

SPECIMEN FA 21

A record of the great drought

20, 21, and 34 represent parts of these three beams. Number 21 being the southern beam. FA 20 and 23 gave bark dates of 1285 A. D., while FA 21 gave a date of 1306 ± 5 . (1) From this it seems probable that the room was constructed about 1285 or 1286, and then fifteen or twenty years later a further beam was necessary at the south end of the room as a support for a weakened portion of the roof.

FA 21 is a three-quarter section of charcoal, a Douglas fir, and shows a very beautiful ring record from 1248, the inside dated ring, to 1301, A. D., the last outside dated ring. It gives an exceptionally good picture of conditions during the great drowth lasting from 1276 to 1299. A. D., showing as very small or even microscopic all the exceedingly dry years during this period, the years 1276, 78, 80, 83, 86, 88, 95, 97, and 1299. No rings were absent in the entire sequence and all are clearly marked, as can be seen in the photograph of this specimen.

(1) Baldwin, Gordon C., 1935. Dates from Kinishba Pueblo. Tree Ring Bulletin, Vol. 1, No. 4, p. 30. Flagstaff, 1935.

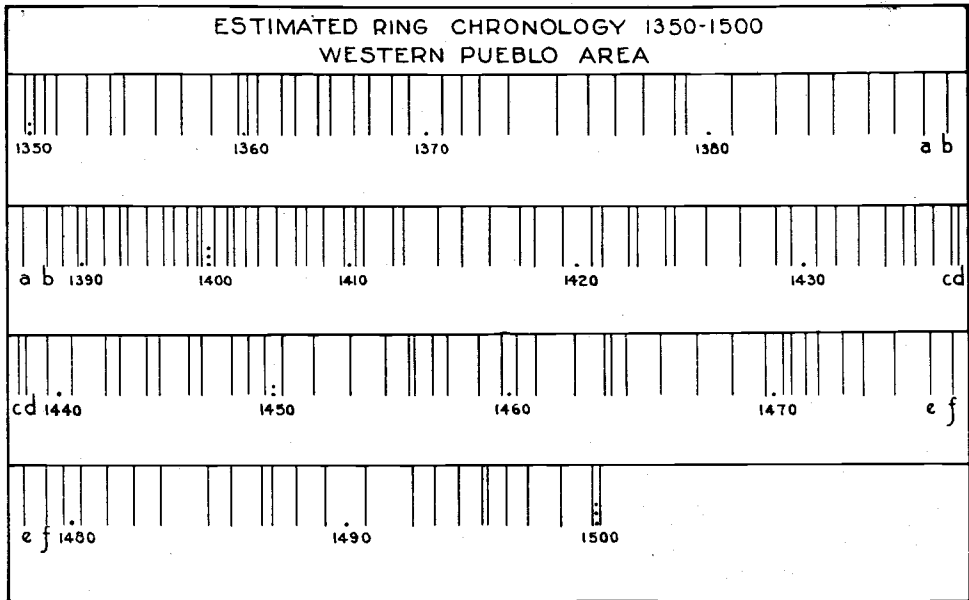
THE PHOTOGRAPHY OF FA-21

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The photography of charcoal specimens requires a special technique because of the difficulty in securing a surface plane enough to give adequate definition to all of the rings and in obtaining proper lighting on this surface. It has been found that a transverse section is the simplest to prepare and highly sat-

