Appendix A

FORENSIC SCIENTIFIC METHOD APPLIED

When one endeavors to find answers to questions, one frequently turns to sources which are believed to offer answers. And if no answers can be found from those familiar sources, the inquisitive often find themselves having to do further research. On occasion, such inquiry for an answer can become the genesis of significant forensic examination into multiple scientific endeavors, sources and forms of evidence. There is much more to finding answers than simply doing research and jotting down what experts or previous researchers have authored. Are they correct? How does the inquisitive determine the level of critical examination which can muster validation and survive scrutiny; and are there protocols to help in reaching an answer which solves that hurdle? This appendix is provided to answer just these questions and identify the protocol which will secure your own answers, as being both correct and verifiable. This first section paraphrases the dilemma regarding the use of the scientific method, to win validation of one's examination. This is reprinted to help understand the protocol applied to the search of the forensic questions answered within our three volumes. Authorship of quoted excerpts is by Dr. Thomas W. Young, Heartland Forensic Pathology. The full publication is cited in the references.

> *"The scientific method, a time-honored approach for discovering and testing scientific truth, does not and cannot work for the forensic sciences in its standard form because it does not work for past events. Past events cannot be observed, cannot be predicted or deduced from physical evidence, and cannot be tested experimentally. The "forensic scientific method" is a modified form of the scientific method that compares evidence obtained by investigators with observable physical findings discovered* [in the field]*, in the* [science] *laboratory, or in* [published documentation]*. The* ***scientific method*** *is a method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested."*

"Repeated confirmations of the hypothesis over time may result in the hypothesis becoming a theory. A theory is a general principle that scientists use to explain phenomena and predict events. [Whereas,] *the applications of forensic science have been distinctly different from the applications of the natural and physical sciences. The purpose of forensic science has never been to understand the universe and how it functions. The purpose has always been to understand what happened and who is responsible for what happened.*[…]"

"The scientific method as upheld by most scientists does not and cannot apply to the forensic sciences."

"It may seem almost sacrilegious to suggest that forensic scientists cannot use the scientific method. After all, to suggest this may be to question whether or not forensic scientists are even scientists! If science is defined as "a branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws, then forensic science is a science. The methods employed by that science must differ from those of the natural and physical sciences. Why is this? It is because forensic sciences study the past and not the present." […]

How does the past prevent the use of the scientific method?

***First**, one cannot observe the past. **Secondly**, one cannot predict the past. **Thirdly**, one cannot design experiments or controlled observations to determine what happened in the past. **Fourthly**, a hypothesis confirmed by multiple experiments and observations in time may become a theory, but forensic science is not and should not be concerned with the formation of theories.*

[..] *"**E**vents ("**E**") in the past can lead to a set of observable **F**indings in the present ("**F**"). The forensic scientist can predict reasonably how certain Events can lead to specific observable Findings. Any set of observable scientific Findings can be consistent with numerous different scenarios of past Events. It is tempting for the forensic scientist to deduce the Events from the Findings. This activity is known as scenario building. […] Using "categorical intuitive deduction" fails to realize any number of situations can lead to the same Findings."*

[…] *"The forensic scientific method addresses past Events in a way that the scientific method could never do. It avoids scenario building and probability assessments, and it recognizes the ability of the forensic expert to reason from Events to Findings on the basis of his or her experience and*

*expertise. During the analysis, the examiner may need to obtain more information until the quality and quantity of the information are sufficient to make **D**eterminations (**"D"**). Once the Determinations are complete, the examiner then can offer opinions but only to a reasonable degree of scientific certainty."*

[…] *"Except for some minor differences, this flow chart* [below] *shares most of the characteristics of the forensic scientific method described in this article. It emphasizes the need to obtain data and to correlate that data with Findings. Most importantly, it indicates that the hypothesis is to be generated from the data and not the physical evidence."*

[…] *"There are three forms of bias common in analyzing data.*

*1), A tendency to select the first alternative that comes to mind consistent with the evidence — a bias known as **satisficing** — may prevent the analysis of other alternatives. Even when more than one alternative is considered, the limitations of the human mind to form and remember lists may limit the explanations to only those available to the imagination.*

*2), The bias of **availability** limits the number of considered possibilities.*

*3), If one scenario is considered and additional evidence shows it to be incorrect, the next scenario that is considered may not differ much from the first one. This is because of **anchoring**. The truth may not resemble either the first or second scenario at all, but the tendency of the human mind to anchor additional hypotheses to the first one will limit the considered possibilities."*

The awful truth is that science is a human endeavor with definite limitations. History often trumps science, particularly if multiple reliable sources document that history.

The table below represents procedures necessary for applying the forensic scientific method in formulating determinations listed on the following pages.

#TABLE : Forensic scientific method

1.	Acquisition of primary witness and other evidence
2.	Anticipation of future questions
3.	Acquisition of physical evidence
4.	Comparison of consistency of alleged events (hypothesis) with physical findings, obtaining additional data as needed
5.	Assessment only to a reasonable degree of scientific certainty, recognizing the limitations of science

On the following pages are enumerated **Questions/Inquiries** shown in **Bold**, which are answered with a forensic Determination in blue [5]. Determinations are based on a set of numerically listed Finding(s)[4] which pertain to the analysis of numbered **Evidences/Events**, [1,3] used to address the **Questions /Inquiries**. Any **Evidences/Events** found to counter or contradict another **Evidence/Event** [2,4] is shown in **red** and is part of the analysis making up the Finding(s) [2,5]. The assessment of all the Findings to answer a **Question/ Inquiry**, produces the Determination shown in blue [1-5].
[Pertaining to Table on previous page]

An example of an enumerated **Question/Inquiry** is displayed here.

Example…
QUESTION OR INQUIRY:
#1. Why have readers purchased the book "Oak Island Mystery Trees and other Forensic Answers – Fibrosity?"
DETERMINATION: "After extensive poling and receipt of survey questionnaires from 38% of readers who purchased this book, it is determined 99% of responding buyers find that "in-depth forensic examination" of topics discussed within the book, was a positive change over those books which simply proffer theories on a topic.."
FINDINGS:
A. 38% of purchasers of this book responded to a poll; 99% gave it a positive rating.
EVENTS/EVIDENCE: **1A1, 1A2**
B. At four book signing events, purchasers said their primary interest in the book was reading a nonfiction account of a historic event
EVENTS/EVIDENCE: **1B1, 1B2, 1B3**

The Second Section of this Appendix lists numerically, the events/evidences which, as shown below, provided the source(s) of proof or information which was found related to the stated finding, so an accurate and verifiable Determination can be ascertained. Below is the continuation of the example.

1A1. Amazon Books sent an online survey to purchasers of this book, and 38% responded. Of that subset of respondents (4,004), 99% found the in-depth research provided in the book was a key reason for buying it.

1A2. KDP Publishing sent questionnaires asking members to comment on this book and analyzed their comments for a report about the nonfiction genre. The report noted 98.52% of respondents gave a positive or good rating for the book based on that genre type.

1B1. Book signing events were held in Anaheim, 06-21-2024; Santa Fe, 05-13-2024; San Antonio, 03-23-2023; and Los Angeles, 09-04-2023. An equal number of purchasers (21) attended each event. A total of 83 purchasers were interviewed and gave the book a positive rating.

1B2. 17% of those questioned at the book signing events said the main interest in attending was to eat the free food offered at the venue and had never read a nonfiction book.

1B3. Several purchasers who were interviewed prior to the book signing and who did not eat any food, felt that factually-based books on such topics was an improvement to AI and ghost-written books on historic events.

…End of Example.

NOTE: Due to the volume of *Evidence/Events* which have been analyzed for this Forensic Scientific Analysis Model, those numbered *Evidence/Events* for each *Finding* will be listed under that stated *Finding*; which are also in related Determination sequence.

Forensic Scientific Methodology Application (FSMA) to Oak Island Determinations

Below are the enumerated ***Questions or Inquiries*** and the *Determinations* made from the *Finding(s),* which reviewed and examined pertinent ***Evidences or Events***. This method provides the reader a system to track and verify the facts answering the *Who*, *What*, *When*, and from *Where* the Oak Island mystery fiber came.

#1. "Where on Oak Island Was the Fiber Found?"

DETERMINATION: The majority of the palm fiber found on Oak Island was at Smith's Cove (a.k.a. Smugglers Cove, Sheerdam Cove) located under 3 ft of beach sand, spread out atop a 1087.5 ft^2 construct. Small amounts of fiber can still be found below the surface at low tide. The second location where a large amount of palm fiber was found and extracted was in the Money Pit (records indicate the 6^{th} oak platform where fiber was encountered). No other locations on the island have been identified.

FINDINGS:

A. Fiber was found in the Money Pit, Smith's Cove and in some borehole diggings.

EVENTS/EVIDENCE: **1A1, 1A2, 1A3, 1A4, 1A5, 1A6, 1A7, 1A8, 1A9, 1A10, 1A11, 1A12, 1A13, 1A14, 1A15, 1A16, 1A17, 1A18, 1A19**

#2. "How Much Fiber Was Found on Oak Island?"

DETERMINATION: Based on review of historical documents, affidavits, statements and commentary, a formulation was used to calculate the known excavated volume of fiber which totaled a minimum of 1.54 metric tons.

FINDINGS:

A. Diameter of the Oak Island Money Pit was 13 ft. This was a 132.73 ft^2 area.

EVENTS/EVIDENCE: **2A1, 2A2, 2A3, 2A4, 2A5, 2A6, 2A7, 2A8, 2A9, 2A10, 2A11, 2A12, 2A13**

B. Volume of fiber found within the Oak Island Money Pit was 44.24 ft^3.

EVENTS/EVIDENCE: **2B1, 2B2**

C. Dimension of Oak Island Smith's Cove Filtration System was 1087.5 ft^2 area.

EVENTS/EVIDENCE: **2C1, 2C2, 2C3**

D. Volume of fiber found in Oak Island Smith's Cove Filtration System was 362.5 ft^3.

EVENTS/EVIDENCE: **2D1, 2D2, 2D3, 2D4, 2D5**

E. Total Volume of fiber found on Oak Island is 407 ft^3, an equivalent of 1.54 MT.

EVENTS/EVIDENCE: **2E1, 2E2**

#3. "How Old Was the Fiber Found on Oak Island?"

DETERMINATION: Six specimens of fiber taken from Smith's Cove between 1990 through 2014, were laboratory tested using radiocarbon and/or AMS dating. With adjusted calibrations, all six specimens fell within a dating period of AD 1185-1330, with a 95% certainty by those testing laboratories.

FINDINGS:

A. Radiocarbon/AMS tested fibers from Oak Island dated from AD 1185-1330.

EVENTS/EVIDENCE: **3A1, 3A2, 3A3, 3A4, 3A5, 3A6, 3A7**

#4. "Was the Fiber Found on Oak Island from a coconut tree?"

DETERMINATION: Fiber found on Oak Island has been identified as palm fiber, specifically date palm fiber (*Phoenix dactylifera*).

FINDINGS:

A. Fiber found on Oak Island was identified as several different fibers.

EVENTS/EVIDENCE: **4A1, 4A2, 4A3, 4A4, 4A5, 4A6, 4A7, 4A8, 4A9, 4A10, 4A11**

B. Fiber found on Oak Island was generally thought to be from a coconut tree (Cocos nucifera) (CCF).

EVENTS/EVIDENCE: **4B1, 4B2, 4B3, 4B4, 4B5**

C. Scanning Electron Microscope (SEM) images of fiber presented conflicting identity.

EVENTS/EVIDENCE: **4C1, 4C2, 4C3, 4C4, 4C5, 4C6, 4C7, 4C8, 4C9, 4C10, 4C11, 4C12**

D. Fiber found on Oak Island has not been conclusively identified as CCF.

EVENTS/EVIDENCE: **4D1, 4D2, 4D3**

E. CCF is spontaneously combustible, stains, odiferous, and floats, unlike DPF.

EVENTS/EVIDENCE: **4E1, 4E2, 4E3, 4E4, 4E5, 4E6, 4E7, 4E8, 4E9**

#5. "Was the Fiber Found on Oak Island from a date palm tree?"

DETERMINATION: The *Phoenix dactylifera* is considered by botanists as the 'one true date palm,' and is the genus and species from where the Oak Island fiber was grown.

FINDINGS:

A. Fiber found on Oak Island Is plant fiber from the Date Palm Tree *(Phoenix dactylifera)*, called (DPF).

EVENTS/EVIDENCE: **5A1, 5A2, 5A3, 5A4, 5A5, 5A6, 5A7**

B. The DPF specifically identified is the mesh/sheath trunk fiber which grows around the trunk to protect new growth, as the fiber found on Oak Island.

EVENTS/EVIDENCE: **5B1, 5B2, 5B3, 5B4, 5B5, 5B6, 5B7, 5B8, 5B9, 5B10**

#6. "How was the palm fiber identified as this Date Palm Tree?"

DETERMINATION: The date palm fiber found on Oak Island, is specific to the cultivar known as the Judean Date Palm Tree, once extinct. Dates produced by the Judean Date Palm were highly sought after and called 'Nicolai,' 'Kothbot' and 'Taali' during antiquity. This cultivar was indigenous to a very select group of locations.

FINDINGS:

A. No other palm species in *Phoenix* genus grows within the area investigated.

EVENTS/EVIDENCE: **6A1, 6A2, 6A3, 6A4, 6A5, 6A6, 6A7, 6A8, 6A9, 6A10, 6A11, 6A12**

B. DPF was the cultivar (variety) of date palm known as the Judean Date Palm, which historically grew larger, longer lasting and tastier than other cultivars in the region.

EVENTS/EVIDENCE: **6B1, 6B2, 6B3, 6B4, 6B5, 6B6, 6B7, 6B8, 6B9, 6B10, 6B11, 6B12, 6B13, 6B14, 6B15, 6B16, 6B17**

#7. "Where and When did the Judean Date Palm Tree grow?"

DETERMINATION: The Judean Date Palm cultivar was plantation-grown exclusively in Jericho, the Jordan River Valley, the Dead Sea area (including Ein Gedi & Zoar). Current scientific researchers believe the fruit from the Judean Date Palm may be related phylogenetically and geographically to Phoenix species *P. sylvestris* and/or *P. atlantica*, however, there is no evidence to the existence of date palm cultivars of interspecific hybrid origin, contrary to what is known from other fruit crops. This specific date palm tree cultivar grew in these regions from the 5th century BC thru AD 1442, before extirpating thereafter.

FINDINGS:

A. The Judean Date Palm cultivar grew in Jericho, Jordan River Valey and the Dead Sea basin area from as early as 5th century BC through AD 1442.

EVENTS/EVIDENCE: **7A1, 7A2, 7A3, 7A4, 7A5, 7A6, 7A7, 7A8, 7A9, 7A10, 7A11, 7A12**

#8. "Were Knights Templar (KT) aware of the Judean Date Palm and why?

DETERMINATION: KT interacted amongst and were aware of the Judean Date Palm and their Plantations in the Kingdom of Jerusalem from AD 1099, until abandoning their facilities near the date palms in 1187.

FINDINGS:

A. This date palm was available during Crusader period, extirpating c. AD 1442.

EVENTS/EVIDENCE: **8A1, 8A2, 8A3, 8A4, 8A5, 8A6, 8A7, 8A8, 8A9, 8A10, 8A11, 8A12, 8A13, 8A14**

B. Knights Templar (KT) members wrote about the Judean Date Palm and its fruit from AD 1098 through 1291.

EVENTS/EVIDENCE: **8B1, 8B2, 8B3, 8B4, 8B5, 8B6**

C. KT traveled and operated in and around date palm plantation areas from their capture of Jerusalem in AD 1099, through abandoning their facilities in Jericho in AD 1187.

EVENTS/EVIDENCE: **8C1, 8C2, 8C3, 8C4, 8C5, 8C6, 8C7, 8C8, 8C9, 8C10, 8C11, 8C12, 8C13**

D. KT built and staffed posts and towers, operated sugarcane mills, and performed aqueduct reconstruction in Jericho and amongst date palm plantations.

EVENTS/EVIDENCE: **8D1, 8D2, 8D3, 8D4, 8D5, 8D6, 8D7, 8D8**

E KT escorted pilgrims to local Holy sites in Jericho and launched other agricultural activities in Jericho, the Jordan River Valley and Dead Sea basin area.

EVENTS/EVIDENCE: **8E1, 8E2, 8E3, 8E4, 8E5, 8E6, 8E7, 8E8, 8E9, 8E10**

#9. " Was the Date Palm celebrated or revered in Ancient Egypt?"

DETERMINATION: The date palm tree began to be worshipped in predynastic Egypt around 3150 BC. From this period forward, the date palm tree maintained a revered or sacred status and was deified in some aspects of pagan worshipping.

FINDINGS:

A. Ancient Egyptians created a finger counting and measurement system inspired by the date palm, called Daktylonomy.

EVENTS/EVIDENCE: **9A1, 9A2, 9A3, 9A4, 9A5, 9A6, 9A7**

B. Ancient Egyptians created obelisks to mimic the date palm tree to mark star placement and used its influence to design structural engineering and record-keeping.

EVENTS/EVIDENCE: **9B1, 9B2, 9B3**

C. Ancient Egyptians worshipped both the date palm tree and affiliated their deities associated with the date palm.

EVENTS/EVIDENCE: **9C1, 9C2, 9C3, 9C4, 9C5, 9C6**

#10. "Was the date palm celebrated or revered in cultures and societies within the Fertile Crescent during antiquity?"

DETERMINATION: The date palm tree was a sacred deity, cultural symbol, and important religious motif as far back as 2900-2600 BC, for Sumerians, Akkadians, Assyrians, Hittites, Canaanites, Phoenicians, Greeks, Babylonians, Libyans, Romans and Hebrews.

FINDINGS:

A. Date palm tree was sacred, revered, worshipped or acclaimed in Fertile Crescent cultures, societies and periods.

EVENTS/EVIDENCE: **10A1, 10A2, 10A3, 10A4, 10A5, 10A6, 10A7, 10A8, 10A9, 10A10, 10A11, 10A12, 10A13, 10A14, 10A15, 10A16, 10A17, 10A18, 10A19, 10A20, 10A21, 10A22, 10A23, 10A24, 10A25, 10A26, 10A27, 10A28, 10A29, 10A30, 10A31, 10A32, 10A33, 10A34, 10A35, 10A36, 10A37, 10A38, 10A39**

#11. "Was the date palm religiously important during antiquity?"

