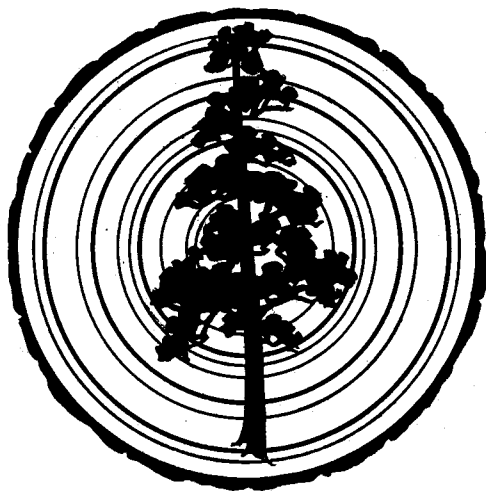


TREE RING BULLETIN

VOL. III

JULY, 1936
A Quarterly

No. 1



CONTENTS

Third Annual Tree Ring Conference	
Tree Rings in Branches.....	WALDO S. GLOCK
Dates from Gallo Canyon.....	W. S. STALLINGS, JR.

PUBLISHED BY THE TREE RING SOCIETY

HAROLD S. COLTON, Managing Editor
Museum of Northern Arizona
Flagstaff, Arizona

\$1.50 Per Year

50 Cents a Copy

THE TREE RING SOCIETY

DR. A. E. DOUGLASS, President

H. T. GETTY, Secretary and Treasurer

Main office, University of Arizona, Tucson, Arizona.
Editorial office Museum of Northern Arizona,
Flagstaff, Arizona

BY-LAWS

- Article 1—The name of this association shall be the Tree Ring Society.
- Article 2—There shall be two classes of active members,
(a) those who are contributing to basic research in dendrochronology
(b) honorary members who have contributed in special ways to tree-ring studies.
- Article 3—Prospective members must be proposed by two members of the society and elected by a two-thirds majority of the members present at a meeting duly called by the president.
- Article 4—The officers of the society shall be a president and secretary to serve for a term of one year.
- Article 5—The Tree Ring Bulletin shall be the official organ of the society, the board of editors of which shall be appointed by the president.
- Article 6—These by-laws can be amended at any duly announced meeting of the society.

EDITORIAL BOARD OF TREE RING BULLETIN

A. E. DOUGLASS, University of Arizona
WALDO S. GLOCK, Carnegie Institution of Washington
HAROLD S. COLTON, Museum of Northern Arizona
JOHN C. MCGREGOR, Museum of Northern Arizona
EMIL W. HAURY, Gila Pueblo
W. S. STALLINGS, Jr., Laboratory of Anthropology
FLORENCE M. HAWLEY, University of New Mexico

INFORMATION

AUTHORS

The Tree-Ring Bulletin will appear four times a year and will publish papers which are the results of original research on tree rings in their relation to climatology, and to other subjects. No paper which has already appeared will be accepted.

Manuscripts should be typewritten in double spacing. The Editor reserves the privilege of returning to the author for revision approved manuscripts and illustrations which are not in the proper form for the printer.

In reporting tree-ring data authors are requested to submit their data in a table such as appears on the back page of Vol. I, No. 1. This will cut the cost of publication very greatly.

Until funds are available authors will be requested to pay the cost of illustration which may be line cuts or half-tones, but must be drawn or printed on white paper, and mounted with paste, not glue.

Each author will be given, free of charge, twenty-five copies of the Bulletin in which his article appears. Reprints may be procured at cost with or without covers if ordered at the time the galley proof is submitted.

Manuscripts and illustrations should be sent express prepaid or by registered mail to the Editor, Dr. A. E. Douglass, Tree Ring Laboratories, University of Arizona, Tucson, Arizona.

SUBSCRIBERS

All correspondence having to do with subscriptions must be addressed to the Managing Editor, Dr. Harold S. Colton, Museum of Northern Arizona, Flagstaff, Ariz.

