series of dark striations (P') in the cuticle (C). Directly below these a number of tubes (T) extend deeply into the pillar cells, apparently forming a continuous arrangement with those of the cuticle.

There is no evidence available as to the possible function of these structures ; but it is suggested that
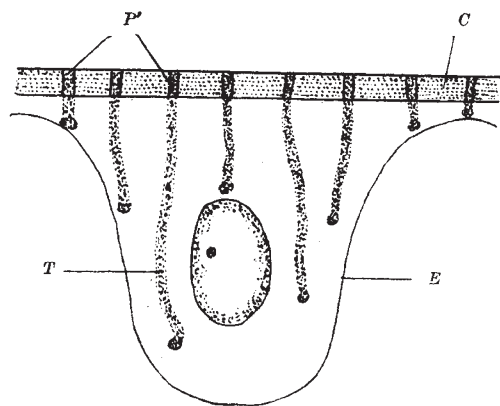

Fig. 2.

they form a tubular system whereby the water is enabled to come into close contact with the pillar cells, and thus assist in the oxygenation of the blood circulating between these cells.

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[1] Webb, D. A., *Proc. Roy. Soc.*, B, **129**, 107 (1940).

Committee Decisions and Mathematical Statistics

DR. BLAKESLEE is surprised that there is not a higher degree of unanimity of the Supreme Court of the United States[1], but a believer in the subjectivity of opinion would expect very much what Dr. Blakeslee records in the tantalizingly few data he gives. In some matters there can scarcely be two opinions. But the ordinary matters of government are commonly settled by committee decisions—of which those of the Supreme Court are a type—or else by the decision of some one man. If the values of the opinions of men *inter pares* are equal, one would premise first, that a wrong decision is equally as likely to emerge as a right one from subjective processes ; and secondly, in relation to complex and obscure questions such as those with which superior courts necessarily deal, that the voting would correspond to some distribution of mathematical probability. Some critiques of examination results ("examinations of examiners") support these views[2]. It would be interesting to know how often a decision of a lower court of law is reversed or upheld by a higher.

Referring solely to a committee of nine members, all of whom vote, I may point out that if decisions were absolutely random the distribution of judgments in which the members were unanimous, or divided

8–1, 7–2, 6–3 and 5–4, would follow the binomial distribution ($n = 9$) 1, 9, 36, 84, 126. Thus a unanimous decision could be expected only once in 256 cases, and an 8–1 or a unanimous decision once in 25. The 6–3 and 5–4 decisions would constitute more than three-quarters ($\frac{210}{256}$) of all the decisions, and a decision of a higher degree of unanimity than 6–3 would occur only once in five or six cases.

Though the data supplied by Dr. Blakeslee are too few to have more than coincidental value, it is interesting to note that the two 6–3 and three 5–4 decisions he mentions are precisely in the ratio indicated by the binomial hypothesis. May I hope that someone with access to recorded decisions of the Supreme and other courts would examine them from the point of view of this hypothesis ?

I am not concerned to question the value of Supreme Court decisions in particular, and I mention that Court only because there is evidently a body of its recorded opinions and of votings such as exists for few other committees. But if the subjectivity of committee judgments can be established, we may advance some way towards putting democracy on a factual basis. Much scorn has been poured on Hitler's "intuition", but it is not clear that the Allies have used any sounder method of attacking many of their problems. Yet the United States and the British Empire have virtually sole command of mathematical statistics, which is the only objective method of analysis of complex problems and offers the only way of assessing the validity of an analysis. Mathematical statistics is presumably not applicable to legal questions, nor to essentially subjective matters such as foreign policy ; but it is applicable to many problems involving numerical data—such as those of supply, production and distribution. While the Allies continue to rely upon the decisions of committees or 'strong men' for problems capable of being objectively solved, they are disregarding the greatest intellectual advantage which they enjoy over their enemies.

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[1] NATURE, **149**, 288 (1942).
[2] NATURE, **136**, 966 (1935).

Physiology of the Amino Acids

THE valuable and comprehensive review by Dr. van Slyke[1] fails to discuss one problem, the most important of all from the point of view of human nutrition. Accepting W. C. Rose's classification of amino acids into essential and non-essential, he has omitted to make clear, though it is implicit in his review, that this information applies only to experimental animals, indeed, only to the experimental rat. It would be interesting to know what evidence, direct or indirect, exists, if any exists, as to the indispensability or dispensability of any individual amino acid for *Homo sapiens*.

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[1] NATURE, **149**, 342 (1942).