MYCORAMA—CREATING AN INTERNATIONAL CENTRE FOR MYCOLOGY AND MUSHROOM MUSEUM IN SWITZERLAND

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The Swiss Canton of Neuchâtel situated near the French border covers only a surface of 720 km^2, and its population does not exceed 200,000.

Nevertheless, the country is renowned for its exceptionally rich mushroom flora, especially the Jura region, which can boast a mycological tradition going back to the 18th century. The first Neuchâtel mycologist was Jean-Frédéric de Chaillet (1747–1839), who mainly studied micromycetes and described over 140 new species. Closer to us is Fritz Leuba (1848–1910) who has really popularised mycology in Switzerland. He was not only a mycologist, but also a skilled artist, who used his spare time to create a series of marvellous mushroom paintings to illustrate his popular guide *Les champignons comestibles et les espèces vénéneuses avec lesquelles ils pourraient être confondus.* This book—the title of which translates roughly as *Edible mushrooms and the poisonous species you should not confuse them with*—appeared in 1890, and is today a collector's item. Its average price at antiquarian booksellers is about US$1000.

Back in the 1950s, Leuba's book drew the attention of R. Gordon Wasson, who included the author's poetical diversion *Hymne à la morille* in his famous ethnomycological treatise *Mushrooms, Russia and History.*

It is also worth mentioning that the mushroom paintings of the Neuchâtelois were used in a series of wall charts teaching the population to distinguish between the most important edible and poisonous mushrooms. When a few years ago, the author of these lines rediscovered a complete set of those forgotten wall charts, he observed that the costs of their edition had been subsidised 'pour l'utilité publique' by both the Canton and the Confederation. Obviously, at the end of the 19th century edible mushrooms were more important as food, especially for the country folk, than they are today.

It would be tedious to give here a summing up of all the Neuchâtel mycologists. Australian readers will be probably familiar with Paul Konrad, one of the founding fathers of modern mycology and author of *Icones Selectae Fungorum*, a treatise in six volumes describing and illustrating 500 species that he published with André Maublanc between 1924 and 1937.

Today, the tradition is continued by the Institute for Botany of the University of Neuchâtel, where the group Mycology, belonging to the Laboratory for Microbiology, is well known for its remarkable research on lignicolous mushrooms. In the early 90s the activities of the group, divided in teams and led by Research Director Daniel Job, were extended to the cultivation of new edible mushrooms and several related projects. The group's activities in the domestication of wild-growing edibles led to the cultivation of over 30 species, including *Sparassis crispa* and *S. laminata*, which had never been grown successfully elsewhere. The methods developed in the laboratory are tested and exploited by a small Company called MYCOTEC, located in Cernier, a small town not far from Neuchâtel. At this plant Shiitake (*Lentinula edodes*), Enokitake (*Flammulina velutipes*), the afore-mentioned *Sparassis* species, the Nameko Mushroom (*Pholiota nameko*), and the White Elm Mushroom (*Hypsizigus ulmarius*) are constantly cultivated, partly for commercial purposes, according to a uniform and simplified procedure. All mushrooms are grown in closed sacks (having an air filter) of 1,8–2,5 kg weight, containing a basic substrate, which is enriched according to the requirements of the particular mushroom. All grow together in a room maintained at 18°C and 85% relative humidity. Infection problems are few, although there are losses due to the mould *Trichoderma*, as experienced by every grower. A special team is studying ways to minimise this nuisance. (Figs 1 and 2.)

The efforts of Daniel Job and his team have greatly contributed to the diffusion of new edible mushrooms both in Switzerland and abroad. Of course, acceptance of a new edible mushroom by the public takes time. Until about 30 years ago, the choice was limited to the Cultivated White Mushroom (*Agaricus bisporus*) only, on both sides of the Atlantic. The Oyster (*Pleurotus ostreatus*), introduced in the early 1960s, needed 20–30 years to find acceptance, but nowadays the public is getting increasingly mushroom-minded. Shiitake took only 10 years to conquer the palate of the Europeans, and the Hen-of-the-Woods (*Grifola frondosa*) only five! Recently, 'Piopini', the Black Poplar Mushroom (*Agrocybe cylindrea*) and the King Oyster Mushroom (*Pleurotus eryngii*) have also found some consumer acceptance. There are, of course, also mushrooms that did not make it. Shaggy Manes disappeared from the market because of their short shelf-life, and the Garden Giant (*Stropharia rugosoannulata*) did not appeal to Swiss and French tastes. While this article was written, Brazilians at the agricultural trade fair BioFach 2003, held at Nuremberg in Germany, presented their Royal Sun Agaricus (*Agaricus blazei* = *A. brasiliensis*). The visitors of the fair could sample a whole array of gourmet recipes, including a genuine 'Bratwurst' (sausage), having this tasty mushroom as an essential ingredient!

