## DON E. CRABTREE Research Associate in Prehistoric Technology University of Idaho Moscow, Idaho

Don was born in Heyburn, Idaho on June 8, 1912 and raised in the Idaho Salmon River country which at that time was still very much occupied by local Indians. Young Crabtree became interested in these people and the artifacts he found in the nearby deserts, but was unable to learn anything of their manufacture from the Indians. Even at that time, flintknapping was a lost art.

By the time Don was seven he had gathered quite a collection of artifacts which had only increased his curiosity about their fabrication. So he began to experiment with methods of manufacture to obtain replication. He tried many methods of holding and applying force with little success and much failure. But "failure" was a word Don would not accept, so he persisted with the experiments and by the time he was twelve had defined a holding technique and learned to use a deer antler or hammerstone for the percussion work and a deer time for pressure finishing and could make a fair imitation. But Don is a perfectionist and was not satisfied with the results for he realized that the technique was not the same and what he was producing was an imitation and not a duplication.

For many years Crabtree continued the lithic experiments, each an attempt to duplicate a different typological point until he had successfully determined the techniques of many people in time and space. During this time he made copious notes of platform preparation, amount of force, angle of seating the tool, angle of applied force, termination of flakes, etc. until he was able to interpret many techniques of both the Old and the New Worlds.

While hunting suitable material for experiments, he realized that the debitage found in the Indian campsite was more vitreous and showed a color change from the raw material of the quarry. It occured to Crabtree that the Indians were successfully treating their stone and so he began to experiment with the alteration of lithic material. After repeated failure, he was successful in duplicating alteration by burying the stone in sand under a campfire and slowly heating and cooling the material. The obsidian needed no alteration for it is a volcanic glass, but the thermal alteration of flint allowed greater control of detaching flakes and permitted Don to replicate many more techniques. Since his experiments in thermal treatment have now been published in "Tebiwa" by Butler and Crabtree, Dr. Francois Bordes of the University of Bordeaux and Dr. Jacques Tixier of the Institute of Human Paleontology, Paris, France have both experimented with the process under controlled laboratory conditions and Dr. Bordes now finds that the alteration can

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be traced to Solutrean and it may well be that pressure flaking is contemporaneous with thermal alteration. Not all flint was altered by prehistoric man for he desired the more unyielding quality of the raw flint for certain tools such as drills, etc.

Crabtree had studied geology and paleontology at Long Beach Junior College and so in the late thirties was employed by Dr. Charles Camp and Dr. Ruben Stirton as supervisor of the vertebrate and invertebrate laboratory at the University of California at Berkeley. During the summer months he was assistant to Dr. Stirton in field work in California and Nevada which allowed him to discover more artifacts and in the evenings to experiment with replication. While at Berkeley, he was privileged to work with Dr. A.L. Krober and Dr. Gifford who together with Camp and Stirton, were intensely interested in Crabtree's flint technology and encouraged him to continue the experiments and to eventually publish the results. Since Crabtree had devised his own techniques of manufacture, he was further stimulated when Dr. Krober told him that his holding and manufacturing methods were duplicate to those of "Ishi".

In 1939 Don was striken with cancer so resigned his position at Berkeley to return to Twin Falls, Idaho for surgery. The surgery and subsequent X-ray treatment left him weighing a mere 70 pounds and with lymphatic phlebitis of the left leg. To regain his health, overcome the pain, and learn to walk again, Don concentrated from morning until night on his flintknapping; and it was during this period he resolved many techniques, among them the making and fluting of the Folsom point both by percussion and pressure. In 1941 he was invited to demonstrate at the meeting of the American Association of Museums in Columbus. Ohio. As a result he was employed by the Ohio State Museum to continue his experiments in their lithic laboratory where he replicated most of the Eastern material and some from Meso-America, including the intricate "ceremonial" points native to that area. At the Museum he worked with Dr. Henry Clyde Shetrone and H. Holmes Ellis who further encouraged his experiments. Later he was called to the University of Pennsylvania as advisor on lithics and from there went to the Smithsonian to work with H.H. Roberts on an analysis of the Lindenmeier collection of Folsom material.

