THE POLLINATION OF *PSEUDOLITHOS CAPUT-VIPERAE* AND ITS CULTIVATION FROM SEED

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The five species of *Pseudolithos* from Somalia are the north African allies of *Lavrania* (*Trichocaulon*) of southern Africa. The similarity in form between these two genera is due to a reduction in surface area after being exposed to the harsh elements over many millennia, ultimately resulting in a globose growth-form and a greyish-white colour. This form and colour deflect sunlight and keep the plants cooler and with reduced transpiration rates.

Pseudolithos caput-viperae grows in a similar way to many stapeliads in making basal offshoots. Each body remains globular in shape and flowers apically (Fig. 1). The flowers, numbering up to 10 or so, are produced from a peduncle and are urn-shaped, flesh-coloured on the outside, only 3.0 mm × 2.5 mm in size and have an apical opening of only 0.5–0.7 mm in diameter. The inside of this opening as well as the corolla lobes are covered with white papillae. The group of flowers open almost simultaneously and remain open for up to a week.

For pollination, two different clones must be flowering simultaneously, as successful self-pollination has not yet occurred. Due to the small apical opening it is almost impossible to pollinate the flowers artificially; in habitat in Somalia, the flowers are probably pollinated by very small flies (midges). It is easy to overcome this problem in cultivated plants. Just cut the urn-shaped flower in half as one would a soft-boiled egg, exposing the corona. This is achieved with a sharp pair of scissors. Most flowers of brachystelmas and ceropegias tend to abort when damaged. Perhaps the harsh climate in Somalia has conditioned *Pseudolithos* plants so that damage to the inflorescence, if not of a critical nature, is tolerated.

Severing a large proportion of the corolla tube leads to the corona becoming immersed in plant sap. This is easily removed by absorbent paper, thus avoiding trying pollination under water. By looking through the eyepiece of a stereo-microscope at 40× magnification and with the help of a pair of very sharp-tipped tweezers, the almost transparent set of pollinia are removed by holding them by the connective (the connective is the structure linking the two pollinia and where a fly's mouth would get attached in the natural pollination process).

The set of pollinia is then transferred to the other clone's corona by aligning the germination mouth (wing) of one pollinium with the guide rails (where the stigmatic surface is situated) and then sliding the germination mouth into this from below (Fig. 2). The germination mouth is the structure through which the pollen tubes emerge before growing through the stigmatic surface to the ovules (Fig. 3). This sounds like a simple procedure, but, with such small pollinia, practice and a very steady hand are needed, as the pollinium must be trapped between the guide rails for successful pollination and later fertilisation of the ovules (Fig. 4).

Fig. 1. *P. caput-viperae,* plant and apical flowers.

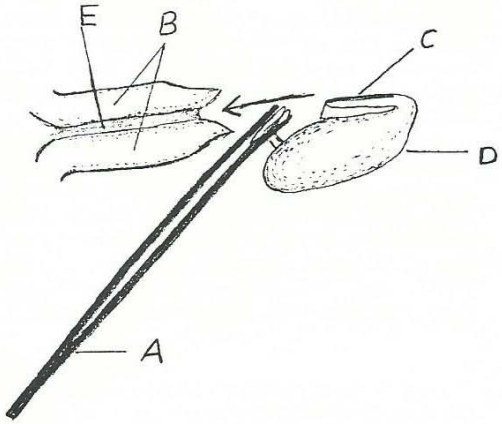

Fig. 2. The pollination process in *Pseudolithos* consists of moving C into E. A = pair of tweezers; B = guide rails on staminal column; C = germination mouth; D = a single pollinium; E = stigmatic surface.

Fig. 3. A pollinium of a brachystelma with pollen tubes that were induced to grow out of the germination mouth by use of a growth hormone.
Fig. 4. All four sets of pollinia have been removed except the set at the two-o'clock position. A pollinium from another clone has been inserted into the guide rails at the twelve-o'clock position and appears as a translucent blob.

If successful, the fertilised ovules within the paired follicles will result in the development within a few weeks of a flattened grey-mottled fruiting structure some 50 mm across and 4 mm in width (Fig. 5). The follicles, which contain around 20 seeds each, mature rapidly and within two months split to release the small blackish seeds, each with a tuft ±7 mm long. The seeds are minute for a stapeliad, only measuring 2 mm × 1 mm, and closely resemble those of *Astrophytum* (a Mexican cactus). Figure 6 depicts their shape from various angles.

The seeds were planted ±2–3 mm deep in a pine-bark commercial seedling mixture and covered with a thin layer of sand. This is to weigh down the seedlings to prevent them from pushing above the medium and exposing their roots. The

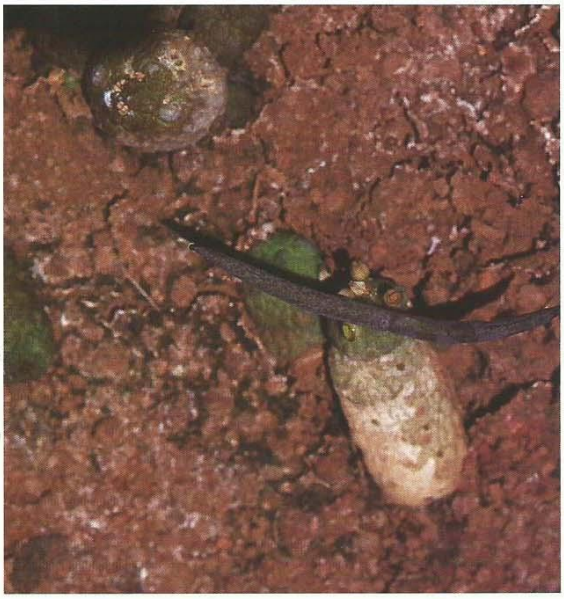

Fig. 5. The pair of mature seed-follicles six weeks after pollination.

Fig. 6. The unusual seeds of *P. caput-viperae* show some similarity to those of *Astrophytum*.

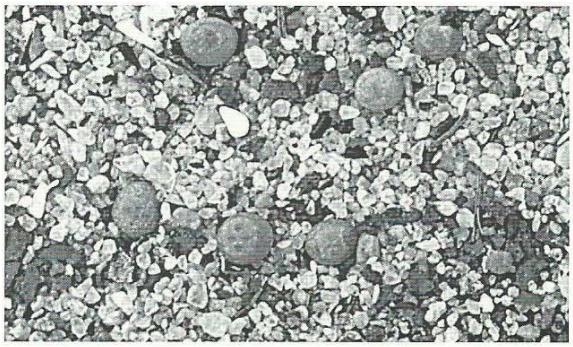

Fig. 7. Two-month-old *P. caput-viperae* seedlings resemble small adult plants.

medium was kept moist and within two weeks all seed had germinated. The similarity to germinated astrophytums was also observed here and seedlings also have the two small seed leaves (cotyledons). Two months later a photo was taken of these seedlings (Fig. 7) and the typical *Pseudolithos* form now becomes apparent. There does not seem to be any problem with their cultivation, and it is expected that nearly all plants will develop normally to maturity—if, of course, pests and diseases do not appear unexpectedly, which usually is not the case.