

MILK & HONEY:
TECHNOLOGIES OF PLENTY IN THE MAKING OF A HOLY LAND, 1880-1960

Tamar Novick

A DISSERTATION

in

History and Sociology of Science

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2014

Supervisor of Dissertation

Robert A. Aronowitz, Professor, History and Sociology of Science

Graduate Group Chairperson

John Tresch, Associate Professor, History and Sociology of Science

Dissertation Committee

John Tresch, Associate Professor, History and Sociology of Science

Heather J. Sharkey, Associate Professor, Near Eastern Languages and Civilizations

MILK & HONEY:
TECHNOLOGIES OF PLENTY IN THE MAKING OF A HOLY LAND, 1880-1960

COPYRIGHT

2014

Tamar Novick

For my Parents, Tova and Ilan, with Love

ACKNOWLEDGEMENTS

Many people became part of this long journey, and I am indebted to them all. First, this dissertation would not have been possible without the financial support from the University of Pennsylvania. I am grateful for the Benjamin Franklin Fellowship, which supported me during my first five years at Penn, and the School of Arts and Science's Dissertation Completion Fellowship, which supported me during my sixth. A Penfield Fellowship for summer research and a GAPSA travel grant also helped enable my early stages of research. The experience of being a student at Penn has been quite wonderful, and I am grateful for all the resources and opportunities offered to me by the university during this incredible time.

The Department of History and Sociology of Science (HSS) at the University of Pennsylvania supported me in numerous ways along the years. The HSS community has been a source of knowledge, interest, and mentorship. I thank Pat Johnson for her kindness and for actualizing things on a daily basis, and everyone else in the administrative offices. In particular, I thank Robert Aronowitz for his support and encouragement. I am grateful not only for his kindness, patience, and reassurance, but also for everything I learned from him about language, ideas, humor, and how different worlds operate. I could not have wished for a better teacher and mentor. I thank John Tresch for exposing me to new terrains of knowledge and for his ability to clarify my cloudy thoughts. I admire his smart questions, and appreciate his search for the unexpected. Heather Sharkey, who is an outsider to HSS, agreed to become a committee member and joined me in my quest for new ways of approaching the history of the Middle East. I am grateful for her support, availability, and faith in my work.

I am very grateful to Rob Kohler for sparking my interest in the environment as a locus for historical inquiry, and for his support. I admire and appreciate his generosity, detailed feedback, and genuine enthusiasm. I also thank Etienne Benson for his comments, ideas, and suggestions. This dissertation grew from a seminar in the history of technology that was led by Ruth Schwartz Cowan; thus, I thank her for her guidance and support. I also learned much from working with Steve Feierman, David Barnes, and Matthew Hirsch; I thank them all for exposing me to the multiple connections between teaching and learning. I was enriched both personally and intellectually from studying underneath Nathan Ensmenger, Riki Kuklick, Susan Lindee, Beth Linker, Julie Livingston, Projit Mukharji, Adriana Petryna, and Adelheid Voskuhl.

The graduate students at HSS were the center of my world during my years at Penn. I thank Eran Alam, Nadia Bernstein, Elise Carpenter, Jason Chernesky, Peter Collopy, Megan Crnic, Deanna Day, Rosanna Dent, Erica Dwyer, Andrew Hogan, Allegra Giovine, Whitney Laemml, Jonathan Milde, Mary Mitchell, Lisa Ruth Rand, Corina Schlombs, and Brittany Shields. I shared an office and thoughts with Samantha Muka and Elaine LaFay, and I learned about bees and love of knowledge from Jason Oaks. Kristoffer Whitney deserves a special thanks for being the very first supporter of this project. I also thank Joanna Radin and Marissa Mika for being good friends and readers, and finally, Rachel Elder for her friendship and brilliance.

This dissertation would also not have been possible without the help I received from various archives and research centers and the generosity of my interviewees. I thank Arthur Kiron at the Herbert D. Katz Center for Judaic Studies at the University of Pennsylvania; the staff of the Historical Society of Philadelphia; the staff of the Widener Library at Harvard University; the staff of the Beit-Rishonim Archive in Ness-Ziona; Arie Shadar at the archives of the Dairy Cattle Breeders Association in Kibbutz Yifat; Yosepha Pecher, Yehudit Sedmy, and Dalia Omer at the Kibbutz Mizra Archives; the staff at the Kibbutz Merhavia Archives; Yuval Dani'eli and

the rest of the staff at the HaShomer Hatzair Archive at the Yad-Yaari Center for Research and Documentation in Givat-Haviva; and the staff at the Kibbutz Yotveta Archives. I thank Gady Alcalay, Ze'ev Zumberg, and Hai Zumberg for the tour at the cowshed at Kibbutz Yotvata. I also thank the staff at the Lavon Institute for the Labor Movement in Tel Aviv, the Israel State Archives in Jerusalem, the Central Zionist Archives in Jerusalem, the American Jewish Joint Distribution Committee's Malben Archives in Jerusalem, and the Hebrew University of Jerusalem Archives. Finally, I am extremely grateful to Bruno Lunenfeld; Nir Mann; Avi Perevolotsky of the Volcani Center for Agricultural Research; Yosef Karasso and Dorit Kababia of the Sheep and Goat Section at the Ministry of Agriculture; Tzach Glasser of Ramat Hanadiv; and lastly, to 101 year old (in 2012) shepherd Lotek Etsion.

Many others deserve my gratitude. Conferences and research groups motivated me to explore new terrains and test new ideas. I am grateful for the conference audiences at meetings of the American Association for the History of Medicine, the American Society for Environmental History, the Northeast Environmental History Conference, and the Israeli Society for the History and Philosophy of Science. I am particularly thankful for the generous feedback I received during my participation in a series of workshops and conferences. These include: "On the Move: The Middle East and the 'First Modern Globalization'" by the Institute for Advanced Studies at the Hebrew University of Jerusalem, "Taking Animals Apart: Exploring Interspecies Enmeshment in a Biotechnological Era" by the Holtz Center for Science and Technology Studies at the University of Wisconsin, "Science, Space, and the Environment" by the Rachel Carson Center for Environment and Society, "Zionism as a Cultural Movement" at Brown University, and finally, "Oh-Man Oh-Machine: The Politics and Aesthetics of Posthumanism" at Tel-Aviv University. I thank everyone who asked questions and challenged me to rethink my beliefs.

During my last year of writing – which I spent in Israel – I was very fortunate to participate in several research groups. I benefited tremendously from the feedback I received in the Israeli Forum for the Study of the British Mandate, the “History of Everyday” study group at Tel-Aviv University, the “Science, Civic Legitimacy, and Local Knowledge” research group at the Safra Center for Ethics at Tel-Aviv University, and the Environmental History research group at Tel-Aviv University. Finally, I thank Bashir Baransi for his help with translation and Isabel Beshar for her help with editing.

Many friends helped me think about how to approach and shape this project. I thank Gabi Admon-Rick, Tal Arbel, Yaron Balslav, On Barak, Nimrod Ben-Zeev, Matan Boord, Basak Can, Nadav Davidovitch, Joao Jose De-Almeida, Samuel Dolbee, Jessica Eary, Elik Elhanan, Tamar El-Or, Shai Enoch, Elia Etkin, Talia Fried, Naama Gershby, Motti Golani, Yifat Gutman, Ayala Hendin, Martin Herscenzon, Alma Igra, Yanay Israeli, Attara Iti’el, Liat Kozma, Hagit Krik, Kerry Levi, Maya Levi, Ran Levi, Inna Leykin, Zachary Lockman, Itamar Mann, Yoav Matos, Oded Na’aman, Lukas Rieppel, Aviva Rot, Avraham Rot, David Schorr, Yuval Shaked, Shira Shmueli, Dmitri Shumsky, Dan Tamir, Dan Tsahor, Hila Vardi (who deserves a special mention for being such a wonderful listener and great reader), Rotem Varon, Sigrid Vertommen, Rakefet Zalashik, Oded Zehavi, Yahav Zohar and all those I may have accidentally forgotten.

Finally, I am grateful to my family for their love, compassion, and generosity. I thank Bashir for his heart of gold. I thank my three sisters – Ruth, Yael, and Adi, who taught me about everything that matters, and their partners – Yaniv, Liat, and Guy. I thank the younger additions to the family – Raz, Shai, Tomer, and Uri – for bringing such happiness into the world. Finally, I thank my mother and father, Tova and Ilan, for giving me so much, for their endless encouragement, and for sparking my curiosity for the unknown. This dissertation is dedicated to them.

ABSTRACT

MILK & HONEY:

TECHNOLOGIES OF PLENTY IN THE MAKING OF A HOLY LAND, 1880-1960

Tamar Novick

Robert A. Aronowitz

Studies of modern Palestine and Israel usually highlight the struggle of European powers for control and the formation of Jewish and Palestinian nationalisms. This dissertation does otherwise. With a thesis centered on the physical “making of a Holy Land,” this work combines the perspectives of cultural history, environmental history, and science and technology studies (STS) to examine the ways in which settlers in Palestine and Israel in the late nineteenth and twentieth century used science and technology to construct a religious idea of the past. In particular, this project centers on the design of certain agricultural productions, which reflected the core belief that the Holy Land should be plentiful – essentially, a “land flowing with of milk and honey.” I explore the various ways that settlers understood the land, demonstrate how the configuration of the environment was intertwined with the construction of settler society, and highlight the ways in which religious sentiments became fused with – not replaced by – modern technological projects throughout the course of three political regimes. This dissertation also reveals the extent to which this process of making a Holy Land transformed the landscape and everyday lives of people and animals in the Middle East, and ultimately suggests that bodies were always recalcitrant mediators.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	viii
ARCHIVE ABBREVIATIONS.....	x
INTRODUCTION.....	1
CHAPTER ONE: Bible, Bees, and Boxes: Technologies of Movement in Late Ottoman Palestine.....	22
CHAPTER TWO: Holy Cow! Milk Yield, Fertility, and the Burdens of the “New Jewess”.....	61
CHAPTER THREE: The Rise and Fall of Jewish Shepherding.....	109
CHAPTER FOUR: Getting their Goat: Disturbing Creatures and the Problem of Counting in Mandate Palestine and the Early Israeli State.....	141
EPILOGUE: The Synesthetic Experience.....	191
BIBLIOGRAPHY.....	208

ARCHIVE ABBREVIATIONS

CZA	Central Zionist Archives, Jerusalem, Israel
ISA	Israel State Archives, Jerusalem, Israel
HHA	HaShomer Hatzair Archive at Yad-Yaari Center for Research and Documentation, Givat-Haviva, Israel
LILR	Lavon Institute for Labor Research, Tel Aviv, Israel
KMA	Kibbutz Merhavia Archives, Kibbutz Merhavia, Israel
MA	Mizra' Archives, Kibbutz Mizra, Israel
DCBA	Dairy Cattle Breeders Association, Kibbutz Yifat, Israel
HSP	Historical Society of Philadelphia, Philadelphia, PA, USA
HKC	Herbert D. Katz Center for Advanced Judaic Studies, University of Pennsylvania, PA, USA
JDWL	Judaica Division, Widener Library, Harvard University, MA, USA

INTRODUCTION:

“A Land Flowing with Milk and Honey”

Just a few months ago, the 91-year-old president of Israel, Shimon Peres, invited farmers to his presidential house in Jerusalem to celebrate *Shavu'ot*, the Israeli harvest holiday. A photo from the event depicts Peres, surrounded by farmers, children, and flags, drinking a glass of milk (see Figure 1). During the celebration, one six year old, daughter to a family of dairy farmers told him: “We came to wish you and the people of Israel a happy holiday, full of milk and sweet as honey.” The president, who sang and danced with the children, said in response: “I was too once a dairy farmer and shepherd...I want to wish a happy *Shavu'ot* holiday to the entirety of Israel and voice my great appreciation to agriculturalists and dairy farmers for their combination of love of the land and love of technology.” Peres finally invited everyone to drink milk and eat dairy products as customary, and warned of the dietary consequences of eating fatty foods.¹

¹ “President Peres Conducted a Festive Ceremony of Presenting First Fruits,” *Israeli Portal for Agriculture, Nature, and the Environment*, 2 June 2014, <http://israel.agrisupportonline.com/news/csv/csvread.pl?show=4915&mytemplate=tp2> (accessed 28 July 2014).



Figure 1: President Shimon Peres drinking milk before the end of his presidency, 2 June 2014. Source: <https://www.facebook.com/ShimonPeresInt/photos/a.648487608571613.1073741911.240142419406136/648488041904903/?type=1&permPage=1> (accessed 28 July 2014).

This faith in the powerful combination of love of the land and love of technology is interwoven throughout the story of the European settlement in late modern Palestine and Israel. This dissertation deals with settlers' attempts to use science and technology as means to recreate the Holy Land in Palestine and Israel in the late nineteenth and twentieth century. It focuses on the efforts to design agricultural production according to the understanding that the Holy Land should be plentiful, essentially a "land flowing with of milk and honey." Cutting across three political regimes, the dissertation explores the various ways that settlers understood the land and demonstrates how the configuration of the environment was intertwined with the construction of settler society.

A desire to characterize the relation between the natural order and the social order has long been a major motivation for anthropologists and historians of science. Scholars tend to describe this relation in three ways: 1) one in which the organization of the natural world reflects the social world;² 2) one where the two are mutually constitutive;³ 3) or, in some remarkable instances, one in which the ordering of the natural world creates the socio-political world.⁴ In *Leviathan and the Air-Pump*, historians Steven Shapin and Simon Schaffer analyze the link between knowledge of nature and political structures and identify how “solutions to the problem of knowledge are solutions to the problem of social order.”⁵ Using an analysis of agricultural production in Palestine and Israel, this dissertation similarly shows that the solutions to the problem of knowing the environment were solutions to the problem of the socio-political order. It demonstrates how the management of the land and its creatures was shaped and reshaped along with carving socio-political structures.

Mystical Pasts and Modern Technologies

Scholars have thoroughly examined the relation between religion and Western science. Numerous studies have described the ways in which science emerged from religious ideas and the manner by which scientific thinking grew from religious

² Emile Durkheim and Marcel Mauss, *Primitive Classification*, trans. Rodney Needham (Chicago: University of Chicago Press, 1963 [1903]); Richard Drayton, *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World* (New Haven: Yale University Press, 2000).

³ William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983); J. Stephern Lensing, *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali* (Princeton: Princeton University Press, 1991); Bruno Latour, *We Have Never Binn Modern* (Cambridge: Harvard University Press, 1993 [1991]).

⁴ See, for example, Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002).

⁵ Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985), 332.

institutions, ranging from ancient times and until the early modern period.⁶ Other studies reflect on the influence of religion in late modern society, showing that it is far from diminishing.⁷ Nevertheless, most of the scholarship dealing with late modern science continues to paint a binary picture and describes a world where science and religion clash.⁸ Furthermore, there is a tendency to assume that scientific and technological superiority replaced religion as a tool for governing new peoples in the age of colonialism.⁹

A few recent studies have challenged this notion of discrepancy, demonstrating how late modern scientific thought and technological practice have helped appease the tensions inherent in nationalism: tensions between narratives of mystical pasts and utopian, rational futures. Historian John Tresch, for example, demonstrates how, for mid nineteenth century France, these seemingly opposing notions converged in the figure of *The Romantic Machine*, “a concrete, rational, often utilitarian object that was

⁶ Seminal studies of early modern science identified profound connections between Protestantism and the scientific revolution. See Max Weber, *The Protestant Ethic and the Spirit of Capitalism* (London; New York: Routledge, 1992 [1905]); Robert K. Merton, “Science, Technology and Society in Seventeenth Century England,” *Osiris* 4 (1938): 360-632; Charles Webster, *The Great Instauration: Science, Medicine, and Reform, 1626-1660* (London: Duckworth, 1975); and Peter Harrison, *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge; New York: Cambridge University Press, 1998).

