



Tectonics, Tectonophysics

## Boris Choubert: The forgotten fit of the circum-Atlantic continents

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### ABSTRACT

Boris Choubert was a strong supporter of Wegener's continental drift theory. In 1935, he published a very accurate fit of the circum-Atlantic continents, which was based on continental edges instead of coastlines; in the same paper, he interpreted the Palaeozoic belts as the result of horizontal movements of the Precambrian blocks; so, he greatly expanded the role of continental drift through time. This original and very prophetic work was almost completely ignored by his contemporaries. Thirty years later (1965), Bullard, Everett and Smith published in turn a similar but more sophisticated fit; they did not acknowledge Choubert's initial work. Bullard's fit was met with immediate and tremendous success. The present paper analyses the reasons why Boris Choubert was frustrated of his pioneering role. This lack of recognition is related to: (1) a great evolution in the geological concepts between 1935 and 1965, and (2) a poor choice of Choubert, regarding the title of his 1935 article.

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### 1. Boris Choubert: a busy life

Boris Schuberth (Fig. 1), also known as Choubert, is a French geologist of Russian origins (see Barruol, 1984). He was born in Saint Petersburg in 1906 and left Russia for Finland in 1917. He came to France in 1927 and studied geology for two years at the Sorbonne in Paris with L  on Luteaud and Albert Michel-Levy. In 1929, he entered the Applied Geology Institute in Nancy. Having his engineer degree in hand, he was appointed, from 1933, by the general government of Gabon ("French Equatorial Africa" or AEF). He defended his thesis in 1937 ("*  tude g  ologique des terrains anciens du Gabon*" / "Geological study of the old units in Gabon"). He stayed in Africa until the end of the war. In 1946, he was recruited by the "*Office de la recherche scientifique d'Outre-Mer*" (ORSOM, future ORSTOM) and left

for a geological expedition in French Guyana. In 1949, he established in Guyana a multidisciplinary research organisation that became in 1954 the "French Tropical America Institute" (IFAT) and, ten years later, the ORSTOM Centre of Cayenne. In 1960, while general inspector of the ORSTOM and head of the French Guyana geological survey, he came back to France. In 1961, he entered the CNRS ("*Centre national de la recherche scientifique*" / National Centre for Scientific Research) as Research Director; he joined the School of Mines of Paris, Fontainebleau Centre, and remained there until his retirement at the age of 70. Pr. Ren   Dars then offered him a room in the geological laboratory at Nice University. Boris Choubert died in Nice on 3 December 1983.

### 2. Scientific work

Boris Choubert focused his research on three main topics: prospecting and mining; geological mapping and

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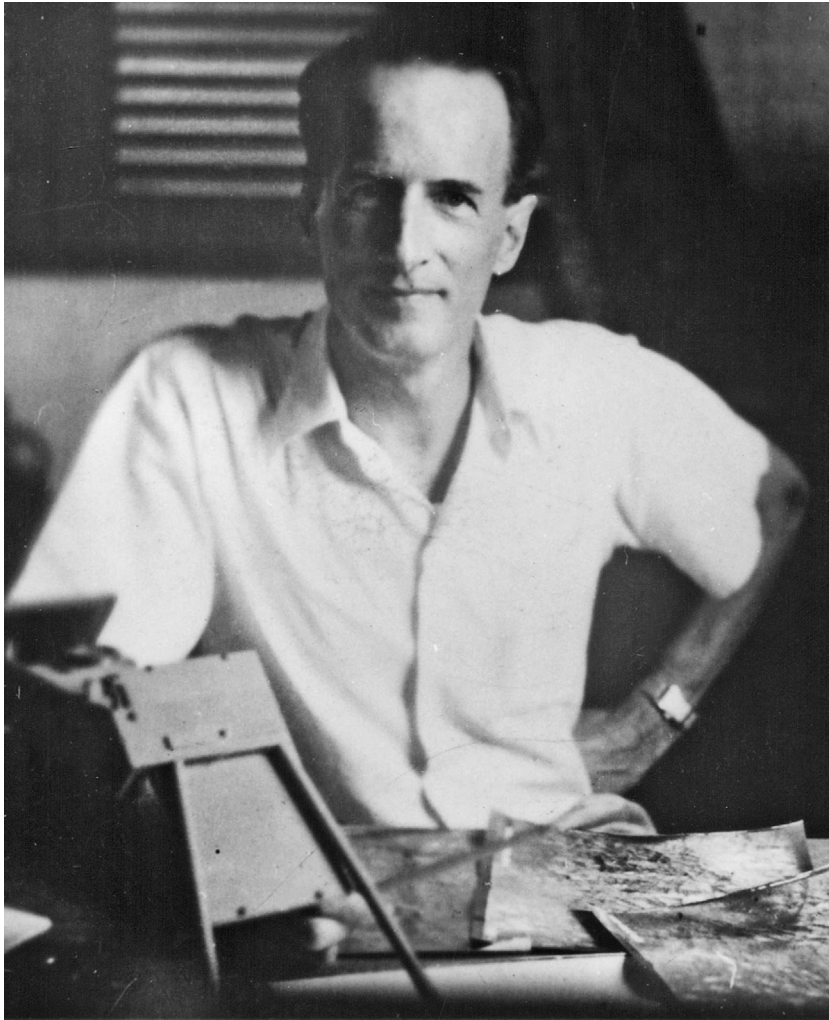


Fig. 1. Boris Choubert in Guyana (around 1950). In front of him is a stereoscope, the main tool of the cartographer together with his hammer  
Photo courtesy of Georges Choubert.

structural geology; theoretical petrology of igneous rocks. The first two directions brought rather significant results that are summarized below.

### 2.1. Mining geology

In 1934, he discovered (Okanga-Guay, 1998) in the Moanda district in Gabon (Upper Ogooué Valley), the first mineral occurrences (manganite and rhodochrosite) of a huge manganese deposit. An industrial exploitation started in 1962, currently producing 4 Mt of ore per year; this deposit accounts for 25% of the earth's global reserves of Mn. In Gabon again, in 1939, Choubert discovered the first alluvial diamonds in the River Ikoy basin, near Lambaréné (where he met Doctor Schweitzer); he showed later (Choubert, 1946) that these placers are related to kimberlites, which are the primary origin of diamond like in South Africa. In Guyana, Boris Choubert was especially interested in gold; he carefully described the gold mines of Saint-Élie and Adieu-Vat (Choubert, 1952) and already emphasized the problem of gold panning in this area.

### 2.2. Geological mapping

It was Boris Choubert's favourite activity. He signed, or jointly signed, a large number of geological maps at any scale, from mining plans on a 1/4000 scale to a world tectonic map on a 1/10,000,000 scale. He was particularly interested in old units and especially in igneous and metamorphic rocks. He especially liked to achieve regional, continental and even intercontinental geological syntheses on very small scale. As far back as 1935, just before his thesis, he published an important paper (Choubert, 1935) on "The Genesis of the Palaeozoic and Precambrian Belts", which will be discussed in the next section. Just arriving in Guyana, he started to draw the geological map on a 1/500,000 scale of the whole territory (88,000 km<sup>2</sup>); a preliminary version was printed in 1949; a more elaborate sheet was published in 1960.

### 3. Boris Choubert and continental drift

When working on his thesis on old rocks in Gabon, Boris Choubert obviously knew the work of the South African

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