



## On the *Geastrum* species (Gaeastraceae, Basidiomycota) described by Rick

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### Abstract

*Geastrum lloydianum*, *G. trichiferum* and *G. violaceum*, described from Brazil by Johannes Rick at the beginning of the 20th century, are redescribed, lectotypified and compared with recent collections. Two recently described species, viz. *G. hirsutum* from Brazil and *G. episcopale* from Argentina, are regarded as synonyms to *G. trichiferum* and *G. violaceum*, respectively. Basidiomata are illustrated in color. SEM images show basidiospores, and line drawings show hyphae and basidia.

**Key words:** earth-star fungi, Gasteromycetes, fungal taxonomy, lectotypification, morphology, South American mycota

### Introduction

Johannes Rick (1869–1946) was an Austrian Jesuit who lived in southern Brazil (State of Rio Grande do Sul) since the beginning of the 20th century until his death (Fidalgo 1962). Rick came to Brazil in 1903 (Rabuske & Rambo 2004), although other dates are also presented in literature, e.g. 1902 (Fidalgo 1962) and 1904 (Torrend 1918). According to Rick himself, he came to Brazil as a naturalist to study the local fungal flora (Rabuske & Rambo 2004).

While in Brazil, Rick was an enthusiastic collector and a passionate mycologist. His fungal collection kept at Herbarium PACA is one of the most important in South America and currently comprises more than 4,500 specimens (Mauhs 2000). Moreover, many more Brazilian specimens collected by Rick are distributed among herbaria across the world, such as B, BPI, CUP, FH, IAC, IACM, K, MICH, R, RB, S, SFPA and SI (Rick 1928, Stafleu & Cowan 1983).

*Geastrum* Pers., in the family Gaeastraceae, is one of several genera of Gasteromycetes where the exoperidium opens in a stellate way (cf. Sunhede 1989) and species of the genus are frequently found in tropical and subtropical forests in South America. During his studies in Brazil, Rick described three new species of *Geastrum*, viz. *G. lloydianum*, *G. trichiferum*, and *G. violaceum*. Since the review of types is urgent in our times (Trierveiler-Pereira & Romero 2011), the main goal of this work was to revisit, redescribe, lectotypify and illustrate the *Geastrum* species described by Rick.

### Material and Methods

Macro- and micromorphological analyses of fungal specimens were conducted at Herbarium PACA and the Mycological Laboratory, Depto. Botânica, UFRGS. Colors were coded according to Kornerup & Wanscher (1978) and referred to dry material, unless otherwise stated. For microscopical analysis, portions of the peridium and the gleba were mounted in 5% KOH solution and spore measurements included surface ornamentation. Morphological descriptions and line drawings were based on types and other additional material. Line drawings were made with the aid of a camera lucida.