The undirectional northerly migration of Penner to the extreme left flank of its own delta, possibly due to neotectonic blocks upliftment. Presence of a linear strip of Gondwana inliers within Krishna delta alluvium is possibly the result of neotectonic fault controlled upliftment. The deltas are endowed with some important economic mineral deposits, besides forming the favoured and strategic locations for transportation, agriculture, industries, defense, recreation and setting of industrial and geotechnical projects. Diamond constitutes the most important economic mineral of the Quaternary gravels of A P. The palaeochannels of Krishna and Penner in their delta reaches and offshore area may also form important loci for placer diamonds. Other mineral resources include shell beds, kankar, lime stone, common salt, gypsum, sulphur, glass and foundry sands and atomic minerals and also building/construction materials. The KG deltas have also emerged as potential blocks of hydrocarbon prospects. The older delta replete with buried channels and fluvial delta plains and levee complexes form good repositories of potable ground water. Fine resolution stratigraphic studies coupled with shallow drilling and geophysical studies at selected places along with absolute dating of suitable samples are highly necessary for building up delta models and reconstructing Quaternary events of the deltas.

INTEGRATED METHODS OF GEOLOGICAL, GEOPHYSICAL AND GECHEMICAL EXPLORATION IN CONCEALED TERRAIN – A MODERN APPROACH (by C.P. Sisodia, AMSE Wing, Bangalore).

Metals like copper, lead, zinc, gold, silver, tin, tungsten etc. find extensive use in agriculture and in almost all industrial sectors like defence, automobiles, electrical and utility industries. These are the basic requirement for the industrial growth of any country and are also of strategic importance. With the changing scenario and for the economic growth of the country, infrastructure development has become essential. For this the basic requirement is steel, cement and coal apart from other commodities. Hence demand of iron ore, manganese, nickel, chromium, coal, limestone etc. has increased manifold. It is now well known that most of the deposits which were outcropping or having surface indications in the form of gossan, old working, oxidized zone etc., have been explored. The time has now come for adopting a systematic approach to locate new mineral deposits in the concealed terrain and in inaccessible areas. The concealed terrain may be soil covered or areas under thick sand or alluvium, whereas inaccessible areas may be thickly forested and snow covered. Mineral exploration in such terrain is not an easy task and the cost of carrying out exploration including drilling has gone up several times. Therefore an integrated approach, which includes airborne geophysical surveys followed by geological, ground geophysical and geochemical characteristics is essential to delineate potential target areas more accurately with high confidence level. Thus a flow sheet of mineral exploration by integrated surveys has been worked out and adopted.

Airborne Mineral Surveys and Exploration Wing of Geological Survey of India has discovered several small and medium size base metal deposits in Rajasthan, Karnataka, and Andhra Pradesh and gold deposits in Rajasthan by integrated surveys. The best example of discovery of base metal deposit is Kayar Zinc and Lead deposit in Ajmer district, Rajasthan. This deposit which is totally concealed has been discovered only on the basis of Airborne geophysical Survey anomaly evaluation followed by geochemical sampling and geological mapping and ultimately drilling using above mentioned flow sheet. The host rock of mineralization is quartz mica schist belonging to Ajbagh Group of Delhi Supergroup. The area forms the northern most part of South Delhi Fold Belt.

9.18 million tonne of zinc and lead ore has been estimated in Kayar area for a continuous strike length of 1160 m, up to a vertical depth of 240 m. The width of the ore body varies between 3 m and 12 and the average grade is 15.82% Zn and 1.55% Pb (Total Metal content is 15.37%).

EVOLUTION OF CONTINENTAL LITHOSPHERE - A BOTTOM-UP VIEW (by Fareeduddin)

The nature and origin of mantle beneath cratonic nucleus, stabilized during earliest part of the earth's history, has remained one of the most fascinating research topics for modern petrologists and geophysicists. A variety of models exist and most are dependent on the precepal indirect information from the seismic waves and the direct observation on tiny mantle xenolithic fragments sampled and couriered to the surface by the mantle derived posttassic ultramafic rocks like kimberlites and lamproites.