DETERMINATION: The date palm tree, from ancient days of pagan worshipping, was brought into the primary religious movements within the Fertile Crescent.

FINDINGS:

A. The Date Palm was important to various religions since pagan worshipping in antiquity.

EVENTS/EVIDENCE: **11A1, 11A2, 11A3, 11A4, 11A5, 11A6, 11A7, 11A8, 11A9, 11A10, 11A11, 11A12, 11A13, 11A14, 11A15, 11A16, 11A17, 11A18, 11A19, 11A20, 11A21, 11A22**

#12. "What Deities, Symbols and Attributes did a date palm or its parts, personify throughout antiquity?"

DETERMINATION: The date palm personified directly or was associated with 58 gods, goddesses, demi-gods, angels, deities, spirits of various evolutions and spellings of those entities. The date palm symbolized more than 37 attributions of character over the period of antiquity.

FINDINGS:

A. Date Palm was directly or indirectly associated with 58 gods, goddesses, demi-gods, angels, deities and spirits of various evolutions and spellings; and was identified with laudatory attributes, affinities and representations which promoted the date palm as a sacred or revered object or deity..

EVENTS/EVIDENCE: **12A1, 12A2, 12A3, 12A4, 12A5, 12A6**

#13. "What indicates the date palm evolved into a "Tree of Life" motif?"

DETERMINATION: As both a symbol and iconographic motif, the sacral tree image on palace and temple reliefs, murals, seals, jewelry and ritualistic implements throughout the Fertile Crescent, evolve from the deification of pagan worship of natural plants, events and contemporary beliefs. Although most archaeologists, historians and commentators identify visual impressions of the motif as a date palm (Albenda 1994; Black et al. 1992, pp. 46, 170–71; Mazar 1961, vol. 4, p. 71; Moldenke and Moldenke 1952, p. 191; Parpola 1993; Porter 1993), the topic is not without dissent and alternate theories. The date palm is associated with various gods and goddesses, sacrificial rituals and social identities. The Tree of Life exhibits clearly interpretable features of a date palm: i.e., stout, singular trunks with persistent leaf bases, pinnate fronds, several pendent and woody, spathae flowering stalks and date fruits. As other rulers, beliefs and rituals and movements like paganism – which represented a wide variety of traditions emphasizing reverence for nature, the spread of polytheistic and animistic practices, further deified the date palm tree. Eventually, a stylized tree with obvious religious significance occurred as an art motif in 4th millennium Mesopotamia, and by the 2nd millennium BC, it was found everywhere within the orbit of the ancient Near Eastern oikumene, including Egypt, Greece and the Indus civilization (Parpola 1993; Franklin, 2021; Archi, 2011; Cornelius, 2008; Popenoe, `924; Cheetham, 1897). In the motifs of Assyrian, Canaanite and, more broadly, Middle Eastern religions the Tree figures as part of early Semitic (as well as non-Semitic) cultures and their symbolism. The common perception has tied this idea of a life-giving Tree with various forms of 'fertility cults' and polytheistic agrarian ritual practice. The iconographic records of ancient Mesopotamia, the Levant, and Egypt developed the *Tree of Life* motif, identifiable from the palm or parts of the palm tree, as well as other local popular tree species. It is a fundamental widespread archetype in many of the world's mythologies like Sufism, Gnosticism and Kabbalism and religious and philosophical traditions, and closely related to the concept of the *Sacred Tree*. Its overall composition strikingly recalls the *Tree of Life* of later Christian, Jewish, Muslim and Buddhist art.

FINDINGS:

A. The date palm, as a symbol, developed into "Tree of Life" motifs over time.

EVENTS/EVIDENCE: **13A1, 13A2. 13A3. 13A4. 13A5. 13A6. 13A7. 13A8. 13A9. 13A10. 13A11. 13A12. 13A13**

#14. "What evidence links Francis Bacon to date Palm Fiber and Oak Island?

DETERMINATION: Francis Bacon has left a broad and lengthy, if not encrypted, trail of evidence through a variety of modalities, proving his knowledge of ancient voyager travels to Oak Island. Furthermore, this same encoded trail of evidence described Francis Bacon's own visitation to the island and implies the burial of Shakespearean folios and royal archives proving is true family line and heritage.

FINDINGS:

A. Sir Francis Bacon used the alias Samuel de Champlain and knew of, left clues and visited Oak Island.

EVENTS/EVIDENCE: **14A1, 14A2, 14A3, 14A4, 14A5**

Forensic Scientific Method
Cited References

This section contains the referenced sources cited with each *Finding* made. These ***Events/Evidences*** are cited as they provide evidence, proof, commentary or contradiction to the stated *Finding*, which, in conjunction with other *Findings*, proves the *Determination* of facts and evidence as described. These ***Events/Evidences*** may be sources for one or more *Finding*, based upon their evidentiary value. Some excerpts are included for relativity.

#1A. Oak island fiber was found in the Money Pit, Smith's Cove and some borehole digging.

1A1. *"The Story of Oak Island – 1895*," by Frederick L. Blair. Included in "Buried Treasure", part of Oak Island Treasure Company's Public Share Offering.
"Additional" Information included." …*On withdrawing the augur several splinters of oak, such as might come from the side of an oak stave, and a small quantity of brown fibrous substance, closely resembling the husk of a coconut, were brought up. […] After removing the sand and gravel covering the beach, they came to a covering or bed of a brown, fibrous plant, the fiber very much resembling the husk of a coconut, and when compared with the plant that was bored out of the Money Pit already mentioned, no difference in the two could be detected.[…] The brown fibrous plant resembling the husk of a coconut" spoken of in the prospectus, which was found in such large quantities on the shore, […] S.C. Frazer writes, "The pamphlet says East India Grass." It is not; but is coconut fiber, nearly as well preserved as what I took off the coconut when examining and comparing them." Considerable of this was found among the sand, last summer, and carried away by visitors. Although it had been there perhaps 200 years, it is in a good state of preservation yet."*

1A2. "*Transcript by Les MacPhie of hand written report dated January 17, 1867 by John Brown*." *On Boreholes I, II and III drilled in 1866 at the Oak Island Money Pit Report submitted to the Directors of The Oak Island Company [Also known as The Halifax Company]*

1A3. "*S.C. Fraser Letter to Mr. A.S. Lowden, Dated June 19, 1895. Briggs Corner, Queens, N.B. Pgs. 1-5*." *"McNutt's boring after all other work on the island until last year was concluded; found disturbed earth, cocoanut fibre and pieces of wood down to 155 ft. Now there was tons and tons of that coconut fibre on the works at the shore and around the treasure in the pit. […] I did not know that the earth of the island undisturbed, had cocoanut fibre and wood mixed with it. The pamphlet says, "East India Grass," it is not; but coconut fibre nearly as well preserved as what I took off the coconut when examining and comparing them. Considerable of this was found among the sand, last summer, and carried away by visitors."*

1A4. "*Sworn Affidavit of J.W. Andrews, C.E.M.E Consulting Engineer*."

1A5. "*Affidavit of Frederick L. Blair, February 1926*."

1A6. "*Letter to R.V Harris by Fred L. Blair, November 5, 1937*."

1A7. "*Reply Letter to Mr. L. Elbert Smith of Dallas*." By Gordon Blair, Traders Finance Corporation Limited, Saint John N.B., August 4, 1947

1A8. "*Letter to Dr. C.G. L. Friedlander by R. V. Harris*." Dalhousie University, Halifax, Nova Scotia. August 19, 1966. MG1 Vol. 385.

1A9. "*Report of Digging in Smith's Cove*." By Daniel C. Blankenship, November 1969.

1A10. "*Interview of Fred Nolan, Oak Island Searcher*." By D'Arcy O'Connor. May 18, 1975.

1A11. "*Interview with Claude C. Chappell (M.R.'s cousin) at his home, July 20, 1976*." *"…We dug up coconut fiber in 1931 too. Down on Smith's Cove."*

1A12. "*Interview of Melbourne R. Chappell, Son of William Chappell, Oak Island searcher*." By D'Arcy O'Conner. July 20-21, 1976.
"…He (Restall) did an awful lot of digging around Smith's Cove by hand trying to locate drains. He found a lot of coconut fiber there too. In 1895 when father went to Oak Island for the first time, he told

me that there was a pile of that coconut fiber that had been piled up on the sore by the searches in 1849 when they uncovered it. He said it was piled up on the shore and that it would fill a big truckload. And when I was there in 1931, I looked around and got several pieces of coconut fiber. Some of it was sent to the Smithsonian Institution for analysis; some of it was sent to Tobias for analysis in Montreal or Toronto. I don't know who did his (Tobias) analysis. It wasn't dated, just authenticated as definitely coconut fiber; the fibers off the husks of coconut."

1A13. "*Interview of Mildred Restall, wife of Robert Restall, Oak Island searcher*." By D'Arcy O'Connor. August 10, 1976.

1A14. "*D`Arcy O`Connor interview with George T. Bates. August 16, 1976*." (Assisted C. Roper perform survey on Oak Island, August 1937)

1A15. "*Letter to Oak Island Participants from Richard C. Nieman*." 3 Pages. October 7, 1990.

1A16. *"Analysis of "Sawdust" from Between Logs of Slipway*." By M Pickford. Reports No#. 7 thru No#. 23 - Oct. 5, 1970 thru Apr. 11, 1971.

1A17. "*The Oak Island Diggings." Published in The Liverpool Transcript, October 16, 1862. Pg. 3*." *"Work was evidently done by hand in both pits, and also at the beach, where we found flag stones made in the form of drains and covered with a kind of grass, not the growth of this country, and the outer rind of the coconut."*

1A18. *"Letter to The Oak Island Exploration Co., care/of, Jon Ergin. October 7, 1970*." By C.H. Schofield, National Research Council of Canada.
"As requested in our telephone conversation of September 14, 1970, and your letter of September 17, 1970, I forwarded four samples of fibrous material from the beach at Smith's Cove Oak Island to Dr. J.H. Soper, Chief Botanist, National Museum of Natural Sciences. Coconut fibers were identified in three of the four samples."

1A19. "*Telephonic Notes by D`Arcy O`Connor interview of Robert R. Dunfield, October 21, 1976*." *"Yes, the coconut fiber was analyzed to be coir, a fibrous mass between the coconut shell and the outer husk, which was used as dunnage in the early days of primitive shipping."*

#2A. The diameter of Oak Island's Money Pit was 13 ft. This was a 132.73 ft² area.

2A1. "*S.C. Fraser Letter to Mr. A.S. Lowden, Dated June 19, 1895. From Briggs Corner, Queens, N.B.* **See pgs. 1-5**."

2A2. "*Letter to R.V Harris by Fred L. Blair, November 5, 1937*."

2A3. "*Interview of Melbourne R. Chappell, Son of William Chappell, Oak Island searcher*." By D'Arcy O'Conner. July 20-21, 1976.

2A4. "*The Oak Island Diggings*." By Jotham Blanchard McCully, October 16, 1862. Published in *The Liverpool Transcript*. **See pgs. 3 & 8**.
"… All the way down they were confined to a ***diameter of 16 feet****, by the softness of the ground within that limit. The pick marks could be distinctly seen all around the sides of the pit."*

2A5. *"History of the Oak Island Enterprise – Chapter 1*." By James McNutt. Printed in *The Colonist* on 1-2-1864, Truro, Nova Scotia. **See pgs. 1-4**.
"On removing the stones, they saw that they were entering the mouth of an old pit or shaft that had been filled up. The mouth was ***seven feet in diameter****, and the sides of the pit were of tough, hard clay, but the earth with which it had been filled up was loose and easy to be removed."*

2A6. *"Account by James McNutt, Secretary of the Oak Island Eldorado Co*.," known as the Halifax Co. Transcribed by Les MacPhie. Work carried out from Dec. 1866 - Jan. 1867. **See pgs. 1-6**.
"…. to dig in the clover patch at the ten feet found a tier of wood and the pit to be ***12 feet in diameter****."*

2A7. "*The Story of Oak Island – 1895, by Frederick L. Blair. Included in "Buried Treasure*", part of Oak Island Treasure Company's Public Share Offering. "Additional" Information included.
"One of the lower and larger branches of this, the outer end of which had been sawed off, projected directly over the center of a deep circular depression in the land about 13 feet in diameter."

2A8. "*To Nova Scotia: The Sunrise Province of Canada*." By T. Morris Longstreth. Personal visit to Smith's Cove and Interview with anonymous Woman from Chester, Nova Scotia. 1935. **See p. 26**.
"Beneath was a circular depression some 13 feet across."

2A9. "*Reply Letter to Mr. L. Elbert Smith of Dallas*," by Gordon Blair, Traders Finance Corporation Limited, Saint John N.B., August 4, 1947.
"Replying in brief to your inquires, the shaft was originally circular in shape, 12 or 13 feet in diameter, and it was uniform in size as far as at least 90 feet."

2A10. "*The Oak Island Enigma*." By Thomas P. Leary. 1953. **See pgs. 4-36**.
"Looking down, he saw a slight depression in the ground under the tree; it was circular and about 13 feet in diameter."

2A11. "*The Secret Treasure of Oak Island, The Amazing True Story of a Centuries-old Treasure Hunt*," by D`Arcy O`Connor. Updated Version. 2018.
"When they cleared away the earth and removed the flagstones, they found themselves working in what obviously was a refilled circular shaft, about thirteen feet in diameter."

2A12. "*Oak Island and Its Lost Treasure*." By Graham Harris & Les MacPhie, 2019. **See pgs. 26-27**.
"…It is reported that when they began to dig, they found themselves in a previously dug pit of circular shape, the diameter of which has been variously reported as between seven and sixteen feet, but he generally accepted dimension is thirteen feet."

2A13. "*Oak Island Encyclopedia Vol. 1*," by Hammerson Peters. Part One – The Discovery, June 2019. **See pgs. 18-36**.
"…After digging for some time, it became obvious to the three men that the hole in the clearing was really a circular shaft about 13 feet in diameter which had been filled in some time in the past."

#2B. The volume of fiber found within the Oak Island Money Pit was 44.24 ft^3.

2B1. "*Oak Island Mystery Trees and other Forensic Answers*." By David H. Neisen, Christopher L Boze, and Robert W. Cook, 2022. **See FORMULA - Chapter 10**, Cracking the Nut.
"**A**. *The Money Pit being a 13 ft round diameter shaft, so too, would be whichever platform(s) the coconut fiber had been placed – 13 ft in a round diameter! A space of 13 ft in round diameter is equivalent to 132.732 square ft – or* ***132.73 ft^2.***
B. *Few reports give a thickness of these fibers, but some do state it was 2 inches thick. The distance between platforms was said to be 10 ft. The weight burden of the 10 ft of refill (dry, soft glacial clay)[8] piled on top of those fibers, creates a downward force of the soil consisting of 1,060 Lbs. per ft^2.*
C. *Due to the impact of the weight upon the fibers, it is forensically determined a 2-inch-thick horizon of fibers found by searchers, were originally much thicker. Under this much pressure and over the time period projected it is estimated the original thickness of the coconut fibers would had to have been a 4 to 6 inch-thick layer. Most likely, this volume may have even been thicker, when originally applied to the platform. Therefore, we will conservatively assume a ratio of 1:2, and the original volume of coconut fibers placed on the platform is determined to be* ***four inches thick****.*
D. *The equation to represent the amount of coconut fiber found within the Money Pit is calculated using a more conservative interpretation of only a single platform was covered in fibers. Again, as you can see in Appendix C, "On the Record," several searchers reported coconut fiber found on multiple platforms or elsewhere in much thicker volume. With a platform round diameter of 13 ft and at 4 inches thick, the calculation of coconut fibers equates to* ***44.24 cubic ft.***

2B2. "*Letter to R.V Harris by Fred L. Blair*" November 5, 1937
"An expert at the Smithsonian Institution stated it was undoubtedly cocoanut fibre and under the conditions in which it was found, may have been there for hundreds of years. […] Considering the quantity found in former years, both at the shore and at the pit, I cannot see that it is of material importance whether it is one or the other. […] Fraser, who superintended the work in the sixties [1860's], stated in a letter that were "tons and tons of cocoanut fibre on the shore and at the works" at the pit. A party told me in Chester in 1916, that he tramped over bushels of it at the pit mouth."

#2C. The dimension of Oak Island's Smith's Cove filtration system was a 1087.5 ft² area.

2C1. "*Letter to Dr. C.G. L. Friedlander by R. V. Harris*," Dalhousie University, Halifax, Nova Scotia. August 19, 1966. MG1 Vol. 385.
"At Oak Island there are huge quantities of coconut fibre buried below the surface of the shore in what is called Smith's Cove. The layer is ***approximately two feet thick*** *and is covered by a deep layer of stone also about two feet thick. This fibre stretches for a length of 145 ft. around the shore of the cove. In addition to finding the coconut fibre along the edge of the cove, there were smaller quantities found in excavating the so-called Money Pit; in which ten platforms of logs were found between the surface and a depth of 100 ft. On several of these platforms there was a quantity of coconut fibre. My assumption is that the fibre has been there at least for two hundred and fifty years and it is presumed that it came from the West Indies."*

2C2. "*Pamphlet by Oak Island Treasure Co., Exhibit A, The Story of Oak Island, 1895*." **See pgs. 5-6.**

2C3. "*Pamphlet by Oak Island Treasure Co., Exhibit B, "Shore End of Tunnel Discovered*," **See pgs. 8-9.**

#2D. Volume of fiber found within Oak Island Smith's Cove filtration system was 362.5 ft³.

2D1. "*Letter to Dr. C.G. L. Friedlander by R. V. Harris*," Dalhousie University, Halifax, Nova Scotia. August 19, 1966. MG1 Vol. 385.
"At Oak Island there are huge quantities of coconut fibre buried below the surface of the shore in what is called Smith's Cove. The layer is ***approximately two feet thick*** *and is covered by a deep layer of stone also about two feet thick. This fibre stretches for a length of 145 ft. around the shore of the cove."*

2D2. "*Oak Island Mystery Trees and other Forensic Answers*." By David H. Neisen, Christopher L Boze, and Robert W. Cook, 2022. FORMULA - Chapter 10, Cracking the Nut, **See p. 304**
"F. *Once searchers of the flood tunnels removed the first 3 ft of sand, they were able to expose the hidden system. The filtration system covered an area of 7.5 ft (between high and low tide marks), by 145 ft in length along the beach. This was an area of approximately* ***1,087.50 ft²****!*
G. *Again, 3 vertical ft of wet sand weighs approximately 390 Lbs. ft³.[8] This would be sufficient pressure to compress +4 inches of volume of coconut fiber, over time, into the 2 or 3-inch-thick horizon reported by searchers. Using the same conservative formulation at Smith's Cove as we had just done for the Money Pit (ratio 1:2), we equate: 4-inch-thick compressed coir matting covering 1,087.5 ft² of area, would require* ***362.50 ft³ of coconut material****.*

2D3. "*Gilbert Hedden Interview with Capt. Anthony Vaughan (98)*." Dated 1939.
"Born on the old Vaughn family farm, he was present on the island probably during the Truro Company digs. Apparently, he worked "the beach" at the age of 10 years old and recalled, "large quantities of fiber" being removed."

