



Ben Leachman

The Jelly Fungus
Tremella mesenterica

From Field and Forest

Edible Fungi in W.A.



Descolea maculata, a rusty-spored gill fungus related to *Cortinarius*

IT IS AUTUMN, and a gourmet's fancy turns lightly to thoughts of mushrooms. For some people, especially those with a European childhood, it is one of the special joys of this season to go out after the first rains in search of mushrooms. Many others, however, are nervous. Fearful of collecting the wrong type of fungus, they confine themselves to the cultivated mushroom found in the marketplace. That is a pity because there are so many delicious fungi to sample; and if you are ever unlucky enough to be stranded in the bush knowing which fungi you can and can't eat could mean the difference between life and death. ROGER HILTON, mycologist recently retired from the University of W.A., tells you all you need to know to enjoy this 'season of mists and mellow fruitfulness'.

Few orders of plants appear to contribute more to the support of animal life in Western Australia. Many species, particularly, the genus *Boletus*, are used as food by the natives and directly supply no inconsiderable portion of their support for several months of the year.

James Drummond, the pioneer botanist of W.A.

Regrettably, the great body of Aboriginal knowledge of fungi has been lost, and is having to be gradually re-built.

The best known mushroom is the common mushroom, of which there are many varieties. Before considering fungi as food one must learn to distinguish the common mushroom from the deadly amanita. So long as you keep these two distinct, you're unlikely to come to great harm as the vast majority of inedible fungi are merely unpleasant - not deadly.

The common mushroom

Start by getting familiar with the cultivated mushroom as bought in shops. The base of the stem will have been cut off, but note the ring which represents the remains of a delicate skin which clothed the gills at the button stage. The gills under the cap are very pale pink, darkening as the mushroom ripens. Finally, they are dark chocolate brown. If a ripe cap is placed on a piece of paper the minute spores - which are the 'seeds' of the mushroom - fall from the gills and make a coloured print with the outline of the gills. Note that the gills do not quite reach the stem; this characteristic helps to tell the mushroom from other dark-spored species with which it might rarely be confused. The top peels, but so do those of many toadstools. The top of the most common variety of cul-

tivated mushrooms is smooth and pale. Field mushrooms differ from cultivated mushrooms in size and flavour - some are inferior in flavour, others better - but all have pale gills darkening to dark brown spore powder, a ring, and a stem base free from a cup. The larger ones are known as horse mushrooms. You can always check the base by levering it up out of the ground with a knife blade or stick. The top may be smooth, but one common W.A. variety has fine scales over the cap.

Warning: there are varieties which give a yellow colour when cut near the stem base. These are yellow-staining mushrooms and are highly indigestible to some people.



The 'Ghost Fungus', *Pleurotus nidiformis*

Magic Mushrooms

The so-called magic mushrooms (certain species of *Panaeolus* and *Psilocybe*) have a dark spore powder and grow in similar situations to field mushrooms. They are sometimes accidentally eaten by careless mushroom pickers, who get the fright of their lives. Their real danger is that people in search of stimulation may deliberately and ignorantly eat various small, dark-spored toadstools, some of which are deadly.

The Amanitas

Danger, several of the most poisonous fungi known belong to this group. Some are harmless, or even good to eat, but one should avoid all on principle. They are

common in W.A., and many are large, with a solid flesh which makes them tempting to eat. First look at the base; it either sits in a cup, called the volva, or is swollen, with the cup represented by large scales. Then note the ring; there are amanitas where the ring is almost invisible, but the combination of ring and cup is a certain sign of amanita. Note the gills; they are white, and stay white, giving a white spore powder. Many amanitas have a sour smell. One of the most common large white amanitas of our local woods (*Amanita preissii*) is covered with a white meal which comes off on your fingers. The famous red amanita with white spots, the fly agaric, has not been found in W.A. It has an effect similar to the 'magic mushroom' and should not be eaten, although it is not as deadly as sometimes believed.

Parasol Mushrooms

These have heavily scaly caps, white spores, prominent ring and no cup at base; most are good to eat but there is the danger of confusion with amanitas because of the white spore powder. The shaggy parasol (*Macrolepiota rhacodes*) is excellent, but a similar form with pale green spore print should be avoided.

