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Volume 3 of 3

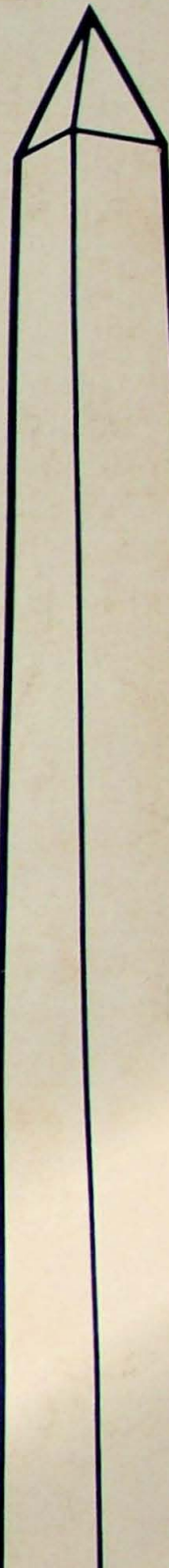
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reported in Cuba. The underlying sequence consists of terrigenous-carbonatic sediments from the Oligocene to the Campanian stage, ending with rests of the volcanic-arc erosion.

In the Vegas 1 (5030 m) well the sequence has variation in thickness in the Tertiary sediments but the underlying deposits involve tuffs of the volcanic-arc and the upper part of the ophiolitic complex. The central basin in that most drilled area in Cuba. The deepest well was Jatabonico 78 (4336 m) that penetrated island arc volcanic material (lava and pyroclastics) from the Albian to the Pre-Campanian age, interbedded non volcanic sediments; all these rocks overlying the ophiolitic sequence (tholeiitic basalts, gabbros and serpentinized ultramafites). In the lower portion metamorphic schists with affinities to those of the Escambray Unit were found. Some depressed areas in the basin reached greater thickness, at least 1000 m, in the Upper Cretaceous (Catalina wells) either in the Tertiary (Cometa 1) well.

Eastern basin: the best stratigraphic information in this basin was obtained from the Granma 1 (3017 m) well. Good cores were recovered from carbonatic-terrigenous sequences from the Pliocene to the Lower-Middle Eocene. The well reached the upper part of the paleogenic volcanic-arc of eastern Cuba.

Data based on deep wells in Cuba are important and must be considered for paleotectonic reconstructions in all Caribbean regions.

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Cubatãq Fault System in Southeastern Brazil: Example of Megafault

A net of mylonite belts with an extension of more than 1000 km borders the Santos Basin on its continental frame. It is represented by an originally Late Precambrian to Early Paleozoic post inversion transcurrent fault system composed by mylonitic belts with different local names that isolate tectonic lenses or fault blocks. The main linear discontinuity is the Cubatã-Alé Paraiba-Lancinha fault zone. Along this structure a whole and complete transition of brittle to ductile shear deformations are observed affecting upper crustal levels to the southwest and deeper to the northwest. While in the upper levels tectonic breccias and stratigraphic discontinuities together with strong stretching and flattening of certain rock types are dominant, in the lower levels expressive stretching, ductile dragging of regional structures across several kilo meters transversally to the main deformation zone, and concomitant flattening and parallelization of previous folds are the most evident features. The deep mylonites show stretching parameters of X:Y:Z above 35:1:1, typical quartz c-axes girdles sheath folds and recrystallization.

The faults were reactivated differently during the Phanerozoic. Chevron folding affected the mylonites in some locals when the rocks were already in higher levels, and Paleozoic sedimentation was partially controlled by this fault system in some places of the Parana Basin during certain periods. Tertiary continental rifting as later activations along these faults conditioned the formation of the Serra do Mar Rift System. Some recent kinematic analyses allow us to admit that the faults have been subjected to a compressional regime during Late Tertiary to Quaternary times.

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Geology of the Italian High-quality Cosmetic Talc

The Italian high-quality cosmetic talc is produced at the Fontane mine near Pinerolo (Piedmont, Italy). This mine is the only active survivor of a series of workings along a mineralized horizon forming part of the terranes of the Dora-Maira Massif.

This massif is a penninic unit of continental crust formed of an upper element consisting of pre-Carboniferous metapelites, marbles and metabasites and a lower one consisting of metasediments of probably (Permo)-Carboniferous age; both elements contain metagranitoid with granitic to tonalitic chemistry. All these lithologies have clearly undergone metamorphic re-equilibration into greenschist facies of Lepontine age, although early-Alpine high-pressure paragenesis and occasional relics of a pre-Alpine metamorphic event are preserved locally.

The talc occurs in the pre-Carboniferous basement and forms a conformable, sheetlike body.

The Fontane lithological series (from below upwards) consists of marbles (interbedded on the regional scale in the basement micaschists), followed by micaschists, Augengneiss and more micaschists enclosing the mineralized body.

On an average this body trends N25°W and dips west-southwestward at an angle of 30°. Its workable thickness is usually 1-3 m but is sometimes more than 10 m. Two foldings phases with subhorizontal (or slightly inclined) N-S and N25°W trending axes are responsible for the variations in thickness and attitude of the mineralization.