2D4. "*Report of Digging in Smith's Cove*" by Daniel C. Blankenship, November 1969.
"Incidentally, large amounts of sticky blue clay was found in layers over the area near the log, as well as grass and some material that looks like coconut husks."

2D5. "*Interview of Fred Nolan, Owner of Lots, 5,9,10,11,12,13,14*." by D'Arcy O'Connor. May 18, 1975.
"I have some coconut fiber Restall gave me. He found quite a bit of it on that beach in Smith's Cove."

#2E. Total volume of fiber found on Oak Island is 407 ft³, equivalent of 1.54 metric tons.

2E1. "*Oak Island Mystery Trees and other Forensic Answers*." By David H. Neisen, Christopher L Boze, and Robert W. Cook, 2022. **See FORMULA - Chapter 10**, Cracking the Nut, **See p. 304**
H. *Alone, these two locations of coconut coir fiber on Oak Island, will formulate the known volume of this organic material. Both volumes were artificially installed in man-made constructs. The total volume of coconut coir fiber found at these two sites is 406.74 ft³. [44.24 ft³ + 362.50 ft³ = 406.74 ft³] or* ***407 ft³****.*

2E2. "*Affidavit from S.C. Fraser to A.S. Lowden*," copy by Frederick Blair. June 19, 1895.
"McNutt's boring after all other work on the island until last year was concluded; found disturbed earth, cocoanut fibre and pieces of wood down to 155 ft. Now there was tons and tons of that cocoanut fibre on the works at the shore and around the treasure in the pit."

#3A. Radiocarbon/AMS tested fibers from Oak Island dated from AD 1185-1330.

3A1. "*Letter to "Oak Island Participants from Richard C. Nieman*." 3 Pages. October 7, 1990.
"Subject: Carbon 14 analysis of coconut fiber. During our visit to Oak Island this summer, Dan Henske provided some samples of what is believed to be coconut fiber. Dan retrieved this material from Smith's (north) Cove after removing several feet of beach overburden. While I did not actually observe the removal of material from the beach, Dan informed me that this was the same material which had been removed in great quantity by earlier searches and the same material which had been identified by the Smithsonian as coconut fiber. […] Since our fibers had already been identified as coconut fiber (or hemp) twice by the Smithsonian, once in 1919 and then again in 1930 and once by the Botanical Museum of Harvard University in 1937, I did not feel that much was to be gained by sending this sample to London for identification. […] Dr. Tamers informed me that the date translated to ***1180 A.D. ± 60 years (1950-770=1180)*** *and asked if I was shocked at the result."*

3A2. "*Letter by Dick Neiman forwarding Report on specimen "Beta-66584 to Oak Island Participant*," BETA Analytic Inc., Miami Florida. October 6, 1993.
"…The date is ***820 years before present ± 70 years****. The before present refers to prior to 1950AD, thus dating the sample to* ***1950 – 820 = 1130AD, ± 70****. This sample was physically obtained by David Tobias from Smith's Cove behind an old board wall (first section north side) and spent the last 20 years or so in the Island museum as sample 'S-2'.*
Note: Dendro Adjustment Applied.
Beta-66584 Radiocarbon Age BP ***820 ± 70***
Calibrated age(s) cal AD 1228
cal AD/BC age ranges obtained from intercepts (Method A):
*one sigma** cal AD 1168-1282*
*two sigma** cal AD 1036-1298*
Summary of Above:
Minimum of cal age ranges (cal ages) maximum of cal age ranges:
Cal AD 1168 (1229) 1282
Cal AD 1036 (1229) 1298"

3A3. "*Report on specimen "Beta-66584 to Richard C. Nieman*," Drs. J.J. Stripp and M.A. Tamers, BETA Analytic Inc., Miami Florida. October 6, 1993.
"As adjusted for dendro calibration, explained on attached sheet, ***date = 1229 AD. C-14 Age Years B.P.= 820, ± 70****, organics."*

3A4. "*Report on specimen "Beta-39897 to Richard C. Nieman*," Drs. J.J. Stripp and M.A. Tamers, BETA Analytic Inc., Miami Florida. September 28, 1990.
"Please find enclosed the result on the fibers sample recently submitted for radiocarbon dating analysis on the Rush Priority basis. We hope this date will be useful in your research. A portion of the sample was saved for the possibility of a future AMS dating.
Beta-39897 Oak Island Fibers 770 +/- 60 BP. 1950-770=1180AD.
However, Dr. Tamers stated that our previous carbon date of coconut fiber as provided by Dan Henske that was retrieved from Smith's Cove that dated 770 years old is scientifically reliable and can be depended upon within the 95% probability (2 standard deviations)."

3A5. "*Carbon Dating Results on specimens Beta-66107 and Beta-39897 to Dick Nieman*," BETA Analytic Inc., Miami Florida. November 18, 1994. Only Beta-39897 (coconut fibers) is *provided here: "Beta-39897" Radiocarbon Age BP* ***770 ± 60***
Calibrated age(s) cal AD ***1278***
Summary of Above:
Minimum of call age ranges (cal ages) maximum of cal age ranges:
cal AD 1225 (1278) 1290
cal AD 1168 (1278) 1374

Notation on page states: 95% confidence in range 1168-1374 AD."

3A6. "Applicable pages of "Draft Report" by Woods Hole Oceanographic Institute (WHOI), April 8, 1996." Samples tested using Acceleration Mass Spectrometry (AMS).

"Page i. *Radiocarbon age dates of two "coconut fibre samples were run. One sample was from D. Blankenship (via Oak Island Discoveries) it was dated at **765** ybp. The second sample was found in Smith's Cove by Dan Henske and D. Aubrey; it was dated at about **1100** ybp. The provenance of the Smith's Cove sample is unclear (whether from original workers, searchers, or natural deposition at the coast from ocean currents). Additional research is taking place to clarify the possible origins of this old material."*

"Page 39. Coconut Fibre Samples:

*Coconut fibre has taken on some aura of importance at Oak Island for several reasons: 1) It was found as a filter fabric, along with seagrass, at the Smith's Cove outlets for flood tunnels, reported by previous searchers. 2) It was previously dated and stated to be old: A letter from Richard C. Nieman, dated oct. 6 1993, reports a date on coconut fibre of **1229 AD ± 70 years**. This sample was obtained by David Tobias (or perhaps Dan Henske, see Nieman letter of Sept. 27, 1993) from Smith's Cove, and reported by Beta Analytic, Inc. of Miami, Fl. A second test of coconut fibre showed an age of **1278 AD ± 60 years (715 YPB)**. These coconut fibers are the one material which have been verified to be old. The coconut fibre was found underneath logs unearthed at Smith's Cove in the 1970's by Dan Blankenship and hypothesized to be original and old.*

*We therefore dated two coconut fibre samples. The first, **receipt #10168 (OI-3-CF2)** was provided by Dan Blankenship to Oak Island Discoveries and presented to WHOI to date. The age was determined to be **765 YPB ± 35**. This age is indistinguishable from the age of the samples dated by Beta Analytic and reported above. We hypothesize we must have dated a subsample of the same material." The second coconut fibre came from just below low tide level within Smith's Cove. It was excavated by Dan Henske in presence of D. Aubrey and others on July 27, 1996. After dewatering the site where Henske knew the sample was to be located, Dan dug down about 8 inches to find fibre which we dated. We have no knowledge of how the fibre came to the position where Henske located it; only that we sampled it on that day. This second coconut fibre sample **(receipt #10167 and ID OI-5-CF3) dated to 1140 YPB, ± 30 years (or approximately 855 AD**).*

-WHOI-3-CF2 10168	*Coconut fibre* *Age (YPB) **765*** *Provided by Dan Henske*	*Age Error 35*
-WHOI-5-CF3 10167	*Coconut fibre* *Age (YBP) **1140*** *Smith's Cove, dug by DGA"*	*Age Error 30*

"Page 40. *We sent the SEM photo-micrographs and portions of the original fibre sample to two palm experts: Scott Zona of the Fairchild Tropical Garden, in Miami, FL, and Prof. (Emeritus) Natalie Uhl, or Cornell University. Correspondence with these two individuals is contained in Attachment E."*

3A7. "Curse of Oak Island," Season 3, Episode 11 – *Sword Play,"* Produced by Prometheus Production for The History Channel. Transcribed by Hammerson Peters in his *The Oak Island Encyclopedia*, 2019. **See pgs. 353-355**.

*"The Eelgrass carbon dating does not match the carbon dating of coconut fiber dug up by Dan Henskee, Jack Begley, Alex Lagina, and Peter Fornetti in Season 1, Episode 2, which was carbon dated to between **AD 1260 and 1400**. To make matters more bizarre, the layer of the much older coconut fiber, according to the Truro Company, lay overtop of the much younger eelgrass fiber. This seems to suggest that, if the carbon dates are to be believed, the Smith's Cove filter was constructed sometime after 1470 and the builders used relatively fresh eelgrass and 70-400 year old coconut fiber."*

#4A. Fiber found on Oak Island was identified as several different fibers.

4A1. "*Letter to R.V Harris by Fred L. Blair November 5, 1937*."
"An expert at the Smithsonian Institution stated it was undoubtedly cocoanut fibre and under the conditions in which it was found, may have been there for hundreds of years. Other experts have before this, pronounced it ***Manila hemp****."*

4A2. "*Account by James McNutt, Secretary of the Oak Island Eldorado Co.*," known as the Halifax Co. Transcribed by Les MacPhie. Work done from Dec. 1866 - Jan. 1867. **See pgs. 1-6**.
"Acquired from Amos Naus, who got it from E. Hamilton in 1941. [Zoysia matrella, a.k.a. manila templegrass, manila grass, zoysia grass, and species Zoysia japonica, both grew in Japan and Mexico.] *"…a mining augur hole in it also a piece of a stick chipped with the appearance of the plank resting on it. Also oak chips and* ***manila grass*** *and two large smooth stones that had been taken off the surface of the earth."*

4A3. *"Letter to The Oak Island Exploration c/o Jon Ergin by C.H. Schofield*," National Research Council of Canada. October 7, 1970.

4A4. "*Letter to Robert Dunfield by R.V. Harris*." Passing along findings by Dept. of Obstetrics and Gynecology, The Albany Medical College of Unition University, Albany, NY. January 31, 1966. Canadian National Archives, **See MG1, Vol. 383**.
"Mr. Kirwan and the members of the Laboratory Staff, after spending considerable time in the examination of this hair sample, have found no evidence that would permit the scientific conclusion that it is human hair. In his opinion, it is an ***animal hair*** *of unidentified origin."*

4A5. "*Letter to Gilbert D. Hedden by R. V. Harris, Reporting findings from Harvard Universities letter from A.F. Hill. October 26, 1937*." **See MG1, Vol. 381, 1264**.
"The Harvard Museum writes as follows; 1) The material has suffered somewhat from its burial in the ground, but even as it is readily distinguishable as ***Manila hemp****, the external appearance is misleading, but typical Manila hemp fibers are to be noted in a microscopic examination of macerated material."*

4A6. "*Letter to R. V. Harris by K.J. McCallum*," Professor of Chemistry, University of Saskatchewan, Saskatoon, Canada. September 15, 1966. **See MG1 Vol. 383, 2093M**.
"You indicate the presence of coconut fibre. I know little about this material, but I presume it is less likely that old coconut fibre would have been used."

4A7. "*Transcript of Notes by Dan Blankenship on Excavation at South Shore Shaft*." Transcribed by Les MacPhie on June 20, 1999 from copy of original notes – Revised February 2007.

4A8. "*Interview of Mildred Restall, wife of Robert Restall, treasure seeker*," by D'Arcy O'Connor. August 10, 1976.
"Now that coconut fiber; we called it coconut fiber. But that fellow (Erwin) Hamilton, he said that it was bark off spruce trees (scraped off by earlier searchers when they were making ***spruce timbers*** *for their cribwork). He claims that's what it was. But it's been analyzed as coconut fiber. And when you pull bark off you take it off in long strips, not short pieces like that (which we found). We gave some of our fiber to people who had it analyzed, and they said it was husk of coconuts."*

4A9. "*D`Arcy O'Connor interview with Mendel L. Peterson*." August 20, 1976. (Director of Underwater Expedition, Smithsonian Institute)

4A10. "*Sworn Affidavit of J.W. Andrews, C.E.M.E Consult Engineer*." As a boy, watched searcher operations on Oak Island, 1849. Lives in NY. N.S. Archives, **See MG1 Vol.383. Part of F**.
"…A covering of fiber over one of the plank platforms said to be coconut fiber – later said to be a ***vegetable growth from Japan or Mexico****."*

4A11. *"Letter to R.V Harris by Hugh P. Bell*," Head of Depart. Of Biology, Dalhousie University, July 22, 1937. **See MG1 Vol. 381, 1204**.
"In reference to the fibrous material that you showed me this morning, I am not sufficiently familiar with all forms of fibrous to identify this with any degree of accuracy. […] However it appeared to me to be angiosperm material probably from some member of the ***lower monocotyledons****, but I do not wish you to take this as a definite statement on the matter."*

#4B. Fibers found on Oak Island were generally thought to be from the nut husk of a coconut tree *(Cocos nucifera)* (CCF).

4B1. "*Interview of Melbourne R. Chappell, Son of William Chappell, Oak Island searcher*." By D'Arcy O'Conner. July 20-21, 1976.
"…He found a lot of coconut fiber there too. In 1895 when father went to Oak Island for the first time, he told me that there was a pile of that coconut fiber that had been piled up on the sore by the searches in 1849 when they uncovered it. He said it was piled up on the shore and that it would fill a big truckload. And when I was there in 1931, I looked around and got several pieces of coconut fiber. It wasn't dated, just authenticated as definitely coconut fiber; the fibers off the husks of coconut."

4B2. "*Transcript of Notes by Dan Blankenship on Excavation at South Shore Shaft*." Transcribed by Les MacPhie on June 20, 1999 from copy of original notes – Revised February 2007.

4B3. "*S.C. Fraser Letter to Mr. A.S. Lowden, Dated June 19, 1895. Briggs Corner, Queens, N.B.* **See pgs. 1-5**
"Now there was tons and tons of that cocoanut fibre on the works at the shore and around the treasure in the pit. […] I did not know that the earth of the island undisturbed, had cocoanut fibre and wood mixed with it. The pamphlet says, "East India Grass," it is not; but coconut fibre nearly as well preserved as what I took off the coconut when examining and comparing them. Considerable of this was found among the sand, last summer, and carried away by visitors."

4B4. "*Telephonic Notes by D`Arcy O`Connor interview of Robert R. Dunfield, October 21, 1976*."
"Yes, the coconut fiber was analyzed to be coir, a fibrous mass between the coconut shell and the outer husk, which was used as dunnage in the early days of primitive shipping."

4B5. *"Interview of George T. Bates, who surveyed Oak Island with Mr. Roper*." By D'Arcy O'Connor. 8-16-76.
"*Theory… and the coconut fiber that has been found in Smith's Cove beach was, originally in that coffer dam to give workmen dry footing the minute the water went out of the dry dock… They get water down to the lower chamber. The vessel is high and dry. The fiber is laid on bottom (of the drydock for footing) to cover slippery wood and slime."*

#4C. Scanning Electron Microscope (SEM) images of the fiber presented conflicting determinations.

4C1. "Applicable pages "Draft Report" by Woods Hole Oceanographic Institute (WHOI), 4-8-96."
"In order to determine whether this material indeed was coconut fibre, we consulted some experts. Unfortunately, the fibre was heavily decomposed, consisting of only about 5% carbon by weight, a low percentage for most vegetative materials. We examined the photographs by SEM, a sophisticated means to examine materials at very fine scale. SEM work was performed by the U.S. Geological Survey in Woods Hole, MA. Fig. 10 shows some SEM photo-micrographs of sample OI-5-CF3."

4C2. "*Email Message to Ben Guttierrez at WHOI, from Prof. Natalie Uhl at Cornell Univ.,12-19-95*."
Reference Identification of plant fiber specimens from Oak Island, Aug. 1995.
"The SEM photos of the transections of the fibers do closely resemble the configuration of the fibrous bundle speaths in some palm stems. It is not possible to say definitely that these are palms just that they could be. It would help to have all of the bundle, i.e., the xylem to check on what sort of vessels might be present. We might then be able to state more strongly that the material is from a palm. Regrettably, I don't believe there is any way to identify the material to genus and species."

4C3. "*Email Message to Ben Guttierrez at WHOI, from Biologist Scott Zona at Fairchild Tropical Gardens, Jan. 9, 1996*." Reference Identification of plant fiber specimens from Oak Island, Aug. 1995.
"I'm afraid I can't be of much help. The fibers don't look like palm leaf-base fibers to me in that they are in more or less parallel groups. Could they be stem fibers with the ground tissue decayed? Possibly, but your letter indicated that you didn't think the fibers had been in an anaerobic deposit, hence decay would have been less likely. Could they be fruit fibers, such as the husk fibers of a coconut? Maybe, although my light microscope comparison with modern fibers are inconclusive. I'm enclosing a small sample of coconut husk fiber from a specimen in our herbarium. You may wish to make SEM photos or try retting away the ground tissue to see how the fibers. Look."

4C4. *"Curse of Oak Island, Season 01, Episode 02 – "The Mystery of Smith's Cove,"* by Prometheus Productions & History Channel Cable TV.
"Searchers take newly found fiber on Oak Island to Acadia University, Nova Scotia, where Biologist Dr. Roger Evans compares with other fiber brought by searchers and stated as husk nut fiber from Cocos nucifera. SEM imagery of both sample fibers illustrate both are identical. Therefore, with the assumption the test sample was from Cocos nucifera, it would indicate the new sample was the same. However, neither SEM sample had the tell-tale Lacuna visible in the center of its microstructure. Quote: "One unique property of coconut fiber is its microstructure which has an irregular honeycomb-like structure, giving the fibers a very high specific stiffness in bending (Bradley/Conroy, 2019)."

