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 subectoplasmic 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

peristome is highly specialized for the collection, selection and ingestion of food by means of ciliary and myonemal structures. But at the opposite pole the foot frequently differentiates and dedifferentiates anchoring organs. These are made by the sticky cortex and the brush or "scopula" of cilia that change function, but there is also a reversion to primitive rhizopod activity involving all parts of the foot.

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THE THREAT OF ANTI-VIVISECTION

SOME careful consideration by appropriate scientific bodies should be given to the threat of anti-vivisection which has flared up recently, particularly in New York State.

The Hearst press succeeded in inflaming the uninformed layman against animal experimentation and medical research. Medical opposition was weak and very nearly ineffectual. If more concrete measures can not be adopted soon it is not impossible that state and even national legislation will be enacted to end scientific animal experimentation.

The means for handling pernicious legislation of this kind exists, but laxity in employing it has created the necessity of calling this fact to the attention of those who will realize its import.

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THE MATHER COLLECTION OF PORTRAITS

THE National Park Service has placed in the Library of Congress the nucleus of a collection of portraits of national park executives as a memorial to Stephen Tyng Mather, first director of the National Park Service. This collection marks a new approach to the history of national parks by bringing together portraits of the most prominent persons who have been associated with national park work and is intended to include portraits of at least 500 individuals. The collection will include (1) Park executives, present and past; (2) persons who have been associated with the establishment and development of national parks and national monuments; (3) persons who have contributed to national park art and literature, and (4) persons whose names are associated with these areas either through place names or designations of species which occur in these areas.

The collection is filed in the Division of Prints and Photographs in the Library of Congress in vertical steel cases. Each portrait is placed in a standard size envelope marked with the full name and year of birth of the individual and is accompanied by an index card giving at least six items of information, *viz.*, (a) full name; (b) date and place of birth; (c) position; (d) titles of the author's publications, if any; (e) reference to a published biography, if any, and (f) indication of the association of the individual with park history.

While the national park idea dates back only seventy-five years, to the historic camp-fire of the Washburn-Langford Expedition on September 19, 1870, at the junction of the Firehole and Gibbon Rivers in the western part of the present Yellowstone National Park, the history of some of the other parks and monuments goes back much further, that of Death Valley National Monument and Yosemite National Park a full century or more, and that of St. Augustine, Cabrillo and Coronado National Monuments to the early days of the sixteenth century.

For some years after the creation of Yellowstone National Park in 1872, the reservation was in charge of superintendents appointed by the Secretary of the Interior, but in 1886 a troop of cavalry was detailed by the Secretary of War, upon request of the Secretary of the Interior, with the duty of patrolling the park, and in 1890 similar details of troops were made to Yosemite, Sequoia and General Grant National Parks. The military administration of the parks continued until 1914.

During the fourteen years that Mr. Mather was in charge, the various scattered areas were welded into a well-organized bureau, in accordance with the provisions of the National Park Service Act of 1916, park standards were adopted, the system of park concessions was reorganized, troops were removed and protection provided by park rangers appointed from civil life. The Tiogo Road across the Sierra was opened to travel without payment of tolls, funds were raised to preserve certain big tree groves in Sequoia National Park, then in danger of destruction by lumbering interests, a ranger service hall was established in Yosemite National Park and a system of park to park highways was provided to facilitate travel by persons who wished to visit several of the parks without the inconvenience of making long detours. New and attractive publications were issued and lectures by park naturalists were arranged to assist visitors in appreciating the full meaning of the various points of interest. Much progress was also made in the elimination of private holdings in several of the parks. These are only a few of the things that Mr. Mather accomplished and by which he will be remembered in the future.

The "Mather Collection" is only one of several methods of visualizing and summarizing the great work of conservation, interpretation and education which the National Park Service is carrying on under benefit of all of the people.

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