

As usual the methods of preserving fragile charcoal specimens were discussed. Mr. McGregor reported good success with a solution of Alvar, a synthetic resin in alcohol which he tried on finding that bakelite became too hard. Mr. Hall reported that he had successfully handled rotten wood by putting it in a can and turning it into charcoal. Dr. Douglass showed an excellent surface that had been put on a small charcoal piece in 1929 after applying a weak solution of paraffin in gasoline. The quality of such surface greatly depends on the use of a very sharp razor blade.

At the morning session on July 13, discussions were developed around the following points:

1) Need for local chronologies.

Such chronologies which have been developed for Southern California, Southern New Mexico, Texas, Northern Mexico, Santa Catalina Mts., Santa Rita Mts., Chiricahua Mts., Arkansas, New England and other places.

2) The work of J. L. Giddings, Jr., on Dendrochronology in Alaska received special attention, because of its great archaeological and climatic significance.

3) Probable dates of the transition from Basketmaker II to Basketmaker III. This led to a general discussion of the cultural implications of the archaeological aspects of tree-ring research, in connection with the following items:

Specimens from Du pont Cave, Kane County, Utah, dated by Stallings at 217 A. D., and checked by specimens from Durango, Colo., collected by I. F. Flora and Earl H. Morris.

Date in 300's A. D. from Basketmaker II site, Ign. 7:101, near Durango, Colo.

Lack of dates in the 500's.

4) Shift in foci of cultures shortly after 1100 A. D. involving the Flagstaff, Tsegi, and Chaco areas. Intensive building in some areas, withdrawal from others.

Mention was made of the date of 1105 for the Gallina area in Northwestern New Mexico, and the association therewith of Woodland type pottery.

5) General discussion concerning the nature of material to be published in the Tree-Ring Bulletin, particularly in regard to tables of data for specimens.

At the business session which was held on the afternoon of July 13, Dr. Douglass was reelected president of the Tree-Ring Society, and Edmund Schulman as treasurer. Harry T. Getty was elected secretary of the Society. There was no change made in the personnel of the editorial board of the Tree-Ring Bulletin. Professor H. Arthur Meyer of Pennsylvania State College was elected a Fellow in the Tree-Ring Society.

The Tree-Ring Society extended a vote of thanks to Dr. Haury and his staff at the field camp for the hospitality extended during the conference.

A BASKETMAKER II DATE FROM CAVE DU PONT, UTAH

W. S. STALLINGS, JR.

Cave du Pont, in Kane County, Utah, eight miles northwest of Kanab, the county seat, was excavated by Jesse L. Nusbaum in 1920. That great rarity, a pure Basketmaker II site, it was historically important in defining the content and range of the culture.¹ This communication reports a date of 217 A. D. from the site, at present writing the earliest cutting date in the Southwest and the first from a pure Basketmaker II deposit.

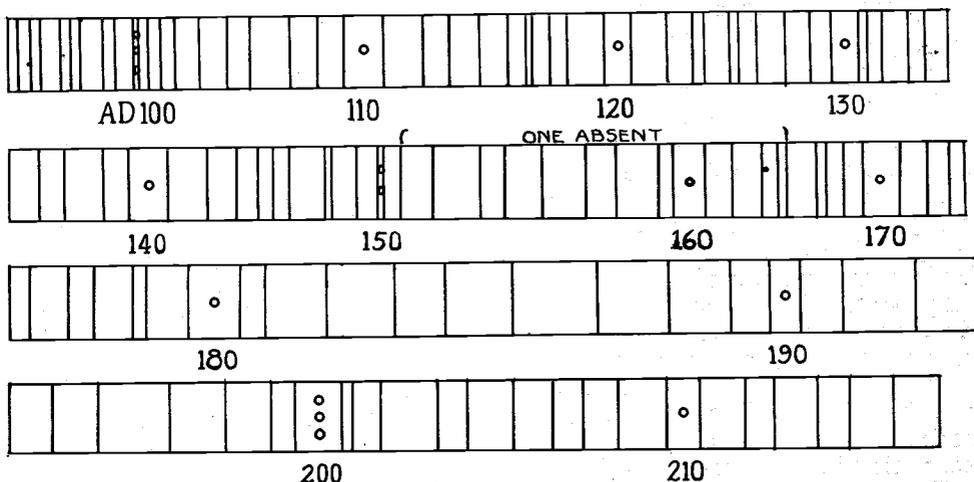
Timbers which had been used to roof storage cists were preserved in the site and at the close of the excavation a number were cached by Mr. Nusbaum in anticipation of possible future value. As the reader is aware, the following years saw the dating of Southwestern archaeological remains by tree-ring studies, and in 1936 Mr. Nusbaum was able to return to the locality and to recover five cached timbers. Duplicate cross-sections of these were deposited in the Tree-Ring Laboratory of the University of Arizona, in Gila Pueblo at Globe, and in the Laboratory of Anthropology, Santa Fe. The site is in a juniper-pinyon-oak zone and the woods reported by Nusbaum from the Basketmaker deposit are characteristic of the zone.² The collection recovered in 1936 consists of one specimen of pinyon, one small pole of oak, and three juniper logs. Of the five, the pinyon alone has been dated. The juniper presents special problems of its kind and the oak contains too few rings for dating.

