Owing to the shrinking and distortion of the chambers from the action of the spirit it is not easy to arrive at very certain conclusions either as to their form or size; probably in many cases in which a chamber now appears to be oval this shape is chiefly due to lateral pressure; and it is noteworthy in this connection that the elongated form is most commonly to be observed in corticate sponges, which, owing to the presence of the fibrous tissue, probably contract more strongly when put into spirit than the non-corticate species.

Within the species the size of the chambers appears usually to be very fairly constant, but the above table seems to indicate that it is not likely to prove of much value for systematic purposes, except perhaps occasionally in the distinction of species or at the most of genera.

Mr. Carter[1] has already pointed out that the diameter of the chambers ("ampullaceous sacs") is about 1–600th of an inch (=0·042 mm.)[2] in the siliceous sponges, and also that in this group they are for the most part globular, results which agree very well with those above given by us.

As a rule the chambers in the Monaxonida are embedded in trabeculæ of mesodermal tissue which separate the ultimate inhalent lacunæ from the ultimate exhalent lacunæ, and they open into the latter by wide mouths (*e.g.*, *Esperella murrayi*, Pl. XLVIII. fig. 2*d*; *Axinella* (?) *paradoxa*, Pl. XLIX. fig. 2; *Latrunculia apicalis*, Pl. LI. fig. 1*a*). In *Stylocordyla stipitata*, var. *globosa*, we have, however, at any rate occasionally, narrow exhalent canaliculi leading away from the flagellated chambers (*cf.* Pl. L. fig. 1*a*), a condition which appears to be much more distinctly pronounced in *Polymastia* (*Weberella*) *bursa*, as described and figured by Vosmaer.[3]

Hansen have suggested that they are absent. Vosmaer, speaking of *Phakellia bowerbanki*, expresses himself very guardedly:—"Also in *Phakellia bowerbanki* I could not detect ciliated chambers. As long as I have not studied *Phakelliæ* which I have preserved myself, being sure that they were living in the moment they came in alcohol, I will not pretend that they really do not exist. But it may be suggested here as a possible fact, that those thin fan-shaped sponges are destitute of them because they do not want them. Every good section shows us that the water can flow through and through the body, the natural movement of the water being probably sufficient for bringing new living material to the sponge (fig. 12)" (Sponges of the "Willem Barents" Expedition, 1880–81, p. 24, 1885). The idea that the water can flow right through from side to side, as indicated here and in Vosmaer's figure, must have arisen from the badness rather than the goodness of the sections (*cf.* Pl. XLIX. fig. 3). Hansen expresses himself with much more confidence concerning his researches on the subject:—"Nach diesen Resultaten der Untersuchung muss man annehmen, dass das Wasser durch die Kanäle strömt ohne durch Flimmerbewegung fortgeleitet zu werden; die Oeffnungen an der Oberfläche kann man demnach als Ostien oder Poren bezeichnen je nach Belieben; sie functionieren wahrscheinlich als beides zugleich. Da die Phakellien meistens dünne Platten bilden, die fast wie ein Sieb durchlöchert sind, wird es kaum schwierig zu verstehen, dass ihnen Nahrung zugeführt werden kann einfach durch die Wasserströmung ohne dass es nöthig wäre diese Strömung durch besondere Einrichtungen zu fördern." (Bergens Museums Aarsberetning for 1885, Bergen, 1886). And this, notwithstanding the fact that Hansen has "keine Schwierigkeit gehabt frisches Material zu beschaffen." The flagellated chambers in *Phakellia ventilabrum*, var. *connexiva* are perfectly distinct and closely crowded together (*vide* Pl. XLIX. fig. 3), and there cannot be the slightest doubt that they are present also in other species of the genus.

[1] *Ann. and Mag. Nat. Hist.*, ser. 4, vol. xvi. p. 22.

[2] Not 0·42 mm. as given by Vosmaer (Bronn's Klass. u. Ordnung. d. Thierreichs, Porifera, p. 129), which is probably a misprint.

[3] Sponges of the "Willem Barents" Expedition, 1880–81, p. 17, pl. iii. fig. 9.