4C5. *"Comparison of Coconut Coir and Date Palm Coir (sheath fiber) and Their Composites."* By Mohamad Midani, Lobna A. Elseify, Tamer Hamouda and Ahmed H. Hassanin, Aug. 2022. Researchgate. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070.9.
See pgs. 331,332, 335, 336 & 338.
"The fiber diameter of coconut coir is in the range of 100–450 μm and length is up to 300 mm. While the fiber diameter for date palm coir ranges 100–2000 μm and length ranges 50–300 mm. The microstructural features of coir fibers are observed using SEM. The cross-sectional shape of both coconut and date palm coir are circular and have a cellular structure made up of hollow fibrils bonded together by a primary layer as shown in **Fig. 15.5.** *However, the coconut coir has a large central lumen known as a lacuna which is not observed in date palm coir. Further, by looking at the surface morphology of both types of coir after cleaning with 2.5%NaOHto remove surface impurities, it's evident that the fiber surface is rough with micropores aligned in the fiber axial direction (***Fig. 15.6***)."*

4C6. "*Coconut Fibre: its Structure, Properties and Applications*." By Leena Mishra, Gautam Basu, Feb. 2020. Published in Handbook of Natural Fibres, Vol. 1. ICAR-National Institute of Research on Jute & Allied Fibre Technology, Kolkata, West Bengal, India. **See pgs. 12-15**.
"Optical microscopy (Fig. 10.9 (right)) illustrates that the cross-section of [CCF] fibre is circular having lumen. Circular cross-section makes the raw coconut fibre lustrous in appearance. Presence of numerous voids around lumen indicates its multi-fibrillar structure."

4C7. "*Looking for Links Between Natural Fibers' Structures and their Physical Properties*." By Nicola M. Everitt, Nesma Alboulkhair, and Mike Clifford, Aug. 2013. Conference Papers in *Materials Science*, Jan. 2013. Publication at: https://www.researchgate.net/publication/259639561 1 **See Figure pgs. 5-8**.
"…as can be seen in SEM images of coir fibres (Figures 9 and 10) since the fibre cross-section shows a large amount of hollowness in the fibre that is not considered in diameter measurement. This means that the strength measurements are misled as the area effectively carrying the load is well less than the measured one. The high magnification SEM image in Figure 8(a) suggests that the microfibrils towards the centre of the fibre tend to have a coiled spring-like structure, with this spring being lined with a thin layer as shown in the inset in the same figure."

4C8. "*Exploring the potential of waste leaf sheath date palm fibres for composite reinforcement through a structural and mechanical analysis*." By Alain Bourmaud, et. al., Dec. 2017. ResearchGate. DOI: 10.17863/CAM.21000. **See pg. 11**.
"However, most interestingly, the date palm fibres were also found to be unique, in that in comparison to the other fibres (including jute, coir, flax, hemp and cotton), they have the largest RH region (up to 10%), where adsorption and desorption curves overlap (i.e., 0% hysteresis region). This gives the date palm fibres a capacity to absorb and hold moisture, potentially of vital importance in supporting the growth of these date palm trees which generally grow in water-scarce regions."

4C9. "*Comparison of Coconut Coir and Date Palm coir (sheath fiber) and Their Composites*." By Mohamad Midani*, Lobna A. Elseify*, Tamer Hamouda, and Ahmed H. Hassanin. Published in Coir Fiber and its Composites, 2022, Elsevier Ltd. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9
"Cited references regarding Lacuna for coir, no Lacuna for date palm: [7]."

4C10. *"Investigation of microstructure and tensile properties of porous natural coir fibre for use in composite materials," By L.Q.N. Tran, T.N. Minh, C.A. Fuentes, T.T. Chi, A.W. Van Vuure, I. Verpoest, Ind. Crops Prod. 65 (2015) **437–445**. https://doi.org/10.1016/j.indcrop.2014.10.064.*

4C11. *"Date palm fibers as polymeric matrix reinforcement: fiber characterization," A.Al-Khanbashi, K. Al-Kaabi, A. Hammami, Polymeric. Composites. 26 (2005)* **See pgs. 486–497**. *https://doi.org/10.1002/pc.20118.*
"The microstructural features of coir fibers are observed using (SEM). The cross-sectional shape of both CCF and DPF are circular and have a cellular structure made up of hollow fibrils bonded together by a primary layer as shown in **Fig.15.5**. *However, the CCF has a large central lumen known as a lacuna which is not observed in date palm coir." In* **Fig. 2**, *a typical cross section of a coir fibre indicates that a technical CCF comprises numerous elementary fibres with a lumen inside. The larger hole, which is approximately located in the centre of the technical fibre, is called lacuna."*

4C12. *"Influence of water absorption on mechanical properties of coconut coir Fiber/ Poly-Lactic acid Biocomposites." Article in Materials Physics and Mechanics. Jan. 2011.*
"Coconut coir also contains a central hollow portion that runs along the fiber axis (lacuna)."

#4D. Fiber found on Oak Island was not conclusively identified as from CCF.

4D1. "Applicable pages "Draft Report" by Woods Hole Oceanographic Institute (WHOI), 4-8-96"
"In order to determine whether this material indeed was coconut fibre, we consulted some experts. Unfortunately, the fibre was heavily decomposed, consisting of only about 5% carbon by weight, a low percentage for most vegetative materials. We examined the photographs by Scanning Electron Microscope, a sophisticated means to examine materials at very fine scale. SEM work was performed by the U.S. Geological Survey in Woods Hole, MA. **See Fig. 10** *shows some SEM photo-micrographs of sample OI-5-CF3."*

4D2. "*Email Message to Ben Guttierrez at WHOI, from Prof. Natalie Uhl at Cornell Univ., 12-19-95*." Reference Identification of plant fiber specimens from Oak Island, Aug. 1995.
"The SEM photos of the transections of the fibers do closely resemble the configuration of the fibrous bundle speaths in some palm stems. It is not possible to say definitely that these are palms just that they could be. It would help to have all of the bundle, i.e., the xylem to check on what sort of vessels might be present. We might then be able to state more strongly that the material is from a palm. Regrettably, I don't believe there is any way to identify the material to genus and species."

4D3. "*Email Message to Ben Guttierrez at WHOI, from Biologist Scott Zona at Fairchild Tropical Gardens, 1-9-96*." Reference Identification of plant fiber specimens from Oak Island, Aug. 1995.
"I'm afraid I can't be of much help. The fibers don't look like palm leaf-base fibers to me in that they are in more or less parallel groups. Could they be stem fibers with the ground tissue decayed? Possibly, but your letter indicated that you didn't think the fibers had been in an anaerobic deposit, hence decay would have been less likely. Could they be fruit fibers, such as the husk fibers of a coconut? Maybe, although my light microscope comparison with modern fibers are inconclusive. I'm enclosing a small sample of coconut husk fiber from a specimen in our herbarium. You may wish to make SEM photos or try retting away the ground tissue to see how the fibers. Look."

#4E. CCF is spontaneously combustible, stains, odiferous, and floats, unlike DPF.

4E1. "*Transport Information Service: COIR Shipping*." International Shipping Container Handbook (CHB). Mar. 8, 2022. German Marine Insurers. HEAVILY SUMMAARIZED FOR BREVITY.
See document at https://www.tis-gdv.de/tis_e/ware/fasern/kokosfa/kokosfa-htm/
"Product name: Coconut fiber, coir, Cocos nucifera. Product description: CCF in category fibers/fibrous materials, […] CCF is obtained from the fibrous husk (mesocarp) of the coconut (Cocos nucifera) from the coconut palm, which belongs to the palm family (Palmae). Intended use: CCF is used to produce hawsers, ropes, cords, runners, mats, brooms, brushes, paintbrushes and as stuffing for mattresses and upholstered furniture. Transporting: CCF is transported in bales (compressed and uncompressed), in

hanks and in rolls. CCF is sometimes wrapped in jute or bamboo mats or are also shipped unpackaged. Handling: […] The cargo must be protected from moisture since CCF is strongly hygroscopic and readily absorbs moisture. This may lead to […] decay and mold growth and to rusting of steel strapping.[…] smoking is absolutely prohibited during cargo handling. Cargo securing: […] This in turn increases the risk of combustion or feeds a fire which has already started. Risk factors and loss prevention: CCF is strongly hygroscopic. It must be protected from sea, rain and condensation water and also from high levels of relative humidity, decay, staining, self-heating, mold, and attacks by microorganisms . Ventilation: CCF very readily absorbs oxygen, before anybody enters the hold, it must be ventilated […] since a shortage of oxygen may endanger life. Biotic activity: CCF belong to the class of goods in which respiration processes are suspended, but in which biochemical, microbial and other decomposition processes still proceed. Gasses: The increase in CO2 and CO content indicates a cargo fire. ***Self-heating / Spontaneous Combustion****: CCF has an oil content of 2-5% (coconut oil). CCF is assigned to Class 4.1 of the IMDG Code (Flammable solids). However, its specific characteristics and negative external influences (see below) may cause them to behave like a substance from* ***Class 4.2 (substances liable to spontaneous combustion****) of the IMDG Code.[…] Lightly compressed bales in particular ignite easily […] Spontaneous combustion may occur as a result of exposure to moisture, animal and vegetable fats/oils, oil-bearing seeds/fruits, copra and raw wool. CCF is very highly susceptible to self-heating due to moisture. […] Firefighting is best performed using CO_2 or foam. It is very difficult to extinguish a fire because of the excess of oxygen in the coconut fiber, which maintains the fire from the inside. When fighting a fire, do not break the steel straps or open the bales, since relieving the compression increases the oxygen supply and makes it impossible to fight the fire effectively.* ***Odor****: CCF has a slight, unpleasant odor. […] Since CCF may easily cause odor-tainting, it must be stowed together with odor-sensitive products (e.g., foodstuffs). CCF itself is sensitive to unpleasant or pungent odors. Contamination: CCF causes contamination due to the coconut oil it contains and must therefore be stowed away from easily stained products. CCF is sensitive to contamination by dust, dirt, fats/oils and rust as well as oil-containing goods, such as oil-bearing seeds/fruits, copra, raw wool etc. since oil-impregnated fibers promote self-heating/cargo fire. Holds or containers must accordingly be clean and in a thoroughly hygienic condition. Toxicity/hazard to health: Since CCF is highly oxygen-absorbent, a life-threatening shortage of oxygen may arise in the hold or container. Thus, before anybody enters the hold, it must be ventilated and, if necessary, a gas measurement carried out. Infestation/disease: [not applicable]."*

4E2. "*On the Stowage of Ships and Their Cargoes: with Information Regarding Freights, Charter-Parties, etc., etc*." By Robert White Stevens. 1878. Longmans, Green, Reader & Dyer. London. www.StevensonStowage1878.pdf. **See pgs. 34 & 528**.

"*At Ceylon, when cocoa-nut oil is stowed in the bottom, and loose coir yarn is used for dunnage, to receive coffee, the yarn should be previously well covered with mats; the yarn should not come in contact with other cargo or the oil (p. 145). 183. COIR, a kind of yarn manufactured from the fibrous husk of cocoanuts; see rope. Bombay ton coir rope 10 cwt. or 50 cubic feet (p. 146). 944. ROPE: Coir, made from the fibrous covering of the cocoa nut, comes mostly from Ceylon, Cochin, Bombay, etc. When confined in the hold it will soon rot if wet, or if water is allowed to drip on it, especially fresh water, which decreases its strength and causes injury from which, as with oil, it never recovers. Constant immersion in salt water is said to strengthen it. Coir junk [considered to be coconut husks for fuel, not retted] or yarn or fiber are often injured by stowage with oil at Ceylon, etc. When hanks [packages of coir yarn] have been stowed at Cochin, between casks of oil, spontaneous combustion has occurred; see oil. Coir rope weighs more than one-third, but not one-half as much as hemp rope (p. 528)."*

4E3. "*International Maritime Dangerous Goods Code (IMDG) – Coconut Coir Fiber*." By International Maritime Organization (IMO), 2023. Transport Information Service, https://www.tis-gdv.de/tis_e/ware/fasern/kokosfa/kokosfa-htm/

4E4. "*History, manufacture and properties OF Lime Bast Cordage in Northern Europe*." By Tor Myking, Anja Hertzberg and Tore Skrøppa.
"Water absorption is marginal (Høeg, 1974 ; Nedkvitne and Gjerdåker, 1997) which is a crucial factor for releasing knots. Limited swelling and low weight (Table 1) meant that the cordage floated well and made it ideal for use in fisheries (Schjølberg, 1988 ; Gjerdåker and Nedkvitne,1997). The low extensibility of bast cordage reported in the literature […] a property that was highly valued during the days of sailing ships (Nedkvitne and Gjerdåker, 1997)."

4E5. "*Exploring the potential of waste leaf sheath date palm fibres for composite reinforcement through a structural and mechanical analysis*." By Alain Bourmaud, et. al., Dec. 2017. ResearchGate. DOI: 10.17863/CAM.21000. **See pg. 11**.
"However, most interestingly, the date palm fibres were also found to be unique, in that in comparison to the other fibres (including jute, coir, flax, hemp and cotton), they have the largest RH region (up to 10%), where adsorption and desorption curves overlap (i.e., 0% hysteresis region). This may give the date palm fibres a capacity to absorb and hold moisture, potentially of vital importance in supporting the growth of these date palm trees which generally grow in water-scarce regions."

4E6. "*What is Coir Rope?*" By Kaylee Keech, last updated April 12, 2023. Online Article @ *The Knots Manual*. https://www.theknotsmanual.com/rope/types-of-rope/coir/
"Unlike other natural ropes, Coir has resistance to microbial and saltwater damage. So, it's particularly useful in marine environments. Plus, ***coir is light and floats****, so boaters can use long lengths without weighing down their boats. The lignin makes coir stronger than the other natural ropes. Yet, it also prevents it from being stretchy, so coir is quite inflexible. Unfortunately, its inflexibility makes it slightly weaker. So, its breaking strength is less than that of jute rope. Coir rope is highly resistant to water damage. Unlike Jute, Manila, Cotton, Flax, Hemp, Sisal and Lime Bast,* ***Coir floats****."*

4E7. "*Transport Information Service: COIR Shipping*." International Shipping Container Handbook (CHB). 3-8-22. German Marine Insurers.
See document at https://www.tis-gdv.de/tis_e/ware/fasern/kokosfa/kokosfa-htm/
"The remarkable lightness of the fibers [CCF] is due to the cavities arising from dried out sieve cells."

4E8. "*On some of the Vegetable Materials from which Cordage, Twine and Thread, are made*." By James Mease, M.D.. *American Journal of Science and Arts*, No. 1, Vol. XXI. 1807. **Pgs. 9-17**.

4E9. "*The Rope Cave" at Mersa/Wadi Gaswasis*." By Andre J. Veldmeijer, et. al.. Published in *Journal of the American Research Center* in Egypt, 2008, Vol. 44.
"However, in most cases ropes for ships are said to have been made from ꜰwḏ, which is widely accepted as referring to [date] palm fibers."

#5A. Fiber found on Oak Island is plant fiber from the date palm tree *(Phoenix dactylifera)* (DPF).

5A1. "*Oak Island Mystery Trees and other Forensic Answers - Fibrosity*." By David H. Neisen, Christopher L Boze, and Brent Sallans, 2024. **See Chapter 1, CCF Fiber vs DPF Fiber**.

5A2. "*Comparison of Coconut Coir and Date Palm coir (sheath fiber) and Their Composites*." By Mohamad Midani*, Lobna A. Elseify*, Tamer Hamouda, and Ahmed H. Hassanin. Published in Coir Fiber and its Composites, 2022, Elsevier Ltd.
DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9
"In conclusion, DPF and its composites have very similar characteristics to CCF."

5A3. "*DATE PALMS (also known as Phoenix Palms): Definition of a Date Palm and Descriptions of the main Phoenix Species*." Bu Phil Bergman. Last updated Feb. 13, 2024.
https://www.junglemusic.net/articles/DatePalms.html
"This genus would include everything from the true Date Palm, Phoenix dactylifera, to the Canary Island Date Palm, Phoenix canariensis. Many heard of the Pygmy Date Palm. It is in this genus Phoenix as well. But, only one plant, the true Date Palm, gives fruit that is edible and marketable."

5A4. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emira Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc. Published in *Sciences Advances*, 6, 2020.

5A5. *"Hybridization in the Genus Phoenix: A Review." By Muriel Gros-Balthazard*. Published in Emirates Journal of Food and Agriculture, April 2013. https:DOI:10.9755/ejfa.v25|11.16660.* (Article includes accompanied map.)

5A6. "*Exploring the Potential of Waste Leaf Sheath Date Palm Fibres for Composite Reinforcement Through a Structural and Mechanical Analysis*." By Alain Bourmaud, Hom Dhakal, Anouck Habrant, Justine Padovani, David Siniscalco, Michael H. Ramage, Johnny Beaugrand, and Darshil U. Shah. Université de Bretagne Sud, IRDL, CNRS FR.
"The cellulose content is well correlated with value of (Saadoui et al.) on DPF fibrillum and is in the same range as bamboo or CCF. Our samples are characterized by an important lignin content in vascular cambium tissues, i.e., palm, bamboo, sisal or coir. Lignin is preponderant for the plant and contribute to its protection against exogenous attacks (water, insects, etc.) by reinforcing the bundle stiffness." And…*"Comparing to (Hill et al.) data on various natural fibres, the date palm fibres have very similar isotherm profiles to CCF and Sitka spruce wood, including total moisture content at a given relative humidity and the high degree of hysteresis exhibited."*

5A7. "*Review on Cellulosic Fibers Extracted from Date Palms (Phoenix dactylifera L.) and their Applications*." By Lobna Elseify*, Mohamad Midani*, Lamia Shihata, Hamed El-Mously*.
"Moreover, according to a study made by El Mously in 1995, it was found that a single female date palm tree produces annually a dry weight of 9.75 kg of midribs, 7 kg of spadix stems, 8 kg of leaflets, and, 1.25 kg of mesh (El-Mously*, 2005)."*

#5B. Fiber found on Oak Island is specifically mesh/sheath trunk fiber from the date palm tree.

