

In Memoriam Henri Gastaut 1915–1995

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*“J'aimerais mieux ne rien dire
que m'exprimer faiblement.”*

Van Gogh

Henri Gastaut died in July 1995, at home in Marseille, at the age of eighty. His death was a great loss to the international epilepsy community, for his contributions knew no national boundaries. There are few names that are as synonymous with epilepsy as his: he was one of the great pioneers who established epileptology as a respected discipline within neurology and whose contributions advanced the knowledge and treatment of epilepsy enormously (Fig. 1). His intelligence was so keen and his personality so exceptional that no one who met him could ever forget the encounter.

ACADEMIC CAREER

Henri Gastaut was born in Monaco on April 15, 1915. After obtaining a graduate degree in the natural sciences, Gastaut obtained his medical degree from the University of Marseille. Early in his medical studies, he manifested the enormous thirst for knowledge and appetite for intellectual challenges that characterized his entire professional life. He specialized in neurology under the tutelage of Professor Henri Roger and simultaneously engaged in specialized studies of normal and morbid neuroanatomy under the direction of Professor Lucien Cornil, then Dean of the University of Marseille School of Medicine.

He was appointed associate professor (“agrégé”) at the University and then succeeded Cornil as Professor of Pathological Anatomy. However, Gastaut had already recognized the possibilities for using

the new technique of EEG to study normal and abnormal cortical function, and in 1953 he became Head of the Neurobiological Laboratories at the Marseille Hospital. In recognition of his outstanding contributions in EEG and related fields, a chair in clinical neurophysiology was created for him in 1973, and he held the permanent position of Professor of Clinical Neurophysiology from 1973 until his retirement in 1984.

In 1967, Gastaut's colleagues elected him Dean of the University of Marseille School of Medicine. The wisdom of this choice was proved in 1968, when Gastaut's exceptional intelligence, diplomacy, and communication skills allowed him to navigate successfully that period of student unrest and political turmoil and to lead the medical school community into the quieter era that followed.

In 1971, he was elected President of a new, second branch of the University of Aix-Marseille which he had helped organize. He served as President of the National Conference of French University Presidents for 2 years, a time of accomplishment due to his administrative skills. He became extremely influential both with his academic peers and the important government ministries.

From 1960 to 1972, Gastaut's clinical and academic activities were divided between the University Hospital La Timone and the Centre Saint-Paul. During the same time, he was Head of one of the units of the National Institute for Medical Research (INSERM) which was dedicated to epilepsy. In 1984, he created the Institute of Neurological Research, a center that was cosponsored by the World Health Organization (WHO), which Gastaut served as an important consultant.

ACHIEVEMENTS IN EEG AND CLINICAL RESEARCH

EEG was Gastaut's passion. He trained with W. Grey Walter in Bristol, and he understood from his

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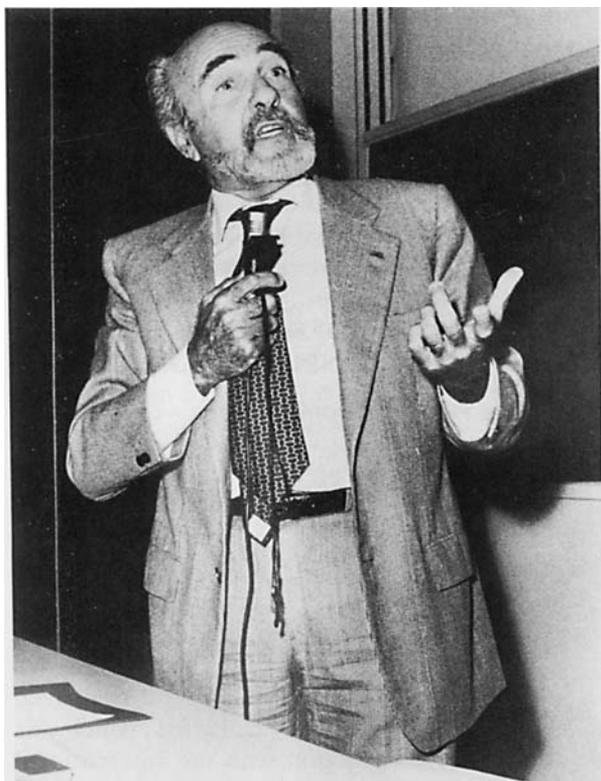


FIG. 1. Gastaut lecturing and commenting during a meeting.

first studies the unique opportunity that EEG offered for studying brain function, especially as it related to epilepsy. Between 1947 and 1987, Gastaut was the driving force behind an uninterrupted series of major contributions concerning neurophysiology and epilepsy.