⁷ Talal Assad, *Genealogies of Religion: Discipline and Reasons of Power in Christianity and Islam* (Baltimore; London: John Hopkins University Press, 1993); Timothy Mitchell, ed., *Questions of modernity* (Minneapolis; London: University of Minnesota Press, 2000); Charles Taylor, *A Secular Age* (Cambridge: Harvard University Press, 2007).

⁸ One important exception is David F. Noble’s study of the intimate historical connections between Christianity and technology, in *The Religion of Technology: The Divinity of Man and the Spirit of Invention* (New York: Penguin Books, 1999 [1997]).

⁹ See, for example, Michael Adas, *Machines as the Measure of Man: Science, Technology, and the Ideologies of Western Dominance* (Ithaca; London: Cornell University Press, 1990), and Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007); Daniel Headrick, *Power Over People: Technology, Environment, and Imperialism* (Princeton: Princeton University Press, 2009).

nevertheless endowed with supernatural, charismatic powers.”¹⁰ In her study *Knossos and the Prophets of Modernism*, which focuses on archeological work in Crete, historian Cathy Gere similarly discusses the importance of the myths of antiquity to modern national projects. She has introduced the term “prophetic modernism” to argue that “Minoan archeology contributed a significant chapter to the scientific rewriting of the Old Testament, suggesting that European civilization had pagan roots in the island of Crete. Science, in this case, did not entail secularization. One of the most striking aspects of [the scientific work taking place there was] the pagan reenchantment of secular modernity.”¹¹

The tendency to pit religion and modernity in opposition and the belief in the secularizing power of science is evident in studies of late modern Palestine and Israel as well. Historians commonly analyze Zionism as a national and settlement movement that raised the banner of modernity, secularism, and technocracy.¹² However, myths regarding the essence of the land have been cardinal to the growth of European settlement in the area. As historian Arie Saposnik demonstrates in *Becoming Hebrews*, a “secular-sacred duality” was paramount to Zionist thought in its response to modernity.¹³ Focusing on agricultural ideas and practices through the late nineteenth and twentieth century, this dissertation examines how technology and mystical sentiments remained interwoven and

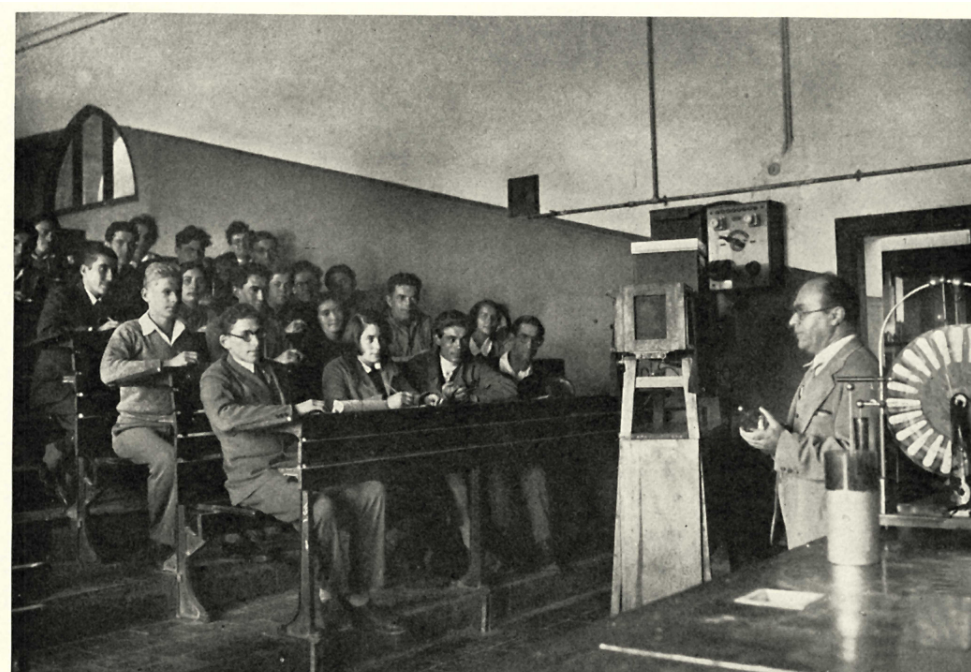
¹⁰ John Tresch, *The Romantic Machine: Utopian Science and Technology after Napoleon* (Chicago: Chicago University Press, 2012), 14.

¹¹ Cathy Gere, *Knossos and the Prophets of Modernism* (Chicago: University of Chicago Press, 2009), 6-7.

¹² See, for example, Derek Penslar, *Zionism and Technocracy: The Engineering of Jewish Settlement in Palestine, 1870-1918* (Bloomington: Indiana University Press, 1991), and Tal Golan, “Introduction: Special Issue - Science, Technology, and Israeli Society,” *Israel Studies* 9, 2 (2004): iv-viii.

¹³ Arie Bruce Saposnik, *Becoming Hebrew: The Creation of a Jewish National Culture in Ottoman Palestine* (Oxford; New York: Oxford University Press, 2008), 240-241.

mutually reinforced each other among settlers in Palestine and Israel. As such, this project constitutes a unique effort to encompass religion and mystical ideas within the study of technology and science in the long twentieth century. It also demonstrates the ways in which technology did not replace religion as a colonial device, but instead became fused with a mystical understanding of the land – what we might call “technomysticism.”¹⁴ Ultimately, it was this “technomysticism” that was crucial for seizing control over lands and people.



Photograph by S. Kaplansky

MODERN SCIENCE IS TAUGHT IN THE HOME OF ANCIENT RELIGIONS

In the Hebrew Technical Institute at Haifa young students study physics with modern laboratory equipment. Many sciences and technical experts in various fields help in the development of the Promised Land.

Figure 2: An image from “Changing Palestine,” a lengthy article published in *The National Geographic Magazine* in 1934. The article depicts the transformation of life, practice, and landscapes in Palestine under the British rule. Source: Edward Keith-Roach, “Changing Palestine,” *The National Geographic Magazine*, April 1934: 510.

¹⁴ European settlers in Palestine and Israel thought of themselves as modern, scientific, and often times secular; at the same time, they believed that land was exceptional. I use “mysticism” to refer to such non-scientific understandings of the land, rather than to invoke systems of spirituality such as that of Kabbalah or Sufism.

Changing Palestine: Land and Biota Transformed

Histories of modern Palestine/Israel seem to follow a series of narrative conventions. First, history-telling is split according to three political regimes: Ottoman Rule (1516-1917), British Rule (~1917-1948), Israeli Statehood and the changing definitions of the Palestinian territories (from 1948), and the wars that happened in-between. Numerous histories of settlement begin in 1882, with the arrival of the first group of Jewish settlers. Most studies that pay attention to the economic and geographic history of the area, however, highlight 1858, the year of the transformative Ottoman Land Law. Issued as part of the *Tanzimat* (the “capitulation system”), a period of reformation of the empire, scholars characterize the law as a turning point in the relations of different populations to this land.¹⁵ Like the early modern European process of enclosure, the new law brought about new ideas of private property and ownership of land and gradually delegitimized communal systems of using the land, such as the land tenure system, *Mushā’*.¹⁶ New conceptions regarding land ownership were intertwined with growing Western interventions in the area, which meant expanding physical presence and financial investments. Soon enough, travelers, researchers, and increasingly settlers

¹⁵ See, for example, Gershon Shafir, *Land, Labor and the Origins of the Israeli-Palestinian Conflict, 1882-1914* (Cambridge: Cambridge University Press, 1989), 32-34; Jacob Metzer, *The Divided Economy of Mandatory Palestine* (Cambridge: Cambridge University Press, 1998); Amos Nadan, *The Palestinian Peasant Economy under the Mandate: A Story of Colonial Bungling* (Cambridge: Harvard University Press, 2006).

¹⁶ Ya'akov Firestone, “Crop-Sharing Economics in Mandatory Palestine - Part I,” *Middle Eastern Studies* 11, 1 (1974): 3-23; Amos Nadan, “Colonial Misunderstanding of an Efficient Peasant Institution: Land Settlement and Mushā’ Tenure in Mandate Palestine, 1921-47,” *Journal of Economic and Social History of the Orient* 46, 3 (2003): 320-354.

became common on the land. By studying, writing about, and settling in Palestine, these various groups also contributed to making Palestine legible to the West.¹⁷

World War I brought an end to the Ottoman Empire: in 1917, Britain seized military control over the newly defined territory of Palestine and starting in 1922, governed according to the contemporary mandate system. This period transformed the settlement patterns, economic structures, and environmental policies of the area. The dramatic growth of European (predominantly Jewish) settlements in Palestine, which were grossly encouraged by the British rule, sparked great tensions between the local and settling populations, and between those and the governing rule, on methods of the ownership and use of the land. Escalating tensions turned violent in 1929 and particularly intensified from 1936 until 1939, in a series of events that are remembered as the Great Arab Revolt.¹⁸ These points of rupture seem more significant to the historiography of Palestine/Israel than the influence of World War II, which is only mildly discussed among historians, possibly compensated by the attention given to the study of the Holocaust in Europe. Nevertheless, the financial constraints of these war years in

¹⁷ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913); Edward Said, *Orientalism* (New York: Pantheon Books, 1978); Lester I. Vogel, *To See Promised Land: Americans and the Holy Land in the Nineteenth Century* (University Park, PA: Penn State University Press, 1993); Haim Goren, *Go Research the Land: German Studies of the Land of Israel in the Nineteenth Century* (Jerusalem: Yad Ben-Zvi, 1999); John Jams Moscrop, *Measuring Jerusalem: The Palestine Exploration Fund and British Interest in the Holy Land* (London; New York: Leicester University Press, 2000); Eitan Bar-Yosef, *The Holy Land in English Culture 1799–1917: Palestine and the Question of Orientalism* (Oxford: Oxford University Press, 2005); Gil Eyal, *The Disenchantment of the Orient : Expertise in Arab Affairs and the Israeli State* (Stanford: Stanford University Press, 2006).

¹⁸ Hillel Cohen, *1929: Year Zero of the Jewish-Arab Conflict* (Jerusalem: Keter, 2013); Baruch Kimmerling and Joel S. Migdal, *Palestinians: The Making of People* (Cambridge: Harvard University Press, 1994), 102-134; Mahmoud Yazbak, "From Poverty to Revolt: Economic Factors in the Outbreak of the 1936 Rebellion in Palestine," *Middle Eastern Studies* 36, 3 (2000): 93-113.

Palestine deeply affected industrial and commercial activities, particularly agricultural production patterns.

The 1948 War was the most dramatic event that shifted power structures and population composition in Palestine, of which major parts became the State of Israel. During the war, many hundreds of thousands of Palestinian Arabs went into exile (most estimations vary from 700,000 to 900,000 people), and only a small few were able to stay and lived under the new military rule (for Palestinians only), which lasted until 1966.¹⁹ In those years, millions of Jews immigrated to Israel from Europe and the Arab world, settling in Palestinian houses or other dwellings in cities and joining existing or new agricultural settlements and peripheral towns.

Through the study of agricultural production, I tell a story that breaks with these historical conventions, as I seek a narrative that cuts across three political regimes. As opposed to a history of Zionism, furthermore, I examine the making of a Holy Land in Palestine and Israel as a Judeo-Christian endeavor. Finally, for the purpose of analyzing the technomystical production of a plentiful land, three turning points are particularly important: the late Ottoman land law of 1858 that sparked new relationships between people and the land, the Great Arab Revolt of 1936-1939 that reshaped the relationship between Europeans and those native to the land, and the 1948 War that transformed everything.

¹⁹ Benny Morris, *The Birth of the Palestinian Refugee Problem, 1947-1949* (Cambridge: Cambridge University Press, 1987); Shira Robinson, *Citizen Strangers: Palestinians and the Birth of Israel's Liberal Settler State* (Stanford: Stanford University Press, 2013).

This dissertation, *Milk & Honey*, draws on the attention paid by environmental historians to the ecological aspects important to the success of Europeans in controlling new grounds. In *Ecological Imperialism*, Alfred Crosby argues that looking at the “portmanteau biota,” a “collective name for the Europeans and all the organisms they brought with them,” is key to understanding the success of European imperialism.²⁰ Virginia Anderson’s *Creatures of Empire* and Elinor Melville’s *Plague of Sheep* track specific animals to demonstrate how the conquest and settlement of the New World was made possible through dramatic biotic transformation.²¹ Other scholars, such as Richard Grove in *Green Imperialism*, emphasize the role of conceptions regarding the environment, or “environmental imaginaries,” in justifying colonial expansion.²²

The construction of nature, or the influence of ideas on land management, is yet another important aspect of environmental histories. Leo Marx has famously analyzed the role of myth in shaping the American landscape in his book, *The Machine in the Garden*. Marx uses literary analysis to show how the pastoral ideal did not wane with American industrialization but simply merged in the process of designing agricultural productivity.²³ Many scholars have written about agricultural planning in the context of Palestine/Israel, focusing on the level of Zionist thinkers, settling organizations, and

²⁰ Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (Cambridge: Cambridge University Press, 1986), 270.

²¹ Virginia D. Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (Oxford; New York: Oxford University Press, 2004); Elinor G. K. Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico* (New York: Cambridge University Press, 2005).

²² Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1995); William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983); Diana K. Davis and Edmund Burke III, eds. *Environmental Imaginaries of the Middle East and North Africa* (Athens: Ohio University Press, 2011).

²³ Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (Oxford; New York: Oxford University Press, 1964).

British and Israeli state institutions.²⁴ As opposed to these levels of analysis, this dissertation deals with changes in the design of the agricultural system vis-à-vis biotic transformations and seeks to move from the level of prescription to practice. I show how the physicality and materiality of the environment, as well as the presence, knowledge, and practices of Palestinian people, shaped and defined European settlement in Palestine and Israel. Compatible to Ann Stoler's observations in *Carnal Knowledge and Imperial Power*, I direct my attention to "the instabilities and vulnerabilities of colonial regimes, to the internal conflicts among those who ruled, and to the divergent and diverse practices among them."²⁵ The project pays attention to the difficulties, the failures, and the unexpected that became part of knowing and transforming the environment.

Focusing on the different creatures that took part in this process of changing the land, this project draws on science and technology studies, animal studies, and the history of the body.²⁶ I consider bodies to be sites of creation and interpretation, and I follow

²⁴ See, for example, Derek Penslar, *Zionism and Technocracy: The Engineering of Jewish Settlement in Palestine, 1870-1918* (Bloomington: Indiana University Press, 1991), Ilan S. Troen, *Imagining Zion: Dreams, Designs, and Realities in a Century of Jewish Settlement* (New Haven: Yale University Press, 2003), Estie Yankelevitch, *Agricultural Education in Agricultural High Schools in Palestine, 1870-1948*, PhD Dissertation (University of Haifa, 2004), Roza El-Eini, *Mandated Landscape: British Imperial Rule in Palestine, 1929-1948* (New York: Routledge, 2006), and Hezi Ami'or, *The Roots and Design of the 'Mixed-Farming Economy' in Jewish Agricultural Settlement in Eretz Israel*, PhD Thesis (Hebrew University of Jerusalem, 2010). One exception is Saul Katz's work, which pays attention to agricultural and technological practices. See, for example, "The First Furrow': Ideology, Settlement, and Agriculture in Petah-Tikva in its First Decade," *Catedra* 23 (1982): 124-157, and "Sociological Aspects in the Development (and Replacement) of Agricultural Knowledge in Israel: The Emergence of Ex-Scientific Systems for the Production of Agricultural Knowledge, 1880-1940," PhD Thesis, Hebrew University (Jerusalem, 1986).

²⁵ Ann L. Stoler, *Carnal Knowledge and Imperial Power: Race and the Intimate in Colonial Rule* (Berkeley; Los Angeles; London: University of California Press, 2002), 10.

