

**Atlas of Electroencephalography Volume 1 Awake and Sleep EEG: Activation Procedures and Artifacts, 2nd Edition.** *Philippe Gelisse, Ariel Crespel, John Libbey Eurotext, 2016, Pages: 406, illustrated EEG atlas with annotations. ISBN: 9-782-792-01507-8*

**OVERVIEW:** This is a wonderful and valuable EEG Atlas covering the awake and sleep EEG. It allows the reader to glance through at random, as well as to look at particular topics, or learn progressively at a more leisurely pace, and in greater depth. The Atlas takes the reader beyond just the obvious and the typical EEG abnormalities to the realm of the “borderline,” the patterns of epileptiform appearance but with more benign significance. It progressively educates the reader by dint of the excellent EEG examples provided on each page on how to distinguish the many normal variants from the abnormal.

**READERSHIP:** The book is directed at beginners embarking on EEG, but is advanced enough to provide even experienced readers with the authors’ unique insights or at least reacquaint them with patterns rarely encountered. Readership will encompass neurology residents, electrophysiology, epilepsy and neuro-intensive care Fellows, and clinicians interested in EEG and epilepsy.

**CONTENT:** The second edition of this book is systematically organized into four “chapitres,” with 29 to 78 examples illustrating “normal awake electroencephalogram and unusual EEG patterns,” “activation procedures,” “EEG and sleep,” and “artifacts.” The authors open with their “philosophy” of EEG analysis, through four stages of learning from “nothing makes sense,” through “you think you understand, but see abnormalities everywhere,” to “you gain more hindsight. You recognize a spike but wonder if it is significant,” and finally “you are able to form your own opinion, even if different from your teachers.” The authors emphasize that EEG alone should not make the diagnosis most obvious when clear and classic epileptiform patterns are found in asymptomatic individuals. “EEG is a tool used to confirm clinical hypotheses,” and should not be used without semiological evidence. Upcoming volumes will deal with pathologic EEGs.

A Glossary provides concise definition of general terms, description of EEG elements in time, place, frequency, morphology, regularity, repetitiveness, and amplitude, ending with definitions of some technical terminology. There is a brief description of physiologic EEG patterns, condensed displays at 15 mm/second, followed by enlarged displays (30 mm/second), providing full-sized EEG examples. Legends and plates permit testing oneself.

**STRENGTHS:** The logical layout for a beginning EEG-er, clarity of analysis of EEG patterns and morphologies, and a clear enunciation of how to distinguish these patterns from possibly similar-appearing, but pathologic patterns. The Atlas can be used for self-testing by looking at just the right-hand page and testing oneself. A further strength is the elaboration on arousal patterns, a section often overlooked in atlases, and often misdiagnosed by

EEG-ers as abnormalities. These include the particularly difficult frontal arousal rhythms in the young—presented in a young child, child and adolescent, along with hypersynchronous patterns. There is alpha arousal, muscle twitches and atonia, and discussion of non rapid eye movement and rapid eye movement sleep patterns from infancy to adulthood. The authors take pains to show how many of these variants (e.g., subclinical rhythmic epileptiform discharge of adults, 6 Hz spike-and-wave, 14-and-6-Hz positive bursts, wicket spikes, positive occipital sharp transients of sleep) change or occur with different sleep stages.

Of note is a particularly challenging example of distinguishing hiccup artifact from an epileptic discharge and glossokinetic artifact from slow delta activity. In some important examples, both the benign variants and the pathologic epileptic abnormality are shown in the same patient on the same page. The fun and fascination that the authors had in putting together this Atlas is almost palpable as they describe and then illustrate with examples from their vast experience examples of mu rhythms on the same page as rhythmic mid-temporal discharges.

**WEAKNESSES:** Minor weaknesses, perhaps, stem from the direct transliteration of the text from French to English, leading to the use of “chapitres” rather than chapters; unusual prepositions (“superimposed with; are blocked the eyes open”), or terms not used in English (wakefulness alpha rhythm; paraphysiology; subcontinuous), or even of terminology: English readers may not be used to “forked” alpha; “ample...waveforms,” or “sinusoidal aspect.”

The eye compression test, even with a careful outline of technique and caveats, is probably rarely used in the United States. The authors themselves provide a salutary example of prolonged asystole, leading to a cardiac arrest of some 22 seconds.

**COMPARISON:** The study of clinical EEG has produced a number of atlases. Like many of the better ones, this one uses a landscape format along with full-page illustrations of the examples in question. Of possibly unique importance in this one is that particular attention has been given to distinguishing normal EEG variants from abnormalities on the same page and of the various effects of drowsiness, arousal, and sleep on these phenomena.

**REFERENCES:** Other atlases may provide readers with exhaustive lists of references, whereas other resources such as PubMed and other search engines can provide specifics. The authors restrict themselves to some of the essential references. Of particular interest to the American readership, there are several references not often found in Anglo-Saxon atlases and EEG reviews. These references bring the reader to key, original publications of these EEG phenomena derived from French sources to recognize some of the “grandparents” of the present generation of EEG knowledge such as Gastaut for mu rhythm and Naquet for subclinical rhythmic epileptiform discharge of adults.

**FIGURES:** The figures are clearly displayed in the brief introductory technical sections on electrode placement and montages and then on each of the illustrative EEG plates, first at 15 mm/second on the left-hand side of the open book, then enlarged at 30 mm/second on the right. They are of excellent quality and provide superior examples of all elements discussed.

**RECOMMENDATIONS:** This comprehensive analysis of normal awake and sleep EEG should be a standard text for all EEG-ers, from trainees to the more experienced as it thoughtfully distinguishes the normal from the near-normal/abnormal and provides clear examples often not found in routine EEG atlases. Students, neurophysiologists, epileptologists, and pediatric and

adult neurologists will all find something of special interest within its covers.

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P. W. Kaplan received royalties from books on epilepsy, EEG and neurology from Wiley-Blackwell and Demos; fees as expert witness on qEEG and seizures; consultant to Cadwell; served on the board of the ACNS and the ABCN.