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STUDIES ON SMALL VICTORIAN FUNGI BY H.J. SWART AND G. BEATON

Gretna Weste
Botany School, University of Melbourne, Parkville, 3052, Australia.

Friends, Romans, countrymen, Lend me your ears
I come not to bury mycologists, but to praise them.
The work these men did was not buried with their bones
But preserved for us in scientific papers.
Adapted from W. Shakespeare.

Harry Swart and Gordon Beaton, two mycologists, found, identified, classified, drew and described a large number of different and entirely new species of small fungi, which they collected from Victorian native forests. During the nineteenth century most newly observed fungi were sent overseas either for identification or for confirmation of their identification. The descriptions, drawings and publication were prepared overseas and many of the specimens remained there, mostly at the Herbarium of the Royal Botanic Gardens, Kew. Swart and Beaton completed their work in Australia, and their specimens are lodged in Australian herbaria, although the papers were published in British journals, because there were, and still remain, no Australian journals devoted solely to mycology.

Gordon Beaton

Gordon Beaton (1911–1988), left school at 12 years old and had no tertiary training. He owned and ran an engineering business in Camperdown, Western Victoria. He was a prominent rifle shooter, billiards player and was interested in photography. After retirement he and his wife settled at Eildon, 100 km. north of Melbourne, and began to study the fungi growing along the bush tracks. He bought a Wild microscope and text books. The photograph (Figure 1) shows Gordon in his study/laboratory. Altogether he discovered, described, classified and drew about 50 new species of fungi and published 36 papers.

At first Gordon sent his material to Kew. He collected and studied the small cup fungi, the Discomycetes, the Victorian species of which were largely unknown. Dr. R.W.G. Dennis, of what was then the Commonwealth Mycological Institute, at Kew, suggested that the specimens be studied by M.A. Rifai then at Sheffield. Dr. Rifai worked on Gordon's material at Kew, and published the results in a book 'The Australasian Pezizales in the Herbarium of the Royal Botanic Gardens, Kew' (1968). Rifai named one of Gordon's specimens after him. *Underwoodia beatonii* Rifai is a small conical Discomycete collected near the ocean foreshore where it was growing under *Melaleuca lanceolata*, a paperbark tree which belongs to the Myrtaceae.

From 1975 I helped Gordon to publish his own work, and we wrote 22 papers, although he continued to send to Kew collections of fungi which belonged to large groups and whose identification was beyond his means. Most of these papers were published in the *Transactions of the British Mycological Society*, although some appeared in the *Victorian Naturalist*. Most were studies of small inoperculate Discomycetes found on bark and rotting logs in the forest. These papers recorded Gordon's work. Gordon wrote the descriptions and prepared the drawings. I found the references, organised the Latin diagnosis, usually translated by Dr George Scott, and wrote the papers. *Cyathicula hyalina* Beaton is shown as an example (Beaton & Weste 1978). It is a small inoperculate Discomycete with a stalked apothecium about 2 mm. in diameter and with a toothed margin.

Mycologists from Britain, such as Dr Sheila Francis and Dr Brian Sutton from the then Commonwealth Mycological Institute and Dr Derek Reid from the Kew Herbarium came to Eildon to visit Gordon.

In 1987 Dr Spooner of the Kew Herbarium published 'The Heliotales of Australasia' which included many of Gordon's collections. Spooner wrote that these collections 'represented numerous taxa previously unknown in Australasia, and many undescribed species'.

Gordon then began to collect and study the subterranean truffles and puffballs, the gasteroid Basidiomycota belonging to orders such as the Russulales and Cortinariales. He collected 59 species of these hypogeal or sub-epigeal indehiscent gasterocarps. Most (90 per cent) came from eucalypt forests, but some from forests of *Acacia* (wattles) and *Nothofagus* (Australian beech). Many belonged to orders known to form ectotrophic mycorrhiza. Some of the fungi were associated with a particular tree species. The gasterocarps were found in the top 10 cm. of soil and humus in the vicinity of the tree roots. The gasterocarps were simple structures with a loculate gleba enclosed by a thin periderm. The spores usually matured inside the closed fruiting body. The ornamentation of the basidiospores was

Figure 1: Gordon Beaton in his study/laboratory.

important for identification and classification. An unpublished drawing of a *Mesophellia* sp., prepared by Gordon Beaton is illustrated (Figure 2).

In 1983 Dr David Pegler from Kew Herbarium, England, came to Melbourne for the 4th International Conference of Plant Pathology and afterwards I drove him to Eildon to visit Gordon, and from this association came 7 major papers on the Gasteroid Basidiomycota from Victoria, published in the Kew Bulletin by Beaton, Pegler & Young between 1984 and 1986. The papers included related species and scanning electron micrographs of the basidiospores

In his last study Gordon described the gasteroid fungi which formed 85 per cent of the diet of some rare and endangered marsupials, the long-footed potoroo, *P. longipes*, and a Tasmanian bettong.

Figure 2. A, Three spores, the left two in optical section; B, Section of mesoperidium with transverse sections of invading rootlets, hyphae diagrammatic; C, Transverse section of gasterocarp: mottled outer area—exoperidium containing charcoal particles, irregularly lined area—mesoperidium with rootlet mesh, solid black line—endoperidium, white area—core and trabeculae, dotted area—spore mass surrounding trabeculae and core.

Figure 3. Harry Swart.

Figure 4. Drawings of *Chaetomium spirale* from a collection from Bega, New South Wales.

Harry Swart

Harry Swart (1922–1993) (Figure 3), was born and educated in the Netherlands. He studied at the University of Utrecht, but this was interrupted by two years of forced labour in Germany under the Nazis. He completed his degree, specialising in mycology and in 1952 was appointed as a lecturer at the University of Witwatersrand, Johannesburg. While there he completed his doctorate of science and his thesis was a study of the mycoflora of a mangrove swamp on the island of Inhaca, then part of Portuguese East Africa. He published 18 papers on South African mycology.

In 1966 he was appointed senior lecturer in the School of Botany, University of Melbourne. He taught mycology and one of his teaching drawings depicting *Chaetomium spirale* Zopf. illustrates the careful accuracy of his work (Figure 4). In Melbourne he concentrated his research on the microfungi inhabiting the leaves of Australian native plants, such as *Eucalyptus*, *Melaleuca* and *Leptospermum* of the Myrtaceae and on *Acacia* spp. He opened our eyes to the world of leaf inhabitants. While at Melbourne he published 59 papers, describing more than 100 species of fungi. These included many new species as well as redescribing and recording new information about these little known microfungi. In all his papers the accuracy and detail of his drawings were outstanding. He prepared, and drew from carefully prepared hand sections mounted in lactic acid. From these he was able to draw and interpret clearly the relationship of each fungus to its host and the method of spore formation. His ability to observe and to provide a logical interpretation of his observations was remarkable.

For example he observed and drew the callosities produced in the walls of the conidiophores of fungi such as *Mucor* and *Aspergillus* by the invading mycoparasites *Fusarium* and *Verticillium*. These callosities resembled those sometimes induced in the roots of higher plants. In fact *V. dahliae* produces callosities in both *Aspergillus* and in *Dahlia*.

