *Pk.*
N. Y. State Mus. Rep't 28, p.69. 1876
Stilbum candidum *Pk.*
N. Y. State Mus. Rep't 28, p.61–62, pl.1, fig.25–27. 1876. (Stilbum peckii *Sacc.*)
Stilbum flavipes *Pk.*
N. Y. State Mus. Rep't 31, p.45. 1879
Stilbum giganteum *Pk.*
N. Y. State Mus. Rep't 24, p.93, pl.3, fig.7–9. 1872
N. Y. State Mus. Rep't 31, p.59. 1879. (Note) (Graphium giganteum (*Pk.*) *Sacc.*)
Stilbum madidum *Pk.*
N. Y. State Mus. Rep't 46, p.35. 1893. Bot. ed.
Stilbum pruinosipes *Pk.*
N. Y. State Mus. Rep't 33, p.28. 1880. (Graphium pruinosipes (*Pk.*) *Sacc.*)
Stilbum ramosum *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.69. July 1873
N. Y. State Mus. Rep't 26, p.78. 1874
Stilbum resinaria *Pk.*
N. Y. State Mus. Bul. 67, p.30. 1903
Streptothrix abietina *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.69. July 1873
N. Y. State Mus. Rep't 25, p.93–94, pl.1, fig.13–15. 1873
Stropharia bilamellata *Pk.*
Torr. Bot. Club Bul. 22, p.204. May 1895
N. Y. State Mus. Bul. 122, p.25, 139–40, pl.112, fig.5–10. 1908
Stropharia caesifolia *Pk.*
Torr. Bot. Club Bul. 22, p.489 90. Dec. 1895
Stropharia howeana *Pk.* (Pholiota howeana *Pk.*)
Stropharia irregularis *Pk.*
Torr. Bot. Club Bul. 27, p.16–17. Jan. 1900
Stropharia johnsoniana *Pk.* (Pholiota johnsoniana *Pk.*)

Stropharia magnivelaris *Pk.*
Harriman Alaska Exped. 5:44-45. 1904
Stropharia schraderi *Pk.*
Torr. Bot. Club Bul. 32, p.80. Feb. 1905
Stropharia siccipes radicata *Pk.*
N. Y. State Mus. Bul. 67, p.37-38. 1903
Agaricus (Stropharia) umbonatescens *Pk.*
N. Y. State Mus. Rep't 30, p.41. 1878
Symphragmidium effusum *Pk.*
N. Y. State Mus. Rep't 33, p.27, pl.1, fig.6-10. 1880. (Speira effusa (*Pk.*) *Sacc.*)
Synchytrium jonesii *Pk.*
Bot. Gaz. 6:240. July 1881. (Tuberculina jonesii (*Pk.*) *Sacc.*)
Teichospora aridophila *Pk.*
Bot. Gaz. 7:57. May 1882. (Teichospora xerophila *Pk.* in Sylloge 2)
Telamonia gracilis *Pk.* (Cortinarius gracilis *Pk.*)
Thelephora exigua *Pk.*
N. Y. State Mus. Bul. 54, p.953-54. 1902
Thelephora gracilis *Pk.*
Torr. Bot. Club Bul. 25, p.371. July 1898
Thelephora laciniata *Pers. var.* integra *Pk.*
N. Y. State Mus. Rep't 50, p.132. 1897
Thelephora odorifera *Pk.*
N. Y. State Mus. Rep't 44, p.22. 1891. Bot. ed.
Thelephora palmata americana *Pk.*
N. Y. State Mus. Rep't 53, p.857. 1900
Thelephora rosella *Pk.*
N. Y. State Mus. Rep't 35, p.136. 1884
Thelephora schweinitzii *Pk.*
N. Y. State Mus. Rep't 29, p.67. 1878. (For Thelephora pallida *Schw.*)
Thelephora scoparia *Pk.*
N. Y. State Mus. Rep't 42, p.27-28, pl.2, fig.20-21. 1889. Bot. ed.
Thelephora subochracea *Pk.*
N. Y. State Mus. Rep't 46, p.29. 1893. Bot. ed.
Thelephora subundulata *Pk.* (Craterellus subundulatus *Pk.*)
Torrubia clavulata *Pk.*
N. Y. State Mus. Rep't 28, p.70. 1876. (Cordyceps pistillariaeformis *B. & Br.*)
Torrubia superficialis *Pk.*
N. Y. State Mus. Rep't 28, p.70. 1876. (Cordyceps superficialis (*Pk.*) *Sacc.*)
Torula alnea *Pk.*
N. Y. State Mus. Rep't 25, p.89. 1873
Torula colliculosa *B. & C. var.* orbicularis *Pk.*
N. Y. State Mus. Rep't 49, p.23. 1896. Bot. ed.
Torula curvata *Pk.*
N. Y. State Mus. Rep't 30, p.53. 1878. (Hormiscium curvatum (*Pk.*) *Sacc.*)
Torula populina *Pk.* (Myxormia populina *Pk.*)

Torula ramosa *Pk.*
N. Y. State Mus. Rep't 32, p.39. 1879. (Torula peckii *Sacc. & Syd.* in Sylloge 14)
Torula uniformis *Pk.*
N. Y. State Mus. Rep't 33, p.27, pl.1, fig.11-13. 1880. (Hormiscium uniforme (*Pk.*) *Sacc.*)
Trametes piceinus *Pk.*
N. Y. State Mus. Rep't 54, p.169-70. 1901
N. Y. State Mus. Rep't 42, p.25. 1889. Bot. ed. (As Polyporus piceinus *Pk.*) (Polystictus piceinus *Pk.* in Sylloge 9)
Trametes variiformis *Pk.*
N. Y. State Mus. Bul. 28, p.220. 1899
N. Y. State Mus. Rep't 54, p.170-71. 1901. (Note)
N. Y. State Mus. Rep't 42, p.26. 1889. Bot. ed. (*See* Polyporus variiformis *Pk.*) (Polystictus variiformis *Pk.* in Sylloge 9)
Tremella colorata *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.62. July 1873
N. Y. State Mus. Rep't 25, p.83. 1873
Tremella mycetophila *Pk.*
N. Y. State Mus. Rep't 28, p.53, pl.1, fig.4. 1876
N. Y. State Mus. Rep't 54, p.172. 1901. (Note)
Tremella pinicola *Pk.*
N. Y. State Mus. Rep't 39, p.44. 1886
Tremella stipitata *Pk.*
N. Y. State Mus. Rep't 27, p.100-1. pl.2. fig.22-23. 1875
Tremella subcarnosa *Pk.*
N. Y. State Mus. Rep't 32. p.36-37. 1879
N. Y. State Mus. Rep't 2, p.15-16. 1887
Tremella subochracea *Pk.*
N. Y. State Mus. Rep't 34, p.43. 1881
Triblidium clavaesporum *Pk.*
N. Y. State Mus. Rep't 35, p.143. 1884. (Tryblidiella clavispora (*Pk.*) *Berl. & Vogl.*)
Triblidium morbidum *Pk.*
N. Y. State Mus. Rep't 31, p.48. 1879. (Colpoma morbidum (*Pk.*) *Sacc.*)
Trichia reniformis *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.65. July 1873
N. Y. State Mus. Rep't 26, p.76. 1874
N. Y. State Mus. Rep't 46, p.57. 1893. Bot. ed. (Note)
Trichobasis balsamorhizae *Pk.* (Puccinia balsamorrhizae *Pk.*)
Trichobasis gaurina *Pk.*
Bot. Gaz. 4:218. Oct. 1879. (Aecidium gaurinum *Pk.* in Sylloge 7)
Trichobasis helianthellae *Pk.*
Bot. Gaz. 7:45. Apr. 1882. (Uredo helianthellae *Pk.* in Sylloge 7)
Trichobasis howei *Pk.* (Uromyces howei *Pk.*)
Trichobasis iridicola *Pk.*
N. Y. State Mus. Rep't 24, p.89, pl.3, fig.17-19. 1872. (Uredo iridicola *Pk.* in Sylloge 7)

