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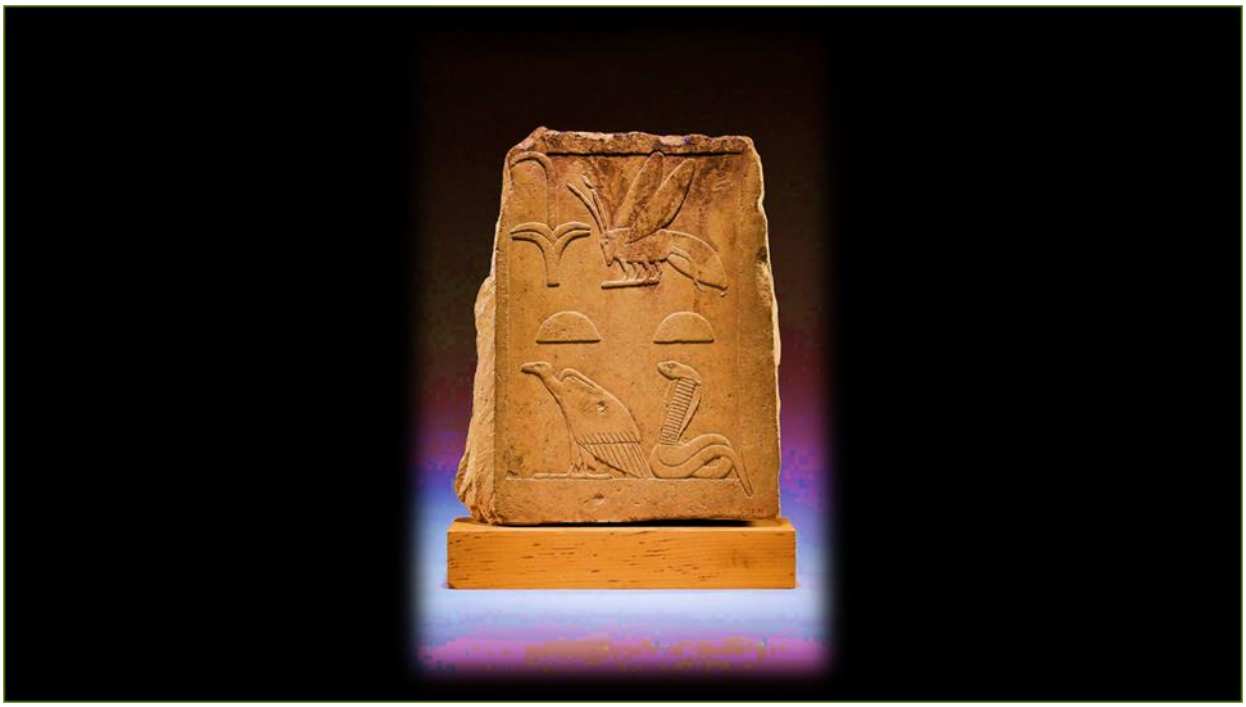
The Bee: Thousands of years, species, harvests, and honeys – but just five eyes



Source: The Metropolitan Museum of Art. Plaque Inscribed with Royal Titles (Of the Sedge and Bee; Nebty, The Two Ladies) from Egypt Third Intermediate Period, 23rd Dynasty

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Bees dominate insect-based pollination, with their role accounting for 5-8% of total global crop production in 2021 (Khalifa *et al.*). Reported declines in their colony and population figures over the past year are cause for concern for not just biodiversity, but long-term food security and affordable food-based nutrition. The latter is a flourishing area of research in terms of disease prevention, mental health, and performance enhancement. The expected price and demand for honey products and cash crops like almonds raises investment in the number of kept bees and capital in mechanised tech to replace pollinating creatures. Perhaps one day plant-shaking electric vehicles will be replaced in turn by teeny tiny sonicating drones for farming. Might the future of AI programming also involve design of optimal pollen-carrying fuzziness and yellow-ultraviolet colour targeting – a Claude Monet mode, if you will? Unclear.

Bees matter in terms of higher food quality and quantity as well as honey for health applications. Clinical trials are ongoing to determine the role of honey (specifically Manuka, royal jelly proteins (MRJP), and medical-grade formulations) in treating ocular disease. Beyond that, several of the fruit and vegetable species pollinated by bees provide compounds and nutrients believed to combat age-related pathologies like macular degeneration. Dry eye disease is also high on the agenda at the moment, and the anti-inflammatory as well as antibacterial properties of natural (and delicious) products like honey hold great promise. In fact, we've thought this for thousands of years!

Greek as well as Egyptian myth attributed great value to the lives and yield of bees. The bee hieroglyph was part of the pharaoh's throne name and the insects themselves believed to be tear drops of the sun god, granting earthly subjects liquid, celestial gold. In the same epoch and general territory, they were also believed to be birthed as a swarming emission from the carcass of a vanquished lion, or the budget version: From the sawn-off horns of buried and rotten oxen. Go figure. Special notice and even religious, regal, and economic priority was given to beekeeping across the centuries because for quite some time in the Middle East and Europe honey was the only dedicated sweetener. This casting rather discounts regional wealth of fruit crops like fig and dates, though.

Besides their value to gods, political theory, and recipes, there was ancient medicinal use. For example, the *Ebers Papyrus* of Ancient Egypt (~1550 BCE) included honey in treatment of many eye diseases and ailments, sometimes accompanied by ritual chanting, halved human brain, brain-of-a-tortoise, clay-from-a-statue, lapis lazuli, and/or the milk-of-a-woman-who-has-borne-a-son.

We expect these combinations to remain untested, but a future line of scientific investigations will cover specific disease applications of honey by provenance, composition, and type. This is hopefully an incentive to protect wild plant species, wild bees and other pollinator populations, and even boost small commercial and

hobby farming. Financial viability of medicinal use, production market corruption, honey's role in dealing with creeping antibiotic resistant diseases, and the nutraceutical implications of ingredient costs around the world are something to watch. In addition, honey is a by-product of apian pro-colony decision-making which is responsive to food source (e.g. plant co-evolution) and environmental shifts, sometimes yielding the unexpected like North Carolina's blue and purple-hued honeys.

A lot is still unknown about bee brains and society as well as their metabolic manufacturing processes, so it's best to expect the unexpected. Topical honey-containing medical products to combat infections and dry eye will be the quickest and easiest to test and refine moving forward.

After a browse through some pop culture beauty & wellness articles, surprisingly this needs to be said: Please do not apply commercial or even freshly harvested honey, or any food products, directly to your eyes. Not even with chanting to keep the pathogenic microorganisms at bay. Chants were only meant for cataracts and evil happenstance – eye infections from non-medical-grade products not included.

It is an awesome chant, though:

"There is a shouting in the Southern Sky in the Darkness.
There is an Uproar in the Northern Sky.
The Hall of Pillars falls into the Waters.
The ship-folk of the Sun-god beat their oars so that the heads at his side fall into the water.
Who leads hither what he finds?
I lead forth what I find.
I lead forth your heads.
I lift up your necks.
I fasten what has been cut from you in its place.
I lead you forth to drive away the God of Fevers and all possible Deadly Arts."

In Bryan (1930) *The Papyrus Ebers*

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