The war intervened and Crabtree interrupted his work to serve as coordinating engineer for Bethlehem Steel Company in California. After the war, he returned to Idaho where he worked as County Supervisor for the Department of Agriculture for Twin Falls County. But during these years he continued to experiment, making an effort to replicate more and more point types.

In 1962, Dr. Earl Swanson, Idaho State University, invited Don to open the first conference of Western Archaeologists on problems of point typology which was held in Pocatello, Idaho. Here he explained and demonstrated the technological differences in manufacturing techniques and their relationship to typology. Later that same year, Don

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suffered a coronary occlusion and was forced to retire from his government position on a disability. However, the participants at the point typology session had become interested in Don's work thru Swanson and so with their help was sent by National Science Foundation to attend the Lithic Technology Conference in Les Eyzies, France, in November of 1964. There he worked with Dr. Francois Bordes, Director of the Laboratory of Prehistory of the University of Bordeaux, who for many years had been acknowledged the leading authority on percussion flaking and Old World Typology. Together they lectured, demonstrated, and explained to the participants the various techniques and their subtle differences. Bordes covered the Old World techniques and Crabtree concentrating on the pressure flaking of the New World. Don felt rewarded for a lifetime of research and experimenting when during the closing remarks of the conference the distinguished Dr. Bordes said "If this Crabtree had lived 40,000 years ago he could have taught ancient man a thing or two about tool making."

As a result of this conference and thanks to some very good friends in the profession, National Science Foundation subsequently issued grants to Dr. Earl Swanson and Don to research and record on film and by publication the results of Don's experiments in lithic technology.

At the conference, Don also worked with Dr. Jacques Tixier, an authority on African typology and a very fine flintknapper. Bordes, Tixier, and Crabtree have now become very good friends and both Bordes and Tixier have spent considerable time with Don at his home in Kimberly resolving various techniques. Here they have an opportunity to work uninterrupted, Crabtree helping these men with the pressure techniques of the New World and they, in turn, teaching him the percussion work of the Old World. In April of 1969, the three men were together at the University of Arizona and the Arizona State University where they simultaneously lectured and demonstrated various techniques.

Don had always wanted to replicate some of the work done in Australia, but never had a chance to review a collection and was fully aware that the Australian techniques were vastly different from the pressure work of this hemisphere, plus the fact that the knapper there used a wooden pressure tool for fabrication. In 1966 he was honored to have Dr. Norman Tindale of the University of Adelaid as a visitor in his home. Tindale explained his observations of manufacture and together they experimented until Don was able to make replications. At the end of his visit, Dr. Tindale said "the only difference between your replication of the Kimberley point is the difference in the spelling of Kimberley and the fact that your replica is made of obsidian rather than chert". In 1969, he gained further knowledge of the Australian techniques when Dr. Junius Bird and Dr. Richard Gould made a visit to his home and together did further experiments in Australian technology.

In 1969, Dr. Swanson conceived the idea of holding a field school of lithic technology and in July of that year the National Science

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Foundation financed the first field school of this kind which was held in Twin Falls, Idaho with graduate students attending from New York, Idaho, Florida, California, Texas, and Washington. The school was highly successful to the point where Dr. Swanson received requests from major universities to continue the lithic technology course and increase the number of participants.

The field school is no longer offered by Idaho State University but the tradition is carried on at Washington State University where Don is a guest lecturer each session.

Don is currently a research associate at the University of Idaho with the Laboratory of Anthropology where he has served since 1977. In May of 1979 Don Crabtree was awarded a Doctor of Science Degree from the University of Idaho for his contributions to the field of anthropology.