²⁶ Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Briec Bay" in *Power, Action and Belief: A Sociology of Knowledge*, 196-233 (London: Routledge, 1986); Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989); Bruno Latour, *We Have Never Been Modern* (Cambridge: Harvard University Press, 1993 [1991]).

other histories of settlement and colonial bodies, such as Conevery Valencius's *The Health of the Country* and Sandra Sufian's *Healing the Land and the Nation*, in analyzing what happens when people touch unfamiliar soils.²⁷ *Milk & Honey* is also a story about the management of populations, both human and others. Informed by Michel Foucault's notions of "biopower" and "governmentality," this is an account of production and reproduction.²⁸ I describe the ways in which bodies – as sites, as technologies, and as property – were used and manipulated in order to impregnate the land, ultimately recounting a tale of the production and reproduction of new nativities.

Finally, this work contributes to studies of the Middle East. Scholars have recently acknowledged the need to reach beyond the perspectives of the political and intellectual history of the region. While various aspects of environmental and technology studies have been explored, most of the literature to date utilizing these perspectives focuses solely on the history and anthropology of Egypt.²⁹ Furthermore, various scholars note the problem of the disciplinary divorce between Middle East Studies and Jewish/Israel Studies. By focusing on bodies and the environment, rather than on the

²⁷ Conevery Bolton Valencius, *The Health of the Country: How American Settlers Understood Themselves and Their Land* (New York: Basic Books, 2002); Sandra M. Sufian, *Healing the Land and the Nation: Malaria and the Zionist Project in Palestine, 1920-1947* (Chicago: Chicago University Press, 2007).

²⁸ Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France, 1977-1978* (New York: Graham Burchell, 2007); Michel Foucault, "Governmentality," in *The Foucault Effect: Studies in Governmentality*, ed. Colin Gordon, Peter Miller Graham Burchell, trans. Rosi Braidotti, (Chicago: University of Chicago Press, 1991), 87-104.

²⁹ Marcia Inhorn, *Infertility and Patriarchy: The Cultural Politics of Gender and Family Life in Egypt* (Philadelphia: University of Pennsylvania, 1996); Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002); Omnia El-Shakry, *The Great Social Laboratory: Subject of Knowledge in Colonial and Postcolonial Egypt* (Stanford: Stanford University Press, 2007); Alan Mikhail, *Nature and Empire in Ottoman Egypt: An Environmental History* (Cambridge: Cambridge University Press, 2011); Sherine Hamdy, *Our Bodies Belong to God: Organ Transplants, Islam, and the Struggle for Human Dignity in Egypt* (Berkeley; Los Angeles; London: University of California Press, 2012); On Barak, *On Time: Technology and Temporality in Modern Egypt* (Berkeley: University of California Press, 2013).

political and intellectual leaderships, this project calls attention to the material, bodily, and grounded aspects in the history of a place many people wanted to control and change.

“Milk and Honey?” Expectations, Disappointments, and the Narrative of Decline

From the mid nineteenth century onwards, European travelers, missionaries, and settlers lengthily described the environment they encountered in Palestine. It was during this period of weakening Ottoman rule that enabled easy access and gradual control for European powers over many of its territories. The professionalization and growing success of biblical studies among mid-century European intellectuals, in conjunction with archeological findings of the ancient civilizations of the Near East, contributed to changes in the perception of religious texts.³⁰ These combined political and intellectual processes resulted in increasing numbers of pilgrims, tourists, and settlers to Palestine. Their view of the Bible as a record of historical events shaped the experiences of these Europeans; the new settlers were carrying the Bible in their hands, seeking to find the Holy Land there.³¹

What they found in Palestine, however, was dramatically different from what they expected.³² Both Christians and Jews were extremely occupied with the desert, so to

³⁰ Yaacov Shavit, *From Hebrew to Canaanite: Aspect in the History, Ideology and Utopia of the “Hebrew Renaissance” – from Radical Zionism to Anti-Zionism* (Jerusalem: Domino Press, 1984), 22-27; Yaacov Shavit and Mordechai Eran, *The Hebrew Bible Reborn: From Holy Scripture to the Book of Books, A History of Biblical Culture and the Battles over the Bible in Modern Judaism* (Berlin; New York: Walter de Gruyter, 2007), 19-20; David Norton, *A History of the Bible as Literature, Part II: From 1700 to the Present Day* (Cambridge; New York: Cambridge University Press, 1993), 53.

³¹ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), viii.

³² Alon Tal, *Pollution in a Promised Land: An Environmental History of Israel* (Berkeley: University of California Press, 2002), 19, 38; Hagit Krik, “Palestine vs. The Holy Land: Cultural Aspects in the Experiences of Clerks of the British Mandate in Palestine,” MA Thesis, Tel Aviv University (Tel Aviv,

speaking, which stood between what they hoped to find and the unfamiliar, grey land. A British traveler to Palestine wrote in 1882: “My first strong impression, and, I may say, my last, on beholding Palestine was one of astonishment. Can this be that glory of all lands – that Promised Land – the land flowing with milk and honey? No! Surely not...I had pictured fertile plains and dewy meads...cultivated lands bringing forth luxuriant crops almost spontaneously...Palestine, of all countries, is now desolate, barren, and accursed.”³³ European comers to Palestine wanted to find a Holy Land, yet they instead encountered a place that seemed worse than profane.

The biblical phrase “a land flowing with milk and honey” appears many times in the scriptures and has been usually interpreted as a metaphor of abundance.³⁴ Many generations of Christians and Jews used it as a way to imagine the Holy Land. Christian Europeans hymned – both in Latin and in English – “Jerusalem the Golden with Milk and Honey Blest...I know not, o I know not, what joys await us there, what radiance of glory, what bliss beyond compare.”³⁵ With the growth of European presence in Palestine, this metaphor became a powerful tool for demonstrating the gap between the imagined and the real. Newcomers to Palestine commonly used the phrase “a land flowing with milk and honey” in order to dramatize their sense of disappointment: “Is this the land of my fathers? The land that is said to flow of milk and honey?” asked a discontented Silesian

2008).

³³ George Pitt, “Palestine,” *The British Friend* 40, 33 (1882): 257-258.

³⁴ Different writers use different numbers when discussing the use of this phrase in the scriptures, as little as 16 and as many as 31. For a discussion regarding the appearance and meanings of this phrase in the scriptures see Chapter 1.

³⁵ The hymn “Jerusalem the Golden” was written by poet Bernard of Cluny in 1146 and was translated to English by John M. Neale in 1858.

Jewish traveler to Palestine in 1838³⁶ and “Jerusalem the Golden with Milk and Honey Blest, Where is that Milk and Honey? It seemed to have ‘gone West.’ The honey that I’ve met here is Crosse and Blackwell’s brand, the only Milk I’ve tasted has come from Switzerland” sang British troops as they took control over Palestine in 1917.³⁷ But the use of the phrase did not end with that bitter disappointment. The image of a plentiful land, “a land flowing with milk and honey,” became idealized, emerging as an organizing theme for the growing European settlement in Palestine starting from the turn of the twentieth century. According to this European understanding, this land of the Bible had prospered in ancient times but had decayed since then. With European interventions, and with the use of science and technology in particular, the land should prosper and become plentiful once again.

This pattern of understanding and treating a land according to previous expectations was not unique to Europeans in Palestine. In *Changes in the Land*, for example, environmental historian William Cronon argues that the descriptions of the first European settlers in New England are both a testimony of contemporary environments, as well as their own ideological biases. The way these settlers viewed the land was influenced by the potential profit to be made by circulating its resources in European markets.³⁸ Europeans in Palestine had their own biases and expectations; beyond

³⁶ Eli'ezer Halevi, *A Journey to the Land of Israel* (Tel Aviv: Omanut Publishers, 1931 [1838]), 21.

³⁷ *Chronicles of the White Horse* 3 (July 1919), 11, quoted in Eitan Bar-Yosef, *The Holy Land in English Culture 1799–1917: Palestine and the Question of Orientalism* (Oxford: Oxford University Press, 2005), 280.

³⁸ William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983), 6.

economic considerations, for example, cultural aspirations led them to seek a Holy Land.³⁹

The use of this specific metaphor – “flowing with milk and honey” – to describe a land was not unique to Palestine and Israel either.⁴⁰ Indeed, this biblical phrase and other expressions of fecundity have frequently been used to describe fertile and plentiful environments of other “new-found lands,” such as the Americas and Oceania.⁴¹ Adopting the Bible as a historical document, however, Europeans in Palestine believed that the land of Palestine was *the* land described in the Bible, and as such, it should *literally* be full of honey and milk. An analysis of the Palestinian landscape in a 1922 copy of the British *Geographical Teacher* demonstrates this tendency: “To the men of the desert Palestine blossoms as the rose once the winter is over, it flows with milk and honey, milk from the cattle on the spring pastures, honey which the bees collect from the myriad flowers... it is a land peculiarly subject to landslips, and the carelessness of man has reduced woodland

³⁹ Many settlers equated the land of Palestine with ancient Israel, believed it was intimately connected to the Jewish people, and referred to it as *Eretz Issra'el/Israel* (“the land of Israel”). This understanding of the land is prevalent to this day. One of Israel’s leading daily newspapers, for example, which was established in Palestine in 1918 by Jewish settlers, is named *Ha'aretz*, “the land (of Israel).” For a historization of this concept, “the land of Israel,” see Shlomo Sand, *The Invention of the Land of Israel: From Holy Land to Homeland* (London; New York: Verso, 2012).

⁴⁰ Biblical descriptions influenced the development of scientific ideas and practices in many other contexts. See, for example, Janet Browne’s work on the influence of the story of Noah’s ark on geology and Richard Drayton’s work on the influence of the biblical garden on early modern science and British imperialism. In Janet Browne, *The Secular Ark: Studies in the History of Biogeography* (New Haven; London: Yale University Press, 1983), and Richard Drayton *Nature’s Government: Science, Imperial Britain and the ‘Improvement’ of the World* (New Haven: Yale University Press, 2000).

⁴¹ See, for example, Andrew D. Berns, “The Place of Paradise in Renaissance Jewish Thought,” *Journal of the History of Ideas* 75, 3 (2014): 363, W. J. T. Mitchell, “W. J. T. Mitchell, “Holy Landscape: Israel, Palestine, and the American Wilderness,” *Critical Inquiry* 26, 2 (2002): 201, 204, and Philip Mennell, *The Coming Colony: Practical Notes on Western Australia* (London: Huntington & Co., 1892), 8.

and allowed terraces and irrigation channels to decay, so that the whole country now has an impoverished look.”⁴²

This theme of decline – the idea that the land used to prosper in biblical times but has since decayed – was widely discussed, debated, and centralized in European interpretations of the land.⁴³ Numerous writers occupied themselves with analyzing the ancient prosperity and the process of impoverishment; with that in mind, they also attempted to define future goals and an apparatus for rejuvenation. This discussion became critical to European dominance in the entire Middle East and North Africa. With time, the perceived decay became a justification for controlling many lands in the region.⁴⁴ This debate regarding the ancient past, furthermore, encapsulated grander tensions of European colonialism in the Middle East. In their perception of the Middle East as the “Cradle of Civilization,” Europeans felt torn between their belief in a glorious past that they considered their own and their faith in the tools of modernity. Some

⁴² “Palestine,” *The Geographical Teacher* 11, 6 (1922): 359-366.

⁴³ A famous example demonstrating the disappointment of encountering the Palestinian reality, and the adoption of the narrative of decline, is seen in Ehad Ha'am, “Truth from the Land of Israel,” *Hamelitz*, June 30, 1891. The belief in the process of decline remains central to this day. See, for example, Moshe Gil's article on the decline of Palestine during the Roman period in “The Decline of the Agrarian Economy in Palestine under Roman Rule,” *Journal of the Economic and Social History of the Orient* 49, 3 (2006): 285-328. Even Alon Tal's environmental history of Israel accepts this paradigm of decay. See *Pollution in a Promised Land: An Environmental History of Israel* (Berkeley: University of California Press, 2002). Several scholars have recently connected perceptions of Palestinian and Israeli environments with changing political structures. Focusing on the study of water, Samer Alatout, for example, argues that the narrative of scarcity emerged as late as 1948 and that in the early twentieth century, the common belief among Europeans was that there was abundance of water in Palestine. In “Bringing Abundance into Environmental Politics: Constructing a Zionist Network of Water Abundance, Immigration, and Colonization,” *Social Studies of Science* 39, 1 (2009): 363-394.

⁴⁴ For the importance of the narrative of decline to French colonialism in North-Africa and the British control of Iraq see Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonialism Expansion in North Africa* (Athens: Ohio University Press, 2007) and Priya Satia, “A Rebellion of Technology: Development, Policing, and the British Arabian Imaginary,” in *Environmental Imaginaries of the Middle East and North Africa*, ed. Diana K. Davis and Edmund Burke III (Athens: Ohio University Press, 2011), 23-59.

suggested that the land of the Bible was as bountiful as a land could be; others argued that, while the process of environmental degradation was evident, the land of the Bible was naturally meager. The main motivation and justification for controlling the land of Palestine was the belief that unusual, unique things had happened there in the past; but, in order to vindicate seizing control and transforming Palestine, the future had to look brighter than this past. To settlers, the land, as part of this paradigm, should become extraordinarily plentiful and its creatures extremely productive.

For both Christian and Jewish settlers, a path to redeem the land from the perceived impoverished state emerged through “working it.” Settlers – most of whom were city dwellers in Europe and were not familiar with agricultural work – established agricultural settlements, believing that through manual labor they, themselves, would “return to the cultivation of the soil.”⁴⁵ Changing agricultural practices in Palestine, therefore, reflected a desire to demonstrate the sacred potential of the land. Philip Schaff, a theologian and historian, described Christian and Jewish settlements in Palestine in 1878 and explained their role in transforming Palestine: “Coming from a forty years' wandering in the wilderness, Palestine was indeed to the Israelites a land of promise flowing with milk and honey. Though fearfully desolate and neglected now, we can even yet everywhere see the traces of its former prosperity and its capacities for a future resurrection under a better government and with a better population. Its climate and natural fertility are unsurpassed...the process of regeneration has already begun.”⁴⁶

⁴⁵ Nahum Karlinsky, *California Dreaming: Ideology, Society, and Technology in the Citrus Industry of Palestine 1890–1939* (Albany, NY: SUNY Press, 2005), 26.

⁴⁶ Philip Schaff, *Through the Land of the Bible: Egypt, the Desert, and Palestine* (New York: American

In order to unravel this process of transformation, and what it meant for settlers and indigenous people, this dissertation examines (1) how different groups of settlers used science and technology to reveal the sacred qualities they attributed to the land of Palestine and Israel and (2) how these technological efforts to produce plenty shaped landscapes and bodyscapes. Settlers during these years came from diverse backgrounds, ranging between Christians and Jews, religious and secular, common people and experts, humans and other animals. Yet beneath these differences lies a singular commonality. While the people and animals taking part in the process varied and changed, the attempts to make this environment sacred resembled each another.

Chapter Outline

Milk & Honey focuses on the production of honey and milk during the years 1880-1960 and is organized around the animals that became key actors in the making of a Holy Land across three political regimes: bees, cows, sheep, and goats. The project takes its basis in archival research, using primary sources in Hebrew, English, and Arabic collected throughout Israel and the US, but it also employs an analysis of scientific publications. Inspired by Jennifer Price's *Flight Maps*, each chapter presents a discrete adventure with nature in society.⁴⁷

Chapter 1 deals with the emergence of "modern beekeeping" in Palestine at the turn of the twentieth century and centers on the use of one technology, the movable frame beehive. It focuses specifically on the story of a Christian missionary family who utilized

Tract Society, 1878), 207, 388.

⁴⁷ Jennifer Price, *Flight Maps: Adventures With Nature In Modern America* (New York: Basic Books, 1999).

this wooden hive to transport numerous honeybees across country. These new movements allowed not only for proof of the land's sanctity, but also for proof of the power of Western interventions in transforming the East. With attention to changes in the lives of bees and the production of honey, the chapter examines how early European settlers and the shifting regimes interpreted the role and limitations of honey-making machines.

