


Jean Aicardi: My Circuitous Path to Becoming a French Child Neurologist and Epileptologist

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Evolution of European and French Medical Education After World War II

Medical education in France and in most European countries underwent major changes in the latter part of the 20th century, owing in part to the creation of the European Community (that makes it possible to select educational institutions and places of employment across countries), and the student unrest of 1968. Up to quite recently throughout Europe countries differed, often considerably, in the details of their paths to medical accreditation. Rapid growth in efficiency of transportation and communication following World War II and progressive adoption of English as the lingua franca for international scientific communication led to more uniform approaches to higher education across Europe which, I am glad to report, nevertheless has retained its rich diversity of cultures and languages.

Before this increased streamlining in most European countries—and France was no exception—a major component of medical education was the magisterial lectures the titular professor of, for instance, pathology or psychiatry delivered in an amphitheatre to several hundred students. The blackboard—not the PowerPoint slide and video show—was the major teaching aide, supplemented in some cases by the professor demonstrating in the amphitheatre an anonymous patient, often, but by no means always, with his or her face masked. In addition, students spent time in groups of 10 to 20 in the

laboratories and for closer demonstrations of instructive patients in the clinic and in hospitals as observers or assistants to postgraduate junior physicians-in-training (house officers). European students almost universally viewed the professor as a formidable and largely unapproachable authority figure with whom opportunity for dialogue was typically nonexistent. To supplement the information he (there were essentially no women professors) imparted, students used textbooks, mostly in their own languages, but also mimeographed notes compiled and passed down by their predecessors and geared to the likely content of examinations. Most students were not made aware of medical indexes to the literature or encouraged to read current medical journals. In France, the obligatory thesis required for graduation as Doctor of Medicine was often a thin formality rather than a worthwhile scholarly endeavor.

At least since the days of Louis XIV in the 17th century and reinforced by Napoléon's administrative reforms, France has lived under an elitist system centered on Paris. This includes education, with universities and technical schools in large provincial cities considered second tier. Intense competition prevailed for admission to the prestigious university-level Parisian "*Grandes Ecoles*," incubators for leaders in many professions such as the military, engineering, mining, administration, and others; these institutions were characterized by highly selective recruitment with an early age limit and, often, guaranteed life-long career advantages. In medicine, it was not so much attendance at the *Faculté de Médecine de l'Université de Paris* but success in a series of competitive examinations (*Concours*) to fill the hierarchy of positions in the Paris public teaching hospitals (*Hôpitaux de l'Assistance Publique de la Ville de Paris—Hôpitaux* for short) and at the *Faculté* that paralleled the elitist tradition of the *Grandes Ecoles*. The *Concours* prevailed right up to the post of *Chef de Service (Patron*, ie, chief of a hospital department), and paradoxically it was the

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Concours des Hôpitaux that determined who could aspire to an academic career at the University. I mention this dual system because it influenced my career path and that of another French child neurologist with an international reputation, my friend and contemporary, the late Dr Gilles Lyon, whom I will mention later.

The first *Concours* was the *Externat*, open to medical students to become *Externes*, essentially observers in the *Hôpitaux*. A hierarchy of several subsequent *Concours* given by the *Hôpitaux* was their means to recruit physicians: *Internes* for 4 years, and *Chefs de Clinique* (instructors) for 2 to 4 years who gave clinical demonstrations of hospital patients to groups of 10 to 20 students. At the same time, *Chefs de Clinique*, appointed without *Concours*, prepared for the later competitive examinations for appointment to the position of *Médecin-Assistant*, then *Médecin des Hôpitaux*, responsible for care of the patients but with no teaching responsibility. This latter post lasted to the age of compulsory retirement at age 65 years. After a variable number of years, *Médecins des Hôpitaux* were usually appointed *Chefs de Service Hospitalier*, a purely hospital position that was not associated as such with any title at the University.