Harry Swart and Gordon Beaton published a joint paper in 1983 on two new inoperculate discomycetes growing on a reed, an Australian species of *Juncus*.

Harry Swart also worked with Dr D.A. Griffiths, then at Latrobe University, Melbourne. This work included fine structure studies of both conidial walls and of conidium ontogeny.

Figure 5. The Gazebo in the System Garden of the Botany School, University of Melbourne.

Figure 6. Self portrait prepared for the South African Botanical Society's Newsletter *Bios*.

Harry Swart's taxonomic descriptions and drawings of leaf inhabiting fungi will endure and be appreciated for many years to come, because of his accuracy and because of his skill as a mycological artist. His great contributions to mycology may be listed as

1. The description, classification and drawings of new species of leaf-inhabiting fungi.
2. The production of more accurate descriptions and illustrations of some previously described fungi, resulting in their reclassification in line with modern taxonomic concepts
3. The sorting out of nomenclature confusions. As an example his paper on *Microthyrium*-like fungi on *Eucalyptus* leaves, where he made new combinations for six different genera and species, by means of careful observations and logical interpretations. Each fungus has been carefully sectioned and drawn for the paper. *M. eucalypticola* Speg. produces leaf spots, often with a red margin, on living *Eucalyptus* leaves. The drawings show the ascocarp, the asci, the immature ascospores and the disintegrating paraphyses as they occur on the leaf, and provide detail of the of hyphae within the leaf cells, all prepared from the type material and therefore available to all mycologists. Harry also sorted out the confusion of Coelomycetes growing on *Acacia* phyllodes, involving nine different genera. Cypress canker had been described as caused by six different genera, and Harry solved that problem!

In all the drawings the relationship between the fungus and its host is accurately portrayed. Most of Harry's drawings show both the path and limits of leaf invasion, the mode of spore formation, and the anatomy of the leaf, and are therefore valuable both to mycologists and to plant pathologists. These results were achieved despite the fact that Harry was almost blind in one eye. He used an old fashioned monocular microscope, described graphically as a brass bedstead microscope, a camera lucida and a watchmaker's eyeglass, for freehand sketching of the detail.

Harry was a spare-time artist and made many superb pen drawings. He was fascinated by fine architecture. He produced fruit wines and designed their labels. As colleagues we read each other's papers, and each year he drew me a personalised Christmas card. He also designed cards for the Botany School. The card shown (Figure 5), depicts the Gazebo in the System Garden of the Botany School, University of Melbourne. He prepared illustrations for textbooks and practical manuals. Thus he was in great demand.

Harry Swart had a subtle, clever and often puckish sense of humour. Many a boring meeting was alleviated by Harry's clever cartoons. Lunchtime serviettes were similarly decorated. We called them 'swartoons'. The drawings were pithy and very witty but never malicious. Figure 6 shows Harry lampooning himself on a mycology foray.

Harry Swart and Gordon Beaton may have died but if you listen very carefully you may hear them softly call 'Find me a leaf spot; Find me a puff ball or else we'll haunt you all.'

I owe much of this information to Dr Parbery's (1994) excellent obituary on Harry Swart. An annotated list of the fungi and their hosts from the papers has appeared recently (Simpson & Grgurinovic 1996). I also thank Katrine Beaton (Eildon), Susan Swart (Melbourne), and Dr Anna Williamson (Queensland) for their help.

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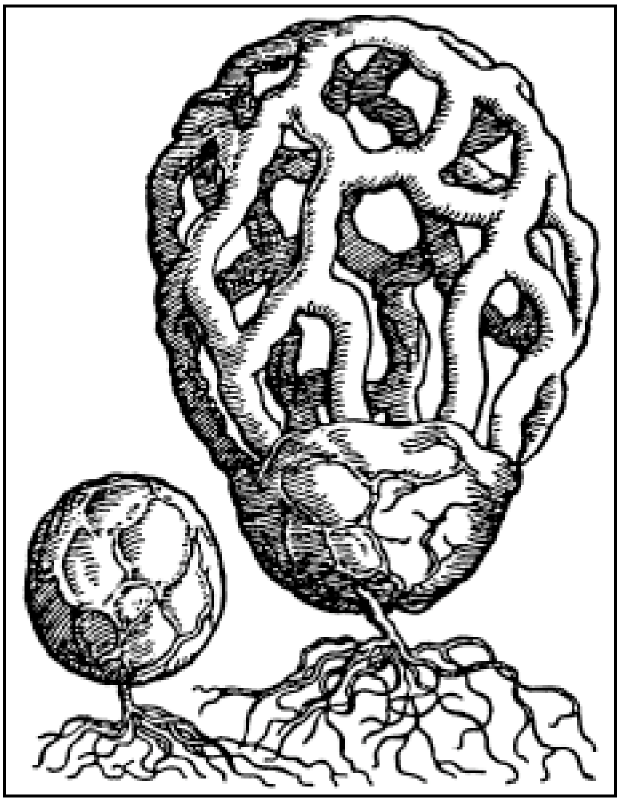
CLOSE ENCOUNTERS WITH CLATHRUS RUBER, THE LATTICED STINKHORN

Tjakko Stijve
Sentier de Clies no 12, 1806 St Légier, Switzerland.

The author narrates his encounters with Clathrus ruber.*, the latticed stinkhorn, a rare species in middle and northern Europe. Considerable variation in the height of the carpophores was observed, ranging from a mere 8 cm for Spanish and French collections to more than 20 cm among the Clathri growing in a park at Ouchy (Lausanne) on Lake Geneva. Chemical investigation of collection from that site confirmed that* Clathrus ruber *accumulates manganese, just as other stinkhorns do. In all probability, this metal plays a role in the biochemistry of the fungus, notably in the enzymatic liquefaction of the gleba with simultaneous formation of odorous compounds.* Clathrus *eggs were subjected to multi-element analysis in which the gelatinous outer layer, the embryonal receptaculum and gleba were separately investigated. The gelatinous layer proved most rich in potassium, calcium, manganese and iron. Calcium undoubtedly stabilises the polysaccharide gel protecting the embryonal carpophore from drying out during the growth of the egg. The superior concentrations of the other elements (compared with those in the developing carpophore) suggest a placenta-like function of the gelatinous layer. The significance of the various elements in the biology of Clathraceae, Hysterangiaceae and Phallaceae is briefly discussed.*

Clathrus ruber Micheli: Persoon is undoubtedly one of the most beautiful representatives of the large family of stinkhorns and allies. It was already described by the 16th century mycologist Charles de l'Ecluse, better known as Carolus Clusius. In fact, in his large work on the fungus flora of Austria/Hungary, 'Fungus in Pannoniis observatorum', he gives a full description of the species as *Fungus coralloeides cancellatus*, complete with an illustration that is reproduced here. In all European literature *Clathrus ruber* is presented as a warmth-loving species that is rather common in countries surrounding the Mediterranean. It is virtually absent in Holland and the Scandinavian countries, rare in Germany and Switzerland, but, surprisingly, not uncommon in Britain, especially on the south coast.