Trichobasis oxytropi *Pk.*
Bot. Gaz. 4:218. Oct. 1879. (Uredo oxytropidis *Pk.* in Sylloge 7)
Trichobasis wyethiae *Pk.*
Bot. Gaz. 7:45. Apr. 1882. (Uredo wyethiae *Pk.* in Sylloge 7)
Tricholoma acre *Pk.*
Torr. Bot. Club Bul. 24, p.139. Mar. 1897
N. Y. State Mus. Bul. 25, p.648. 1899. (Note)
Agaricus (Tricholoma) alboflavidus *Pk.*
N. Y. State Cab. Rep't 23, p.75. 1872. Bot. ed.
N. Y. State Mus. Bul. 28, p.104. 1899. (Name)
N. Y. State Mus. Rep't 44, p.53-54. 1891. Bot. ed. (As Tricholoma albiflavidum *Pk.*)
Tricholoma alboides *Pk.* (Tricholoma album caesariatum *Pk.*)
Tricholoma album *Schaeff. var.* caesariatum *Pk.*
N. Y. State Mus. Rep't 44, p.57. 1891. Bot. ed.
N. Y. State Mus. Rep't 32, p.25. 1879. (As Agaricus (Tricholoma) alboides *Pk.*)
Agaricus (Tricholoma) chrysenteroides *Pk.*
N. Y. Strte Mus. Rep't 24, p.60. 1872
N. Y. State Mus. Rep't 44, p.54. 1891. Bot. ed.
Tricholoma davisiae *Pk.*
Torr. Bot. Club Bul. 27, p.611-12. Dec. 1900
Agaricus (Tricholoma) decorosus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.42-43. July 1873
N. Y. State Mus. Rep't 25, p.73, pl.1, fig.1-4. 1873
N. Y. State Mus. Rep't 44, p.45. 1891. Bot. ed.
N. Y. State Mus. Rep't 49, p.29. 1896. Bot. ed. (Note)
Agaricus (Tricholoma) fallax *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.44. July 1873
N. Y. State Mus. Rep't 25, p.74, pl.1, fig.5-8. 1873
N. Y. State Mus. Rep't 44, p.54-55. 1891. Bot. ed.
N. Y. State Mus. Bul. 54, p.963. 1902. (Note)
Agaricus (Tricholoma) flavescens *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.42. July 1873
N. Y. State Mus. Rep't 26, p.51. 1874
N. Y. State Mus. Rep't 44, p.46. 1891. Bot. ed.
N. Y. State Mus. Rep't 54, p.162. 1901. (Note)
Tricholoma fuligineum *Pk.*
N. Y. State Mus. Rep't 41, p.60-61. 1888
N. Y. State Mus. Rep't 44, p.51. 1891. Bot. ed.
Agaricus (Tricholoma) fumescens *Pk.*
N. Y. State Mus. Rep't 31, p.32. 1879
N. Y. State Mus. Rep't 44, p.51. 1891. Bot. ed.
N. Y. State Mus. Rep't 46, p.54. 1893. Bot. ed. (Note)
Agaricus (Tricholoma) fumidellus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.44. July 1873
N. Y. State Mus. Rep't 26, p.52. 1874
N. Y. State Mus. Rep't 41, p.82. 1888. (Note)
N. Y. State Mus. Rep't 44, p.58-59. 1891. Bot. ed.

Agaricus (Tricholoma) fumosoluteus *Pk.*
N. Y. State Mus. Rep't 27, p.92-93. 1875
N. Y. State Mus. Rep't 41, p.82. 1888. (Note)
N. Y. State Mus. Rep't 44, p.59. 1891. Bot. ed.
Tricholoma grande *Pk.*
N. Y. State Mus. Rep't 44, p.16-17, 47-48, pl.3, fig.5-8. 1891. Bot. ed.
Tricholoma grave *Pk.*
N. Y. State Mus. Rep't 43, p.17, pl.1, fig.5-8. 1890. Bot. ed.
N. Y. State Mus. Rep't 44, p.60-61. 1891. Bot. ed.
Agaricus (Tricholoma) hebeloma *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.45. July 1873
N. Y. State Mus. Rep't 26, p.53. 1874
N. Y. State Mus. Rep't 44, p.63-64. 1891. Bot. ed.
Tricholoma hirtellum *Pk.*
N. Y. State Mus. Bul. 116, p.31, 38-39, pl. 105, fig.1-5. 1907
Tricholoma humile bulbosum *Pk.*
Univ. of Me. Studies 3:61. Apr. 1902. (Name)
Agaricus (Tricholoma) impolitoides *Pk.*
N. Y. State Mus. Rep't 32, p.25. 1879
N. Y. State Mus. Rep't 44, p.46. 1891. Bot. ed. (As Tricholoma scalpturatum *Fr.*)
Tricholoma infantilis *Pk.*
N. Y. State Mus. Bul. 2, p.5. 1887
N. Y. State Mus. Rep't 44, p.55. 1891. Bot. ed.
Tricholoma intermedium *Pk.*
N. Y. State Mus. Rep't 41, p.60. 1888
N. Y. State Mus. Rep't 44, p.41. 1891. Bot. ed.
Tricholoma lacunosum *Pk.* (Collybia lacunosa *Pk.*)
Agaricus (Tricholoma) laterarius *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.43. July 1873
N. Y. State Mus. Rep't 26, p.51-52. 1874
N. Y. State Mus. Rep't 44, p.58. 1891. Bot. ed.
Tricholoma leucocephaloides *Pk.*
N. Y. State Mus. Rep't 49, p.16-17. 1896. Bot. ed.
Agaricus (Tricholoma) limonius *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.43-44. July 1873
N. Y. State Mus. Rep't 26, p.52. 1874
N. Y. State Mus. Rep't 44, p.64. 1891. Bot. ed.
N. Y. State Mus. Rep't 49, p.38. 1896. Bot. ed. (As Collybia scorzonera *Batsch*)
Tricholoma lugubre *Pk.*
N. Y. State Mus. Rep't 49, p.16. 1896. Bot. ed.
Tricholoma maculatescens *Pk.*
N. Y. State Mus. Rep't 44, p.38. 1891. Bot. ed.
Agaricus (Tricholoma) multipunctus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.43. July 1873
N. Y. State Mus. Rep't 25, p.73. 1873
N. Y. State Mus. Rep't 44, p.64. 1891. Bot. ed. (As Clitocybe decora *Fr.*)