With his wife Yvette as his close collaborator, Gastaut defined five of the major human EEG patterns recognized by the International Federation of EEG and Clinical Neurophysiology: lambda waves, mu rhythm, pi rhythm, posterior theta rhythm, and rolandic spikes. He established several methods for activating abnormal EEG discharges, including photic stimulation and photic-pentylentetrazol activation. He used EEG to study the relation between cortical physiology and various states of altered consciousness, including both those he considered natural (meditation, ecstasy, oriental mystic techniques), as well as those he termed artificial (psychoactive drugs, biofeedback). He also studied Pavlovian and operant conditioning and made major contributions to understanding of the clinical manifestations and physiological correlates of the parasomnias (pavor nocturnus, somnambulism, enuresis).

Always and above all, Gastaut was an epileptologist, and his work addressed almost all clinical as-

pects of seizures and epilepsy. Seizure semiology was a particular interest. Stimulated by a stay at the Montreal Neurological Institute, he refined the description of seizures of temporal lobe origin and reported the behavioral manifestations of seizures occurring after stimulation of temporolimbic structures in experimental animals. He described unilateral seizures, tonic seizures, atonic seizures, and typical and atypical absence seizures. Beyond seizure semiology, however, Gastaut was committed to understanding and elucidating the complete phenomenology of different types of epilepsy. His work in photosensitivity led naturally to studies of a group of photosensitive epilepsies and, among these, his careful definition and delineation of patients with self-induced photosensitive seizures and those with television-induced seizures deserve special note. He also described startle epilepsy and epilepsy manifested by hemiconvulsions and associated with hemiplegia (HHE syndrome). By recognizing essential common features, he individualized one of the most malignant childhood epileptic encephalopathies, the Lennox-Gastaut syndrome. As a major contributor to a large international collaborative study and as a singular presence at a subsequent international meeting, Gastaut was a vital catalyst in providing a modern definition of West's syndrome. His last important clinical discovery was identifying benign partial epilepsy of childhood with occipital spike-waves.

Gastaut's research did not result only in a collection of facts or observations about new phenomena. On the contrary, he always tried to understand the context and to integrate his findings into a more global understanding of brain function and epilepsy, in all its aspects. Early in his career, he understood the critical need for classifying seizures and different kinds of epilepsy based on their most important characteristics. Over the years, he progressively elaborated and refined a comprehensive nosology that is the basis of our present classification systems. His classification of epileptic seizures was the focus of the 1964 Marseille Colloquium (1). Subsequently, the Commission on Terminology of the International League Against Epilepsy (ILAE) reviewed the proposal at meetings in Hemstede and Vienna. Gastaut then integrated the various comments, suggestions, and criticisms into a revised version which was approved at the 12th International Epilepsy Congress in New York in 1967, formally adopted by the ILAE in 1969, and published in 1970 (2). Recognizing that epileptologists needed to use a common language in which words are recognized as having specific meanings, Gastaut began a *Dictionary of Epilepsy* in 1964. This work under-

went a long development before being published by the WHO in 1973 (3). ILAE's Classification of Epilepsies and Epileptic Syndromes, adopted in 1989, also had its origin in Gastaut's earlier proposals (4).

We cannot sufficiently emphasize Gastaut's comprehensive view of epilepsy. His strong background in anatomy led him to seek clinicopathological and physiopathological correlations wherever possible. In 1958, he dedicated the Marseille Colloquium to understanding the relationship between neuroradiological and EEG findings in the epilepsies (5). When computed tomography (CT) of the brain was introduced, Gastaut recognized its importance immediately and arranged through the WHO to have one of the first machines installed in the Hospital La Timone for investigation of all patients with epilepsy. The role of CT and its emerging contribution to epileptology was the theme of the 1975 Marseille Colloquium (6). He was also interested in the psychological and behavioral manifestations of epilepsy and organized several meetings on the relation between EEG and behavior.

Not all paroxysmal phenomena are epileptic, and Gastaut was concerned about accurate differential diagnosis. To this end, he conducted a series of studies of syncope, sleep disorders, and autonomic phenomena that became seminal contributions. He was an early proponent of the importance of epidemiological research, and his 1968 symposium on Epilepsy in Africa was the starting point for many later surveys of epilepsy in developing countries (7).

