The paleoclimatic and paleometeorologic conclusions which can be made from the maps are confirmed independently by Stehli's species-diversity gradients and by Axelrod's tree-ring distribution studies. Additional support includes: (1) A single Jurassic climatic and floral province extends from the Ust-'Urt Plateau, on the eastern side of the Caspian Sea, onto the Indian shield. (2) The late Paleozoic sequence of the northern Indian shield is remarkably like that of the Tarim basin of China; the faunas and floras are nearly identical; and both can be mapped across the Himalayas; therefore, India has been part of the Asian continent since mid-Paleozoic time; the presence in India and much of the central Himalayas of Late Pennsylvanian tillites can be understood in terms of the effects of a cold world climate on the monsoons of the Indian Ocean. (3) Many of the Late Pennsylvanian and/or Early Permian glacial deposits of the Andes, of Brazil, of Suid-West Afrika, and of India, are mountain glaciers, as Martin, Grabert, and others have shown. (4) Pennsylvanian and Permian reefs flourished in southern Chile. (5) The "Nubian" desert sandstone—from Spanish Sahara to Iran—remained in the same position relative to the equator from Cambrian through Holocene time. (6) Smiley's floral zones from Holocene through Triassic time parallel the present equator.

These and many additional facts from field geology and from paleozoological-paleobotanical studies refute the spreading-sea-floor hypothesis. The writer concludes that continents and ocean basins have maintained the same relative positions for at least 1 billion years. Exploration of the shelves and slopes, therefore, should proceed on this premise.

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ENVIRONMENTAL ANALYSIS OF ANCIENT SANDSTONE BODIES BY DISCRIMINANT ANALYSIS

Several sedimentologists have demonstrated that certain combinations of textural parameters (*e.g.*, mean diameter *vs.* skewness; mean diameter *vs.* standard deviation) are environmentally sensitive and effective in differentiating between modern beach, river, and dune sands. However, the reliability of textural parameters as criteria for identifying analogous ancient sandstone bodies has never been documented clearly.

Recently, data which the writers presented show that linear discriminant analysis, a mathematical technique which uses a classifying function to assign an individual sample to one of two or more populations, can be used successfully to differentiate between various modern sand bodies. Results of applying discriminant analysis to whole ϕ grain-size analyses have demonstrated that the technique is more effective in differentiating between modern beach, coastal dune, inland dune, and river sands than textural parameters calculated from quarter ϕ data.

This study shows that discriminant analysis is also a reliable and effective technique for determining the depositional environment of ancient sandstone bodies.

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ROLE OF OFFSHORE OPERATIONS IN LONG-RANGE FREE WORLD SUPPLY AND DEMAND OUTLOOK

Stronger interest in and knowledge of future energy trends and petroleum's part therein are needed for the appraisal of rate and timing of development of offshore resources, because of the significant role that offshore operations will have to play in satisfying the future demand for petroleum.

Total energy requirements are expected to more than double in the next 20 years and oil's share of the total is expected to remain at about the 50% level. A minimum of about 400 billion bbl of new reserves must be added in the next 20 years to satisfy cumulative production requirements and provide an adequate base for estimated production in the terminal year of outlook period. The writer speculates that the contribution required from offshore areas might represent as much as 25% of the free world requirements and amount to at least 100 billion bbl.

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EVAPORATIVE REFLUX HYDROLOGY OF SOUTH BONAIRE, NETHERLANDS ANTILLES

Flow of fresh seawater onto the tidal flats and salinas of the south end of the island of Bonaire takes place through permeability conduits in the underlying Pleistocene terrace limestone and emerges as numerous springs. Reflux of some heavy brine probably is taking place continuously because of gravitational instability. In addition, evidence suggests the existence of a major annual reflux event in early summer that causes a significant loss of heavy brine. This annual event is controlled as follows: the total pressure of the brine exerted at the level of an impermeable clay layer within the Holocene sediments is greater than the pressure exerted by the seawater at equivalent level. This annual return flow of brine moves through some of the same permeability conduits that supply fresh seawater through most of the year. Dolomite formed by such a hydrological system should be confined to permeability paths such as faults or dissolution channels under an evaporitic sediment in older rock. This pattern of rock-selective or permeability-controlled dolomitization by downward flow of brine through older rocks may be common in the geologic record.

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TEXTURE OF MODERN DELTAIC SEDIMENTS OF GODAVARI RIVER (INDIA)

Textures of modern sediments collected from distributary and tidal channels, lagoon, mangrove swamps, coastal beach and dunes, offshore barrier, and deep-marine facies of the Godavari delta differ significantly from place to place. Distributary-channel sediments are characterized by textures ranging from well-sorted sand to poorly sorted mud, and from positively skewed to negatively skewed sediments. The lagoonal sediments generally are poorly sorted and positively skewed. Their texture is believed to have resulted from mixing small amounts of present-day poorly sorted silt and clay with a well-sorted primary sand mode which is inferred to have been deposited earlier in a littoral environment. Coastal beach sands are moderately sorted and slightly negatively skewed. The dune sands are well sorted and slightly positively skewed. In contrast, the barrier sands are very well sorted and the skewness curve is nearly symmetrical. Beach sands differ from dune sands by having relatively larger amounts of silt plus clay-size particles. Mangrove swamps have silty clay to clay sediments, whereas all sediments from the deep-marine facies of the Godavari delta are clay. The difference between the paludal and deep-marine clays