5B1. "*Review on Cellulosic Fibers Extracted from Date Palms (Phoenix dactylifera) and their Applications*." By Lobna A. Elseify*, Mohamad Midani*, Lamia A. Shihata, and Hamed El-Mously*, October 1, 2018. Published in Cellulose, (2019), **See pgs. 2209-2232**. https://doi.org/10.1007/s10570-019-02259-6

5B2. "*Comparison of Coconut Coir and Date Palm coir (sheath fiber) and Their Composites*." By Mohamad Midani*, Lobna A. Elseify*, Tamer Hamouda, and Ahmed H. Hassanin. Published in Coir Fiber and its Composites, 2022, Elsevier Ltd.
DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9

5B3. *"Date palm fibers as polymeric matrix reinforcement: fiber characterization,"* A.Al-Khanbashi, K. Al-Kaabi, A. Hammami, Polymeric. Composites. 26 (2005) **See pgs.486–497**. *https://doi.org/10.1002/pc.20118*.

5B4. "*Exploring the potential of waste leaf sheath date palm fibres for composite reinforcement through a structural and mechanical analysis*." By Alain Bourmaud, et. al., Dec. 2017. ResearchGate. DOI: 10.17863/CAM.21000. **See pg. 2**.
"The palm tree stem is covered with a mesh made of fibre bundles, called fibrillum, creating a natural, woven mat of crossed fibres of different diameters. The fibrillum forms from the natural decomposition of leaf sheaths and surrounds the remaining petioles of the old leaves. This fibrillum has a function of thermal protection of the plant [25] with entrapped air between the fibre bundles."

5B5. "*The Encyclopedia of Fruit & Nuts*." Edited by Jules Janick and Robert E. Paull. Published in *Araceae*, CABI, 2008. Coconut Palm, **See pgs. 107-118. Date Palm, pgs. 138-151**.

5B6. "*Coir fiber process and opportunities, 1-2*." By Akhila Rajan, at Govt. College Kozhinjampara. Published in The *Journal of Natural Fibers*, Vol. 3(4) 2006 & January 2008. The Hawthorne Press. https://doi: 10.1300/J395v03n04_03 .

5B7. *"Dr. Vincent Battesti* Email Response, Dated February 2, 2024."* Centre National de la Recherche Scientifique / French National Centre for Scientific Research.
"…it is known in the Sahara that local populations prefer to use rope made from Iīf (instead of goat or sheep hair) because they resist water well (when you use a rope to draw water)."

5B8. "*Date Palm Byproducts: A Springboard for Circular Bio Economy*." By Hamed El-Mously*, Mohamad Midani*, Eman A. Darwish. Part of *Materials Horizons: From Nature to Nanomaterials* series. 2023. Springer Nature.

5B9. "*Coconut Fibre: Its Structure, Properties and Applications*." By Leena Mishra and Gautam Basu. National Institute of Natural Fibre Engineering & Technologies Institute. Kolkata, West Bengal India. Section Yield of Coconut Fibre, **See pg. 7, para. 10.2.1.3**. Researchgate. Pub. 339284598. February 2020. 27 Pages.

5B10. "*A Review on Date Palm Tree: Properties, Characterization and its Potential Applications*." By Mehdi Jonoobi, Masoud Shafie, Younes Shirmohammadli, Alireza Ashori, Hamid Zarea-Hosseinabadi, and Tizazu Mekonnen. Published in *Journal of Renewable Materials*. https://doi:10.32604/jrm.2019.08188

#6A. No other palm species in *Phoenix* genus (date palm) grew within the area investigated.

6A1. "*The genus Phoenix: List of Species*." By Johnson, 1996 & Barrow, 1998. USDA–ARS National Plant Germplasm System, 2022

6A2. "*Oak Island Mystery Trees and other Forensic Answers - Fibrosity*." By David H. Neisen, Christopher L Boze, and Brent Sallans, 2024. **See Chapter 1**.

6A3. "*Comparison of Coconut Coir and Date Palm coir (sheath fiber) and Their Composites*." By Mohamad Midani*, Lobna A. Elseify*, Tamer Hamouda, and Ahmed H. Hassanin. Published in Coir Fiber and its Composites, 2022, Elsevier Ltd. DOI: https://doi.org/10.1016/B978-0-443-15186-6.00070-9

6A4. "*DATE PALMS (also known as Phoenix Palms): Definition of a Date Palm and Descriptions of the main Phoenix Species*." Bu Phil Bergman. Last updated Feb. 13, 2024. https://www.junglemusic.net/articles/DatePalms.html
"This genus would include everything from the true Date Palm, Phoenix dactylifera, to the Canary Island Date Palm, Phoenix canariensis. Many have heard of the Pygmy Date Palm. It is in this genus Phoenix as well. But, only one plant, the true Date Palm, gives fruit that is edible and marketable."

6A5. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emira Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc. Published in *Sciences Advances*, 6, 2020.
"In Israel, the oldest remains of P. dactylifera are wood specimens 19,000 yr B.P. from Ohalo II site on the Sea of Galilee. Recovery of carbonized date seeds from Chalcolithic and Early Bronze Age sites (4500 to 2900 BC) in the Judean desert, Jordan Valley, and Jericho and early Iron Age sites in Israel (12th to 11th century BC) suggest that human exploitation and consumption of dates occurred at this time. Judean date culture was present around Jericho, the Dead Sea, and Jordan Valley from the 5th century BC onward, benefitting from an optimal oasis agriculture environment of freshwater sources and subtropical climate. The origins of these exchanges are unclear; however, archaeological evidence indicates that North Africa, Near East, and Mediterranean cultures were clearly linked during the Neolithic in the southern Levant (approximately 11700 to 7300 B.P.) and were associated in Jericho with the earliest origins of food production and fundamental changes in human subsistence strategies."

6A6. *"Hybridization in the Genus Phoenix: A Review." By Muriel Gros-Balthazard*. Published in Emirates Journal of Food and Agriculture, April 2013. https:DOI:10.9755/ejfa.v25|11.16660.* **"See Fig. Distribution of Phoenix Species, pg. 833."**

6A7. "*The first identification of Phoenix dactylifera (date palm) from Early Bronze Age Lebanon*." By Alison Damick, 1 February 2018. Published in *Vegetation History and Archaeobotany*. https://doi.org/10.1007/s00334-019-00723-8
"*There exists clear evidence that P. dactylifera has been used for a wide variety of purposes by humans and our close relatives for millennia; for instance, by Neanderthal populations in Iraq (Henry et al. 2011), and in the southern Levant (Madella et al. 2002; Rosen 2003). These*

areas, however, have a more hospitable natural climate for date palms, which probably were not actively cultivated at that time. In the Levant, in practice, this means that they are diagnostic to the genus Phoenix. P. dactylifera is the only palm species endemic to the region at the time, except for Hyphaene thebaica (doum palm) in the very southern Aqaba area, the phytoliths of which have distinctly different morphology and dimensions (Rosen 1992).

6A8. "*Nannorrhops ritchiana: the dwarf palm tree of the king in the 24th-23rd century BC palace of Jericho*." By Claudia Moricca, et. al.., 2022. This one-page statement presented at 19th Conference of the International Workgroup for Palaeoethnobotany, Czech Republic.
"Tell es-Sultan, the Early Bronze Age city of Jericho is earliest urban centers of 3rd millennium BC Palestine. 2015-2017 excavations carried out by Sapienza University of Rome and the Palestinian MoTA-DACH have yielded charred botanical finds ascribable to the destruction of the palace by a fire in 2350 BC. The most enigmatic retrieved plant macro-remain is represented by a round fruit found in the subsidiary room behind the throne room of Royal Palace G, next to a vase, in the burnt filling overlying the platform. Classical archaeobotanical methods combined with a computed tomography scan allowed for it to be identified as a drupe of a dwarf palm. Two dwarf palms were taken in consideration: the Mediterranean dwarf palm (Chamaerops humilis L.) and the ***Mazari palm*** *(Nannorrhops ritchiana (Griff.) Aitch. native to the Sahara-Indian region), both with small, round/oval fruits, none of which currently growing nearby Jericho. A detailed analysis of herbarium samples of both species stored in Rome, Florence and Edinburgh, has allowed to identify the charred drupe as Nannorrhops ritchiana. Iconography, archaeobotanical literature and archaeological data were crucial for its interpretation. The presence of the Mazari palm in the palace suggests the existence of an overland commercial track to the south-east, across the desert of Saudi Arabia, which only recent excavations and other finds have revealed. While the medical properties of such palm are widely attested, the specific context of retrieval suggests a sacred use of the plant, thus backdating its possible use as a religious symbol/cult* object.

6A9. "*Ethnobotanical Survey of Chamaerops humilis L. in the Rural Commune of Sidi Youssef Ben Ahmed, Sefrou Province, Morocco*." By Houria Nekhla. Published in Tropical Journal of Natural Product Research. Available online at https://www.tjnpr.org.
"However, fruits of C. humilis L. were used for mastication, grinding, and decoction with 54, 36, and 10%, respectively. Concerning the pulp of C. humilis L., the population used it as an ingredient to prepare salad (66%) and for chewing (34%) as revealed by the respondents. This observation is consistent with a previous study by Medjati."

6A10. "*Tropical Palms, 2010 Revision*." By Dennis V. Johnson. FAO, Food and Agriculture Organization of the United Nations.
"Recent research on the date palm's origins reveal that the cultivated form is closely related to wild and feral date palms in the Near East, Middle East and North Africa, and that they are considered to be the same species (Zohary and Hopf, 2000). In cultivation there exist numerous date varieties named for the fruit characteristics. […] the palm flora of Africa is relatively poor in species diversity. Only about 50 palm species are native to the continent as defined here. […] The doum palm genus Hyphaene is poorly known in Africa where it chiefly occurs. Its habitat includes arid and semiarid areas and river valleys. Although as many as 26 species have been named in Africa, (Dransfield et al., 2008 and Tuley,1995) propose the recognition of six species (H. Reptans & Miedema argun). The genus Raphia is better known scientifically than Hyphaene, because of research by Otedoh (1982), who described 18 African species of this mostly swamp-dwelling palm. Currently, 20 species are recognized (Dransfield et al., 2008). Phoenix reclinata - The fruit is edible but smaller and inferior to the domesticated date." This leaves Phoenix dactylifera, the date palm tree."

6A11. "*The History of the Date Through the Ages in the Holy Land*." By Asaph Goor. Ministry of Agriculture, Jerusalem, Israel. **See note: pg. 321**.
"Phoenix sylvestris was introduced into Israel as an ornamental tree in 20th century."

6A12. "*Archaeology meets DNA: peering into the past of the date palm*." By Chelsea Snell, Dr. Oscar Alejandro Perez Escobar, Dr. Natalia Przelomska, Dr. Sidonie Bellot, and Dr. Philippa Ryan. https://www.kew.org/read-and-watch/date-palm-history

#6B. The cultivar of the species was known as the Judean Date Palm, historically grew larger, longer lasting and was tastier than other region cultivars.

6B1. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emira Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc. Published in *Sciences Advances*, 6, 2020.
"Judean date culture was present around Jericho, the Dead Sea, and Jordan Valley from the 5th century BC onward, benefitting from an optimal oasis agriculture environment of freshwater sources and subtropical climate.."

6B2. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emira Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc. Published in *Sciences Advances*, 6, 2020. SUPPLEMENTAL MATERIAL.

6B3. "*The Sweet and Sticky History of the Date*." By Matti Friedman. Published online at Smithsonianmag.com. www.smithsonianmag.com/history/sweet-sticky-history-the-date-180980983/

6B4. "*The History of the Date Through the Ages in the Holy Land*." By Asaph Goor. Ministry of Agriculture, Jerusalem, Israel.

6B5. *"Hybridization in the Genus Phoenix: A Review."* By Muriel Gros-Balthazard*. Published in *Emirates Journal of Food and Agriculture*, April 2013. https:DOI:10.9755/ejfa.v25|11.16660.

6B6. *"How King Solomon and the Romans Shaped the Judean Date Palm."* By Ruth Schuster. Published online at Haaretz, *Archaeology*, Mar. 30, 2022. https://www.haaretz.com/archaeology/2022-03-20/ty-article/how-king-solomon-and-the-romans-shaped-the-judean-date-palm/00000180-5bc7-db1e-a1d4-dfe71c180000

6B7. "*Pliny the Elder, Natural History, The different varieties of Palm Trees and their Characteristics*." Eds. J. Bostock, and H.T. Riley. **Book XIII, Chap. 9**. www.perseus.tufts.edu/hopper/text

6B8. "*Josepus, The Jewish War*." Eds. G. Cornfeld, B. Mazar, P. Maier. (Zondervan, 1982), **See Book IV, Chapter 8, pgs. 296–299, and Book VII, Chap. 8, pg. 488**.

6B9. "*Optimal Use of the Date Palm (Phoenix Dactylifera L.) during Antiquity: Anatomical Identification of Plant Remains from Madâ'n Sâlih*." By Ch. Bouchaud, R. Thomas and M. Tengberg, 2012. Published in Wood and Charcoal: Evidence for Human and Natural History. **See pgs. 173-186**. Universitat de València

6B10. "*On the Development of a Symbol: The Date Palm in Roman Palestine and the Jews*." By Steven Fine*, Jerusalem, Israel.
"Biblical references to date palms – such as Ps. 92.13 (The righteous will flourish like a date palm), or Sir. 24.14 (… I grow tall like a date palm in Ein Gedi, like rose plants in Jericho."

6B11. *"On the necessity of combining ethnobotany and genetics to assess agrobiodiversity and its evolution in crops: A case study on date palms (Phoenix dactylifera L.) in Siwa Oasis, Egypt*." By Muriel Gros-Balthazard* and Vincent Battesti*, et. al..
"So far, there is no evidence of date palms or other Phoenix populations in North Africa before the establishment of oasis agriculture. Predomestication Phoenix remains attributed to P. dactylifera have only been found in the Levant and in Iraq (Henry, Brooks, & Piperno, 2011; Liphschitz & Nadel, 1997; Solecki & Leroi-Gourhan, 1961)."

6B12. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emira Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc. Published in *Sciences Advances*, 6, 2020.
"Judean date culture was present around Jericho, the Dead Sea, and Jordan Valley from the 5th century BC onward, benefitting from an optimal oasis agriculture environment of freshwater sources and subtropical climate. Described by classical writers including Theophrastus, Herodotus, Galen, Strabo, Pliny the Elder, and Josephus, these valuable plantations produced dates attributed with various qualities including large size, nutritional and medicinal benefits, sweetness, and a long storage life, enabling them to be exported throughout the Roman Empire. Several types of Judean dates are also described in antiquity including the exceptionally large "Nicolai" variety measuring up to 11 cm."

6B13. "*The Sweet and Sticky History of the Date*." By Matti Friedman. Published online at Smithsonianmag.com. www.smithsonianmag.com/history/sweet-sticky-history-the-date-180980983/

6B14. "*The History of the Date Through the Ages in the Holy Land*." By Asaph Goor. Ministry of Agriculture, Jerusalem, Israel.
"The 'nicolai' date belonging to this class is not so juicy but exceptionally large in size, four put end to end making a length of eighteen inches… Of the many drier dates, the finger date 'dactylis' forms a class of its own – it is a very long, slender date, sometimes of a curved shape. The variety of this class which we offer to the honor of the gods is called 'chydaeos' by the Jews (XIII, IX, 44-46)."

6B15. *"How King Solomon and the Romans Shaped the Judean Date Palm."* By Ruth Schuster. Published online at Haaretz, *Archaeology*, Mar. 30, 2022.
https://www.haaretz.com/archaeology/2022-03-20/ty-article/how-king-solomon-and-the-romans-shaped-the-judean-date-palm/00000180-5bc7-db1e-a1d4-dfe71c180000
"Pliny mentions the large size of these Judean dates," Sallon says. "Six of them were a cubit in length; i.e., stretching from the elbow to the tip of the third finger."

6B16. "*Pliny the Elder, Natural History, The different varieties of Palm Trees and their Characteristics*." Eds. J. Bostock, and H.T. Riley. **See Book XIII, Chap. 9**. www.perseus.tufts.edu/hopper/text

6B17. "*Important info on the Judean Date Palm*."
https://research.reading.ac.uk/herbarium/2020/12/15/adventbotany-day-15/

#7A. The Judean Date Palm cultivar grew in Jericho, Jordan River Valley and the Dead Sea basin area from as early as 5th century BC through AD 1442.

7A1. *"Hybridization in the Genus Phoenix: A Review."* By Muriel Gros-Balthazard*. Published in *Emirates Journal of Food and Agriculture*, April 2013.
https:DOI:10.9755/ejfa.v25|11.16660.

7A2. *"How King Solomon and the Romans Shaped the Judean Date Palm."* By Ruth Schuster. Published online at Haaretz, *Archaeology*, Mar. 30, 2022.
https://www.haaretz.com/archaeology/2022-03-20/ty-article/how-king-solomon-and-the-romans-shaped-the-judean-date-palm/00000180-5bc7-db1e-a1d4-dfe71c180000

7A3. "*Pliny the Elder, Natural History, The different varieties of Palm Trees and their Characteristics*." Eds. J. Bostock, and H.T. Riley. **See Book XIII, Chap. 9**. www.perseus.tufts.edu/hopper/text

7A4. "*Josepus, The Jewish War*." Eds. G. Cornfeld, B. Mazar, P. Maier. (Zondervan, 1982), **See Book IV, Chapter 8, Pgs. 296–299, and Book VII, Chap. 8, Pg.. 488**.

7A5. "*Optimal Use of the Date Palm (Phoenix Dactylifera L.) during Antiquity: Anatomical Identification of Plant Remains from Madâ'n Sâlih*." By Ch. Bouchaud, R. Thomas and M. Tengberg, 2012. Published in Wood and Charcoal: Evidence for Human and Natural History. **See Pgs. 173-186**. Universitat de València

7A6. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emira Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc. Published in *Sciences Advances*, 6, 2020.
"Judean date culture was present around Jericho, the Dead Sea, and Jordan Valley from the 5th century BC onward, benefitting from an optimal oasis agriculture environment of freshwater sources and subtropical climate.."

7A7. "*Origins and insights into the historic Judean Date Palm Based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Elaine Solowey*, Muriel Gros-Balthazard*, et. al.. Published in *Sciences Advances*, 6, 2020.
SUPPLEMENTAL MATERIAL.

7A8. "*The Sweet and Sticky History of the Date*." By Matti Friedman. Published online at Smithsonianmag.com. www.smithsonianmag.com/history/sweet-sticky-history-the-date-180980983/

7A9. "*The History of the Date Through the Ages in the Holy Land*." By Asaph Goor. Ministry of Agriculture, Jerusalem, Israel.
"Their first ascription to the Holy Land in the ancient Egyptian literature is in Papyrus Anastasi IV, 12, 5, and Anastasi V, written during the reign of Ramesses II (1298-1235 BC).