Volvarias

Anyone who has eaten Chinese soups may have fished out a wholesome mushroom in which the cup is even better developed than the cap. It is the padi straw mushroom (*Volvariella speciosa*), commonly cultivated in S.E. Asia. The scientific name for the cup, the volva, gives this group its name. In contrast with those other volva fungi, the amanitas, the gill colour and spore colour is pink not white. The most common volvaria locally (*Volvaria volvacea*) is found growing in long grass in abandoned gardens. It has a sticky cap, no trace of a ring, and a tough stem which is not good to eat. Despite a statement



Roger Hilton

What Are Fungi ?

Fungi are living things that are neither plants nor animals. In many ways they are plant-like, but are devoid of the green colour (chlorophyll) of true plants. Nutritionally they are more equivalent to vegetables than meat, but they do contain vitamins and can be a valuable source of food. A few of them, however, contain powerful poisons, and it is important to be aware of precisely what one is eating.

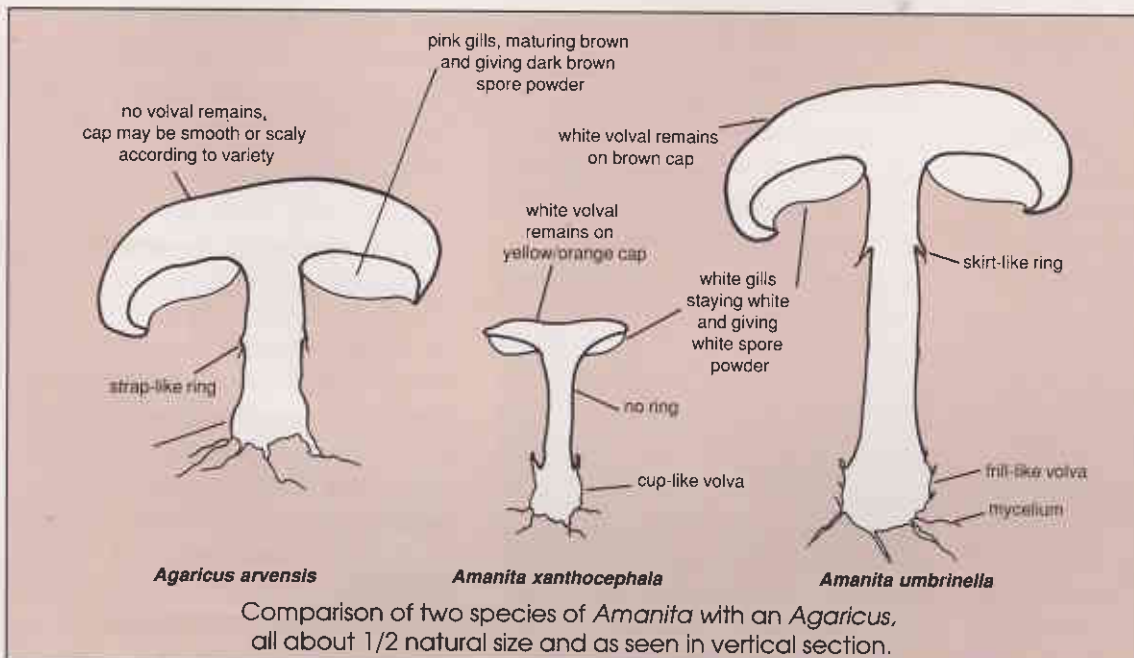
Mushrooms and toadstools are the best known fungi, but the brackets and jellies on rotting wood, puff balls, stinkhorns, yeast and the common moulds on bread are all fungi. A **mushroom** is an umbrella-like fungus which is good to eat, a **toadstool** one that is either inedible or actually poisonous. Of course, any fungus may be poisonous if it is old and rotten.



Roger Hilton

Dissected fruit-bodies of an *Agaricus*. Note from the cut base that the species shown is a 'yellow stainer', not recommended for eating (Top).

One of the species of *Amanita* with well-developed ring and volva, a combination of features found in some of the most poisonous species of this genus (Left).



in J.B. Cleland's book on South Australian mushrooms that it is poisonous, it is eaten in Europe and has been sold in the local markets in Perth.

