

Memorial to Jean Goguel

1908–1987

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Jean Goguel, who was elected an Honorary Fellow of the Geological Society of America in 1955, died in Paris, France, on January 5, 1987. He never knew the inconveniences of old age; he barely knew what it is to be sick. His relatives and his friends were fortunate enough to have always seen him as he was during his entire life: active, inquisitive, and immensely knowledgeable of whatever concerned earth sciences and science in general. He was a gentleman, always listening to others, colleagues and students alike. With him, France has lost one of its most dedicated civil servants. The common good of his fellow citizens and of mankind was his passion, much more than money, which he held in contempt, and much more than honors, which he did not desire. With him has disappeared perhaps one of the last “encyclopedists” the geological scientific community has known.



His entire career was dedicated to serving in various governmental agencies in France. He strongly influenced the structure and the objectives of these agencies, even though he was reluctant to head them whenever he thought the difficulties of managing them would prevent him from pursuing his scientific work.

After graduating from the prestigious Ecole Polytechnique de Paris and the Ecole des Mines de Paris, in 1931, he started as a geologist at the French geological mapping survey (Service de la Carte Géologique de la France). As early as 1940, he became Deputy Director, then, in 1953, Director. He was instrumental in giving France a complete geological map at a scale of 1:80,000 and in launching the program for a new map at 1:50,000, which is now almost completed. In 1941, he understood the great advantage of having a detailed geophysical map of France, and he was named Deputy Director of a new agency created with that objective, the Bureau de Recherche Géologiques et Géophysiques. This agency and the geological mapping survey are jointly the precursors of the main French geological and mining body, the Bureau de Recherches Géologiques et Minières. After 1968, he was Vice-chairman, then General Inspector of this body, and he remained a highly regarded counsellor after he retired in 1978. One can say that this world-renowned geological and mining agency owes a great deal to Jean Goguel, who strongly contributed to keeping it at a high scientific level.

As a civil servant, he was a professor at the Ecole des Mines de Paris, where he first taught paleontology, and then, until 1983, geology and geodynamics. He also gave courses at several engineering schools and at the University Paris VI, where he was still teaching geothermics until a few weeks before his death. In addition, he played a major role in the development of the French low-temperature geothermal energy program and of the nuclear waste underground storage program. Also, the government repeatedly used his expertise in geotechnics for assessing hydroelectric dam-building projects.

All these activities, covering a remarkably wide range of specialties, found their roots in his extraordinarily broad scientific expertise. Whether as an applied mathematician or as a naturalist, he reached the same level of excellence. This rare conjunction of talents allowed him to make a very significant contribution to quantitative explanations of many geologic phenomena. Tectonic

deformations provide one example: his "Introduction à l'étude mécanique des déformations de l'écorce terrestre," followed by a "Traité de tectonique," gave a solid interpretation of the major features of the deformations he had described while mapping the Alps in the southern part of France. Moreover, most of the concepts which much later would be used in studies of plate tectonics were already suggested in these books. Among those concepts were the role of horizontal extension in the creation of rifts, such as those in Africa, and the importance of sub-crustal convection movements as a motor for tectonics. His "Traité de tectonique" was a great success and was translated into English and Russian. Later, he made a significant contribution to the understanding of geothermal energy sources by modeling the convective movements of water under abnormal temperature conditions in the ground. In all his scientific papers, he never forgot that computations are of little help if they cannot be supported by facts. Many of his students were with him as he drove his small car with one hand on the winding roads of the Alps while pointing out a geologic feature with the other hand. They will remember the role of observation in geology!

Jean Goguel was well known outside of his country: he was an Honorary Fellow of the Geological Societies of America, of London, and of Belgium. He played an active role in the International Union of Geodesy and Geophysics and he was chairman of the European Association of Exploration Geophysicists in 1952. He was a visiting professor at Yale and taught geothermics at Pisa, Italy.

Although he was modest and did not care for honors, he received many in France, of course, but also abroad. He was a foreign associate of the National Academy of Sciences and a Foreign Honorary Member of the American Academy of Arts and Sciences of Boston. Belgium granted him the Paul Fourmarier Gold Medal. He received the very prestigious Prix Gaudry from the French Geological Society, but his friends will always regret that the French "Académie des Sciences" did not give him the seat he most certainly deserved.

Of the 260 titles included in Jean's bibliography, eight were selected for inclusion herein.

SELECTED BIBLIOGRAPHY OF JEAN GOGUEL

- 1943 Introduction à l'étude mécanique des déformations de l'écorce terrestre: Paris, Service de la Carte Géologique de France, Mém., 514 p.
- 1950 Géologie de la France: Presses Universitaires de France, no. 443, Paris, 128 p.
- 1952 Traité de Tectonique: Masson, Paris, 383 p. (English translation: Tectonics: San Francisco and London, W. H. Freeman and Company, 1962.)
- 1953 Le régime thermique de l'eau souterraine: Paris, Annales des Mines, v. 142, p. 3–31.
- 1959 Application de la Géologie aux travaux de l'ingénieur: Paris, Masson, 357 p.
- 1965 Tectonics and continental drift, *in* A symposium on continental drift: Philosophical Transactions of the Royal Society of London, v. 258, p. 194–198.
- 1973 La Géologie et la condition humaine: Opening ceremony, XXIV Geological Congress, Montréal.
- 1975 La Géothermie: Paris, Doin, 171 p. (English translation: Geothermics: New York, McGraw Hill, 1976.)