Médecins des Hôpitaux could compete to become university professors: first *Professeur Agrégé* by passing the *Concours d'Agrégation* given by the University, not the *Hôpitaux*, and then (and not necessarily) *Professeur Titulaire de Chaire Universitaire à la Faculté de Médecine* in a specific clinical discipline. Competition for a *Chaire Universitaire* was open only to *Professeurs Agrégés* who were *Chefs de Service* in one of the *Hôpitaux*. Success at the *Concours d'Agrégation*, like all *Concours* after the *Internat*, was entirely at the discretion of the jury; even though its composition was drawn by chance, jury members strongly favored candidates who were former pupils or friends. *Professeurs Titulaires* were appointed by a committee of professors upon presentation of their titles and publications. Being *Chef de Service* in one of the many Paris teaching hospitals was no guarantee of a *Chaire* at the *Faculté* because their number was limited, one for each discipline. As will be mentioned later, this limitation affected the only professorship open to Dr Stéphane Thieffry, chief of a Unit at the *Hôpital des Enfants Malades* which was in fact (though not in name) the first child neurology service in France. The Unit absurdly had to move to another hospital from 1964 to 1979 in order to accommodate Dr Thieffry's nomination to a *Chaire Universitaire* since the nomination required that he be both *Chef de Service* and *Professeur Agrégé*.

For the reasons stated earlier, the organization of European medical education has changed drastically from what it was in the middle of the 20th century when I was in training. Medical education at all French medical schools now closes with a comprehensive anonymous computerized examination. It is given simultaneously nationwide, much like the United States Medical Licensing Examination (USMLE). Marks on this national examination rank all the graduating medical students in France, which influences their choices of medical careers and the city and postgraduate training ("*Internat*") in a teaching hospital

open to them. This step is particularly critical for those who aspire to an academic career. Students with lower rankings have access to less prestigious postgraduate hospital training slots and specialties.

Student Days and the "Externat"

I was born in Rambouillet, a small city 50 kilometers from Paris, the seventh child of a close-knit family from the Provence. My father, originally a naval officer, developed an interest in radiotelegraphy shortly after World War I and became an engineer in order to improve the financial situation of his big family. He spent the rest of his professional career working on the radio beams that enabled blind landing of planes in all weather conditions, at a time when aviation was still in its infancy. Both my parents were hard working: my mother managed to rear her large family with the help of one part-time woman.

I entered primary school at age 5 years and was later an average student with no burning interest in any particular subject, notably not maths, at the Lycée Hoche (high school) in Versailles. The one subject that intrigued me was natural science (biology), which was taught superficially. This relatively vague attraction led me to think of medicine as a career even though I had no real idea of what medicine and medical studies were like as there was no doctor in my family. Fortunately, during the first preparatory year at the *Faculté des Sciences de l'Université de Paris*, I discovered that I was really interested in physics, chemistry, and especially biology, and started to work more seriously than I ever had. I found my first 2 years at the *Faculté de Médecine* (medical school) rather pleasant and the discovery of an entirely new domain enjoyable despite a workload wildly in excess of what I was used to at the Lycée. In the late 1940s and early 1950s, teaching in medical school was clinical from the start and weak in the basic sciences, the relevance of which to the pathogenesis of disease was inadequately emphasized, which of course is now no longer the case.

Starting in the first year of medical school proper, mornings were occupied by the professors' magisterial lectures in amphitheatres, which I confess I rarely attended unless I was especially interested in the topic or wanted to hear a particular professor, because they competed with the much more clinically informative post of "*Externe des Hôpitaux*." Afternoons had compulsory small group practical teaching sessions and laboratories at the *Faculté de Médecine*, usually given by junior instructors and likely to be rehashes of the morning lectures in preparation for medical school examinations and for the all-important *Concours*.

A key component of the clinical education of a French medical student was to become an *Externe des Hôpitaux* by succeeding at the anonymous *Concours d'Externat* available to students starting from the second year of medical school. Assignments were determined by both availability of a slot and rank in the *Concours*, depending on individual interest and, in some cases, by a *Chef de Service* who might have come to know a candidate. There were no mandatory rotations across

basic disciplines so that students were liable to have major holes in their knowledge.

