

Aserinsky E & Kleitman N. Regularly occurring periods of eye motility, and concomitant phenomena, during sleep. *Science* 118:273-4, 1953.  
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Approximately every two hours during sleep, clusters of rapid, jerky, binocularly synchronous eye movements appear for about 20 minutes in association with a low-voltage electroencephalogram and a high degree of dream recall. This can serve as an objective measure of dream incidence and duration. [The *SCI*® and *SSCI*® indicate that this paper has been cited in over 515 publications since 1955.]

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September 23, 1987

According to my anti-intellectual "Golden Manure"<sup>1</sup> theory of discovery, a painfully accurate, well-focused probe of any minutiae is almost certain to divulge a heretofore unknown nugget of science. This was the philosophy that propelled me to make continuous measures of eye movements while people slept. It was also a credo of desperation.

For several months I had undertaken the assignment of determining whether blinking stopped abruptly or gradually at sleep onset. When I could not establish a pragmatic definition for blinking, I confessed my inadequacy to my advisor and therewith altered the parameter of "blinking" to "lid movements," which of course negated the original project. However, like cleaning the Augean stables, the new task was at least feasible. All that was necessary was a compulsive drive to stay up all night and measure miles of pen squiggles.

I was convinced that with the eye's ubiquitous representation in the brain, the quantification of ocular motility during sleep (which had never been measured meticulously before) simply had to be rewarding. What ensued was an amassing of voluminous data that resembled a manure pile sans scientific nuggets. Still, I persevered, and rapid eye movements (REMs) ultimately appeared. Upon connecting these REMs with a waking-type electroencephalo-

gram and dream recall I was in an odd situation. The results completely contradicted sleep theory as espoused by Ivan Pavlov and my own sponsor, Nathaniel Kleitman, who expected the cerebral cortex to be quiescent in sleep. Furthermore, Sigmund Freud's concept that dreams functioned to protect sleep from disturbing thoughts was not easily reconcilable with a REM (dreaming) state that recurred with clocklike regularity.

In 1953 I made the first public announcement of the discovery<sup>2</sup> and introduced the acronym REM on a slide that will soon be published.<sup>3</sup> While "jerky" seemed more descriptive of the eye movements than "rapid," I chose the latter term to eliminate humorous connotations. Ironically, three decades later I found that REMs are indeed jerky in the mathematical sense.<sup>4</sup>

The worldwide publicity accorded to REM culminated in a cover on a popular magazine depicting a sexy female being ogled by a white-coated scientist, presumably myself. This notoriety did little to alter the Department of Physiology's attitude that the research was of dubious merit; to assuage my concern, the faculty assured me that the awarding of the doctorate was not solely contingent on the value of a dissertation. Meanwhile, Kleitman, convinced of the validity of my observations, had me train W.C. Dement in my techniques so that the study could be corroborated on schizophrenics. Before leaving Chicago to study fish at the University of Washington, I hastily submitted an extended version of the earlier abstract (done for a meeting of the Federation of American Societies for Experimental Biology) to *Science*, and that paper became the *Citation Classic*. The complete paper on REM did not achieve exalted status; it was first rejected by *Electroencephalography and Clinical Neurophysiology* before its acceptance by the *Journal of Applied Physiology* in 1955.<sup>5</sup>

The REM state became recognized as a central nervous system condition uniquely different from waking or sleep. This instigated new proposals for functional organization of the brain<sup>6</sup> and a myriad of papers reporting how certain bodily functions or drugs operated during the REM state.

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