LONG ISLAND MYCOLOGICAL CLUB

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FINDINGS AFIELD

by Joel Horman

Rhizopogon fuscorubens

The tale of this particular identification is rather long, involving several continents, and a long chain of evidence. It began when we encountered an unknown species of *Rhizopogon* during our Oct.29, 2005 foray in Peconic Hills County Park. This foray was unusually productive, producing about 50 species including some previously unrecorded (*Cortinarius mucifluus, Entoloma sericium*) and a nice harvest of Gypsies. Claudine Michaud, who is also a member of the NYMS, was in attendance and informed me that Dr. James Trappe, the noted West Coast expert in hypogeous (underground) fungi was leading a New Jersey pine barrens walk the following day which she planned on attending. She graciously accepted the assignment of bringing the specimen to Dr. Trapp for identification.

Subsequently, I received word that Dr. Trapp's original impression was of *Rhizopogon fuscorubens,* but that he needed some time to firm this identification up. Nothing else was

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BEATRIX POTTER, AUTHOR, ARTIST, & SCIENTIST

by Joel Horman

Beatrix Potter is known world-wide as the creator of a beloved series of illustrated children's classics featuring whimsically portrayed woodland creatures such as Peter Rabbit and Squirrel Nutkin. She has recently been celebrated by both a book ("Beatrix Potter, a Life in Nature", by Linda Lear) and a movie ("Miss Potter", starring Renee Zellweger) which have enlightened the public about her many-faceted interests and accomplishments. Her love of nature encompassed all of natural history and included botany, mycology, paleontology, archeology and entomology. Some she pursued more as a recreational or artistic endeavor, while she delved deeply into mycology in a scientific way, becoming one of the first in Britain to culture and experimentally observe fungi. Her illustrations of fungi, amounting to hundreds of species, were both beautiful and botanically correct, containing enough accurate detail to permit identification by modern mycologists, even of species which were then undescribed.

In her mid-twenties she was fortunate to meet the postman and self-taught naturalist Charles McIntosh, who had discovered thirteen new species of fungi in Britain, and who subsequently was to supply her with many specimens for her paintings. She considered him, "a dragon of erudition" and they collaborated in gathering and discussing mushrooms. During their partnership, she made copies of her drawings for him, and he gave her specific advice on improving the depiction of details for recording purposes, on one occasion advising her to "make separate sketches of sections showing the attachment of the gills". But she went far beyond mere depiction and delved deeply into the lifestyle and reproduction of fungi, at one point observing and drawing the progress of germinating spores

Flammulina velutipes

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PRESIDENT'S MESSAGE

Here it is: summer. Right now it is 92 degrees and it is a scorcher. I wonder how the mushroom mycelia are reacting to this weather Do they get heated and dry up or do they somehow go dormant to fruit another time? This year thus far has been a dud; too cold, too hot, lots of rain and then no rain. The mushroom gods appear not to be with us yet this year. Good news! Rain is forecast for tomorrow.

The best edibles so far have been the oysters, which never have failed us and a beautiful Laetiporus cincinnatus which I found in a well watered area under an oak. (I always say: look for the orange beacon!) In my opinion, the chickens are some of the best. When it gets a little cooler, look for them on oaks and at their bases. Yum, yum.

Another option is to head to the north and west where there has been lots of rain. I'll bet that there are plenty of collectibles around. There should be Russulas, Amanitas and other seasonal offerings at this time. In fact, just to our west, the NY club, led by Gary Lincoff, found good amounts of these as well as a few Boletes on a walk this past Sunday. Parks in Queens and Brooklyn should be explored by those nearby. If you find anything good, let us know and we'll be on your heels. For stay-at-homes, just stick around; change is sure to come.

Best regards to all who have not attended recent forays. We miss you and hope all is well. See you when conditions are more favorable.

EDITOR'S NOTE

The role of the amateur in modern mycology, can be fraught with difficulty as shown by Beatrix Potter's experience, outlined in this issue's article. Even a very talented and knowledgeable amateur with the correct connections could make little headway, particularly if of the wrong gender. While we no longer live in completely male dominated Victorian times, scientists are not always graciously accepting of efforts to share their domain.

