

THE LANCASHIRE AND CHESHIRE  
NATURALIST.

A MONTHLY JOURNAL of Natural History and  
Microscopy for the counties of Lancashire and  
Cheshire, and the adjoining districts of Westmorland,  
Derbyshire, North Wales and the Isle of Man.

Founded in 1907 by W. H. Western as the *Lancashire  
Naturalist*. Title changed to *Lancashire and Cheshire  
Naturalist* in 1914.

- The official organ of
- The Lancashire and Cheshire Fauna Committee.
  - The Manchester Microscopical Society.
  - The Liverpool Botanical Society.

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THE  
Lancashire & Cheshire Naturalist

VOLUME XIII, No. 7. JANUARY, 1921.

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Some observations on *Arrum maculatum*, L.\*

By ELEONORA ARMITAGE.

It may be well to explain that the observations on which  
this paper is founded were made by two members of a  
small Botanical Essay Society this year (1920). The  
subject set for study was to collect data on any  
differences discernible in the spathes of *Arrum macu-  
latum*.

Miss M. E. Ackerley has begged me to make use of  
her observations and to correlate them with my own,  
thus showing the results obtained by her in Yorkshire  
and by myself in Herefordshire.

During April and May I collected and examined  
nearly 500 *Arrum* spathes and their accompanying  
spadices, and Miss Ackerley about 50.

As a child one used to differentiate the "Clubs" of  
the *Arrum* spadices according to their colouring into  
three groups: First, "Lords," the dark crimson ones,  
which always form the large majority; then the  
"Ladies," the delicate cream-coloured ones, which were

\* Read before the Liverpool Botanical Society, October 21st, 1920.

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much valued on account of their rarity; and, thirdly, the "Thieves," which embraced all the dull pink and pale pink shades; these were very abundant but were always looked upon with disfavour owing to their pallid and unpleasant tint.

It is interesting to notice that the colouring of the "Clubs" is reflected in that of the ring of anthers; in "Lords" this is deep crimson, in "Thieves" light pink, and in "Ladies" it is cream with no tinge of pink. These last may perhaps represent the albino form. This year only two clumps of "Ladies" were seen.

There is also considerable variation in the colouring of the spathes. We have both observed that they are frequently entirely green or with only a faint marginal tinge of claret brown. A slightly larger proportion are more or less suffused with a claret tinge while spathes blotched with handsome claret-coloured spots and streaks on a green ground are very much rarer. Miss Ackerley found one out of thirty-three examined; my own observations agree, with about fifteen out of nearly five hundred. This last point leads one to discuss the leaf colour of these plants, for though the type is named *Arum maculatum* on account of the black spots on the leaves, we have both observed how very much more numerous are the plain-green leaves than the spotted ones; Miss Ackerley remarking that along one hedge all the Arums were green-leaved except for one area about a yard in length where the spotted leaves occurred. I have noticed the spotted leaves scattered along the hedgerows among the much more frequent green leaves; and we have both noted that the blotched spathes only occur on plants with spotted leaves, while many of the plants with spotted leaves have green spathes. So that it would seem that the variety named *immaculatum*, Gray, should rather be the type; but in some places *maculatum* may be the more abundant.

The Arum leaves vary a good deal in shape too; they all have divergent lobes, but in some the apices are quite acute, in others blunt and rounded. Both leaves

## Some observations on "*Arum maculatum*."

and spathes vary considerably in size; the spathes are mostly from 15 to 20 cm. in length, but some reach 25 cm. This difference is related to habitat, the small ones are found on dry elevated banks, the large ones in the thick herbage at the base of the hedge.

We have also observed that there is no relation between spathe colour and spadix colour; we could make no guess at the colour of the "Club" until we had opened the spathe. Possibly the green spathe may be more often associated with the paler spadix, but we did not make enough observations to give an opinion on this point.

When I began to collect Arum spathes a fundamental difference at once became conspicuous, though I had had no idea previously that such an one existed. It is that in the spiral folding of the spathe around the spadix the spiral is sometimes left-handed and sometimes right-handed; sometimes one edge overlaps, sometimes the other. Miss Ackerley noticed this also. If two different spathes are laid on the table, the observer should place them so that he lays his left hand on the one coiling from right to left with the left edge uppermost (the sinistral spiral), while his right hand rests on the one with the right edge uppermost (the dextral spiral).