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I. Universities represented by students at the flintworking school include:

Arizona State University University of British Columbia University of Indiana Columbia University University of Kansas Idaho State University Iowa State University University of Missouri, Columbia New York University University of Nebraska University of North Carolina Ohio State University Tohoku National University University of Northern Colorado Sendai, Japan University of Oregon University of Pennsylvania Washington State University University of Pittsburg Yale University University of Arizona University of Toronto University of Florida University of Wisconsin

- II. Collaboration, review and advice to authors on books pertaining to lithic technology and early man.
  - 1. James A. Michener. Crabtree read and edited three chapters of Michener's book, <u>Centennial</u> and has been duly acknowledged for his help in preventing gross errors in flintknapping techniques of early man.
  - 2. Denise de Sonneville-Bordes. La Prehistoire Moderne. Review and advice.
  - 3. Francois Bordes. <u>The Old Stone Age</u>, and <u>La France Au Temps des</u> <u>Marrouths</u>. Advice given via correspondence.
  - 4. Jacques Bordaz. Tools of the Old and New Stone Age. Review and advice.
  - 5. Erich Von Daniken. <u>Chariots of the Gods</u>. Advice via telephone to the editors of the New York Times on Crabtree opinion of this book.
- III. Consultant on Archaeological Sites:
  - 1. Louis L.B Leakey site at Calico Hills, California.
  - 2. Wormington Site at Kersey, Colorado.
  - 3. Hudson-Meng Site, Nebraska.
  - 4. Murray Springs Site, Arizona.
  - 5. Anasazi Site, Bernalillo, New Mexico.
  - 6. Orange Walk Town, Belize (British Honduras)
  - 7. Colha Site, Belize
  - 8. Cuello Site, Belize

IV. Visits by professionals to the Crabtree home:

- 1. Francois Bordes, University of Bordeaux, Talence, France. Three visits by Dr. Bordes to study pressure flaking, resolve the Corbiac technique, and analyze collections and discuss typology. Subsequent publication by Bordes and Crabtree on the Corbiac Technique.
- 2. Richard Gould, University of Hawaii, Honolulu, Hawaii. Two visits by Dr. Gould to the Crabtree home to learn flintknapping

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and observe the replication of point types and techniques used by present day flintknappers in Australia to substantiate his work in that area.

- Junius Bird, American Museum of Natural History, New York, N.Y. A visit by Dr. Bird to study flintknapping and have Crabtree replicate the Fells Cave tools and resolve pressure flaking with wooden tools. Subsequent publication of "Flaking Stone and Wooden Implements" by Crabtree in Science.
- 4. Jacques Tixier, Museum National D'Historie Naturelle Prehistorie, Paris, France. One visit to learn flintknapping and discuss lithic technology. After the visit, Crabtree drove Tixier to Tucson, Arizona, for a joint meeting with Francois Bordes at both the University of Arizona and Arizona State University to give demonstrations and instruction in lithic technology. Film made at Arizona State University of their experiments and is presently used for classroom teaching.
- 5. Norman Tindale, Australian National University, Camberra, Australia. One visit to the Crabtree home to replicate the stone tools of Australia and a joint effort by both men to reproduce the Australian technique of hafting projectile points and adzes.
- 6. Vance Haynes, University of Arizona, Tucson, Arizona. One visit to Kimberly to observe flintknapping and particularly the fluting of Clovis and Folsom points for his research on the Murray Springs site.
- 7. Bruce and Helen Schroeder, Scarborough College, University of Toronto, West Hill, Ontario, Canada. One visit to the Crabtree home to observe Don replicating some of the point types and tools excavated as a result of their work in a cave at Palmyra, Syria.
- 8. Erra Lou Davis, Los Angeles County Museum, Los Angeles, California. Three visits to Dons to study and observe flintknapping and watch Crabtree replicate tools from her excavations at Calico Hills. A joint effort by Crabtree and Davis to manufacture wooden implements with flaked stone tools. Subsequent publication of their experiments in <u>Science</u>.
- Bruce Bradley, Southern Methodist University, Dallas, Texas. A graduate student specializing in lithic technology. One visit with Crabtree to improve his pressure flaking.
- 10. William J. Mayer-Oakes, Texas Tech University, Dallas, Texas. One visit with Crabtree with two graduate students to observe and practice flintknapping and confer with Don on his proposed lithic technology article to appear in <u>Scientific American</u>.
- 11. Dr. Tsugio Matsuzawa, National Centre for Archaeology, Saki-chyo, Nara City, Japan. One visit to Crabtree's to confer with Don on type collections from Japan.
- 12. Dr. Robson Bonnichsen, University of Maine, Orono, Maine. Resided with Crabtree for one year to learn flintknapping.