CONTRIBUTIONS TO PATIENTS

Gastaut understood that seizures and epilepsy were not abstract concepts but conditions that vitally affected patients and their families. Although much of his work was scientific, Gastaut was deeply committed to improving the well-being and quality of life not only of his own patients but of everyone afflicted with epilepsy. He recognized the antiepileptic properties of the benzodiazepines and was a strong advocate for their use not only to terminate status epilepticus but also to treat patients with chronic epilepsy. His studies of childhood epilepsies led to the development of specialized facilities that provided comprehensive, multidisciplinary care, and education. In 1958, together with Drs. P. and M. Kerfriden, he founded the Toul-archoat Center for education of children with epilepsy in Brittany. At the same time, he spearheaded the formation of a working group within the WHO on the importance of education about epilepsy. With the help of Madame Germain Poinso-Chapuis, the

former Minister of Health for France, Gastaut created the Centre Saint-Paul in Marseille in 1960 and directed it for the next 10 years. Like his Neurophysiology Department at La Timone, the Centre Saint-Paul under Gastaut's leadership became the crucible for many original ideas, research that contributed significantly to our understanding of epilepsy and to advanced patient care that benefited children with epilepsy everywhere.

CONTRIBUTIONS TO THE FRENCH LEAGUE AGAINST EPILEPSY (FLAE) AND THE ILAE

Gastaut's views and contributions were never parochial. He was devoted to epilepsy not only in Marseille, but also throughout France and, indeed, the world. He believed strongly that medical and scientific advances must be communicated as widely as possible.

After World War II, at the urging of William G. Lennox, Gastaut founded the FLAE in 1949 and served as its President until 1973. The FLAE was the sixth chapter of the ILAE. Gastaut organized the 7th International Epilepsy Congress, which was held in Paris in conjunction with the International Congress of EEG and Clinical Neurophysiology. After the 7th International Congress, he established the principle of a quadrennial meeting for all neurological science societies, including the ILAE. Gastaut was named President-Elect of the ILAE in 1953 and spent several months in South America and Japan helping develop ILAE chapters in those areas. He served as ILAE's Secretary General from 1957 to 1969, and he became its President in 1969, a term that ended in 1973. There is little question that Gastaut introduced new vigor into the ILAE. He played a leading role in reorganizing *Epilepsia*, which had not been published since 1955. The first volume of the fourth series appeared in 1959 with Gastaut, Gilbert Glaser, and Albert Lorentz de Haas as co-editors. Gastaut was instrumental in reestablishing *Epilepsia* as the main forum for clinical and experimental publications related to epilepsy. He greatly enhanced the journal's prestige by preferentially submitting his own papers to it and urging his colleagues and co-workers to do the same. He was a founding member of the International Federation of EEG and Clinical Neurophysiology and served both as its Secretary (1949-1957) and then its President (1957-1961).

THE MARSEILLE COLLOQUIA

Gastaut founded the Marseille Colloquia, meetings that under his direction became internationally known as premier forums for promoting epilepsy

research, developing consensus views about particular issues, defining critical research questions, and providing state-of-the-art clinical and scientific reviews (Fig. 2). The Colloquia were held almost every year, from 1950 to 1980, and each attracted 300–500 participants. Meetings were chaired by renowned neurologists or neurophysiologists, including Alfred Fessard, W. Grey Walter, Herbert Jasper, Theophile Alajouanine, Wilder Penfield, and Karl Zülch. The last Colloquium, in 1980, was chaired by Roger Broughton of Ottawa, who was one of Gastaut's first students in Saint-Paul who was not from France. The proceedings of this final Colloquium were published under the title: *Henri Gastaut and the Marseille School's Contributions to the Neurosciences* (8). Even after the Colloquia had ended, Gastaut continued to hold annual meetings, attended by many French and foreign neurologists, to review topics in epilepsy and EEG and discuss interesting cases, both his own and those presented by participants. In this activity, he was invariably aided by his devoted secretary, Mireille Taury. He brought the same level of energy, dedication, and enthusiasm for teaching to these smaller meetings as he did to the great international congresses.

HONORS AND AWARDS

Needless to say, Gastaut's contributions were recognized repeatedly, and over the years he accu-

mulated numerous honors and awards. He was a corresponding member of the Académie Française de Médecine, Commandeur of the Ordre National du Mérite, Commandeur of the Ordre of the Palmes Académiques. He received the Prix Monthyon of the Académie des Sciences. An officer of the Légion d'Honneur, he had been elevated to the grade of Commandeur shortly before his death. He was a corresponding member of the American Neurological Association and an honorary member of the American Academy of Neurology, the Belgian Royal Academy of Medicine, and the National Academy of Medicine of Buenos-Aires, as well as of many other national neurology and epilepsy societies. He received honorary doctorates from the Universities of Bologna, Liège, Ottawa, and Shanghai.

