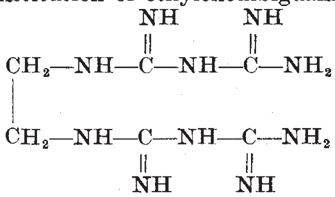
and the constitution of ethylenedibiguanide as :



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Sept. 25.

[1] NATURE, **151**, 643 (1943).
[2] Dittler, *Monatsh.*, **29**, 647 (1908).
[3] Dübsky, Langer and Strand, X, 111 (1938).

Surface 'Memory' in a Carboy

TOWARD the close of a recent afternoon, we calibrated a cleaned, dry 5-gallon carboy by pouring in successive litres of distilled water. During the next morning, we found that the bottom 13 litre-levels had been 'remembered', these levels being precisely marked by the lines of gas bubbles shown in the photograph. We had not previously encountered the phenomenon, nor have we seen it described.

The gas released must have been carbon dioxide. At the time, the pH of our distilled water could be increased from 4·7 to 6·8 by boiling. Furthermore, the bubbles marking most of the levels were 'fixed' as continuous white lines, presumably of barium carbonate, when dissolved barium hydroxide was added to the undisturbed carboy.

Several successful attempts to reproduce the phenomenon gave some clues to its mechanism. Successive litres of water were poured into each of several carboys through extended funnels, about 10 seconds being required for the pouring and 2 minutes for the filling of the graduate. While this was going on, gas bubbles rose from the floor of the carboy to the surface of the water. Owing to a gentle swirling motion, the smaller bubbles occasionally came into contact with, and adhered to, the walls. During the 2-minute interval, enough pin-point size bubbles were usually captured by the walls to give an almost continuous line marking each level below the topmost. Such lines could usually be seen while the next litre of water was being poured in ; at least once, however, they did not appear until some time later, perhaps because the bubbles adhering were initially so small as to escape observation. The bubbles eventually grew to a diameter near 1/8 in., whereupon they escaped into the gas space over a period of days. Those marking the upper levels disappeared first, probably because the buoyant force acting on them was greatest. (Disappearance of the bubbles owing to re-solution of the carbon dioxide seems less likely.) The phenomenon was observed also in a carboy the walls of which had been wet before the experiment was begun.

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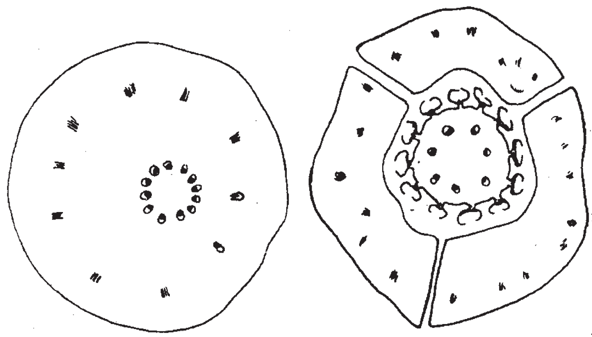
Origin of the Trimerous Perianth

THE trimerous perianth being one of the characteristic features of the monocotyledons, its origin is an important problem of floral morphology. Salisbury[1], from detailed studies of meristic variations among the floral parts of the Ranunculaceæ and Helobiales, has come to the conclusion that trimery is really the most primitive condition among the angiospermous flowers. The pentamerous whorl, according to him, has evolved from two trimerous whorls by the fusion of one member of the outer and one member of the inner whorl. A study of the vascular anatomy of the male flowers of *Myristica fragrans* Houtten, Fam. Myristicaceæ, however, leads to a quite contrary view. This family is phylogenetically not far removed from the Ranunculaceæ and is usually included among the Ranales. Its diœcious flowers possess a tubular or campanulate perianth, which divides above generally into three lobes. The serial transverse sections of the male flowers of *Myristica fragrans* show that the trimerous perianth is supplied by ten vascular traces (Fig. 1). Such a vascular supply is clearly of a pentamerous whorl.



1 2

Myristica fragrans

1, transverse section of a male flower showing ten perianth traces ; 2, the same at a higher level after division of the perianth tube into three valvate segments. In the centre is the anther-bearing column.

There is thus in this case evidence that the trimerous perianth has been derived from a pentamerous whorl. How the change has occurred is not shown so definitely, but the size of the perianth-lobes points the way. Two of the perianth-lobes are much larger than the third (Fig. 2). This suggests that each of the larger lobes has been derived from the fusion of originally two separate perianth leaves. The persistence of the original pentamerous vascular supply even after the establishment of the trimerous condition in the perianth also favours the view that the change has been brought about by the fusion of certain parts rather than by the suppression of two members.

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Aug. 1.

[1] Salisbury, E. J., *Ann. Bot.*, **33**, 47 (1919) ; **34, 107** (1902) ; **40**, 419 (1926) ; **45**, 539 (1931).