In more modern times, highly accomplished amateurs have contributed much to our knowledge of the variety and distribution of species. But the run of the mill, serious amateur is likely to get short shrift, as there exists no organizational mechanism to report interesting and potentially novel sightings. For example, that *Rhizopogon fuscorubens* was previously unrecorded in NY is not easily obtained information. We were lucky in this case that an expert was available and willing to graciously share his expertise. But that is not always the case, and there are many sad tales of inquiries that go unanswered and specimens unreturned.

It is incumbent upon professional mycologists to enable access to willing experts in all facets of mycology; and upon amateur clubs to encourage such connections and to form usable liaisons for all to use.

MATERIAL FOR THE AUTUMN, 2007 EDITION SHOULD REACH THE EDITOR BY AUGUST 31ST

(Submissions should preferably be typed or submitted in Rich Text Format on PC floppy disk or by e-mail)

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BEATRIX POTTER

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every twenty minutes, according to British mycologist Roy Watling.

In his revealing article in *The Linnaean* regarding her mycological work Watling divides her activities into five topics: biorecording; germination of spores; the dual nature of lichens; asexual stages in the macromycetes; and the possibility of hybrids in the latter group. After correctly identifying *Strobilomyces floccupus* (Old-man-of-the-Woods) for McIntosh she illustrated it several times; this is still a rare mushroom in Scotland. By this time (1897) she "was very conversant with the British species of larger fungi, probably more so than members of the staff then at the British Museum". As she gained confidence, she approached the botanists at the Royal Botanic Gardens at Kew, and going to lengths to obtain "a student ticket" through her uncle, the distinguished chemist Sir Henry Enfield Roscoe, to gain an appointment with George Massee, Kew's cryptogamist.

Cantherellus cibarius

At her visit there, her journal records that she saw two young women gardeners in "knickerbockers tying up flowers". It is symptomatic of the male dominated institution that these women from the Horticultural College for Women, were forced to work in a concealing costume of knickerbockers, woolen stockings, waistcoat, jacket and cap, in order not to distract their male colleagues. Nevertheless, she persevered and eventually had a paper, "Germination of the spores of *Agaricineae,"* presented to the Linnaean Society of London in April, 1897. At this time, women were not permitted to attend official society meetings, and she subsequently withdrew her paper; it was not until 1905 that women were finally allowed in.

Boletus chrysenteron

She was ahead of British scientists of the time when she came to the conclusion that lichens were a life form composed of two organisms, an algae and a fungus. Only the Swiss botanist Schwenderer was of this belief, but was regarded with contempt; Potter differed from him in not believing that one of the organisms was a parasite. Eventually she was able to convince Massee of her way of thinking, which represented a small triumph for her. Another conceptual leap into the future was her speculation in a letter to McIntosh regarding a possible connection between *Lachnellula willkommii,* a canker disease of Larch, and aphids; many years later such a relationship was demonstrated between aphids and a *Nectria sp.* The illustration associated with this letter also depict the gelatinization of *Aleurodiscus* as it ages, caused by a *Tremella,* which was subsequently identified from her painting as *Tremella simplex,* and represents the first record of that species in Britain.

Hygrocybe psittacina

Her speculation (in her last letter to McIntosh) that some boletes exhibited hybridization was not borne out by subsequent studies, and the particular species she mentioned, *Leccinum scabrum and L. versipelle,* though very close in appearance, have been shown by Watling to be separate species, but he indicates that hybridization, although rare, does occur in some pleurotoid species. After this, Potter moved on to other challenges, and lost all contact with McIntosh. Her mycological illustrations did not receive public recognition until the publication of W. P. K. Findlay's "Wayside and Woodland Fungi" book published in 1967, twenty-four years after her death in 1943. In 1997, one-hundred years after the presentation of her paper before the Linnean Society, a meeting was held in her honor, and an apology made for their previous exclusionary policies.