THIRD ANNUAL TREE RING CONFERENCE

The Tree Ring Society met in the library of the laboratory of the Museum of Northern Arizona, Flagstaff, Arizona, April 26, 1936 at 2:30 p. m. This meeting was duly called by the president of the society, Dr. A. E. Douglass, who presided at the two sessions which were held. As customary, this meeting was held in conjunction with the annual meeting of the Southwestern Division of the American Association for the Advancement of Science.

Those present at the first meeting were: Dr. A. E. Douglass, Dr. Harold S. Colton, Dr. Emil W. Haury, Mr. K. M. Chapman, Dr. W. S. Glock, Mr. Lyndon L. Hargrave, Mr. J. C. McGregor, Mr. Edmund Schulman, Mr. Thomas Hale and Mr. H. T. Getty.

The minutes of the previous annual meeting at Santa Fe were read and approved with slight correction. By request the secretary also read the By-Laws of the Society. Dr. Douglass commented briefly upon the climatological researches and publications involving tree ring results, now carried on by aid of the Carnegie Institution of Washington and the relation of such work to the Tree Ring Society and its Bulletin.

The Treasurer, Mr. McGregor, made a report on the financial status of the Tree Ring Bulletin, showing a bank balance of \$63.67 as of February 8, 1936.

It was brought to the attention of those present that since the Tree Ring Society has no library it has been the policy of the editors of the Bulletin to make no exchange arrangements with institutions and societies; the continuation of this policy was approved.

The matter of contributions for publication in the Tree Ring Bulletin was discussed. It was pointed out that these papers must be relatively short; papers are desired dealing with or related to all aspects of tree ring research, and especially those which set forth the application of tree ring information to problems of archaeology and climatology.

It was decided that associate membership in the Tree Ring Society will be accorded to everyone who pays the annual dues of \$1.50, which include the Bulletin. The following orders of membership were thereupon established.

Fellows: Those doing actual reading of tree rings; annual dues \$1.50 including the Bulletin.

Honorary: Those who have contributed materially to tree ring research.

Associate: All other members.

The following individuals were designated as fellows:

Baldwin, G. C.	Haury, Dr. Emil W.
Colton, Dr. Harold S.	Hawley, Dr. Florence M.
Davis, H. Faurest	(Mrs. Senter)
Dewey, Mrs. G.	Lassetter, Roy
Douglass, Dr. A. E.	McGregor, J. C.
Getty, H. T.	Miller, Carl F.
Gladwin, H. S.	Schulman, Edmund
Glock, Dr. W. S.	Stallings, W. S.
Hargrave, L. L.	

The following officers were elected for the ensuing year:

President—Dr. A. E. Douglass, Tucson.

Secretary—H. T. Getty, Tucson.

Treasurer—J. C. McGregor, Flagstaff.
Managing Editor of the Bulletin—Dr. Harold S. Colton,
Flagstaff.

The rest of the session was devoted to discussion of some of the major problems of tree ring research as indicated by the following outline.

1. Reports upon the dating of archaeological specimens should be accompanied if possible by description of the culture associated with the tree-ring material as determined on the site; whenever possible there should be a trained tree-ring worker on the expedition staff.
2. Climatic problems: Collectors should bear in mind the need to secure all material that contributes to a picture of past climatic conditions; thus a few specimens of complacent ring records should be included; specimens of each different species of tree should be preserved and it is well to have specimens from different heights in a tree.
3. Dating in other regions.

Some other localities will probably be found where cross-dating is as strong and the building of a ring chronology is as certain as in the Pueblo areas, but places will undoubtedly be tried where these results cannot so easily be reached because the identity of the same dates in different trees will not easily be recognized. Some general policies should be accepted:

- A. Wherever possible tree-ring projects should be set up for long periods of time.
 - B. Cross-dating between modern trees is the first essential to be established, for on this depends the proof of climatic influence on the ring records. We need a quantitative figure to express the degree of correlations on which cross-dating is based, such as a "slope" index, Glock's trend index, Gladwin's increment index.
 - C. Every individual false ring or absent ring in every specimen should be placed on record.
 - D. Full sections of trees when available should be preserved.
 - E. Injuries and cycle characters sometimes aid in cross-dating.
- This first session adjourned at 5:30 p. m.