As a Dutch chemist with a keen interest in mycology, I published my first studies on the 'flavour' of the big stinkhorn (*Phallus impudicus* L.: Persoon) in the mid-sixties. At that time, I would have loved to extend my modest research to *Clathrus,* but alas, this species proved extremely rare in my country. From the literature I learned that it had been found in 1735 by the great Linnaeus (the founding father of the modern botanical nomenclatural system) along a road between Amsterdam and Haarlem. After that it had only been observed a few times in gardens and hothouses, presumably introduced with soil or leafmould. For a very long time I knew *Clathrus* only from pictures and photos (*e.g.* Calonge 1979) until I found it in a garden on the Spanish island of Mallorca. It formed a small colony there, and the eggs had only the size of a ping-pong ball. Of course, I was thrilled to watch those eggs burst, and see the beautiful red receptacle emerge. This process took only a few hours.

French authors describe the fruitbody as a 'fenêtre treillisée' (window with bars), which is about the translation of the Greek word *Clathrus.* English and American mycologists speak of a latticed stinkhorn, which amounts to the same thing.
For those readers who are not familiar with the *Clathrus,* it may be useful to give a brief description. The egg of this particular mushroom can already be recognised by the network markings that become more pronounced during development. The wall of the egg consists of three layers, the inner and outer ones are thin, the middle is a thick gelatinous mass that protects the embryonal mushroom from drying out. This mass also contains the

minerals and chemical compounds necessary for the development of the stinkhorn. Upon eclosion the holes in the emerging lattice are still small, but they rapidly grow bigger upon expansion of the receptacle. Finally, the pink to coral red *Clathrus* stands upright, somewhat loosely connected to the remainders of the egg. Subsequently, the olive brown spore mass on the inner side of the receptacle starts liquefying, whereupon a particular fetid smell is produced, which readily attracts flies which feed on the sugar-containing mucus, thus assuring the dissemination of the spores. After about 24 hours the lattice structure collapses, but by this time the spore mass has been completely removed and the offensive smell greatly diminished.

I observed that my Spanish collection had indeed a cadaverous smell, but it was not as strong as that produced by a mature *Phallus impudicus*. This was also the case with the *Clathrus* I found some years later in a neglected garden in the French town of Lyon. The owner of the garden had rather negative feelings about these 'clathres en réseau'. He looked on with disgust, while I dug out a few eggs to take them along, assuring me that it was dangerous even to touch those fungi. Indeed, Ramsbottom (1953) in his classic *Mushrooms and Toadstools* mentions that *Clathrus* has a bad reputation in France, *e.g.* people in Gascogne believe that—what they call—the Cancru causes cancer when handled. If they find one, they bury it carefully and deep. In other French departments touching the *Clathrus* is supposed to give you eczema, or even convulsions! In Spain the population does not love the *Clathrus* either. Folknames like 'Gita de bruixa' (witches' egg) and 'Cranc' (cancer) speak volumes. Although in several countries eggs of *Phallus impudicus* are eaten and sometimes considered a delicacy, I have not found any information about culinary or medicinal use of *Clathrus ruber*. Burk (1979) reported *C. ruber* to be poisonous.

My third encounter with this fungus took place in 1987 during a visit to the Barla Museum in Nice (south of France). Jean Baptiste Barla (1817–1890), a well-known mycologist, had not only written a voluminous guide to the fungi found in the Nice area, but had also made a series of most realistically looking wax models of the *Clathrus* in all stages of development and with variously shaped receptacles. I noticed that these models were far bigger than my collections of this particular mushroom, and I asked myself if this reflected reality. In 1988 this question was positively answered when I found in the parc d'Elysée in Ouchy (Lausanne, Switzerland) some ghost eggs being as big as an average apple. At first I thought that these were eggs of *Phallus impudicus*, which is a common species in this country. However, imagine my surprise and joy when one of those eggs—which I had taken home for further study—produced after a while a most beautiful *Clathrus*! The colour of the lattice work was not as red as that of my earlier finds, but the receptacle measured not less than 5 inches which was twice as big as that observed in the Spanish and French collections.

Finding *Clathrus ruber* in Ouchy can probably be explained by the almost Mediterranean climate there. The park is situated on the side of Lake Geneva that receives most sunshine. Clearly, *Clathrus* must feel itself at home there, since further investigation at the site revealed two more colonies, which produced carpophores two to three times a year. The occurrence of *Clathrus* here is probably just a manifestation of what is called 'the advance of the stinkhorns in Europe'. These highly specialised, non-mycorrhizal gasteromycetes are apparently not affected by environmental degradation. Svreck (1983) has pointed out that during the last 30 years *Phallus impudicus* has been widely diffused, even to the south of Sweden , whereas in the beginning of the century it was a fairly rare mushroom there. *Clathrus ruber* may also be conquering new territories. Indeed, about ten years ago, it was repeatedly reported in the Berlin area. Even more exotic stinkhorns turn up with increasing frequency in Europe, *e.g.* *Anthurus archeri* (Berk.) E. Fischer (= *Clathrus archeri* (Berk.) Dring), the octopus stinkhorn, which was accidently brought into France by the Australian army during WWI. It is now already a common species in Ticino, the Italian-speaking part of Switzerland. Recently, it was even observed as far north as Holland.

I learned from further observations in Ouchy that the dimensions of the latticed stinkhorn are variable, but it was clear that Barla had not exaggerated when making his wax models. Late autumn 1993, at a temperature of 4°C, with a strong wind blowing, I found a colony that was really thriving: when approaching the park from a 100 yards distance I saw a really enormous red receptacle. It was 8 inches high and 5 inches broad, and it was accompanied by half a dozen large eggs. Two of those, weighing 110 and 195 gms were taken along and put in a bin of garden soil under glass jars of respectively 0.6 and 1 litre (to avoid being surprised by the stench of the expanded carpophore). The skin of the biggest egg was already torn during the evening of the next day showing the orange-red colour of the embryonal *Clathrus*. During the next 24 hours it emerged as a bulging sphere with holes, which permitted to see the olive-black gleba on the inside. The typical latticed form was only achieved on the 4th day: the 1 litre jar proved too small and was removed whereupon the receptacle proceeded to grow into a fine orange-red lantern, measuring 4 □ 4 □ 6 inches! Somewhat surprisingly, the cadaverous odour proved weak enough to permit measuring and photographing the fungus, and to show it to interested persons. When placed outside, the smell still proved strong enough to attract flies, in spite of the low temperature. After one day the lattice work collapsed, and was dried to be preserved as an herbarium collection. The other egg only opened after 8 days producing a pink receptacle of 2.8 □ 3.3 □ 4.5 inches, which was also too big for the glass jar covering it. The dimensions of the receptacles proved about proportional with the weight of the eggs. This specimen also had a rather weak odour.

Chemical investigations

Stinkhorns are not only characterised by their peculiar Jack-in-the-box way of growth, but they also have in common that, after eclosion, a number of chemical reactions are initiated to liquefy the gleba and produce the cadaverous odour. *Phallus impudicus* has repeatedly been the subject of chemical investigations, which even resulted (during the 60s) in two doctoral theses (Bindler 1967; Freund 1967). The German scientist Johannes Schmitt (1973) found that during eclosion of *Phallus impudicus* and *Anthurus archeri* a considerable amount of carbon dioxide gas is produced, simultaneously with the carrion-like stench. Carbon dioxide and the 'flavour' components (methyl sulfides, aldehydes and amines) are probably produced by enzymatic decarboxylation of keto- and amino acids, but such a process will work only in presence of certain metals, such as manganese. Now every mushroom contains detectable amounts of this trace element, but in most gilled fungi, boletes and puffballs the concentration seldom exceeds 60 mg/kg on dry matter. Interestingly, Schmitt *et al.* (1977) found in a number of Hysterangia, and especially in stinkhorns, exceptional high levels of manganese. The concentrations of this metal were even higher than those of the closely related essential element iron (see Table 1).

