

shortly, as I am informed, to renew their search in and near the place, where these inscriptions were found; it is to be hoped, that some further light may by that means be gained, for the clearing up these difficulties.

XXXII. *Some Observations upon an American Wasps-Nest, shewn to the Royal Society : By Mr. Israel Mauduit, F.R.S.*

Read May 15, 1755. **M**R. de Reaumur distinguishes wasps into three classes, from the different situations, in which they place their nests; some making choice of unfrequented parts of houses, some of little cavities in the earth, and others of the branches of trees for that purpose. The first of these is the largest sort, or hornet; the second is the common sort here in England; and the last is more frequent in America.

The nest, which I now do myself the honour to communicate to this Society, was sent me from Maryland; where they are found on the lower kinds of trees, in the thickest parts of their woods. This is built upon a dogwood-tree, or the *Cornus mas Virginiana*; and hangs quite detached from the rest of the tree by an extreme branch, of little more than an inch circumference: which, with its smaller divisions running through the substance of the nest, answer the purpose of pillars, to unite and support the several floors of the building.

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The figure is a conoid, or an acuminated oval: its longer diameter is twenty inches, the shorter near the base is twelve.

It is perforated on two opposite sides, for the inhabitants to enter and go out at: the upper door was originally less, but is enlarged, to give a more easy view of the structure of the cells within.

The shell is composed of paper; the sheets of which at its upper end are larger and more distinct. They are of an ash-colour, of different shades, and streak'd or marbled: and, being lightly laid upon each other, form a wall of from one and an half to four inches thickness in the several parts of it.

The lax hollow manner, in which they are joined to each other, renders them a more effectual security from rain; as they attract water in common with all other substances, made of the same materials; and would have been more easily soaked thro', if they had been closer compressed together. For the same reason the apex of the cone is of the greatest thickness; and the base is of a stiffer and more cellulose texture.

Our paper is formed of broken vegetable fibres, placed together without any order, just as the water leaves them upon the sieve. *This*, to the naked eye, yeilds the appearance of a more regular arrangement of its parts; being wholly composed of parallel striæ, placed at about a line's distance from each other; with fibres going off from them, in a manner imperfectly resembling the ribs and plumes of a feather. The microscope shews very little of this regular arrangement; except that the ribs consist of a thicker and closer texture; being the joinings of the
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several breadths, in which the animal works it. In all other respects it appears to be a plexus of fibres, very rudely platted together, and no way superior to the meanest sort of whited-brown paper, with which I have compared it.

In respect of strength it is much inferior to it; having nothing of that toughness, requisite to every other use of paper, except that one, for which this is intended.

Upon this single account the more rigid nature of its woody fibres is an advantage to it; as it is less bibulous than the common blotting paper, retains its stiffness better when it is wetted, and does not collapse so soon.

The colour is the same with that of oak-wood, and the common sorts of timber, after it has been for three or four years exposed in the air; and appears in the microscope to be intirely owing to extraneous matter adhering to it: for the fibres themselves are of a clear white, little differing from those of white paper, with this sordes scattered over them.

It burns like paper, but with a weaker and quicker flame, as if a great part of its oil had been before exhausted: and its smell in burning discovers nothing of the pungency of volatile salts, but proves it to be a purely vegetable substance.

Each of these observations confirms Mr. de Reaumur's account of its formation; it being composed of the fibres of wood, that is in its first stage of decay; when, by having been long exposed in the air to the action of the sun and rain, its external parts begin to separate, and give these animals an opportunity to tear off certain smaller filaments, which

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are then loosened; and which they collect together into a little ball; and, having moistened it to a kind of paste, spread it out with their talons and fore-feet, into its present form.

Hence the marbling of this paper is the necessary result of the method of its construction: for as each sheet consists of a number of fasciæ or breadths, equal to the reach of the animal, that spreads them; each of these fasciæ will be of a different shade, according to the several colours of the little bundles of fibres, collected by so many labourers from different materials.

Upon the whole, the substance before us is a true paper; but, by the exact œconomy of nature, wrought to that degree of perfection only, which was necessary to serve the single purpose it was intended for. Being examined by the microscope, it appears to be of a coarser grain, a shorter staple, and of a much looser texture; and is a rare, though not a singular instance, of a natural production falling far short of the artificial one of the same kind.

The inside structure of these nests is so well described by Mr. de Reaumur, that we cannot hope to discover any thing new in the opening it.