7A10. *"On the necessity of combining ethnobotany and genetics to assess agrobiodiversity and its evolution in crops: A case study on date palms (Phoenix dactylifera L.) in Siwa Oasis, Egypt*." By Muriel Gros-Balthazard* and Vincent Battesti*, et. al..

7A11. "*Biblical Researches in Palestine, Mount Sinai and Arabia Petrea. I Journal of Travels in the Year 1838, by E. Robinson and E. Smith. Undertaken in Reference to Biblical Geography*." By Edward Robinson, D.D., Vol. II.
"Josephus, whenever he has occasion to mention Jericho, rarely fails to break forth into praises of the richness and productiveness of its environs. He calls it the most fertile tract of Judea; pronounces it as a "divine region;" and in speaking of the fountain, says it watered a tract seventy stadia long by twenty broad, covered with beautiful gardens and groves of date palms. […] All of these productions, which so distinguished the plain of Jericho, and which it had for the most part in common with Egypt, few now remain. The groves of palms, such as still constitute the pride of Judea, have disappeared, and only one solitary date palm tree lingers in all the plain."

7A12. "*Jericho, A Living History: Ten Thousand Years of Civilization*." By Dr. Hamdan Taha and Dr. Ali Qleibo.

#8A. This date palm cultivar was available during Crusader period, extirpating circa AD 1442.

8A1. "*The Crusaders in the Holy Land*." By Meron Benvenisti, 1970. Note:
"TAWAHIN A-SUKKAR ("THE SUGAR MILLS") These mills are situated a kilometer from biblical Jericho (Tel a-Sultan) at the foot of the monastery of Deir Quruntul, the Templar Quarantene. The mills were referred to as early as AD 1116. They were in use throughout the Crusader period and subsequently. [KT] Burchard saw them at work in AD 1283 and they were also recorded by Felix Fabri in the year AD 1484. The archaeological survey of the British Mandatory government of Palestine mentioned "an Arab inscription and knight's coat of arms" on one of them. One mill remains intact today, as well as a Crusader building where the sugar was apparently boiled. In the 12th century the whole area of Jericho, was at first in the possession of the Patriarch of Jerusalem, who received from it an annual income of 5000 bezants. The place was given to the convent of Bethany by Queen Melisende in AD 1138. The area at the foot of the mountain of Quarantene was very fertile and noted for its crops of dates, bananas and sugar cane. The mill was driven by water brought by one of the aqueducts from the springs of Nu'eima and Duyuk to the Jericho plain. This magnificent supply system, established in the time of King Herod, was still in working order, and was also repaired by the Templars. A stone chute with a plastered channel 40 centimeters in width was built on the slope of a hill and conveyed water from it to the waterwheel of the Crusader mill. The wheel pit is completely preserved in the mill structure; it is ten meters long, three meters wide and two meters deep. To the

north-east of the mill house, close by it, stands the ruin of a grain-vaulted hall, where the sugar was probably boiled. There is further evidence that the Templars possessed the technical knowledge necessary to repair the conduits and restore them to working order. Lord Hugh of Caesarea reserved for himself (in AD 1162) the right "to repair the ancient water-line and to bring the [waters of the] spring to grow sugar cane." The system of conduits, reservoirs and distribution channels erected in the Plain of Jericho by Herod, and improved by his successors, was still partly working. Remains have been discovered in a section of the conduits bringing water from the springs of Wadi Qilt, Duyuk and Nu'eima which show that they were repaired in the Crusader period, and the sugar mills elsewhere described were driven by water from one of these conduits."

8A2. "*Oak Island, Knights Templar, and the Holy Grail: Secrets of "The Underground Project" Revealed*." By Scott F. Wolter and Donald A. Ruh. April 2024. Published by North Star Press of St. Cloud, Inc.

8A3. *"The History of the Date Through the Ages In the Holy Land*." By Asaph Goor, June 8, 1963. Ministry of Agriculture, Jerusalem, Israel. **See P. 336**
"Post Mameluke Invasion: Burchard of Mt. Zion (about 1280) notes a few groves of Ginossar and Ein-Gedi. It is now that the agrarian economy of Palestine really began to collapse. Most of the coastal palms disappeared; only few survived in the Jordan Valley and, as time went on, they thinned out even more. E1- Kazawini, in 1308, can still mention dates, bananas and sugar cane in Jericho. Abu el-Fida, in 1321, found a handful of palms in Gaza and in the Ghor, El-Qalqasandi."

8A4. *"Origins and insights into the historic Judean date palm based on genetic analysis of germinated ancient seeds and morphometric studies."* By Sarah Sallon, Emira Cherif, Nathalie Chabrillange, Elaine Solowey, Muriel Gros-Balthazard, Sarah Ivorra, Jean Frédéric Terral, Markus Egli, Frédérique Aberlenc. **See Introduction**
"Judean dates" grown in plantations around Jericho and Dead Sea were recognized by classical writers for their large size, sweet taste, extended storage, and medicinal properties. While evidence suggests Judean date culture continued during the Byzantine & Arab periods (4th – 11th century CE), further waves of conquest proved so destructive that by the 19th century, no traces of these historic plantations remained."

8A5. "*Franks, Locals and sugar cane: A case study of cultural interaction in the Latin Kingdom of Jerusalem.*" By Judith Bronstein, Edna J. Stern and Elisabeth Yehuda. Published in *Journal of Medieval History*, Vol. 45, 2019 – Issue: Minority Influences in medieval society. MY 2, 2019.

8A6. *"Agricultural Conditions in the Crusaders States."* By Jean Richard, 1985.

8A7. *"Sugar in the Kingdom of Jerusalem, A Crusader Technology between East and West."* By Anat Peled, 2009.

8A8. *"The Pilgrimage of the Russian Abbot Daniel in the Holy Land, AD 1106-1107."* By J. Wilkinson, 1988.

8A9. *"The Crusades and their Sources: Essays Presented to Bernard Hamilton."* By Benjamin Z. Kedar, 1998.

8A10. *"Sugar Production ion the 'Akko Plain."* By Edna J. Stern.
"The archaeological evidence of the Templar and the Hospitallar mills and the dam identified at 'Ein Afek."

8A11. "*Jericho*." By E. Sellin and C. Watzinger, 1913.

8A12. "*The Story of Jerich*." By J. Garstand, 1948.

8A13. "*Jericho – 2 Volumes*." By K.M. Kenyon, 1960-65. Published online at Encyclopedia Judaica, 2007.

8A14. "*Biblical Researches in Palestine, Mount Sinai and Arabia Petrea. I Journal of Travels in the Year 1838, by E. Robinson and E. Smith. Undertaken in Reference to Biblical Geography*." By Edward Robinson, D.D., Vol. II.
"The water from the fountain of Dŭk in the N. N. W. after being conducted along the base of the high mountain in an artificial channel, is here carried through the low ridge by a somewhat deep cut and distributed by aqueducts to the palms below as already described."

#8B. Knights Templar (KT) members wrote about the Judean Date Palm and its fruit from AD 1098 through AD 1291.

8B1. *"The History of the Date Through the Ages In the Holy Land*." By Asaph Goor, June 8, 1963. Ministry of Agriculture, Jerusalem, Israel.
"Includes Crusaders such as: Saewolf (1102); Bishop Daniel (1106); William of Tyre (1130-1190); Richard the Lion-Hearted (1190); Jacques de Vitrey of Acre (1210-1240) and Burchard of Mt. Zion (1280)."

8B2. *"Gesta Franeorum."* By Rosalinda Hill, 1967. Translates *Gesta Franeorum Iherusalem Peregrinantium (1101-1127)* by Fulcher of Chartres on his book covering the First Crusade, says: "*Segor, pleasantly situated and very rich in the fruits of the date-palm, very sweet to taste and which we lived on, for we could get nothing else*."
https://archive.org/details/hill-gesta-francorum

8B3. "*History of Jerusalem*." By Alburtus Aqueusis (Albert of Aachen) (circa 12th ce). A chronicler of the First Crusade called, *Chronicon Hiresrosolymitanum de bello sacro*. Written in 12 books from 1095-1121.
https://www.catholic.com/encyclopedia/albert-of-aachen

8B4. "*Liber Peregrinationis*." By Jacopo de Verona (1230). Excerpt from Italian travel book to Jericho. https://www.medievalnubia.info/dev/index.php/Jacques_de_Verone
"I took the dates and gulped them down. Come and give out 6 artabs of dates. […] And they had a few palms, and they ate bread [made] of their millet with their dates having **[p. 423]** *nothing else. And there was in it one large building only, which was the palace of the king and the remainder of the natives of the town dwelt in huts (or booths) and caves. ALSO…*
"On 7 May 1335 J. left Verona for the Holy Land. He embarked in Venice on 30 May and arrived in Jerusalem on 5 August, touching Otranto, Candia and Cyprus. After having gone to Bethlehem and the Jordan River, he left on the 23rd for Gaza and from there for the holy places of Sinai (10 September); on the 30th he was in Cairo."
https://www.treccani.it/enciclopedia/jacopo-da-verona_%28Dizionario-Biografico%29/

8B5. "*The Military Orders: Fighting for the Faith and Caring for the Sick*." Edited by Malcom Barber, 1994. Part II, Denys Pringle, author.
"Templar facilities on the road from Jerusalem to Jericho: Bait Jubr at-Tahtani (tower), Castle Maldoim; Qal`at ad-Damn (Castellum Ruge Cisterne), as described by Theoderic, 1172."

8B6. "*Biblical Researches in Palestine, Mount Sinai and Arabia Petrea. I Journal of Travels in the Year 1838, by E. Robinson and E. Smith. Undertaken in Reference to Biblical Geography*." By Edward Robinson, D.D., Vol. II.
"… and was therefore placed in their midst at a distance from the fountain and the former site of Jericho. It is first mentioned by Willebrand of Oldenborg, AD 1211; it was already in a ruinous state and inhabited by Saracens."

#8C. KT traveled and operated in and around those date palm plantation areas, from their capture of Jerusalem in AD 1099, through abandoning their facilities in Jericho in 1187.

8C1. "*Jericho*." Published in Encyclopedia Judaica, 2007. The Gale Group. Posted online @Jewish Virtual Library – AICE. https://www.jewishvirtuallibrary.org/jericho-2

8C2. *"Knights Templar Encyclopedia: The Essential Guide to the People, Places, Events, & Symbols of the Order of the Temple." By Karen Ralls, Ph.D. 2007. Printed by New Page Books, Newburyport, MA.* **See pgs. 9 & 229**

8C3. "*The Military Orders: Fighting for the Faith and Caring for the Sick*." Edited by Malcom Barber, 1994. Part II, Denys Pringle, author.
"Templar Castles on the Road to the Jordan." Bait Jubr at-Tahtani (tower), Castle Maldoim; Qal`at ad-Damn (Castellum Ruge Cisterne), as described by Theoderic, 1172."

8C4. "*Franks, Locals and sugar cane: A case study of cultural interaction in the Latin Kingdom of Jerusalem.*" By Judith Bronstein, Edna J. Stern and Elisabeth Yehuda. Published in *Journal of Medieval History*, Vol. 45, 2019 – Issue: Minority Influences in medieval society. MY 2, 2019.

8C5. *"Agricultural Conditions in the Crusaders States."* By Jean Richard, 1985.

8C6. *"Sugar in the Kingdom of Jerusalem, A Crusader Technology between East and West."* By Anat Peled, 1999 & 2009.

8C7. *"The Pilgrimage of the Russian Abbot Daniel in the Holy Land, AD 1106-1107."* By J. Wilkinson, 1988.

8C8. *"The Crusades and their Sources: Essays Presented to Bernard Hamilton."* By Benjamin Z. Kedar, 1998.

8C9. *"Sugar Production ion the 'Akko Plain."* By Edna J. Stern.
"The archaeological evidence of the Templar and the Hospitallar mills and the dam identified at 'Ein Afek."

8C10. "*Jericho*." By E. Sellin and C. Watzinger, 1913.
"It was captured by the Crusaders in 1099 and used by Raymond IV, count of Toulouse, as an encampment when his rival Godfrey de Bouillon gained Jerusalem. Queen Melisande endowed the whole of Jericho and its surrounding lands to her newly established convent of St. Lazarus in 1147 and Templars fortified Jericho with a tower. It was recaptured by Saladin without a struggle in 1187.

8C11. "*The Story of Jerich*." By J. Garstand, 1948; and

8C12. "*Jericho - 2 Volumes*." By K.M. Kenyon, 1960-65. Published online at Encyclopedia Judaica, 2007.

8C13. "*The Sugarcane Industry in Jericho, Jordan Valley*." By Hamdan Taha. Updated from *Some Aspects of Sugar Production in Jericho, Jordan Valley*. Palestinian Department of Antiquities.
https://www.academia.edu/9600239/Some_Aspects_of_Sugar_Production_in_Jericho_Jordan_Valley
"The sugar industry flourished as an important economic activity in the Jordan Valley during the medieval period, as indicated in both historical sources and archaeological evidence. Cultivation of sugarcane expanded in the lower plain of the Jordan Valley with the new industry of sugar production in operation from the 12th century onward. Sugar mills were in use during the Fatimid, Crusader, Ayyubid and Mamluk periods. In 1116 a general reference was made to a mill in Jericho, without specification, but sugar mills were in use there during the Crusader and Ayyubid periods. Yaqut (1995: 217) described Jericho in 1225 as a city famous for sugarcane and dates. He wrote the best quality of sugar is manufactured in this area (Le Strange 1896). The whole production process was described by Burchard of Mount Sion in 1283 (Benvenisti 1970: 253f.) and by Al-Nuwairi in 1391 (1976: 264-266). The technology of sugar production was transferred to Europe during the Crusader period as indicated by the large numbers of sugar refineries in Cyprus (von Wartburg 1983, 1995, Riley-Smith 1967, and Phillips 1986). […] The whole production process was described by Burchard of Mount Sion in 1283 (Benvenisti 1970: 253-54) and in a comprehensive way by Al-Nuwairi in 1391 (1976)."

#8D. KT built and staffed posts and towers, operated sugarcane mills, and performed aqueduct reconstruction in Jericho and amongst the date palm plantations.

8D1. "*The Crusaders in the Holy Land*." By Meron Benvenisti, 1970. Note:
"TAWAHIN A-SUKKAR ("THE SUGAR MILLS") These mills are situated a kilometer from biblical Jericho (Tel a-Sultan) at the foot of the monastery of Deir Quruntul, the Crusader Quarantene. The mills were referred to as early as AD 1116. They were in use throughout the Crusader period and subsequently. Burchard saw them at work in AD 1283 and they were also recorded by Felix Fabri in the year AD 1484. Three mills could still be seen at this site at the beginning of the century, and the archaeological survey of the British Mandatory government of Palestine mentioned "an Arab inscription and knight's coat of arms" on one of them. One mill remains intact today, as well as a Crusader building where the sugar was apparently boiled. In the 12th century the whole area of Jericho, was at first in the possession of the Patriarch of Jerusalem, who received from it an annual income of 5000 bezants. The place was given to the convent of Bethany by Queen Melisende in AD 1138. The area at the foot of the mountain of Quarantene was very fertile and noted for its crops of dates, bananas and sugar cane. The mill was driven by water brought by one of the aqueducts from the springs of Nu'eima and Duyuk to the Jericho plain. This magnificent supply system, established in

the time of King Herod, was still in working order, and was also repaired by the Crusaders. A stone chute with a plastered channel 40 centimeters in width was built on the slope of a hill and conveyed water from it to the waterwheel of the Crusader mill. The wheel pit is completely preserved in the mill structure; it is ten meters long, three meters wide and two meters deep. In the centre of the basin is a round hole with a raised lip, through which once turned the shaft of the waterwheel. The upper millstone has disappeared. The aqueduct, supported by a circular arch, runs along the slope where the mill stands with the opening of its wheel tunnel facing east. To the north-east of the mill house, close by it, stands the ruin of a groin-vaulted hall, where the sugar was probably boiled. There is further evidence that the Crusaders possessed the technical knowledge necessary to repair the conduits and restore them to working order. Lord Hugh of Caesarea reserved for himself (in AD 1162) the right "to repair the ancient water-line and to bring the [waters of the] spring to grow sugar cane." The system of conduits, reservoirs and distribution channels erected in the Plain of Jericho by Herod, and improved by his successors, was still partly working. Remains have been discovered in a section of the conduits bringing water from the springs of Wadi Qilt, Duyuk and Nu'eima which show that they were repaired in the Crusader period, and the sugar mills elsewhere described were driven by the water from one of these conduits."

8D2. "*The Military Orders: Fighting for the Faith and Caring for the Sick*." Edited by Malcom Barber, 1994. Part II, Denys Pringle, author.
"Templar facilities on the road from Jerusalem to Jericho: Bait Jubr at-Tahtani (tower), Castle Maldoim; Qal`at ad-Damn (Castellum Ruge Cisterne), as described by Theoderic, 1172."

8D3. *"Knights Templar Encyclopedia: The Essential Guide to the People, Places, Events, & Symbols of the Order of the Temple." By Karen Ralls, Ph.D. 2007. Printed by New Page Books, Newburyport, MA.* **See pgs. 9 & 229**

8D4. "*Jericho*." Published in Encyclopedia Judaica, 2007. The Gale Group. Posted online @Jewish Virtual Library – AICE. https://www.jewishvirtuallibrary.org/jericho-2
"…and by the early Middle Ages was important for the production of indigo and sugar cane (Yakut, 3:823, 913). It was captured by the Crusaders in 1099 and used by Raymond IV, count of Toulouse, as an encampment when his rival Godfrey de Bouillon gained Jerusalem. Queen Melisande endowed the whole of Jericho and its surrounding lands to her newly established convent of St. Lazarus in 1147 and Templars fortified Jericho with a tower. It was recaptured by Saladin without a struggle in 1187. The present Jericho is on the site of the Crusader town. The Knights Templar built a fortress on the summit, called Castellum Dok, and the monastery was granted the tithes of Jericho city and the rights of the sugar mills in 1136. At the foot of the hill are the remains of three Crusader sugar mills (one nearly intact) which were referred to as early as 1116. They were driven by water systems originally built by Herod and repaired by the Crusaders. Nearby a Crusader building for boiling the sugar is in a good state of preservation."