Tricholoma niveipes *Pk.*
Torr. Bot. Club Bul. 29, p.69. Feb. 1902
Tricholoma nobile *Pk.*
N. Y. State Mus. Rep't 42, p.17. 1889. Bot. ed.
N. Y. State Mus. Rep't 44, p.57-58. 1891. Bot. ed.
Tricholoma odorum *Pk.*
Torr. Bot. Club Bul. 25, p.321. June 1898
Tricholoma pallidum *Pk.*
Torr. Bot. Club Bul. 24, p.139. Mar. 1897
Tricholoma personatum *Fr. var.* bulbosum *Pk.*
N. Y. State Mus. Rep't 48, p.171, pl.22, fig.7-8. 1896. Bot. ed.
Mushrooms and their Use, p.54. May 1897
Tricholoma piperatum *Pk.*
Torr. Bot. Club Bul. 26, p.63-64. Feb. 1899
Tricholoma portentosum *Fr. var.* centrale *Pk.*
N. Y. State Mus. Bul. 25, p.647, 655, 673, pl.57, fig.1-5. 1899
N. Y. State Mus. Mem. 4, p.138-39, pl.45, fig.1-5. 1900
Agaricus (Tricholoma) praefoliatus *Pk.*
N. Y. State Mus. Rep't 32, p.55. 1879
N. Y. State Mus. Rep't 44, p.64. 1891. Bot. ed.
N. Y. State Mus. Rep't 49, p.36. 1896. Bot. ed. (As Collybia platyphylla *Fr.*)
Tricholoma radicatum *Pk.*
N. Y. State Mus. Bul. 67, p.22, 40-41, pl. 82, fig.15-19. 1903
Tricholoma rimosum *Pk.*
N. Y. State Mus. Bul. 54, p.947-48. 1902
Tricholoma rubescentifolium *Pk.* (Collybia colorea rubescentifolia *Pk.*)
Agaricus (Tricholoma) rubicundus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.42. July 1873
N. Y. State Mus. Rep't 26, p.51. 1874
N. Y. State Mus. Rep't 44, p.42-43. 1891. Bot. ed. (As Tricholoma russula *Schaeff.*)
Tricholoma semivestitum *Pk.*
Torr. Bot. Club Bul. 22, p.485-86. Dec. 1895
Tricholoma serratifolium *Pk.*
N. Y. State Mus. Rep't 46, p.22. 1893. Bot. ed.
Agaricus (Tricholoma) sienna *Pk.*
N. Y. State Mus. Rep't 24, p.60. 1872
N. Y. State Mus. Rep't 44, p.62-63. 1891. Bot. ed.
Tricholoma silvaticum *Pk.*
N. Y. State Mus. Rep't 42, p.17, pl.2, fig.16-19. 1889. Bot. ed.
N. Y. State Mus. Rep't 44, p.52-53. 1891. Bot. ed.
N. Y. State Mus. Bul. 67, p.41, pl.82, fig.1-6. 1903
Agaricus (Tricholoma) striatifolius *Pk.*
N. Y. State Mus. Rep't 30, p.37-38. 1878
N. Y. State Mus. Rep't 44, p.48. 1891. Bot. ed.
Tricholoma subacutum *Pk.*
N. Y. State Mus. Rep't 42, p.16-17, pl.1, fig.1-5. 1889. Bot. ed.
N. Y. State Mus. Rep't 44, p.52. 1891. Bot. ed.
N. Y. State Mus. Bul. 28, p.194. 1899. (Note)
N. Y. State Mus. Bul. 67, p.39-40, pl.82, fig.7-14. 1903

Tricholoma subluteum *Pk.*
N. Y. State Mus. Bul. 75, p.21, pl.O, fig.26–29. 1904
Tricholoma submaculatum *Pk.*
N. Y. State Mus. Rep't 46, p.22–23. 1893. Bot. ed.
Agaricus (Tricholoma) terraeolens *Pk.*
N. Y. State Mus. Rep't 38, p.84. 1885
N. Y. State Mus. Rep't 44, p.53. 1891. Bot. ed.
Tricholoma terreum *Schaeff. var.* fragrans *Pk.*
N. Y. State Mus. Rep't 44, p.50. 1891. Bot. ed.
N. Y. State Mus. Rep't 48, p.19. 1896. Bot. ed. (Note)
N. Y. State Mus. Rep't 49, p.57, pl.47, fig.1–10. 1896. Bot. ed.
N. Y. State Mus. Rep't 50, p.128. 1897. Bot. ed.
N. Y. State Mus. Mem. 4, p.137–38, pl.45, fig.6–15. 1900
Tricholoma terriferum *Pk.*
N. Y. State Mus. Rep't 41, p.60. 1888
N. Y. State Mus. Rep't 44, p.41–42. 1891. Bot. ed.
Agaricus (Tricholoma) thujinus *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.44. July 1873
N. Y. State Mus. Rep't 26, p.52. 1874
N. Y. State Mus. Rep't 44, p.63. 1891. Bot. ed.
Agaricus (Tricholoma) transmutans *Pk.*
N. Y. State Mus. Rep't 29, p.38. 1878
N. Y. State Mus. Rep't 42, p.37. 1889. Bot. ed. (Note)
N. Y. State Mus. Rep't 44, p.43. 1891. Bot. ed.
N Y. State Mus. Rep't 48, p.168–69, pl.21, fig.1–5. 1896. Bot. ed.
Mushrooms and their Use, p.51–52. fig. May 1897
Agaricus (Tricholoma) trentonensis *Pk.*
N. Y. State Mus. Rep't 24, p.60. 1872
N. Y. State Mus. Rep't 44, p.62. 1891. Bot. ed.
Tricholoma tricolor *Pk.*
N. Y. State Mus. Rep't 41, p.60. 1888
N. Y. State Mus. Rep't 44, p.48–49. 1891. Bot. ed.
Tricholoma unifactum *Pk.*
N. Y. State Mus. Bul. 105, p.29, 36–37, pl.94. 1906
Agaricus (Tricholoma) virescens *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.44. July 1873
N. Y. State Mus. Rep't 25, p.74. 1873
N. Y. State Mus. Rep't 44, p.59. 1891. Bot. ed.
N. Y. State Mus. Rep't 33, p.36. 1880
N. Y. State Mus. Rep't 34, p.57. 1881. (As Agaricus (Tricholoma) viriditinctus *Pk.*)
Tricholoma viriditinctum *Pk.* (Tricholoma virescens *Pk.*)
Tricholoma viscosum *Pk.*
Torr. Bot. Club Bul. 31, p.178. Apr. 1904
Trogia alni *Pk.*
N. Y. State Mus. Rep't 29, p.66–67. 1878
N. Y. State Mus. Rep't 31, p.54. 1879. (Note)
N. Y. State Mus. Rep't 24, p.76. 1872. (As Plicatura alni *Pk.*)
Trogia crispa *Fr. var.* variegata *Pk.*
N. Y. State Mus. Rep't 38, p.110. 1885