Dendrochronology. The outer third of the pinyon (LA-U20) is in excellent condition and bark still adheres to the outside. But the wood has been attacked by borers and, of greater seriousness, the inner two-thirds of the specimen contain hundreds of posthumously formed holes, increasingly abundant toward the inner third, which obscure the ring-sequence over the greater part of the area. The walls of the remaining cells in the inner part are well lignified and very hard, however, and within this infected portion occur very narrow radiating areas which escaped infection and which show the ring sequence. None of these, in the sections which I have observed, extends completely from the center to the uninfected outer third, but they are sufficiently numerous so that a transition can be made from one to another with certainty of ring-identification and the ring-pattern can be cross-checked throughout. The accompanying measured diagram of the ring-sequence, from center to the last complete ring (A. D. 91-216) is taken along three radii. It is drawn from actual measures. Between 152 and 165 there is a ring absent, but the pattern of the specimen carries through in such detail otherwise as to leave no question as to the certainty in dating.

Original dating of the specimen was done in 1939 with the publication of Dr. Douglass' diagram of that portion of the Central Pueblo Chronology between 150 and 300 A. D., and of an accompanying photograph of an early pinyon record (MLK 153) from 150 to 238.³ After 235 A. D. the chronology is covered by a considerable number of specimens but previous to that date it is covered by only five, three pinyons and two rather complacent Douglas firs.⁴ These come from Obelisk Cave in the Red Rock Valley in northeastern Arizona and from Mummy Cave, some forty miles to the south, an area roughly 190-200 miles airline from Cave du Pont. Between 150 and 235 A. D., and including the period pertinent here, Douglass' diagram is based on the three pinyons, MLK 153 (A. D. 150-486) and MLK 110 (A. D. 199 on) from Obelisk Cave, and M 159 (A. D. 200-367) from Mummy Cave.⁵ The present specimen, from 91 to 216 A. D., adds a long record to this early, terminal period of the chronology.

Previous to 150 A. D. comparative material is restricted to the two Douglas firs, which have been considered to be of poor dating quality, MLK 152 (A. D. 11-477) from Obelisk Cave and M 143 (A. D. 90-358) from Mummy Cave.⁴⁻⁵ Microfilm records of these now are available in a collection of photographs of specimens forming the Central Pueblo Chronology.⁶ MLK 152, tending to complacency, nonetheless cross-dates in satisfactory detail with the present specimen, with strong cross-dating between 91 and 150; thus each serves to corroborate the dating record of the other.

Dr. Douglass has verified the cross-dating of the specimen, comparing it with the actual wood which forms this early portion of the chronology.



LA-U20. Pinyon, Cave du Pont, Utah. Measured diagram, X10. For comparative material see text.

To summarize the clerical data: LA-U20. Pinyon, wood. Full-section. Center and inside dated ring, A. D. 91. Outside dated ring (bark adhering), 217. One ring absent between 152 and 165. Radius, 102 mm.

Archaeology. Sites of periods later than Basketmaker II (Basketmaker III into Pueblo II) are common in the region but no trace of them was found in Cave du Pont.⁷ The site was stratified as follows: 1) 12-18 inches of sterile wind-blown sand and fallen rock; 2) a man-made layer, 3-5 feet thick, of tangled grass, oak leaves, juniper bark, corn-husks and other vegetal material (presumably successively discarded packing and other debris from storage cists), and; 3) the sandy floor of the cave into which were sunk thirty-one storage cists, often filled with the matted debris. Animal bones were rare. The cave was dry, sunless, well hidden, and presumably was used primarily for storage of crops, also as a cache for other property, and, in six cases, for burials, some of which showed signs of ancient disturbance. A rather large collection of material, described in detail by Kidder and Guernsey, was recovered.⁸

The relation of the date to others may be briefly indicated. The earliest previously established dates come from Mummy and Obelisk Caves in northeastern Arizona. Mummy Cave, which appears to contain Basketmaker II as well as Basketmaker III deposits, has yielded a series of dates between 348 and 398 from loose poles and a later series between 643 and 666.⁹ A critical site has been Obelisk Cave, the archaeological remains in which appear to be typologically very early Basketmaker III, and from which dates from 473 to 480+x have been obtained.¹⁰ The typological indications of Obelisk Cave have suggested that the earlier dates from Mummy Cave may be assignable to Basketmaker II; on this evidence a working terminal date for Basketmaker II and III commonly has been estimated at various points in the fifth century. Recently Morris more conservatively has estimated the transition to be sometime between 150 and 475.¹¹

