

## BOOK REVIEW

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# The Golden Age of Rapid Eye Movement Sleep Discoveries 1965-1966

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Reviews serve important source of information about progress on a particular subject often during a specific period, however, it differs from classical history in that often the former attempts to relate the historical events with the existing state of knowledge. Dr. Claude Gottesmann, a French professor and a sleep researcher, took up a herculean task of reviewing the progress and development of the knowledge in the field of rapid eye movement (REM) sleep over the years. This is one of the several reviews on this broad subject area that he has contributed in recent years.

The reviewer, Prof. Gottesmann, has carefully collected the papers published during those two years (1965-1966) under review and brings out the highlights of those papers. On the scientific issues the author has tried to bring out the experimental details to a reasonable extent of individual papers with perspective. The salient features of a paper including the results as well as the methods used have been moderately mentioned so that the present day readers get to know about the techniques used as well. The extent of his studying the papers may be judged by the fact that meticulously he has pointed out if any significant paper has been missing in the reference list in those earlier papers. The author also reviewed several important

reviews that came up during those years, thus, the present readers can get to know about the subject for an extended period of time. The experimental species and the dose of drugs used, whether single case study or study in twins or in human newborns also have been highlighted. In most places findings from individual papers have been written in separate paragraphs so that the reader gets to know the chronological progress on the subject. He has tried to link the old findings with the present literature. Thus, in my opinion, this review would be of immense help to the beginner as well as established sleep researchers in general and REM sleep researchers in particular.

In the modern electronic era of Internet and PUBMED it has become reasonably easy to collect the salient features on most of the scientific papers, however, as we know the data base does not contain abstracts earlier to mid 1970s. Hence, one must appreciate the painstaking efforts made by Gottesmann to collect the papers, read and summarize them for the readers. This reflects the author's love and feeling for the subject, which needs a special mention and he needs to be congratulated for the same. Another significance of this review is that Gottesmann being a French, has brought out the essence of French articles in English language, which

otherwise often remains unnoticed by the scientists who do not know French. It is not out of place to mention here that sleep research has progressed significantly in France and a large data is available in that language which sometimes remains unrecognized; this work would help bringing those studies to the front.

Based on behavioral observations in animals, Gottesmann argued in the book that mention of the state of dream sleep, a state similar to the present REM sleep, may be found in ancient historical literatures as early as about first century BC. However, I think, if one considers the eastern philosophical literature, the Vedas, the present REM sleep state resembles some of the states of consciousness, which may or may not be within sleep state, the swapna, the thuriya and the fourth state of consciousness. The modern REM Sleep, as identified by its present characteristic signs, was discovered by Aserinsky and Kleitman in the year 1953 in humans and then in the animals by Dement and Jouvet. It took about a decade for the scientific community to pick up the subject and there was explosion of research on the topic during the two year period 1965-1966. The quantity as well as the quality of research during those two years led Gottesmann to term it as "The Golden Age of Rapid Eye Movement Sleep Discoveries".

This review highlights that during those years how extensively behavioral and electrophysiological techniques were combined to understand the subject of REM sleep. It is amazing to note that even during those two early years REM sleep research was so fertile that the scientific community studied and related REM sleep with a host of behaviors including olfaction, vision, penile

erection and several other behaviors and so on. Nevertheless, in this book the author did not attempt to correlate the changes in neurotransmitter, cellular, biochemical and molecular aspects of REM sleep research which are often the focus of most of the present day REM sleep research. I think that is probably to keep the volume within limit; already the review has taken a shape of a book rather than a review. I remember Claude's anguish and repent when a very well known journal expressed inability to publish his review because of its length; hope now he does not regret any more. Notwithstanding, I recommend that the reader may read this review along with Gottesmann's earlier reviews where he has dealt with changes in other physiological parameters and other such reviews to get a comprehensive picture on the subject. Besides, as a constructive criticism, I think at certain places there has been over or less emphasis on certain findings, which may be due to language expression inadequacies. Also, although he narrates the findings of old literature and linked those with the present literature, he has refrained from commenting on lacunae in the knowledge; which could be because he did not want to bias the reader with his views. However, at certain places such comments would have been of significance and exciting to them who are joining the field now and would have been welcome, I suppose.

Overall, Prof. Claude Gottesmann has done a great job towards the REM sleep research community by collating the knowledge in this review for which I personally thank him with deep sincerity and I think it would be welcome by other readers as well.