Chapter 2 examines dairy farming among Christian and Jewish settlers during the British mandate. It focuses on the invention and costly success of the "Hebrew Cow." I ask why the dairy industry was positioned at the center of the growing settler's agricultural economy and track the process of creating of a high milk-yielding creature, which was ultimately the result of multiple attempts of breeding local and European cows. As milk yield became the new way of measuring success, breeding practices interacted with and changed in response to environmental challenges. The chapter also introduces the term "New Jewess" to contend that producing a plentiful land depended on fertile female bodies, both human and other.

Sheep herding is at the basis of Chapter 3. It looks at settlers' attempts to practice shepherding in order to follow biblical leaders and become Hebrews in the first half of the twentieth century. The chapter follows two groups of Jewish settlers who learned how to become shepherds differently and compares the types of knowledge and practices they considered valuable. Although these settlers changed from using senses to employing numbers as ways of understanding sheep and the environment, the sheep milk economy

was ultimately unsuccessful. I explore this once widespread agricultural and cultural phenomenon, in a manner of considering the meanings of this failure.

Chapter 4 focuses on the denunciation of the leading milk producer of the area, the black herding goat. I examine the process by which British and Israeli experts and state officials came to see the hungry goat, along with its Palestinian owner, not only as an enemy of nature, but also as a threat to the revival of the land. The tools of denunciation included a process of counting, recording, measuring, and classifying, which was consummated by a plan to terminate these destructive creatures and replace them with prolific others. The chapter analyzes the debates that emerged as a result of these convictions and new ways of organizing the land, and examines the different ways of reacting to them, a practice that I call “rubbing against.”

Finally, the Epilogue describes the shapes, colors, flavors, and nativities that were constructed along with the production of honey and milk. I introduce recent uses of the narrative of decline, and suggest that, in addition to animals, plants and humans were also part of the attempts and failures to produce a plentiful environment in Palestine and Israel.

CHAPTER 1:

Bible, Bees, and Boxes: Technologies of Movement in Late Ottoman Palestine

Like many European and American people, honeybees began to travel throughout Palestine in the last decades of the nineteenth century. While nothing is surprising about bee flight, circumstances of the nineteenth century created a new type of bee movement. Beyond the local ‘Holy Land’ tourism frenzy, bee travels were part of extensive exploration projects in all of the European colonies during this time.⁴⁸ One of those projects focused on finding ‘the ultimate race of bees;’ Bee species “supremacy” depended on quality and amount of honey produced, their temper, and resistance to disease.⁴⁹ By the first decades of the twentieth century, the ‘Italian bee’ had prominently established itself as the preferred breed in most parts of the globe; however, several other types of bees that were thought to have powerful qualities – particularly, bees of the East, the *apis dorsata* (see figure 1).

Until the late nineteenth century, bees in Palestine encountered a limited variety of flora, simply that which existed within a radius of about two miles of flight. Bees created honey during a short period of the year, and some of them lived in human-made

⁴⁸ For the importance of the Holy Land to British culture and during the British presence in Ottoman Palestine see Eitan Bar-Yosef, *The Holy Land in English Culture 1799–1917: Palestine and the Question of Orientalism* (Oxford: Oxford University Press, 2005). For American Holy Land tourism, see Lester I. Vogel, *To See Promised Land: Americans and the Holy Land in the Nineteenth Century* (University Park, PA: Penn State University Press, 1993).

⁴⁹ Frank Benton, “The New Races of Bees,” *The American Bee Journal* 20, 3 (1884): 38; Eva Crane, *The World History of Beekeeping and Honey Hunting* (New York: Routledge, Chapman, and Hall, 1999), 369.

hives, which were usually long, cylindrical, and made of clay. They built the honeycomb anew after every swarming season, since human hands had to break the hives in order to extract the honey. Honey was valued in Palestine as an article of food and was often thought to hold medicinal qualities; it was consumed locally and at times sold in nearby markets.

By the early twentieth century, the life of bees in Palestine, as well as the honey they produced, were utterly different. In 1880, the moveable frame beehive – hailing from North America – arrived in Palestine. Replacing the local fixed clay hive, the success of this technology was sweeping. Bees soon had new mobility, with some bee queens traveling to North America and others reaching Java.⁵⁰ While bees continued to fly and collect nectar and pollen and made honey that humans enjoyed, their labor and behavior dramatically changed. Furthermore, although this technology gained prominence in many other parts of the world, the movable-frame beehive in Palestine had a unique role, as it served as a tool for the production of scientific truths and the reconfirmation of religious beliefs.

This chapter uses the story of the Baldenspergers, a family of settling missionaries who were first to use this frame hive in Palestine, to demonstrate how the movable-frame beehive was transformative in late Ottoman Palestine, as it helped demonstrate that the land was literally “flowing with honey.” As part of the work of experts, this technology

⁵⁰ James P. Strange, “A severe stinging and much fatigue – Frank Benton and his 1881 search for *Apis dorsata*,” *American Ethnologist* 47, 2 (2001): 112-116; Andrew H. Divan, “First Queen by Mail from Jerusalem,” *The American Bee Journal* 20, 51 (1884): 809; There are some indications showing that the American hive was not the only movable frame beehive to arrive in Palestine in the 1880. Haim Goren and Richab Rubin argue that the German Templar settlers used the European *Dzierzon* hive in settlement in the Haifa area. In Haim Goren and Richab Rubin, “This is How Modern Beekeeping Started in this Land,” *Mada* 29, 4-5 (1985).

supplied evidence to prove that the land of Palestine was in fact unusual, that it was becoming a Holy Land again, and furthermore, that technoscience played a critical role in the process. Through the changes in beekeeping practices, I examine how the combination of mystical and scientific ideas was an inspirational as well as legitimizing force for environmental, economic, and ultimately political change. Finally, I position the story of honey production and the practice of stealing beehives in the larger context of European expansion and colonialism at the turn of the twentieth century.

The chapter begins by explaining how it came to be that Europeans settled in Palestine in the late nineteenth century, why they started keeping bees, and how the production of honey changed over time. I then analyze how interpretations of Palestine and its relation to the Holy Land were reshaped through this process of change in production. This chapter is primarily based on traveler accounts, contemporary ethnographic materials, press coverage, articles addressing the professional global beekeeping community, and official publications of the changing governing rules. At the center of this story is an analysis of the publications of the prolific Baldensperger family and an examination of the way the family practice was portrayed over time.



Figure 1: *Apis Dorsata*: The bee of the East. This particular bee was caught by American apiarist Frank Benton (or more likely by his local assistants) in India in 1904, during his global travels to find the ‘ultimate race of bees.’ This journey included the examination of bees and queens in Palestine, and their export to America and Java. Source: James P. Strange, “A severe stinging and much fatigue – Frank Benton and his 1881 search for *Apis dorsata*,” *American Ethnologist* 47, 2 (2001): 112-116.

Creating “Biblical Plenty”

In the last decades of the nineteenth century, bees became the center of attention in attempts to recreate “the land flowing with milk and honey” – at least for one family of German-French Missionaries, the Baldenspergers, who settled in Artas (or Urtas), a small Arab village near Bethlehem. While the Baldenspergers began by practicing traditional beekeeping in Artas, they soon adopted a new type of hive – the movable frame hive. They then started moving bees from Artas throughout Palestine introducing these bees to new plants and ultimately transforming honey production in area.

Henry (Heinrich) Baldensperger came to Palestine from Alsace through Basel in 1848 in order to join the German-Swiss “St. Chrischona Pilgrims Mission.”⁵¹ This mission was seen as the first step in “the establishment of Christian settlement that would be an example and a source of light to their surroundings.”⁵² It brought Baldensperger, along with few other missionaries, to Jerusalem as “craftsmen and peasants to the Holy Land, as salt to the earth and a light in the darkness.”⁵³ The missionaries, newcomers to Palestine, were to teach local populations practical knowledge, as the formal goal of the project was “not to send preachers to Palestine but people who would demonstrate true Christianity to the inhabitants through quiet work and good deeds.”⁵⁴ Baldensperger, in addition to a locksmith and mechanic, a soap maker and chemist, and a watchmaker, was to demonstrate true Christianity in Palestine.

⁵¹ The St. Chrischona Pilgrims Mission was established at 1840.

⁵² Alex Carmel, “C.F. Spittler and the Activities of the Pilgrims Mission in Jerusalem,” in *Ottoman Palestine 1800-1914: Studies in Economic and Social History*, ed. G. Gilber (Leiden: E. J. Brill, 1990), 255.

⁵³ Ibid, 256.

⁵⁴ Ibid, 270.

A few months after his arrival to Jerusalem, however, Henry left the mission and moved to the Bethlehem area, where he lived until head of the mission asked him to return.⁵⁵ According to his son, Philip, Henry and his newly wedded wife operated under “the belief that they were called, under the protection of Divine providence, to teach the people of Palestine better ways, not by preaching the Word, but by exemplary life and work.”⁵⁶ The couple bought land and built a house in Artas, an Arab village inhabited by approximately 200 people, to initiate their independent mission “among the natives.”⁵⁷ The Baldenspergers had six children – Theophile, Philip, Emile, Jean, Louise and Willie – who grew up in the village, among the villagers and occasional European visitors. In old ruins of this village, Henry Baldensperger also started keeping bees.

Beekeeping in this region has a special role in the global history of beekeeping, as the earliest evidence for organized honey hunting was found in Egypt. According to European sources, beekeeping methods and hives in the region, and in Palestine in particular, resembled traditional Egyptian ones.⁵⁸ Although hives varied in shape (Palestinian hives were usually cylindrical), they were all fixed clay hives with back opening. Jean Baldensperger describes the hives the family encountered:

In almost every village of Palestine and Syria bees are kept...they do not keep such members to depend upon them for their living, but simply a few hives placed one on top of the other, having

⁵⁵ Ibid, 272.

⁵⁶ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), viii.

⁵⁷ Local tribe of Bedouins. Ibid, x. Partially due to its proximity to Bethlehem and ancient pools known as “Solomon’s Pools,” Artas became a center of European exploration and settlement throughout the nineteenth century. Among the Europeans who lived in Artas were James Finn, the British consul of Jerusalem (1846-1863), who bought a house in the village, British missionary John Meshullam (1799-1878) who attempted to establish an agricultural settlement there, and anthropologist Hilma Granqvist (1890-1972) who lived with the Baldenspergers.

⁵⁸ Eva Crane, “Impact of Langstrogh’s Movable-Frame Hive on World Beekeeping,” in *The World History of Beekeeping and Honey Hunting* (New York: Routledge, Chapman, and Hall, 1999), 175-176, 269.

arch built over them or some protection intended to keep away the hot sun-rays...the clay pipes are very cool as long as they are kept in the shade.⁵⁹

Other sources hint to the practice of beekeeping in Palestine, especially in Artas. A unique 1924 ethnography of Louise Baldensperger's Palestinian maid, Alia, for example, gives supplemental evidence for beekeeping in the village.⁶⁰ In her story, beehives are listed as part of the greater family fortune.⁶¹ Furthermore, in an article published in 1888 in the *American Bee Journal*, Jean explains local beekeeping methods in great detail, demonstrating a typical orientalist perspective and a disregard for the local practice:

In general, bee-keeping is carried in very primitive and negligent ways in some respects, as weak colonies are never cared for...The only work performed is in the swarming season, when swarms are watched for a few weeks in April and May, and hived into clay cylinders. The back covers are put on after hiving, and besmeared with wetted argillaceous earth. The interior is rubbed with citron leaves, and the small fly hole stopped with a few herbs for a day or two. They are then released, and not again looked to till the honey-crop...general honey harvest is the September crop. The covers are then hastily broken open. A few puffs of smoke from the pitcher-smoker...are blown on the bees, a comb or two if honey is cut out and put away, the cover is immediately replaced, and the bees are left for a whole year.⁶²

This critical view of beekeeping, which portrays local practices as careless and disorderly, might be more of an indication of a colonial perspective than a true reflection of Palestinian hives. Nevertheless, these descriptions demonstrate the prevalence of beekeeping in the area and explain the limitations to honey production. Given the fixed

⁵⁹ Jean Baldensperger, "Palestine: An Account of Bee-Keeping There by an Eye-Witness," *American Bee Journal* 24, 4 (1888), 60.

⁶⁰ Alia later became Hilma Granqvist's main informant in her work on the people of Artas. See *Marriage Conditions in a Palestinian Village* (Helsingfors: Centraltryckeri Och Bokbinderi, 1931); *Birth and Childhood Among the Arabs: Studies in a Huhnmadan Village in Palestine* (Helsingfors: Soderstrom & Co Forlagsaktiebolag, 1947).

⁶¹ Ada Goodrich-Fereer, *Arabs in Tent & Town: An Intimate Account of the Family Life of the Arabs of Syria, Their Manner of Living in Desert & Town, Their Hospitality, Customs & Mental Attitude, with a Description of the Animals Birds, Flowers & Plants of Their Country* (New York: G. P. Putnam's Sons, 1924), 73.

⁶² *Ibid*, 60.

structure of the hive, honey production in Palestine was limited to local, seasonal swarming. In his first days as a beekeeper, Henry used similar Palestinian methods. According to Philip, his father “kept bees...in the old castle above Solomon's Pools beyond Bethlehem, in the old clay hived of immemorial model” (see Figure 2).⁶³

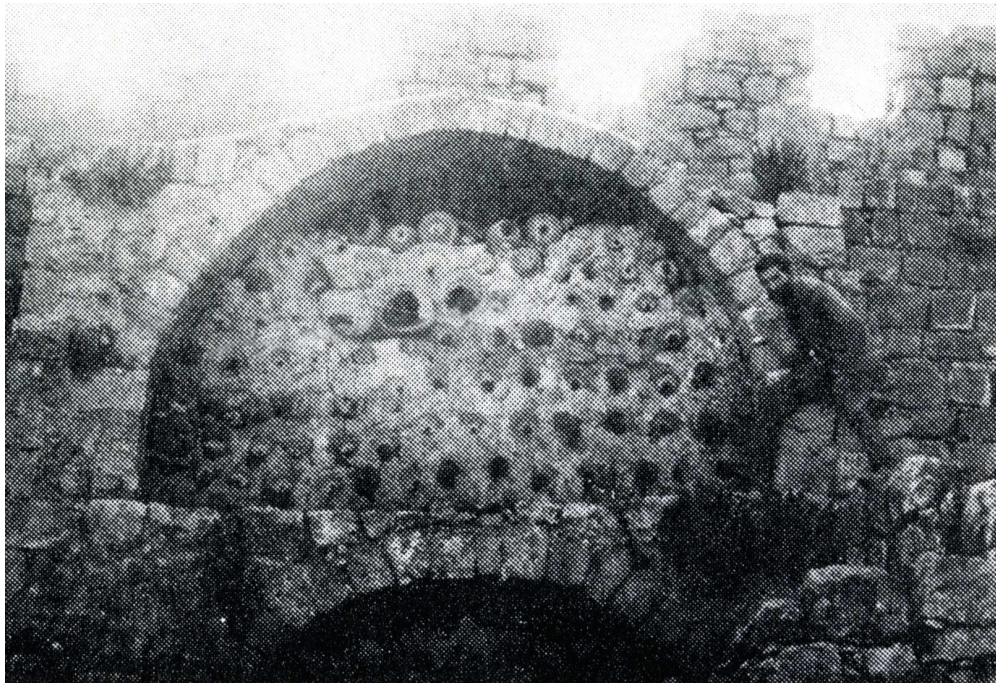


Figure 2: “Traditional beekeeping” in Palestine. This photograph was taken in “a village in the Bethlehem area”- most probably Artas and demonstrates traditional clay beehives of the region. Moreover, the presence of the European-looking figure in the right side of this 1890 photograph lends itself to the conclusion that this is indeed a Baldensperger family member, and, most importantly, that these are the early Baldensperger beehives. In this sense, this picture documents Europeans in Palestine, rather than traditional practices of beekeeping. Source: Phillipe Marchenay, *L'Homme et l'Abeille* (Paris: Berger-Levrault, 1979), 59.

