

## FUNGI IN SCHOOLS

for  
CHILDREN  
TEACHERS  
PARENTS

and other  
interested parties



### FUNGUS GUNS 1

The picture opposite shows a fungus that grows on horse droppings. It is called *Pilobolus* — the cap thrower.

If you live in a town near a riding school, or can collect some horse droppings (they must be fresh) from a field, you should be able to watch this fungus grow and shoot off its black caps. Collect the horse droppings in an old tin, or better still a plastic box that you can see through, remember to take a small trowel (and plastic gloves if you are very particular). When you are home again take the lid off the tin and put the bottom, with the horse droppings, into a large plastic bag so that you can see what happens. The droppings must not get dry and should be in a light, cool place. If you have to leave them outside you may have to postpone your experiment until the weather is warmer.

*Pilobolus* will not grow if the temperature is too low.

You should see *Pilobolus* in about 7 days. Not every collection is successful but I have grown it from a stables in S. Kensington, London and from Wimbleton Common. Try again if you are not lucky the first time. When it first starts to grow *Pilobolus* looks like small transparent pins all over the surface of the droppings. Each pin grows about 8mm long and will swell at the end to form a small balloon. Sitting on top of the balloon will be a small black cap. It is these caps that are shot away and you will see them sticking to the top of the box or the plastic bag. Several 'crops' of *Pilobolus* will grow on the horse droppings, the black caps shoot away, the stalks shrivel and a completely new crop then grows. As you may have noticed one crop seems to have thrown some of its caps onto this page.

*Pilobolus* is such an interesting fungus that there has to be a Part 2 to find out what happens when the black cap is shot away. In the meantime see what you can discover for yourselves.

Sheila M Francis

**Next time:** Fungus guns 2.

**THINGS TO DO**

- 1 How far can *Pilobolus* shoot its black caps?
- 2 Do the stalks all point in the same direction?
- 3 What time of day do the fungus guns shoot?
- 4 Can you hear them? Do **NOT** take off the cover when a shoot is on or you will become spotty.
- 5 The cap is black, the stalk pearly white, can you see any other colour?

