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Field Key
to the
Genera of the
Gill Mushrooms

by
Louis C. C. Krieger

The Norman, Remington Co.
Baltimore
1920

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Under *Collybi*
Marasmius."

Under *Panaec*
poisonous; cau

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Biology

THE STRUCTURAL PARTS OF GILL-MUSHROOMS

The figures in parentheses refer to the large numbers in the spaces of the key.

Fig. 1. (a) Warts, or remains of the volva (d), to be found on the caps or pilei (sing. pileus) of some *Amanitae* (1).

(b) Gills free from the stem, or stipe.

(c) Inner veil, also called annulus or partial veil.

(d) Volva, also called outer or universal veil. This tissue, which may be membranous or crumbling ("friable"), originally encloses, like a bag, young plants belonging to *Amanita* (1), *Amanitopsis* (2), etc.

Fig. 2. Cap umbilicate (b). Gills decurrent (a). The term "arcuate" describes a similar mode of gill-attachment (See 7, 79, 15, 33, 51, and 69).

Fig. 3. Cap umbonate (a). Gills emarginate or sinuate (b). A decurrent "tooth" is also shown. (See 5, 41, 14, and 32).

Fig. 4. Cap conic or campanulate (some species of *Coprinus* [74], 45, 81, 10, 13, 31, 49, 67, and 87). Gills adnexed (a), i.e., narrowly attached to the stem.

Fig. 5. (a) Gills somewhat emarginate, or rounded behind, but without a decurrent "tooth." Cap slightly umbonate and expanded.

Botany 23820 Recd direct

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Fig. 6. Cap convex, approaching semi-globose. Gills adnate, broadly or squarely so (a). The degree of adnateness varies from an approach to adnexed to almost decurrent. Some gills (adnexed, adnate, or decurrent) are loosely attached to the stem, and, therefore, "secede" readily. Such spurious "freeness" must be carefully differentiated from the true.

EXAMPLE ILLUSTRATING THE USE OF THE FIELD-KEY

We wish to learn the generic name of a certain gill-mushroom. An examination of its structure shows it possesses a ring on the centrally placed stem; there is no volva at the base of the stem, nor do we find fragments ("warts") of this tissue on the top of the cap; the gills are free, and the spore-print (obtained by the method described above) is purple-brown. The color of the spore-print places it in the fourth spore-color group (see left side of Key), while the presence of a ring and the absence of a volva refer it to the third division by structures (see captions above the Key). Its stem being central, and its gills non-waxy and free, we look down the Key, meet the horizontal row of purple-brown spored agarics, and at the point of intersection we learn the genus name of our plant, *Agaricus*. The genus is a fairly large one, comprising well over one hundred species for the world. *Agaricus campester*, the common meadow mushroom, is a well-known representative.

HOW TO ASCERTAIN THE COLOR OF THE SPORES

To determine a mushroom generically it is not only necessary to make careful notes on the struc-

ture, but the color of the spores must be ascertained as well. To infer this color from the color of the gills is likely to lead to error. As it is important to avoid error in so fundamental a matter, a deposit of the spores themselves should be obtained. Such a spore-deposit ("spore-print") can be secured from a fresh, mature or maturing specimen by cutting off the stem near the cap and placing the cap, gill-side lowermost, on two sheets of paper, one white and the other black, the sheets being so disposed as to receive equal amounts of the spore-rain. The length of time required for the formation of a sufficiently dense deposit varies somewhat, but in an hour enough spores will have fallen to enable one to decide as to their color. A glass bowl or a large cup should be used as a cover, otherwise the microscopic spores will be blown about by air currents.

INDEX TO THE NAMES OF THE GENERA IN THE KEY

The names in italics are used by some writers in place of those adopted here. The figures refer to the spaces.

<i>Acetabularia</i> 38	<i>Laccaria</i> 15
Agaricus 57	Lactarius 16
Amanita 1	Lentinus 18
Amanitopsis 2	Lenzites 18
Anellaria 77	Lepiota 3, 4
Annularia 21	Leptonia 30
Anthrachophyllum 90	<i>Limacium</i> 7
Armillaria 6	Locellina 38
Arrhenia 17	Marasmiopsis 40
Bolbitius 45	Marasmius 18
<i>Camarophyllus</i> 15	Metraria 19
Cantharellus 15	Montagnites 74
Chalymotta 77	Mycena 13
<i>Chamaeota</i> 21	Naucoria 48
<i>Chitonia</i> 56	Nolanea 31
Chitoniella 55	Nyctalis 52
Clarkeinda 56	Omphalia 15
Claudopus 35	Panaeolus 87
Clitocybe 15	Panus 18
Clitopilus 33	Paxillus 51
Collybia 12	Pholiota 41
Coprinus 74	Pilosace 65
Cortinarius 41	Pleurotus 8, 17
Cortinellus 5	Pluteolus 47
Crepidotus 53	Pluteus 29
Deconica 69	<i>Psalliota</i> 57
Eccilia 33	Psathyra 67
Entoloma 32	Psathyrella 81
Eomycenella 9	Psilocybe 66
Flammula 51	Rozites 37
Galera 49	Russula 16
Gomphidius 79	Schizophyllum 18
Hebeloma 41, 48	Schulzeria 11
Heliumyces 18	Stropharia 60
Hiatula 9	Tricholoma 14
<i>Hygrocybe</i> 10	Trogia 18
Hygrophorus 7, 10, 15	Tubaria 51
Hypholoma 59	Volvaria 20
Inocybe 48	Xerotus 18