The talc is normally very pure, although accessory minerals are by no means uncommon. The mineralized body also contains predominantly carbonatic or siliceous "xenoliths" of various sizes and usually ellipsoid.

The genesis of the talc can probably be attributed to regional metamorphism, very likely in Hercynian time, of an original sepiolitic horizon.

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Jurassic and Cretaceous Brachiopods as Indicators of Tethys-Atlantic-Pacific Mesozoic Gateways

Jurassic and Cretaceous brachiopod faunas from northwest and southern Europe and the Soviet Union are abundant and diverse at certain horizons. However, it is the lesser known (and often unpublished) brachiopod occurrences from other continental blocks of Pangaea, subsequently Laurasia and Gondwanaland, that are keys in interpreting Tethys-Atlantic-Pacific gateways for Mesozoic brachiopods. This paper is a synthesis incorporating new data and new interpretations. Similarity coefficients, diversity, and abundance data will be discussed during the presentation.

Opening of the Atlantic Ocean: The opening of the Atlantic Ocean had a direct effect on brachiopod connections along Tethys and into the Pacific. During the opening of the Atlantic Cretaceous, brachiopods show evidence of migration via four major routes: (1) the Hispanic Corridor (European Tethys) to the eastern seaboard of the Pacific; (2) from eastern Tethys via eastern Africa to the South Atlantic; (3) south along the opening South Atlantic to the Antarctic Peninsula; (4) northward to East Greenland (Ager and Walley, 1977). For routes 1-3 direction of movement may prove to have been in either direction.

Transatlantic brachiopods and the Hispanic Corridor: The Atlantic Ocean has been expanding in a predominantly east-west direction from the Jurassic to the present day. The terebratulid brachiopod *Flabellothyris* from the Middle Jurassic of Mexico, Morocco, and India (Ager and Walley, 1977) and *Rhynchonella s.s.* from the Late Jurassic of Mexico, northwest Europe, and the Russian Platform (Ager, 1986) provide examples of the Hispanic Corridor linking early trans-Atlantic faunas.

The number of generic links between the trans-Atlantic brachiopod faunas rose during the Early Cretaceous from the Jurassic as free communication along the Hispanic Corridor increased. From the Valanginian of Mexico the brachiopod genera *Sellithyris*, *Cyrtothyris* and *Colinella* have been recorded (Owen, 1981). *Sellithyris* and *Cyrtothyris* are known from the Early Cretaceous of northwest Europe and the Hauterivian of Morocco. The record of a single specimen of the terebratulid *Musculina sanctaerucis* (Catzigras) from the Cretaceous of South America (British Museum [Natural History], London) probably also supports this Hauterivian connection. Early Cretaceous brachiopods from Colombia have affinities with genera originally described from Europe, i.e., *Gemmarcula* and *Oblongarcula* (National Museum of Natural History, Paris). These examples show the continuing influence of the Hispanic Corridor on brachiopod distributions through western Tethys to the eastern Pacific margin during the Early Cretaceous.

Toward the end of the Early Cretaceous, there are still links at the generic level between American and European brachiopod faunas that point toward the continued existence of the Hispanic Corridor or at least trans-Atlantic connections. Albian brachiopods from Arizona include the rhynchonellid *Cyclothyris* (also recorded from the Aptian-Albian of Texas) and the terebratulids *Psilothyris* and *Gemmarcula*. *Cyclothyris*, *Psilothyris*, and *Gemmarcula* (the latter probably present on Vancouver Island, Canada; Owen, 1981; *Cyclothyris* and *Kingena* may also be present in this region) appear to be widespread genera, and alternative routes and distributions should not be dismissed as the Atlantic Ocean increased in width. The Hispanic Corridor was too wide for free faunal dispersal although Arctic links may have still been maintained.

East Pacific fauna and possible Boreal links: The rhynchonellid *Ptilorhynchia* has been recorded from the Middle and Late Jurassic of California and British Columbia, respectively. It is also known from the Late Jurassic to Early Cretaceous of Northern Siberia and the Early Cretaceous of the Barents Sea (Sandy, in preparation). *Ptilorhynchia* has also been recorded from the Aptian of Alexander Island, Antarctic Peninsula, and possibly the Turonian-Coniacian of James Ross Island, Antarctic Peninsula (Sandy, in preparation). A northern high-latitude, eastern Pacific seaboard through to southern high-latitude distribution is emerging for the genus. *Proteorhynchia* from the Early Cretaceous of Mexico may be an endemic off-shoot from *Ptilorhynchia*.

The occurrence of the enigmatic rhynchonellid *Peregrinella* in the Early Cretaceous of Europe, Tibet, and California has been cited as possible evidence in support of an expanding earth or seamount "hopping" across the Pacific (Ager, 1986). The Californian occurrence was at a paleolatitude greater than 40°N. Records of *Peregrinella* are scarce, and the genus