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V. Trips by Crabtree to Universities and sites to demonstrate flintknapping:

- 1. University of California, Berkeley, California. Trip to demonstrate, lecture, review collections, and make a joint film with Francois Bordes.
- 2. University of California at Los Angeles, Los Angeles, California. Trip to meet and confer with Francois Bordes, Norman Tindale, and Lewis Binford on lithic technology, give demonstrations and lecture to graduate students.
- 3. University of Hawaii, Honolulu, Hawaii. To demonstrate, lecture and advise students on lithic technology at the University, the Bishop Museum, and Kemehameha School. Also visited sites on the big island of Hawall and replicated tools found there.
- 4. Instituto Nacional De Anthropologia E. Historia, Mexico City, D.F. To confer with Jose Luis Lorenzo on type collections and instruct Juan Garcia Cook in flintknapping.
- 5. Grasshopper Field School, University of Arizona, Cibicue, Arizona. Visited the site each summer for three years to teach students flintknapping and analyze the materials found there. While there, assisted in the skinning of a bear with stone tools.
- 6. Field Museum of Chicago, Field School, Vernon, Arizona. Visited the school each summer for three years to confer with Paul Martin, give demonstrations and lectures.
- 7. Chadron State College, Chadron, Nebraska. Visited the Hudson-Meng site to meet Dr. Marie Wormington and Dr. Larry Agenbroad to give demonstrations, lectures, and analyze materials found at the site. Dr. Peter Bleed brought six students from the University of Nebraska and Don instructed them in Lithic Technology.
- 8. Phillips Academy, Andover, Massachusetts. Meeting with Richard S. MacNeish, Douglas Byers and Fred Johnson to review collections, analyze materials and advise on lithic technology.
- 9. American Museum of Natural History, New York, N.Y. Ten days spent at the museum explaining personal exhibit, giving lectures and demonstrations.
- 10. Yale University, New Haven, Connecticut. Gave demonstrations and classroom and nightly sessions to graduate students.
- 11. University of North Carolina, Chapel Hill, N.C. Three days meeting with students and professors to demonstrate and explain the rudiments of lithic technology.
- 12. University of Alberta, Edmonton, and Calgary, Canada. Day and night sessions with students to explain lithic technology and give demonstrations. Replicated a study collection for the University of Alberta at Edmonton which is used for classroom study.
- 13. Smithsonian Institute, Washington, D.C. A week visit to confer with Ed Wilmsen on Lindenmeier site materials and process for computor analysis.
- 14. University of Maryland, College Park, Maryland. Demonstrations and lectures to graduate students.
- 15. Colima Museum, Colima, Mexico. Visit to the museum to confer with Maira Gomez on Polyhedral blades and cores and other stone tools found in the Colima area.

