



Insect Potters

STORY & PICTURES BY
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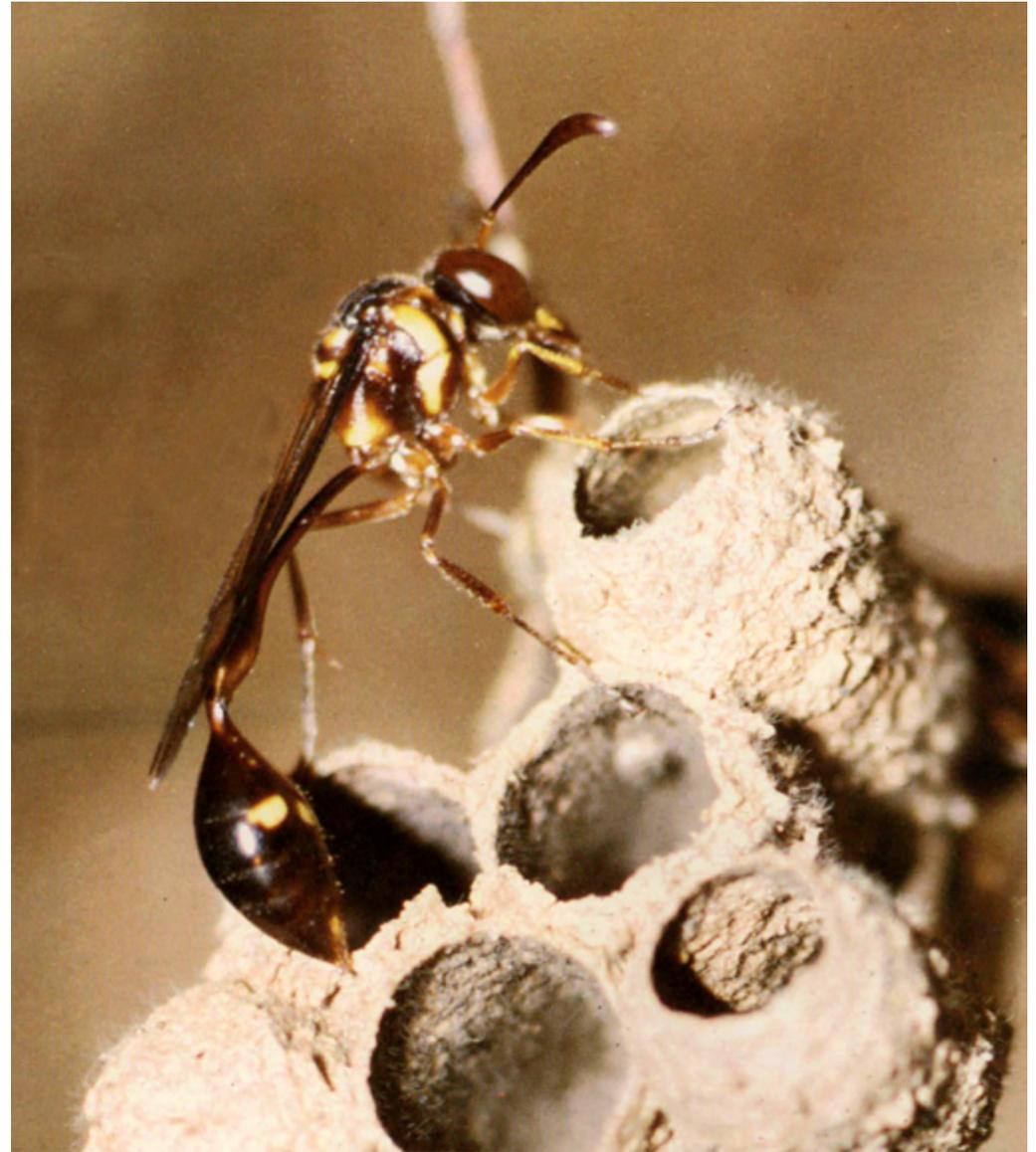
BEFORE humans set foot in New Guinea, clay pots were being fashioned in a rich variety of shapes and styles. The potters were species of wasps. Their ability as potters may come as something of a surprise to those who thought the only thing wasps were good at was stinging.