STUDENTS AND COLLABORATORS

From the earliest days, Gastaut attracted the best students and eminent co-workers. From France, these included Robert Naquet, Henri Régis, and Robert Vigouroux in neurophysiology; George Salamon in neuroradiology; Maurice Toga in neuropathology; Joseph Roger, Anne Beaumanoir, Micheline Vigouroux, Maurice and Suzanne Dongier, Carlo Alberto Tassinari, René Soulayrol, Michelle Bureau, and Charlotte Dravet in epileptology. Gastaut's achievements and great reputation



FIG. 2. Gastaut (front row, center) with participants at the 1964 Marseille Colloquium.

made Marseille a magnet for neurologists and neurophysiologists from around the world. It is impossible to name them all without inadvertently omitting some. Suffice it to say that Gastaut was particularly linked to Italy and Spain, and that there are numerous former students of his in these countries who continue his work and teaching. Epileptologists around the world who were trained by Gastaut or who collaborated with him are sufficiently numerous and have had sufficient impact in the field that they are known collectively as the Marseille School.

CONTRIBUTIONS TO ART AND CULTURE

A person of Gastaut's personality and energy could not confine himself only to medicine and science. Indeed, he had an insatiable curiosity for all human activities, especially those in art and literature. He tried to understand possible links between epilepsy and artistic genius in persons such as Fedor Dostoyevski, Gustave Flaubert, and Vincent Van Gogh, and he published several papers about this relationship. His research brought him into close contact with the cultural world, and he became knowledgeable about literature and the fine arts. He and his wife Yvette collected books, paintings, furniture, jewels, and other art works from around the world. Gastaut also had a long-standing interest in the human skull and the worship and rites surrounding it in primitive cultures. He assembled a unique collection of rare specimens which he displayed in his home office and which gave him great pleasure to show. At the end of his life, he donated

the collection to the Vieille Charité Museum of Marseille.

CONCLUSION

All of the foregoing is but the briefest summary of a full, intensely active life made possible by exceptional intelligence, enormous capacity for work, an ability to identify the critical issues unerringly, and an extraordinary gift for communicating complex issues clearly. No one who participated in a meeting with Gastaut will ever forget the experience (Fig. 3). He was always frank, and he never hesitated to contradict a speaker or interlocutor. This guaranteed that discussions, whether large or small, were always lively, frequently argumentative, even tumultuous but, at the same time, always profitable and rarely rancorous. His humor and great expressive ability were usually effective in diffusing anger and bitterness. Even those who disagreed with him recognized his unique qualities and contributions. It was truly a fascinating experience to work with him! At the very end of his life, still lucid and insightful, he was able to criticize his own work and took delight in seeing the reaction when he would announce that "only a minority of my studies had any real interest"!

We cannot conclude this tribute without acknowledging Henri Gastaut's wife, daughter, and twin sons. His was a close family, and Gastaut was deeply attached to all of them. They participated in all of his activities. He was proud to see his children's accomplishments, which include professorships in neurology and hematology.



FIG. 3. Gastaut in a lively discussion at University Hospital La Timone with Dr. Carlo A. Tassinari, Dr. Joseph Roger, and L. Bollis (of the World Health Organization) (left to right).

With Henri Gastaut's passing, the world has lost an incomparable personality and genius.

REFERENCES

1. Commission on Terminology of the International League Against Epilepsy. A proposed international classification of epileptic seizures. *Epilepsia* 1964;5:297-306.
2. Gastaut H. Clinical and electroencephalographic classification of epileptic seizures. *Epilepsia* 1970;11:102-13.
3. Gastaut H. *Dictionary of epilepsy*. World Health Organization, Geneva, 1973.
4. Commission on Classification and Terminology of the International League Against Epilepsy. Proposal for revised classification of epilepsies and epileptic syndromes. *Epilepsia* 1989;30:389-99.
5. Fishgold H, Gastaut H, Rayons X. Radioisotopes et EEG dans l'épilepsie. *Electroencephalogr Clin Neurophysiol* 1960;(suppl 17):1-266.
6. Gastaut H, Gastaut JL. Computerized transverse axial tomography in epilepsy. *Epilepsia* 1976;17:325-36.
7. Gastaut H. Epidemiologie de l'épilepsie en Afrique. *Afr J Med Sci* 1970;1:115-251.
8. Broughton RJ. Henri Gastaut and the Marseille School's Contribution to the Neurosciences. *Electroencephalogr Clin Neurophysiol* 1982;(suppl 35):1-447.