There are no means at present for judging accurately the duration of occupancy of Cave du Pont or of the position of the 217 date in Basketmaker II. The thick layer of matted debris easily could have been formed in a few years or the cave could have been reused over a much longer period. The site itself is geographically marginal to the larger and better known Basketmaker concentrations east and south of the Colorado River and

there may or may not have been cultural lag. Although Morris has made a beginning toward the definition of material changes within the period there is still little by which to place du Pont, except that it does not appear to be extremely early.¹²

Most suggestive of a late date is the unfired pottery. Unfired pottery is relatively common in Basketmaker III cave sites along with fired pottery but, so far as I know, Cave du Pont is the only site where unfired pottery alone has been found.¹³ In Obelisk Cave, unfired containers were in use along with fired pottery, both the familiar Basketmaker undecorated Lino Grey and a pottery "superficially indistinguishable from the San Francisco Red" characteristic of the Mogollon culture.¹⁴ Either two or three unfired, finger-molded specimens are represented from Cave du Pont. One is a bowl decorated with black painted zig-zags, incisions and punctations. The other sherds represent one or two small, thick-walled, sub-conical vessels.¹⁵ But aside from the fact they are unfired, and that one bears incisions, the du Pont specimens are aberrant in shape and treatment from the described unfired pots of the San Juan drainage;¹⁶ which complicates an estimate of their chronological and historical affiliations.

This is not the place to enter the discussion over the native or foreign origin of Basketmaker-Pueblo pottery and similar cultural problems, but simply to indicate, for purposes of archaeological chronology, the associations of tree-ring dates. The present date is unfortunately only one, with its inherent limitations. A large collection of Basketmaker II tree-ring material recently recovered by Morris from near Durango, Colorado, and now being studied by Douglass, may be expected to outline temporal changes there in some detail.¹⁷

FOOTNOTES

- ¹ Jesse L. Nusbaum, A. V. Kidder and S. J. Guernsey, "A Basket-Maker Cave in Kane County, Utah." Museum of the American Indian, Heye Foundation, *Indian Notes and Monographs*. New York, 1922.
- ² *Op. cit.*, passim.
- ³ A. E. Douglass, "Estimated Tree-Ring Chronology: 150-300 A.D." *Tree-Ring Bulletin*, 5 (3), pp. 18-21. Tucson, 1939.
- ⁴ Collections of early material made by Earl H. Morris and I. W. Flora in the vicinity of Durango, Colorado, and being studied by Douglass, will cover the pre-235 period more adequately, both quantitatively and qualitatively. They were not available as comparative material when the present study was made.
- ⁵ Douglass, *op. cit.*; and, "The Central Pueblo Chronology." *Tree-Ring Bulletin*, 2 (4), pp. 29-30. Tucson, 1936.
- ⁶ A. E. Douglass, "Southwestern Photographic Ring Sequences." American Documentation Institute, Science Service, *Document 1298*. Washington, 1939.
- ⁷ Nusbaum, *et al.*, *op. cit.* Julian H. Steward, "Archaeological Reconnaissance of Southern Utah." *Bur. Amer. Eth., Bull. 128, Anthro. Paper 18*. Washington, 1941.
- ⁸ Nusbaum, *et al.*, *op. cit.*
- ⁹ E. H. Morris, "Archaeological Background of Dates in Early Pueblo Chronology." *Tree-Ring Bulletin*, 2 (4). Tucson, 1936. A. E. Douglass, *op. cit.*, 1936; also, "Southwestern Dated Ruins: V." *Tree-Ring Bulletin*, 5 (2). Tucson, 1938.
- ¹⁰ Morris, *op. cit.*, 1936. Douglass, *op. cit.*, 1936, 1938. Emil W. Haury, *Southwestern Dated Ruins: II.* *Tree-Ring Bulletin*, 4 (3). Tucson, 1938.
- ¹¹ E. H. Morris, "Archaeological Studies in the La Plata District." Carnegie Institution of Washington, *Pub. 519*, p. 5. Washington, 1939.
- ¹² Morris, *op. cit.*, 1939, pp. 12-19.
- ¹³ Cp. Morris, 1939, p. 157.
- ¹⁴ Morris, 1936, p. 35; 1939, p. 5, p. 23.
- ¹⁵ Nusbaum, *et al.*, pp. 138-144.
- ¹⁶ E. H. Morris, "The Beginnings of Pottery Making in the San Juan Area." *Amer. Mus. Nat. Hist., Anthro. Papers*, XXVIII, Pt. II. New York, 1937. S. J. Guernsey and A. V. Kidder, "Basket-Maker Caves of Northeastern Arizona." *Peabody Mus. Amer. Arch. and Eth., Papers*, 8 (2), p. 98, pl. 25a. Cambridge, 1921.
- ¹⁷ Carnegie Institution of Washington, *Yearbook*, 38, pp. 245-246. Washington, 1939.