

**More on the art of the pencil.  
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One of the most important things when drawing directly from a microscope without the use of a camera lucida and grid, is proportion. To gain this one must use a micrometer to accurately gain Length, Width and even Depth. I use an eyepiece-micrometer as opposed to a stage-micrometer because protozoa won't swim where you want them to. With an eyepiece-micrometer one can align it with the organism. I always use Phase Contrast when drawing.

My microscope is a Zeiss Axiostar Plus with a trinocular head. It has 4 objectives: CP-Achromat X5, CP- Achromat X10, A-Plan X20 and CP - Achromat X40.

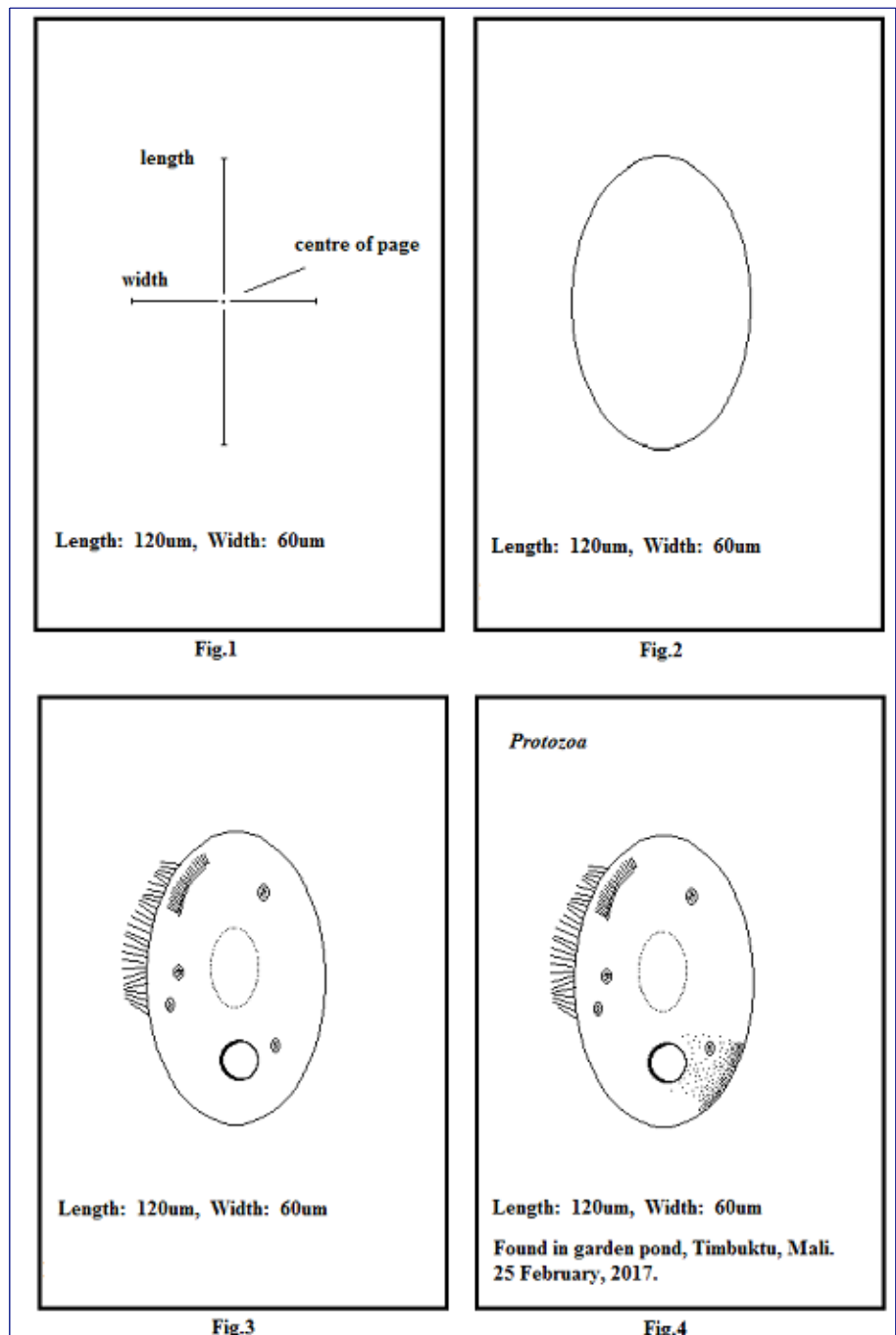
The equipment needed to draw is simple and cheap. I use a standard HB pencil and 80 gram photocopy paper and a clear plastic rule but by all means use what is at hand.

After measuring your subject, using a pencil, firstly mark the centre of your page then measure out half the total length up and down and width both side, as in Fig 1. Then roughly but lightly draw in the outline of the subject as in Fig. 2, keeping in mind any indentations for mouth, etc.

