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## RADIOCARBON DATES OF SAMPLES FROM SOUTHERN NEOLITHIC SITES

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**I**N this paper we present radiocarbon dates of samples from Sangankallu, Hallur, Bainapalli and T. Narasipur. Samples from Utnur (Agrawal *et al.*, 1964) and Tekklakota (Agrawal *et al.*, 1965) were reported earlier. From these, a tentative chronology of the Southern Neolithic seems to emerge, though more samples are needed to confirm it. A brief discussion of the results is given below.

Two dates in years B.P. (before present) are given for each sample: the first one is based on carbon-14 half-life of 5568 years; the other—within brackets—is based on the half-life value of 5730 years. For changing them to A.D./B.C. scale, 1950 A.D. should be used as reference year. For intercomparisons dates based on the same half-life should be used.

Samples were manually cleaned to get rid of rootlets and other extraneous matter. Soil-carbonates in the sample were removed by 1% HCl treatment. Relatively harder charcoal samples alone were given NaOH treatment to remove humic acid. Gas proportional counters were used to count methane synthesised from the samples. For modern reference 95% activity of N.B.S. oxalic acid was taken as standard. Techniques employed have been described in detail earlier (Kusumgar *et al.*, 1963; Agrawal *et al.*, 1965).

### GENERAL DISCUSSION\*

Although the age determinations made so far for the Neolithic of the South are not numerous, they already reveal certain salient features of this culture (Agrawal, 1966). We have several dates for the period ca. 2100–1100 B.C. If we include the extreme dates of samples TF-573,  $2905 \pm 100$ , and BM-54,  $4250 \pm 155$  (Barker and Mackey, 1960), the maximum time spread for this Neolithic Culture can be bracketed within

\*  $C^{14}$  dates based on  $\tau_{1/2} = 5370$  years have been used for discussion.

ca. 2300–900 B.C. The three Hallur samples (TF-570, -573, -575) date the overlap phase with iron using megalithic people. This shows that for about 1,400 years the neolithic economy continued without any drastic change, although slow changes are perceptible. Whereas early neolithic at Piklihal (Allchin, 1960) and Utnur (Allchin, 1961) is completely free of any metal, copper artifacts are associated with the earliest neolithic phase at Tekklakota (Nagaraj Rao, 1965). The rusticated A<sub>1</sub> ware, which is an upper neolithic trait, occurs in Phase I at Tekklakota. A detailed comparative study of the wares of all the excavated sites would undoubtedly reveal the slow evolution even in neolithic pattern of life. In later sites more specialisation in society and trade should be discernible in the cultural assemblage.

If one plots the sites (with their  $C^{14}$  dates) latitudinally, there is a faint indication of a migratory pattern from north to south, as suspected by Sankalia also. This can be confirmed only by a larger number of measurements and more precise data about the cultural horizons of the samples.

Very interesting—though only three so far—are the dates for the end of the neolithic and the beginning of megalithic. Iron and Black-and-Red ware using megalithic folks are appearing in the South with the beginning of the first millennium B.C. Is it a migration to or from the Doab in view of very early megalithic there—in case the two are connected. The relation between the pre-P.G. Ware black-and-red ware and the pre-Iron Megaliths of Doab is worth pursuing.

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C<sup>14</sup> DATES WITH SAMPLE DESCRIPTIONS*Bainapalli, Madras, India*

Bainapalli (Lat. 12° 33' N., Long. 78° 27' E.), District North Arcot, is a megalithic-neolithic site of the South. It was excavated by S. R. Rao. Samples submitted by A. Ghosh.

TF-350, *Megalithic Period* (?), 2265 ± 100  
(2330 ± 105)

Charred grain from Trench BNP1, Locus C1, Pit 4, Sealed by Layer 3, Depth 1.30 m., Field No. BNP1/C1/64-2. Visible rootlets were handpicked. Comment: sample belongs to the end of megalithic period or is slightly later. Data given are not clear, though data expected by the excavator is ca. 300 B.C.

