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Beatrix Potter's 1895 drawings of the *Boletus granulatus* mushroom were part of a study that she submitted to the UK Royal Botanic Gardens at Kew.

NATURAL HISTORY

A scientist's eye

Beatrix Potter's meticulous artistry served mycology and entomology as well as children's fiction, reveals **Linda Lear**.

In January, the British press reported the discovery of a rare parasitic fungus on the Mar Lodge Estate in Aberdeenshire. Liz Holden, an independent field mycologist, spotted the small jelly fungus *Tremella simplex* growing on the pink blobs of another rarity, *Aleurodiscus amorphus*. When she checked, she discovered that *T. simplex* had first been drawn in the late 1890s, by Beatrix Potter (1866–1943).

Before Potter became a famous children's author and illustrator, she was a pioneering naturalist and amateur mycologist, although later discouraged by professionals in Britain's natural-history establishment. It was her habit to draw everything she saw under the lens, so Potter included the *Tremella* in her study, although she could not have recognized it

then as an independent parasitic fungus. Potter was an extraordinary observer whose many contributions to natural science are only now becoming more widely recognized. Along with women such as Margaret Gatty, author of *The History of British Seaweeds* (1863), Potter was part of a generation of female naturalists whose work contributed to the advancement of professional science, whether acknowledged or not.

Potter always prized the tribute paid to her by family friend John Everett Millais, the Pre-Raphaelite society painter: "plenty of people can draw, but you ... have observation". All her life, she exhibited a meticulous

concern for factual evidence. Her recording of observable data, although deliberately never systematic because she followed her artistic inclinations, marked her as a student of natural history from a young age. At nine, she was executing watercolour sketches of caterpillars, complete with physical descriptions and field observations. That she was interested in geology, archaeology, entomology and especially mycology was not unusual for someone raised in wealth and privately educated. What was rare was how Potter used her gifts in diverse areas, from stories for children and animal husbandry to the preservation of land, farms and watersheds in the English Lake District.

Potter's childhood offered unique opportunities for observing and recording

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nature. She enjoyed summers exploring and drawing the flora and fauna of Perthshire near the River Tay in central Scotland, tagging along with her artistic parents and absorbing photographic techniques of perspective and detail from her father, a fine amateur photographer. As a young woman, she explored the Tay Valley in her pony and trap, noting in her journal geological formations, diversity of land use and the progress of soil erosion, and despairing over practices such as the dehorning of Ayrshire cattle.

SCHOOLROOM SCIENCE

The boredom of the Victorian schoolroom enhanced Potter's skills almost by default. After lessons, Beatrix and her younger brother Walter drew a menagerie of animals secretly conveyed into the nursery — rabbits, mice, hedgehogs, bats, snails and lizards — as well as more typical collections of insects and bird eggs. When a schoolroom pet died, the Potter children often boiled the corpse and articulated the bones to improve the anatomical accuracy of their drawings. Potter noticed that lettuce contained a "soporific" that made her pet rabbit Benjamin sleepy; that field mice were inordinately fastidious housekeepers; and that hedgehogs yawned "pathetically" and might bite when propped up in one position to draw. Such discoveries later informed the plots and characters of her children's tales.

Like the artist and critic John Ruskin, Potter understood that the only way to know something was to draw it. First the hand-lens, then the camera, and finally the microscope taught Potter how to 'see'. By her early 30s, Potter's enthusiasm was focused on how fungal spores reproduced — an issue that few British mycologists agreed on. During a holiday in Scotland in 1892, Potter had formed a botanical alliance with noted naturalist Charles McIntosh, who provided instruction in the microscope drawing of fungi in exchange for Potter's accurate watercolours of rare specimens. By 1895 Potter had gathered young forms of the mushroom *Boletus granulatulus*, now known as *Suillus granulatus*, and drawn the spores and spore-producing structures, or basidia. Potter successfully germinated spores of several species of fungi, and made drawings of the mycelium at different stages.

She approached the Royal Botanic Gardens at Kew with these

A Beatrix Potter study of insects, including a stag beetle (top left) and a bloody-nosed beetle (middle right).

findings, only to be rebuffed by its director, William Thiselton-Dyer. She noted in her journal that "he hadn't the time to look at my drawings", even though he "indicated the subject was profound". Her uncle — the chemist Henry Enfield Roscoe — encouraged her to continue her research, and in 1897 she offered to the Linnean Society in London (which did not then admit women, or allow them to attend meetings) a paper: 'On the Germination of the Spores of *Agaricineae*', which was accompanied by several of her microscope drawings. Although this paper has been lost, it seems from her drawings and journal that Potter had become intrigued with the possibility of hybridization.

Around the mid-1890s, Caroline Martineau, the principal of London's Morley Memorial College for Working Men and Women, commissioned Potter to produce a dozen lithographs to accompany lectures on entomology. Two survive; one shows a sheetweb spider, *Linyphia triangularis*. They are accurate, despite Potter's recorded frustration with the errors in the Natural History Museum's

entomology index, and the misidentified specimens in the museum's insect cases.

Long after Potter had become the celebrated author of *The Tale of Peter Rabbit*, *The Tale of Two Bad Mice* and more than 20 other classic books for the young, she gave her prized mycological and botanical drawings to the Armitage Museum and Library in Ambleside in the Lake District. Today, they are still consulted by professional and amateur mycologists, and 59 of the drawings are reproduced in W. P. K. Findlay's *Wayside and Woodland Fungi* (Warne, 1967).

When her eyesight diminished, Potter turned to breeding prizewinning native Herdwick sheep, and to promoting the preservation of the unique ecology and farming character of the Lake District. On her death in 1943, Potter, then Mrs William Heelis, bequeathed to the National Trust more than 1,700 hectares of land, now enjoyed by thousands of visitors each year.

In 1896, Potter summed up her delight in the natural world with a proclamation of supreme Victorian self-confidence: "With opportunity the world is very interesting." The natural-history legacy of this shy but hugely curious and determined amateur continues to enlighten, and even dazzle. ■

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Beatrix Potter as a teenager, with her spaniel, Spot.