In addition to keeping bees, most of the Baldenspergers – that is, Henry and his children – were occupied with writing about beekeeping and honey production in professional apiculture journals published in France, Britain and the US. Family

⁶³ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), x.

publications, however, addressed issues beyond beekeeping, and Philip's and Louise's contributions in particular, are considered of great value to the study of the Palestinian life in the late Ottoman period. With the great scarcity of surviving written materials from this time, the Baldensperger's scope of work is a unique mirror into Palestinian environment and culture.⁶⁴ While Louise's 1932 book *From Cedar to Hyssop* focuses on documenting the plants of Palestine, the 1913 work of Philip, *The Immovable East*, for example, concentrates on the inhabitants of the country, their customs, and their points of comparison to the scriptures.

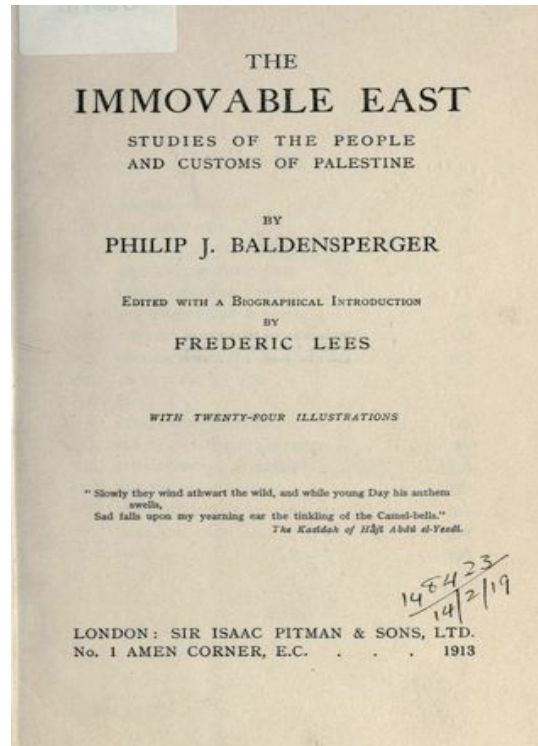


Figure 3: The cover of Philip J. Baldensperger's *The Immovable East: Studies of the People and Customs of Palestine* (1913). Baldensperger and his family were Swiss-French Christian beekeepers in late Ottoman Palestine.

⁶⁴ In spite of the recognized value of these works (Philip's in particular), they seem to have escaped thorough analysis by scholars as ethnographic materials.

A Bee in the Bonnet: A Documented Family Hobby

With the opening of the Anglican missionary school on Mount Zion in Jerusalem (1853), Henry was called back to service, and he became a housefather at the school for orphan Arab boys.⁶⁵ It was mostly his children (and European guests, such as the anthropologist Hilma Granqvist) who inhabited the house in Artas throughout the years, worked the lands, and gradually became interested in apiculture.

There is no firsthand statement explaining Henry's choice for becoming a beekeeper. His particular religious impulses for settling in Artas, however – 'to teach better ways by exemplary work' – help us speculate about his motives. In their various publications, moreover, Henry's children explicitly state that beekeeping in Palestine had special value, which depended on two kinds of justifications. First, identifying Palestine with the biblical land required continuous comparisons of the scriptures to the land and people of Palestine, and second, the product of the land had to become bountiful.

Throughout this period, in both kinds of their publications – in professional apiary journals, as well as their ethnographic and botanical work – the Baldenspergers put great effort into identifying parallels between the land they encountered in Palestine and the land of the Bible. Philip, the most prominent and prolific writer in the family, was a frequent contributor to the *Palestine Exploration Fund Quarterly Statement* between 1890 and 1920, thus participating in the British efforts to survey the topography and

⁶⁵ Alex Carmel, "C.F. Spittler and the Activities of the Pilgrims Mission in Jerusalem," in *Ottoman Palestine 1800-1914: Studies in Economic and Social History*, ed. G. Gilber (Leiden: E. J. Brill, 1990), 272.

ethnography of Palestine in relation to the biblical land during the turn of the century.⁶⁶ Prior to focusing on the habits and customs of the people of Palestine, Philip first concentrated on demonstrating specific connections between Palestine and the biblical land, as in his article titled “The identification of [biblical] Ain-Rimmon with Ain-Artas (Urtas).”⁶⁷ Even his brother’s 1888 article, “Palestine: an account of bee-keeping there by eye-witness,” which was published both in both *The British Bee Journal* and *The American Bee Journal*, is saturated with comparisons between different places and practices in Palestine and various references in the scriptures.⁶⁸

Hilma Granqvist, a Finnish anthropologist who stayed with the Baldenspergers in Artas while researching the people of the village, wrote about the “biblical danger,” of comparing Palestine to the biblical land. In her discussion she clearly criticized the most famous of Philip's works:

[There is] temptation to identify without criticism customs and habits and views of life of the present day with those of the Bible, especially the Old Testament. Only too often one has been tempted to build a bridge from the past to the present by combining modern parallels with Bible versus...a period of 2000 years and more between them – a gap which cannot be explained away merely by citing “the immovable east.”⁶⁹

⁶⁶ Philip's articles, entitled “The Immovable East,” later became a permanent column in the *Palestine Exploration Fund Quarterly Statement*. The collection of these articles was published in 1913 as a book under the same name; John Jams Moscrop, *Measuring Jerusalem: The Palestine Exploration Fund and British Interest in the Holy Land* (London; New York: Leicester University Press, 2000); Nadia Abu El-Haj, “Introduction,” in *Facts on the Ground: Archeological Practice and Territorial Self-Fashioning in Israeli Society* (Chicago: University of Chicago Press, 2001).

⁶⁷ Philip Baldensperger, “The Identification of Ain-Rimmon with Ain-Urtas (Artas),” *Palestine Exploration Fund Quarterly Statement* 43 (1912), 201-2011.

⁶⁸ Jean Baldensperger, “Palestine: An Account of Bee-Keeping there by an Eye-Witness,” *American Bee Journal* 24, 4 (1888): 59-60.

⁶⁹ Hilma Granqvist, *Marriage Conditions in a Palestinian Village* (Helsingfors: Centraltryckeri Och Bokbinderi, 1931), 9.

Not only is this critique telling of Philip's agenda and the way his writing was perceived, but it is also a strong indication that the “biblical danger” was a prevalent phenomenon among European settlers in late Ottoman Palestine.

Beyond comparing locations in and habits common to Palestine with the scriptures, the identification of Palestine as the Holy Land depended on providing evidence to its fertility. If Palestine was the biblical land, could it also “flow with honey”? In their writing to professional apiary journals, Jean and Philip frequently compare references to honey in the scriptures to their findings in Palestine and analyze the inadequacies between the scriptures and reality. They argue that specific changes in beekeeping allowed for the abundance of honey in Palestine, and they highlight the family's role in enabling these changes. The Baldenspergers indeed adopted a transformative form of beekeeping. However, their story is but one of a larger movement. According to the common understanding of the time, Palestine was the sacred land of the Bible, and as such it held special qualities. For this land to become sacred again, however, particular practices – rational, modern, and scientific – had to be employed by particular people. In late Ottoman Palestine, technological changes, as well as new forms of movement, were interconnected in this manner with religious sentiments.

Redemption Technologies

Several historians have pointed to the role of technology in global colonialism. In *Machines as the Measure of Man*, for example, historian Michael Adas discusses the emergence of technology as the ideology of Western colonialism.⁷⁰ After the industrial

⁷⁰ Michael Adas, *Machines as the Measure of Man: Science, Technology, and the Ideologies of Western*

revolution, he claims, science and technology replaced the traditional role of religion as the central justification for conquering new lands. In the pre-industrial era, he argues, Europeans viewed “the Christian faith, rather than their mastery of the natural world, as the key source of their distinctiveness from and superiority to non-Western people.”⁷¹ With the industrial revolution, however, a shift occurred, as “religious measures of the attainments of overseas peoples diminished in importance for many Europeans beginning in the eighteenth century, while scientific and technological criteria became increasingly decisive.”⁷² Enhanced by growing technological superiority, Europeans became convinced of their natural superiority, which ultimately resulted in the creation of race as a natural category. European practices in late Ottoman Palestine, however, undermine this historical dogma.

While it is true that new European settlers in Palestine, both Christians and Jews, acknowledged their scientific and technological advantage over the people of Palestine, religious motivations continued to play a crucial and explicit role. In his book, Adas references a pre-industrial eighteenth century Indian example that bears stronger resemblance to Europeans in Palestine than his nineteenth and twentieth century examples. In both cases, India in the eighteenth century and Palestine at the turn of the twentieth century, Europeans were occupied with the gap between the land that “had produced flourishing cultivations in the distant past” and the idea that “these once great cultures had stagnated and fallen into the decadent conditions in which the European

Dominance (Ithaca; London: Cornell University Press, 1990); see also Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007).

⁷¹ Michael Adas, *Machines as the Measure of Man*, 22.

⁷² *Ibid*, 7.

found them.”⁷³ As opposed to the Indian case, however, the discovery of such gap in Palestine was not sufficient as a justification of seizing control. The justification instead depended on the duality – on the combination of religion and technology, on the pairing of past notions and future developments – that ultimately ensured the making of a sacred land.

European settlers in Palestine imagined particular ways by which to recreate the Holy Land. For both Christian (usually millenarian) and Jewish settlers, the path to change was paved through a tilling of the land. By the establishment of agricultural settlements these settlers were hoping to enable the redemption of the land.⁷⁴ A description of early European settlement efforts in Artas illustrates the spirit of these settlers and the importance of modern practices in this process of redemption:

The débris and rocks of former terraces ten miles east of Jerusalem, while they render cultivation under the present method out of the question, were at the same time the downfallen monuments of the former industry and prosperity of the people. But the efforts...of “the industrial settlement” near the pools of Solomon, southeast of Bethlehem, enable us to add to the above the facts of present produce...This may explain the wonderful fertility predicated of this country by early writers, and which seems to be so poorly sustained by the appearance of the land at the present day.⁷⁵

From the early years of European settlement in Palestine, great efforts were put in increasing the production of the land, but the choices behind such products were highly calculated. Many scholars have pointed to the role of missionaries in the process of Europe’s so-called ‘great expansion.’ These researchers critique the perception that

⁷³ Ibid, 173.

⁷⁴ Nahum Karlinsky, *California Dreaming: Ideology, Society, and Technology in the Citrus Industry of Palestine 1890–1939* (Albany, NY: SUNY Press, 2005), 26; Alex Carmel, “C.F. Spittler and the Activities of the Pilgrims Mission in Jerusalem,” in *Ottoman Palestine 1800–1914: Studies in Economic and Social History*, ed. G. Gilber (Leiden: E. J. Brill, 1990), 265.

⁷⁵ Rev. Henry S. Osborn, *Palestine: Past and Present, with Biblical, Literary and Scientific Notices* (Philadelphia: James Challen & Son, 1859), 506–507.

missionaries were marginal to greater social operations, instead commenting that missionaries were major agents of global transformation throughout the late nineteenth and twentieth century.⁷⁶ For example, historical geographer Ruth Kark cites the “the impact of missionary concepts and activity on environmental and spatial change and the introduction of modern technology,” in late Ottoman Palestine and uses the term “religious-technology nexus” to describe the creation of a new politics of space in the late nineteenth century.⁷⁷

The period of intensified Christian missionary settlement in Palestine coincided with the emergence of a long process of technological and environmental changes. In the following decades, moreover, growing Jewish-European settlements in Palestine played a central role in enforcing this progression, ultimately enabling the establishment of the Israeli state. By examining the continuous Judeo-Christian effort to create a new physical space – a modern-holy land – a new understanding of colonialism emerges. In a period of sweeping transformations, new technologies and old religious conceptions were intertwined as agents of change. The frame beehive was one of these technologies – as made evident by the Baldensperger family – adopted in an effort to create modern-biblical plenty.

⁷⁶ See, for example, Jean Comaroff and John L. Comaroff, *Of Revelation and Revolution, Volume 1: Christianity, Colonialism, and Consciousness in South Africa* (Chicago; London: Chicago University Press, 1991); Heather J. Sharkey, *American Evangelicals in Egypt: Missionary Encounters in an Age of Empire* (Princeton; Oxford: Princeton University Press, 2008). For missionaries specific to Palestine see, for example, Ruth Kark, “Millenarism and Agricultural Settlement in the Holy Land in the Nineteenth Century,” in *Deutsche in Palästina und ihr Anteil an der Modernisierung des Landes*, ed. Jacob Eisler, 14-29 (Wiesbaden: Harrassowitz Verlag, 2008).

⁷⁷ Ruth Kark, “Millenarism and Agricultural Settlement,” 18.

Changes in the Hive

In their writing to the Western beekeeping community, the brothers glorify the Palestinian bee, which they often name “the holy bee.”⁷⁸ “The Palestine bees are good honey-gatherers, and the queens are very prolific and beautiful. It is not rare to have colonies yielding upwards of 100 pounds for a single crop, through it is not the average.”⁷⁹

While the Baldenspergers often acknowledged the value of honey produced in Palestine, they also lamented the technical limitations inherent to the system. In her book, *From Cedar to Hyssop*, Louise Baldensperger discusses traditional beekeeping methods, which she perceives as simple and primitive:

Village beekeeping in Palestine is a constant source of surprise and interest to newcomers in the country. The bees are housed in clay pipes built up into stacks, place usually inside the village in courtyards or on low roofs, and they often have a very picturesque appearance. They are like the beehives of Egypt, which go back...to at least 2600B.C....The honey...is often of excellent quality, but marred by dirt owing to primitive methods of dealing with the comb...In spite of these primitive hives, bees seem able to live healthily in them; at lease there is no record of disease before the introduction of infected bees from South Russia. But the system has one defect: *the hives are fixed*, and the crop is therefore limited to what the bees can get near the village.⁸⁰

Although Louise explains the virtues of the Palestinian honey, she also points to its imperfections, highlighting the immobility of the Palestinian hives.

⁷⁸ As demonstrated below, Jean's reference to the “holy bee” was not unique. The global apiary community used this term prior to Jean's publication. This undermines the claim that the Baldenspergers were an atypical case.

⁷⁹ Jean Baldensperger, “Palestine: An Account of Bee-Keeping there by an Eye-Witness,” *American Bee Journal* 24, 4 (1888): 60.

⁸⁰ Grace M. Crowfoot and Louise Baldensperger, *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine* (London: The Sheldon Press, 1932), 59. Italics are included for my personal emphasis. *From Cedar to Hyssop* was written by Grace M. Crowfoot and was based on Louise's knowledge and experience. Crowfoot (1877-1957) was primarily a British archeologist and explorer of Egypt, but also had worked in Sudan and Palestine as part of the Palestine Exploration fund. She was particularly interested in textile, traditional weaving, and hand spinning techniques.

Thus, in spite of natural qualities of the bees and the land, beekeepers in Palestine faced constraints. As the Baldenspergers came to exemplify, providing the proofs for a biblical land, as well as for the supremacy of its crop, were not sufficient. Instead, particular European interventions were necessary in order to achieve ultimate productivity of bees and abundance of honey.

According to family records, a crucial change occurred in the late nineteenth century. In 1880, Henry met two prominent American beekeepers exploring the area, D.A. Jones and Frank Benton. Given recent success in importing the Italian honeybee to North America, the late nineteenth century was a period of intensified efforts to identify new species of bees. Jones and Benton were part of this growing entrepreneurial trend, and they traveled throughout Europe and the Middle East with the intention of learning, breeding, and ultimately exporting bees (and queens in particular) to North America.⁸¹ The two introduced their findings to the beekeeping community in the US and put special efforts to distinguish the “holy bee” from other regional species.⁸²

In his famous beekeeping manual, Cornell professor of apiculture E. F. Phillips (1878-1951) mentioned this journey and its results. He counted two kinds of bees in Palestine: one identical to the Egyptian species and one which was “introduced into America in 1880 by Jones and Benton but were soon abandoned as valueless.”⁸³ It was in

⁸¹ James P. Strange, “A severe stinging and much fatigue – Frank Benton and his 1881 search for *Apis dorsata*,” *American Ethnologist* 47, 2 (2001): 112-113.