Most wasps build their nests by digging burrows in the ground or constructing cells of mud in which they bring up their young. Although many species build in mud or clay, few produce the delicate flask-like cells which are typical of the *Eumenes* wasp whose name is derived from the Greek word for 'gracious ones'. Their nests are fixed to branches of trees and shrubs, stone walls and man-made structures such as house timbers, curtains, even books.

The *Stenogaster* – primitive relatives of the *Eumenes* – build their fragile mud cells along the banks of streams in the rainforests of Papua New Guinea. They feed on midges trapped in spiders' webs which abound in such localities.

Although fixed structures are generally used as sites for wasps' nests, there is a story of a wasp which built its nest on the window pane of a railway passenger carriage in Australia. Though the carriage made several trips in and out of the city each day, the wasp persisted in its building activity every time the train stopped at one suburban station. It finished the nest. Whether it was a successful home for the young is not known.

Right: Stenogaster females rest on the clay cells they are building.





Once a wasp has selected a site for its nest, it goes off to find water and a patch of bare soil. The water is used to soften the soil during the excavation process. This results in a ball of mud being produced which is then carried back to the nest site.

When construction has begun, the wasp works with ferocious energy. It flies to and fro, without resting, until a cell is complete. The wasp then extends the tip of its abdomen and places it through the narrow opening to the cell and lays an egg. The egg is suspended by a fragile thread from the roof of the cell.

Then begins the task of provisioning the new home with food. The *Eumenes* wasp feeds its young on small caterpillars although other food, such as beetle grubs and spiders, are used by other wasps.

Hunting among the foliage of trees and shrubs, the wasp grabs a caterpillar with jaws and legs, quickly jabbing its sting into the victim's body, injecting a paralyzing venom. This keeps the food alive, thus ensuring a supply of fresh food for the young wasp.

The wasp carries its victims back to the nest slung beneath its body like a fighter plane carrying an air-to-air missile. It then pushes them through the narrow cell opening before flying off in search of more food. Five to 10 caterpillars are required to provision a cell, the number depending on the size of the victims. When the cell is packed, the wasp flies off to get a final few loads of mud to seal the entrance.

Usually several cells are built at the same site and, when the cluster of pots is complete, the



Above: stocking the larvae's larder.

Opposite: *Eumenes* female collects a ball of mud after softening the soil with droplets of water.



Above: After Provisioning the cell with living but paralysed food, the wasp then returns with a ball of clay to seal the entrance, finally putting finishing touches to the completed clay pot.

Opposite: Eumenes female inspects the inside of a new cell; pushing the tip of its abdomen into the cell to lay an egg; cross-section of cell showing egg, suspended from roof, and paralysed caterpillars.

wasp frequently adds camouflage by daubing mud over them so that the whole structure looks like a large blob of clay. Some Eumenes wasps even use plant materials found at the nest site. They stick it over the structure to make it virtually indistinguishable from its surroundings. The wasp egg hatches after only a few days and the grub-like larva begins feeding on the preserved caterpillars until they are all eaten. Then the larva spins a silken cocoon within which it changes into an adult wasp.

When large numbers of cells are built on top of each other, or end to end, young adults are faced with the problem of chewing their way out. To help synchronise each cell's development, the wasp has evolved a system whereby it makes the first cells (which may be completed several days before the last) bigger, lays female eggs in them and stocks them with more food. Females, needing more food, take longer to feed and therefore are ready to emerge about the same time as the smaller males which feed on fewer caterpillars in the smaller cells.

When the female wasps begin chewing their way out of the cell walls, the rasping noises they make act as a signal for the wasp next door to begin to cut its own way out. This communication makes for an orderly evacuation of the nest. The parent wasp which nests in the hollow stem of plants leaves a coded message for her offspring. The end of the cell furthest from the opening of the stem is made concave and smooth while the plug which seals the cell is rough and irregular. When the time comes for the young wasp to leave the

nest, it can detect the difference in texture of the cell walls and always leaves via the rough end.

Although the potter wasp stings its prey, it is not aggressive and its sting is not well adapted to pierce human skin. If it should manage to sting you, however, the effects are very mild compared with stings of bees or hornets.

Because potter wasps provision their nests with caterpillars – many of which otherwise would damage the crops and flowers in our gardens – they are useful to us.

So, next time you see a wasp building or provisioning its clay pot, don't destroy its nest. Just stand back and admire its artistry and industry. ■

