Ra series decay products like radioactive isotopes of Pb, Bi and Tl etc. and ^{40}K which also occur in background show only marginal activities in all the ice samples and also in dust samples. Cosmogenic isotope ^{7}Be forms the second group. ^{7}Be occurs at the level of 8-22 dpm/litre as expected from its cosmic ray production in the atmosphere. Similar concentration of ^{7}Be was found in Bombay rains (31±0·2 dpm/litre) collected on 19 October, 1981. The third group consisting of radioisotopes ^{95}Zr, ^{95}Nb, ^{103}Ru, ^{125}Sb, ^{137}Cs, and ^{141}Ce occur only in snow samples and are absent or low in old ice or dust samples. Two high energy neutron products ^{54}Mn and ^{88}Y have also been identified in CK-3 sample. Of these, the most dominant activity is observed of ^{95}Nb (35 d) at 766 KeV and ^{95}Zr (65 d) at 724 and 757 KeV, yielding an activity level of 59 dpm/l to 33 dpm/l respectively in sample CK-3. The presence of these isotopes was confirmed by the gamma ray energy as well as by following their decay for several months. Since ^{95}Zr, ^{95}Nb, ^{103}Ru and ^{141}Ce are short-lived, their presence indicates a source certainly not older than a few years whereas the absence of ^{140}Ba (12·8 d) supports the view that debris is atleast several months old.

Whereas ^{95}Nb, ^{95}Zr, ^{141}Ce and ^{7}Be decayed, the ^{95}Nb/^{95}Zr activity ratio in sample CK-3 was 2·11, remaining relatively unchanged, during the 4-month counting period from September to December 1981. This ratio of the daughter to the parent nuclide yields a time of production of the parent nuclide at least 10–12 months before the date of first counting. The ratio is only slightly sensitive to the relative amounts of the daughter and parent nuclide present initially. If we use probable ratios in fission yield, the date of production is estimated to be around October 1980.

It has been reported that France and China have been conducting nuclear tests during the past few years. France has conducted five underground nuclear tests at Muraroa atoll in South Pacific since May 1981. China on the other hand have been conducting atmospheric tests at Lop Nor (41°N, 89°E), close to the sampling site since 1964, which have been generally weaker than 3 MT[2]. The last test of 1980 was on 16 October[2]. The fact that the October 1981 rains in Bombay (B-1) contain no bomb produced activity rules out the deposition of French debris on the CK glacier, as in such a case, due to mixing, the debris must be present in equatorial air before reaching the northerly latitudes of Sikkim[3,4]. The underground nuclear explosion carried out by India was in May 1974 and is well contained in the cavity[5]. The debris is therefore attributed to October 1980 Chinese test. The activity in ice corrected for decay to 11 October, 1980 yield ^{141}Ce=1445 dpm/l, ^{144}Ce=156 dpm/l and ^{95}Zr 946 dpm/l. The observed ^{141}Ce/^{144}Ce ratio and the ^{95}Zr concentration is well within the range observed by other investigators in rain samples collected in early 1960's [6,7]. These levels represent typical activity, depositing in Himalayan glaciers and could provide reference horizons for the determination of past accumulation rates of the glaciers. These measurements in a vertical profile in accumulation zone is in progress and will be reported elsewhere.

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ON THE DELINEATION OF GONDWANA SEDIMENTS BELOW TRAP ROCKS IN MAHARASHTRA

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Exploration of additional coal fields in the known Gondwana basins and their covered extensions needs immediate attention in view of the energy crisis. In this context, delineation of Gondwana sediments at depth, where there is an indirect evidence of their possible presence, assumes greater significance for future exploration. The regional gravity data to the northwest of the Godavari graben, covered by Deccan traps, suggest the possible presence of the Gondwanas below the traps between Nagpur and Amaroati in view