The Externat work took place in the mornings when the Chef de Service and his Internes conducted daily teaching rounds. The less frequent “*Grande Visite*” consisted of the Professor (Patron) in his white coat, apron, and blue cape, followed by a gaggle of other physicians and students and by nurses whose short starched veils floated above their shoulders and who were the unquestioned bosses of the *Salle* (open ward) which typically was named for a famous predecessor like Charcot, Duchenne de Boulogne, or Marfan. This white-clad procession walked in hierarchical order around the large ward, stopping by each of 2 dozen or more patients waiting silently in his or her immaculate bed which, on an adult ward, could be flanked by an otherwise empty bedside table on which a small bottle of wine might sit. Following presentation of the case by the Interne, or sometimes the Externe, the Professeur would typically demonstrate interesting findings, ask a few questions, and discuss the presumptive diagnosis. He would recommend a treatment that the head nurse duly wrote down in a big book and would perhaps address a few words to the patient. There was generally little or no opportunity for dialog with younger colleagues, let alone with lowly Externes or the patient in question. Although the Visite was less formal on pediatric wards, parents were allowed at their child’s bedside only at limited hours during which no treatment or care was given. Information to parents was conveyed privately, usually in a medical office.

Other than learning how to elicit and record a medical history, do venipunctures and small sutures, and listen to heart sounds and such, Externes were mostly passive spectators, although they often had to read aloud their notes and answer to queries and they could ask questions. More than a few Externes took advantage of opportunities to return in the evening, after the afternoon teaching sessions at the medical school, to assist their Interne. Externes could thus gain some hands-on practical experience, notably by assisting in surgery and acute medicine, and particularly in obstetrics because to have delivered at least 12 babies was a requirement for graduation from medical school. Births took place in cubicles of the delivery room under the tutelage of the highly skilled midwives responsible for all normal deliveries and for timely calling of the Interne on duty in case of anticipated trouble.

The Externat lasted for 2 or more years, either until the end of the required 6 years at the Faculté de Médecine, or success at the *Concours d’Internat* which was open exclusively to Externes des Hôpitaux. Externes attended a given service for 6 months, less often for a year, then rotated to another one, usually in another Paris Hôpital and speciality, trying to ensure as broad as possible an educational exposure. In those days, students who did not become Externes had little opportunity to secure even basic clinical training because much of their education did not take place in the Hôpitaux. Some of them managed to find jobs that enabled them to acquire a modicum of clinical experience, for example by performing routine physical or medical examinations in public dispensaries or, when

more advanced, by taking on *locum tenens* positions for practitioners or working in nonteaching hospitals. Such activities (all unofficial) gave students an exposure to clinical medicine, some of which had useful educational value, but they were of variable quality and largely unsupervised. After graduation, students who did not participate in the *Concours* constituted a lower tier of practitioners some of whom chose careers outside of medical practice.

From the third year on, cramming for the *Concours d’Internat*, which was required at the time for further progress to a full-time position in one of the Paris teaching hospitals, as well as for any hope of a future clinical academic career, became absorbing and tedious for me. I succeeded at the Internat but its preparation left me with fragmentary knowledge most reminiscent of an archipelago in an ocean of ignorance.

The “Internat”

Externes usually tried the yearly *Concours d’Internat* for the first time between years 4 and 6 of medical school or even later, deferring graduation until they succeeded or had exhausted the 5 consecutive attempts allowed, each of which had a 1 out of 10 probability of success. The written first part, scored blindly, covered anatomy and the clinical features of classic medical and surgical diseases, with physiology added later as the only other nonclinical subject. Candidates who obtained high marks were eligible to participate in the second oral part of the *Concours*. Candidates for the second part were assigned 2 clinical topics and given 10 minutes to prepare a 5-minute written synopsis of each to be read aloud to a jury—needless to say a harrowing experience. The oral part could not be anonymous, which opened up the possibility of members of the jury, even though selected by chance, boosting the marks of favored candidates. Other weaknesses of the *Concours* system as it existed then were the poverty of its basic science content, its restricted scope (which required cramming to be ready to present the 5-minute synopses on a relatively narrow range of classic medical and surgical topics rather than emphasizing independent thinking), and the limited number of available Internat slots (which explains the low 1 in 10 probability of success, not to mention that only 5 consecutive attempts were allowed, which early on restricted career opportunities for potential late bloomers). The situation was made worse if some Chef de Service preallocated a position to a favored candidate so that it did not appear on the official roster of openings. Slots thus withdrawn from competition were often highly desirable ones on the Service of a supposedly—or known to be—powerful Patron who could facilitate the later careers of their former Internes.