Fig. 1. Daniel Job and the author with cultivated *Sparassis*.

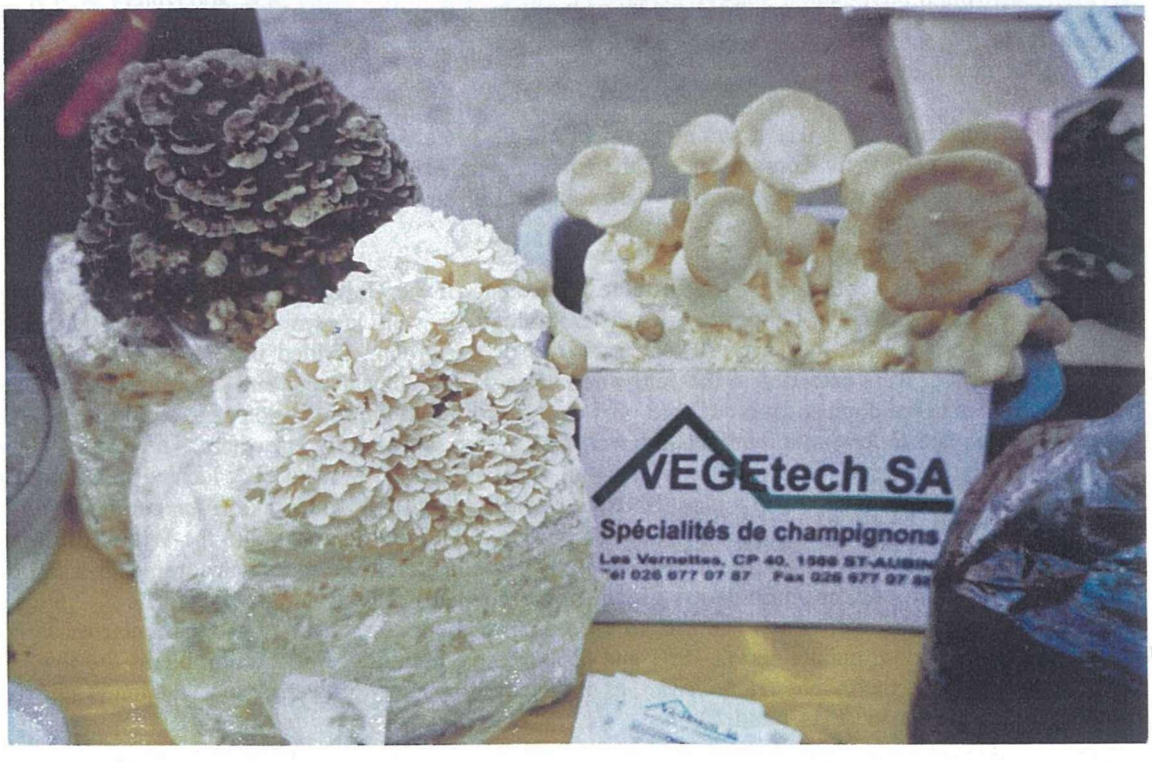
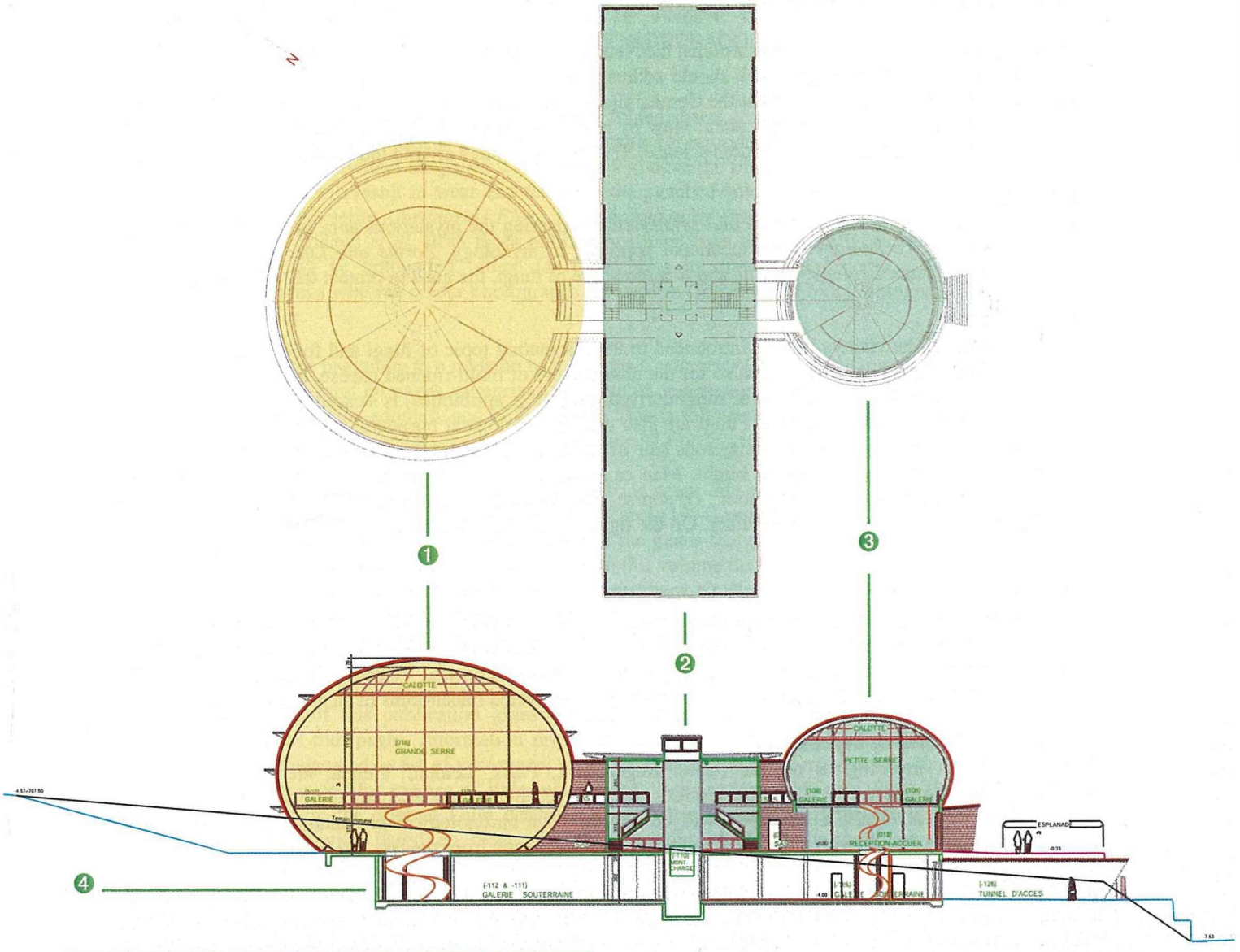


