Roberto Mantovani an Italian defender of the continental drift and planetary expansion

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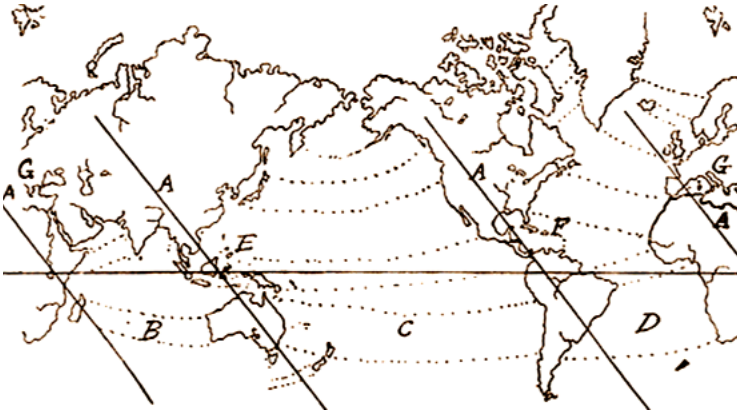

Fig.1
The portrait of Roberto Mantovani beside the map of the opening Pacific in the 1909 paper. The Italian scientist drew the map to show the points on the opposite side of the oceans that were once in contact. The points are joined by dotted lines wich were drown also through the Pacific Ocean. Then the Earth size in the geologic past must have been smaller then today.

The biography of Roberto Mantovani (Parma, 25 March 1854 - Paris 10 January 1933), violinist and scientist (Fig.1), has been reconstructed on the basis of archive documents found in Rome and Parma.

After a stay in the volcanic Réunion Island, Mantovani was arguing that the volcanic fractures observable on the island's shore might have undergone, on a minor scale, the same process of breakup of the continents. His ideas, published in 1889 and 1909, together with a 'Pangea reconstruction', aroused the attention of the French Geological Society. Wegener was advised to quote him in 1924, by a paper of Bourcart, written to show that the Italian had similar conceptions. The name of Mantovani appears in the 1929 edition of his book (Gohau, 1990,1991).

Wegener's quotation was:

'In 1909, Mantovani drew some maps illustrating his ideas on continental displacements. His ideas are in some aspects different but in others astonishingly coinciding with mine. For instance, this was the case of the ancient grouping of the southern continents around austral Africa.'

No mention was made on Mantovani's expansion idea. From the above Wegener sentence people get the impression that

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Why expanding Earth? – A book in honour of O.C. Hilgenberg. INGV, Rome, 71-74.

Mantovani was a mere precursor of the continental drift idea: instead, Mantovani's ideas on Earth expansion were more general compared to those of Wegener who was not taking into account the possibility of variation of the Earth's radius.

In an autobiographical letter (Fig.2) the Italian wrote:

> 'I was born in Parma on March 25, 1854. My father, Timoteo, died six months later. My mother, Luigia Ferrari, directed me to studies, and at the age of 11 I was accepted as a boarder in the Royal School of Music, where I was conferred with the Honorary Degree, in August 1872. Having always preferred the exact sciences and literature to music, it was with great perseverance that I succeeded in completing my studies myself and learning several languages.'

Roberto Mantovani, violinist and scientist, was part of an orches-tral team reaching the volcanic Réunion Island in 1878. During his stay on the island, Mantovani had the occasion of observing the huge volcanic fractures on the Indian ocean shore near the town of Saint Denis. He argued that, on a global scale, all the continents might have undergone the same disjunction proces-ses as the volcanic flanks. The global fractures are today the oceans. After several years from his observations, Mantovani published his idea in 1889 in the *Bulletin of the Societé des Sciences et des Arts* of Saint Denis, where the Italian established his family and became Consul of Italy. After an economic crisis and an epidemic plague in the Réunion Island, Roberto Mantovani left his post as Consul to go and live in San Servan, near the port of Saint Malo, in northern France, where he continued his activity as violinist, managing a school of music. As a scientist, he gave public conferences on the idea of planetary expansion.