Table 1: Manganese and iron concentrations in Hysterangiales and Phallales
(as reported by J.A. Schmitt *et al.* 1977)

Species	Manganese in mg/kg	Iron mg/kg	Ratio Fe: Mn
Hysterangiales			
Hysterangium coriaceum	100	557	5.6
Hysterangium stoloniferum	13–25	75–78	3.2–5.8
Hysterangium nephriticum	14–46	393–702	15.3–28.1
Hysterangium rubricatum	225	116	0.5
Hysterangium calcareum	18	295	16.4
Gauteria otthii	10	138	13.8
Phallogaster saccatus	448	135	0.3
Phallales			
Clathrus ruber	447	573	1.3
Anthurus archeri Egg	1956	226	0.1
Receptacle	538	297	0.6
Mutinus caninus Egg	230	335	1.5
Phallus impudicus Egg	218	224	1.0
Gelatinous layer	447	270	0.6
Egg without outer layer	168	132	0.8

All values expressed on dry matter.

These interesting results invite a number of comments. Among the Hysterangia there are species with a low as well as a high manganese content. Some of these subterranean gasteromycetes apparently exclude the element, since the soil contains on the average 1000 mg/kg (0.1%), whereas the iron content fluctuates between 1 and 6 per cent. The above-ground growing *Phallogaster saccatus* A.P. Morgan, a rare fungus representing a bridge to the 'true' stinkhorns and which contains, just as them, more manganese than iron! Some of the stinkhorns, *e.g. A. archeri* (bio) concentrates manganese, since its content, 2000 mg/kg, is higher than that of the average soil. Our *Clathrus ruber* contains both much manganese and iron, but since Schmitt examined herbarium material, it is not clear what part of the fungus he analysed. The figures listed for the different parts of the big stinkhorn indicate that the outer part of the egg contains more manganese than the embryonal gleba! Such differences are also observed in the results for the various parts of *A. archeri*.

To check these interesting findings, we decided to analyse a few stinkhorns in our own laboratory. For this purpose, comparative analyses of dried eggs of both *Clathrus ruber* and *Phallus impudicus*, as well as corresponding soil samples were carried out. Table 2 shows that both stinkhorns prefer manganese. The much more abundant iron is only taken up in minor quantities. To study the distribution of these metals and those of other essential elements in the different parts of *Clathrus ruber*, we gathered a number of eggs in July 1993 of the afore-mentioned colony in Ouchy. Half a dozen were cut in thin slices, whereupon we isolated with a sharp knife the reddish embryonal receptacle and its blackgreen gleba, and dried these parts overnight separately in a draft oven set at 55°C. The remaining gelatinous layer and its adhering skin were treated in the same way. Subsequently, the dried parts were ground to a fine powder, sieved and stored in glass vials until carrying out the multi-element analyses of which the results are given in Table 3.

Table 2: Manganese and iron concentrations in dried eggs of two Phallales species compared with soil levels

	Manganese mg/kg	Iron mg/kg
Phallus impudicus from la Forêt de Jorat, Lausanne, CH	725–1118	108–143
Soil samples	430–1220	24000–36000
Clathrus ruber from the Parc d'Elysée, Ouchy, CH	450–1900	180–570
Soil samples	650–1250	13500–50000

All values expressed on dry matter.

Table 3: Essential chemical elements in *Clathrus ruber*

	Na mg/kg	K%	P%	Ca mg/kg	Mg mg/kg	Zn mg/kg	Mn mg/kg	Fe mg/kg	Cu mg/kg
Whole eggs after drying & grinding	170	4.03	0.72	1137	1953	13	488	229	20
Gelatinous layer and outer skin	413	8.65	0.51	3490	2045	37	1454	261	17
Receptaculum	431	5.62	0.82	289	2230	20	621	97	22
Spore mass	223	2.84	0.62	111	2094	23	236	127	26

All values expressed on dry matter.

The concentrations listed for the various elements should not be taken too absolutely, since we analysed biological material, subject to considerable variation. However, the high levels of potassium, calcium, manganese and iron in the gelatinous layer are striking. These are undoubtedly those elements that are most essential to the fungus. Potassium is a component of the cells regulating their osmotic pressure. It is foremost necessary for the growth of the carpophore. There is not only a correlation between the potassium concentration and the water content of the fungi, but also the velocity of growth depends on the metal. The slowly growing polypores contain seldom more than 2 per cent potassium, but in the rapidly growing Coprinaceae 10 to 12 per cent is found (Stijve 1996). The gelatinous layer contains 8.65 per cent. It is therefore not unthinkable that the receptacle obtains its potassium from this source.

The calcium concentration of 3490 mg/kg is much higher than that reported in literature for gilled fungi and puffballs (Seeger & Hüttner 1981). Calcium plays a role in the metabolism of the mushroom, stabilising intercellular membranes. In our *Clathrus* calcium undoubtedly stabilises the gelatinous layer which protects the embryonal carpophore during the growth of the egg, which takes between 2–4 weeks for its full development. The concentrations in the receptacle and gleba are rather modest. It has been established (Bindler 1967) that the gelatinous layer consists of polysaccharides just as the vegetable gums that are used as thickeners in the food industry. Indeed, the slimy part of the egg has characteristics similar to those of alginic acid and pectine that also need calcium to produce a gel. The amount of manganese in the gelatinous layer suggests again that this part plays the role of a reservoir, even as a placenta, because the receptacle as well as the gleba contain more than average concentrations of the metal. The level in the spore mass (236 mg/kg) suggests the presence of manganese-containing enzymes that produce the sugars and odorous compounds necessary to attract the flies. Although the ratio iron: manganese in Stinkhorns is smaller than 1, it cannot be said that these fungi are poor in iron. In our *Clathrus* the amount in the gelatinous layer is well above the average value of 158 mg/kg reported by Manfred Lupper (1988) who examined not less than 500 fungi. An antagonism between the two metals—as observed in animal metabolism—does not seem to exist in higher fungi. In all stinkhorns analysed so far, manganese predominates, but the iron content is also appreciable.

The other elements listed in Table 3 do not invite much comment. The sodium content is less than 1 per cent of the potassium concentration. It apparently does not play a role in the fungal metabolism. It is curious that the levels of zinc and copper are significantly lower than those measured in many other mushrooms (Mutsch *et al.* 1979). Perhaps the uptake of these metals is inhibited in presence of much manganese. Magnesium is evenly distributed among the different parts of the *Clathrus* and its levels are in agreement with those reported in literature for other stinkhorns (Seeger & Beckert 1979). The reader having some knowledge of biochemistry will not be surprised that the metals are accompanied by a considerable amount of phosphorus, just as is the case in green plants. The element is largely present as phosphate (quantitatively the major anion) and it plays a key role in the transport of metals through the cell membranes. Of course, phosphate is also necessary for buffering the acid compounds formed during the metabolism of *Clathrus.*

There is little doubt that the chemistry of *Clathrus* is interesting enough to be investigated more thoroughly. We know now that the mushroom takes up much manganese, but the supposed role of this metal in the enzymatic reactions occurring during the liquefaction of the gleba has still to be elucidated. The isolation and characterisation of the manganese-containing enzymes would be a fine subject for a doctoral thesis, especially for a biochemist having an interest in mycology.