Tubaria brevipes *Pk.*
Harriman Alaska Exped. 5:45. 1904
Tubaria canescens *Pk.*
N. Y. State Mus. Rep't 46, p.24–25. 1893. Bot. ed.
Tubaria deformata *Pk.*
N. Y. State Mus. Rep't 51, p.290–91. 1898
Tubaria pallescens *Pk.*
Torr. Bot. Club Bul. 22, p.202–3. May 1895
Tubaria tenuis *Pk.*
Torr. Bot. Club Bul. 23, p.415–16 Oct. 1896
Tubercularia carpogena *Pk.* (Tubercularia decolorans *Pk.*)
Tubercularia decolorans *Pk.*
N. Y. State Mus. Rep't 47, p.42. 1894. Bot. ed.
N. Y. State Mus. Rep't 43, p.31. 1890. Bot. ed. (As Tubercularia carpogena *Pk.*) (Tubercularia fructicola *Sacc. & Syd.*)
Tubercularia fungicola *Pk.*
N. Y. State Mus. Rep't 42, p.33. 1889. Bot. ed.
Tubercularia hirtissima *Pk.*
N. Y. State Mus. Rep't 32, p.40. 1879
Tubulina cylindrica (Bull.) *Fr. var.* acuta *Pk.*
Roch. Acad. Sci. Proc. 1:53. Aug. 1890
Tylostoma kansense *Pk.*
Torr. Bot. Club Bul. 28, p.430, pl.32, fig.7–9. Aug. 1901
Tylostoma punctatum *Pk.*
Torr. Bot. Club Bul. 23, p.419. Oct. 1896
N. Y. State Mus. Bul. 67, p.28. 1903. (Note)
Tylostoma semisulcatum *Pk.*
Torr. Bot. Club Bul. 22, p.209. May 1895
Tympanis acerina *Pk.*
N. Y. State Mus. Rep't 31, p.48. 1879. (Scleroderris acerina (*Pk.*) *Sacc.*)
Tympanis nemopanthis *Pk.*
N. Y. State Mus. Rep't 35, p.142–43. 1884. (Godronia nemopanthis (*Pk.*) *Sacc.*)
Typhula filicina *Pk.*
N. Y. State Mus. Rep't 27, p.100, pl.1, fig.29–30. 1875
Uncinula ampelopsidis *Pk.*
Alb. Inst. Trans. 7:216. 1872
N. Y. State Mus. Rep't 25, p.96. 1873
Uncinula circinata *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1):12. Jan. 1872
Alb. Inst. Trans. 7:214. 1872
N. Y. State Mus. Rep't 25, p.96. 1873
Uncinula clintonii *Pk.*
Alb. Inst. Trans. 7:216. 1872
N. Y. State Mus. Rep't 25, p.96–97. 1873
Uncinula flexuosa *Pk.*
Alb. Inst. Trans. 7:216. 1872
N. Y. State Mus. Rep't 26, p.80. 1874. (Note)

Uncinula macrospora *Pk.*
Alb. Inst. Trans. 7:215. 1872
N. Y. State Mus. Rep't 25, p.96. 1873
Uncinula parvula *C. & P.*
Trimen's Jour. Bot. 10 (n.s.1):170–71. June 1872
Underwoodia *Pk.*
N. Y. State Mus. Rep't 43, p.32. 1890. Bot. ed.
Underwoodia columnaris *Pk.*
N. Y. State Mus. Rep't 43, p.32, pl.4, fig.1–4. 1890. Bot. ed.
Uredo aecidioides *Pk.*
N. Y. State Mus. Rep't 24, p.88–89. 1872. (Synchytrium decipiens *Farl.*)
Uredo aspidiotus *Pk.*
N. Y. State Mus. Rep't 24, p.88, pl.1, fig.18–20. 1872. (Hyalospora polypodii-dryopteridis (*Moug. & Nest*) *Magn.* in Sylloge 17)
Uredo cassandrae *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.54. 1878
Uredo chimaphilae *Pk.*
N. Y. State Mus. Rep't 46, p.33. 1893. Bot. ed.
Uredo jonesii *Pk.*
Torr. Bot. Club Bul. 12, p.36. Apr. 1885
Uredo ledicola *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.67. July 1873
N. Y. State Mus. Rep't 25, p.90–91. 1873
Urnula geaster *Pk.*
N. Y. State Mus. Rep't 46, p.39. 1893. Bot. ed.
Urocystis pusilla *C. & P.*
N. Y. State Mus. Rep't 25, p.90. 1873. (Schizonella melanogramma (*DC.*) *Schroet.*)
Urocystis waldsteiniae *Pk.*
N. Y. State Mus. Rep't 46, p.32. 1893. Bot. ed.
N. Y. State Mus. Rep't 47, p.43. 1894. Bot. ed.
Uromyces borealis *Pk.*
Bot. Gaz. 6:276. Oct. 1881
Uromyces brandegei *Pk.*
Bot. Gaz. 4:127. Feb. 1879. (Puccinia vexans *Farl.*)
Uromyces caricis *Pk.*
N. Y. State Mus. Rep't 24, p.90. 1872
N. Y. State Mus. Bul. 105, p.36. 1906. (As Puccinia caricis-strictae *Dict.*)
Uromyces claytoniae *C. & P.*
N. Y. State Mus. Rep't 29, p.50. 1878
Uromyces compacta *Pk.*
Bot. Gaz. 7:56. May 1882
Uromyces deciduus *Pk.*
N. Y. State Mus. Rep't 45, p.25. 1893. Bot. ed
Uromyces euphorbiae *C. & P.*
N. Y. State Mus. Rep't 25, p.90. 1873
Uromyces howei *Pk.*
N. Y. State Mus. Rept 30, p.75. 1878
N. Y. State Cab. Rep't 23, p.58. 1872. Bot. ed. (As Trichobasis howei *Pk.*)