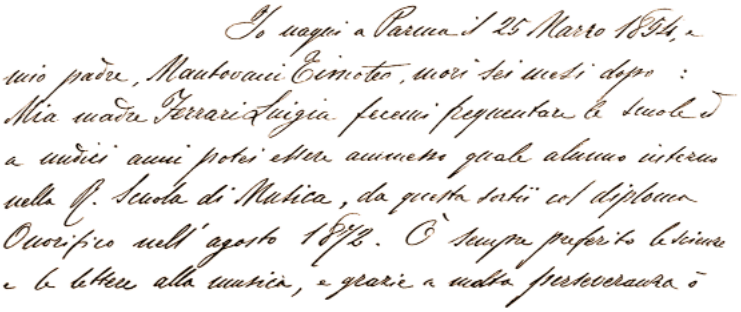

Fig.2
An autobiographic letter of Mantovani.

His more famous paper, quoted later by Wegener, was pub-lished in 1909, in a popular magazine *Je m'instruis*. The paper contains the first suggestive mapping of the breakup of the Pangea continent based on geological arguments. In this new publication a fundamental role was played by the epic of the Antarctic explorations. Mantovani was convinced (Fig.3) that the Antarctic continent had undergone a characteristic partition. The

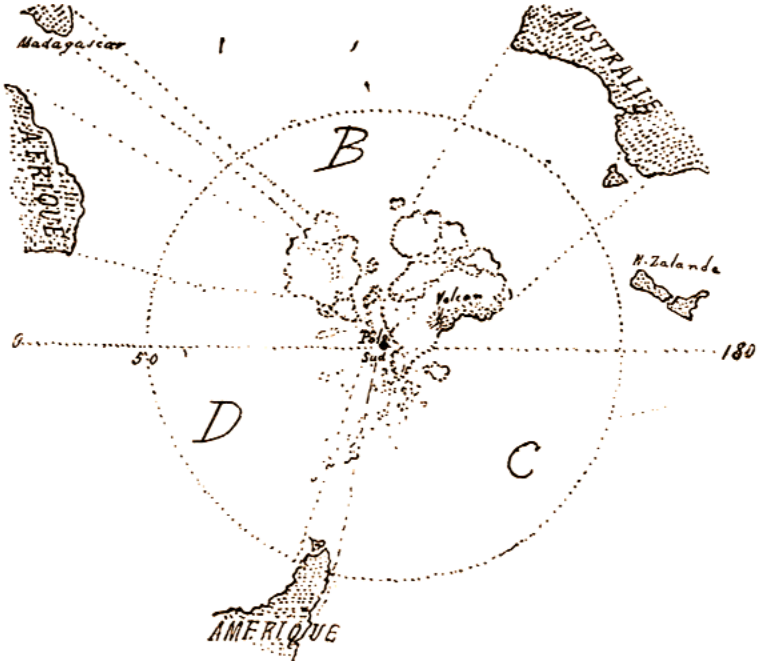

Fig.3
Mantovani's map of the breakup of the southern oceans. Modern Antarctica was hypotesized as fragmented in two subcontinents.

idea was probably inspired by Francis Bacon's conception of the continents' shapes, cuspidal towards south. Mantovani gave his maps to the French polar explorer Jean-Baptiste Charcot (1867-1936), hoping to receive a confirmation of his theory by direct observation.

The great novelty in the 1909 paper was the mapping (Fig.1) of the Pacific view: dotted lines were drown between pairs of geographical points which once were in contact while today are separated by the huge extension of the Pacific basin. The idea was that the corresponding points were in contact before the expansion of the Earth. The enlarging of huge fractures formed all the oceans. We had to wait the sixties to find the same kind of lines for the Indian and Atlantic oceans in plate tectonics. According to plate tectonics this is not true for the Pacific Ocean, because in this case the plate movement is inverse and the ocean tends towards closing. The 1909 Pacific map was forgotten, and only Mantovani's Pangea representation is reproduced today in some books dealing with the history of science.

The message Roberto Mantovani has left to us is clear: merging the two cultures, humanistic and scientific, independently of the academic main stream. A scent of poetry is perceptible in the conclusion of his last paper in 1930:

'Si nous voulons faire une projection de la surface de notre globe en la posant à plat, de manière à avoir comme centre de la projection le pôle Nord, nous trouvons comme sur la sphère terrestre que les trois grandes masses continentales par la dilatation de l'enveloppe terrestre, se sont séparées en quelque

sorte, comme trois sépales d'une fleur dont le pôle Nord serait le pédoncule [If we want to make the projection of our globe on a plane surface, having the North Pole as the centre of the projection, we find that, under the effect of the planetary dilatation, the three large continental masses of the Earth have opened as the petals of a flower, with the North Pole as its peduncle].'

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