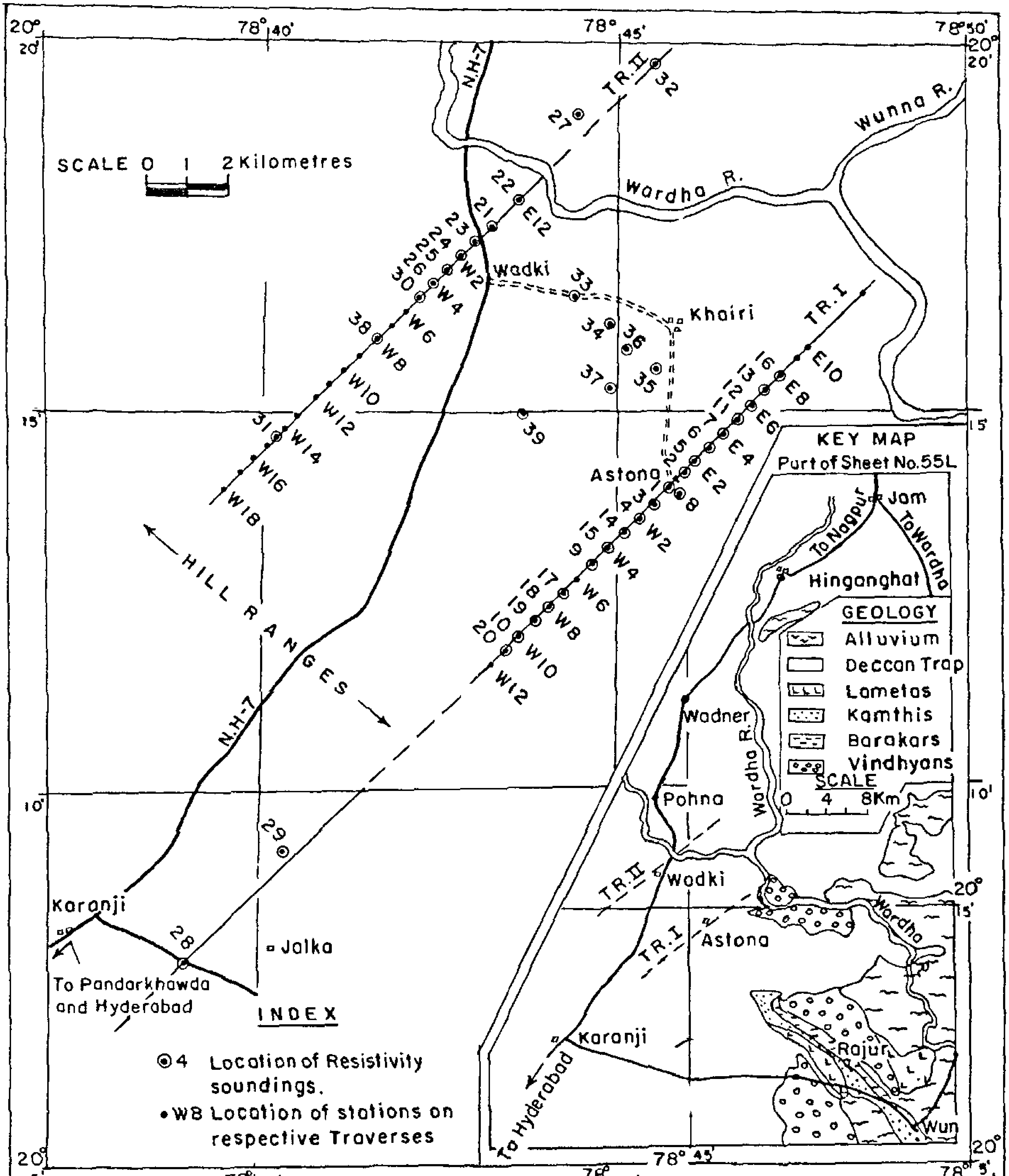

Figure 1. Geological map and location of the selected geophysical traverses.

of the observed gravity low[1]. In the deep electrical resistivity soundings conducted along Nagpur-Amaroati road cutting across this gravity low and further south along Nagpur-Wardha road, the above drawn inference has further been supplemented by an indication of a thick conductive layer, representative of Gondwanas, below traps[2]. These anomaly zones, falling in line with the strike extensions of the major Gondwana basins over the Deccan trap country were taken-up for detailed geophysical investigations by the Geological Survey of India on priority basis.