Attention of our readers of this journal is drawn to an interesting article by Dante Canil entitled "Canada's craton - A bottom-up view” published by GSA Today, v 18, no 6, pp 4-10. The paper traces the events that led to the formation of the lithosphere beneath Canadian craton by way of ‘stacking processes’ in a convergent plate.
margin set-up. A diachronous development for the lithosphere is envisaged, first during Archaean when bulk of the peridotitic lithosphere accreted and about a half a billion years later, a deep ultra-depleted lithosphere was stacked over the latter stabilizing the ‘root’.

The paper draws strength from the bottom-up view proposal from the contrasting information from the thermal and petrological structure of the lithosphere below Slave craton. The thermal structure here has not changed during the last 500 m.y as the kimberlites emplaced during this period delivered mantle xenoliths that have minerals showing P-T arrays with remarkable similarity. In contrast, the petrological structure of the lithosphere below the Slave province suggests a deeper fertile layer overlain by shallower ultra-depleted layer. The latter, interpreted as lithospheric underthrust or ‘stack’ is the region of seismic anisotropy and constitutes the ‘root’ for the lithosphere. When did the stacking take place? The author argues, with the help of Re-Os isotopic systematics, that cratonic mantle roots formed and coupled to their overlying Archaean crust within a narrow time frame and has remained their ever since. A widespread late- and post-Archaean events recorded however is at odds with simultaneous development below a well-established “cold” Archaean lithospheric root as recorded by its ‘Re’ depleton ages. A simple one dimensional model shows a thermal pulse causing melting and metamorphism in the lower crust which may not have thermal imprint over the entire craton.

The alternate model, as suggested by the author is insertion of cratonic lithosphere in eclogitic bearing roots during Proterozoic causing melting in the lower crust. The age of the root formation is therefore younger by half a billion years from the age of the lithosphere root.

The tectonic setting, inferred by a variety of petrogenetic and geochemical models for mantle beneath Archaean crustal provinces, was generated in the upper plate of convergent margin.

The author raise few questions that remain unanswered. If it has happened during Proterozoic, why lithospheric stacking does not occur today or did not occur during Phanerozoic? Did Precambrian plate dimensions differ significantly from those of the present day plate to engender more neutral buoyancy, required for shallow subduction and stacking? Slower plates and fewer convergent margins with smaller proportion of early continents may explain time lag of half billion years between lithosphere age and the age of actual mantle “root” or “stabilization”.

The current hypothesis could answer few of the many uncertainties that concerns the Archaean continental lithosphere. But chunk of information needs to be generated from well exposed but grossly impoverished (in terms of the high precision isotopic data) cratonic regions like Dharwad, Bastar and Aravalli regions in India to fine tune such kind of the models.

The paper is available in the Geological Society of India library and the author could be contacted at dcanil@yvic.ca.

**ANNOUNCEMENTS**

**NATIONAL SEMINAR ON EARTH RESOURCES, ENVIRONMENT AND EARTH SCIENCES FOR SOCIETY (EARTH - 2009)**

The Department of Geology, Periyar University, Salem is organizing the above National Seminar during 5-7 February, 2009 at Salem Tamil Nadu. For further details, please contact Dr. R. Venkatachalapathy, Convener (Earth-2009), Department of Geology, Periyar University, Salem - 636 001, Tamil Nadu. Phone: 09442105151, 09443475716, 91-427-2345766, 2345520 extn 261/2, Fax: 91-427-2345124, 2345585. Email: earth2009salem@gmail.com, Website: www.periyaruniversity.ac.in

**NATIONAL SEMINAR ON KONKAN COAST – DYNAMICS, EVOLUTION, ECOSYSTEM AND DEVELOPMENT**

The above National Seminar is being organised by the Department of Geology, G.S. Science Degree College, Belgaum during 12-13 September, 2008 at Belgaum. For further details, please contact Dr. PT Hanamgond, Convener, National Seminar, Department of Geology, G.S. Science Degree College, Tilakwadi, Belgaum - 590 006. Phone: 0831-2443916 (R), 2423024 (O), Mobile 9480275757. Email: konkandeed_nationalseminar@yahoo.com. Website: www.gssbgm.org

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