Internes (ie, residents, house officers) played an essential role in the public hospital system. Their choice of training fields was determined officially in the days or weeks following success at the *Concours* by the candidate’s rank in the *Concours* and available Internat openings in the Hôpitaux, but also by the new Interne’s interest and acceptance by a desired Patron. Internes covered 5 to 30 patients and carried out most of the diagnostic work and treatment under the supervision of

the Chef de Service and his assistants. The real benefit of the Internat was the opportunity to work full-time in a teaching hospital for 4 modestly paid years that guaranteed exposure to, and responsibility for, a wide variety of patients.

In stark contrast to the years of preparation, I found the 4 years of the Internat extremely rewarding. Discussions with senior colleagues provided an education far superior to the limited experience offered by university teaching. This period gave me the unique opportunity to profit from senior colleagues' experience when making decisions, and taking major responsibility for care of human beings. The Internat was exciting, even though Internes had to face some difficult cases they were not fully capable of dealing with, especially at night or on holidays when help was limited. Internes were the sole effective medical presence during night hours and weekends because at the time there was no senior physician officially on call, except for one surgeon who covered all the Hôpitaux de Paris! Many supervising Médecins des Hôpitaux did in fact come unofficially to the rescue of their Internes in critical cases, even though busy in the afternoons with the more lucrative private practices needed to support their families.

Before I became his Interne, I had the good fortune of being an Externe of Professor Raymond Garcin, a neurologist at the Salpêtrière, the major neurologic hospital in Paris, who had a dual passion for clinical neurology and teaching and whose Tuesday afternoon presentations of patients were outstanding. It was he who kindled my attraction to clinical neurology. I was lucky to have had many opportunities to appreciate his clinical skills which I have tried to emulate. From early in medical school, I had decided that pediatrics would be my specialty. My lucky break was to obtain a post as Interne on the Thieffry Unit at the *Hôpital des Enfants Malades* which combined my interests in pediatrics and neurology, resulting in a passionate life-long commitment to child neurology.

As mentioned earlier, further oral Concours were required for access to higher positions in both the Hôpitaux and the Faculté. Presence on the jury of one or more former Patrons of candidates greatly influenced the probability of success. Failure to pass these Concours precluded access to higher hospital posts and thus to an academic career, which was permanently closed to former Internes such as Dr Gilles Lyon and me who were engaged in a hitherto nonexistent field unlikely to be significantly represented on a jury. Academic and higher hospital positions were also closed to the majority of ex-Internes who did not choose to continue competing because their goal was practice, usually as consultants. They identified themselves as former "Interne des Hôpitaux de Paris," which was a prestigious title, virtually required for a surgical career. A drawback to this prestige was a feeling of superiority that led some former Internes to neglect continuously updating their knowledge.

After my years of Internat, finding a stable hospital position outside of the hierarchical ladder turned out to be very difficult. In order to be able to stay at the *Hôpital des Enfants Malades*, I accepted a meagerly paid appointment as *Médecin Assistant* on the Surgical Service. Fortunately my role in surgery was not

very demanding, making it possible for me to continue to participate *unofficially* in teaching and the care of children with neurologic conditions on Professor Stéphane Thieffry's Unit. Until I was appointed to the INSERM, I had to take on a variety of *locum tenens* positions and appointments in public outpatient pediatric dispensaries in order to support my wife and me.

