Francis Ruellan, one of Emmanuel de Martonne’s students, followed an original course. The First World War created some delay in his studies, but it enabled him to learn the techniques of aerial observation and photography, which, at the time, were quite new methods. In the beginning of his career he worked in Japan, where he lived at the French-Japanese house in Tokyo in 1925 and afterward was head of the French-Japanese Institute of Kwansai in Kyoto. He not only delivered lectures in many universities and institutes in Japan, but he carried out geomorphologic research in Japan, Korea, and North China. He returned to France in 1931 and taught in various institutions, especially in the Ecole Pratique des Hautes Etudes in Paris. During the Second World War he was in Latin America, especially Brazil. At first he was attaché militaire (1940); after that he was Professor of Geography at the National Faculty of Philosophy of the University of Brazil in Rio de Janeiro. He carried out many teaching and research duties there until his final return to France in 1957. Indeed, he had never lost contact with France, where he had been appointed Director of the Geomorphological Laboratory of the Ecole Pratique des Hautes Etudes in Paris (1948), which he regularly frequented during his vacations. He was, moreover, appointed Professor of the Faculté des Lettres in Rennes, where he taught geomorphology and photointerpretation. These studies were primarily concerned with coastal geomorphology, especially after he was able to create a laboratory of coastal geomorphology in Dinard on the northern coast of Brittany, which was sponsored by the Ecole Pratique des Hautes Etudes and the University of Rennes.

So Francis Ruellan’s life and work may be divided into three distinct parts: the Far East, Brazil, and Brittany. For the entirety of his career, though, he was interested in photointerpretation.

His stay in the Far East was the shortest, but by no means the least original and profitable. Ruellan was the only French geographer to do long-term geomorphologic research in Japan, at least until 1961. He was the only one to carry out there a regional geomorphologic survey. The result was a beautiful book, a State Doctorat thesis, but it is so thick that it is not often read—especially in Japan, where the French language is seldomly used. However, the thesis is an excellent application of the French geomorphologic techniques that were in use during the period between the two world wars. Kwansai is part of Hondo, which is between the Japan Sea and the Kii peninsula, which closes the Osaka-Kobe Bay. In his structural and seismologic presentation, the morphologic problems there are introduced: Cenozoic planation surfaces and their tectonic warping; correlative fluvial, lacustrine, or marine aggradation forms; and fault reliefs. This is followed by a detailed survey of the three main regions and their subdivisions and the proposal of a morphologic evolution of Kwansai: pre- or post-Miocene surfaces, studied
according to the Davisian method, neotectonic disturbances down to Pleistocene, and various aggradations. Ruellan explained the conditions in which the river system, often superimposed, had been established, the valleys entrenched, and the Pleistocene terraces built up (which, he thought, were little warped and are connected to the marine terraces). His explanation is prudent, in spite of the important available documentation that he used in strict accord with lithologic, tectonic, sedimentologic, and morphologic analytic methods. About 200 figures, a methodical grid of geologic sections and a bibliography (mostly in Japanese) of 667 references testify to the quality of a project never before done in Japan. Moreover, Ruellan's work in the Far East was not limited to this important monograph. He was interested in new problems, such as granite alteration in Japan and Korea, the morphology of the Inland Sea, and the relief of southwestern Japan.

Ruellan stayed in Brazil much longer than he did in Japan. Nevertheless, he did not publish nearly as much on Brazilian geomorphology or geography as he did on Japan. He was too busy with his duties as teacher; in Rio and even São Paulo he taught his students the new methods of laboratory and field research in geomorphology used in France. Beside this, he was able in a "new country" to convince the various administrations of the usefulness of geography, and he applied the results of his own and his students' surveys to the problems of natural resource inventory, regional settlement, and, especially, the choice of the new federal capital (Brazilia). This, too, was a new task for a geographer—and one seldom assumed in Western Europe. This also explains why his scientific publications were often restricted to short notices or reports about excursions and expeditions that were organized under rather difficult circumstances. His job was to explore a nearly unknown country and its problems on behalf of the National Council of Geography and at the same time to teach the students about mapping, photogrammetry, and photointerpretation. To do this he took them to the Rio San Francisco Valley, the Itatiaia, and the Paraiba Valley, as well as to the vicinity of Rio, the Santa Catarina coastal area, Santos, and other places. He applied a quite new conception of the geographer's profession, especially in the field, in order to study the means of settlement and development. From 1948, his method was directed toward the choice of the federal capital. The expeditions became longer and more distant, and the surveys dealt more with the Central Plateau, without, however, abandoning the Rio area. From 1953, his scientific interest took him as far as Amazonia. During the Congress of the International Geographical Union in Rio de Janeiro in 1956, Ruellan took part in the work of an international commission on the correlation of erosion levels and planation surfaces around the Atlantic Ocean. He continued to take interest in this commission during the succeeding congresses (Stockholm in 1960 and London in 1964).

