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Robert Patterson Esq.

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III.—*Note on the appearance of Clouds of Diptera.* By  
ROBERT PATTERSON, Esq., Member of the Nat. Hist. Soc.  
Belfast, &c.

THE appearance of Dipterous insects in large numbers is in certain localities and at certain times a matter of common observation. About Lough Neagh myriads of *Culicidæ*, *Tipulidæ* and *Ephemeridæ* are seen, and *Culex detritus* is recorded by Mr. Haliday\* as rising above trees, so as to resemble the smoke of a cottage chimney. In Phil. Trans. 1767, it is stated that in 1736 the common gnat (*Culex pipiens*) rose in the air from Salisbury Cathedral in columns so resembling smoke, that many people thought the cathedral was on fire. In Norwich, in 1813, a similar alarm was created. At Oxford, in 1766, "a little before sunset, six columns of them were observed to ascend from the boughs of an apple-tree, some in a perpendicular and others in an oblique direction, to the height of fifty or sixty feet †."

A phænomenon similar to that last mentioned was this summer observed for some days at Belfast. Wherever there were trees, columns of insects were seen, and attracted the notice of even the most incurious. They began to appear a little before seven o'clock, and diminished in numbers as the light decreased, so that by half-past nine few were visible. On the evening of June the 11th, I went with Messrs. Bryce and Hyndman to the house of our fellow-member Mr. Grattan, situated on the north side of the bay, and about half a mile from the town, for the purpose of observing them. The following notes were there drawn up, our remarks being limited to an irregular semicircular area, having an average diameter of seventy or eighty perches.

The insects appeared in columns above the trees, the shade of colour varying according to the greater or less density of the mass from that of light vapour to black smoke, the columns not only differing in this respect from each other, but each column being frequently different in different parts. They might have been mistaken for dark smoke-wreaths but for their general uniformity of breadth, and for a graceful and easy undulation, similar to that of the tail of a boy's kite, when at some height and tolerably steady. The individual insects flew about in each column in a confused and whirling multitude, without presenting in their mazy dance, any of those regular figures which gnats frequently exhibit over pools of water. The motion of their wings filled the air with a pe-

\* Entom. Mag., No. 11. p. 51.      † Kirby and Spence, vol. i. p. 114.

cular and not unmelodious humming noise, like the distant sound of the machinery of a spinning-mill, but more varied.

The columns rose perpendicularly to the height of from 30 to 60 feet, and in some instances to the height of 80 feet. They were equally abundant over trees of every kind, as ash, beech, birch, poplar, &c., and so numerous were these distinct columns, that so many as from 200 to 300 were visible at the same time. As each column was every instant undergoing a change in density of colour, diameter, elevation or form, the phenomenon was one of exceeding interest, especially as connected with the living myriads, which in these aerial gambols gave expression to their enjoyment.

Some individuals were taken in a gauze net, and on examination by Mr. Haliday proved to be *Erioptera trivialis* ♂ (Hoffmansegg); others taken two evenings afterwards at the Royal Academical Institution (where they presented the same appearance, but in smaller masses) were *Chironomus testaceus*\* (Macquart); so that different species would appear to have occasioned a similar phenomenon in different localities.

As we are at present ignorant of the conditions which are requisite to call these tiny multitudes into existence, the state of the barometer and thermometer for some successive days is given as recorded by Mr. Bryce:—

Thermometer.				Barometer.	
	Mean of 9 A.M. and 2 P.M.			Mean of 9 A.M. and 3 P.M.	
June 9	....	69.125	.....	30.398	
— 10	....	69.25	.....	30.332	
— 11	....	69.50	.....	30.400	
— 12	....	73.75	.....	30.450	
— 13	....	69.62	.....	30.378	

During all these days there was a very light summer wind between E. and N. On the 13th, between two and six P.M., a thunder-storm with rain passed north by west over Lough Neagh, Antrim, &c., and was followed by a diminished temperature.

