Robert BOURROUILH
An Appetite for Knowledge
1938-2014.

Robert Bourrouilh was born September 1, 1938. His father Antoine was artistic director on an Atlantic liner, speaking four languages. Robert was the last of three boys, Roger, 11 years older, and René, 7 years older. He married Françoise Le Jan in1965. Robert is survived by his wife, a respected carbonate specialist, three children and four grandchildren. He died in Bordeaux the July 16, 2014, after an aggressive cancer, during his seventy sixth year.

A native from Béarn (SW France), his grandfather had emigrated around 1880 to Argentina where he married a French girl, Marie Dufour, from St Gaudens (Pyrénées). Their son, Antoine voluntarily enlisted in the French Army in 1914 and returned to France from New York. He fought in the Verdun and Douaumont battles. During the Second World War, as economic refugees from Paris, Robert's family settled in Ger in Béarn, back in the family farm.

In Paris, recognized by his schoolmasters as a bright student, he entered the Schoolmaster Training Institute of Paris from 1955 to 1959, where bright pupils were identified as potential future teachers from sixteen years of age. After he obtained his final diploma (baccalauréat Sciences Expérimentales) in 1957, he received, despite teachers' advice that he was too young, the first diploma of the university. In two years, following this success, he received the diplomas of biology (zoology, botanic, physiology) and geology (general and historical), with mineralogy and physical crystallography.

Noticed by Professor Henri Termier, he did his first research work on Lias Moroccan Gastropods, (Nerinees). Then, he was appointed as Assistant in Geology, in the geological laboratories located in the Sorbonne, along rue Saint-Jacques in Paris. Their arrangement was little changed from the XIXth century when each floor was dedicated to a geological era. An assistant was a civil officer and assisted in advising and teaching students while pursueing, in parallel, research work on a subject suggested by an academic professor.

Professor Pierre Pruvost send him to a young Maître de Conférence, named Michel Durand Delga who suggested research subjects in Spain because of inter-governmental agreements between Spain and France to complete the geological map coverage of those countries. Robert Bourrouilh chose Menorca, in the Balearic Islands in 1960. As early as 1962, he assisted on an oceanographic trip with the help of Professor Bourcart, one of the promoters of geological oceanography in France, on the famous Calypso with Commandant Jacques-Yves Cousteau as captain. The mission concerned the Northern Balearic area. Very soon, he discovered, in Menorca, thick repetitive Devonian series. In consequence, he acquired in 1964, flysch training with Professeur Lanteaume on the Grès d'Annot (SE France), which allowed him to explain the Menorcan series as turbidites deposited on an abyssal plain, during Devonian time between the Balearic Islands and

Africa, further confirmed later by his studies on the Kabylies (Algeria) and some scarce Rif Massifs (Morocco).

The « May 1968 French Events » found him in field in Mallorca. He came back in June and took his place in the defense of the geological laboratories of the Sorbonne, the sample collections of which were kept in stone cupboards and gave happiness and joy to the rioters by provisioning them with perfect missles, easy to get. Some of his colleagues, preparing also their theses, discovered their thin sections of rocks being trampled by the gang called « the Katanga group ». Guard turns were organized in the laboratories to protect the scientific equipment and materials

In July 1969, he decided on his own initiative, to take part in a geological fieldtrip in Iceland, to see for himself evidence of this new theory of Plate Tectonic developed for the Atlantic. He introduced these ideas in the BG2, then SNV2, exam for which he was responsible, during the student second year course in the P.-et-M.-Curie-Paris-6 University in the early seventies.

On December 20, 1973, he presented his thesis to the new faculty of Sciences in Paris, which had been rebuilt in place of the Paris ancient wine market. His thesis is entitled « Sedimentology, stratigraphy and tectonic of the Island of Menorca and of the NE of the island of Mallorca, Spain. The North-Eastern end of the Betic Cordilleras in the Western Mediterranea »; the two volumes are accompanied by 2 geological maps of 1/50,000 scale, the first concerns Menorca and the second the Sierra of Levante. The thesis is recorded by the CNRS in French and was later translated in Spanish and published by the Geological and Mining Institute of Madrid (Spain), with the geological map of Menorca also published by the new Spanish government, as drawn and written by Robert Bourrouilh.

