

### CORRECTION ON "CHRONIC INTERMITTENT ANOXIA . . ."

THE writer is embarrassed by his discovery that in revising a manuscript entitled "Chronic Intermittent Anoxia and Impairment of Peripheral Vision," an important paragraph was inadvertently omitted from the version which appeared in *SCIENCE* for June 15, 1945. In checking back it becomes evident that the omission arose in the author's final copy, and that the editors of *SCIENCE* are in no way responsible. The paragraph which should have been inserted between the two paragraphs of column 2, page 615, is as follows:

Serial determinations of alveolar gas tensions for each visual test day were carried out on sixteen of the twenty subjects by Dr. Wright Adams, but no relationship could be established with the impairment of peripheral vision. Similarly, in a smaller number of subjects no clear relationship could be established between the visual effect and renal vascular changes (Dr. Alf S. Alving), cardio-vascular changes (Dr. Emmet B. Bay), blood chemistry (Dr. Guzmán E. S. Barrón), psychiatric changes (Dr. Hugh T. Carmichael), electroencephalograms (Dr. Theodore Case), peripheral blood flow (Dr. Milton Landowne), certain metabolic effects (Drs. Henry T. Ricketts and A. Hughes Bryan), and certain additional neuropsychological indicators.

Through omission of the above paragraph, inadequate representation was given to the scope of the total war research project in which the psychological studies carried out by the writer constituted one aspect. In addition to their particular lines of investigation, each of the above men contributed generously of specialized knowledge and of time and energy to insure adequate clinical supervision of the experimental subjects and a valid interpretation of the impairment of peripheral vision as reported.

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### HOW STENTOR ANCHORS ITSELF

FOR two hundred years it has been known that the large ciliated infusorian called stentor alternates between free-swimming and fixed or temporarily anchored conditions. Swimming free it may find localities suitable for itself and its progeny; but temporarily fixed it feeds itself, joins with a neighbor and procreates its kind. Though the fixed state is so important our knowledge is far from satisfactory as to the way in which the animal anchors itself so readily and so readily breaks away again.

The early microscopists observed a slight enlargement at the foot end of the body and considered this functioned as a sort of sucker to hold the animal fast. And as late as 1926 precise methods of sectioning

stentor revealed what was interpreted as a mechanism to hold the animal fast by aid of atmospheric pressure.

However, the general understanding is that stentor holds fast by the aid of pseudopodia. These are of two sorts, large branches of the foot and fine threads that have been called setae-like cilia and also pseudocilia. But it has been contended that the anchorage is chiefly by cilia that form a brush or "scopula" as found in some other ciliates. There is also the view that upon certain substrates stentor anchors itself merely by the stickiness of the exposed cortex, a sub-ectoplasmic layer that comes to the surface at the middle of the foot.

Prolonged observation of *Stentor coeruleus* leads me to reject any sucker hypothesis but enables me to combine the other views as follows:

Stentor anchors in a series of actions that may or may not go on to the most complex expression. The foot as an abruptly truncated ending of a stalk is applied to a suitable substrate and the central cortex adheres and spreads out. Some of the cilia of the lower end of the body show remarkable activity till they reach and stick to the substrate, whereupon they transform into the stiff radiating fine pseudopodia or pseudocilia that hold the animal firmly. Finally the entire foot region flows out radially as gross pseudopodia, that do but extend the area of activity of the real adherents, the cortex and cilia. The actual adherence is by the stickiness of the cortex and of such cilia as transform into holdfasts. Thus the large pseudopodial branches of the foot, so evident in many illustrations of stentor, are important fixation organs in the sense that they increase efficiency by spreading the adhering surfaces of the cortex and cilia over a larger area.

In the swimming phase the animal has a minimum exposure of cortex at the middle of the foot and this is surrounded by cilia. These two elements evolve and also the whole foot with its colored and ciliated stripes spreads out radially as the ectoplasmic component of the completed foot disk. This disk is variously adjusted to fit against different surfaces, flat or convex or linear. Its outlines slowly change like those of an amoeba.

When the body contracts from external stimuli, or inner states, the foot disk also contracts. Either known stimuli or unknown inner changes may lead to the breaking away of the disk. This is commonly instantaneous but may show stages in which there is dedifferentiation of the attaching organs ending in the gross pseudopodia being withdrawn into the foot and the finer pseudopodia changed back into locomotor cilia of the body.

Polarity in stentor then is marked by great diversities in structure and action at the two poles. The