One must read all of these short communications to realize how broad his Brazilian experience was. He noted everything that was new or had a practical use: unknown outcrops, superficial formations and soils, peculiarities of the hydrographic network and the valley slopes, and the general dynamics of the continental and coastal relief. We think it a pity that he did not take enough time to write longer papers, but he felt that he was breaking new ground and that, first of all, he had to prospect the country and teach his Brazilian successors.

At least his main goals were achieved: experimenting with new methods and the study of coastal geomorphology. When he returned to France he continued to publish every year after that reports of the activities of his laboratories in Dinard and Paris in the review Norois or to give short papers to the French Academy of Sciences or various specialized congresses. He liked to equip his laboratories with the newest equipment, and he overloaded an old boat that he got for his laboratory in Dinard with this equipment.
He was becoming more and more specialized in coastal geomorphology and was interested both in coastal sedimentation and large-scale coastal mapping. He devoted a great part of his scientific activity to the sea and to the methodology of coastal geomorphologic mapping and then to the elaboration and publication of large-scale geomorphologic maps or sedimentologic maps of the sea floor. Another trend in his research was the use of aerial photographs, which he first pioneered in Brazil. He published several papers on this subject and spent a long time preparing a book entitled *Photogrammetrie et interpretation de photographies stéréoscopiques terrestres et aeriennes*, the first volume of which was published in 1967. In his opinion, the book was the conclusion of his scientific activity, including his coastal geomorphologic and sedimentologic mapping. In it he related the history of photogrammetry and photo-interpretation and gave an account of the methods of using photographs and of correcting the perspective deformations of the reflection. With the book are offered practical exercises on photoanalysis and interpretation tracings. A terminological vocabulary, a copious bibliography (mainly in French and English), stereo photoplates, and interpretative maps made the book, at the time it was published, a very useful initiation. However, technical improvements in such topics are very fast, and remote sensing now integrates not only oblique and vertical aerial photographs, but all the various kinds of satellite photographs. Ruellan endeavored to follow these technical improvements, correcting and reshaping ceaselessly the second volume of his book. However, he spent so much time with it that although the book was ready when he died, we are still waiting for its publication.

Francis Ruellan never ceased to work steadily in the same direction. He was a pioneer in his field, and he trained his students to take part in surveys and the laboratory as well as teaching them new methods. Thus, he was often compelled to neglect his own scientific production. Moreover, the techniques were developing so fast that it took him a great deal of time to keep up with their evolution. His work is still unfinished, but this seems to be the common fate of researchers who have been anxious to apply rules of strict methodology and who, especially in France, are enclosed within the university traditions.

**SELECTED BIBLIOGRAPHY OF F. RUELLAN**


1940 *"Le Kwansai—Etude géomorphologique d’une région japonaise"*: Tours, Arrault 821 p.


1943 O problema de determinar num sistema fluvial o rio principal e os afluentes: 1a tert. sem. 5 de jan. 1943: Bol. Conselho Nac. Geog., v. 1, no. 1, April, p. 79–80.
--- Comunicação sobre a região meridional de Minas Gerais e a evolução do vale do Paraíba: 21a e 22a tert. sem. de 8 e 15 de julho de 1943: Bol. Conselho Nac. Geog., v. 1, no. 8, November, p. 95–104.
--- O afundamento de rio São Francisco e as Cachoeiras: 28a tert. sem. 27.07.1943: Bol. Conselho Nac. Geog., v. 1, no. 8, November, p. 127.
--- Observações sobre as formas carsticas dos arenitos de Vila Velha e sobre as dolinas e "avenas" (poços) dos arredores de Ponta Grossa: 87a tert. sem., 28.11.1944: Bol. Conselho Nac. Geog., v. 2, no. 21, December, p. 1379.

Interpretação geomorfológica do relevo da Serra de Mar no Parana: 103a tert. sem., 27.03.1945: Bol. Conselho Nac. Geog., v. 3, no. 25, April, p. 81-82.


Nota Sobre a jazida de calcareo da região do Rio Maués: Estado do Amazonas, Diario Official, Manaus, August, p. 4-6.

O problema das rias na Amazônia: Conf. inaugurale de la première semaine d’Études Géographiques de Sorocoba, September.


       —— La base scientifique de l'interprétation des photographies stéréoscopiques: Rev. l'Enseignement supérieur, no. 3, p. 75-90.
       —— La carte géomorphologique du golfe Normand-Breton au 1/10 000. Premiers résultats: Internat. Photogrammétrie Cong., Lisbon, September, commun.
       (and Dagorne, A.) Carte sédimentologique des fonds marins des côtes de France au 1/100 000: Paris, Saint-Malo.