⁸² Frank Benton, “The New Races of Bees,” *The American Bee Journal* 20, 3 (1884): 38-39. Benton and Jones were not the only ones advocating for the value of the “holy bee” in America. See, for example, H. Alley, “The Holy Land Bees,” *The American Bee Journal* 20, 37 (1884): 586.

⁸³ E. E. Phillips, *Beekeeping (The Rural Science Series)*, ed. L. H. Bailly (New York: The Macmillan Company, 1914), 195.

the midst of this attempt to find the ultimate bee that the Baldenspergers were introduced to a new technology – the movable frame hive.

Global beekeeping went through a series of fundamental changes during the nineteenth century. Following concurrent developments in Europe and America during the seventeenth and eighteenth centuries, a specific model of hive known as the Langstroth movable frame hive received great recognition and was gradually adopted globally in the later nineteenth century.⁸⁴ The structure – a square wooden hive containing several wooden frames, in which bees could build a honeycomb – assured great advantage over existing traditional hives. In the Langstroth model, the wooden frames were easily removed and placed within the wooden boxes, which were positioned on top of each other. The structure forced the bees to build the comb on the frames alone, leaving the box and the gaps between the frames detached. This allowed the beekeeper to remove the frame from the box and extract the honey without breaking the hive altogether, as was done in various traditional hives globally. Avoiding the destruction of the hive and combs not only increased the beehive's lifespan, but also directed bees' energy into building new combs to produce more honey. These changes, therefore, were central to the success of the new model, as it allowed for a great increase in the cultivation of honey.

⁸⁴ Several moveable frame beehive model were invented and tested concurrently in Europe and North America during the nineteenth century. The Landstroth moveable frame beehive, which ultimately won the greatest success around the world, was invented and patented by the American Reverend L.L. Langstroth in 1852. See Eva Crane, *The World History of Beekeeping and Honey Hunting* (New York: Routledge, Chapman, and Hall, 1999), 422.

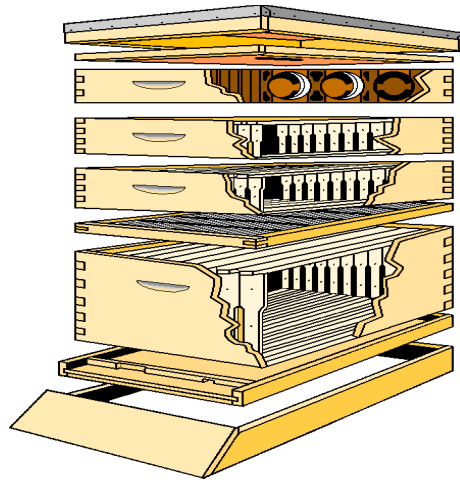


Figure 4: Illustration of the Langstroth Moveable-Frame Beehive. Rev. L. L. Langstroth (1810-1895) patented his model in 1852, and writes in 1878: “If every bee-keeper would adopt this plan [of hive, t.n.], our country might soon be like ancient Palestine, ‘a land flowing with milk and honey.’” In *The Hive and the Honeybee: The Classic Beekeeper’s Manual* (Mineola, NY: Dover Publications, 1878), 182.

Thus, not only was each frame movable, but also so was the entirety of the beehive.⁸⁵ Pastoral beekeeping now synced the transport of bees throughout Palestine with the blooming of plants, so that the bees could make honey yearlong. The new movement of bees was part of an emerging wide-scale technological system that included honey-making machines, but also irrigation pipes, roads and cars, and different kinds of workers.⁸⁶ The American explorers left the region shortly, and the community of global beekeepers promoted the Italian bee as the best of breeds. But the Western way of keeping bees gained prominence in Palestine: long-distance bee travels became

⁸⁵ Straw basket hives, which were common in Europe, were not fixed, but they did not have frames.

⁸⁶ For an analysis of technologies as systems, see Thomas P. Hughes, *Networks of Power: Electrification in Western society, 1880–1930* (Baltimore: John Hopkins University Press, 1993). On the interactions between various kinds of workers, both Jews and Arabs, in the construction of railways in British Palestine see Zachary Lockman, *Comrades and Enemies: Arab and Jewish Workers in Palestine, 1906–1948* (Berkeley; Los Angeles; London: University of California Press, 1996), 812. Lockman focuses on railway workers in order to challenge the ‘Dual Society’ paradigm in the historiography of British Palestine, which separates between the Jewish and Arab communities.

commonplace in Palestine, and the honey products – with flavors now including thyme, prickly pear, and citrus fruits – reached European markets.

Ultimately, the combination of the movable frame and the movable hive was of great influence on honey production in Palestine. Louise describes in her 1932 book how the new technologies transformed her family's method of beekeeping:

Nowadays modern beekeeping is spreading in Palestine, in the Jewish colonies, and among the Arabs too. It was all started by the Baldensperger brothers with their introduction of the first movable hives in 1880. They were the first to have the brilliant idea of carrying them about, from coast to the hills, and so assuring a crop of honey all through the season, and many were their adventures on beginning to put the idea into practice.⁸⁷

The success of the movable-frame beehive was indeed sweeping: to this day, for example, beekeepers throughout the world use this nineteenth-century technology. But in Palestine, at least for a short while and prior to the widespread construction of roads and the availability of cars, bees lived inside the new movable hives but traveled on the old transport technologies (see Figure 5).⁸⁸

While Palestine's traditional fixed hive fit the Western image of Palestine as *The Immobile East* as described by Philip Baldensperger, movement existed all along in

⁸⁷ Grace M. Crowfoot and Louise Baldensperger, *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine* (London: The Sheldon Press, 1932), 59.

⁸⁸ Beyond Lockman's book, little work focuses on railroads in Palestine throughout the nineteenth and the first half of the twentieth centuries. Yair Safran and Tamir Goren, for example, write about plans to construct railroads in late Ottoman northern Palestine in "Ideas and plans to construct a railroad in northern Palestine in the later Ottoman period," *Middle Eastern Studies* 46, 5 (2010): 753-770. Furthermore, almost no work focuses on other transport technologies. Several popular accounts mention that cars were extremely rare in Palestine prior to WWI, but that they became more prevalent as the war progressed. For example, according to the written media, cars were owned by a rich few in the 1920s, but became increasingly common in the 1930s: it is cited that in 1933, there were only 6,000 cars in Palestine, but approximately 10,000 by 1935. See "A car for every one hundred thousand people in the land of Israel," *Doar Hayom*, February 25, 1935: 1. Lockman argues that 'motor transport had developed very quickly in Palestine during the late 1920s and the early 1930s as the government built new roads and improved existing ones': idem, *Comrades and Enemies*, 186-187. On the emergence of the Jewish flight culture in British Palestine see Yossi Malchi, "Modernity, nationality, and society: The beginning of Hebrew flight in Palestine 1932-1940," MA Thesis, Tel Aviv University (2007).

various, often forgotten, ways.⁸⁹ The shift from static to movable hives depended on older, more local forms of movement. This 1890 image illustrates how – if for just a brief moment in time – the new movement of bees was made possible by the old movement of camels. The photograph of bees traveling on other animals captures a ‘creole technology’ in the midst of change, when new technologies of movement were combined with existing local ones.⁹⁰ For example, according to one account, movable beehives were also carried on the heads of women across the country, one hive at a time.⁹¹

⁸⁹ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913).

⁹⁰ Historian David Edgerton examines the Old that is part of the utilization of new technologies, as well as the change in technologies over time. In so doing, he argues against the centrality of inventions and inventors in historical analyses, as well as the equation of technology with progress. Edgerton also coins the term ‘creole technologies’ to refer to the technologies of the poor and to the creative utilization of whatever parts are available for making technologies work – technologies of “making do.” Using the broader meaning of ‘creole’, I adopt the term to analyze technologies of mixture. See David Edgerton, *The Shock of the Old: Technology and Global History Since 1900* (Oxford; New York: Oxford University Press, 2007).

⁹¹ Saleh Merrill, “Honey Producing in Old Palestine,” *The American Bee Journal* 40, 23 (1900): 356; for the temporary movement of beehive on wagons drawn by horses see Clifford M. Zierer, “Migratory Beekeepers of Southern California,” *Geographical Review* 22, 2 (1932): 260-261.

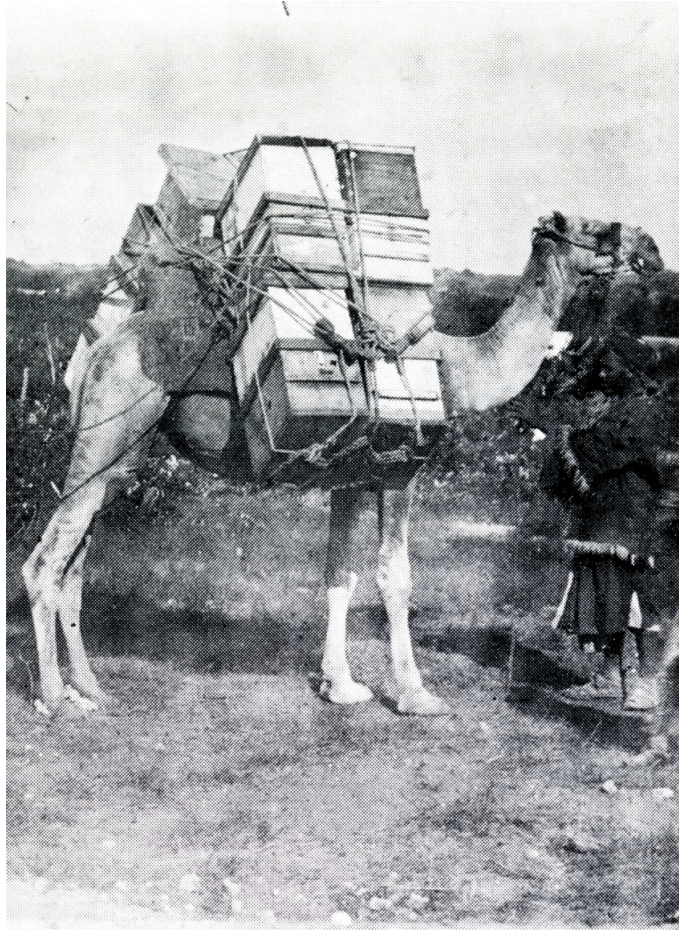


Figure 5: Palestinian bees on camels on their way to Jaffa in 1890. Source: Phillipe Marchenay, *L'Homme et l'Abeille* (Paris, 1979), 100.

Together with the anonymous figure on the right, camels and local women were essential for the eruption of new movement. Beyond the new technology, therefore, this image reveals some of the actors, human and non-human, that remained invisible forces for change in the East. Thus, new technologies, such as the wooden frame hives, were successful in Palestine not only for the reasons behind their global acceptance, but also because they became intertwined with old, local (and often living) ones. Furthermore, long after camels were deemed unnecessary for (or even interfering with) moving bees,

back-stagers continue to be locomotors; thus, in this sense, all technologies are so-called ‘creole technologies.’⁹²

Beekeeping Going Pro

Louise herself highlights some of these new-old combinations: “When the time came to take the bees from the Orange blossom of Jaffa to the thymy uplands they bound the hives on a camel and proposed to travel by night while the bees are asleep.”⁹³ The new mobility of the hive meant that beekeepers had to take the transport of both camels and bees into consideration. For example, in order to move the beehives around, extend the swarming season, and ultimately produce more honey, pastoral beekeeping had to develop new strategies – such as traveling on camels at night while the bees were asleep – for managing the population of bees and their temper. The Baldenspergers share amusing stories about frightened camels and alarmed employees, adding: “nowadays bees travel swiftly by motor lorry and the excitements of other days are no more, or perhaps we might say changes, for we think that beekeeping is never a very quiet kind of occupation.”⁹⁴

For the Baldenspergers, however, beekeeping became more than an entertaining hobby. Philip describes how meeting Jones and Benton changed the Baldensperger

⁹² A letter sent by the Lydda District Engineer to the Chairman of the Soil Conservation Board of the British Mandate in Palestine discusses the problem of camels and other animals in disturbing the movement and functionality of trains and railroads. See ISA/M-13/5109, Sgd. F.H. Taylor to Chairman of Soil Conservation Board, 11 July 1942.

⁹³ Grace M. Crowfoot and Louise Baldensperger, *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine* (London: The Sheldon Press, 1932), 59.

⁹⁴ Ibid, 59-60. Similar descriptions are found in the records of the Lerrer family from Ness-Ziona. This Jewish family adopted the movable frame beehive directly from the Baldenspergers in the late 1880s. See the official website of the Israeli Honey Council (in Hebrew): Israeli Honey Council, *On the History of Beekeeping in Israel: Problems and Related Stories*, http://www.honey.org.il/info/about-us/begin_peer.htm (accessed 2 October 2010).

brothers' mind about beekeeping completely. In addition to adopting the movable frame hive, this new form of beekeeping required training. Shortly after the meeting, Philip joined Benton's "bee-conversion" in Beirut and Cyprus, where "the most important work done... was the adoption of a standard frame," and "modern methods in beekeeping" had taken permanent root.⁹⁵ After Philip stayed for "many months and thoroughly learned apiculture," the brothers finally decided to "abandon their agricultural work, let out the family lands on hire, and devoted themselves exclusively to bee-keeping."⁹⁶ Thus, following Philip's professional training, the Baldensperger brothers adopted beekeeping as a main occupation, although each did so in different ways. Here, Granqvist gives more details about the destiny of the Baldensperger family members and their relation to beekeeping throughout the years:

He [Henry Baldensperger] then hoped that his sons would live in the village...but neither did anything come to that. Two of his sons Phillippe and Emile Baldensperger who had learnt bee-keeping were in Artas for a short time but then settled in other places; Phillippe in Nice and Emile in Jaffa where they continued with their bees.⁹⁷

While Louise remained at home in Artas, modern beekeeping took the bees, as well the Baldensperger brothers, elsewhere.

"Pastoral beekeeping" involved other struggles, beyond that of transportation.

Philip describes the realities of disease, taxation, and government intervention, where

⁹⁵ Frank Benton, "A Bee-Convention in Syria," *The American Bee Journal* 21, 35 (1885): 551.

⁹⁶ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), xi. In spite of Philip's claim, the eldest of the Baldensperger family, Theophile, did not take part in the family beekeeping practice, as he left Palestine as early as 1865 and settled in the French Saint-Dié-des-Vosges. See Captain Egon Potter, "Ph. J. Baldensperger's Career," *Bee World* 8 (1927): 156-157. According to records of the Ecole Nationale d'Ingénieur, Sud Alsace, Mulhouse, Theophile finished his education there in 1874, and therefore was probably an engineer, rather than a beekeeper. In Ecole Nationale d'Ingénieur, Sud Alsace, Mulhouse, *Graduates*, <http://www.anciens-ensisa.org/> (accessed October 2, 2010).

⁹⁷ Hilma Granqvist, *Birth and Childhood Among the Arabs: Studies in a Huhnmadan Village in Palestine* (Helsingfors: Soderstrom & Co Forlagsaktiebolag, 1947), 20.

