

meditation, when the EEG showed a pattern of sustained drowsiness. Other phenomena of the hypnagogic state were also present, such as vivid visual imagery and myoclonic jerking. As the onset of sleep may activate an abnormal EEG, so meditation seems to facilitate the firing or spread of aberrant impulses. We therefore feel that a history of seizures should be a contraindication to the practice of meditation.

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SUSAN R. DONALDSON, M.D.  
Boston, Mass.

P.B.C. FENWICK, M.R.C. PSYCH.  
London, England

## Effects of Meditation

SIR: In "Overview: Clinical and Physiological Comparison of Meditation with Other Self-Control Strategies" (March 1982 issue) Deane H. Shapiro, Jr., Ph.D., compared the efficacy for stress and tension management, and the potential side effects, of meditation and other techniques.

In Eastern cultures, however, the desired effect has been a growth of one's "awareness." The process begins with the ability to enter a state of deep relaxation and relatively quiet mind. One then allows a relaxed attention to one's own thoughts, breath, and bodily sensations. One observes how a thought arises and leaves; how thoughts are linked to feelings, such as fears and anxieties; how the breath reflects both thoughts and feelings.

To experience a disturbing habit pattern, for example, is to be aware of how it first arises and becomes manifest in the mind and body. This can be a most disquieting experience, with the "side effects" Dr. Shapiro noted, such as disorientation, dizziness, anxiety, fear, and depression. One can bring the state of deep relaxation to such feelings and change their quality so that a fearful feeling becomes more a thought and sensation and less "fearful." A sense of depersonalization or relaxing of one's self-image can lead to a "loosening" of usual habit patterns and greater freedom of change.

This goal of greater self-awareness and freedom from a static self-image is not easily measured. Indeed, experience with deep relaxation allows one to venture into dark regions of one's being and explore with a clear awareness how such negative patterns repeat themselves. Relaxation is a necessary early step in this process.

DANIEL A. SWITKES, M.D.  
Berkeley, Calif.

SIR: Dr. Shapiro's excellent article will doubtless interest many practitioners who may wish to recommend such techniques to their patients. We would like to mention a possible adverse effect of meditation that is somewhat more severe than those noted by Dr. Shapiro: namely, increased seizure activity in epileptic patients. This caution is based in part on our own work with transcendental meditators (1) and in part on anecdotal data gathered from acquaintances who meditate.

In monitoring EEGs during transcendental meditation, we found one subject whose resting EEG showed occasional brief bursts of 3 spikes and wave complexes per second. During meditation, the frequency of these complexes increased threefold. The subject had no clinical history of epilepsy. However, in subsequent inquiries about epileptic patients who meditated, we found that grand mal seizures were an acknowledged side effect in epileptic meditators and that some patients had dropped out of intensive meditation courses because of the increased frequency of seizures. Particularly unnerving was the approach of the meditation teachers, who regarded the seizures as a beneficial discharge of stress and an indication for further meditation.

An increased frequency of seizures during meditation is consistent with the decreased level of arousal that we observed during

## Dr. Shapiro Replies

SIR: The comments by Switkes and by Donaldson and Fenwick together highlight a critically important clinical and methodological issue in meditation research.

Dr. Switkes' letter accurately points out the need to look at the larger philosophical and values context involved when discussing meditation and attempts to ensure that Western reductionistic biases do not trivialize and/or misinterpret clinical outcome measures. This is an important position and suggests that, as scientists, we be sensitive to issues of paradigm clash between Eastern and Western disciplines (1), to unduly pathologizing that which we do not understand (2), and to looking at meditation as an altered state of consciousness (3). Dr. Switkes suggests a vision of positive psychological health involving greater self-awareness, loosening of usual habit patterns, and greater freedom of change. On the other hand, Dr. Switkes' comments themselves attempt to "trivialize" the adverse effects of meditation (4), suggesting without exception that one can bring deep relaxation to the adverse effects and thereby reduce them. In other words, the antidote for problems arising from the practice of meditation is more meditation. Although Dr. Switkes rightly points out that it is difficult to measure aspects of the altered states experienced during meditation, any view that does not allow disconfirming evidence to alter one's prior beliefs is not science but evangelical sermonizing and ends up with a noncritical acceptance of meditation per se, regardless of consequences (5).

Thus, the letter by Donaldson and Fenwick can be seen as an important counterbalancing view. They point out one potentially critical adverse effect that may occur in meditation—the heightened possibility of seizures. Further, as they note, meditation teachers often regard this as "beneficial discharge of stress and an indication for further medication."

I believe that as scientists we need to be sufficiently open-minded to be able both to look for detailed contraindications and indications of meditation, as suggested by Donaldson and Fenwick, and to keep the broader perspective of the goals of meditation and psychological health for which the technique might be used, as suggested by Switkes. What truly seems needed, particularly in the study of a technique such as meditation, is an approach that can integrate both ends of the continuum, to ensure that critical evaluation does not hinder us from keeping the larger perspective of the goals of psychological health and that the larger perspective does not limit us to uncritical sermonizing. Ultimately, I believe that this middle way is most fully and truly within the spirit of our scientific tradition.

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