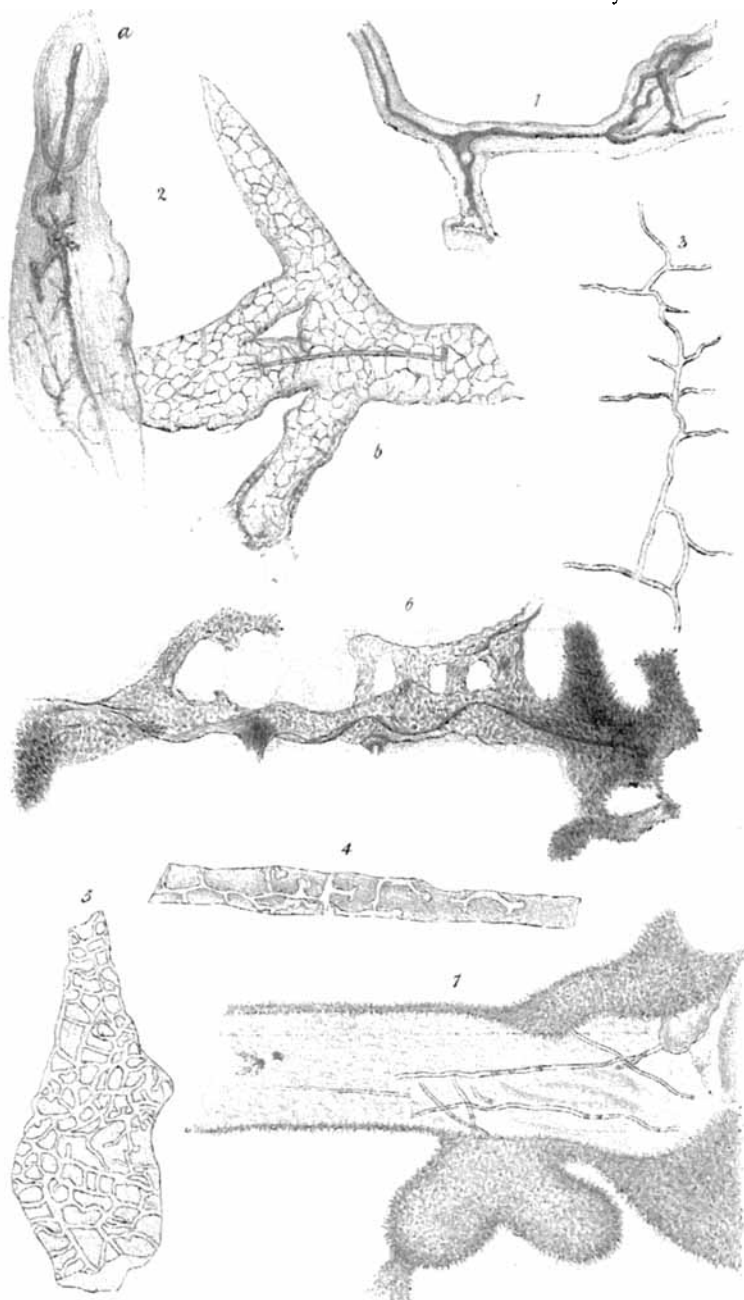
I have been unable to define the precise range in which these singular assemblages of insects appeared. About Belfast they were everywhere abundant over trees. At the residence of one gentleman, about a mile to the north of the town, they came forth in myriads; and when the noise of their wings first attracted his attention, he for a moment supposed it to be the sound produced by letting off the steam from a steam-vessel at a distance. By a lady on the

\* In the box sent to Mr. Haliday, containing probably above 100 specimens of this insect, there was but one female.

evening of the 11th, and by another on the evening of the 13th, it was mistaken for the sound of something boiling, and one of them hastened from the hall door into the house to see that her servant was not neglecting some culinary matter then in progress. At Colin Glen, about four miles west of Belfast, they were observed on the 12th. On the evening of the 11th, the person who has the care of the Friar's-bush burial-ground, adjoining the Botanic Garden, thought the dark smoky-looking columns which he saw were caused by something being burned in the garden, and ascended the highest part of the ground to ascertain if such were the case. I observed the insects on the evenings of the 10th, 11th, 12th, 13th and 14th; but on communicating these particulars to my friend Mr. Thompson, I was gratified by finding that they had attracted his notice above the trees in front of his residence on the 9th; and he has obligingly placed at my disposal the following note respecting them:—

“Belfast, June 9, 1842.—When returning from the Botanic Garden to town this evening at eight o'clock, and about a quarter of a mile from Donegal Square, my attention was arrested by what appeared to be several narrow columns of black smoke rising into the air above the trees to a great height—‘like the mast of some tall ammiral.’—Looking upon them as smoke, I could not understand why a portion of one should occasionally vibrate, or as it were, break down, until it would touch a neighbouring column to the east of it, while another would play a similar part towards a column on the west. The whole appearance seemed to indicate an extraordinary state of the atmosphere, though I could not conceive the gentlest zephyrs blowing different ways so near each other and about the same time. On approaching nearer, however, the phenomenon was explained, and proved to arise from columns of a large species of midge instead of smoke. The trees along the west side of the square are deciduous and chiefly elms (*Ulmus montana*), about forty-five feet in height, forming a continuous row, and the summit of almost every tree (for there evidently was no favouritism as to species) seemed to be emitting smoke—sometimes in two or three distinct columns. The insects presented themselves in masses of every form, the most remarkable of which was still the tall mast-like column. One cloud of them appeared above the middle of the spacious street, where numbers of persons were now assembled gazing and wondering at the singular spectacle. There were as usual several swifts (*Cypselus apus*) flying about the Square, and I particularly remarked, that although they occasionally passed very near the masses of insects, they never once swept through any congregated party of them. For some time past the weather has been remarkably fine, dry and warm, as was this day.

