The Permian Coal Measures of eastern Australia are characterized by multiple seams within the measures which may coalesce or split over the entire field in a seemingly complex manner. Associated structures in the sediment pile include non-conformable attitudes of bedding, and seam displacement by low-angled overthrust faulting or bedding plane shears along stone bands.

The origin of such structures is explained by a process of differential consolidation of the primeval peat, associated with intermittent sediment influx, and capture of local drainage. Consolidation, i.e., early lithogenesis of peats, relative to the consistency of associated sediments at the perimeters of areas undergoing differential compaction provided a mechanism for lateral compression and yielding of the seam by simple shear.

The degree of splitting can be associated with variations in split quality, while associated deformations of the sediment may give rise to difficult surface and underground support conditions. Thus much information on important resource parameters is obtained from thorough analysis of exploration results which should include an interpretation of the sedimentology of the coal measure section under evaluation.

Tectonic Framework of Melanesian Borderland

We report on the initial results of a cruise to determine the tectonic framework, origin, and hence, resource potential, of the northern margin of the North Fiji basin. The cruise, coordinated by CCOP/SOPAC and manned by scientists from Australia, New Zealand, and the United States (ANZUS), was completed by the end of April 1982. The central issue is whether the Melanesian borderland is simply a remnant island arc or whether Samoan or Tuvalu Island chain volcanism was responsible, in part, for the formation of this region. During the 20-day cruise, stretching from Pago Pago, Samoa, to the western end of the Vitiaz trench, dredge stations, piston and free-fall cores, and underway geophysical data were collected. In addition, we performed a reconnaissance of proposed spreading centers in the North Fiji basin.

Mineral Resource Expansion in British Columbia

Starting in 1980, British Columbia embarked on a decade of major growth in its mineral industry that is based on expansion of existing mines, development of established reserves, further investigation of known prospects, and widespread grass roots exploration. Production valued at least $2 billion in 1980 is expected to double before the end of the decade. The evolution of the Cordillera provided a uniquely fertile environment for the formation of mineral deposits. An extensive terrace wedge on the margin of the craton and a growing collage of allochthonous terranes have been repeatedly activated by a sequence of collision, fault translation, and subduction. The result has been a great diversity of deposit types, found in a wide variety of tectonic settings from the Insular Belt to the Rocky Mountains. In the last few years it has become evident that favorable terranes for massive sulfides, porphyry, and shale-hosted lead-zinc deposits are much more extensive than originally believed. Current search concentrates on precious metal deposits or base metal deposits with significant by-product gold and silver. An array of deposit types for the latter is now recognized, including at least four types of bulk gold-silver deposits as well as a variety of vein types. Interest in the search for strategic minerals, not previously mined in the Canadian Cordillera, is also increasing.