Uromyces hyalinus *Pk.*
Bot. Gaz. 3:34-35. Apr. 1878
Uromyces jonesii *Pk.*
Bot. Gaz. 7:45. Apr. 1882
Uromyces lespedezae (*Schw.*) *Pk.*
Bot. Gaz. 1:20. Mar. 1876
N. Y. State Mus. Rep't 29, p.69. 1878. (Note)
Uromyces plumbarius *Pk.*
Bot. Gaz. 4:127. Feb. 1879
Uromyces polymorphus *Pk. & Clint.*
N. Y. State Mus. Rep't 31, p.43. 1879
Uromyces psoraleae *Pk.*
Bot. Gaz. 6:239. July 1881
Uromyces sanguineus *Pk.*
Bot. Gaz. 4:128. Feb. 1879
Uromyces simulans *Pk.*
Bot. Gaz. 4:127-28. Feb. 1879
Uromyces sophorae *Pk.*
Torr. Bot. Club Bul. 12, p.35. Apr. 1885
Uromyces sparganii *C. & P.*
N. Y. State Mus. Rep't 26, p.77. 1874
Uromyces unitus *Pk.*
Torr. Bot. Club Bul. 10, p.74. July 1883
Uromyces versatilis *Pk.*
Bot. Gaz. 7:56. May 1882
Uromyces zygadeni *Pk.*
Bot. Gaz. 6:239-40. July 1881
Ustilago aristidae *Pk.*
Torr. Bot. Club Bul. 12, p.35. Apr. 1885
Ustilago cylindrica *Pk.*
Bot. Gaz. 7:55. May 1882
Ustilago osmundae *Pk.*
Bot. Gaz. 6:276-77. Oct. 1881
N. Y. State Mus. Rep't 42, p.31. 1889. Bot. ed. (Note)
Ustilago syntherismae *Pk.* (Not *Schw.*)
N. Y. State Mus. Rep't 27, p.103. 1875. (Name)
Valsa acerina *Pk.*
N. Y. State Mus. Rep't 28, p.74. 1876. (Diaporthe acerina (*Pk.*) *Sacc.*)
Valsa acrocystis *Pk.*
N. Y. State Mus. Rep't 33, p.34, pl.2, fig.19-22. 1880. (Melanconiella acrocystis (*Pk.*) *Berl. & Vogl.*)
Valsa albocincta *C. & P.*
Acad. Nat. Sci. Phila. Proc. p.120. Apr.-May 1877. (Diaporthe albocincta (*C. & P.*) *Sacc.*)
Valsa alni *Pk.*
N. Y. State Mus. Rep't 25, p.103. 1873
Valsa bicincta *C. & P.*
N. Y. State Mus. Rep't 26, p.86. 1874. (Name)
N. Y. State Mus. Rep't 29, p.64. 1878. (Diaporthe bicincta (*C. & P.*) *Sacc.*)

Valsa brevis *Pk.*
Torr. Bot. Club Bul. 22, p.210–11. May 1895

Valsa cinctula *C. & P.*
N. Y. State Mus. Rep't 29, p.59, pl.2, fig.21–24. 1878. (Cryptospora cinctula (*C. & P.*) *Sacc.*)

Valsa cornina *Pk.*
N. Y. State Mus. Rep't 38, p.102–3. 1885

Valsa femoralis *Pk.*
N. Y. State Mus. Rep't 28, p.74–75. 1876. (Cryptospora femoralis (*Pk.*) *Sacc.*)

Valsa fraxinicola *C. & P.*
N. Y. State Mus. Rep't 29, p.59. 1878. (Eutypella fraxinicola (*C. & P.*) *Sacc.*)

Valsa fraxinina *Pk.*
Torr. Bot. Club Bul. 11, p.28. Mar. 1884

Valsa grisea *Pk.*
Torr. Bot. Club Bul. 11, p.28. Mar. 1884

Valsa impulsa *C. & P.*
N. Y. State Mus. Rep't 27, p.109. 1875. (Diaporthe impulsa (*C. & P.*) *Sacc.*)

Valsa (Obvallata) innumerabilis *Pk.*
N. Y. State Mus. Rep't 30, p.65. 1878. (Eutypella innumerabilis (*Pk.*) *Sacc.*)

Valsa leptasca *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.59. 1878. (Cryptosporella leptasca (*P. & C.*) *Sacc.*)

Valsa leucostomoides *Pk.*
N. Y. State Mus. Rep't 38, p.103. 1885

Valsa linderae *Pk.*
N. Y. State Mus. Rep't 29, p.59. 1878

Valsa minutella *Pk.*
Torr. Bot. Club Bul. 11, p.27. Mar. 1884

Valsa mucronata *Pk.*
N. Y. State Mus. Rep't 28, p.74, pl.2, fig.10–13. 1876. (Diaporthe mucronata (*Pk.*) *Sacc.*)

Valsa obscura *Pk.*
N. Y. State Mus. Rep't 28, p.73–74. 1876. (Diaporthe obscura (*Pk.*) *Sacc.*)

Valsa opulifoliae *Pk.*
N. Y. State Mus. Rep't 38, p.103. 1885

Valsa oxyspora *Pk.*
N. Y. State Mus. Rep't 28, p.73, pl.2, fig.26–29. 1876
N. Y. State Mus. Rep't 32, p.58. 1879. (Note) (Diaporthe oxyspora (*Pk.*) *Sacc.*)

Valsa paucispora *Pk.*
N. Y. State Mus. Rep't 33, p.33. 1880. (Cryptosporella paucispora (*Pk.*) *Berl. & Vogl.*)