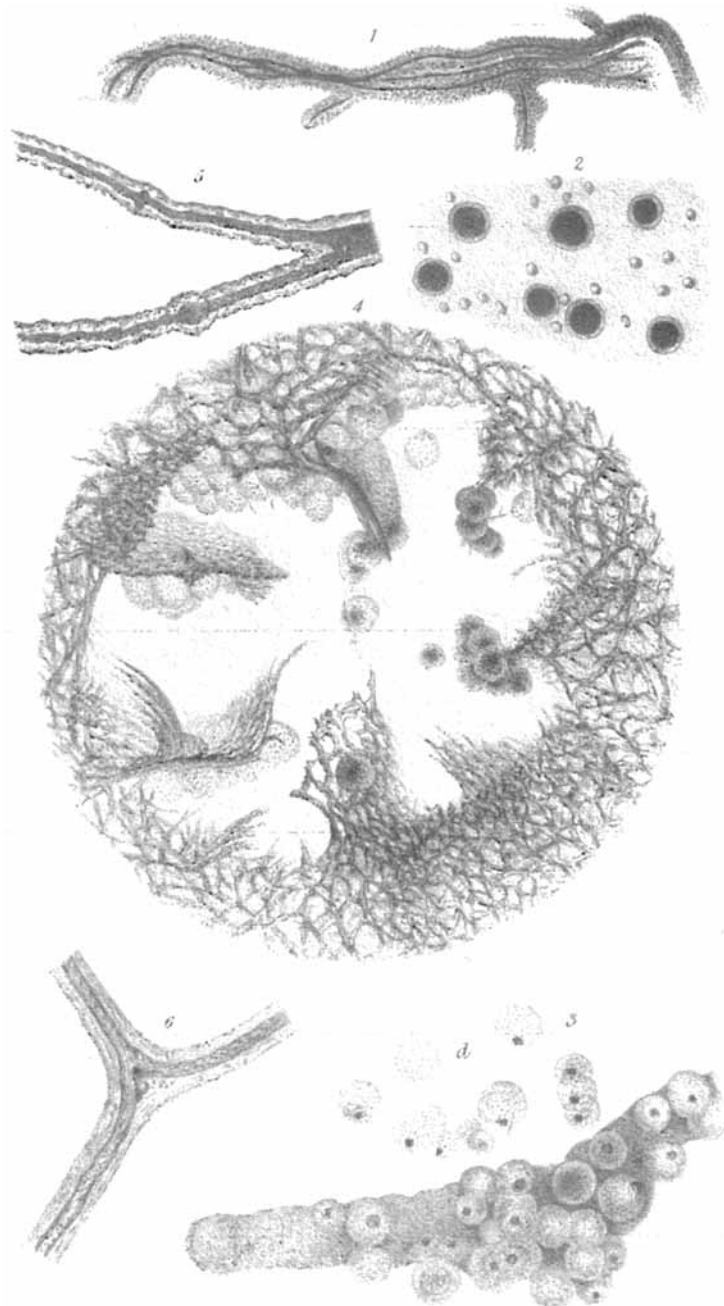
“My brother, as I afterwards learned, remarked the same appearance this evening above the trees at the Grove, a mile distant from