Dr. Douglass presided at the second session which was held April 27, 1936 at 9:30 p. m. in the dining room of the Monte Vista Hotel. In addition to those present at the first session, the following also attended: Dr. Earl H. Morris, Dr. and Mrs. Ernst Antevs, Dr. Florence M. Hawley, Major L. F. Brady, Mr. Paul R. Franke, Mr. G. C. Baldwin, Father V. R. Stoner.

There being no business to transact, this session, with its larger attendance, was given over to further discussion of the problems taken up on the preceding day, and in addition, the staining of wood to make examination easier was discussed. Mention was made of probable improvement of our knowledge of actual rainfall values in past climates in the Pueblo area.

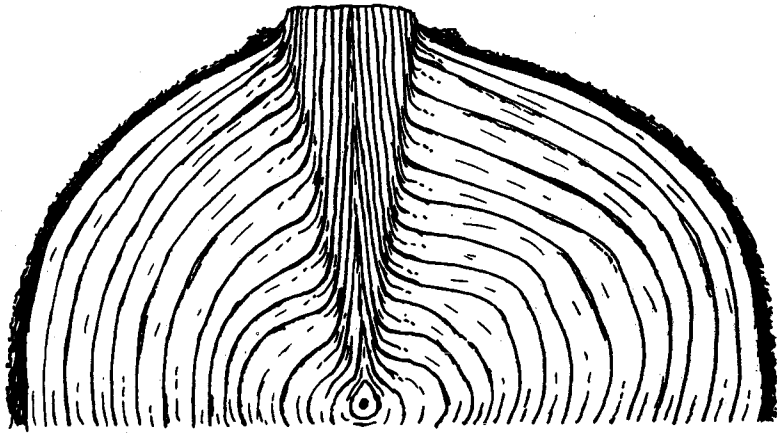
It was suggested and approved that students of tree-ring classes be admitted to these sessions. The meeting then adjourned.

TREE RINGS IN BRANCHES

BY WALDO S. GLOCK

An interesting problem in the age of a living conifer was recently brought to my attention. Sample ring counts interpolated into the radius of the tree gave such an excessive age that a trip into the field seemed worthwhile. Cores taken from the trunk showed ring counts per inch far less than in the specimens submitted previously. Then the fact came out that these specimens were secured chiefly from branches.

Now the normal successful branch of the conifers used in tree-ring work emerges from the axis of the trunk at, or near, the base of the seasonal increment of tip growth. The branch, therefore, at any later time is of the same age as the trunk at the level of emergence. Since the



The relation of rings in trunk and branch in a juniper section, EFR 14.

diameter of the branch is less than that of the trunk, the thickness of the rings must be correspondingly less in the branch. The ring count per inch in the branch must be far higher than that in the trunk, for the two are of exactly the same age at the level of the branch.

This relation of trunk and normal living branch is self-evident. However, a 19-foot sapling was cut down and sectioned so as to bisect a branch longitudinally from its point of origin at the axis of the trunk out to a point beyond the bark of the trunk. The radius of the trunk was three inches and of the branch one-half inch at the point of emergence. In this case, therefore, the ratio of ring thicknesses is six to one. Moreover, the individual rings can be traced from the trunk out into the branch where all can be identified. These relations are shown in the accompanying diagram. Inspection of an ordinary conifer, of course, shows the normal decrease in length and diameter of the lateral branches from bottom to top.

Several points which have been derived not only from this study but also from others deserve mention. (1) With proper care and adequate knowledge of the species used, a branch can be made to reveal the age of the tree at the level of emergence, due allowance being made for the annual increments of tip growth in the branch from the axis of the trunk out to the place on the branch where its rings are counted. (2) Branches of conifers very commonly are strongly hyponastic, that is, the axis lies

closer to the upper than to the lower side, which causes the rings to be thin above and thick below. Red, or "compression," wood is not at all an uncommon feature of the rings on the under side of the branch. This hyponastic characteristic, when present, can be used to distinguish branch from trunk in archaeological material. (3) For chronologic or climatic purposes branches are apt to be rather unreliable. They are, on the whole, a poor substitute for the trunk. Cross-dating (or matching the rings) between a branch and its parent stem may not be of such high quality as that among adjacent trees. The ring records from branches apparently diverge more from the average record of a group of trees than the individual trunk record diverges from that average. Branches appear to be more erratic and less consistent than trunks.