TF-349, *Neolithic Period*, 3340 ± 100  
(3435 ± 100)

Charcoal from Trench BNP1, Locus A1, Layer 6, Depth 1.80 m., Field No. BNP1/A1/64-1. NaOH pretreatment was also given.

*T. Narasipur, Mysore, India*

T. Narasipur (Lat. 12° 13' N., Long. 76° 55' E.), District Mysore, was excavated by M. Seshadri, who submitted the samples.

TF-414, *Megalithic* (?), 220 ± 90  
(225 ± 90)

Charcoal from T.N. 24 A, Locus C-D, Layer 3 A, Depth 0.67 m., Sample No. 3, 1965. Visible rootlets were handpicked. Comment: sample is much younger than expected.

TF-413, *Neolithic*, 3345 ± 105  
(3445 ± 110)

Charcoal from T.N. 24 A, Locus C-D, Pit IV, Sealed by Layer 6 (?), Depth 1.77 m., Sample No. 2, 1965.

TF-412, *Neolithic*, 3645 ± 105  
(3755 ± 110)

Charcoal from T.N. 24 A, Locus A-B, Layer 6, Depth 1.6 m., Sample No. 1, 1965. NaOH pretreatment was also given.

*Sangankallu, Mysore, India*

Sangankallu (Lat. 15° 11' N., Long. 76° 58' E.), District Bellary, was excavated originally by the late Subba Rao. Excavations were resumed recently by H. D. Sankalia who submitted the samples.

TF-354, *Neolithic Period*, 3440 ± 105  
(3540 ± 110)

Charcoal from Trench 1-2, Layer 3, Depth 2.5 m., Field No. SKL/Tr. 1-2/64-65/393. NaOH pretreatment was also given. Comment: sample belongs to an early level.

TF-359, *Neolithic Period*, 3400 ± 100  
(3500 ± 105)

Charcoal from Trench 1-2, Layer 4, Depth

2.4 m., Field No. SKL/Tr. 1-2/64-65/588. Visible rootlets were handpicked. NaOH pretreatment was also given. Comment: sample comes from an early level.

TF-355, *Neolithic Period*, 3435 ± 100  
(3535 ± 105)

Charcoal from Trench S. Rao's II, Layer 2, Depth 1.40 m., Field No. SKL/S. Rao's II/64-65/474 (Eastern Section). Visible rootlets were handpicked. NaOH pretreatment was also given.

*Hallur, Mysore, India*

Hallur (Lat. 14° 20' N., Long. 75° 37' E.), District Dharwar, has recently been excavated by M. S. Nagaraj Rao. It gives a good sequence from neolithic to megalithic phases.

TF-580, *Early Neolithic Period*, 3560 ± 105  
(3660 ± 105)

Charcoal from Trench 1, Layer 14, Depth 6.1-6.4 m., Sample No. 11, Field No. HLR/1965. Visible rootlets were handpicked. NaOH pretreatment was also given.

TF-575, *Late Neolithic Period*, 2895 ± 100  
(2980 ± 105)

Charcoal from Trench-1, Layer 7, Depth 3.2 m., Sample No. 6, Field No. HLR/1965. NaOH pretreatment was also given. Comment (M. S. N.): sample derives from the latest neolithic phase just prior to the arrival of megalithic people.

TF-573, *Overlap Phase*, 2820 ± 100  
(2905 ± 100)

Charcoal from Trench 1, Layer 5, Depth 2.35-3.55 m., Sample No. 4, Field No. HLR/1965. NaOH pretreatment was also given. Comment: sample belongs to Megalithic-Neolithic phase.

TF-570, *Overlap Phase*, 2970 ± 105  
(3055 ± 105)

Charcoal from Trench-1, Layer 4, Depth 1.80-2.10 m., Sample No. 1, Field No. HLR/1965. NaOH pretreatment was also given. Comment: sample belongs to Megalithic-Neolithic overlap phase.

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