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10TH NEW ZEALAND FUNGAL FORAY

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Landcare Research, Private Bag 92170, Auckland, New Zealand, johnstonp@landcare.cri.nz

The 10th New Zealand Fungal Foray was held over the week beginning 6 May 1996, with collecting carried out over three days, 7–9 May, at various sites around the Hunua Ranges, south-east of Auckland. Twenty-four people, both amateur and professional, attended the foray. The professionals were from a number of research organisations from around the country and included Landcare Research, Forest Research Institute, the University of Canterbury and Lincoln University. We also had overseas visitors from the University of Melbourne and from Norway.

The group assembled at the Hunua Outdoor Pursuits Centre on Monday evening where Peter Johnston outlined the collecting options available over the next three day. This foray was to be more relaxed then previous forays with participants choosing walks and locations that best suited them. In this way a number of sites were explored.

Sites visited included:

- Waharau Regional Park and adjoining Hunua Ranges Water Supply Fringe Land with regenerating kanuka/manuka on the lower slopes and *Nothofagus* on the ridge top. Transportation to the ridge top was kindly provided by Alistair Douglas of the Auckland Regional Council.
- Tapapakanga Regional Park with small patches of regenerating and planted manuka/kanuka. The diversity of mycorrhizal fungi of these patches is being monitored by Peter Johnston, Landcare Research.
- The Mangatangi and Workman Tracks near the Mangatangi Reservoir provided access to regenerating kauri and to stands of *Nothofagus*.
- A number of tracks near the lodge, including Cossey's Track, Hunua Falls Track and around the Wairo Dam, were explored.

Weather conditions meant that collecting was not easy, with relatively few fungi being found at most sites visited. It was noticeable that the wetter, southern-facing slopes were generally more productive. The species found at each site visited during the foray are listed later in the *Newsletter*.

In the evenings a number of informal seminars were presented. Peter Buchanan (Herb. PDD) outlined the equipment needed and methods of collecting fungi. Geoff Ridley (Herb. NZFRI) presented slides of the varying methods employed by fungi to kill nematodes as a nutrient source. Catherine Elsworth (Uni. Melbourne) described her PhD studies on pigments derived from Australian mushrooms. Gillian Nicholas (Uni. Canterbury) presented some of her PhD studies into bioactive chemicals derived from fungi. Stephen Whitton (Uni. Hong Kong) outline his PhD project on the fungi occurring on Pandanaceae. Don Horne and Don Pittham presented a dazzling display of fungi to be found in the New Zealand bush and Per Marstad introduced the edible fungi of Norway.

Thursday saw the great majority scurrying for the hills to be out of shot of the team from 'Maggie's Garden Show'. Although a number of innocents were later caught on Cossey's track and forced to walk down the track 'foraying' for the camera. That afternoon Lawrie Taylor cooked up a mess of mushrooms for the show which the rest of us got to enjoy later.

The Grand Finale to the weeks events were the rounding up of a couple of dumped cockerels who had woken us each morning. The birds were trapped in one of the bunk rooms and wrestled to the ground by Diana Pittman. They are now residing in Te Puke with Lindsay Gibbons.

A new innovation this year was the 'Mycology Shop' organised by Peter Buchanan. This included our first foray tee shirts featuring a cartoon of *Agaricus campestris*. This illustration was from 'The Edible Mushrooms of New Zealand' poster produced by the *New Zealand Geographic* and who kindly allowed its reproduction.

Species List Compiled from the 10th New Zealand Fungal Foray Held in the Hunua Ranges, Auckland, 6–10 May 1996

Of the 113 species found during the foray, 76 were 'new' records for the Hunua Ranges. There is no published list of fungi for this area, however a list derived from the Herbarium PDD database was used to provide the best base-line data available on fungi known from the Ranges. A search of the database on the word 'hunua' in the locality field gave a list of 277 species from 412 records. The high proportion of new records illustrates the real lack of even the most basic data on the occurrence and distribution of indigenous fungi in New Zealand.

Voucher specimens are held at NZFRI (Mycological Herbarium, New Zealand Forest Research Institute, Rotorua) or PDD (Herbarium PDD, Landcare Research, Mt Albert, Auckland).

Cossey's Track
Agrocybe parasitica
Armillaria novae-zelandiae
Camarophyllus pratensis var. *gracilis* (=*Hygrophorus pratensis*)
Clitocybe sp. (NZFRI)
Descolea sp.
Entoloma peralbidum
Entoloma sp.
Favolaschia calocera (NZFRI)
Favolaschia pustulosa (NZFRI)
Humidicutis multicolor (=*Hygrocybe multicolor*)
Macrolepiota sp.
Mycena parsonsii
Nivatogastrium sp.
Pholiota adiposa
Pluteus sp.

Calvatia sp.
Clavaria sulcata
Hericium clathroides
Weraroa virescens

Aleuria rhenana
Beauveria bassiana on wasp
Cookeina colensoi
Cookeina sp.
Fasciatispora nypae on *Ripogonum scandens* (previously known only from palm fronds from tropical Asia)
Scutellinia sp.

Hunua Falls
Cantharellus sp. (NZFRI)
Gymnopilus sp. (NZFRI)
Hypholoma sp. (NZFRI)

Phellodon sp . (NZFRI)
Stereum fasciatum (NZFRI)

Mangatangi Track
Agaricus sp.
Amanita nothofagi
Amanita taiepa
Austropiptoporus portentosus
Cantharellus brunneum
Clitocybe sp.
Cortinarius sp.
Entoloma hochstetteri
Entoloma porphyrescens
Entoloma spp. (× 2) (NZFRI)
Galerina pategonica
Gymnopilus sp.
Hebeloma victoriense
Inocybe sp.
Notholepiota areolata
Rozites pallida
Russula sp. (NZFRI)
Tricholomopsis rutilans (NZFRI)
Tylopilus formosus

Gautieria novae-zelandiae
Nidula sp.
Scleroderma sp.
Repeater Valley
Bertrandia astatogala

Tapapakanga Park
under planted manuka
Scleroderma sp.
Laccaria spp. (× 2)
hypogeous species, white, staining yellow
Cortinarius sp.

under 'natural' manuka
Amanita nehuta
Amanita nothofagi
Cortinarius sp.
Entoloma sp.
Hebeloma victoriense
Inocybe luteobulbosa var. *volvata*
Inocybe spp. (× 3)
Laccaria sp.
Russula acrolamellata
Russula sp.
hypogeous species, small, staining reddish

Track near Wairoa Dam
Amanita australis
Amanita nehuta
Amanita nothofagi
Collybia sp.
Favolaschia calocera
Hypholoma sp.
Inocybe sp.
Laccaria sp.
Marasmiellus sp.
Psathyrella aff. *bipellis* (NZFRI)
Psilocybe aucklandii
Russula sp.
Tylopilus formosus