DATES FROM GALLO CANYON, EAST-CENTRAL NEW MEXICO

BY W. S. STALLINGS, JR.

Thirteen miles southeast of Corona, in the valley bottom of Gallo Canyon, and adjacent to the ranch-house of Mr. F. H. Armstrong are the mounds of a compact, very late Pueblo III - early Pueblo IV village, Laboratory of Anthropology site number 1225. The mounds, varying from some 25 to 35 feet in width, form a slightly wedge-shaped quadrangle, roughly 140 by 180 feet, surrounding a plaza. Near one end the quadrangle is broken by a passage-way some 15 feet wide. The pueblo is essentially an adobe structure and appears, from the height of the mounds, to have been terraced to at least two, probably three, stories.

Ceramically the site is a Chupadero Black-on-white village containing a large amount of Rio Grande Glaze A red (1), a component of the Cedarvale phase as defined by Mera (2). Of particular interest is the abundance and diversity of recognizable trade pottery present. Types from regions to the south and southwest include Lincoln Black-on-red, El Paso Polychrome, Three Rivers Red-on-terra-cotta, Babicora Polychrome (3), and Gila Polychrome (including pieces with secondary use of red); and from the west and northwest, matte- and glaze-paint varieties of St. Johns Polychrome and an undefined eastern Little Colorado, Pueblo IV type with a contrasting slip (red exterior, white interior) decorated on the interior with green glaze paint. Also present from the northwest are sherds representative of the Los Padillas-Heshotauthla Polychrome category (4), minor varieties of Rio Grande Glaze (San Clemente Polychrome, Arenal Polychrome) and a black-on-white pottery with Mesa Verde affinities which occur in the region of Albuquerque as members of Mera's Arenal phase (2). On general evi-

(1) Descriptions and discussion of the chronologic positions of the pottery types mentioned may be found in the following papers, which also contain further bibliography. D. D. Brand, "The Distribution of Pottery Types in Northwest Mexico," *American Anthropologist*, 37 (2), Menasha (1935). H. S. & C. E. Cosgrove, "The Swarts Ruin . . ." *Papers of Peabody Museum of Amer. Arch. and Eth.*, 15 (1), Cambridge (1932). W. & H. S. Gladwin, "Some Southwestern Pottery Types, Series I & II," *Medallion Papers*, 8 & 10, Globe (1930, 1931). A. V. Kidder & A. O. Shepard, "The Pottery of Pecos," 2, *Papers of the Phillips Academy Southwestern Expedition*, 7, New Haven (1936). H. P. Mera, "Chupadero Black-on-white," *Laboratory of Anthropology, Tech. Ser., Bull. 1*, Santa Fe (1931); "A Proposed Revision of the Rio Grande Glaze-Paint Sequence," *Lab. of Anthro., Tech. Ser., Bull. 5*, Santa Fe (1933); "Ceramic Clues to the Prehistory of North Central New Mexico," *Lab. of Anthro., Tech. Ser., Bull. 8*, Santa Fe (1935). H. P. Mera & W. S. Stallings, jr., "Lincoln Black-on-red," *Lab. of Anthro., Tech. Ser., Bull. 2*, Santa Fe (1931). E. B. Sayles, "Some Southwestern Pottery Types, Series IV," *Medallion Papers*, 19, Globe (in press). W. S. Stallings, jr., "El Paso Polychrome," *Lab. of Anthro., Tech. Ser., Bull. 3*, Santa Fe (1931).

(2) Mera, *op. cit.*, 1935.

(3) The sherds of Babicora Polychrome were kindly identified by Mr. E. B. Sayles, Gila Pueblo.

(4) The distinction between Heshotauthla and Los Padillas Polychromes as recently described is not clear. There is undoubtedly a considerable duplication in the material on which the descriptions are made if the two lots do not represent essentially the same type. See Kidder and Shepard, *op. cit.*, pp. 363-366, 387, 603-608; Mera, *op. cit.*, 1935, pp. 81-83.

dence the pueblo may be tentatively placed chronologically within the late 13th and the 14th centuries, with its visible remains largely attributable to the later century.