“fighting the mosquitoes and the fever – a consequence of roaming about in unhealthy marshy places – as well as the vile tax-gatherers and Turkish officials' odious vexations and injustice.”⁹⁸ In addition to the tragic death of their youngest brother, Willie, who drowned in sea near Jaffa in 1891, health problems and struggles with the Turkish authorities finally led most of the brothers to leave Palestine and continue their work in North Africa and Europe. Emile and Jean “carried part of their hives and apparatus with them to Algeria,” where beekeeping proved more profitable, and Philip “exhausted by fever and doubtful of ever being able to change the mentality of the natives” moved with his family to Nice, France, in 1892, where he established an honorable career as a beekeeper, researcher, writer and lecturer.⁹⁹ Named at old age as “Père Baldens,” Philip became a renowned scholar and contributor to global knowledge of bees and beekeeping.¹⁰⁰ With the death of his daughter, Nora (herself an esteemed apiarist) in 1977, the British *Bee World* Journal commented that her father was “one of the greatest international figures in beekeeping between the wars.”¹⁰¹

In *The Immovable East*, Philip mentions that Emile and Jean, who moved to Algeria, “were soon glad to return home [to Palestine] again, as it is still 'the land flowing

⁹⁸ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), xi. I have found no record of Jean's life circumstances beyond Philip's accounts, which has led me to conclude that Jean died soon after his return to Palestine.

⁹⁹ Ibid, xii; Philip Baldensperger, “Marketing Honey on the Shores of the Mediterranean,” *Bee World* 11 (1930): 133-136; Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), xii.

¹⁰⁰ As part of his work, Philip established the Société d'Apiculture des Alpes Maritime in 1921 and its bulletin. He participated and represented France in Apiculture International congresses and became the president of “Apis Club” in 1927. For further details about Philip's career see Prof. E. F. Phillips, “Mr. P. J. Baldensperger,” *Bee World* 8 (1927): 97-99, Captain Egon Potter, “Ph. J. Baldensperger's Career,” *Bee World* 8 (1927): 156-157, and “Ph. J. Baldensperger,” *Bee World* 29 (1948): 73.

¹⁰¹ “Obituary Notices: Nora Baldensperger,” *Bee Journal* 58 (1977): 128.

with milk and honey.¹⁰² Emile was the son to continue on with beekeeping and he established a successful independent apiary in the Jaffa area, the main economic artery of the region, and continued to move his hives from place to place according to seasonal flowering (see Figure 6).¹⁰³



Figure 6: Emile Baldensperger, a professional beekeeper with his movable frame hives in the Jerusalem area, as depicted by his sister, Louise. Source: Grace M. Crowfoot and Louise Baldensperger, *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine* (London: The Sheldon Press, 1932), plate 9.

Emile's beekeeping practice not only enabled his "intimate contact with the people in very different parts of the country" but also exposed the bees to the blossoming citrus trees of Jaffa at a period when the citrus industry was booming and when European settlers were increasingly dominating it.¹⁰⁴ This strengthening relationship – between the

¹⁰² Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), xii.

¹⁰³ Hilma Granqvist, *Birth and Childhood Among the Arabs: Studies in a Huhnmadan Village in Palestine* (Helsingfors: Soderstrom & Co Forlagsaktiebolag, 1947), 171.

¹⁰⁴ Ibid. On the history of the citrus industry in Palestine, the relation between Palestinian and Jewish

bees and the citrus trees – in the process of seizing European control over the citrus industry, brought the bees and the oranges much acclaim.

Abundance and its Discontents

In her analysis of the plants of Palestine in *From Cedar to Hyssop*, Louise writes about plants that became “important for the bees” in the new form of beekeeping. Importantly, she highlights that “of all these crops, the Orange Blossom is the most important. Mr. E. Baldensperger tells us that once in an exceptional year – 1883 – ten hives gave a total of a little over 3,000 pounds of honey in Jaffa!”¹⁰⁵ Other sources acknowledge the great success of the family practice, even in comparison to global standards. Henry Allen, a famous American beekeeper and researcher writes in 1884 to the *Bee Journal*: “with only 50 and 60 colonies they [the Baldensperger brothers] had taken 5,800 pounds of honey, 5,200 of which were taken in 16 day. How many apiaries with this same number of colonies in America can make such a good report?”¹⁰⁶

Maintaining and expanding the scope of the new form of honey production depended on more than the type of bees or the variance of plants, but on the regulating authority as well. In his memoir of traveling in Palestine, the literary scholar and Qur’an translator Marmaduke Pickthall mentioned “a French Alsatian family, the Baldenspergers, renowned as pioneers of scientific bee-keeping in Palestine, who

techniques, and the gradual Jewish domination of the industry, see Nahum Karlinsky, *California Dreaming: Ideology, Society, and Technology in the Citrus Industry of Palestine 1890–1939* (Albany, NY: SUNY Press, 2005), and *Jaffa, the Orange’s Clockwork*, film by Eyal Sivan, 2009.

¹⁰⁵ Grace M. Crowfoot and Louise Baldensperger, *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine* (London: The Sheldon Press, 1932), 62.

¹⁰⁶ Henry Alley, “The Holy Land Bees,” *The American Bee Journal* 20, 37 (1884): 586.

hospitably took a share in my initiation.”¹⁰⁷ Pickthall described Ottoman attitude towards Western beekeeping in Palestine and the way this attitude changed:

They [the Baldenspergers] had innumerable hives in different parts of the country... For a long while the Government ignored their industry, until the rumour grew that it was very profitable. Then a high tax was imposed. The Baldenspergers would not pay it. They said the Government might take the hives if it desired to do so. Soldiers were sent to carry out the seizure. But the beekeepers had taken out the bottom of each hive, and when the soldiers lifted them, out swarmed the angry bees. The soldiers fled; and after that experience the Government agreed to compromise.¹⁰⁸

Philip too referred to this change when he described how Emile’s beekeeping generated more success along the years “as the Turkish officials have become more accommodating.”¹⁰⁹ In spite of initial objections, according to such testimonies, Ottoman authorities gradually became tolerant to the European form of beekeeping.

Since the new form of beekeeping demanded considerable financial investment – partially because movable frame hives and other equipment were usually imported from Europe or the United States as opposed to the domestic, handmade clay hive – Ottoman support for this new form, together with the technical benefits of the movable frame hive, established an advantage to European ways of honey production.¹¹⁰ As early as the turn of the century, therefore, the project of creating abundance in Palestine was beyond the hands of local populations, and to a great extent, adopted by the changing governing powers.

¹⁰⁷ Marmaduke W. Pickthall, *Oriental Encounters: Palestine and Syria, 1894-5-6* (London: W. Colloms Sons & Co., 1918), 11.

¹⁰⁸ Ibid.

¹⁰⁹ Philip Baldensperger, *The Immovable East: Studies of the People and Customs of Palestine* (Boston: Small, Maynard and Company, 1913), xii.

¹¹⁰ Eva Crane, *The World History of Beekeeping and Honey Hunting* (New York: Routledge, Chapman, and Hall, 1999), 427; on American equipment utilized by Jewish settlers in Palestine see “Palestine Honey Production,” report sent by the American consul in Jerusalem, Palestine, 2 Nov. 1921. USNA/US State Department, Records of the Department of State Relating to the Internal Affairs of Turkey, 1910-1929, film reel 86, 3.

The new mobility of the hive, however, also posed a threat to European ways of beekeeping. As beehives became movable, and as honey production – now monopolized by Europeans – grew accordingly, reports of theft of bees and hives grew as well. The *Haskell Free Press* in Texas, for example, published “Famous for Honey: An Industry of Palestine in Biblical Days May Be Revived” in 1900. This article mentions the Baldenspergers’ work and discusses the difficulties that accompanied their success:

The greatest enemy [to beekeeping in Palestine] is man. Whenever an apiary is set down, the sheiks of the nearest village have to receive a certain amount of honey, otherwise the bees will be stolen...about one-tenth of the honey produced must be given away to prevent people from taking the hives. Furthermore, when the bees are carried from one place to another on camels, the Bedouins, or wild Arabs, occasionally steal the camels.¹¹¹

With the growth of new beekeeping practices theft became commonplace throughout Palestine. Numerous beekeepers complained about the disappearance of their hives throughout the years, connected stealing to the local struggle against European settlement and the Zionist movement, and furthermore, argued that the different governments handled the matter inadequately. Mobility became a two-edged sword for some: thanks to the new transportation of the hive, stealing bees and honey-making machines allowed non-Europeans in Palestine to resist to – as well as to configure – this process of change in the land and the new means of owning it.

¹¹¹ *Kaskell Free Press, Texas*, “Famous for Honey: An Industry of Palestine in Biblical Days May Be Revived,” July 28, 1900. This report has been published in a very similar version in various journal and papers around the world, such as *Geneva Daily Times*, “Apiary Interests in Palestine,” May 5, 1900, *Bruce Herald*, “Honey in Jerusalem,” February 1, 1901 that was published in New Zealand, and *Ha-Melitz*, “In the Holy Land,” July 5, 1900: 3 that was published in Russia in Hebrew.

Proper, Superior Hives

From the early years of British rule in Palestine, the government officially supported the expansion of honey by the complete removal of taxation over “bee-hives, hive frames, honey extractors, centrifugal machines for honey extraction and hive foundation.”¹¹² The British government also offered loans to those who wanted to become beekeepers: “The loans” it was declared, “will not be given in the form of money but in the form of hives, equipment, and wax.”¹¹³ Throughout the 1930s, furthermore, the British government supplied sugar tax-free or discounted for the sake of feeding bees.¹¹⁴ However, the support for beekeeping in Palestine depended on the use of the moveable frame beehive: “bee-keepers are hereby notified that Government [sic] has decided to sell duty-free sugar to those bee-keepers who are in possession of populated moveable frame comb hives.”¹¹⁵

Under British rule, as part of agricultural development programs, beekeeping was explicitly promoted, professionalized, and standardized.¹¹⁶ Starting in the late 1920s, the government established professional training courses at the governmental agricultural station at Acre.¹¹⁷ Jewish agriculturalist Alexander Livshutz, who had previously trained

¹¹² *The Handbook of Palestine, Issued Under the Authority of the Government of Palestine*, ed. Harry C. Luke and Edward Keith-Roach (London: Macmillan & Co., 1922), 165-166.

¹¹³ *Davar*, “Loans to Beekeepers,” October 24, 1935.

¹¹⁴ The Director, Department of Agriculture & Forests, “Sale of Sugar to Beekeepers,” *Palestine Post*, October 7, 1934.

¹¹⁵ *Ibid.*

¹¹⁶ The establishment of supervision services in regards to the purchase of bees, as well as the management of bee diseases was detailed in *Davar*, “Bee Supervision Command,” August 26, 1928. According to Israel Robert Blum, a Jewish Beekeepers Association was established in 1929. In “Global Honey Production,” 3, CZA/K13/160/1. Other documents show that earlier forms of organization existed, yet failed. See correspondence within the Zionist Management Board of the Zionist Agency, “Proposal to Establish a Cooperative for the Sale of Honey,” 9 February 1925, CZA/S25/521/6.

¹¹⁷ Breeding experiments with the local bee, as well as with Caucasian bees were held at the Acre farm in

with the Baldensperger brothers, organized the training courses, which demonstrated the benefits of the moveable frame beehive and delegitimized the static clay hive.¹¹⁸

Modern methods are essential, and the Government Department will be glad, at its various beekeeping stations, and especially at Acre, to give all enquirers the fullest information and advice on the subject, to sell bees of good stock...and in particular to give practical demonstrations of the superiority of movable comb-hives over mud-hives. With mud-hives, the bees have often to be killed before the honey can be extracted, and then it is full of impurities; with movable come hives, the honey can be removed in its purity without harming the comb or the brood, and natural swarming can be controlled and the number of colonies of bees increased as the beekeeper wishes.¹¹⁹

Along the lines of the colonial logic, the new hive was equated with modernity, and mobility was equated with progress. The promotion of a different temporal standard through the use of movable hives, or the attempt to “expedite local peasants,” as one article called it, was well organized: “Last Friday the Mukhtars [appointed heads of Palestinian villages, t.n] of the Jerusalem district were gathered for a meeting with District Officer Nicola Saba. He *demande*d that they start using new methods in agriculture, and become interested in raising chickens, bees, etc. The government is willing to help the fellaheen [Palestinian peasants, t.n] in purchasing proper hives instead of the clay vessels.”¹²⁰ The contrast between the mobility of the new hive and the immovability of the old, in the eye of officials, mapped onto and naturalized the contrast between the European settlers and native Palestinians. An American report, sent by the

Palestine already in the 1930s, and also by the head of the Jewish agricultural Khadoorie School and beekeeper Natan Fiat. The Italian bee finally gained prominence in Israel in the 1950s.

¹¹⁸ Details about the funding for Livshutz training with the Baldensperger brothers in letter from the Agricultural Center of the Jewish Workers Organization to the Settlement Department, Re: The work done at farms and settlements, a work diary by Yehoshua Brandstetter, 24 April 1922, CZA/S15/20915.

¹¹⁹ Press notice by the government, 25 July 1933, CZA/S90/2121/1.

¹²⁰ *Davar*, “Expediting the Fellahs,” December 14, 1932. Italics are included for my personal emphasis. On the relation between governance and the standartization of time see Thompson, E. P. “Time, Work-Discipline, and Industrial Capitalism”, *Past & Present* 38 (1967): 56-97; On a discussion of the consolidation of colonial temporality see On Barak, *On Time: Technology and Temporality in Modern Egypt* (Berkeley: University of California Press, 2013).

consul in Jerusalem to the US State Department in 1921, noted, “an attempt was made to interest the natives in these modern methods but without any appreciable success...In later years, however, the Jewish immigrants to Palestine who came here to found agricultural colonies have taken up honey production on modern lines.”¹²¹

The successful creation of movement and flow of honey was not only a test for the tools of European modernity, however. According to this same report, the promotion of European beekeeping became a way to examine if Western technologies could accentuate the holiness of the land. “Whether or not Palestine may literally become a land flowing with milk and honey,” the report begins, “is now being tested in a practical and commercial manner” (see Figure 7).¹²² Official support for the production of honey in Palestine signified a great step in the making of a fertile land – one that went beyond the hands of local peoples, beyond the story of one missionary family who appreciated honeybees. The Baldenspergers continued to practice this new form of beekeeping in Palestine and elsewhere, and they participated in the global apiary community. However, with time and in comparison to earlier years, they gradually came to doubt and finally reject the connections between the biblical metaphor and its manifestations in Palestine.

¹²¹ “Palestine Honey Production,” a report sent by the consul in Jerusalem, Palestine, 2 November 1921. USNA/US State Department, Records of the Department of State Relating to the Internal Affairs of Turkey, 1910-1929, film reel 86.

¹²² Ibid.

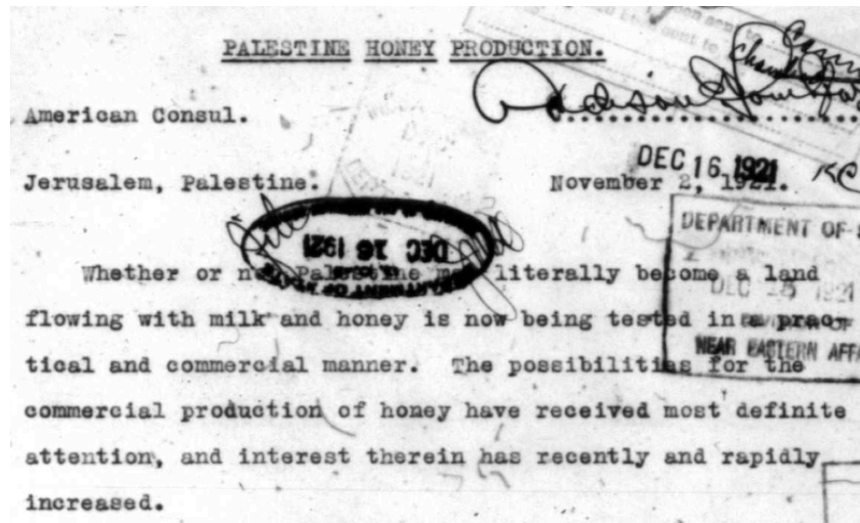


Figure 7: “Palestine Honey Production,” a report sent from the American consul in Jerusalem, Palestine, on 2 November 1921. Source: USNA/US State Department, Records of the Department of State Relating to the Internal Affairs of Turkey, 1910-1929, film reel 86. I thank Samuel Dolbee for finding this document.