Valsa prunicola *Pk.*
N. Y. State Mus. Rep't 33, p.33–34. 1880

Valsa pulviniceps *Pk.*
N. Y. State Mus. Rep't 32, p.50. 1879. (Cryptospora pulviniceps (*Pk.*) *Sacc.*)
Valsa rubi *Pk.*
N. Y. State Mus. Rep't 28, p.72–73. 1876. (Valsa rubi *Fckl.* in Sylloge 1)
Valsa sambucina *Pk.*
N. Y. State Mus. Rep't 28, p.75. 1876. (Pseudovalsa sambucina (*Pk.*) *Sacc.*)
Valsa subclypeata *C. & P.*
N. Y. State Mus. Rep't 27, p.109. 1875
Valsa thujae *Pk.*
N. Y. State Mus. Rep't 40, p.67. 1887
Valsa (Cryptospora) tomentella *Pk.*
N. Y. State Mus. Rep't 35, p.144. 1884. (Cryptospora tomentella (*Pk.*) *Berl. & Vogl.*)
Valsa trichispora *C. & P.*
N. Y. State Mus. Rep't 29, p.58. 1878. (Cryptospora trichispora (*C. & P.*) *Sacc.*)
Valsa truncata *C. & P.*
N. Y. State Mus. Rep't 25, p.103. 1873
Valsa tumidula *C. & P.*
N. Y. State Mus. Rep't 29, p.58. 1878. (Eutypella tumidula (*C. & P.*) *Sacc.*)
Valsa woolworthi *Pk.*
N. Y. State Mus. Rep't 28, p.73. 1876. (Diaporthe woolworthi (*Pk.*) *Sacc.*)
Valsa xanthoxyli *Pk.*
N. Y. State Mus. Rep't 31, p.49–50. 1879. (Fenestella xanthoxyli (*Pk.*) *Sacc.*)
Valsaria purpurea *Pk.*
Torr. Bot. Club Bul. 11, p.28. Mar. 1884
Valsella adhaerens *Fckl. var.* americana *Pk.*
N. Y. State Mus. Rep't 40, p.68. 1887
Valsella laschii *Sacc. var.* acerina *Pk.*
N. Y. State Mus. Rep't 40, p.68. 1887
Venturia cassandrae *Pk.*
N. Y. State Mus. Rep't 38, p.104, pl.3, fig.11–14. 1885
Venturia clintonii *Pk.*
N. Y. State Mus. Rep't 28, p.82. 1876
Venturia compacta *Pk.*
N. Y. State Mus. Rep't 25, p.106. 1873
Venturia curviseta *Pk.*
N. Y. State Mus. Rep't 35, p.145. 1884
Venturia kalmiae *Pk.*
N. Y. State Mus. Rep't 28, p.82, pl.2, fig.6–9. 1876
Venturia maculans *Pk.*
N. Y. State Mus. Rep't 28, p.81–82. 1876
N. Y. State Mus. Rep't 30, p.77. 1878. (Venturia ditricha (*Fr.*) *Karst.*)
Venturia orbicula (*Schw.*) *C. & P.*
N. Y. State Mus. Rep't 25, p.105. 1873. (Sphaeria orbicula *Schw.*)

Venturia pulchella *C. & P.*
N. Y. State Mus. Rep't 25, p.106. 1873
Vermicularia concentrica *Pk. & Clint.*
N. Y. State Mus. Rep't 29, p.47-48. 1878. (Vermicularia peckii *Sacc.*)
Vermicularia coptina *Pk.*
N. Y. State Mus. Rep't 28, p.58. 1876
Vermicularia hepaticae *Pk.*
N. Y. State Mus. Rep't 48, p.13. 1896. Bot. ed.
Verticillium candidum *Pk.*
N. Y. State Mus. Rep't 34, p.48, pl.2, fig.11-13. 1881
Verticillium lactarii *Pk.*
N. Y. State Mus. Rep't 35, p.140. 1884
Verticillium pulvereum *Pk. & Clint.*
N. Y. State Mus. Rep't 30, p.56-57. 1878. (Verticicladium pulvereum (*P. & C.*) *Sacc.*)
Verticillium sphaerophilum *Pk.*
N. Y. State Mus. Rep't 46, p.33. 1893. Bot. ed.
Vibrissea lutea *Pk.*
Buf. Soc. Nat. Sci. Bul. 1, p.70. July 1873
N. Y. State Mus. Rep't 25, p.97, pl.1, fig.19-23. 1873. (Cudonia lutea (*Pk.*) *Sacc.*)
Vibrissea truncorum *Fr. var.* albipes *Pk.*
N. Y. State Mus. Rep't 44, p.37. 1891. Bot. ed.
N. Y. State Mus. Bul. 28, p.231. 1899
Virgaria hydnicola *Pk.*
N. Y. State Mus. Rep't 42, p.32-33. 1889. Bot. ed.
Volutella stellata *Pk.*
N. Y. State Mus. Rep't 47, p.22. 1894. Bot. ed.
Agaricus (Volvaria) pubescentipes *Pk.*
N. Y. State Mus. Rep't 29, p.39. 1878. (Volvaria pubipes *Pk.* in Sylloge 5)
Volvaria striatula *Pk.*
Torr. Bot. Club Bul. 22, p.487-88. Dec. 1895
Volvaria umbonata *Pk.*
Torr. Bot. Club Bul. 26, p.64-65. Feb. 1899
Xylaria acuta *Pk.*
N. Y. State Mus. Rep't 25, p.101. 1873
N. Y. State Mus. Rep't 31, p.60. 1879. (Note)
Xylaria corniformis *Mont. var.* irregularis *Pk.*
N. Y. State Mus. Rep't 28, p.87. 1876
Xylaria digitata *Grev. var.* americana *Pk.*
N. Y. State Mus. Rep't 31, p.59-60. 1879
N. Y. State Mus. Rep't 50, p.133. 1897. (Note)
Xylaria digitata (*L.*) *Grev. var.* tenuis *Pk.*
N. Y. State Mus. Rep't 50, p.133. 1897
Xylaria grandis *Pk.*
N. Y. State Mus. Rep't 26, p.85. 1874
N. Y. State Mus. Rep't 31, p.60. 1879. (Note)
N. Y. State Mus. Bul. 75, p.27. 1904. (Note)

Xylaria polymorpha combinans *Pk.*
    N. Y. State Mus. Bul. 116, p.33. 1907
Zignoella humulina *Pk.*
    N. Y. State Mus. Bul. 2, p.24. 1887
    N. Y. State Mus. Rep't 32, p.52. [illegible] Sphaeria (Caulicolae) humulina *Pk.*) (Metasphaeria humulina (*Pk.*) *Sacc.*)
Zygodesmus atroruber *Pk.*
    Bot. Gaz. 6:277. Oct. 1881
Zygodesmus granulosus *Pk.*
    Bot. Gaz. 6:277. Oct. 1881
Zygodesmus pallidofulvus *Pk.*
    N. Y. State Mus. Bul. 105, p.30. 1906
Zygodesmus rubiginosus *Pk.*
    N. Y. State Mus. Rep't 30, p.58. 1878
Zygodesmus tenuissimus *Pk.*
    N. Y. State Mus. Rep't 47, p.26. 1894. Bot. ed.
Zythia ovata *Pk.*
    N. Y. State Mus. Rep't 39, p.47. 1886