The ruin was the subject of a brief visit in the summer of 1933, at which time a number of charred timbers were removed from a partially pot-hunted room on the west side of the plaza. From sherds found in undisturbed fill it was evident that at least seven vessels had been broken at the time of the destruction of the room: two Chupadero Black-on-white ollas and a bowl, a Rio Grande Glaze A red bowl and an olla, an El Paso Polychrome jar, and a crude, "smeared" plain brown-ware jar. Also present was a lone sherd of Babicora Polychrome. The room-fill was composed largely of fallen wall-blocks and disintegrated adobe, and the charred timbers lay on or close to the floor, the same stratum from which the sherds came.

Specimen Number	Form of Specimen	Outside Dated Ring	Inside Dated Ring	Rings Absent in Sequence	Approximate Radius MM.	Rings Lost on Outside	Bark-Date
RG 477	F. sect.	1348† or 49*	1294	1?†	46	0	1349±1
478	5 frags.	1366	1273	0	58	0	1366
479	F. sect.	1365	1295	4	37	0?	1366±1
484	F. sect.	1365*	1263	3	34	0	1365-66
485	F. sect.	1364	1312	0	31	Few	1366±2

*Ring of complete width. †1347, usually microscopic, may be absent.

The site is in a juniper-pinyon zone at an approximate elevation of 6200 feet above sea-level. Western yellow (*ponderosa*) pines are said to have been formerly growing a short distance up canyon. All three woods were present in the room, but neither the juniper nor the pine proved datable. The juniper possesses its typical eccentricities and the pine has short, hypersensitive records some thirty years in length. Five pinyon timbers, however, cross-dated without difficulty and correlated with other sequences which are grouped under the heading of "Rio Grande chronology" (5). Critical data regarding the dated specimens are listed below. The specimens are on file at the Laboratory of Anthropology and a duplicate of RG 478, an excellent record, has been deposited at the Tree-Ring Laboratories, University of Arizona. The inside dated rings as listed are also the center rings except in the case of RG 479. The inner rings of this specimen, which probably go back to the neighborhood of 1265, are too congested for identification. The absent rings in RG 479 and 484 are near the outsides of the timbers among minute terminal rings and are probably those of 1347, 55, 57 and 60 in RG 479, and 1347, 55, and 57 in RG 484.

A description of the standardized ring-sequence of the five specimens is given in the following written skeleton plot, a means of recording major dating criteria which was devised by Dr. Douglass with the extension of his investigations into the archaeological field. Emphasis is on narrow rings. The dots and lines indicate relative degrees of deficiency: a dot has half the value of a line. Dates followed by the letter "B" (denoting "big") and

(5) W. S. Stallings, jr., "A Tree-Ring Chronology for the Rio Grande Drainage in Northern New Mexico," Proceedings, National Academy of Sciences, 19 (9), Washington (1933).

enclosed in parentheses identify rings distinctively wide. Rings neither characteristically wide nor narrow are not mentioned. With a few differences the sequence follows the classic chronology (6). In common with other Rio Grande sequences the "Great Drouth" closes with 1296 instead of 1299 and begins in 1269 or 1270 instead of 1276. The latter date, however, marks a general intensification of drouth conditions.

1269-70-71-72-73-74	1322-23-24
• • • —	
1276-77-78-79-80-81-82-83 84	1326-27
• — — • •	• —
(1285 B)	(1334 variable)-35
1286	1337-38
•	•
1288	1340-41-42-43-44
•	• • — •
1290-91-92	(1346B)
• — •	1347
1295-96	—
1301	1350
1303-04-05-(06 variable)	•
1308	1352
•	(1353B)
1310-11-12	(1355 variable)-56-57
(1313-14 B)	—
1315-16-17	1360
•	—
1320	1362-63-64
•	• —
	•

(6) A. E. Douglass, "Dating Pueblo Bonito and Other Ruins of the Southwest," National Geographic Society, Contrib. Tech. Papers, Pueblo Bonito Series, 1, Washington (1935); "Estimated Tree-Ring Chronology," Tree-Ring Bulletin, vols. 1 & 2, Flagstaff (1935, 1936).