8D5. "*Franks, Locals and sugar cane: A case study of cultural interaction in the Latin Kingdom of Jerusalem.*" By Judith Bronstein, Edna J. Stern and Elisabeth Yehuda. Published in *Journal of Medieval History*, Vol. 45, 2019 – Issue: Minority Influences in medieval society. MY 2, 2019.
"The novelty of some local crops, including sugar, is mentioned, for example in "Tractatus de locis et statu Sancta Terre Ierosolimitaine," in the Kingdom of Jerusalem, between 1168 and 1176. Lists sugarcane among the trees and their fruit, such as dates and bananas, found in the Holy Land but not in Europe."

8D6. *"Agricultural Conditions in the Crusaders States."* By Jean Richard, 1985.

8D7. *"Sugar in the Kingdom of Jerusalem, A Crusader Technology between East and West."* By Anat Peled, 1999 & 2009.

8D8. "*Biblical Researches in Palestine, Mount Sinai and Arabia Petrea. I Journal of Travels in the Year 1838, by E. Robinson and E. Smith. Undertaken in Reference to Biblical Geography*." By Edward Robinson, D.D., Vol. II.

#8E. KT escorted pilgrims to holy sites and launched other agricultural activities in Jericho, Jordan River Valley and Dead Sea basin area.

8E1. "*The Military Orders: Fighting for the Faith and Caring for the Sick*." Edited by Malcom Barber, 1994. Part II, Denys Pringle, author.
"Templar facilities on the road from Jerusalem to Jericho: Bait Jubr at-Tahtani (tower), Castle Maldoim; Qal`at ad-Damn (Castellum Ruge Cisterne), as described by Theoderic, 1172."

8E2. "*The Crusaders in the Holy Land*." By Meron Benvenisti, 1970. Note:
"TAWAHIN A-SUKKAR ("THE SUGAR MILLS") These mills are situated a kilometer from biblical Jericho (Tel a-Sultan) at the foot of the monastery of Deir Quruntul, the Crusader Quarantene.

8E3. *"Knights Templar Encyclopedia: The Essential Guide to the People, Places, Events, & Symbols of the Order of the Temple."* By Karen Ralls, Ph.D. 2007. Printed by New Page Books, Newburyport, MA.

8E4. "*Biblical Researches in Palestine, Mount Sinai and Arabia Petrea. I Journal of Travels in the Year 1838, by E. Robinson and E. Smith. Undertaken in Reference to Biblical Geography*." By Edward Robinson, D.D., Vol. II.
"Here [el-Bîreh] between Jeba and Mŭkhmâs, remains a fine old church with pointed arches, which mark it as being of the time of the Crusades. Erected by the Knights Templar, whose breadth measured 90 ft in length by 35 ft in breadth. (el-Bireh is believed to be biblical Beer or Beeroth, thought by Crusaders to be the site of Michmash). [..] According to Jacob de Vitry the [sugar] canes were also cultivated very extensively on the plains of the Jordan around Jericho. […] When the crusaders took possession of the country, this region was assigned to the church of the Holy Sepulchre as a portion of its possessions; and it is one of the reproaches brought against Arnulphus, the third Latin Patriarch of Jerusalem, that he gave away this district from the endowment of the church, as a portion to his niece on her marriage with Eustache Grenier, in AD 1111. We find in AD 1138, its rich fields assigned to the convent of nuns erected by Queen Melisinda at Bethany."

8E5. "*Syrian Stone-Lore; The Monumental History of Palestine*." By Claude Reignier Conder, R.E.. 1889. London.
"It appears also that the Crusaders had ships on the Sea of Galilee and on the Dead Sean, the latter carrying provisions to Castles of Kerak and Montreal and paying dues to Renaud. Ships had already been launched on the Dead Sea in the time of Herod the Great (Josephus, "Wars," bitumen)."

8E6. *"Agricultural Conditions in the Crusaders States."* By Jean Richard, 1985.

8E7. *"Sugar in the Kingdom of Jerusalem, A Crusader Technology between East and West."* By Anat Peled, 1999 & 2009.

8E8. *"The Pilgrimage of the Russian Abbot Daniel in the Holy Land, AD 1106-1107."* By J. Wilkinson, 1988.

8E9. *"The Crusades and their Sources: Essays Presented to Bernard Hamilton."* By Benjamin Z. Kedar, 1998.

8E10. *"The Knights Templar."* By Stephen Howarth, 1993. Barnes & Noble Books.
"Founded in Jerusalem in 1118 (or 1119), they had sworn in God's name to defend the holy places and to protect pilgrims on their long journeys."

#9A. Ancient Egyptians created a finger counting and measurement system inspired by the date palm, called Daktylonomy.

9A1. "*July – Date Palm*." By Laural Virtues Wauters. Return to the Garden, Published online. Accessed 03-28-2024. https://treespiritwisdom.com/ .
"This was a land of date palms and desert near the delta of the Nile River. It attracted seekers and scribes who functioned as mathematicians, astronomers, architects and builders. Inspired by the sight of date palms seeming to touch the stars, they began to construct tapered stones and mud pillars to replicate them. These pillars helped the early scribes of Heliopolis to record the movements of the stars that rotated around the 'north portal'. They believed it to be the place where the soul's 'ba' could travel after death and be reborn in the afterlife. These pillars, modeled after the date palm, also allowed

them to measure the sun's shadows from sunrise to sunset. […] The second half of the Latin name is dactylifera which means "date-bearing." A combination of the Greek word daktylos (digit) and fero (to bear) was due to the fruit of the date palm (dates) resemble fingers on the hands (as digits). Daktylonomy, or finger counting, was first recorded by the ancient Egyptians who created a base 10 (decimal) numbering system in 3000 BC. Having 10 fingers and 10 toes was inspiration to create a finger/digit standard unit of measurement with a finger equaling 1 'inch.' A palm [hand] was the width of 4 fingers, totaling 4 inches. Similarly, the 'foot' measurement was the length of a human foot totaling 12 fingers, thus 12 inches. Other measurements included from the fingertips to the elbow, equaled a 'cubit.' A 'decan' was a unit of 10 which organized time within a day and a year. And a decade' was a unit of ten years. Ten became the unit of measurement for time and space.

9A2. "*Dactylonomy*." World Wide Words Online. Accessed 04-04-2024. https://www.worldwidewords.org/weirdwords/ww-dac1.htm .
"*Paintings exist from more than four thousand years ago showing Egyptians counting in this way, and we know it was common in classical Greece and Rome."*

9A3. "*Egyptian Numerals*." By J.J. O'Connor and E.F. Robertson, 2000. Published online at M T MacTutor. Accessed 04-04-2024. https://mathshistory.st-andrews.ac.uk/HistTopics/Egyptian_numerals/
"*The Egyptians had a bases 10 system of hieroglyphs for numerals. By this we mean that they has separate symbols for one unit, one ten, one hundred, one thousand, one ten thousand, one hundred thousand, and one million. Another number system, which the Egyptians used after the invention of writing on papyrus, was composed of hieratic numerals. These numerals allowed numbers to be written in a far more compact form yet using the system required many more symbols to be memorized."*

9A4. "*Renpet*." By J. Hill, 2016. Published on Ancient Egypt Online. https://ancientegyptonline.co.uk/renpet/
*"**Renpet** was the ancient Egyptian goddess who personified fertility, spring, and youth. She was often known as the "**Mistress of Eternity**" and her name was used to express the term "year. She is depicted as a young woman wearing a date palm shoot over her head. The date palm shoot (rib) represented "time" and this glyph regularly appears on monuments and documents throughout Egyptian history as the beginning of the phrase recording the regnal year of the pharaoh. **Renpet** was worshipped in Memphis and Crocodilopolis and was considered to be an aspect of **Isis**.*

9A5. **"***Renpet: The Egyptian God of Time and Transitions***."** By Spencer Lanoue, in Egyptian Gods. Feb. 01, 2024. **See The *Role of Deities in Ancient Egyptian Cosmology*.**

9A6. "*Finger-counting*." WikiMili link to: The Exact Sciences in Antiquity. *Acta Historica Scientiarum Naturalium et Medicinalium*. By Otto, E. Neugebauer, (1952). Vol. 9. Princeton University Press. pp. 1–191. ISBN 1-56619-269-2. PMID Updated May 30, 2024. https://wikimili.com/en/Finger-counting#cite_note-1
"Neugebauer 1952 , p. 9 notes that as early as the 3rd millennium BC, in Egypt's Old Kingdom, in the Pyramid texts' "Spell for obtaining a ferry-boat", the ferryman might object "Did you bring me a man who cannot number his fingers?". This spell was needed to cross a canal of the nether-world, as detailed in the Book of the Dead."

9A7. "*The Date Palm*." By David Cloud, Port Huron, MI. https://www.wayoflife.org/reports/the_date_palm.php .

#9B. Ancient Egyptians created obelisks to mimic the date palm tree, to mark star placement, and used its influence for structural engineering and record-keeping.

9B1. *"July – Date Palm*." By Laural Virtues Wauters. Return to the Garden, Published online. Accessed 03-28-2024. https://treespiritwisdom.com/
"This was a land of date palms and desert near the delta of the Nile River. It attracted seekers and scribes who functioned as mathematicians, astronomers, architects and builders. Inspired by the sight of date palms seeming to touch the stars, they began to construct tapered stones and mud pillars to replicate them. These pillars helped the early scribes of Heliopolis to record the

movements of the stars that rotated around the "north portal". The believed it to be the place where the soul's "ba" could travel after death and be reborn in the afterlife. These pillars also allowed them to measure the sun's shadows from sunrise to sunset." Around 3150 BC, before the construction of pyramids, Heliopolis was known for its tall four-sided stone obelisks. Egyptians called them tekhenu, which meant "to pierce the sky." The word "obelisk" is based on the Greek word obeliskos, meaning "skewer." In Arabic it's masalla, meaning "needle." Obelisks were inspired by date palms, which became monuments in honor of Egypt's great Kings, Queens & Pharaohs. These early rulers believed so strongly in life after death that they erected obelisks to record their divine rule and to help them on their journey to the afterlife."

9B2. "*The Sweet and Sticky History of the Date*." By Matti Friedman. Published online at Smithsonianmag.com. www.smithsonianmag.com/history/sweet-sticky-history-the-date-180980983/
"Egyptian architects building the temple of Sahure 4500 years ago shaped their stone pillars like palm trunks, and the style was still in use 2000 years later when Herodotus noted "pillars carved to imitate date palms" at a different Egyptian temple. By that time, the "palmette," a stylized motif based on palm fronds, had spread through the civilization of ancient Greece."

9B3. "*Oxford Encyclopedia of Ancient Egypt*." 2001. Oxford University Press, New York.
"Predynastic Egypt monitored the stars from positions of the date palm tree, prior to a special class of priests, called the "Overseers of the hours." Later, they would create a tool, called a 'bay' or 'renpet.' This date palm rib with a notch cut into one end, along with a plumb bob "merchet, would be used to calculate the orientation of the building and therefore, the stars. See Userkaf's Temple."

#9C. Ancient Egyptians worshipped both the date palm tree and affiliated deities associated with the date palm.

9C1. "*Tree of Life in the Book of Proverbs and Ancient Egyptian Iconography*." By Sukho Jang (Billy). Bar-Ilan University, Israel.
"Wisdom scholars acknowledge solid similarities between the wisdom traditions of ancient Egypt and the Hebrew Bible. Othmar Keel and Christoph Uehlinger claim that Judah had been gradually under "the influence of the Egyptian religious symbol system toward the end of the eighth century." Gregory Haynes argues that "Egyptian gods are often shown rising up out of the cosmic Tree of Life." Judith M. Hadley and Hans Conzelmann claim Egyptian connections with Lady Wisdom in Proverbs on the Egyptian goddesses Ma'at and Isis, and Othmar Keel gives attention to the goddess Nut as a humanized tree."

9C2. *"What Does the Date Palm Represent for the Ancient Egyptians?"* Published online by Historicaleve. Accessed March 24, 2024 **See Pg. 4**. https://historicaleve.com/
*"Resilient to high temperatures and thriving in arid regions, the date palm symbolized life's victory over death, akin to resurrection. Its canopy was seen as forming the celestial vault, linking it to the heavens. Depictions of the god **Heb** often include two palm leaves, while its trunk's notches were believed to mark divine years. Linked to the sun god, the palm's branch arranged and towering trunk mirrored the sun's rays and the deity's grandeur, symbolizing the cosmos' axis. Similar to the sycomore, the date palm was considered a Tree of Life and associated with various deities, particularly female ones like **Nut**, **Hathor**, **Isis**, and **Iusaas**. All of these entities are referred to in the cited texts as "Ladies of the Date Palm,"; these divine beings were believed to reside within the date palm tree, providing sustenance to the deceased."*

9C3. "*July – Date Palm*." By Laural Virtues Wauters. Return to the Garden, Published online. Accessed 03-28-2024. https://treespiritwisdom.com/ .

9C4. "*Oxford Encyclopedia of Ancient Egypt*." 2001. Oxford University Press, New York.
"The date palm symbolized the location where the youthful morning sun rose, and they were grown in the sacred grove at Buto."

9C5. "*The Date Palm*." By David Cloud, Port Huron, MI.
https://www.wayoflife.org/reports/the_date_palm.php .

9C6. "*Tree of Life in the Book of Proverbs and Ancient Egyptian Iconography*." By Sukho Jang. Bar-Ilan University, Jerusalem, Israel.

SEE FULL LISTING AT END OF THIS SECTION

#10A. The date palm tree was sacred, revered, worshipped or acclaimed in Fertile Crescent Cultures, Societies and periods.

10A1. "*The Assyrian Tree of Life: Tracing the Origins of Jewish Monotheism and Greek Philosophy*." By Simo Parpola. University of Helsinki. Published in *Journal of Near Eastern Studies*, University of Chicago Press. Introduction.

10A2. "*The Assyrian Sacred Tree: A History of Interpretations*." By Mariana Giovino, 2007. Zurich Open Repository and Archive. University of Zurich. **See Page 5. See A. S. T.**

10A3. "*The Assyrian Stylized Tree: A Date Palm Plantation and Aššurnaṣirpal II's Stemma*." By Norma Franklin*, University of Haifa. Published in Ash-sharq, Vol. 5, 2021: **See pg. 79.**

10A4. "*July – Date Palm*." By Laural Virtues Wauters. Return to the Garden, Published online. Accessed 03-28-2024. https://treespiritwisdom.com/ .

10A5. "*Renpet: The Egyptian God of Time and Transitions*.**"** By Spencer Lanoue, in Egyptian Gods. Feb. 01, 2024. **See The Mythology of Renpet & The Iconography of Renpet**.

10A6. *"What Does the Date Palm Represent for the Ancient Egyptians?"* Published online by Historicaleve. Accessed March 24, 2024. **See pg. 4.** https://historicaleve.com/

10A7. "*Renpet*." By J. Hill, 2016. Published on Ancient Egypt Online. https://ancientegyptonline.co.uk/renpet/

10A8. "*Ramesses II in the Sacred Tree of Life*." By Olaf Tausch and uploaded by Carole Raddato. Published March 13, 2022. Accessed 03-11-2024. https://www.worldhistory.org/image/15418/ramesses-ii-in-the-tree-of-life/

10A9. "*Assyrian Ornament*." Court of King Aššurnaṣirpal. Courtesy of the Trustees of the British Museum, London. Licensed from IStock.com.

10A10. "*Cylinder Seal Impression of Darius, King of Persia (522-486 BC)*." Image, courtesy of British Museum, London. Commentary – By Radu Cristian. Published online World History Encyclopedia, April 10, 2017. https://www.worldhistory.org/Darius_I/

10A11. "*Assyrian Scribes at Palace of Sennacherib, 640-615 BC*." Photographer, Melinda Kolk. British Museum, London.

10A12. "*Stylized Sacred Date Palm Tree of Kar Tukulti Ninurta*." Ninurta artwork, circa 1243-1207 BC. Credit: Pergamon Museum, Berlin.

10A13. "*The Assyrian Stylized Tree: A Date Palm Plantation and Aššurnaṣirpal II's Stemma*." By Norma Franklin*, University of Haifa. Published in Ash-sharq, Vol. 5, 2021: **See pgs. 77-78.**

10A14. "*Kar-Tukulti-Ninurta*. " By Harman Patil. Updated Dec. 29, 2023. Accessed 04-10-2024. https://alchetron.com/Ashur-(god) or https://alchetron.com/Kar-Tukulti-Ninurta

10A15. "*The Assyrian Tree of Life: Tracing the Origins of Jewish Monotheism and Greek Philosophy*." By Simo Parpola. University of Helsinki. Published in *Journal of Near Eastern Studies*, Vol. 52, No. 3 (Jul 1993). University of Chicago Press. **See pgs. 163-165 & Note #21.**

10A16. "*The Assyrian Stylized Tree: A Date Palm Plantation and Aššurnaṣirpal II's Stemma*." By Norma Franklin*, University of Haifa. Published in Ash-sharq, Vol. 5, 2021: **See pgs. 77-96.** Abstract: Aššurnaṣirpal II (r. 883–859 BC) moved his capital.

10A17. "*Egyptianizing Figures on Either Side of a Sacred Palm Tree with a winged disk, 8th – 7th ce BC*." Neo-Assyrian Mesopotamia, Nimrud (ancient Kalhu) Ivory. MET Museum. http://www.ipernity.com/doc/laurieannie/24664967 www.metmuseum.org/toah/works-of-art/62.269.3

10A18. "*Molded plaque: Bull-men Flanking a Palm Trunk Surrounded by a Sun Disc*." Babylonian, 2000-1600 BC. Louvre Museum, # AO12446. https://en.wikipedia.org/wiki/Kusarikku

10A19. "*The Assyrian Tree of Life: Tracing the Origins of Jewish Monotheism and Greek Philosophy*." By Simo Parpola. University of Helsinki. Published in *Journal of Near Eastern Studies*, Vol. 52, No. 3 (Jul 1993). University of Chicago Press. Introduction & notation.