**Answers, next time.**

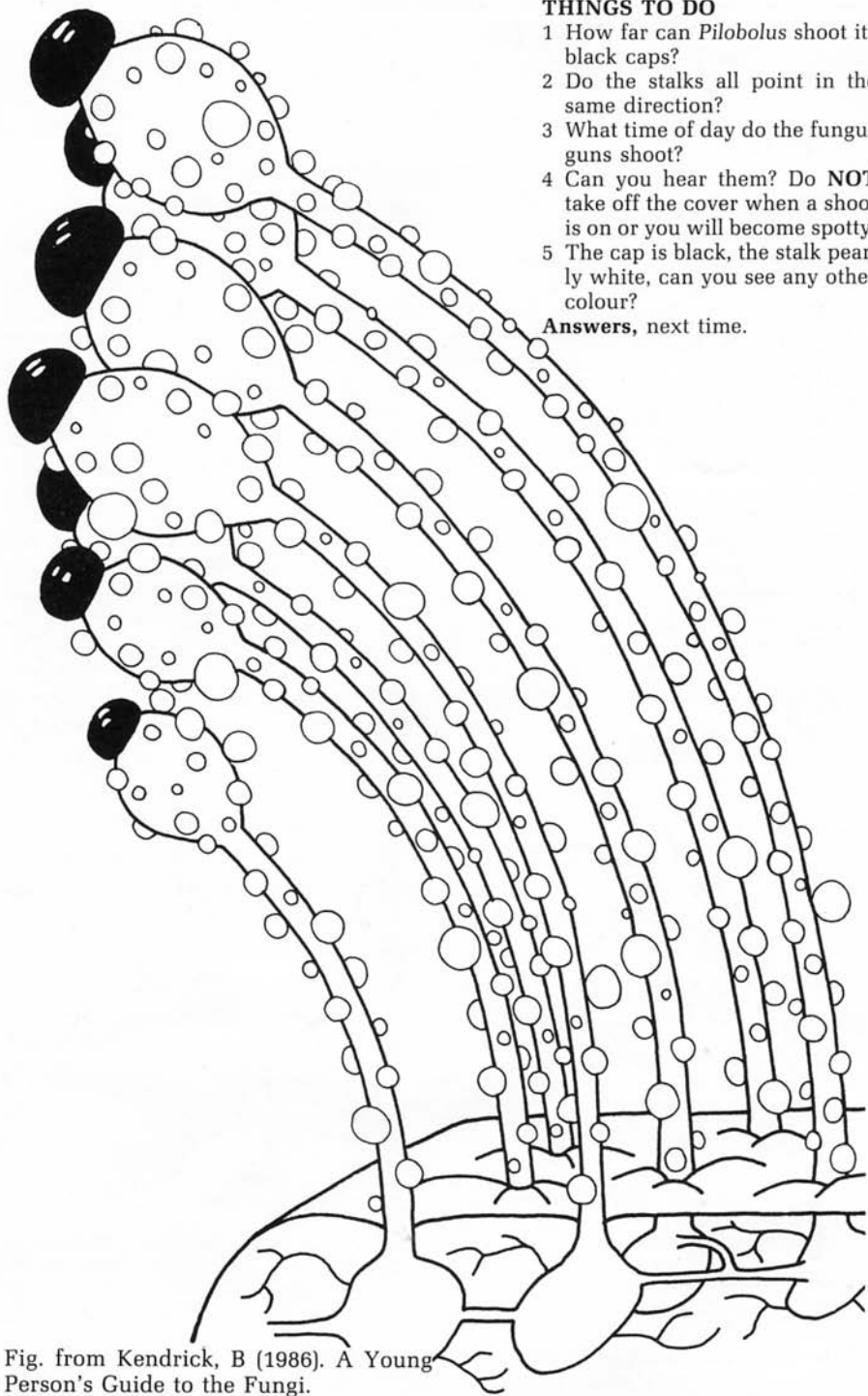


Fig. from Kendrick, B (1986). A Young Person's Guide to the Fungi.

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## FUNGUS GUNS 2

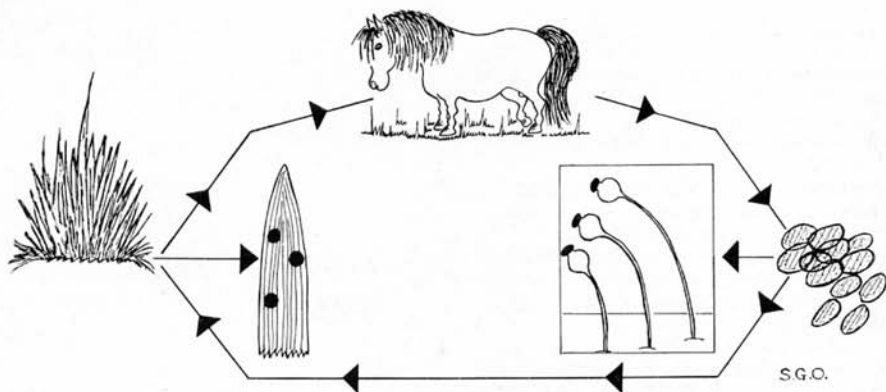
In **Fungus Guns 1** *Pilobolus* the cap thrower was growing on horse dung and shooting its caps away into the air. If you look at the Answer to Question 1 on the next page you will see that the caps can travel as far as 6 ft (1.8m) upwards and even further — 8 ft (2.4m) on the ground, provided nothing gets in their way.

### Why do the caps shoot away from the droppings?

They need to be eaten by a horse to continue living, the horse eats grass and by shooting away from the droppings some, at least, of the caps may fall onto a blade of grass and the lucky ones will then be eaten by a horse. The caps have a sticky ring on their underside and glue themselves very firmly to the grass leaves — as you will know if you tried to scrape them off the sides and lid of the dish you used to grow *Pilobolus*.

The black caps contain very small orange-red spores, which escape from the caps in the horse's gut, pass right through and are returned to the field in the droppings where they can begin to grow and produce new crops of *Pilobolus* with more black caps that will shoot away and start the life-cycle all over again.

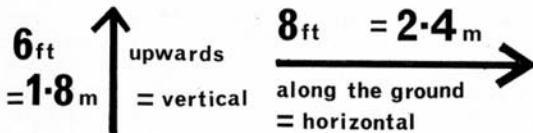
The diagram below, which is not to scale, shows some of the events in the life of *Pilobolus*.



## ANSWERS to Questions in Fungus Guns 1

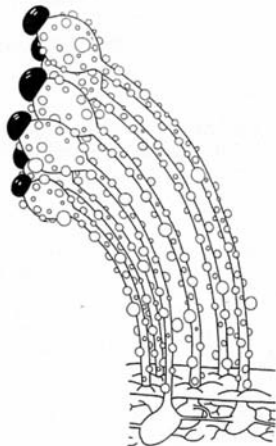
### 1 How far can *Pilobolus* shoot its black caps?

These distances were recorded by Professor Buller working in Winnipeg, Canada in 1934.



### 2 Do the stalks all seem to point in the same direction?

Yes, they point towards the light. The small balloons, beneath the black caps, focus the light, rather like a lens, onto light sensitive areas that ensure the stalks grow towards the light.



### 3 What time of day do the fungus guns shoot?

Usually about midday, 12 noon.

### 4 Can you hear them?

You certainly can especially if you have *Pilobolus* in a plastic or glass container. The sound of the black caps hitting the lid and sides of the dish was described by Professor Buller as a 'mimic bombardment as on the field of battle'.

### 5 The cap is black, the stalk pearly white, can you see any other colour?

Yes, there is a small orange spot at the base of the balloon where it joins the stalk. This is marked 'X' in the figure opposite.

