Table 1

	Before	After	Mineralized (per cent)
Organic carbon (per cent)	8·51	3·11	63·5
Organic nitrogen (per cent)	0·69	0·37	46·4
C : N ratio	12·33	8·41	
*p*H (using 0·01 *M* calcium chloride)	6·0	7·9	
p.p.m. inorganic phosphorus (cold *N* sulphuric acid)	133	570	
p.p.m. organic phosphorus (Walker and Adams, ref. 4)	437	Nil	100·0

mineralized in spite of the enhanced microbial activity following the frequent moistenings of the soil after oven-drying. This is in marked contrast to organic phosphorus, which was completely mineralized. Thompson and Black[5], however, have shown that soil organic phosphorus is susceptible to hydrolysis with hot water. A duplicate soil sample was therefore kept at field capacity at 100° C. for 16 days (a period equivalent to that in which the experimental soil was in a hot moist state during its 204 treatments) when it was found that 53 per cent of the organic phosphorus and 7 per cent of the organic nitrogen were hydrolysed, with no increase on longer heating. With the experimental soil, therefore, the non-hydrolysable organic phosphorus compounds must have been microbially decomposed together with at least part of the hydrolysable compounds which are likely to be even more susceptible to microbial attack. It appears that potentially the whole of the soil organic phosphorus is fairly readily decomposable microbially. Since organic phosphorus complexes of soil are more readily extracted than other fractions of soil organic matter[6] they may also be more accessible to micro-organisms.

The increase in *p*H probably results from the release of bases during decomposition and the absorption of carbon dioxide by the sodium hydroxide in the respirometer vessel, which would prevent the formation of carbonic acid. The increase in ammonia amounted to only 1 m.equiv./100 gm. soil instead of the 23 m.equiv. demanded by theory. Presumably much of the ammonia was driven off under the hot, moist slightly alkaline conditions occurring early in the successive drying periods.

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[4] Walker, T. W., and Adams, A. F. R., *Soil Sci.*, **85**, 307 (1958).
[5] Thompson, L. M., and Black, C. A., *Soil Sci. Soc. Amer. Proc.*, **12**, 323 (1947).
[6] Bremner, J. M., *J. Soil Sci.*, **2**, 67 (1951).

PSYCHOLOGY

Effect of Attention in Peripheral Vision

The facts adduced by B. Babington Smith[1] appear to be new. At first it seemed that they might be explained in terms of what Stout calls "the conditions of attention"[2]—conditions that include change as well as extensity, intensity, duration, contrast and interest. If Stout is right, the factor missing in the object was change. I therefore repeated the experiment with objects containing moving parts, like the second-hand of a watch and an oscillating compass needle, and was amazed to find that the peripheral fade-out was, if anything, more marked.

The explanation of the phenomenon is, I believe, the following. When one inhibits the natural tendency to focus an object to which one is attending, one inevitably tends to reconstruct its details from memory. Though perception and memory are not inherently incompatible, the simplest kinds of image are, in fact, antagonistic to their sensational counterparts. Hence the effort to reconstruct the object from memory inhibits the exact perception of it. The most important inference to be drawn from the experiment is not that attention inhibits the perception of peripheral objects, but that the instinct of curiosity in its simpler forms operates by means of a commutative mechanism, whereby it automatically switches over to memory, when it is frustrated in perception. Experiments might be devised to show under what conditions the mind automatically switches back to perception, and, once the main facts had been elucidated, considerable improvements in methods of teaching and learning might be effected.

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[1] *Nature*, **189**, 776 (1961).
[2] Stout, G. F., *Manual of Psychology*, fourth ed., 167.

In my communication of March 4, I spoke of placing objects on a table. As Mr. Thomson has deduced, the situation I described was static, and thus change, which is, broadly speaking, one of the essential conditions for perception, was lacking. Mr. Thomson's observations with the second-hand of a watch and a compass needle are very interesting but puzzle me, for I have failed to find what he describes. Others as well as myself have found that objects in motion do not disappear; though one correspondent has spoken of 'flicker', seen peripherally, disappearing when attended to.

The second part of Mr. Thomson's letter also puzzles me; while I can conceive that "the effort to reconstruct an object from memory inhibits the exact perception of it", it seems to me that switching over "by means of a commutative mechanism", as he suggests, ought to produce a memory image in place of the percept which disappears. This is not, however, what seems to happen.

Finally, Mr. Thomson writes that the facts I adduced appear to be new. Having failed to locate similar observations in Aubert[1], Baird[2] or Helmholtz[3], I had hoped this was so. Since publication, however, further search suggests that observations by Troxler[4], who was studying reports of a blind spot, and (according to Helmholtz's reference to their work) by Aubert and Förster[5], who were studying the sensitivity of the retina, refer to differential disappearance of objects in the peripheral field in a way conformable to what I have described.

Even nearer to the mark is a note by J. H. Hyslop[6], to which Prof. R. C. Oldfield has directed my attention, in which the following occurs: "When mentally preoccupied and having the eyes fixated on a given point or object I often notice the disappearance of a part of the indirect field of vision.