

## ASSOCIATIONS WITH NEUROPHYSIOLOGY AND NEUROPHYSIOLOGISTS IN FRANCE

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My first involvement with the physiology of brain mechanisms was in a study of the nervous basis of pain and its control by analgesics. And from the start of that involvement in 1956 I had quickly come to admire the investigations of Professor Denise Albe-Fessard and her colleagues in Paris on the neurophysiology of sensory pathways involved in pain. This work was being published in the most important international and French journals in the field, from the Laboratoire de Physiologie des Centres Nerveux, part of the Institut Marey at 4, avenue Gordon-Bennett, Paris XVI<sup>e</sup>. Soon after joining the Physiology Department of the University of Melbourne in 1963, as a Senior Lecturer charged with the particular task of developing courses in brain physiology, I began to make preparations for an eventual study or "sabbatical" leave at the Institut Marey, taking an informal University course for scientific staff in French, joining the Alliance Française, beginning to read French books and magazines. By 1967 I had received the consent of the University and of Albe-Fessard to spend the best part of 1968 on sabbatical leave in the Institut Marey, a plan that some of my colleagues considered rash, doomed to disappointment, or not in one's best scientific interests. Happily, not all of them were of this mind. My study of French continued in 1967 with reading, listening to linguaphone records, sending my children to Alliance class on Saturday mornings (hotly resented as a waste of time); and it persisted during the voyage to Europe in January of 1968. On reaching Paris I found that the work put in enabled me to communicate in basic fashion with most people in spoken French.

I began work at the Institut Marey at the start of February, helped by a French Government Bourse du Ministère des Affaires Etrangères, de la Coopération Technique, for six months, which covered three quarters of the rent of an apartment too small for a family of five, for half the time of our stay.

The Institut Marey was made up of a group of laboratories, directed by M. Alfred Fessard, Professeur en Physiologie at the Collège de France, member of the Academy, and the husband of Albe-Fessard, who was herself Professeur en Psychophysiologie at the Faculté des Sciences, Université de Paris. (As a result of the *événements* in Paris later in 1968, the University would be broken up into thirteen according to the scattered campuses.)

Alfred Fessard (1900-1982), physicist and physiologist, had an important influence on the introduction of modern electrophysiology, clinical and experimental, into France between the wars. After serving as Associate Director to the famous psychologist Henri Piéron at the Collège de France, Fessard in 1949

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founded the Centre d'Etudes de Physiologie Nerveuse at the Institut Marey. The Institut was located in the old laboratory-dwelling of Etienne Jules Marey, one of Fessard's predecessors at the Collège. It was situated in spacious grounds near the Bois de Boulogne and had also been Marey's house. There Marey had set up a renowned "Station Physiologique" to study the details of animal and human locomotion, using a small track laid out in the garden. For this purpose he devised various recording instruments including high-speed photographic techniques that laid the basis for cinematography at the turn of the century.

Alfred Fessard, interested in sensory psychophysiology and a prewar colleague of Lord Adrian, one of the great British pioneers of sensory neurophysiology, had combined researchers from the Collège de France, the Université de Paris and the CNRS into a joint institute of neurophysiology, with laboratories crammed into the old house and various temporary pavilions in the grounds (by now hemmed in by the Roland Garros tennis stadium). From these laboratories had come the most significant brain research of France since the Second World War, and the "anciens de Marey" were scattered across France and many other countries in Europe, Asia and the Americas.

On arriving at the Institut Marey, I was soon summoned to M. Fessard's office, and at once made to feel welcome, invited to visit his other laboratories at the Collège de France ("we have just a sandwich for lunch"), rue des Ecoles, where a group was engaged in neurochemical investigations of the brain during behaviour.

Mme D. Albe-Fessard, in whose unit I was particularly interested, arranged that I undertake studies in a new area with a young Assistant of the "Fac.", Paul Feitz, investigating the electrophysiology of the brain pathway damaged in Parkinson's disease. This area of the brain has taken up a large part of my research interests ever since. She also got me to attend group seminars on other work in progress, and arranged for me to attend a conference on sleep in Bordeaux, near the beginning of my stay. Feitz and I worked very hard until the middle of May, when the social upheavals in Paris of 1968 effectively interrupted our research — university and schools closed, a general strike, meetings and discussions in the laboratories. My children were in the local schools near our rented apartment in Billancourt (we had a grand-stand view from our balcony of the flags flying from the Renault factory during the sit-in). On the advice of my colleagues, we drove to England during the strike, for visits to laboratories and a conference on Parkinson's disease in Edinburgh.

As is well-known, the upheaval ended with pay concessions to the unions and more significantly the onset of the summer vacation. At the *rentrée* our research resumed. Mme Fessard obtained a very temporary post for me as an "assistant" without teaching duties, to replace my now expired *bourse*; and organized visits for me to a meeting of the Association des Physiologistes at Lyon,

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and to laboratories in Leningrad, Moscow and Pécs, which she had visited on official missions.

The professional contacts and friendships made in Paris and Bordeaux that year marked me permanently. My subsequent study-leave periods have been spent in Paris or Bordeaux, with short visits to Paris as often as possible for discussions with my old colleagues about research matters of mutual interest. These visits included attending an international conference on "Neurophysiology Studied in Man" organized by Albe-Fessard in 1971, delivering seminars in 1974 on our Melbourne research to the neurophysiology group of the Université de Bordeaux II, directed by Professor Vincent (last met at a conference in Cambridge), and to the group of Professors Jean Massion and Jacques Paillard, director of the CNRS Institut de Neurophysiologie et Psychophysiologie in Marseille.

