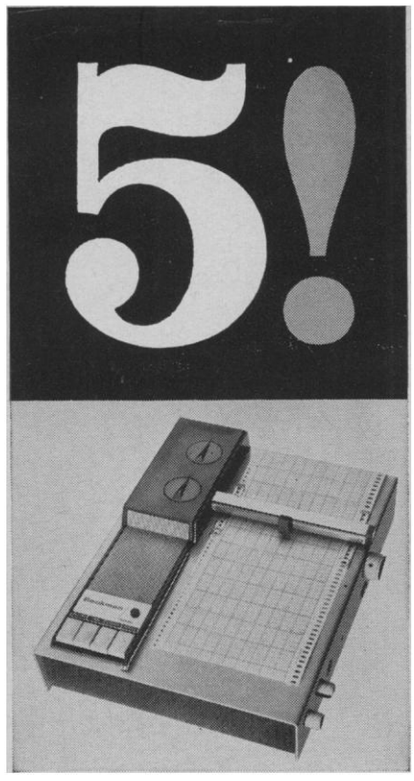

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Letters

Sensory Deprivation

In their article, "Sensory deprivation and hallucinations" [*Science* **133**, 1808 (1961)], Vernon, Marton, and Peterson attribute the beginnings of such research to the 1954 McGill studies. It should be noted that hallucinations resulting from the use of shaped ping-pong balls to achieve diffuse, homogeneous illumination were reported by Hochberg, Triebel, and Seamon [*J. Exptl. Psychol.* **41**, 153 (1951)], and reprinted in Beardslee and Wertheimer, Eds., *Readings in Perception* (Van Nostrand, Princeton, N.J., 1958), pp. 61–69: "Color adaptation under conditions of homogeneous visual stimulation (*Ganzfeld*)." This paper described investigations undertaken to measure the fading and blink-restored recovery of the illuminating color, which apparently surprised Vernon *et al.* The occurrence of some form of hallucinatory experience for 5 out of 11 subjects was described as an incidental phenomenon.

As pointed out in that paper, it is necessary to paste back the subjects' eyelashes in order to achieve a homogeneous visual field. If Vernon *et al.* had taken that precaution they might have gotten more frequent reports of hallucinations.

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We greatly appreciate the interest Gruber has shown in our work. He is quite correct in relating the technique of homogeneous visual stimulation to Hochberg *et al.*, and it was obviously their technique which we tried to copy. That is, we copied most of their technique; we did not paste the upper eyelashes to the upper eyelids, for several reasons. In the first place, we found it easily possible to so fit the eyecaps that the eyelashes did not hit them; we also found that eyelashes did not prevent the achievement of a homogeneous visual field for any of our subjects; and finally, we felt that to paste the eyelashes back for a 48-hour period would lead to unnecessary subject discomfort.

Gruber states that Hochberg *et al.* found recovery of the illuminating color resulting from blinking. This is precisely what they *did not* find. Instead they report: ". . . brief blinking during and after adaptation had no apparent effects. . . ." They did find, however, a brief restoration of the illuminating color in five of ten subjects following deliberate left-right eye movements. But they attach little importance to that finding, since, in the absence of a fixation point, eye movements must have continuously occurred.

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Alpha Blocking

Aside from a certain querulous tone, I can find little to object to in the report by Stern *et al.* [*Science* **134**, 388 (11 Aug. 1961)] commenting on an earlier report by Wolff and me on a study of cerebral function [*ibid.* **131**, 1617 (1960)]. On close reading of both communications, the observations of Stern *et al.* seem to cast doubt primarily in our somewhat parsimonious interpretation of our original findings. Stern and his associates merely replicate the question originally asked long ago by Knott and Henry as to whether or not the alpha blocking to sound before the appearance of light when the two are paired really constitutes a conditioned reflex. In the second paragraph of our report we stated: "Such a phenomenon has been known as a temporary cerebral connection or a conditioned cerebral response (it being understood that the phenomenon does not fulfill the criteria for Pavlovian conditioning)."

We have been engaged in studying the presence or absence of this phenomenon in health and disease, but have not been concerned with the interpretation of the phenomenon either as a "conditioned reflex" or as an "adaptation to a complex stimulus." The term *conditioned cerebral response* has for some years been commonly used by neurophysiologists studying this phenomenon and is understood by those familiar with the field to imply a phenomenon which is different from Pavlovian conditioning, whether or not it implies "adaptation to a complex stimulus." The term was thus used by us because of its common acceptance by investigators in this field, and it was clearly stated not to imply classic Pavlovian conditioning.

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