Macrolepiota procera

Her approach to life and nature was an amalgam of hard-headed science, common sense and an irrepressible whimsy, best revealed by her own

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BEATRIX POTTER

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words. "....One of my pleasantest memories …is sitting on Oatmeal Crag…with the lane and fields and oak copse…below my feet, and all the tiny fungus people singing and bobbing and dancing in the grass and under the leaves all down below, like the whistling that some people cannot hear of stray mice and bats, and I sitting up above and knowing something about them. I cannot tell what possesses me with the fancy that they laugh and clap their hands, especially the little ones that grow in troops and rings amongst the dead leaves in the woods. I suppose it is the fairy rings, the myriad of fairy fungi that start into life in the autumn woods."

(All illustrations in this article are by Beatrix Potter, accessed in the following websites, which contain further information regarding her life and work:)

http://www.the-scientist.com/news/home/53057/
http://www.peterrabbit.com/beatrixpotter/beatrixpotter1c_c.cfm
http://fungus.org.uk/nwfg/beamay01.htm
http://www.linnean.org/fileadmin/images/Publications/B_Potter_fungi.pdf
http://fp.armitt.plus.com/beatrix_potter.htm

LETTERS.....

From Ruth Davis, one of our senior members, now residing in Colorado, comes this observation

Stropharia rugosoannulata appeared around 35 years ago. It was thought then that it was a new species. But (Clark) Rogerson the then curator of mycology at the NY Botanical Garden examined older books and found this mushroom in a book dated around 1890. It apparently had disappeared but made an appearance again around 1970. Mushrooms can have a very long sleep and reappear whenever they feel like it.

Is there anyone who has a similar memory or who can comment on this interesting observation? I believe there is a history of cultivation of this species in Europe, and the fact that it occurs in disturbed habitats may be indicative of an historical introduction.

Editor

FORAY RESULTS SUMMARY

April 21& 28, Wellwyn: A miserable showing, no Morels the first time and only one on the 28th. Perhaps attributable to the 5th coldest recorded Feb. temperatures.
May 12, Planting Fields: Cancelled due to lack of fungi.
May 19, Bethpage: The spring oysters, *Pleurotus populinus,* did not fail us, and the high-tech tool supplied by Leonard Schecter enabled access to otherwise out of reach treasures (see photo, rt.). Everyone culled several good meals this day.
May 26, Muttontown: Another cancellation due to lack of fungi.
June 9, Christie: A slight improvement, 8 species, with *Pluteus cervinus* predominating, a few slime molds, and polypores.
June 16, Caleb Smith: Again, 8 species, which included a few Winecaps.
June 23, Planting Fields: A grand total of 12 species, most growing on wood or wood chips, the most numerous being *Psilocybe cyanescens,* dried out and differing from their usual appearance. One specimen of the infrequently encountered *Simocybe centunculus.*

WELCOME, NEW MEMBERS

Danielle & Diane Fish
Herbert & Lauretta Feldman
Joan M. Murray
Andrew Rockwell
H. William & Dena Rockwell
Brooke Rodgers
Michael & Anna Schwartz

FLYING OYSTERS– Bob Warasila harvesting while Jacques observes, Bob Cresko gathers and Lenny skulks.

Gleanings

■**MIGHTY MYCOSE:** *Prototaxites* was a huge columnar fossil which stood 25 feet high and 3 feet wide, dominating the small land plants of the Devonian landscape of 400 million years past. Its original designation as a conifer was scornfully derided and underwent several mutations, as an alga and more recently, as a holobasidial fungus. The most recent interpretation is based on a carbon isotope analysis which shows a higher level of Carbon-13 variation than would be the case for a photosynthetic plant. However, either a fungus or a lichen is possible, although the authors favor a giant lichen. Why did it grow so big? Apparently because it could, since nothing big enough to eat it had yet evolved. (*Devonian landscape heterogeneity recorded by a giant fungus. Boyce, C. Kevin et al: Geology, 5/2007,Volume: 35, Issue: 5, Page: 399)*