Difficult Birth of the First Child Neurology Unit in France

Child Neurology was late to develop in France and as of today is still not an officially recognized independent subspecialty. This seems largely attributable to the opposition of pediatricians who were (and some still are) contending, against all evidence, that child medicine is a single homogeneous discipline and, consequently, are intent on preserving their jurisdiction over all of pediatrics. This delay is all the more surprising because there was a long tradition of study of child neurologic disorders in France, witness the outstanding early contributors such as Duchenne de Boulogne, Marfan, and Charcot.

Starting in 1945, André-Thomas (a retired *adult* neurologist) studied in detail the behavior and neurology—especially muscle tone and primitive reflexes—of neonates. He wrote a remarkable book on this topic that remains poorly known, probably because it was written in rather arcane French. Some of his pupils, among them the pediatricians Dr Claudine Amiel-Tison and Dr Albert Grenier, designed a standardized neonatal neurologic examination with the goal of predicting neurologic outcome of high-risk infants, which is still used in several neonatal units in France. Probably because they worked in Maternity Services, these investigators did not concentrate on later neurologic disorders of children, even though their work testifies to early and increasing interest in child neurology.

A similar interest was developing at that time in other countries, especially in the United States and in the United Kingdom where adult neurologists became staff members of some major pediatric hospitals, while other child neurologists were pediatricians self-trained in child neurology. Depending on the country or hospital, today's European child neurologists remain mostly attached to departments of pediatrics, less often to adult neurology or, rarely, to psychiatry. In France, the first hospital unit oriented toward pediatric neurology developed in 1951-1952 at the initiative of Professor Robert Debré at the *Hôpital des Enfants Malades* in Paris, founded in 1802, perhaps the first children's hospital in the world. Professor Debré realized the need for subspecialties in pediatrics and divided his own large service into several units. One unit was first developed for the care of acute paralytic poliomyelitis during a severe epidemic that did not abate until effective immunization became widely used. Professor Debré appointed as director of the Child Neurology Unit Dr Stéphane Thieffry, an enthusiastic pediatrician whose interest in neurology developed when he was an Interne of Dr Clovis Vincent, an eminent pre-World War II neurosurgeon at the *Hôpital Pitié-Salpêtrière*. Dr Thieffry's staff was limited initially to one Assistant, Dr Charlotte Martin, and one

Interne, Dr Michel Arthuis (another pediatrician who had been a pupil of Professeur Raymond Garcin at the Salpêtrière and, many years later, became Professeur and Chef of the Thieffry Unit at les Enfants Malades). In order to care for paralytic respiratory failure, the Unit was equipped for mechanical ventilation, first with the “Iron Lung” and later with endotracheal ventilation. The Unit required the continuous presence of physicians on site, mainly Internes who came from various pediatric services in Paris and took 24-hour stints dealing with the multiple daily incidents inherent to such units. It became the first pediatric intensive care unit in Paris under the direction of Dr Gilbert Huault. With the end of poliomyelitis epidemics, its expertise was applied to the treatment of other nonneurologic and neurologic causes of respiratory failure, notably Guillain-Barré syndrome, so that children with neurologic diseases continued to outnumber others.

For several years, this was the only specialized child neurology unit in France. A negative consequence of lack of official recognition of child neurology to this day is the drastically limited availability of Internat positions in the subspecialty and the restricted training opportunities. This is a major deterrent for interested candidates: pediatric neurologists are so few that they seldom have the opportunity to serve on the juries of Concours, jeopardizing the probability of candidates progressing up the academic career in the field.