ESTIMATED RING CHRONOLOGY IV: 1350-1500

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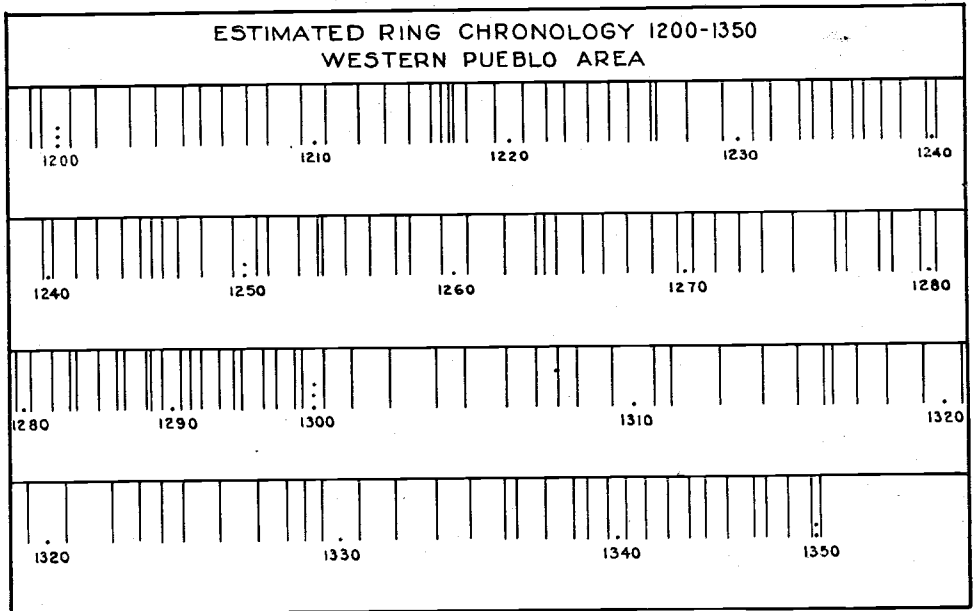
Special Ring Characters

1350-1-2 Always small	1428-9 Big
1355 Smallish	1435 Small
1357-8-9 Big, but '59 is small in pinyon samples	1438 Small
1360-1 Very small, often microscopic	1441 Big
1360's Odd numbers small	1442-4-6 Very small
1371-2 Smallish	1448-9-50 Very small
1379 Very small amidst big rings	1451-2-3-4 Big
1383 Sometimes smallish	1455 Microscopic and often absent
1385 Sometimes smallish	1457 Very small, sometimes absent
1390 Smallish	1460 Occasionally very small; rarely absent
1396 Small	1464 Very small; often absent
1399 Very small	1465 Usually small
1396-1402 Drouth	1470-3 Small
1402 Very small	1471 Very small; sometimes absent
1407 Very small	1474-85 Large
1410-1-13 Very small	1487 Reliably very small; often double
1418 Usually small	1495 Microscopic and usually absent
1421-3-5 Small	1499 Sometimes very small

isfactory with which to work either visually or photographically. Such a section can easily be obtained by breaking the charcoal across the grain with the fingers, but great care must be taken in the breaking to prevent the specimen from crumbling. This type of break gives the rings of the specimen a brilliantly contrasting quality which cannot easily be obtained from a razor-cut surface, although rarely does this method of creating a surface give a working plane enough to be photographed with an ordinary short-focus lens of the sort found in the amateur camera. A lens of at least 25 centimeters focal length is better and one of 50 centimeters is still more desirable in order to bring the many points in the highly irregular surface of the specimen into the focal plane.