■ **LINGERING HARVESTS:** A survey of 315 species of mushrooms conducted by Alan Gange at Royal Holloway, University of London, UK, and colleagues demonstrates that, within the last 50 years, many fungi have doubled the length of their breeding season from 33 days to 74. That is, species that formerly did not fruit until the Fall now appear in July and continue into December, apparently as the result of warming temperatures. Moreover, about 30% now reproduce twice a year, appearing in Spring as well. (Here on Long Island, it is not unusual to see the Spring appearance of a few specimens of autumnal species such as *Suillus granulatus* or *Leccinum aurantiacum,* but nothing resembling the pattern reported in England.) (*Science, Vol 316, p. 71)*

■ **MOSSES AND FUNGI:** Over 90% of modern?? plants are known to have a symbiotic relationship with fungi, either ecto or endo-mycorrhizal, which provide them with enhanced soil nutrients. Now researchers at the Chinese Academy of Sciences have shown that arbuscular mycorrhizal fungi, mostly of the genus *Glomus,* were found in 17 of 24 moss species, which contained 15 taxa of AM fungi. (*Ying Zhang and Liang-Dong Guo, Mycorrizha, pub. online, 3 Feb 2007)*

■**MUSHROOMS & METALS:** A very extensive analysis of the heavy metal content of 60 species of edible mushrooms was carried out in the province of Reggio Emilia, Italy, examining the levels of arsenic, cadmium, lead, mercury, and selenium. While these results cannot be used as a precise guideline to our US species, they may provide a rough guide. Species sampled include *Agaricus campestris, Macrolepiota procera, Coprinus comatus, Russula cyanoxantha, Rozites caperata, Lepista nuda,* and *Boletus edulis,* all familiar to us. Arsenic amounts were modest in almost all species, while cadmium was problematical, with *Boletus edulis, Agaricus arvensis, A. sylvicola,* and *Rozites caperata* containing an excess in amount of the European health guidelines. Some of these concentrations were 50-60 times higher than the highest concentration in vegetables. Lead levels were overly high in *Lepista nuda, Lycoperdon perlatum,* and *Boletus edulis,* among others. On the other hand, selenium, important for human nutrition, is readily available in most mushrooms. *(Food Chemistry, Volume 98, Issue 2, 2006, Pages 277-284)*

■ **OLDEST GILLED MUSHROOM FOSSIL:** A 100 million year old amber sample from a Burmese mine in northern Myanmar has yielded the oldest gilled mushroom fossil yet discovered. Named *Paleoagaracites antiquus* -in recognition of its ancient provenance- its minute size, spore shape, features of the pileus and likely habitat (conifer trunks) suggest membership in genera *Mycena, Marasmius* or *Collybia.* The 3 mm sample was so well preserved that it was capable of being examined microscopically. Astonishingly, this revealed that it had been partially decomposed by a mycoparasite, which in turn had been attacked by a hyperparasite. These were named, *Mycetophagites atrebora* and *Entropezites patricii,* respectively. *Mycetophagites* roughly translates to "fungus eater" and *Entropezites* implies turning inwards. Although there are no present day records of fungal hyperparasites, the fact that this pattern existed 100 million years ago convinces the authors that it must exist today as well. *(Evidence of mycoparasitism and hypermycoparasitism in Early Cretaceous amber, GO. Poinar Jr. & R Buckley, mycological research 2007, #111, p.503)*

Paleoagaracites antiquus

(Compiled by editor from cited sources)

SQUIRREL MYCOPHAGY

by Joel Horman

Mushroom hunters are well aware that there are many competitors for the edible fungi that we so avidly seek, and that these competitors include some very serious and numerous chompers such as snails, slugs, nematodes, and a myriad of beetles and other insects. Among the mammals here on Long Island, deer are fond of mushrooms, and have been observed to be particularly partial to *Boletus bicolor*, and no doubt other boletes as well. On occasion, we have seen gray squirrels nibbling such gilled mushrooms as *Amanita flavoconia* and *Megacollybia plattyphyla*, to which they are more than welcome.