During my time, the Thieffry Unit was entirely dependent for support on physicians and technicians who were not organizationally part of the Unit. Most of the doctors belonged to the staffs of other services in the hospital, such as electroencephalography (EEG), radiology, electrodiagnosis, pathology, or as in my case and that of Dr Jean-Jacques Chevrie for several years before me, the *INSERM* (Institut National de la Santé et de la Recherche Médicale [National Institute of Health and Medical Research]). Although the material situation of many of the doctors at the Hôpital des Enfants Malades was poor, even precarious or temporary, they nonetheless worked actively and collaboratively. Their help was critical for the hospital but meagerly remunerated, making part-time private practices necessary. Dr Edith Farkas, a former pupil of Dr Ivan Bertrand, a neuropathologist at la Salpêtrière, was responsible for pathologic study of biopsies, and was later assisted by Dr Gilles Lyon who became an internationally known child neurologist and neuropathologist who subsequently emigrated to Brussels (Belgium) where he was appointed Professor of Child Neurology at the French-speaking Division of the Université Catholique de Louvain.

Originally, neurosurgery at the Hôpital des Enfants Malades was limited to 2 part-time neurosurgeons working in the General Surgical Unit without an official staff position. Several years elapsed before a fully equipped and manned neurosurgery service was created under Professeur Jean-François Hirsch but, dysfunctionally, not until after the Thieffry Unit had had to move in 1964 to the *Hôpital Saint-Vincent-de-Paul*, located in another section of Paris, thus requiring the transfer between hospitals of children requiring neurosurgery. The reason for the move of the Thieffry Unit was a fortuitous vacancy

in the position of *Médecin Chef du Service de Pédiatrie et Puériculture* (not neurology!) at Saint-Vincent-de-Paul, because eligibility for promotion to titular Professeur de Clinique at the University required that Dr Thieffry be *Médecin Chef* in one of the Hôpitaux. His collaborators had no choice but to follow him to l’Hôpital Saint-Vincent-de-Paul, which had neither neurologic equipment nor a neurosurgery service. This move implied transportation of patients requiring neuroradiology or neurosurgery between l’Hôpital Saint-Vincent-de-Paul and l’Hôpital des Enfants Malades, which complicated care, was impractical, and probably quite expensive.

When Dr Thieffry moved to l’Hôpital Saint-Vincent-de-Paul, I was given the opportunity of an unpaid post on his service as “unofficial assistant” rather than assistant in surgery, enabling me for the first time to devote all my hospital time to child neurology. Financial support continued to come from out-of-hospital jobs as *locum tenens* or work in dispensaries. I had the good fortune of working with Dr Michel Arthuis, and later with Dr Gérard Ponsot who had joined the staff and was largely responsible for providing high-level neurologic patient care. I collaborated in clinical research with Dr Françoise Goutières, an excellent clinician, and the late Dr Jean-Jacques Chevrie, an INSERM investigator whose main responsibility was epilepsy, both of whom fortunately moved as I did from l’Hôpital des Enfants Malades. My unofficial situation lasted 4 years until I too won stable support from the INSERM, unashamedly through the intervention of the all-powerful Professeur Robert Debré at les Enfants Malades. Like the National Institutes of Health in the United States, initial INSERM grant support, usually modest, is competitive—but unlike the National Institutes of Health it provides stability because it provides salary for productive investigators rather than specific projects. My appointment was Director of Research for the Thieffry Unit and INSERM enabled me and my 2 collaborators to concentrate on clinical research. INSERM’s support afforded me the flexibility to write papers and major textbooks, be active in international child neurology organizations, and interact with colleagues abroad. I was then 42 years old and for the first time was able to contemplate a stable career as clinician, clinical investigator, and educator, largely free of the hassles of hospital and university politics and demands.

Despite organizational difficulties and the limited numbers of senior colleagues, productivity of the Neurological Unit—first at the Hôpital des Enfants Malades, then at the Hôpital Saint-Vincent-de-Paul from 1964 until 1979 when it moved back to l’Hôpital des Enfants Malades—has been high. It has become an international referral centre for child neurology beyond France and neighboring countries. The Unit discovered or contributed significantly to the description of several novel neurologic entities such as Rett syndrome (with Dr Bengt Hagberg of Göteborg, Sweden), Aicardi syndrome, Aicardi-Goutières syndrome (with Dr Françoise Goutières), delayed encephalitis following rubeola (Dr Gilles Lyon and coworkers), alternating hemiplegia of infancy, and others. Members have presented their work at national, European, and international congresses and have published several hundred articles