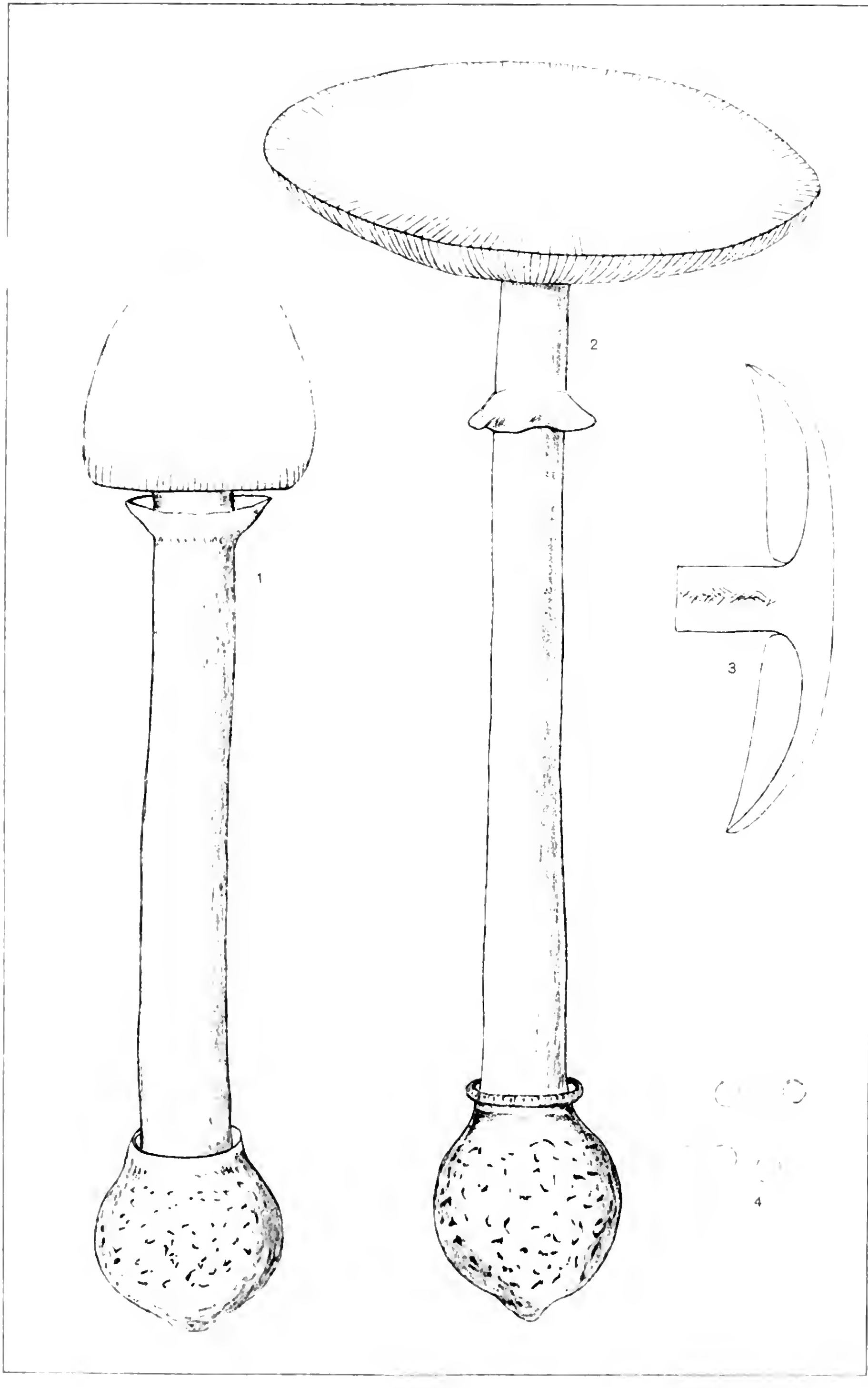
EXPLANATION OF PLATES

PLATE U

Amanita glabriceps Pk.

SMOOTH CAP AMANITA

1 Immature plant
2 Mature plant
3 Vertical section of the upper part of a plant
4 Four spores, x 400



AMANITA GLABRICEPS Pk.

SMOOTH CAP AMANITA

PLATE V

193

Hypholoma fragile Pk.

FRAGILE HYPHOLOMA

1 Immature plant showing floccose squamules on the cap and an appendiculate margin
2 Immature plant showing whitish color of the gills
3 Mature plant
4 Vertical section of the upper part of an immature plant
5 Vertical section of the upper part of a mature plant
6 Transverse section of a stem
7 Four spores, x 400

Extralimital species

Agaricus approximans Pk.

APPROXIMATE MUSHROOM

8 Two immature plants united at the base
9 Immature plant
10 Mature plant
11 Vertical section of the upper part of an immature plant
12 Vertical section of the upper part of a mature plant
13 Transverse section of a stem
14 Four spores, x 400

Galera besseyi Pk.

BESSEY GALERA

15 Immature plant
16 Mature plant with oval cap
17 Mature plant with subglobose cap
18 Vertical section of the upper part of a plant
19 Transverse section of a stem
20 Four spores, x 400