However, I never thought of squirrels as food preservers, although well aware of their propensity to cache acorns. This was remedied by a recent article in the Northeastern Naturalist* which reports the finding of a Robin's nest in southern New Brunswick, Canada, which contained 52 mature false truffles, Elaphomyces granulatus, which we are familiar with as the species on which Cordyceps capitata is parasitic. The hoarder was *Tamiasciurius hudsonicus*, the northern red squirrel, as proven by analysis of the preserved bite marks.

Previous records of mushroom consumption by this species date back to 1920, when the great mycologist A.H.Buller authored an article on mycophagy by the red squirrel. Although this species consumes a wide variety of food such as fruit, nuts, bark, and fledgling birds, its diet can be comprised of between 45% and 95% fungus, depending on season and availability. Buller was also the first to observe that prior to caching them, red squirrels dried mushrooms by hanging them in the branches of trees, and then storing them in knot holes, tree hollows, and at ground level under stumps. They seem extraordinarily adaptable in this regard and there is even a remarkable observation of one packing mushrooms in empty cans after first drying them on shelves in an abandoned cabin in Alaska. Shades of Beatrix Potter!

In 2000 a Canadian study of the gut contents of red squirrels and northern flying squirrels showed greater consumption of epigeous (above-ground) fungi such as Boletes, Russulas and Cortinarius than hypogeous (underground) fungi such as *Elaphomyces* and *Rhizopogon*.

However, there are few reports of them using abandoned birds nests to store fungi, and the present report is well documented with photographs. The total weight of the 53 sporocarps amounted to 173 grams (5.1 ounces), with the average individual weight only 3.3 grams. Since they were all well preserved and not deteriorated, it is likely that they were dried before storing, in order to be consumed during the winter season. Those of us who follow a similar path will recognize a kindred spirit in this frequently derided rodent.

**(Use of a Robin's Nest as a Cache Site for Truffles by a Red Squirrel, Karl Vernes and Nelson*

FINDINGS AFIELD ***(Continued from page 1)***

heard until June 2006 when I received an email indicating that he was then in Australia, without access to his notes, but to the best of his recollection, the specimen was *R. vulgaris.* There then ensued a lapse in communications, and I despaired of ever obtaining a confirmed identification. In April of this year, I was pleasantly surprised to hear from Dr.Trappe, asking for another piece of the specimen, since it had evidently been misplaced. Alas, I had given him the entire specimen, but I did the next best thing, emailing a photo file and details from my notes.

On this basis, Dr. Trappe was able to confirm that it was *Rhizopogon fuscorubens,* "one of the relatively few species that is so macroscopically distinctive that I don't even need micro characters." He goes on to say that the reported spore size was correct, and "the black rhizomorphs over a dingy peridium are sure giveaways." When mounted in KOH the peridium turns magenta, "sometimes strikingly so", as this specimen did. **This is the first record for NY State**, although it has recently been found in Florida, N.& S. Carolina, and New Jersey, usually in sandy soils near the coastline, the same as in Oregon.

Rhizopogon fuscoruben will now be placed on our official checklist. As Dr. Trappe would like a voucher specimen for his herbarium to document the NY occurrence, we ask all members to be on the outlook for this species, particularly in the pine barrens.