in high-impact journals. They authored a number of books in English published internationally that ran to several editions, including Lyon's *Neurology of Hereditary Metabolic Diseases of Children* (3 editions), Aicardi's *Epilepsy in Children* (3 editions) and *Diseases of the Nervous System in Childhood* (3 editions), and *Movement Disorders in Childhood* (with Dr E Fernandez-Alvarez of Barcelona). Invited to give honorary lectures around the world, I received prestigious European and international awards such as the Hower Award of the Child Neurology Society in 1986 and Epilepsy Research Award of the American Epilepsy Society in 1995.

I divided my efforts almost equally between traditional neurology and epilepsy, which is frequent in children and has more effective therapeutic possibilities than many other neurologic disorders. The topic of my MD thesis had been *Convulsions in the First Year of Life* and Dr Chevrie and I collaborated for several years on studies of infantile epilepsies, including the *sequelae* of febrile seizures and status epilepticus. Epilepsy represents a major part of neurologic practice, yet few adult neurologists at l'Hôpital Pitié-Salpêtrière regarded this common disorder as suitable for high-level investigation. At the time, only 4 clinical types of seizures were considered (grand mal, petit mal, psychomotor, and Jacksonian), whereas I viewed epilepsy as much more complex and worthy of research. This disregard for epilepsy was fortunately not shared internationally and major contemporaneous books and research on epilepsy appeared (eg, by Lennox, Penfield and Jasper, and others) and electroencephalography (EEG) became well developed as a practical clinical and research tool.

Professor Henri Gastaut, a prolific investigator of the epilepsies from Marseille, came to lecture at the Hôpital Pitié-Salpêtrière on the multiple facets of lateralized seizures, but was not taken too seriously in Paris because of his provincial origin. His somewhat flamboyant personality attracted me and he kindled my abiding interest in epilepsy. My consideration for him and his school increased rapidly as I followed his publications and attended yearly epilepsy meetings in Marseille. Indeed, the work of the Centre Saint-Paul that Dr Gastaut created and ran collaboratively with the late Dr Joseph Roger, Dr Charlotte Dravet, and their coworkers, remains, in my opinion, a landmark in modern epileptology.

Interest in epilepsy eventually did develop in Paris, owing in part to the contributions of Dr Jean Bancaud, a neurologist and distinguished epileptologist at the Hôpital Sainte-Anne who worked with Dr Jean Talairach, a Hôpital Sainte-Anne neurosurgeon well known for his classical text on brain anatomy and radiology. They published fundamental studies on partial epilepsies and developed stereoencephalography using electrodes implanted under neuroradiologic control, which allows precise localization of epileptic activity, a method adopted worldwide to evaluate candidates for surgical treatment of medically intractable seizures.

Dr Bancaud organized an informal group of physicians interested in epilepsy, colloquially known as the "Epiclub." This congenial and stimulating small group met about once a month at the Thieffry Unit to discuss difficult seizure cases,

especially potential surgical candidates. Dr Gastaut, the Centre Saint-Paul, and the short-lived Epiclub provided moral support to epilepsy research amid the relatively indifferent Paris establishment and contributed to its spread to several French cities, which became new centers of excellence. Research led to notable progress in the description of clinical seizures and the introduction of new concepts such as "epilepsy syndromes" and "benign epilepsies of childhood," of great significance for the diagnosis, prognosis, and treatment of the childhood epilepsies.