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- 16. University of Michigan, Ann Arbor, Michigan. Visit to the museum to analyze materials for students work on their doctorates.
- 17. University of Indiana, Bloomington, Indiana. Two day visit to demonstrate and lecture to graduate students. Also analyzed materials and located a flint quarry in Harrison County.
- 18. University of Illinois, Urbana, Illinois. A week visit to meet with Francois Bordes where they both gave demonstrations, lectures, and reviewed materials for professionals and students.
- 19. University of Arizona, Tucson, Arizona. Visited each year for six years to demonstrate, lecture, and confer with Dr. Emil Haury on Hohokam lithics.
- 20. Denver Museum of Natural History, Denver, Colorado. Three visits to the museum to demonstrate, lecture, analyze materials, and allow movies to be taken of the experiments. These movies are now used at Long Beach State University for teaching purposes.
- 21. Arizona State University, Tempe, Arizona. Three visits to the University. Once to meet Francois Bordes and Jacques Tixier to give demonstrations and allow photographing of same for future classroom study.
- 22. Columbia University, New York, N.Y. Two visits to this institution to analyze materials and confer with Dr. Edward P. Lanning and Dr. Ralph Solecki on South American and European materials.
- 23. Paleo Institute, Portales, New Mexico. A visit to confer with Dr. Cynthia Irwin-Williams and Dr. George Agogino on Folsom materials from both the Lindenmeier and Folsom sites and other Paleo-Indian materials.
- 24. Ohio State Museum, Columbus, Ohio. To confer with Dr. Ray Baby on lithic technology and analyze collections.
- 25. University of Nevada, reno, and Las Vegas. To assist in analyzing collections and review papers by students.
- 26. Nevada State Museum, To confer with Don Tuohy on local materials and review papers prior to publication.
- 27. Washington State University, Pullman, Washington. Many visits here to demonstrate and analyze materials. Once to meet with Francois Bordes and Bruce Bradley for a week's session of demonstrations and lectures.
- 28. Amerind Foundation, Dragoon, Arizona. To confer with Charles Di Peso to analyze artifacts and materials.
- 29. University of Montana, Missoula, Montana. Visited to confer with Carling Malouf about Knife River flint artifacts and discuss artifacts with students.
- 30. St. Martin's College, Olympia, Washington. Demonstrations and instructions and review of museum collections at request of Father Gerald Desmond.
- 31. University of Washington, Seattle, Washington. To confer with Alex Krieger, give demonstrations and review collections.
- 32. University of Victoria, Vancouver, B.C. Demonstration and review of collections.
- 33. University of British Columbia, Vancouver, B.C. Confer with Charles Borden and instruct in flintknapping. Analyze British Columbia collections. Visit local sites.
- 34. Provincial Museum, Victoria, B.C. Analyze collections and give demonstration.

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- 35. University of Idaho, Moscow, Idaho. Review collections.
- 36. Bernalillo, New Mexico. To visit excavations by Dr. Cynthia Irwin-Williams and examine flaked stone tools.
- 37. Kersey, Colorado. To visit Early Man excavations by Dr. Marie Wormington and to give demonstrations of flintworking related to the finds.
- 38. Hell Gap, Wyoming, To visit archaeological sites excavated by Dr. George Agogino and Dr. Cynthia Irwin-Williams and to examine Spanisg Diggings quarry material.
- 39. College of Southern Idaho Museum, Twin Falls, Idaho. Review collections.
- 40. Orange Walk Town, Belize. To study Maya lithics.
- 41. The Colha Project, Belize, Sponsored by the University of Texas. To study Maya lithics and confer with Dr. Thomas Hester.
- 42. The Cuello Project, Belize. Sponsored by Rutgers University and Cambridge University. To confer with Dr. Normand Harmond on Maya lithics.
- 43 Washington State University Field School, Colfax, Washington. Demonstrate and discuss lithic technology with graduate students and to confer with J. Jeffery Flenniken.
- 44. Plains Conference, Denver, Colorado. Demonstations.
- 45. Casper whyoming, Whyoming Archaeological Society, Guest Speaker.
- 46. National Flintworkers Knap-In, Casper Whyoming.
- 47. Washington State University, Summer Field School, Demonstrations.

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48. University of Idaho, Recipienttof PhD, visit to Laboratory of Anthropology.

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