Waharau Nature Trail
Amanita nehuta (NZFRI)
Amanita nothofagi
Cantharellus brunneus (NZFRI)
Collybia spp.
Cortinarius sp.
Entoloma porphyrescens
Gliophorus versicolor or *viridis*
Hygrophorus sp.
Hypholoma fasciculare
Laccaria sp.
Russula acrolamellata (NZFRI)

Russula spp. (□3) (NZFRI)

Clavaria sulcata (NZFRI)
Coltricia oblectans
Hyphoderma collosperma
Podoscyha petaloides
Postia brunnea (NZFRI)
Pycnoporus coccineus
Scleroderma sp. under kanuka

Mycogone sp. on agaric
Sepedonium chrysospermum on bolete

Waharau Ridge Track
Amanita australis (NZFRI)
Amanita pekeoides (NZFRI)
Amanita nothofagi (NZFRI)
Amanita taiepa
Armillaria limonea (NZFRI)
Conchomyces bursiformis
Cortinarius sp.
Entoloma sp.
Galerina pategonica (NZFRI)
Gymnopilus sp.
Hebeloma victoriense (NZFRI)
Hygrophorus chromolimoneus
Mycena subviscosa
Psathyrella sp. (NZFRI)
Psilocybe aucklandii (NZFRI)
Rozites australiensis
Russula sp. (NZFRI)
Tylopilus formosus (NZFRI)
Xerocomus sp. (NZFRI)

Bjerkandera adusta
Fomitopsis hemitephra
Ganoderma aff. *applanatum*
Gloeoporus dichrous
Phellinus sp.
Piptoporus sp.
Pseudohydnum gelatinosum
Pycnoporus coccineus

Arachnopeziza rhopalostylidis
Coccomyces cupressinum on *Dacrydium cupressinum*
Coccomyces globosus on *Nestegis lanceolata*
Coccomyces lauraceus on *Beilscmiedia tawa*
Coccomyces radiatus on *Knightia excelsa*
Hypoderma collospermi on *Collospermum hastatum*
Hypoxylon sp.
Lachnum filiceum on *Dicksonia squarrosa*
Plectania sp.
Proliferodiscus sp on *Dicksonia squarrosa*
Stictis lata on *Freycinetia baueriana* ssp. *banksii*
Stictis ramuligera on *Rhopalostylis sapida*
Torrendiella sp. 1 on *Rhopalostylis sapida*
Xylaria cf. *filiformes*

Workman Track, Mangatangi
Amanita australis
Amanita nehuta
Amanita nothofagi
Austroboletus novae-zelandiae
Cantharellus wellingtonensis
Cortinarius spp.
Entoloma hochstetteri (NZFRI)
Hygrocybe sp. (NZFRI)
Inocybe sp.
Lactarius umerensis
Lactarius spp.
Lepiota sp.
Mycena mamaku
Phaeomarasmius sp.
Russula spp.
Tylopilus formosus

Fomitopsis hemitephra
Ganoderma applanatum
Gautieria novae-zelandiae
Phellodon nothofagi
Phellodon sinclairii

Lachnum filiceum
Hymenoscyphus sp.
Hyphomyces aurantius on *Russula*
Hypoderma obtectum on *Nothofagus truncata*
Lanzia allantospora on *Agathis australis*
Lophodermium agathidis on *Agathis australis*
Plectania sp.
Torrendiella sp. 2 on *Coriaria arborea*

SOME MACROFUNGI ASSOCIATED WITH ANTARCTIC BEECH IN LAMINGTON NATIONAL PARK, QUEENSLAND, AUSTRALIA

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One of the most distinctive floristic components of the Lamington National Park is the cool temperate rainforest composed of Antarctic Beech, *Nothofagus moorei*. The Lamington beech forests have a disjoint distribution along the summits of the southern facing escarpment of the McPherson Range (which forms the caldera rim of the extinct Mount Warning volcano) but the beeches are also found in other small patches, mostly along the tops of the ridges which radiate northwards from the Mt Warning caldera. The beech forests are found in those sections of the Park which receive cooler and moister climatic conditions compared with the remainder and since higher altitudes produce such climatic conditions, the beech communities are generally found on the highest parts of the McPherson Range although local climatic conditions (*eg.* deep gullies with waterfalls and wind funnel effects) may sometimes allow the beeches to exist at lower altitudes. Typical locations with their altitudes above sea-level are Mt Hobwee (1140 m), Mt Wanungara (1165 m) and Mt Durigan (1110 m).

Beech forests are of special interest as they are known to contain macrofungi that form ectomycorrhizal associations (Horak 1973, 1979) and some of these genera (*eg. Descolea*) are associated with beech forests in New Zealand and South America. The Lamington beech forests are almost invariably small 'islands' within a non-ectomycorrhizal sub-tropical rainforest and as a consequence if known mycorrhizal macrofungal taxa are found in the beech forests, then they can be reasonably assumed to be mycorrhizal on the beech.

In 1995, attempts were begun to collect macrofungi within two beech communities which could be easily reached from the Binna Burra entrance to the Park. The two beech communities are on the Beechmont Range at 'Tullawallal' (900–950 m) and in a gulley on the Dave's Creek/Shipstern Track (800–900 m). The primary aim was to document the taxa present in the beech communities that were known to form mycorrhizal associations. The following macrofungal taxa, together with their dates of collection and substrates are listed for the years 1995 and 1996; an asterisk '*' denotes a taxon known to form mycorrhiza. (Voucher collections are held for all taxa.):

Taxon	Date	Substrate	Mycorrhizal
Lactarius sp.	17 Feb. 1990	moss	*
Tyromyces pulcherrima	15 Mar. 1995	heart wood of Antarctic beech	
Amanita sp.1	15 Mar. 1995	soil	*
Ramaria subaurantiaca	15 Mar. 1995	soil	*
Descolea recedens	04 Apr. 1995	soil	*
Hydnum crocidens	04 Apr. 1995	soil	*
Cortinarius sp.1	04 Apr. 1995	soil	*
Cortinarius sp.2	04 Apr. 1995	soil	*
Russula sp.1	04 Apr. 1995	soil	*
Lactarius sp.	05 Apr. 1995	soil	*
Amanita sp.2	11 Jan. 1996	soil	*
Cortinarius sp.3	11 Jan. 1996	soil	*

The following taxa have been observed in these two beech forests but no voucher specimens are held: *Boletellus* sp., *Hygrocybe miniata*, *Inocybe* sp. *Cyttaria gunnii* has been collected on Antarctic beeches at the rim of the Mt.Warning caldera.

