length and to carry it to such detail that the patterns become memorized. For it is in that memory that crossdating become a living reality to the student.*

We are of course not only strongly interested in papers that have contributed directly to this phase of tree-ring work but also in numerous others such as detailed botanical studies of special ring structures. Also of much interest are the studies in special regions as the rainy semi-tropics where influences entirely different from those in our dry Southwest are dominant in ring growth, and studies in those large areas where so many factors seek control of the trees that it is very difficult for climatic influences to show through. In some instances, too, rough summarizing methods are employed, of practical value in general growth studies but of little use in the development of reliable climatic indices from tree-rings. It is in considering the conclusions of papers dealing directly with tree-rings as climatic indices, however, that one must specially look for the proper use of the principle of crossdating outlined in the first paragraph.

*We are seeking publication in quarto form of a "multiple chronology" containing some 900 photographs of our best ring records from the Southwest. Through most of this chronology any ring may be found as it appears in ten to thirty different trees. Such a publication is much desired as it will illustrate the fundamentals of our work as nothing else can do.

A BIBLIOGRAPHY OF TREE-RING ANALYSIS

EDMUND SCHULMAN

The present bibliography is with a few exceptions limited to papers dealing in whole or part with the analysis of tree-rings in relation to climatic and archaeologic studies. For the literature on cycles, see Douglass ref. 124, about 200 titles; Antevs ref. 10 reviews about 350 titles (over 300 not in the present list), largely botanical and preceding 1917. Much relevant material may be found also in ref. 392 which lists some 700 papers on silviculture, and ref. 412 which contains about 1000 papers on forests and water.

For a survey of the precision dating of tree-rings in the Southwest, refs. 106, 124, 126, 127 and 173 will be helpful.

References for the archaeological contact are: 2, 20-24, 31, 32, 46, 70-72, 86, 87, 97, 108, 113, 121-123, 125, 128, 129, 148, 161, 162, 164, 165, 185, 194-196, 205-212, 214-217, 240, 241, 246, 264, 274, 280-290, 297, 304-309, 324, 337, 366, 373, 375, 376, 378-380, 406, 407.

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Note: It is suggested that the space below be used for addenda.