In 1976 I returned to the Institut Marey on sabbatical leave, helped by a Bourse de Haut Niveau, to find the laboratories rather depleted. M. Fessard had retired, suffering some consequences of a stroke, but continued part-time at the laboratory, preparing his papers. I worked once again on the basal ganglia of the brain in Albe-Fessard's group, now made up of new researchers: Professor J. Féger (Université de Paris V), Dr J.M. Deniau, Dr Constance Hammond. This was the last period of the illustrious institute; during the year, J.M. Besson, who had continued to develop the study of pain mechanisms with important new discoveries, left to start his own INSERM institute (now one of world significance in this area). Once again I had the opportunity to meet a range of French neurophysiologists, old-established like Pierre Buser (formerly of Marey, now Professeur at the Université Pierre et Marie Curie) and Professor Jean Scherrer (Faculté de Médecine, Pitié-Salpêtrière), or up-and-coming like Gérard Percheron (developing computer-aided visualization of brain cells at the Salpêtrière) and J.D. Vincent in Bordeaux (in whose laboratory I spent three weeks studying brain mechanisms stimulated by dehydration). Other contacts were formed with visitors from Canada, Britain and Europe.

I was honoured by M. Fessard's request for me to edit the obituary he contributed on Lord Adrian's death, and delighted to hear his lengthy reminiscences of pre-war and early post-war conferences in England. With conferences in Brussels and Marseille on the neurophysiology of movement, in Nijmegen on the basal ganglia, in Oviedo on neurology, and a paper on my own research from Melbourne to the Association des Physiologistes at their Bordeaux meeting, this year finally set a seal on my interests in the investigation of the basal ganglia, and their functions in the initiation and control of movement – interests that began under the stimulus of the Institut Marey and were continually nurtured by repeated association with my friends and colleagues in Paris.

I visited Paris again, briefly, in January 1978, and by then Albe-Fessard's

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Laboratoire de Physiologie des Centres Nerveux had been transferred to the precinct of the Université Pierre et Marie Curie at Quai St Bernard. The old Institut Marey had been demolished and the garden bulldozed, to extend the exclusive Roland Garros tennis club, and the "Tombeau de Marey" that had stood under the trees, with its marvellous bas-relief depicting Marey observing the flight of birds, the canter of horses, and men running, had disappeared – its fate still obscure to me despite several enquiries.

In 1980 I was able to return some of the warm hospitality I had received from Vincent in Bordeaux, when he stayed in my house on visiting Melbourne for a congress. At a seminar I arranged for him, I became interested in some new methods in his laboratory for investigating single nerve-cells in tissue-culture, and decided to go to his new laboratory to learn about this technique. My study leave there of four months in the first half of 1982 was devoted to the electrical activity of mouse spinal cord cells *in vitro*, interspersed with visits to Albe-Fessard's and Féger's laboratories (now separate), and to others in Paris. I was also urging my French colleagues to come to Melbourne in 1983 for an International Symposium on the Basal Ganglia – Structure and Function, which I was organizing with the help of two associates. A relatively strong French contingent, consisting of five independent neurophysiologists – Professors Albe-Fessard, Féger, and Percheron, from Paris, Professor Bioulac from Bordeaux, Dr Trouche from Massion's Marseille Institute – were able to participate in a very successful conference held at Erskine House, Lorne, and contributed papers to the resultant book which sums up the 1983-1984 state of knowledge of the brain parts affected in motor disorders such as Parkinson's and Huntington's diseases.

In January 1984 I returned to Bordeaux to draft an article on some of the results obtained in 1982, and to edit the manuscript contributed for our book by Professor Bioulac. Bernard Bioulac, formerly in Vincent's laboratory, neurosurgeon and neurophysiologist by profession, is also Président du Conseil Général de la Dordogne – managing to divide his activities among brain research, medical teaching, politics, and administration in the Département de la Dordogne. I was his guest for lunch at his home village in the Périgord Vert, and for visiting Lascaux and its superb cave-paintings.

On the same trip I saw Percheron and Buser in Paris to discuss some matters concerning the book; and Dr Jacques Servière, Université de Paris VI (and well-known with his wife Annick to Alliance Française members since his two-year sojourn at Monash in 1980-1981), to discuss a specialized autoradiographic technique in brain research which he had helped us with before returning to France.

Now, in 1985, Alfred Fessard is gone, Mme le Professeur Denise Albe-Fessard has retired, though still doing some research at the Zootechnical Insti-

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tute at Jouy-en-Josas outside Paris. The former Institut Marey researchers have dispersed, with new constellations of interest forming and dispersing. I retain enormous satisfaction at having spent two year-long periods in what was the best neurophysiological ambience of France; with regret at having waited too long to do so, thus missing the earlier, most vigorous period of the Institut Marey. In January 1986 I will see my Paris friends and colleagues again, and return to Vincent's laboratory in Bordeaux to learn more about the membranes of isolated nerve cells and their selective channels for the passage of electrically charged particles, on which all activity of the nervous system, brain and mind is ultimately based.

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### ARTICLES AND COMMUNICATIONS PUBLISHED IN ASSOCIATION WITH NEUROSCIENCE IN FRANCE

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