Initiating the phased programme, deep resistivity soundings were conducted at every half a kilometre along two traverses cutting across the expected strike extensions of the western trough, namely the Pranhita-Godavari (Wardha) trough, of the main Godavari graben (figure 1). Also, traverse-I was laid passing through the Astona borehole, drilled by the Directorate of Geology and Mining, Maharashtra, where coal bearing Barakars were encountered at a depth of about 200 m to orient the resistivity parametres. The resistivity soundings were conducted adopting the Schlumberger array with a maximum half-current electrode separation equal to 2 km keeping the electrode spread invariably along the expected strike of the Gondwanas and using a sophisticated resistivity equipment model RDC-8 of Scintrex make. The resistivity sounding curves were interpreted both by curve matching technique and by direct interpretation using the computer techniques available at the Central Geophysical Division.

The resistivity soundings have picked-up a characteristic conductive zone (5 to 25 ohm metres resistivity) at depth having a general order of thickness of about 600 to 800 m all along the traverse-I. This zone showing the same order of resistivities, as reported by earlier investigators in the adjacent areas where Gondwanas are exposed represents the Talchir formations and/or shale formations within Vindhyans. The depth to this conductive layer varies from 40 to 300 m, and comprises trap and Gondwanas younger to Talchirs as overlying formations having resistivity layers varying from 40 to 200 ohm metres. It is not possible at this stage, to distinguish the trap and Gondwanas, *i.e.*, Kamthis/Moturs and coal-bearing Barakars, as they showed an overlapping nature of resistivities. however, the expected thickness of trap rocks in this area seems to be not more than 75 m, as shown in the Astona borehole on traverse-I and as reported earlier[3] in the vicinity of traverse-II. In such cases, it would be reasonable to infer the presence of Kamthis/Moturs and Barakars as part of the overlying formations above the conductive zone where the depth to this conductive zone exceeds more than 75 m. The last layer showing high order or resistivity (more than 300 ohm metres), underlying the conductive zone, represents Vindhyan limestones or Crystallines. Along traverse-II, the formations with a thickness varying from 100 to 300 m overlying the high resistivity layer represent the total thickness of the trap and Gondwana formations. The conductive zone, which is so predominant along traverse-I does not appear to continue or is very thin all along traverse-II. While the resistivity surveys picked-up the high resistivity layer at shallow depths towards east in both the traverses, they appear to suggest a faulted contact nature towards west passing through the soundings 9 and 30 on traverses-I and II respectively (figure 1).

Detailed geophysical investigations — deep resistivity soundings at every 500 m — along certain selected traverses based on regional gravity surveys help in delineating the Gondwanas below the trap cover[4]. In addition, because of the sufficient resistivity contrast observed between trap rocks, Talchir rocks of Gondwanas and pre-Cambrian formations, these investigations play an important role in mapping the geology below the Deccan trap cover.

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OCCURRENCE OF CYSTIC ATRESIA IN THE OVARY OF *CHANNA GACHUA*

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Follicular atresia is a widely occurring phenomenon in the ovaries of all vertebrates [1-4]. The process was formerly considered to be a degenerative phenomenon aimed at disposition of supernumerary follicles by a process other than ovulation[3]. Recently it has been proposed that the process might have a role in intraovarian control over follicular development and ovulation[1]. Based on the actual mode of degeneration and the developmental stage of the follicle, six types of follicular artesia namely, previtellogenic, yolky, glandular, bursting, haemorragic and cystic have been described in reptiles[2] and birds[5,6]. However, in fish the glandular type of follicular atresia is of common occurrence. There are also a few reports on the occurrence of previtellogenic[7] and bursting[8,9] atresia in the ovary of fish. The present study reports the occurrence of cystic atresia in the ovary of a freshwater teleost, *Channa gachua*.

Adult female specimens measuring 19–25 cm in total length were procured from the freshwater tanks around Dharwar city (15°27′ N and 75° 01′ E). They