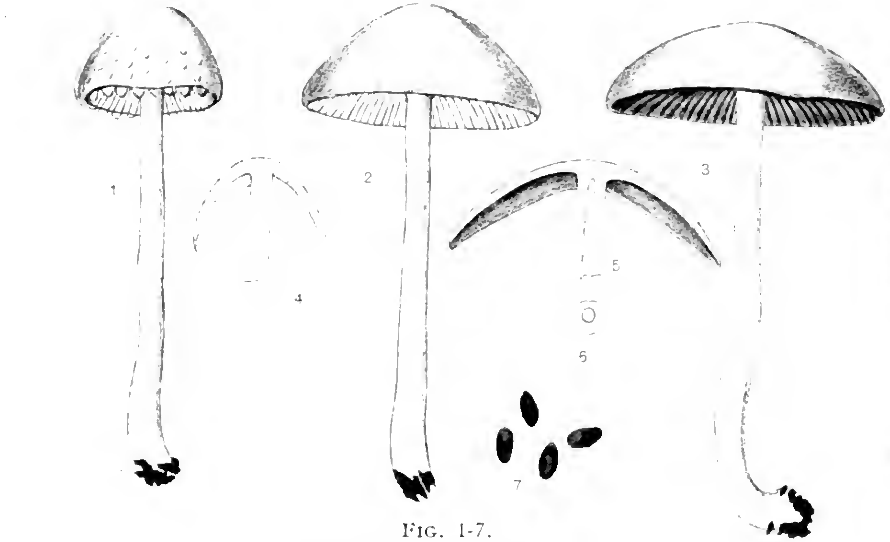


FIG. 1-7.
HYPHOLOMA FRAGILE PK.
FRAGILE HYPHOLOMA

EXTRA-LIMITAL FUNGI

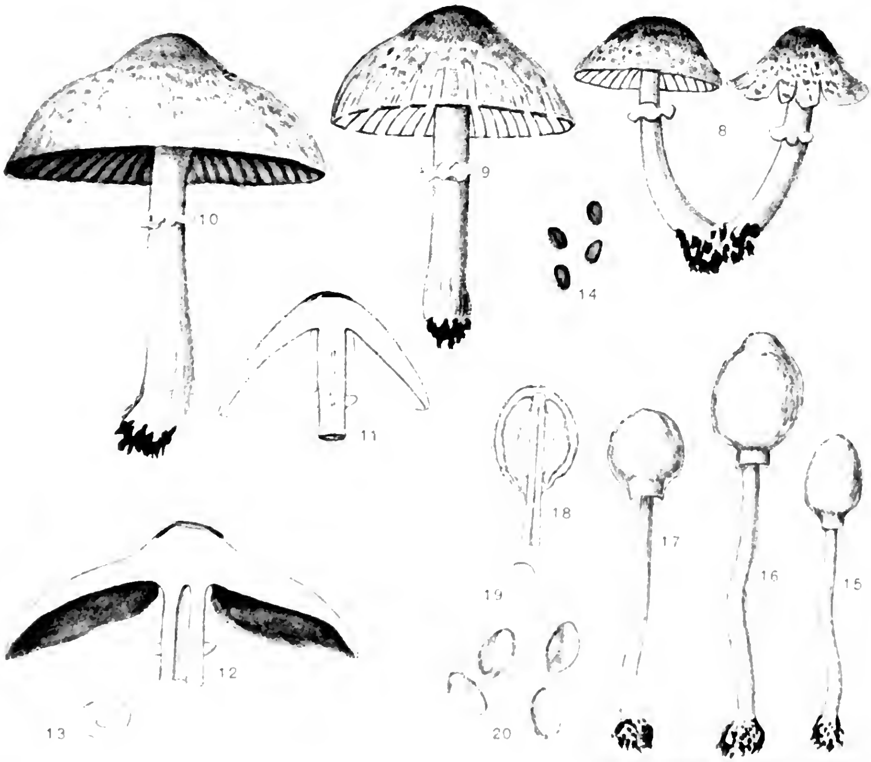


FIG. 8-14.
AGARICUS APPROXIMANS PK.
APPROXIMATE MUSHROOM

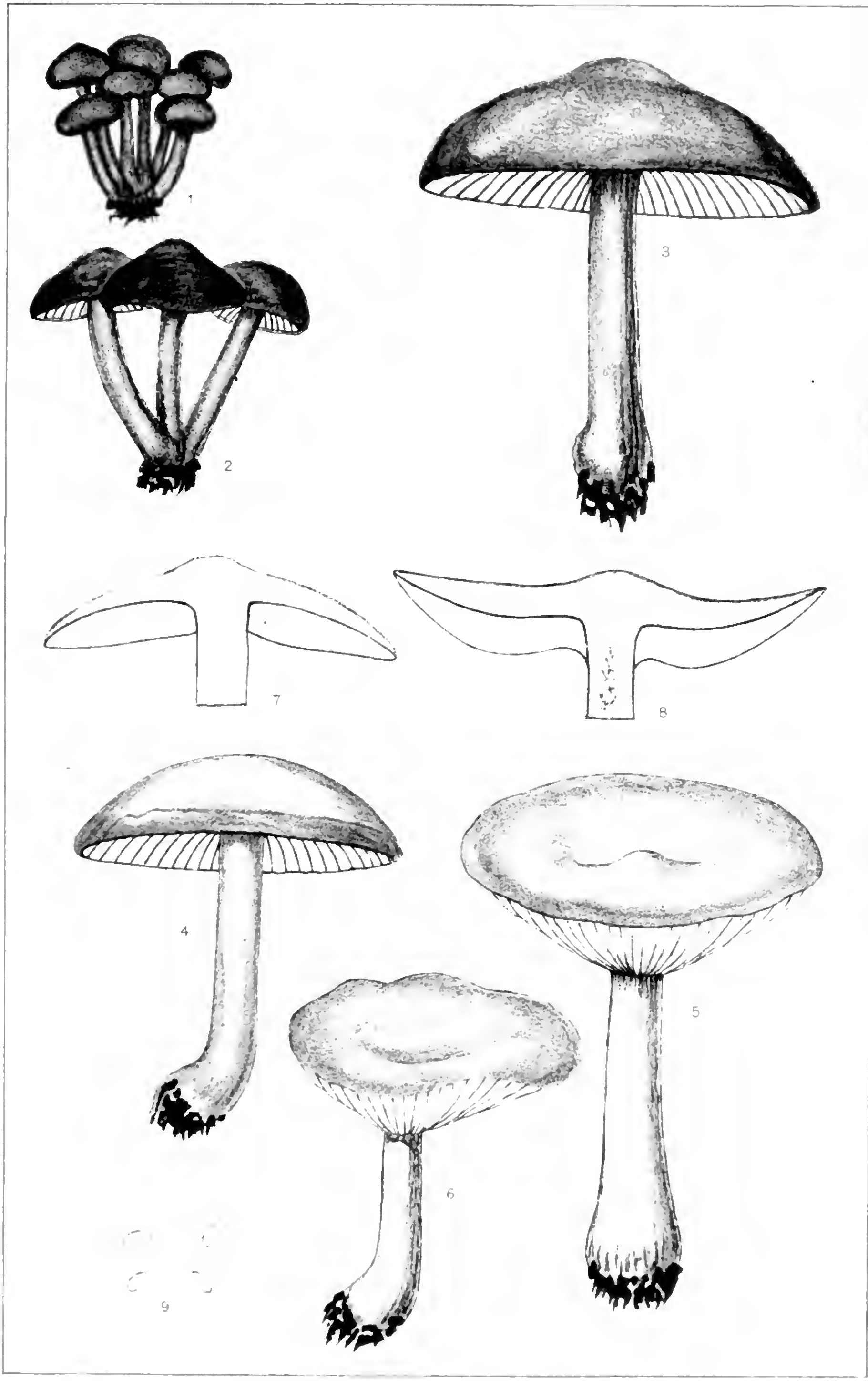
FIG. 15-20.
GALERA BESSEYI PK.
BESSEY GALERA

PLATE 115

Tricholoma sordidum (Schum.) Fr.

SORDID TRICHOLOMA

1 Cluster of very young plants
2 Cluster of three young plants slightly older
3 Immature moist plant showing color of young gills
4 Mature plant with margin of cap still moist
5 Mature plant with cap fully expanded
6 Vertical section of the upper part of an immature plant
8 Vertical section of the upper part of a mature plant
9 Four spores, x 400



TRICHOLOMA SORDIDUM (SCHUM.) FR.

SORDID TRICHOLOMA

PLATE 116

Pholiota duroides Pk.

HARDISH PHOLIOTA

1 Immature plant
2 Mature plant with a broad umbo
3 Mature plant with a scaly disk
4 Vertical section of the upper part of an immature plant
5 Vertical section of the upper part of a mature plant
6 Transverse section of a stem
7 Four spores, x 400

Phylloporus rhodoxanthus (Schw.) Bres

YELLOW RED PHYLLOPORUS

8 Immature plant
9 Mature plant
10 Vertical section of the upper part of a plant
11 Four spores, x 400

Cantharellus minor Pk.

SMALL CHANTARELLE

12 Immature plant
13 Mature plant with convex cap
14 Mature plant with cap nearly plane
15, 16 Vertical sections of the upper part of two plants
17 Four spores, x 400

FIG. 1-7.
PHOLIOTA DUROIDES PK.
HARDISH PHOLIOTA

FIG. 8-11.
PHYLLOPORUS RHODOXANTHUS (SCHW.) BRES.
YELLOW RED PHYLLOPORUS

FIG. 12-17.
CANTHARELLUS MINOR PK.
SMALL CHANTARELLE

INDEX