589.22
K89f

589.22 K89f	VOLVA AND RING PRESENT. See <i>Lentus</i> (18) and <i>Cortinarius</i> (41).	VOLVA PRESENT; RING ABSENT. See 2, <i>Coprinus</i> (74), and 75.	41, 57, and 75; RING MORE OR LESS CONSPICUOUSLY PRESENT, EITHER ON THE STEM, OR ON THE MARGIN OF THE CAP AS A FRINGE. See <i>Lentus</i> (18).	VOLVA ABSENT; RING ABSENT OR VERY EPHEMERAL. See 48, <i>Flammula</i> (51), and <i>Lentus</i> (18).	PLANTS MORE OR LESS FLESHY	PLANTS TOUGH; LENZITES (IN 18) ALMOST WOODY
STEM CENTRAL MARASMIOPSIS 40 TOUGH, THE REST MEMBRANOUS OR FLESHY		STEM EXCENTRIC		PLANTS VERY THIN, MEMBRANOUS	PLANTS WATERY, WAXY, NOT MERELY VISCID	
GILLS NOT WAXY, THEIR EDGES NOT KEEN		GILLS WAXY, THEIR EDGES KEEN				
GILLS FREE		GILLS VARIOUSLY ATTACHED TO STEM, THE THREE DIVISIONS NOT TO BE TOO CLOSELY ADHERED TO		GILLS FREE (GILL ATTACHMENT SOMEWHAT VARIABLE IN THESE DIVISIONS)		GILLS ADNATE OR ADNATE (GILL ATTACHMENT SOMEWHAT VARIABLE IN THESE DIVISIONS)
GILLS VERY LOOSELY ATTACHED OR ADNATE		GILLS ADNATE TO ADNATE, USUALLY EMARGINATE	GILLS ADNATE, ADNATE OR SUBDECURRENT, USUALLY NOT EMARGINATE	MARGIN OF PILEUS CURVED AT FIRST; STRAIGHT AT FIRST		MARGIN OF PILEUS CURVED AT FIRST; STRAIGHT AT FIRST
AMANTITA	AMANTITOPSIS	LEPIOTA	LEPIOTA (GRANULOSA) SURFACE OF PILEUS GRANULOSE	CORTINELLUS RING FIBRILLOSE, ON MARGIN OF CAP, OR ON STEM	ARMILLARIA RING EVIDENT; DOUBLE RING (PSEUDO-VOLVA) PRESENT IN SOME SPECIES	HYGROPHORUS (LIMACIUM)
1	2	3	4	5	6	7
MEITARIA AUSTRALIAN GENUS. SOME AMANTITAS HAVE PINK GILLS. SEE 1	VOLVARIA ONE SPECIES PARASITIC ON A CLITOCYBE. SEE 15 AND 52	ANNULARIA (=CHAMAEOTA)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
19	20	21	22	23	24	25
ROZITES	LOCELLINA (=ACETABULARIA)	UNKNOWN	MARASMIOPSIS CONTEXT TANGY; PERHAPS IDENTICAL WITH PHOLIOTA (41). SEE ALSO MARASMIUS (18)	PHOLIOTA RING USUALLY QUITE EVIDENT. SPORES MORE OR LESS DUSTY-BROWN. SEE PHOLIOTA, HEBELOMA, CORTINARIUS (41), FLAMMULA (51), AND INOCYBE (48).	UNKNOWN	UNKNOWN
37	38	39	40	41	42	43
CHITONELLA	CLARKENDIA (=CHITONIA)	AGARICUS (=PSALLIOTA)	HYPHOLOMA RING FORMING A FRINGE ON MARGIN OF PILEUS; ONLY TRACES OF STEM. PSILOCYBE (66) IS CLOSELY RELATED. SEE 60	STROPHARIA SOME SPECIES ARE NEAR PHOLIOTA (41) IN SPOT COLOR; GILLS SOME TIMES EMARGINATE OR BECOMING SO. ONE SPECIES PARASITIC ON COPRINUS. SEE 52 AND 74	UNKNOWN	UNKNOWN
55	56	57	58	59	60	61
UNKNOWN	COPRINUS GILLS DELICATE, QUISCENT. SEE 45. GILLS FREE OR SLIGHTLY ATTACHED	UNKNOWN WHAT APPEARS TO BE A RING IN SOME COPRINI IS THE UNIVERSAL VEIL OR VOLVA. SEE COPRINUS (74) SEE ALSO 77 AND 87	ANELLARIA RING IN STEM	CHALYMOTTA RING IN FRAGMENTS ON MARGIN OF PILEUS. SEE COPRINUS (74), 75	GOMPHIDIUS RING SLIGHT, GLUTINOUS	PSATHYRELLA GILLS NON-DELICATESCENT. SEE COPRINUS (74)
73	74	75	76	77	78	79
MONTAGNITES	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
80	81	82	83	84	85	86
UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
87	88	89	90	91	92	93
UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
94	95	96	97	98	99	100

SPORES WHITE

SPORES WHITE

SPORES WHITE

SPORES WHITE

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SPORES WHITE

EXPLANATION OF SYMBOLS: * = MAJORITY DEADLY!!! • = SOME VERY POISONOUS, CAUTION! ⊕ = ONE OR MORE EDIBLE, SOME DANGEROUS. ⊕ = SOME EDIBLE; TOO CLOSELY RELATED TO DEADLY SPECIES. ○ = SAFE, SO FAR AS KNOWN.

ILLUSTRATED KEY TO THE PRINCIPAL GENERA OF THE GILL-MUSHROOMS.

Gills absent or much reduced in *Eomycenella* (9) and *Nyctalis* (52).

UNIVERSITY OF ILLINOIS-URBANA

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FIELD KEY TO THE GENERA OF THE GILL MUSH

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