In 1973-1974, he edited, as CNFG (Comité National Français de Géologie) secretary, a paper called « Geological Chronicle », which was later added, in 1975, to the French Geological Society Report in association with UFG (French Geologists Union). So, he brought the idea of a federated journal in French to make aware the community of geological opportunities, academic and industrial. This with another draftor, took the name of Géochronique.

In 1976, Robert Bourrouilh went to California for a 6 months stay in Professor Donn S. Gorsline’s laboratory where he did research at sea (geophysics and cores) and, on land, near Santa Paula Creek and San Clemente to compare modern and ancient active margins. Also in 1976, during the International Geological Congress at Sydney in Australia, Professor Robert Laffitte (in charge of the 19th I.G.C. in Alger in 1952), Alain Perrodon, Exploration Director of Elf Aquitaine Company and President of the CNFG and Robert Bourrouilh, as secretary, submitted the French capital, Paris, as a candidate for the next I.G.C. which was accepted. So started an adventure of several years for French geology. In 1978, he was invited to participate in the Penrose Conference of the American Geological Society on « Submarine slope, fans and trench sedimentation. New concepts and Problem solving ».

The French Ministry of Education created at this time an entrance competition for the positions of Professor in University which became « Professor of Universities ». Robert Bourrouilh came through this new trial in 1980, first of 12 accepted of 150 candidates. He chose Pau in Béarn, SW of France, with the hope that he could create a performing laboratory of geology with DEA third cycle teaching for highly qualified students and theses with strong relations with economic geologists: Elf Aquitaine, Total, Penaroya, BRGM... As Director of the Natural Sciences Department, he was responsible, with Professeur Garcia in Pau, for the new geological laboratory building construction. During the years 1985-1995, he completed his field observations on land surface by training in speleology and making underground geological observations in the Pyrenean karstic networks. Especially by exploring scientifically the huge Verna cave (Gouffre de la Pierre-Saint-Martin, Pyrénées).

Invited by Professor Vigneaux, he moved to Bordeaux in 1989, after oceanographic marine missions in the Antarctic in 1986 and 1988. This allowed him to create a new laboratory: CIBAMAR, CInématique de BAssin et MARges, associating sedimentology and tectonic. At the end of the 1990's, he started collaboration with Mexican Cicimar Laboratory in Baja California (Mexico) around the Cortes Sea and, later, a collaboration with the Geosciences University in Beijing with a new IGCP (447) on « Carbonates and the Evolution of the Earth in the Proterozoic », in association with a Canadian laboratory. Then he participated with the Schlumberger Foundation on an Exobiology program: primitive Earth and hypothesis of primitive cells, his final favorite subjects.

His main research themes have been:
1) correlations in Western Mediterranea of the Paleozoic deposits (Carboniferous and Devonian) : Montagne Noire (France, paleomargin with carbonate mud mounds), abyssal distal facies in Menorca (Spain), Sardinia (Italy), Kabylies (Algeria) and Khudiat Tizian Massif (Rif, Morocco), passing to continental margin with Beni Hozmar *p.p.* in the Rif (Morocco), and to intertidal facies of Beni Hozmar and Talembote Massifs (Rif, Maroc). This theme was materialized by an IGCP (n°5) ;
2) tectonics of the Spanish Betic Cordilleras ; the comparison between different tectonic styles in the world show : a/ a californian type, by subductions is developed during the Middle Jurassic to Middle Eocene in the Eastern Betic Cordilleras and during Lower Miocene (Western Betic Cordilleras) and by a collisional tectonic, developed from Miocene to Modern, due to Africa-Europe connection ;
3) the Aquitaine-Pyrénées basin compared to the modern South California transcurrent margins for its northern margins : Albo-Aptian aperture basins, black shales, fine grained sediments, reworked Jurassic and Lower Cretaceous shallow water carbonates ; its Southern margin is on the Iberian plate with Mendibelza Conglomerates, Eaux Chaudes shallow water Limestones;
4) the formation and evolution of an intra-plate basins, pull-apart basins, structural inheritance and paleozoïc margins reconstitution : Basque Land and Béarn (Pyrénées, France) ;
5) sedimentation mechanisms and sedimentary hydrodynamism : Shallow water carbonate deposits (Florida Bay with South Florida University, USA), carbonate gravity