These extremely preliminary results are interesting for several reasons. First, there seems to be ample evidence that mycorrhizal taxa are associated with the Antarctic beech forests near Binna Burra as eight of the genera recorded/observed are well known to form ectomycorrhizae. Second, field observations thus far suggest that when basidiomes appear, they are rarely in quantity: most collections consisted of one or at most two fruiting bodies although *Ramaria subaurantiaca* produced its usual large, coralloid clump. Third, basidiome appearance for the mycorrhizal taxa has been found to be extremely unpredictable. Whatever seasonal and/or climatic combination stimulates basidiome production in the sub-tropical rainforest may not be the same combination to stimulate basidiome production in the Antarctic beech. Extensive examination of the two beech forests during the period 27–30 April 1996 failed to find any mycorrhizal taxa fruiting despite climatic conditions apparently being suitable and the presence of plentiful basidiomes of various taxa in the sub-tropical rainforest. Finally, the record for *Tyromyces pulcherrima* is also interesting as it conforms with observations by both J.H. Willis and L.

Rodway in Cunningham (1965) where the species is described as mostly found on the evergreen beech *Nothofagus cunninghamii*, or rarely on a eucalypt.

Current intentions are to continue collecting in the beech forests as much as possible with two aims: first to identify which taxa are present and second to determine, if and when abundant fruiting occurs.

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LARGER FUNGI OF SOUTH AUSTRALIA

Larger Fungi of South Australia by C.A. Grgurinovic will be published in June this year. It is over 700 pages long. Only 1000 copies will be printed at a cost of about $80 each. A flier will be enclosed in the next issue of the *Newsletter* for those who wish to order the book.

MYCOSURFING ON THE WORLD WIDE WEB

The ‘World Directory of Myxomycologists’ published as a hard copy in 1996 is now available on the WWW at <http://www.wvonline.com/myxo/direct.htm>

<http://www.medconnect.com> An excellent set of mushroom poisoning cases written up in an interactive format.

<http://www.nybg.org/bsci/res/hall/costaric.html> The Agaricales of Costa Rican Quercus Forests describes a project conducted by Gregory Mueller and Roy Halling and includes explanatory text as well as images and commentary on agarics/boletes and a few other miscellaneous macrofungi found in that habitat.

Visit the MSA Home Page at <http://www.erin.utoronto.ca/soc/msa/> Members can use the links from MSA Home Page to access MSA resources maintained on other servers. Additionally Gopher client software can still directly access the MSA Bulletin Board <gopher://huh.harvard.edu/1m/project_information/msa-bbs> or back issues of *Inoculum* <gopher://nmnhgoph.si.edu/11/.botany/.myco/.inoculum>

SECOND AUSTRALASIAN MYCOLOGICAL SOCIETY CONFERENCE AND JOINT NATIONAL CONFERENCES IN ADELAIDE

The comments received by members of the Executive about the Mycology meeting in Melbourne last October have been very favourable and positive. It was felt that the meeting provided an excellent opportunity for people to meet, discuss areas of common interest, establish new friendships, and plan new research projects. Perhaps of greatest importance it provided an opportunity for mycologists to present results of research in progress to peers for comment and discussion. Most attendees seem to have found the Conference to be very stimulating. People were also very enthusiastic about Society's combining meetings so maximum benefit could be obtained from scarce travel funds.

Planning is now well advanced for the second Conference of the Australasian Mycological Society to be held in Adelaide on Wednesday, 1 October 1997. As happened last year the Conference will be held as one of a group of related Conferences sponsored by various scientific societies.

A brochure outlining the Joint National Conferences to be held in Adelaide from 28 September to 3 October 1997 is enclosed with this Newsletter. Also included is a **CONFERENCE REGISTRATION FORM** and a **CALL FOR PAPERS** with details of how to prepare abstracts.

There will be a **Fungal Foray** to Kuitpo, south of Adelaide, on Sunday, 28 September. Dr Greg Kirby of Flinders Unversity has agreed to organise the foray. A registration form for the foray will be enclosed with the next (June) *Newsletter*.

In fact the range of conferences in Adelaide that week is even greater than shown in the brochure. ANZAAS, the Australasian Society of Microbiologists, and the Society for Growing Australian Plants are also meeting in Adelaide that week. Given the expected influx of conference delegates to Adelaide that week it would be wise to book accommodation as soon as practicable.

It is also intended that the Molecular Systematics Meeting on Friday 3 October will include contributions from mycologists. For further information please contact Mrs Robyn Barker at the State Herbarium. **Please note that the phone number given for Mrs Barker in the brochure is incorrect: the correct phone number is (08) 8228 2348.**

This year the initial handling of Papers and Abstracts of Papers is to be handled by the Adelaide Systematics Conference Organisers. Abstracts of all papers will be included in the one booklet. We are looking forward to seeing all those who attended the Melbourne Conference plus lots of others.

It is intended that the presentation of **papers** will occupy the entire day (1 October 1997) of the Mycology Conference. **Posters** for all sessions of the Joint Conferences will be on display for several days. A special section of the poster hall will be devoted to Mycology. This will leave more time for presentation of papers and more opportunity and time for viewing posters.

Details of the Australasian Society of Microbiologists meeting were not available for inclusion in the *Newsletter*. However, day registration will be available for those wanting to attend the Mycology Program on Thurday 2 October. The Australasian Society of Microbiologists meetings will be held in the Adelaide Convention Centre which is less than one kilometre from the University.

Also to be held during the week 28 September–3 October 1997 will be the **Second Annual General Meeting of the Australasian Mycological Society**. Further details in the June *Newsletter*.

We hope to see you in Adelaide.

J.A. Simpson

CONFERENCES AND WORKSHOPS

3–7 April 1997	University of Nottingham, UK	A European Conference on Fungal Physiology and Biochemistry	John Peberdy <PLZJFP@pln1.life.nottingham.ac.uk>
21 April–2 May 1997	IMI, Egham, UK	Modern Techniques in the Identification of Bacteria and Filamentous Fungi	Mrs Stephanie Groundwater, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK Ph.: +44 (0) 1784 470111 Fax: +44 (0) 1784 470909 Email: s.groundwater@cabi.org (Please give your postal address.)
26–27 April 1997	Shepherdstown, WV, USA	Mid Atlantic States Mycology Conference	John C. Landolt Department of Biology Shepherd College Shepherdstown, WV 25443, USA Fax: 304 876 3101 <jlandolt@shepherd.wvnet.edu>
1–2 May 1997	Miami Beach, Florida, USA	Workshop on Dermatophytes and other cutaneous fungi you're itching to know	Dr Jim Harris Training Co-ordinator Bureau of Laboratories Texas Department of Health Ph.: 512 458 7566 Fax: 512 458 7294 <jharris@laba.tdh.state.tx.us>
19–21 May 1997	IMI, Egham, UK	Identification of *Aspergillus* and *Penicillium* species	Mrs Stephanie Groundwater, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK Ph.: +44 (0) 1784 470111 Fax: +44 (0) 1784 470909 Email: s.groundwater@cabi.org (Please give your postal address.)
15–20 June 1997	San Jose, Costa Rica	Tropical Diversity, Origins, Maintenance, and Conservation	<http://www.ots.ac.cr/> or <http://ecology.umsl.edu/atb/> OTS, PO Box 676-2050,San Pedro, San Jose, Costa Rica. <atbots@ns.ots.ac.cr>
11–13 July 1997	University of Tasmania, Hobart	Tasmania in the Southern Hemisphere—evolutionary biology and biodiversity	Professor R.S. Hill Department of Plant Science University of Tasmania Hobart 7001, Australia email: Bob.Hill@plant.utas.edu.au
11 August–19 September 1997	IMI, Egham, UK	International Course on the Identification of Fungi of Agricultural and Environmental significance	Mrs Stephanie Groundwater, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK Ph.: +44 (0) 1784 470111 Fax: +44 (0) 1784 470909 Email: s.groundwater@cabi.org (Please give your postal address.)

