

## i5 Wegener's geological evidence for Pangea < Holmes >

The term Pangea (or Pangaea) comes from the Greek 'pan'=all, entire + 'gaea'=land, Earth. The name is frequently stated to have been coined by Alfred Wegener (1914) in *Die Entstehung der Kontinente und Ozeane* (The Origin of the Continents and Oceans), but it has not been found in the 1st edition of that book.—*Georoots*.<sup>1</sup> The first use of the word [*Pangea*] comes in a 1924 translation of Wegener's book, by the man named Skerl.—Winchester.<sup>2</sup> And in fact the word is used in Wegener's book but not as a proper noun (and so it cannot be found in the book's index) in the sentence 'Schon die Pangäa [the pangäa] der Karbonzeit hatte so einen Vorderrand (Amerika) ...' *once* in the 1920 edition, p. 120, and again so *once* in the 1922 edition, p. 131. *Pangea* is first used as a proper noun by J. W. Evans in his introduction to the 1924 book.—*HR*.

The geological evidence that Wegener marshaled to support his reconstruction of a primordial continent (Pangea) was vast in scope. A deduction would be that fossils of closely related land animals and plants should be now separated by wide oceans if Pangea had existed. Wegener, at first, was not able to give examples and this could be construed to negate the once existence of Pangea. But later, Wegener did find some examples and Arthur Holmes favorably observed: "Negative evidence may be destroyed at any moment by fresh discoveries, whereas genuine positive evidence can never be explained away."<sup>3</sup> However, landbridges could be evoked to explain the fossil data. Evidences for the once existence of Pangea that cannot be easily shaken or ignored, are the trends of ancient mountain belts (*see* Topic *i6*) and the Late Paleozoic distributions of: land animals (*see* Topic *i7*), coals (*see* Topic *i8*), and tillites (*see* Topic *i9*). Further investigations of these by others did nothing but strengthen the case for Pangea and, implicitly, for continental drift. □

**Figure i6.1 After Arthur Holmes' map showing tectonic correspondences across the Atlantic.**<sup>1</sup> Presently, east-west trend lines of the Triassic Cape Foldings are cut off at the coasts of South Africa and Argentina. In the reconstruction of Pangea, these are continuous. In Africa, the Triassic Cape Foldings re-fold northwest trending Pre-Devonian folds. Followed in that direction, these older fold trends are cut off at the Atlantic coast of Namibia. In South America, the north-south trends of Pre-Devonian folds are cut off at the coasts of Brazil and Uruguay. In a reconstructed Pangea, the Pre-Devonian fold belts in South America and South Africa are continuous.

Late Paleozoic Hercynian or (synonymously) Variscan folds with east-west trend lines through Europe, cut off at the west coast of Ireland. The same reappear in New England, pass along the St Lawrence seaway, re-fold older Caledonian (Early Paleozoic) folds where they cross them, and then turn to parallel the same where both trend southwest in the Appalachians.

North of Newfoundland, north-trending Caledonian folds occur in short stretches, with deep ocean between, through northern Ireland, western Scotland (Roman name for which was *Caledonia*), Norway, east coast of Greenland, and the west coast of Spitsbergen.

In reconstructed Pangea, the trends of the Hercynian and Caledonian mobile belts are continuous in their convergence from the west and the north to the point that they cross and then run parallel in the Appalachians.

