New genera of fungi — XII

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During the work carried out under the auspices of the Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, Argentina, and dedicated primarily to the ecology of the ectotroph populations in Southern South America, special attention was given to the mycological flora of the Nothofageta in Southern Argentina and South Chile. These regions are particularly rich in secomaceous fungi and Hymenogastrineae in general as has been known since Thaxter’s visits in the region of Valdivia and Punta Arenas, and has been confirmed by the discovery of Thaxterogaster, several interesting species of the Hydnangiaceae, Austrogaster, Weraroa, etc. by the present author.

In a forest on the east slope of the Cordillera Pelada (west of the town Unión, Valdivia, Chile), with Nothofagus (N. dombeyi and N. alpina) dominating, strongly mixed with conifers and other large dicotyledonous trees (Saxegothaea, Podocarpus, Weinmannia, Laurelia, Flothovia, Drimys, Pseudopanax, Eucryphia) we observed during the fall fruiting period and at a point about 600 m. above sea level near a place called „Chivería“, a fungus growth which at first glance appeared to be Bondarzewia guaitecasensis inasmuch as it grew at the base of Nothofagus dombeyi much in the same manner as that common root parasite of Nothofagus. It was observed and described in fresh condition by the present author in company of Dr. Kubitzki, Dr. R. E. de la Sota, Sr. G. Sarmiento, and photographed by Dr. M. Moser.

Closer observation disclosed the fact that the specimen in question was not the fructification of a polypore but a secomaceous gastromycete of the astrogastaceous series (Hydnangiaceae) recently revised by this author in collaboration with Dr. A. H. Smith (1960). Since it carried abundant latex, it was compared with the genera Zelleromyces and Arcangeliella, but it differs from both genera by


its internal structure and its enormous size. It is here described as new genus and species of the family Hydnangiaceae.

**Hybogaster** gen. nov. Fructificatio epigaea, grandis; hyphis crassitunicatis et laticiferis praesentibus; structura dendroidea ramoso-submultiplyata; peridio tenui; consistentia carnoso-subtenaci; superficie gibusso-protracta ubi rami steriles peridium jungunt; latice abundant; sphaerocystibus nullis; sporis subglobosis, echinatis, amylaceis. Ad basin truncorum arborum. Typus generis: *H. giganteus* Sing.

**Hybogaster giganteus** Sing. spec. nov.

Epigaeus; gastrocarpio tuberoso, lobulato-gibboso, ad apicem umbilicato, subcerebriformi, subisodiametrico, 135 mm cc. diametro, ad basin substipitiformiter contracto; peridio tenui (1 mm. cc. crasso) et in partibus superficieis subnullo et ibi subscrobiculato, ceterum levi, aurantiaco; gleba inter ramos columellares collocata, loculis subminutis, pallide ochraceis vel brunneolis; columella e trunco communi ramariformiter divisa, ramis crassioribus peridium ubique a [13] tangiblebus et cum eo confluentibus, nonnullis terreibus, alii lateriter dilatatis, albidis vel albis; contextu albido vel albo, lactescente elatice abundant, carnoso-subduriusculo-subtenaci; odore rancido; sapore acridi, — Ad basin trunci *Nothofagi dombeyi*. Legit Singer no. M 3229 (BAFC) in Cordillera Costera Chilensi.

Gastrocarp epigeous, tuberiform, lobulate-gibbous, more or less irregularly umbilicate above, almost cerebriform, subisodiametric, about 135 mm. in diameter, at base constricted into a stipe-like (30 × 25 mm) extension where the columella originates; peridium thin (about 1 mm. thick) but in certain parts of the surface — not however in differentiated or well limited portions — almost nil so that in these parts the surface appears almost scrobiculate from the glebal chambers which reach the surface, otherwise smooth, glabrous or subglabrous, continuous, a dull and not very deep orange (a combination of two colors: "tan, heather" and "burnt sienna" M & P); gleba filling the space between the ramifications of the columella, with small (0.2 — 0.3 mm. diam.) chambers which are not lamellarly arranged, pale ochraceous to pale brownish ("mellow glow" to "Inca gold" M & P), at maturity mostly filled with spores; columella originating in a common fleshy base which corresponds to the stipe-like projection of the base of the gastrocarp and begins to ramify immediately above this sterile base in the manner or a *Ramaria* (Clavariella) but with the main branches not erect but rather branching out obliquely to reach the peridial level all over the surface of the gastrocarp and joining the peridium at such areas where the gastrocarp shows the gibbous elevations, which indicates a tendency towards
the multipileate structure (without actually resulting in a multi-
pileate organization of the gastrocarp even at full maturity because
the peridium remains confluent and nearly continuous), the branches
either terete or laterally broadened, with secondary ramifications
which eventually merge into ordinary chamber-walls (tramal plates);
context of peridium and columella, stipe and branches white, unchan-
ging, partially whitish and occasionally slightly brownish in age, fleshy-
hard and somewhat tough, exuding a milk-like white unchangeable
latex in all parts; odor of rancid fat; taste acrid; outer layer of base
mixed with humus particles (pseudosclerotiotid).