Ink caps

These fungi are easily recognisable because of the habit of the older specimens dissolving into an inky mass. They can actually be used as ink. This is not putrescence, although you would not want to eat them at this stage. They should be caught just before the flesh begins to darken, and they are delicious cooked in a little fat. The best known is the 'shaggy cap' or 'lawyer's wig' (*Coprinus comatus*). These mushrooms come up from buried wood and rubbish in the soil and are common on filled building sites or road verges. In the desert country there is a stalked puff ball called *Podaxis* which looks similar, and is fit to eat when young.



Roger Hilton

Coprinus Comatus

White-spored gill fungi on wood

A good example is the oyster mushroom of Europe (*Pleurotus ostreatus*). Beware of the largest of these, the ghost fungus (*Pleurotus nidiformis*), as it is known to cause vomiting several hours after being eaten. It is a cream-coloured gilled bracket, common on peppermint trees and sometimes growing at ground level. At night it emits a greenish phosphorescent glow, whence the name ghost fungus. There are several other white-spored, gilled, bracket fungi which are eaten in South East Asia. One is the easily recognised split-gill



A bolete (*Boletus caesareus*) showing the pores that make this genus different from gilled agarics.

(*Schizophyllum commune*) which is not uncommon in W.A.

Rusty-spored gill-fungi on wood

Some may not be poisonous, some definitely are, so they are all best avoided.

Rusty-spored gill fungi on the ground include the numerous and colourful species of *Cortinarius*. None are recommended for eating.

The Boletes

All the fungi mentioned so far have gills under their caps, but there is a large group of fleshy umbrella-like fungi, which have pores underneath just like the common bracket fungi found on logs. These boletes are an important source of food as few, if any, are likely to be poisonous - and then not deadly. They are fleshy, but unfortunately are often spoiled by being badly attacked by fly maggots. Many varieties show strong colours when cut, but this does not necessarily mean that they are poisonous. The famous cep or steinpilz (*Boletus edulis*) of Europe is a bolete, and although it has not been found in W.A., relatives of it are here. The aboriginal *woorda* or *wurdo* is a bolete. The boletes of W.A. have not been studied sufficiently yet to make recommendations, but known to be wholesome are the

slimy-topped pine boletes (*Suillus granulatus* and *Suillus luteus*) so common in plantations of *radiata* pine. Another is the giant bolete which occurs in pastures in the western wheat belt, known as the salmon gum mushroom (*Phaeogyroporus portentosus*).

Beef-steak fungus

Similar to a bolete growing out of wood, it is unlike one of the bracket fungi only in that it is soft and fleshy. It looks like an animal tongue sticking out of a living tree, usually jarrah, and in some countries is known as ox tongue fungus (*Fistulina hepatica*). The colour is red, the flesh meat-like, and the underside has pores which are separated, almost like thick, hollow hairs. The whole cuts like a piece of meat, but it has nothing like so fine a flavour! Nevertheless, it is safe to eat. It is the aboriginal *numar*.

White-spored pore-fungi on wood

These are very often the cause of timber rots. The local varieties are too tough to eat, though not actually poisonous. Two of them, the punk fungi (*Piptoporus portentosus* and *Piptoporus australiensis*) may be as much as 1/2 m across and 15 cm thick. They grow from the trunk of large gum trees. Dried, they have the property of conserving fire for



The Scarlet Bracket Fungus (*Pycnoporus coccineus*), one of the most common white-spored pore-fungi.

hours as they smoulder away and are known to have been used by Aborigines for this purpose.

Coral fungi

Another fungus associated with jarrah trees, but growing up from the ground amongst the trees, is the richly-branching coral fungus (Ramaria). There is a canary yellow and a pale-pink form, both safe to eat. Younger coral fungi that have not opened out may be called cauliflower fungus.

Hedgehog fungus

So-named from the short spines projecting from below the cap. Its scientific name is *Hydnum repandum*. It is easily recognised and good to eat.

Puffballs

Avoid most wild fungi in the button stage, as they are too young for characters of stem, gill and spore colour to be evident. The common puffball, however, occurring on practically every lawn, does not have even rudimentary stem or gill, and is so familiar that it can be safely collected. It should be broken open and only eaten if the flesh is still white and not coloured. The matured puffball, which is full of spore powder, would be most un-

pleasant to eat, although not actually poisonous.