MIX-N-MATCH

A. Strobilomyces floccopus	1. False chanterelle
B. Coprinus comatus	2. Eyelash cup
C. Amanita virosa	3. Jack-o-lantern
D. Boletus edulis	4. Oyster mushroom
E. Serpula lacrymans	5. The Miller
F. Amanita rubescens	6. Honey mushroom
G. Calvatia gigantea	8. Bears head fungus
H. Grifola frondosa	9. Old man of the woods
I. Hypholoma sublateritium	10. Dead mans finger
J. Tremella mesenterica	11 Parasol mushroom
K. Dictyophora duplicata	12. Shaggy mane
L. Fistulina hepatica	13. Fly agaric
M. Hygrophoropsis aurantiacum	14. Dry rot
N. Clitocybe nuda	15. Ceramic parchment
O. Agaricus campestris	16. Brick top
P. Ostreatus pleurotus	17. Destroying angel
Q. Rozites caperata	18. Death cap
R. Cyathus striatus	20. Giant puffball
S. Tricholoma equestre	21. Red-cracked bolete
T. Armillariella meliea	22. Netted stinkhorn
U. Aleuria aurantia	23. Cep/Steinpilz/Porcini/King bolete
V. Xylaria polymorpha	24. Blewit
W. Amanita phalloides	25. Slippery jack
X. Omphalotus olearius	26. Witches butter
Y. Lactarius species	27. Horse mushroom
Z. Clitopilus prunulus	30. Cauliflower fungus
AA. Macrolepiota procera	31. Beefsteak fungus
BB. Marasmius oreades	32. Blusher
CC. Craterellus fallax	33. Meadow mushroom
DD. Sparassis crispa	34. Orange peel
EE Agaricus arvensis	35. Chicken of the woods
FF. Amanita muscaria	36. Hen of the woods
GG. Suillus luteus	37. Gypsy
HH. Scuttelinia scutellata	38. Birds nest fungus
II. Xylobolus frustulatus	40. Fairy ring mushroom
JJ. Boletus chrysenteron	41. Milk cap
KK. Laetiporus sulfureus	42. Man on Horseback
LL. Amanita rubescens	43. Black Trumpet

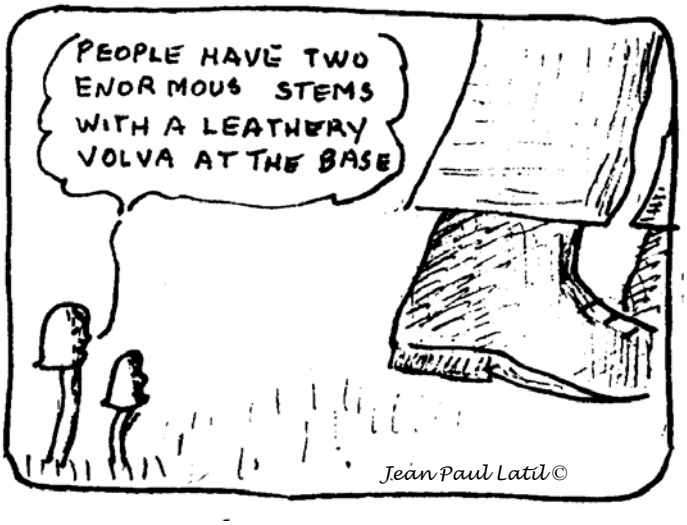
ANSWERS

A-9, B-12, C-17, D-23, E-14, F-32, G-20, H-36, I-16, J-26, K-22, L-31, M-1, N-24, 0-33, P-4, Q-37, R-38, S-42, T-6, U-34, V-10, W-18, X-3, Y-41, Z-5, AA-11, BB-40, CC-43, DD-30, EE-27, FF-13, GG-25, HH-2, II-15, JJ-21, KK-35, LL-32.

FORAY SCHEDULE CHANGE FOR SEPT 29TH

Our foray is still scheduled for West Hills County Park, but instead of beginning at 9:30 AM at the park (South Entrance-see Foray Directions) the foray will be preceded by Dr. Greller's lecture, which will take place at the Walt Whitman House, commencing at 9:30 AM. The lecture will last about one hour, after which we will reconvene at the park for our foray. Dr. Greller will accompany us and identify the unique flora there. Attendees may wish to bring their lunch, as we will probably be there through the early afternoon.

The Walt Whitman House, birthplace of the author, is located at 246 Old Walt Whitman Road, West Hills, in the town of Huntington, and can be reached by taking the Long Island Expressway to Exit 49N (Route 110 North). Follow brown "Walt Whitman" signs. Go north 1.8 miles on Route 110. Make a left onto Old Walt Whitman Road (Exxon Gas Station on corner). The Walt Whitman Birthplace will be on your right surrounded by a wood fence. Further directions may be found at their website http://www.waltwhitman.org/



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SEE PAGE 7 FOR FORAY SCHEDULE CHANGE

Identification is the beginning of all natural history. Nature appears to us as the grandest conceivable theater, endlessly unfolding. There can be no understanding at all until we have at least some inkling of the cast. ***Colin Tudge, The Tree, 2005***

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