deposits (evolutive mass-flows, megaturbidites), modern alimentation systems with the studies of the Pyrenean floods, the Adour river, French Basque shoreline ;
6) the evolution of oceanic openings and oceanic circulations : Golf of Guinea-Golf of Gascogne, Angola Margin, South Atlantic margins (ridge of Rio-Grande-Walvis), Leg 114.
7) carbonate mud mounds with Stromatactis (Montagne Noire) as Devonian paleogeographical margin indicators, as Cretaceous Arudy mud mounds (Pyrénées), slided down in black shales of same age.
During his teaching and research career, Robert Bourrouilh developed a voluntary effort of improving his scientific research by learning new sciences, discovering new apparatus or new techniques. He is the first to use a laser optic apparatus to analyze the fault network of Menorca and Mallorca. He developed collaborations with numerous scientific organizations. He organized, in Pau and later in Bordeaux, SEPM and AAPG meetings, with D. S. Gorsline (California) and L. Doyle (Florida), during 1984, 1985 and 1986 (First Field Seminar of the AAPG in Europe), 1986 (SEPM-AAPG International Symposium on gravity deposits, comparison with Florida and Pyrénées margins), 1987 (SEPM Research Conference on gravity deposits in Ainhoa (French Pays Basque, France), which allowed economic geologist from several countries to discover the Pyrénées, the Iberian plate movements, the paleogeography of Pyrenean area during the Upper Cretaceous and its petroleum basin.

Nationally, he was interested in promoting geology among non-geologists with an active participation in Géoval in the Pyrénées, to the Red Marble festival near Carcassonne (South of France) where he organized exhibitions, conferences and field observations to develop the activity and the composition of an underwater Devonian mud mound, then later giving conferences to the association of APG (Friends of the Giens tombolo) in Southeastern of France.

His students are working as Professors in Universities or as economic geologists, in France, Tunisia, Morocco, Ivory Coast, Syria, Iran, Mexico, Venezuela. In 2003/2004, recognition of his research activities and his publications lead to his election to the Academy of Literature and Sciences of the Instituto Lombardo of Milano (Italy). The number of his publications is more than 230, with 2 geological maps of 1/50,000. He has collaborated with the geological surveys of France (BRGM), Spain (IGME), Morocco and Algeria. As research team, he participated to CNRS Associate Lab. n° 145 (M. Durand Delga), n° 215 (J. Aubouin), National Science Foundation on California Precontinent (D. S. Gorsline), IGCP n° 5 « Variscan and pre-variscan events correlation of the alpine orogeny in Mediterranea », member of the organizing comity of the 9th International Sedimentological Congress, Treasurer of the 26th IGC, co-director of the IGCP 447, co-director of ECOS-Nord of cooperation between Bordeaux 1 university and IPN of La Paz (Baja California Sur, Mexico), associated research CNRS team in Bordeaux, member of the organizing committee of the 32th IGC in Florence 2004.

After his sabatical in 2008, he took an active part to the revision of the geological map of Toulon (SE France), giving minutes concerning the Coudon Mountain area and its hinterland. His last realization was the organization of a scientific meeting dedicated to

his research director, Professor Durand Delga, preceded by a memorial at the Academy of Sciences in Paris, in December 2013.

Memorial Prepared by Dr. Francoise Bourrouilh La Jan