A factor of equal importance to preparation of surface is the lighting

CHRONOLOGY V: 1200-1350



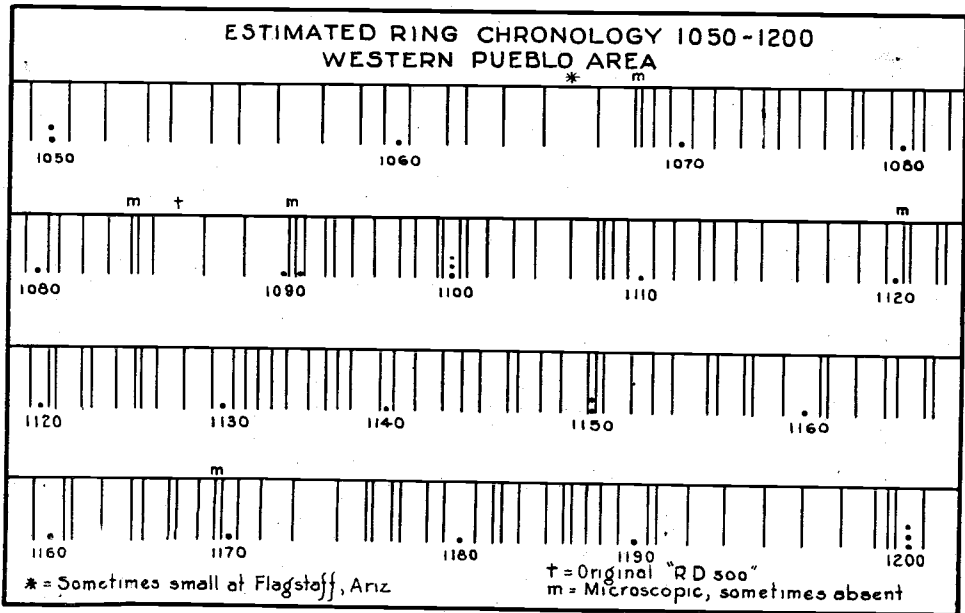
Special Ring Characters

1205	smallish	1276	very small
1208	smallish	1277	often double
1215-6-7	increasingly small	1278	smallish
1217	very small; sometimes absent	1280	very small; occasionally double
1218	sometimes small or large	1283	small to often absent; frequently double
1221	smallish	1286	very small to microscopic
1227	microscopic to absent amidst large rings	1288	very small; often absent
1233	sometimes small	1295	very small
1236	sometimes small	1297	usually smallish
1240	always small	1299	very small to microscopic (1300's generally larger than average)
1244-5-6	smallish	1307	small
1249-50	large	1311	often small
1251	medium to microscopic; rarely double	1316	reliably very small
1254	very small and often absent	1322-3	smallish
1258	smallish, weakened	1328-9	smallish
1263	very small; rarely absent	1335	always small
1264	smallish	1338	usually small
1270	smallish	1342	sometimes small
1275	very large	1347	small
1276-99	great drouth		

of surface. For the best possible definition of the rings on the photographic plate it is necessary that the plane of the charcoal surface be perpendicular to the optical axis of the apparatus while retaining the maximum degree of contrast that can be obtained in the rings. Contrast in rings depends upon the relatively compact and compressed nature of cells in late growth as compared with the larger cells of early or spring growth. Thus it will be seen that if light comes from above and a short distance in front of the surface to be photographed, a specular reflection of considerable intensity will be obtained from cell wells of late growth whereas the light falling on the spring growth will be lost in the cell cavities.

In photographing FA-21 a light-tight specimen box approximately 2'x2'x3' was used. This box is enamelled white on the inside to give great