*Drawn by A. W. Hattersley.*

*Fig. 1. High Light Micrograph.*

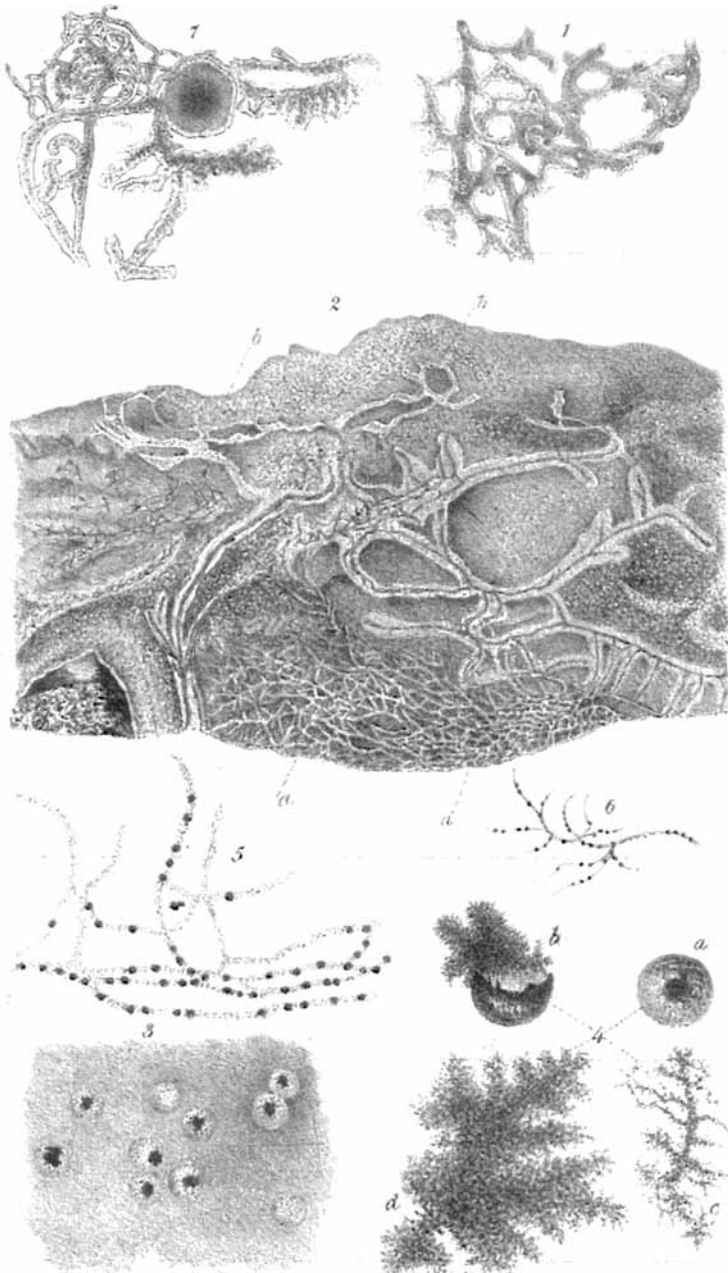
*On Zircby Lens. Aldeus.*



*Drawn by K. H. R. S. S.*

*Engraved by L. H. R. S. S.*

*On Zinc by L. H. R. S. S.*



*Drawn by M. S. Hattersley*

*Day & Night Lith. to the Queen.*

*On Zinc by Lens Aldous.*

Belfast, in an opposite direction from Donegal Square. Leaving town for some time on the following day, I had not any further opportunity of witnessing the interesting phenomenon.

"W. THOMPSON."

IV.—*On the spongy origin of Moss Agates and other siliceous bodies.* By J. S. BOWERBANK, Esq., F.G.S.\*

[With Three Plates.]

IN the course of the last session I had the honour of submitting to the Geological Society a paper "On the structure and origin of the flinty bodies of the chalk and greensand formations of England," in which I endeavoured to prove that the greater portion of these siliceous masses were derived from the silicification of spongy bodies which existed at the bottom of the sea at the periods of the deposit of these strata in as great abundance as their recent types are now found in the ocean, both in tropical and temperate latitudes. In my description of the organic contents of the flints and cherts there described, I mentioned the frequent occurrence of spicula among these remains. From their appearance in bodies which bore every appearance of being true keratose sponges in which spicula were not at that time thought to exist, I was led to believe that the sponges which had originated these siliceous masses were an order of the tribe differing from our recent keratose types only by the possession of siliceous spicula, and therefore, although not absolutely belonging to the same genus as the sponges of commerce, yet so nearly allied to them in every other respect as to leave no reasonable doubt of the true spongy nature of the fibre that abounds in them. Since that period I have received from my friend Rupert Kirk, Esq., of Sydney, numerous specimens of at least three distinct genera of sponges, and among them many keratose ones, which upon examination with a microscopic power of 500 linear, proved to contain siliceous spicula in great quantities. This circumstance induced me to suspect their presence in the sponges of commerce, and upon examining them carefully I detected spicula in each of the two species from the Mediterranean as well as in that from the West Indian Islands, although, I believe, every author who has hitherto described the sponges of commerce has denied their existence in these bodies. Since the publication of these facts, I have had the opportunity of examining two species of keratose sponges in the collection at the British Museum, which are preserved in spirit in the state in which they were immediately after being taken from their native element, and in both these specimens

\* Read before the Geological Society of London, April 7, 1811.