The interest lay in testing as to which spiral, if either, should prove to be the more frequent. Nearly five hundred spathes were collected and sorted; they were taken from various hedgebanks in three parishes, with every possible difference of aspect and condition, and everywhere the results showed a strong preponderance of sinistral spirals over dextral. Out of 498 spathes 278 were sinistral and 220 were dextral, a balance of 58 in favour of the sinistrals with the proportion of five lefts to four rights. Miss Ackerley's observations tallied with my own: out of 22 specimens she found 14 lefts and 8 rights. Each gathering naturally showed a different proportion; sometimes there was an almost equal distribution: e.g., 16 lefts to 16 rights, 24 lefts to 20 rights, 25 lefts to 25 rights, 14 lefts to 12 rights; but often the difference was very striking: e.g., 13 lefts to 6 rights,

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84 lefts to 67 rights, 23 lefts to 16 rights, 38 lefts to 28 rights; hardly ever were there more rights than lefts.

One point I noted particularly, that I never found the same spiral on every spathe of a plant or clump (unless there was only one spathe), they were always mixed, quite haphazard. At the same time, on opening the spathes, I found one unaltered rule, that on the same plant or clump the same spadix colour was rigidly adhered to, never crimson and pink mixed, always one colour to one plant or clump, and the same with the cream-coloured form.

After my original paper was written my attention was drawn to a very interesting account of Arum spirals contributed by Mr. Miller Christy, F.L.S., to the *Journal of Botany* for 1914. The summary of his observations during five years, mostly in Essex, coincided with our own. Out of the large number (1,228) of spathes examined, he counted 645 lefts and 583 rights, a preponderance of lefts over rights of 62. As the majority for lefts in my counts was 58 in a good deal less than half his total, the frequency in my plants was very much greater, but with more observations the proportion might be changed; at any rate there is a striking concordance. I cannot, however, agree with his statement that all the spathes on any one plant are rolled the same way. He adds a similar observation for the foliage leaves, but this point I did not observe.

The variability of the Arum spiral is the more striking as in nearly every plant with a spiral tendency, *e.g.*, in climbers, the same spiral form is adhered to, whether it be right or left.

## Mr. Charles Ledger.

Mr. CHARLES LEDGER, whose death took place on Sunday, April 4th, 1920, was a well-known botanist in the East Lancashire district.

He was born at Hull in 1850, and came to work as a moulder in Oldham about the year 1875.

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## Mr. Charles Ledger

He commenced his botanical studies some few years later and is recorded as having passed the Advanced Stage of the Science and Art Department in 1884-5.

The Board of Education granted him facilities to attend a Botanical Course at the Victoria University, Manchester, and later a similar course at Kew.

He commenced teaching Botany in 1889, and continued this work for about ten years in the Oldham district.

He was a notable member of the various Natural History Societies of the District, and many men and women owe a debt of gratitude to him for his inspiring and patient endeavours in initiating them in the early stages of their study.

He was of very great assistance in the work of compiling the District Flora for the use of Botanical Societies of the district.

Mr. Ledger was elected President of the Ashton-u-Lyne District Botanical and Field Naturalists' Society in 1887, and an Honorary Member and Vice-President of the Oldham Microscopical Society from about 1890. His services to these and kindred Societies were very valuable and greatly esteemed.

The writer would like to add a personal note of appreciation. Mr. Ledger and he were fellow-students in Botany, in 1885, in a class conducted by the late Mr. I. Hannan, of Ashton, and the memory of many pleasant rambles and discussions during the preparation for the May examination has been a lasting source of pleasure. When in later years both were members of the Microscopical Society the memory of these meetings was often renewed.

In addition to his services to Botanical Science, Mr. Ledger was an expert Photographer and an enthusiastic Ambulance worker. In the latter service he held the rank of 1st-class Staff-Sergeant and Corps Storekeeper in the local Corps of the Order of St. John and also gained the Medalion and Nursing Certificate awarded by the Authorities of the Order.

H. H. WAREING (Oldham).

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