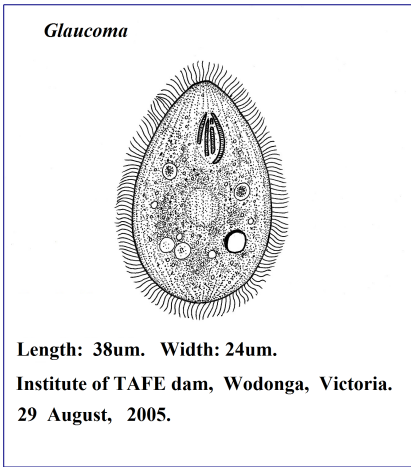
Then draw what you see: contractile vacuole, mouth, nucleus (if you can discern it) food vacuoles, peripheral cilia, etc as in Fig3.

Don't draw what you think you see or what you think you should see.

When you are satisfied that you have all the



details correct, go over it with an Artline 200 0.4 felt-tipped pen or similar. When finished, rub out pencil lines.



I finish off with a random-dot method. Starting from the outside, just randomly dot your drawing becoming less concentrated as you work inwards (Fig. 4). This helps give a three dimensional effect as in Fig.5 and 6. Remember to keep your contractile vacuoles dot free. Tidy up and if scanning you can reposition where required.

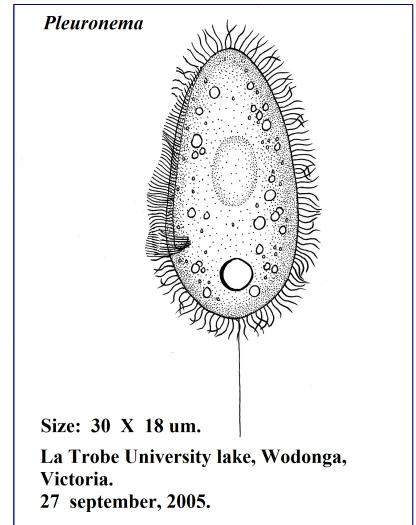


Fig. 5

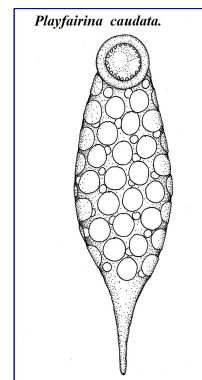
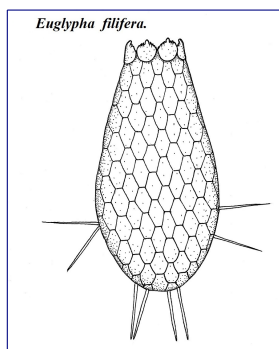
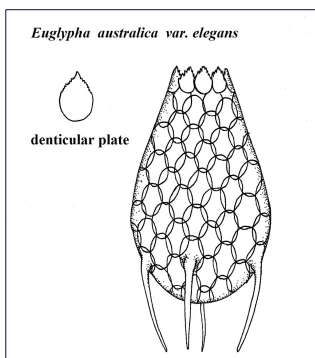
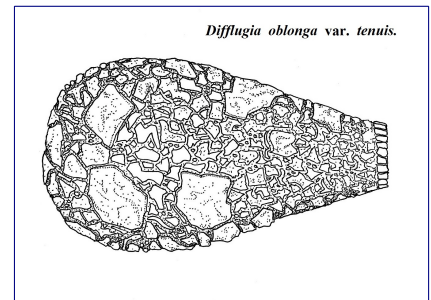
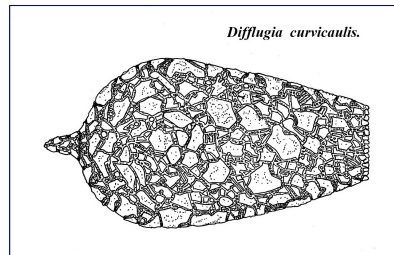
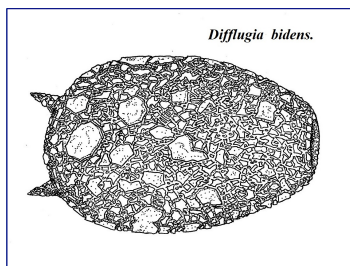
Fig.6