10A20. "*Parpola's 'Tree if Life' Revisited: Mysteries and Myths of Assyrian Kabbalah*." By Otto Lehto, 2018. 23 Pages.
10A21. "*Being, Kabbalah, and the Assyrian Sacred Tree.*" https://zenodo.org/record/1247536/files/BeingKabbalahandtheAssyrianSacredTree.pd
10A22. "*On the Development of a Symbol: The Date Palm in Roman Palestine and the Jews*." By Steven Fine. Jerusalem, Israel. 1989.
10A23. "*Historia Naturalis, by Pliny the Elder*." 13.26-45, translated by H. Rackham, in M. Stem, *Greek and Latin Authors Vol. 1, pp. 490-94. H. Kohl and C. Watzinger, Antike Synagogen in Galilaea (Leipzig, 1916), pp. 186-187; Hart, Rome and Jerusalem, p. 185; J. Meyshan, (an unknown variant and date of the Judaea Capta Coins), Essays in Jewish Numismatics (Jerusalem, 1968),* **See pg. 137**.
10A24. "*Numismata Graeca: Greek Coin-Types, For Immediate Identification .*" By Leo Anson, 1911. London.
10A25. "*Forum Ancient Coins – Palm*." Published on Numiswiki Online. https://www.forumancientcoins.com/numiswiki/view.asp?key=palm
10A26. "*Botanics and Iconography: Images of the Lulav and the Etrog*." By Rivka Ben-Sasson. Academia, ARSJudaica,2012 7. **See pg. 14**.
10A27. "*Cultural and Ecological Significance of the Date Palm*." By Hamed El-Mousley* and Mohammed Midani*. Chapter – May 2023. DOI: 10.1007/978-981-99-0475-4_1
10A28. "*How King Solomon and the Romans shaped the Judean Date Palm*." By Sarah Sallon*. https://www.haaretz.com/archaeology/2022-03-20/ty-article/how-king-solomon-and-the-romans-shaped-the-judean-date-palm/00000180-5bc7-db1e-a1d4-dfe71c180000
10A29. "*In The Shadow of the Temple: Depicting the Menorah in Ancient Art* ." By Samuele Rocca, 2017. Bar Ilan University, Israel.
10A30. "*The Date Palm: A Special Plant from the Old World*." (Accessed 02-13-2024) https://blogs.reading.ac.uk/tropical-biodiversity/2014/12/the-date-palm-a-special-plant-from-the-old-world/
10A31. "*The Many Faces of the Goddesses. The iconography of the Syro-Palestinian Goddesses Anat, Astarte, Qedeshet and Asherah, c. 1500-1000 BC*." By Izak Cornelius. Academic Press Fribourg Vandenhoeck & Ruprecht, Gottingen.
10A32. "*Origins and Insights into the Historic Judean Date Palm based on Genetic Analysis of Germinated Ancient Seeds and Morphometric Studies*." By Sarah Sallon*, Emma Cherif, Nathalie Chabrillange, Elaine Solowey*, Muriel Gros-Balthazard*, Sarah Ivorra, Jean-Frédéric Terral, Markus Egli, Frédérique Aberlenc (7 February 2020).
10A33. "*The History of the Date Through the Ages in the Holy Land*." By Asaph Goor. Ministry of Agriculture, Jerusalem, Israel.
10A34. "*Mythology and the Date Palm*." By Desert Empire Palms, April 7, 2022. https://desertempirepalms.com/blog/the-ancient-significance-of-the-date-palm/
10A35. "*The Date Palm*." By David Cloud, Port Huron, MI. https://www.wayoflife.org/reports/the_date_palm.php .
10A36. "*The Historical Symbolism and Significance of Dates*." By Bateel Gourmet. https://bateel.com/blog/bateel-gourmet/the-historical-symbolism-and-significance-of-dates/
10A37. "*Date Palm Status and Perspective in Egypt*." By Shawky A. Bekheet and Sherif F. El-Sharabasy. *Chapter 3, Date Palm Genetic Resources and Utilization: Volume 1: Africa and the Americas*. DOI: 10.1007/978-94-017-9694-1_3.
10A38. "*Identification of Plant Figures on Stone Statues and Sarcophaguses and their Symbols: The Hellenistic and Roman Periods of the Eastern Mediterranean Basin in the Istanbul Archaeology Museum*." By H. Yilmaz, U. Akkemik, S. Karagoz. Mediterranean Archaeology and Archaeometry (MAA) 2013. **See Date Palms**.
10A39. "*Tree of Life in the Book of Proverbs and Ancient Egyptian Iconography*." By Sukho Jang. Bar-Ilan University, Jerusalem, Israel.

#11A. The Judean Date Palm was important to various religions in antiquity.

11A1. "*The Historical Symbolism and Significance of Dates*." By Bateel Gourmet. https://bateel.com/blog/bateel-gourmet/the-historical-symbolism-and-significance-of-dates/

11A2. "*The History of the Date Through the Ages in the Holy Land*." By Asaph Goor. Ministry of Agriculture, Jerusalem, Israel.

11A3. "*How King Solomon and the Romans shaped the Judean Date Palm*." By Sarah Sallon*. https://www.haaretz.com/archaeology/2022-03-20/ty-article/how-king-solomon-and-the-romans-shaped-the-judean-date-palm/00000180-5bc7-db1e-a1d4-dfe71c180000

11A4. "*The Healing Power of Trees*." By Rabbi Avraham Arieh Trugman. https://www.chabad.org/kabbalah/article_cdo/aid/2097201/jewish/The-Healing-Power-of-Trees.htm m

11A5. "*Botanics and Iconography: Images of the Lulav and the Etrog*." By Rivka Ben-Sasson. Academia, ARSJudaica,2012 7. **See pg. 14**.

11A6. "*Date update: Methuselah Gets Six Siblings*." By Janet Stephens, The History Blog online. Lat updated: February 8, 2020.

11A7. "*The Assyrian Tree of Life: Tracing the Origins of Jewish Monotheism and Greek Philosophy*." By Simo Parpola. University of Helsinki. Published in *Journal of Near Eastern Studies*, University of Chicago Press. **See Introduction**.

11A8. "*The ASATIR. The Samaritan Book of the 'Secrets of Moses'*." By Moses Gaster, Ph.D., 1927. Published by the Royal Asiatic Society, London.

11A9. "*Tree of Life in the Book of Proverbs and Ancient Egyptian Iconography*." By Sukho Jang. Bar-Ilan University, Jerusalem, Israel.

11A10. "*The Christian Topography of Cosmas, an Egyptian Monk*." Edited by J.W. McCrindle, M.A., M.R.A.S., F.R.S.G.S.. PRINTED BY THE Hakluyt Society, London. 1897.

11A11. "*Historia Naturalis, by Pliny the Elder*." 13.26-45, translated by H. Rackham, in M. Stem, *Greek and Latin* Authors Vol. 1, **See pgs. 490-94**. H. Kohl and C. Watzinger, Antike *Synagogen in Galilaea* (Leipzig, 1916), **See pgs. 186-187**; Hart, *Rome and Jerusalem*, **See pg. 185**.

11A12. "*A Dictionary of Angels, Including Fallen Ones*." By Gustave Davidson. The Free Press. 1967.

11A13. "*A History of Persia*." By Lieut.-Col. P.M. Sykes C.M.G., C.I.E.. McMillan and Co. Limited. 1915.

11A14. "*The Parable of the Date Palm Tree and the Believer in the Hadith: A Correlation Study of Characteristics Date Palm and Believers*." By Muhammad Nurfaizi, et. al.. Univ. of Indonesia.

11A15. "*The Technical Heritage of Date Palm Leaves Utilization in Traditional Handicrafts and Architecture in Egypt & the Middle East*." E.A. Darwish, Y. Mansour, H. Elmously*, and A. Abdelrahman, 2019. By-Products of Palm Trees and Their Applications.

11A16. "*Origin of the Date Palm*." By A. Zaid and P.F. de Wet. Chapter II: Origin, Geographical Distribution and Nutritional Values of Date Palm.

11A17. "*Unusual Date Palm Products: Prayer Beads, Walking Sticks and Fishing Boats*." By Dennis V. Johnson*. Published in Emirates Journal of Food and Agriculture. 2016 28(1): 12-16.

11A18. "*The Historical Symbolism and Significance of Dates*." By Bateel Gourmet. https://bateel.com/blog/bateel-gourmet/the-historical-symbolism-and-significance-of-dates/

11A19. "*On the History of Angels and Demons in the Hebrew Bible*." By Ian Ford-Terry. May 10, 2007.

11A20. "*Guild Inscriptions and Sundara Chola Copper Plates of Historical Periods – With Graphemes Reminiscent Indus Script Tradition to Signify Wealth*." By S. Kalyanaraman. Hindu Art History.

11A21. *"Knowledge of Sufism and the Symbolic Interpretation of Paradise Garden Design Concept."* By Muhammad Ahsan Bilal and Sonia Nasir Khan. Published in *Perennial Journal of History (PJH),* Vol. II No. II (July-December, 2021), **See pgs. 254-282**. ISSN: 2788-693X (online). Accessed 04-15-2024. Https://doi.org/10.52700/pjh.v2i2.74

11A22. "*The Asherah, the Menorah and the Sacred Tree*." By Joan E. Taylor, 1995. Published in *Journal for the Study of the old Testament*. http://jot.sagepub.com/content/20/66/29

#12A. Date palm was directly or indirectly associated with 58 gods, goddesses, demi-gods, angels, deities and spirits of various evolutions and spellings; and was identified with laudatory attributes, affinities and representations which promoted the date palm as a sacred or revered object or deity.

12A1. "*On the History of Angels and Demons in the Hebrew Bible*." By Ian Ford-Terry. May 10, 2007.

12A2. "*The ASATIR. The Samaritan Book of the 'Secrets of Moses'*." By Moses Gaster, Ph.D., 1927. Published by the Royal Asiatic Society, London.

12A3. "*A Dictionary of Angels, Including Fallen Ones*." By Gustave Davidson. The Free Press. 1967.

12A4. "*The Beginnings of History According to The Bible and the Traditions of Oriental Peoples: From The Creation of Man to the Deluge*." By Francois Lenormant, 1882. Charles Scribner's Sons, NY.
"…With them the serpent ***Âpap*** *is not the storm-cloud; he is the personification of the darkness which the Sun, under the form of* ***Ra*** *or '****Hor****, contends against, during his nocturnal passage around the lower hemisphere, and over which he is destined to triumph before reappearing in the East. The conflict of "****Hor*** *with* ***Âpap*** *is ever renewed at the seventh hour of the night, a little before the sun-rising, and the thirty-ninth chapter of the Book of the Dead demonstrates that this conflict between light and darkness was looked upon by the Egyptians as the emblem of the moral conflict between Good and Evil."*

12A5. "*The Origin of the Names of Angels and Demons in the Extra-Canonical Apocalypses*." By George A. Barton. Published in *Journal of Biblical Literature*, Vol. 31, No. 4,1912. **See pgs. 156-167**.

12A6. "*The Asherah, the Menorah and the Sacred Tree*." By Joan E. Taylor, 1995. Published in *Journal for the Study of the old Testament*. http://jot.sagepub.com/content/20/66/29

#13A. The date palm as a symbol, developed into "Tree of Life" motifs overtime.

13A1. "*The Beginnings of History According to The Bible and the Traditions of Oriental Peoples: From The Creation of Man to the Deluge*." By Francois Lenormant, 1882. Scribner's Sons, NY.
"… a great number of religious Babylonish traditions, are also familiar with the Tree of Life, designating it in their books under the name of 'Setarvan', "that which gives shade." The most ancient name of Babylon, in the idiom of the Antisemitic population, Tin-tir-ki, signifies "the place of the tree of life." In conclusion, as has been well observed by Schrader, the figure of the sacred plant, which we connect with the tree of the Edenic traditions, appears as a symbol of eternal life upon the curious sarcophagi of enameled pottery belonging to the last epoch of Chaldean civilization, posterior to Alexander the Great, which have been discovered at Warka, ancient Uruk. […] So much for the Tree of Life. As to the Tree of Knowledge of Good and Evil, when distinct from the first, W. Baudissin has very justly remarked that its conception is intimately connected with that of the tree regarded as prophetic, revealing the secrets of the future, and serving to interpret the divine will. It is, therefore, necessary here to note that trees played a considerable part in Chaldaic divination, and that we hear of a Phyllomancy among the Assyrians."

13A2. "*He Passed Away Because of Cutting Down a Fig Tree': The Similarity between People and Trees in Jewish Symbolism, Mysticism and Halakhic Practice*." By Abraham Ofir Shemesh. HTS Teologiese Studies. 10 pages.

13A3. "*Tree of Life in the Book of Proverbs and Ancient Egyptian Iconography*." By Sukho Jang. Bar-Ilan University, Jerusalem, Israel.

13A4. "*Parpola's 'Tree if Life' Revisited: Mysteries and Myths of Assyrian Kabbalah*." By Otto Lehto, 2018. 23 Pages.

13A5. "*The Assyrian Tree of Life: Tracing the Origins of Jewish Monotheism and Greek Philosophy*." By Simo Parpola. University of Helsinki. Published in *Journal of Near Eastern Studies*, University of Chicago Press. **See Introduction**.

13A6. "*The Assyrian Sacred Tree: A History of Interpretations*." By Mariana Giovino, 2007. Zurich Open Repository and Archive. University of Zurich.

13A7. "*The Assyrian Stylized Tree: A Date Palm Plantation and Aššurnaṣirpal II's Stemma*." By Norma Franklin*, University of Haifa. Published in Ash-sharq, Vol. 5, 2021:

13A8. *"Knowledge of Sufism and the Symbolic Interpretation of Paradise Garden Design Concept."* By Muhammad Ahsan Bilal and Sonia Nasir Khan. Published in *Perennial Journal of History* (PJH), Vol. II No. II (July-December, 2021), **See pgs 254-282**. ISSN: 2788-693X (online). Accessed 04-15-2024. Https://doi.org/10.52700/pjh.v2i2.74

13A9. "*Being, Kabbalah and the Assyrian Sacred Tree*." Published online @ zenodo.org. 14 pages. https://zenodo.org/record/1247536/files/BeingKabbalahandtheAssyrianSacredTree.pdf

13A10. "*The Date Palm in Antiquity*." By Paul Popenoe. Coachella, California. Published in *The Scientific Monthly*, Vol. 19, No. 3 (Sep., 1924), **See pgs. 313-325** Published by: American Association for the Advancement of Science.

13A11. "*The Asherah, the Menorah and the Sacred Tree*." By Joan E. Taylor, 1995. Published in *Journal for the Study of the old Testament*. http://jot.sagepub.com/content/20/66/29

13A12. "*The 32 Secret Paths of Solomon. A New Examination of the Qabbalah in Freemasonry*." By Timothy Hogan, PM, 32* KCCH. KT, ROoS, FRC, PSM, S.I.I.
"… and this has been called the "Qabbalistic Tree" – or sometimes the "Tree of Life," the "Tree of Knowledge," "Jacob's Ladder" or the "Qabbalistic Pillars." […] In general, this Tree represents a blue print for creation on all levels, and it becomes a mandala that we can meditate on in order to make correlations in the book of nature and within ourselves. Each sphere or path represents an aspect of the manifestation of the consciousness of Deity in creation."

13A13. *"The Tree of Light: A Study of the Menorah – The Seven-Branched Lampstand."* By L. Yarden

#14A. Sir Francis Bacon used the alias Samuel de Champlain and knew of, left clues and visited Oak Island.

14A1. "*Samuel de Champlain – A Brief Sketch*." By Henry Higgins Hurlbut. Posted online at https://www.samueldechamplain.com/ . **See image said to be illustrated by Champlain, titled "Defeat of the Iroquois at Lake Champlain**."

14A2. **"***The Holy Trinity Decryption: The Hidden Autobiography of Sir Francis Bacon*." By Jacob Roberts. SLEWFOOT Publishing, Jan. 2020. **See Chptr 12 & Champlain illus. on pg. 244**.
"…This in itself began to convince me that the outrageous claim could be true – Samuel de Champlain was an alias, albeit a very famous one, of Sir Francis Bacon. However, the clues do not end there. More dorrelattions appear in this famous image of the Iroquois battle."

14A3. "*Oak Island, Knights Templar, and the Holy Grail: Secrets of "The Underground Project" Revealed*." By Scott F. Wolter and Donald A. Ruh. April 2024. Published by North Star Press of St. Cloud, Inc.

14A4. *"The Keys of the Rosi Crosse and the Ghosts of Bacon."* By Jake Roberts. SLEWFOOT Publishing, 2024. **See Pgs. 321-326**.
"Finding such obvious cipher signature evidence in the exact place the messages tell us to "see" is direct confirmation of the veracity of the messages. This one fact alone is enough to recognize that Francis Bacon used the name of Samuel de Champlain. Bacon was Champlain."

14A5. "*Date palms (Phoenix dactylifera) only grow within 15° and 35° N longitudes*. Palm species living in Canada. See following websites.
1) "https://treepursuits.com/can-palm-trees-grow-in-canada/"
2) "https://www.exoticplants.ca/blogs/tutorials/what-varieties-of-palm-tree-can-you-grow-in-canada"
3) "https://thebackyardpros.com/palm-trees-that-can-survive-in-the-cold-weather/"
4) "https://en.wikipedia.org/wiki/Chamaerops"

The Date Palm as a deity, was directly or indirectly associated with 58 gods, goddesses, demi-gods, angels, deities and spirits of various evolutions and spellings within the Fertile Crescent region.

Alpiel, Ama-ušumgal-ana, Apollo, Anfiel, Angel of Fertility, Angel over Fruit, Angel of Knowledge, Angel of Light, Anath, Aphrodite, Ashera, Asherah, Ashteroth Aššur, Astarte, Atum-Ra, Baruch, Bel, Bennu Bird, Chalkydri, Cherubim, Dumuzi/Tammuz, Ea, El, Geb, Gilgameš, Hathor, Ilaniel, Helios, Heh, Inanna, Ishtar-Venus, Isis, Iusaas, Jeliel, Julii, Magna, Marduk, Min, Nanna, Nephthys, Nut, Ogdoad, Osiris, Palm of Deborah, Phoenix, Phoenixes (sun birds), Raphael, Rempha, Renpet, Sachluph Šamaš, Sepa, Seref, Seshat, Set, Tefnut, Thoth, Venus, Yofiel.

The Date Palm was identified with laudatory attributes, affinities and representations which promoted the date palm as a sacred or revered object or deity.

Life, Prosperity, Fertility, Peace, Victory, Righteousness, Wealth, Hospitality, Sustenance, Endurance, Resilience, Tranquility, Renewal, Plentifulness, Blessing, Beauty, Axis Mundi, Spring, Youth, Passage of Time, Transitions between Different Life Phases, Marker of Time, Control over the Spiritual Realm, Divine Light, Guiding Souls Through Their Journey in the Afterlife, Tree of Knowledge of Good and Evil, Multiplicity in Unity, Regeneration, Wisdom, Resurrection, Self-Renewal, Growth, Grace, Elegance, Martyred Saints in their victory over Sin and Death, Fecundity, Devotion, Tree of Life.