Fig. 2. Several cultivated mushrooms together.



Plan and sectional views. In green: the central building and small dome (1st stage); in yellow: the big dome (2nd stage).

Fig. 3. MYCORAMA. Plan and sectional views.

Clearly, popular interest in mushrooms has never been greater as witnessed by the overwhelming number of field guides and periodicals devoted to mushrooms. Even traditional mycophobic countries like the USA and the UK now have their aficionados who meet in (amateur) mycological societies and associations, each having its own periodical and/or website. In addition, a big international trade in wild-growing mushrooms has developed over the last 20 years. It is now quite normal to see Mexican morels, boletes from South Africa, and chanterelles from Portugal on the Swiss markets. This trade not only prompted the US Agricultural Dept. to regulate mushroom picking, but it also raised new problems in quality control and consumer protection. Many European countries had to keep abreast of these changes by adapting their legislation on marketable mushrooms.

The big dome project.

Fig. 4. The big dome.

MYCORAMA, an interface between the layman interested in mushrooms and science

Considering all this new interest in mushrooms, the Neuchâtel scientists got the idea to create MYCORAMA, an international centre for mycology, which should address itself not only to the mycological community, but also to the public at large. It will be housed at the Cernier site, an ideal area between plain and mountain. Unlike other museums, which mostly give a rather static view of mycology, MYCORAMA sees its role as a continually evolving window on advances in mushroom science. The concept centers around the following principal themes:

Knowledge

This theme covers such topics as *Myths and Mysteries*: discovering the mysterious aura surrounding the fungus world. *Science and Technology*: the educational approach to mycology. *Forms and Life*: the hidden face of mushrooms. *Nature and Ecology*: the role and omnipresence of fungi, the need to protect the wild mushroom.

Fungi and man

Under this heading, the visitors will be introduced to the fascinating topic of fungi and food. We need not only fungi for our daily bread and wine, but also for the manufacture of mold-ripened cheese, and many other fungi-related foods. Furthermore, the number of fungi-derived drugs (*e.g.* antibiotics) is steadily increasing, and in this biotechnology plays an important role. Fungi are also used for ecological purposes, such as the cleaning up of polluted sites. On the other hand, the dangerous side of fungi will be highlighted by showing their role in plant diseases, such as the infamous potato blight. Man can also fall victim to molds, notably through such skin infections as 'ringworm' and 'athlete's foot'. Of course, the poisonous mushrooms that make victims every year, especially in Europe, are not forgotten either. On the lighter side, there will also be an exhibition on mushrooms in art and literature.

Cultivation

Not surprisingly, a large part of the museum's space will be devoted to the domestication and cultivation of a wide range of mushrooms. The core element will be a laboratory where the growing techniques are demonstrated. Preserving techniques and culinary aspects are not forgotten. Visitors will be invited to sample various mushroom dishes, and a shop will sell a selection of cultivated mushrooms in an attractive package.

Contacts (the World of Mycology)

Famous European mycological centres (Oslo, Regensburg, Paris, Leiden, Vienna, *etc.*), as well as the mycological departments of the Swiss universities, will be presented in an overview that will also include the societies. Last, but not least, a large part will be devoted to a chronological presentation of the History of Mycology, richly illustrated with old books, paintings, and wall charts from the last 250 years.

MYCORAMA's mushroom-shaped architecture will be evocative, but the buildings will blend with the surrounding greenery. The **big dome** (Fig. 4), equipped with movable and fixed walkways is a green house, measuring 24 metres in diameter. It will house a display of fungi in various everyday situations. The **Central building** (Fig. 3) comprises exhibition halls dealing with the many aspects of mycology, partly via interactive equipment, a laboratory for the production of mushroom spawn, and service rooms. An elevator in the middle accesses the upper floor, the upper gallery of the green house, and part of the roof. The **small dome** (Fig. 3) houses visitor areas (reception, kiosk, and a room for tasting mushrooms, as well as a small greenhouse. The area for growing mushrooms is in the **underground gallery,** complete with incubation and preparation rooms (Fig. 3). A certain atmosphere will be created by a mysterious cave and a small stream that runs through it. The gallery offers a direct exit from the building (south side). (Figs 3 & 4 printed with permission.)

When will MYCORAMA be operational?

Since 1998, the 'Association suisse du MYCORAMA (ASM)'—which has about 500 members including 50 mycological societies—has been planning and preparing this ambitious project, examining its feasibility and looking for the required funds. In a publicity campaign illustrated folders explaining the project have been distributed in four languages. Informative booklets with splendid photographs of newly cultivated mushrooms, including original recipes by a famous Chef, were available free of charge on the Swiss annual mushroom fair. The construction costs are estimated at 10 million Swiss francs (7 million US dollars). Since in this time of economic recession it is difficult to find sponsors, the ASM committee has decided to carry out the project in two stages. This year, construction of the small dome and the main building will be initiated. In a second stage, hopefully finished by the year 2006, the big Puffball dome will be constructed. If the funds could be found quickly, MYCORAMA could, of course, be realised all in one go. Let us hope that this great project will be realised real soon, and that mushroom aficionados from all over the world will find their way to Cernier.