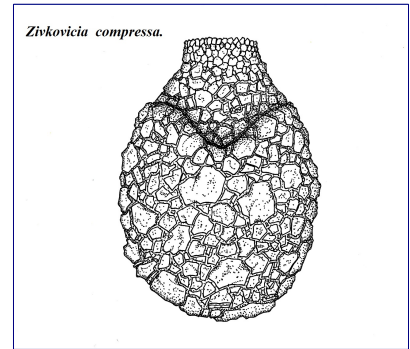
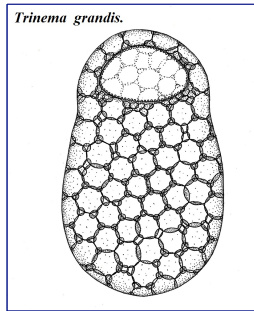
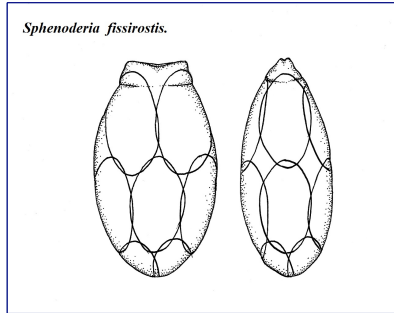
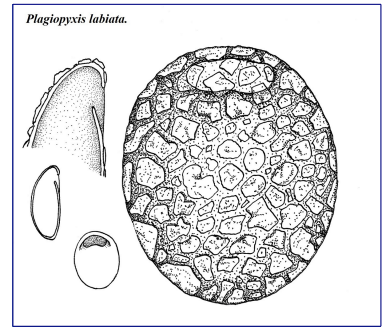
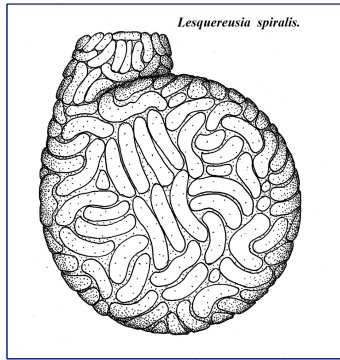
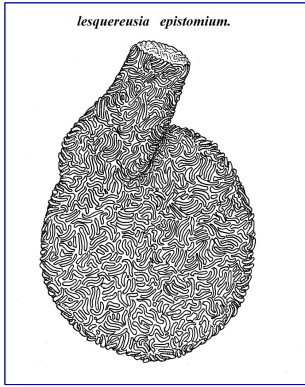
### Gallery of drawings

It's important to record the details of your find as this may help when determining genera and species.

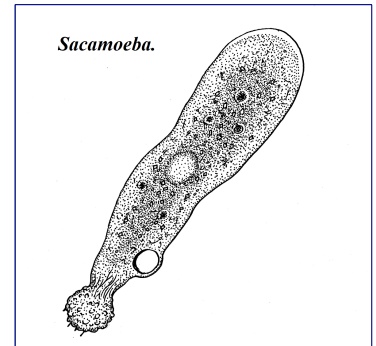
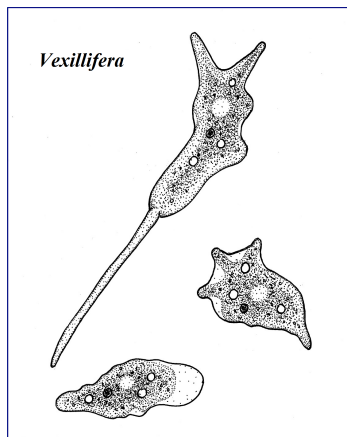
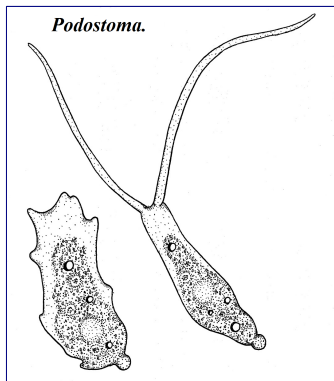
While drawing may be slower and more time consuming, the sense of satisfaction it gives is enormous.

The following are drawings of a variety of testate amoeba.

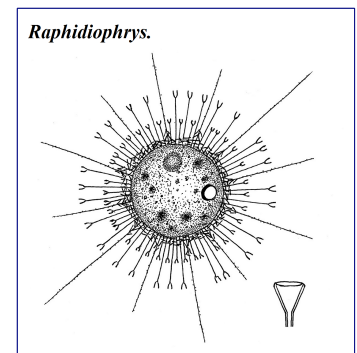
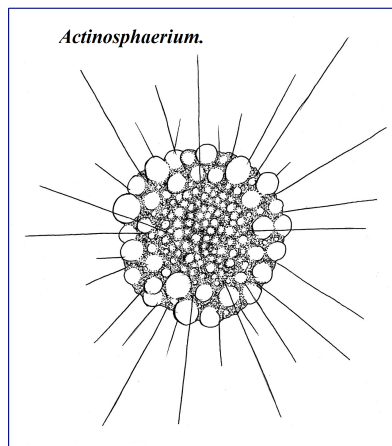
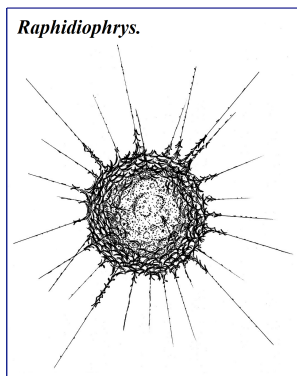




The following three are drawings of a variety of naked amoeba.



The following three are drawings of a variety of Heliozoa.



Contact the author David Seamer, email, dseamer AT live DOT com

*(Email in anti-spam format, replace capitals with appropriate characters,  
remove spacing and copy to email software.)*

Part 1, '[Art of the Pencil](#)', also featured in the March 2017 issue of Micscape.

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