CHRONOLOGY VI: 1050-1200

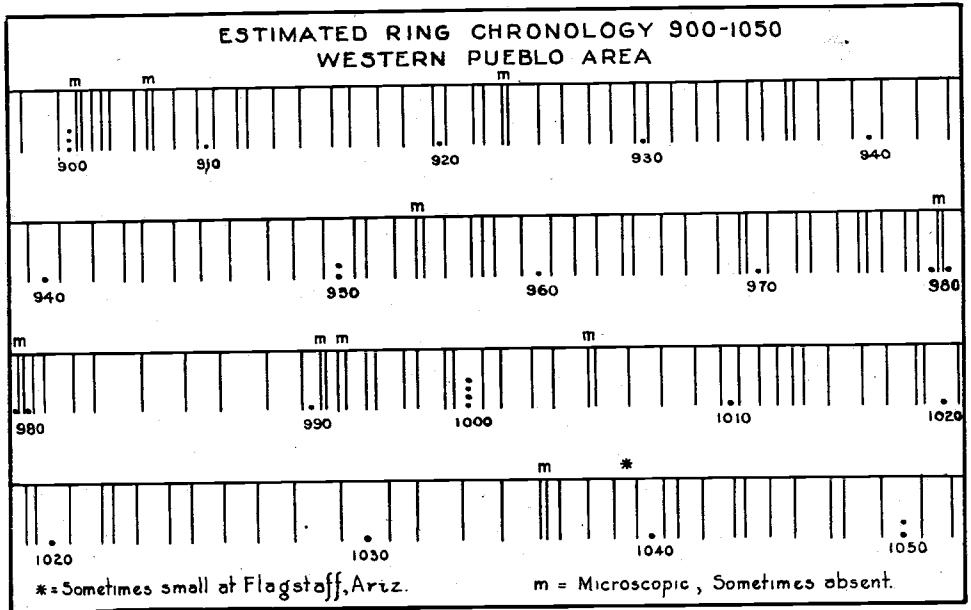


Special Ring Characters

1053	smallish amidst large rings		
1062	smallish and usually heavy red		times absent in series of big rings 1122-30
1063-6	large but 1065 sometimes small at Flagstaff	1123	very small
1067-8	very small; either is occasionally absent	1126	very small
1078	always smallish	1131-3	very small
1081	usually smallish	1146	very small
1085	very small, sometimes absent	1150	very small
1086	small	1151	usually small
1087-9	large	1156	very small
1090	very small; often microscopic or absent	1158	very small
1091	very small	1161	small
1093	very small	1164	smallish
1097	very small; occasionally microscopic	1166	usually very small
1099	very small; sometimes microscopic	1169	usually microscopic
1101	very small to microscopic	1175	very small to microscopic
1102-5	large	1177	very small to microscopic
1107	very small to microscopic; occasionally absent	1182	very small to microscopic
1113	always smallish	1185	small
1121	very small to microscopic; some-	1186	very small; occasionally microscopic
		1187	small
		1191	sometimes small
		1193-7	large
		1198	smallish
		1199	very small amidst large rings

er diffusion. At one end of it is an aperture in which is mounted a Bausch and Lomb Tessar lens of 10 inches (25 centimeters) focal length. A bank of lights is located on the inside of the box against the panel in which the lens is mounted. Of this bank, only one 75-watt element, with diffusing screen, was used on the specimen. To avoid the possibility of any stray or unintended reflector light striking the lens a black cylindrical hood 7" long was placed over the lens cell inside the box and toward the specimen, which was placed in the proper position within the box. A Wratten Panchromatic plate, 8"x10", was selected as being the most desirable for the type of subject and nature of light source. No filter was needed. The lens was

CHRONOLOGY VII: 900-1050



Special Ring Characters

900-4 very small group	980 microscopic and usually absent
901 microscopic or absent	981 very small to microscopic and even absent
905 large	982 small
906 small	984 smallish
907 microscopic and often absent	985-9 very large
910 smallish	991 very small; often absent
912 smallish	992 small
916 smallish	993 very small; occasionally absent
920 very small	995 very small
922 usually very small	1005 always small to microscopic, even absent
924 very small to absent; 923 sometimes absent with 922 and 924	1009-14 smallish
930 smallish	1014 small
935 smallish	1019 always small to microscopic, or even absent
937 very small and often absent	1022 small; in Flagstaff area 1023 is sometimes smaller
943 smallish amidst large rings	1031 smallish
951 small	1035 always very small and often absent
954 microscopic to absent, after small 953	1036 usually small
957-8 smallish-equal	1039 often very small at Flagstaff; not so at Chaco Canyon
964 smallish	1041 small
968-9 small, one of them sometimes absent	1044 small
972 small	1048 smallish
975 very small	
978 small	

stopped down to f:11 so that an exposure of 5.0 minutes was necessary.

The length of the original ring sequence shown in the cut was 13.0 millimeters and the degree of original enlargement was x8. In order to preserve the contrast of the specimen itself an X-ray developer worked out by Hubble of Mount Wilson was used. The cut shown is a further enlargement of the specimen of about x1.6 from the negative onto Defender Contrast Velour Black Bromide. The illustration gives an enlargement of about x13 from the original.