Spores 9.3—10.7×8.8—9.7 μ (with ornamentation), globose or
more frequently short ellipsoid-subglobose, hyaline or pale yellowish,
symmetric or with somewhat eccentric hilar appendage (the latter
rod-shaped to noduliform), with seemingly double-“walled” central
oil drop, with strong exosporial ornamentation consisting of isolated
amyloaceous spines which are 1.2—1.8 μ long and up to 1.2 μ broad
at base and subacute. Hymenium: Basidia (25)—45—46×7.5—8.8 μ,
clavate, sometimes with a secondary thickening near the base, inter-
rupted by hyphal ends which may be somewhat forked, generally
4-spored; true cystidia or pseudocystidia in mature gleba not seen.
Hyphae of the columella-branches often thick-walled (wall about
1.5 μ thick) to almost solid and often wavy to molinoid, predominantly
thinwalled in the tramal plates, the latter with regular structure,
its elements slightly interwoven and no spherocysts intermixed,
some hyphae with irregular excrescencies or nodules or locally broade-
ned and shortened, interior noticeably well colored in phloxine-KOH
mounts, subhymenium densely interlaced, of small thin-walled
elements, some elements spherocyst-like and up to 11—12 μ in dia-
meter; laticifers yellow in KOH and ammonia, brown in sulfoformol
mounts, fuliginous-brown in sulfobenzaldehyde mounts, other hyphae
mostly characteristically opaque and refringent; hyphae of the
peridium much like those of the columella, but the external (covering)
layer a dense tissue of periclinal hyphae with percurrent trichodermal
(divergent) hyphal elements, laticifers, and occasional swollen ele-
ments perforating the layer of periclinal hyphae, pale orange in
KOH, with rounded-obtuse hyphal ends. Laticifers about 5—9 μ
in diameter; hyphal walls inamyloid, clamp connections not seen
(but septa rare and difficult to observe).

Chemical characters: KOH (10%) on surface of peridium and
on trama deep purple in fresh condition (between 8-E-5 and 8-J-5,
M & P).

On the base of a living trunk of Nothofagus dombei (Mirb.)
Oerst. in mixed forest, solitary. Montane vegetation of the Cordillera
Costera.
Material studied: Chile: Valdivia: Cordillera Pelada, at the locality “Chiveria” at 600 m. alt., between Unión and Mirador, R. Singer no. M 3229 (BAFC), Typus.

The genus Hybogaster and its only species differs from both Zelleromyces and Arcangeliella by the size of the carpophores (several times larger in Hybogaster than in the largest fructifications of the other two genera), in its coralloid-submultiple structure, in the absence of spherocysts as well as clavate epicuticular cells; it differs from Zelleromyces in particular also by its habitat (epigeous on the ground of tree trunks), by the spores which are smaller than in all species known to belong in Zelleromyces, absence of heteromorous trama, the presence of thick-walled, strongly refractive hyphae and consequently a somewhat tough and hard consistency.

The general appearance, submultiple structure, colors, spore characters and hyphal structure of this fungus as well as its habitat are very similar to that of Bondarzewia. The question whether we have here an example of convergence or an indication of true affinity is as difficult to answer at present as it is vital for far-reaching phylogenetical and systematical conclusions. The author is not prepared to give an opinion on this question as long as no additional data are available as to the cultural characters and the individual development of both Hybogaster and the Bondarzewiaceae. On the other hand, it appeared desirable to publish a complete description of the morphological and some chemical characters of the mature stage of H. giganteus, and present mycologists with the facts which may lead to new concepts and interpretations. It may, for example, be argued that, in case of true affinity between Hydnangiaceae and Bondarzewiaceae, the latter might be removed from the Aphyllophorales proper and incorporated in the order Agaricales on the same level as the Polyporaceae sensu stricto, the Russulaceae, or the genus Lentinellus. Any such conclusions would necessarily have to be based on further investigations as to the hiatus that separates the Bondarzewiaceae from other similar polypores and a revision of the delimitation and the scope of this family, comparative studies of mycelial characters and development of the carpophores, perhaps also on studies on cytology and sexual behavior of the species involved. It would also be interesting to find out more about the tree-fungus relation in the case of H. giganteus inasmuch as a truly parasitical relation or the demonstration of mycorrhizal relations might considerably influence our judgment on the problem at hand. The author acknowledges the financial and organizational assistance received from the Consejo Nacional de Investigaciones Científicas y Técnicas (Buenos Aires) and the Universidad Austral (Valdivia). I also wish to thank Dr. Kubitzky for his advice and collaboration.
Literature cited.