Morels

The morel fungi (*Morchella spp.*) can occur in great abundance in the forest, especially after extensive fires. They are firm and odourless, with a deeply furrowed head growing on a white stalk. They have been appearing in bark chips covering flowerbeds in the metropolitan area. Both head and stalk are hollow, and the recommended method of eating them is to stuff them with morsels of meat and then to bake them in butter. You are not likely to confuse them with the somewhat similar stinkhorns (*Phallus spp.*), which have a froth-like structure and an abominable smell.

Blackfellow's Bread

This is an underground fungus consisting of a mass of tapioca-like material encased in a black rind. The whole may weigh as much as a kilogram. The contents may be



Three Morel fruit-bodies

eaten raw, and have a pleasant acid flavour. They are normally found embedded in the sides of road cuttings or are turned up when farmers are ploughing, especially in the karri country around Pemberton. Pored, tough, white, inedible mushroom-shaped fruit bodies (*Polyporus mylittae*) are produced sporadically.

Truffles

These are underground fungi much prized in Europe as fine-flavoured food. Several are known to be valued by Aborigines in W.A.: the Elder truffle (named after the expedition that collected the first specimen to be scientifically described) is about the size of an egg, and occurs under trees in the Great Australian desert near Lake Hazlett and Lake Mackay, where it is found just breaking the surface in loose sand.

Yeasts

Grow naturally on plant sap. They are very rich in vitamin B and their deliberate culture on rice extracts in Prisoner of War Camps in S.E. Asia during the Second World War saved many lives.

Moulds

We eat mouldy cheese without coming to harm, and mould on food is not normally harmful (although it may indicate that the food is 'off', and unfit to eat). Boer soldiers used the skin of mould from food as dressings for wounds and abscesses - pre-dating the discovery of penicillin (which is made from moulds) by 50 years.

Fungi have a number of uses in a survival situation - perhaps some yet to be discovered or rediscovered. But their main use will always be as a source of food. Some of the items make a pleasant addition to your regular diet. Armed with this information, why wait for an emergency to start exploring fungi as a source of sustenance?

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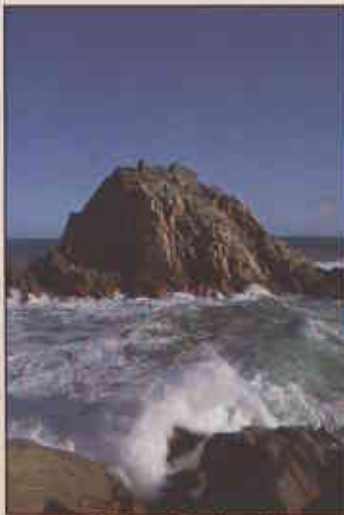
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EDITORIAL

The economic development versus environmental protection debate is a constant feature of our society today. No-one will disagree that our environment needs protection; there is also no doubt that Australia must improve its economic performance if we are to maintain our living standards and enjoy the natural environment which we are blessed with. This *Landscape* describes a project which combines environmental and economic advantages.

Australia's import bill for forest products is \$1.7 billion. Of this a considerable portion is paper which is made from eucalypt fibre. A Perth scientist was the first person to demonstrate that eucalypt could be made into paper, yet it is other countries that have capitalised on this discovery. For example, Brazil, Portugal, Chile, South Africa and Spain have established over 3 million hectares of highly productive eucalyptus plantations. Australia, home of the genus *Eucalyptus*, has only 40 000 hectares of eucalyptus plantations.

Despite our late start, there is no reason why W.A. cannot share some of the rewards which would come from capitalizing on the increasing world demand for high quality paper. We have the land and climate to grow the trees and the skills to do it competitively.

Widespread afforestation of the south-west is also an essential prerequisite to ameliorating salination and eutrophication of our waterways. It is unlikely that afforestation of the magnitude required could be achieved unless it is commercially driven. The production of trees for paper could provide the opportunity to carry out the afforestation program necessary for improving the environment at no cost to the State.

It would be ironic if the world demand for the much maligned woodchip provided the solution for what would arguably be two of the most serious environmental problems in south-western Australia.

Cover Photo

Trees loom out of the mist at Amelup near the Stirling Ranges.
Photograph by Robert Karri-Davies.