Foreign Contributions to French Child Neurology

As the Thieffry Unit remained for a long time unique in France, the then-younger generation turned toward the United States, perceived as leaders in most scientific and technical domains. The United States provided generous grants to 2 members of the Unit, Dr Gilles Lyon and me. I spent the 1955-1956 year at Boston Children's Hospital working with Dr Randolph Byers, Director of the Child Neurology Service, and Dr Cesare Lombroso and Dr Giuseppe Erba of the Seizure Unit. Dr Lyon spent 1956-1957 with Professor Raymond Adams and his collaborators at the Department of Neurology of the Massachusetts General Hospital investigating acute encephalopathies and metabolic disorders of children (which became his lifelong interest). Both of us were excited to discover new technologies, along with new ways of thinking and of organizing hospital work. We were amazed by the very active participation of Boston students and trainees who did not hesitate to ask questions and address their teachers in a much less formal manner than their Paris counterparts. We felt humiliated at times as we realized the wide gap between American and continental European medical systems. This made our reinsertion into the French system rather discouraging, so we resolved to maintain long-term contacts with American and other foreign colleagues and to introduce new ideas and a freer atmosphere at home, which was not easy.

The first connection to develop was, in 1970, with the British group of Dr Ronald Mac Keith, an extremely active and quintessentially British pediatrician and expert on cerebral palsy and child development who had a remarkable talent for communication, even though I found his English difficult to follow. Assisted by Dr Martin Bax, he organized small yearly meetings in an old Oxford College to which he invited selected foreign physicians, not all neurologists but all interested in child neurology and neurodevelopment. The meetings were informal and involved discussion rather than presentations. The friendly Oxford Club meetings gave birth to many lifelong friendships and spurred the rapid development of similar, though more strictly neurologic, national and international child neurology groups in several European countries. Parenthetically, continued close relationship with British child neurologists eventuated in my appointment as Honorary Professor at the *Institute for Child Health* and an invitation to work as Consultant at the *Hospital for Sick Children Great Ormond Street* in London from 1991 to 1997 after the rigid French

retirement system locked the door to my office at l'Hôpital des Enfants Malades on my 65th birthday.

Dr Gilles Lyon, Dr Emilio Fernandez-Alvarez of Barcelona, and Dr Giuseppe Gobbi from Bologna founded the French-Speaking Child Neurology Society, which I quickly joined and that still meets annually and later evolved into the European Child Neurology Society. Larger European and international societies, for example, the European Federation of Child Neurology Societies (EFCNS) and International Child Neurology Association (ICNA), were founded in Europe in the 1970s. Large attendance at their meetings and at those of the Child Neurology Society in the United States testified to intense worldwide growing interest in child neurology. They spurred the creation of other child neurology units in large French provincial cities, run mainly by pediatricians who acquired neurologic skills, often in close relationship with the Paris group. Some, like Professor Gastaut's Centre Saint-Paul for infant and childhood epilepsy in Marseille (later directed by Dr Charlotte Dravet and Prof Nicole Pinsard) and the contemporary Laboratoire de Génétique Médicale in Strasbourg (focused on Cockayne syndrome), became worldwide clinical, research, and education resources. Despite France's persistent failure to give child neurology official recognition as a subspecialty, resulting in its still less than optimal size, it continues to participate in advancing this fascinating field and providing training to physicians from less well endowed countries.

Conclusion

I have exciting memories and feel privileged to have been a witness to the birth of child neurology as an entirely new field.

I am extremely grateful to the many colleagues abroad and in France who encouraged my work and shared ideas with me, and to the INSERM which supported me in my many collaborations and voyages of discovery. When I started, our knowledge was essentially clinical and mostly derived from adult neurologic conditions although, even then, it demanded special skills and a different approach to the patient. The ongoing technical revolution in imaging, in electrophysiology, and in other functional methods has impacted neurology particularly strongly because of the nervous system's complexity. This revolution has of course increased tremendously our diagnostic possibilities. Ever more sophisticated molecular and other biological laboratory techniques have expanded enormously our understanding of genetic conditions. Yet, the clinic remains fundamental in child neurology. Scientific advancement requires educated observation and enlisting the participation of the children we serve and their parents. Whereas it is the children who are the material for scientific study and discovery, it takes the astute clinician to recognize that what ails the child is unexplained and to find scientists to investigate it. Thus has progress in scientific understanding and better treatment been made and will continue to be made on the basis of mutual dependence and collaboration between clinicians and scientists.

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