15–17 September 1997	University of Bristol, UK	15th Long Ashton International Symposium, UK. Understanding pathosystems: a focus on *Septoria*.	IACR-Long Ashton Research Station Department of Agricultural Sciences University of Bristol Long Ashton Bristol, BS 18 9AF, UK <Christine.Cooke@bbsrc.ac.uk>
28 September–3 October	**Adelaide**	**Australian Society for Microbiology, Annual Scientific Meeting**	**Assoc. Prof. David Ellis Mycology Unit Women's and Children's Hospital North Adelaide, SA 5006 Ph. +61 8 8204 7365 Fax: +61 8 8204 7589 email: dellis@mad.adelaide.edu.au**
29 September–2 October 1997	**Radisson Observation City Hotel, Perth, Western Australia**	**Australasian Plant Pathology Society, 11th Biennial Conference**	**Ms M. Eyres, Secretary 11th APPS Conference Plant Pathology Agriculture Western Australia Baron-Hay Court South Perth, WA 6151 Ph.: (61 9) 368 3694 Fax: (61 9) 367 2625 email: APPS97@agric.wa.gov.au**
29 September–3 October 1997	**University of Adelaide**	**Australian Systematic Botany Society (ASBS) National Conference**	**Robyn Barker Ph.: 08 82282348 Email: rbarker@btg.lands.sa.gov.au**
1 October 1997	**University of Adelaide**	**Second Australasian Mycological Conference**	**Contact address will be in next *Newsletter***
13–17 October 1997	IMI, Egham, UK	Mycorrhizas—Identification and Techniques	Mrs Stephanie Groundwater, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK Ph.: +44 (0) 1784 470111 Fax: +44 (0) 1784 470909 Email: s.groundwater@cabi.org (Please give your postal address.)
15–17 October 1997	Convention Center of Tapachula, Chiapas, Mexico	VI Mexican Mycological Conference	Jose E. Sanchez Vazquez, ECOSUR-Tapachula, Apdo. Postal 36. Tapachula, Chiapas. 30700 Mexico.
29–31 October 1997	IMI, Egham, UK	Culture Preservation Techniques for Filamentous Fungi and Bacteria	Mrs Stephanie Groundwater, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK Ph.: +44 (0) 1784 470111 Fax: +44 (0) 1784 470909 Email: s.groundwater@cabi.org (Please give your postal address.)
17–21 November 1997	IMI, Egham, UK	PCR Techniques and Applications	As above
July 1998	Uppsala, Sweden	International Congress of Mycorrhizae	<http://www.slu.se/icom2/icom2.html>

9–16 August 1998	Edinburgh, Scotland	7th International Congress of Plant Pathology	ICPP98 Congress Secretariat, c/o Meeting Makers 50 George Street, Glasgow G1 1QE, Scotland, UK
23–28 August 1998	Jerusalem, Israel	6th International Mycological Congress	Secretariat 6th International Mycological Congress PO Box 50006, Tel Aviv 61500, Israel
26–30 July 1999	Beltsville, Maryland, USA	The Third International Congress on the Systematics and Ecology of Myxomycetes	Lafayette Frederick Biology Department Howard University Washington, DC 20059 or Steve Stephenson Department of Biology Fairmont State College Fairmont, WV 26554, USA <sls@fscvax.wvnet.edu>
1–7 August 1999	St Louis, MO, USA	International Botanical Congress	Contact Don Pfister or Meredith Blackwell with any ideas of topics that will be of interest to the botanical community as a whole, as well as to mycology. Although the meeting is not until 1999, we must offer suggestions now if they are to be considered.

If you know of any other conferences, symposia, workshops, *etc.* that may be of interest to members, please send us the details so the information can be included in the next *Newsletter*.

C.A. Grgurinovic

A GASTRONOME'S GUIDE TO TRUFFLES

Peter Austwick
40 Montgomery Avenue, Rothesay Bay 1310, New Zealand

The note about the Black Truffle in the last *Newsletter* was very interesting. Joan and I had an entree of 'Fresh truffles on chatto potatoes' at our hotel during the Conferences in Melbourne last October. This dish consisted of *very* thin slices of truffle, complete with rind, each on a slice of potato and steeped in a vinagrette and oil dressing. In view of the season I did not expect to have *Tuber melanosporum* and was not disappointed. The large warts and the coarsely reticulate ascospores confirmed that this was *T. aestivum*. This species we have hunted, with truffle dogs, in the Dordogne. We have not been impressed with its elusive flavour even when cooked and tasted really fresh, so would not recommend it as an expensive luxury (let alone its reputed aphrodisiac properties!).

I have yet to try *T. melanosporum* freshly harvested, but after three hours sterilization in brine, the commercial samples one can purchase in small pots at $2 per gram, have little flavour left when prepared in omelettes or sauces, or even tinned paté de fois gras truffé (percentage truffle given on the tin). What is really good is *T. magnatum* served on a carpaccio of veal—it is out of this world!!

AMANITA PHALLOIDES

It was reported in the *Sydney Daily Telegraph* on 12 March that the previous day the Coroner at Melbourne Coroners Court found a retired fruiterer had died three days after eating 'death cap' mushrooms he had picked from the side of a road. The Court was told the victim died of massive liver damage and organ failure after three days of nausea, vomiting and severe abdominal pain.

J.A. Simpson

REFEREEING OF PAPERS?

It is very gratifying to see some longer articles are now being submitted for publication in the *Newletter*. To ensure a high standard and accuracy of information the editors are now proposing to send some manuscripts to referees, at the author's request, for comment prior to publication. It is not anticipated that this will cause delays in publication. Refereed papers would be identified. If you have comments to make, preferably in writing, about this proposed change please contact Jack Simpson or Cheryl Grgurinovic

J.A.Simpson & C.A. Grgurinovic

NEW MEMBERS

Full members:
David Backhouse, Sydney, NSW
Candida Briggs, Padstow, NSW
Tony Cole, Christchurch, New Zealand
Lou Gerrettson-Cornell, Baulkham Hills, NSW
Geoff Hyde, Sydney, NSW
Robert R. Parker, Dorroughby, NSW
Kim Tynan, Perth, WA
Alan Woodgyer, Melbourne, Vic.

Student member:
Jacqueline Edwards, Melbourne, Vic.

CALL FOR CONTRIBUTIONS TO THE *NEWSLETTER*

The editors would like to thank all those who contributed to this issue of the *Newsletter*. We would greatly appreciate continued support and would particularly like to receive contributions from members who have not previously written articles for the *Newsletter*. We would appreciate it if authors would adhere to the *Newsletter*'s style, especially with regard to references where we would like the journal and book titles in full.

C.A. Grgurinovic & J.A. Simpson

DEADLINE FOR NEXT ISSUE

Articles for the next *Newsletter* are due by Friday 13 June 1997. If articles are more than half a page long, the editors would appreciate a copy on disc. The disc will be returned after publication of the *Newsletter*.

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