For example, the earlier writings of the Baldenspergers insist on making connections between metaphor and reality in the land of Palestine: in an 1888 article, titled “Palestine: An Account of Bee-Keeping there by an Eye-Witness,” Jean claims that “honey was always abundant in Palestine.”¹²³ Along the years, however, the family expresses different opinions in regard to its abundance. In 1932, Louise claims that her brother Philip objected the idea that biblical Palestine was “flowing with honey:”

Surely we may still speak of Palestine as a land flowing with milk and honey, even if, as Mr. P. Baldensperger declares, 15 out of 19 references to honey in the Bible are more likely to mean dibs, grape treacle...He goes far as to say that in his opinion bees were not brought in till after the Captivity.¹²⁴

In an article published in 1931 in *Bee World*, Philip deepens his doubt in the biblical ancestry of bees and honey, citing that “honey was not known to early Hebrews, nor were

¹²³ Jean Baldensperger, “Palestine: An Account of Bee-Keeping there by an Eye-Witness,” *American Bee Journal* 24, 4 (1888): 59.

¹²⁴ Grace M. Crowfoot and Louise Baldensperger, *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine* (London: The Sheldon Press, 1932), 62.

bees.” As opposed to others that “accept...Canaan as a land flowing with milk and honey’ as literally correct,” he explains his change in approach at great length:

I must say also that from boyhood I was amongst the fervent Bible readers on Mount Zion, and still continue to be so, I admitted the “Land flowing with milk and honey” as Oriental mentality puts it, to be very nearly correct. This becomes very different when we look at it not poetically but practically and as a beekeeper; and I therefore studied every nook and crevice, every local name...and ask “could honey possibly flow down the face of rocks without calling forth the most tremendous robberies by bees ever heard of?” Bees are sometimes crevices, but I never succeeded in Palestine to bring them forth.¹²⁵

Throughout the years, therefore, the Baldenspergers expressed varied opinions in regards to the connection between the land of the Bible and modern Palestine. Their public opinions were probably appropriated according to their needs, the changes in their practice, as well as the audience they were writing for. Their publications, nevertheless, demonstrate a wide and consistent interest in these connections, and the kinds of efforts that were put into making a metaphor a reality. By the time the Baldenspergers – who had established such parallels by way of practice – abandoned this effort, other settlers adopted it.

Israel Robert Blum (~1898-1979), a Czech Jew who immigrated to Palestine in 1924 and became a successful apiarist and a leading figure in the Jewish beekeeper community, was investing efforts in establishing similar connections between beekeeping and the biblical land. Around the same time when Philip denied these relationships, Blum writes:

It is not a poetic phrase that our land was called in Biblical times “a land flowing with milk and honey.” My mentor and teacher – Prof. [Ludwig, t.n] Armbruster, the famous bee researcher from Germany – that visited the land of Israel a year ago, wrote about this matter an essay called “The Bible and The Bee.” He thinks that we should interpret the word “honey,” which appears so often

¹²⁵ Philip Baldensperger, “Bees in Palestine,” *Bee World* 12 (1931): 34-36.

in the Bible, as bee honey and not as date honey. According to him, beekeeping was very developed and widespread in this land already thousands of years ago.¹²⁶

Throughout his life, Blum continued to insist that biblical Hebrews were beekeepers. In 1951, for example, in *The Man and the Bee*, a guidebook that became a classic, he considers this belief a moral obligation:

I have no doubt that the Israelites made sweets from dates, figs and other fruits that contain sugars. And yet additionally they were occupied with beekeeping so they have real honey. As an expert that is dealing with bees for more than fifty years and that devotes his mind every day to his work, and who has learned that our fathers when they lived on their country and in their land had incomparable knowledge in comparison to other people in the region – I must say that every person who sees the aromatic and pure honey that our father collected from the honeycomb – and artificial product, is not respecting the memory of our fathers as should be...It is worth mentioning that those most educated in the occupation of bees among the gentiles...see the honey as real honey as it says in the Bible.¹²⁷

The emphasis on such connections, furthermore, was not only limited to Blum and his mentor, but also was widely accepted among the growing Jewish beekeeper community in Palestine. The hall of the 1939 Jewish Beekeepers Conference, for example, was decorated with “verses from the Bible, which detail the value of honey.”¹²⁸ Friedrich Simon Bodenheimer (1897-1959), a famous Jewish German entomologist and zoologist, and later historian of science, moreover, gave an opening lecture in a professional course for Jewish beekeepers in 1933, entitled “Beekeeping Among Jews in Biblical Times.”¹²⁹

¹²⁶ Israel Robert Blum, “Beekeeping and Its Needs,” *Davar*, December 14, 1932.

¹²⁷ Israel Robert Blum, *The Man and the Bee* (Tel Aviv: Tversky, 1951), 33.

¹²⁸ *Davar*, “Jewish Beekeepers Conference,” August 30, 1939.

¹²⁹ *Davar*, “Course for Beekeepers,” January 10, 1933: 4. Fritz Simon Bodenheimer conducted various studies on animal population, such as “Studies in Animal Populations II: Seasonal Population - Trends of Honey-Bee,” *The Quarterly Review of Biology* 12, 4 (1937): 406-425. He is also the author of *Animal and Man in Bible Lands* (Leiden: E. J. Brill, 1960). Solomon Leon Skoss (1884-1953), a Philadelphia-based Arabist, devoted to Jewish-Arabic studies, was in his early years an enthusiastic beekeeper and traveled to Palestine in 1925. Like Bodenheimer, he published studies relating to the behavior of bees and the practice

Professional conferences became recurrent sites of debate over the probability of the existence of honey in biblical times. These debates were crucial, as the proof for the existence of beekeeping practices was considered a justification for contemporary Jewish beekeeping and, more broadly, for the growing Jewish settlement in Palestine. In 1956, after returning from a meeting of the International Beekeepers Association, Blum offered his own insight into the Baldensperger rejection of the parallels between honeybees and the Holy Land:

This is the first time that a Jewish Israeli actively participates in the congress. In previous meetings there was always the spokesman of the Holy Land, Mr. Philip Baldensperger, a son of a missionary family, who was born a hundred years ago on Mount Zion. Him and his four brothers were the first beekeepers in our renewed land...Mr. Baldensperger, that lived in Nice in recent years, was a respected figure among beekeepers around the world; There is no wonder, therefore, that he managed to promote the idea among them that in biblical time our fathers had no contact with bees. His remarks regarding our current ways of beekeeping [in Israel] were also very malicious. The basis of this perception he holds becomes clear if we remember that his brother Emile, that lived in Ajami [an Arab neighborhood] in Jaffa, was the father-in-law of Mr. Rock, who was the a member of the Supreme Muslim Council, of the Mufti Haj Amin al-Husseini.¹³⁰ Clearly, in my lecture I saw it as my primary duty to contradict Mr. Baldensperger's popular argument and reestablish the honor of our beekeeper-fathers as well as the beekeepers of our generation. Using many biblical phrases...accompanied by drawings, I proved that not only did our fathers keep bees, but also that they had a lot of professional knowledge in those days.¹³¹

Thus, Blum cited personal ties with Arab nationalists – seen as an evidence for a support for the Palestinian cause – as the reason behind the Baldensperger rejection. According to Blum, it was now the duty of Jewish beekeepers to continue maintaining the “technology-biblical nexus.”

of beekeeping among ancient Hebrews. In Solomon Leon Skoss, *Portrait of a Jewish Scholar: Essays and Addresses* (New York: Block Publishing Company, 1957), 12-13, 137-148.

¹³⁰ The council was the highest body responsible for the Muslim community's affairs during the British Mandate in Palestine. Haj Amin al-Husseini (1897-1974) was the Mufti of Jerusalem during the British rule, a position that included responsibility over the religious Muslim sites within the city. Al-Husseini was an Arab nationalist and a leading figure in the resistance to the growing Jewish settlement and the Zionist movement.

¹³¹ Israel Robert Blum, “World Congress for Beekeepers,” *Davar*, September 25, 1956: 4.

Conclusion

The story of the Baldensperger family at the turn of the twentieth century is an example of the ways in which a biblical notion became an inspirational and legitimizing force for environmental, economic, and, ultimately, political change. Here, we see how an adoption of a new technology resulted in an intensifying production of honey and a change in domination over the product of the land. An increase in honey production must also raise questions about consumption: How did honey consumption change as a result of increasing abundance? How did different people understand and use this bounty? While these questions remain unanswered, it may be argued that the utility of honey was secondary to its quantity, as the honey practices of early European settlers, Ottoman rule, and the British government was primarily tailored to increase production, rather than ensure consumption.

Although the new practice of beekeeping was not unique to Europeans in Palestine, the combination of the technology and the metaphor became a crucial component in justifying intensified European settlement in Palestine. From the turn of the twentieth century, this unique agricultural pattern of settlement in Palestine resulted in complete transformation of the land and its creatures. Since a Western technology had seemingly succeeded in creating even greater “flow of honey” than the biblical one, European interventions were encouraged and felt justified. In Philip’s own words, the Westerners had succeeded in accelerating movement toward *The Immovable East*.

The creation of biblical plenty went beyond honey. The history of milk production is a crucial part of the story (see Chapter 2, 3, 4). Important too is the

difference between milk and honey production – while the milk industry is considered a story of great success, beekeepers in Israel increasingly lament the deterioration of the local honey industry. They argue that the reduction in production of honey is related to greater changes in the Israeli agricultural scheme. Just as the success of honey production was intertwined with the expansion of the citrus industry in the early twentieth century, the weakening citrus industry and the gradual reduction of orange groves beginning in mid century (vis-à-vis an expansion in the planting of forest, especially pine trees, see Chapter 4), caused a decrease in the availability of nectar and hence a dramatic fallout in the production of honey.¹³² Combined with expedited urbanization and recent anxiety for the Colony Collapse Disorder, a sense of crisis in the beekeeping industry has emerged.¹³³ Another aspect of analysis is the preference of honey and milk production over industries that were largely established and profitable in Palestine, yet lacked sufficient cultural currency. While particular industries were aggrandized as a result of European intervention, various salient industries weakened or diminished, as in the case of sesame seed and sesame oil production.¹³⁴

Furthermore, the debate regarding the existence of biblical bees and their honey continues to occupy researchers today. Excavations in Tel Rehov from 2005-2007, for example, point to the existence of beekeeping in ancient Israel. An article in *Science*

¹³² See Tim Butcher, “Israel No Longer Land of Milk and Honey after 60% Fall in Honey Harvest,” *Telegraph*, September 16, 2008, <http://www.telegraph.co.uk/earth/earthnews/3351841/Israel-no-longer-Land-of-Milk-and-Honey-after-60-fall-in-honey-harvest.html> (accessed 2 May 2010).

¹³³ This phenomenon, of the abrupt disappearance of entire bee colonies, has received growing scientific public attention, especially in North America and Europe. Interestingly enough, the scientific community often associated this phenomenon with “the Israeli acute paralysis virus (IAPV),” which was named after the nationality of the first researcher who described it. See D. L. Cox-Foster et al., “A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder,” *Science* 318 (2007): 283.

¹³⁴ Marwan R. Buheiry, “The Agricultural Exports of Southern Palestine, 1885-1914,” *Journal of Palestine Studies* 10, 4 (1981): 67

News noted in 2008 that “the Bible refers to ancient Israel as the ‘land flowing with milk and honey,’ so it’s fitting that one of its towns milked honey for all it was worth. Scientists have unearthed the remains of a beekeeping operation at a nearly 3,000-year-old Israeli site, dating to the time of King David and King Solomon.”¹³⁵ “It is a land of honey,” argued the directors of the dig, Amihai Mazar and Nava Panitz-Cohen, and explained how sophisticated scientific methods helped establish such fact:

The discovery of the beehives at Tel Rehov is unique since it appears that no apiaries have ever been discovered in the archaeology of the Old World. It comprises an innovation in the archaeological study of ancient economies in Israel and its neighbors during the period of the Israelite Monarchy. Based on the ceramic evidence and C14 dates, the apiary at Tel Rehov was in use during the latter part of the United Monarchy and/or during the initial period of the Northern Kingdom of Israel, prior to the Omride Dynasty.¹³⁶

The experts then explain the significance of their findings to the understanding of the Bible and ancient Hebrews:

The term “honey” appears fifty-five times in the Bible, sixteen of which as part of the metaphor of Israel as “the land of milk and honey.” This honey has been always understood as having been produced from fruits, such as dates and figs, with bees’ honey mentioned explicitly only twice, both times in relation to wild bees... However, careful reading of biblical metaphors mentioning honey led Forti (2006) to suggest that they refer mostly to bee’s honey, through in her view, due to the lack of agriculture in the Bible, the references are to honey collected in nature. Indeed, in no case does the Bible mention bee rearing as a productive industry. The discovery of the beehives at Tel Rehov shows that this was a well developed economic branch during the First Temple period. We can now assume that at least some of the notations of honey in the Bible pertain to bees’ honey.¹³⁷

Finally, the efforts to transform Palestine into that of a once plentiful land did not only generate altering feelings and memories of triumph and disappointment among European settlers. These dramatic environmental and political processes also constituted

¹³⁵ Bruce Bower, “Excavators Find Honey of a Discovery: Israeli Site Yields Oldest Known Example of Beekeeping,” *Science News*, September 27, 2008: 11.

¹³⁶ Amihai Mazar and Nava Panitz-Cohen, “It Is the Land of Honey: Beekeeping at Tel Rehov,” *Near Eastern Archeology* 70, 4 (2007): 218.

¹³⁷ Amihai Mazar and Nava Panitz-Cohen, “It Is the Land of Honey: Beekeeping at Tel Rehov,” *Near Eastern Archeology* 70, 4 (2007): 213-214.

completely new perceptions of a plentiful Palestine. In exile since 1948, Palestinians from Artas now remember it as a plentiful garden; they understand this central West Bank village as a place that – during the twentieth century – has declined and was ruined. Similar to the Judeo-Christian narrative, and as a result of the success of Europeans settlement and its destructive consequences, new notions of plentiful pasts germinate.¹³⁸

¹³⁸ Falestin Naili, “Memories of Home and Stories of Displacement: The Women of Artas and the ‘Peasant Past’,” *Journal of Palestine Studies* 38, 4 (2009): 63-74. Similar ideas about memories of plenty are portrayed in Raja Shehadeh, *Palestinian Walks : Notes on a Vanishing Landscape* (London: Profile, 2007).

CHAPTER 2:

Holy Cow! Milk Yield, Fertility, and the Burdens of the “New Jewess”

“The Israeli cow reigns supreme. She has the largest milk yield in the world, on average 10,500 liters a year, compared to 9,500 liters per cow in the United States and some 7,500 liters per cow in Europe.”¹³⁹

*

“IVF [In Vitro Fertilization] soon became a field of internationally acclaimed Israeli excellence and a source of national pride... and Israeli women are the world’s most intensive consumers of the technology.”¹⁴⁰

The Christians and Jews who traveled or immigrated to Palestine considered themselves to be modern and scientific; they also thought of Palestine as the land of the Bible and expected it would be fertile and plentiful. Thus, when their expectations were unfulfilled, they chose science and technology as appropriate tools for redeeming the land. In this process of creating plenty, settlers concentrated their efforts into milk production. Since the early years of European settlement in Palestine, researchers in dairy farming have taken pride in their milking technologies, their record highs in increased milk yield,¹⁴¹ and more recently, the naming of their Israeli cow as a milk-yield “world champion” (producing almost 12,000 kg per year).¹⁴² From economic, political, ecological, and

¹³⁹ Yaron Dror, “Udderly marvelous Gina: Israel's most productive cow”, *Haaretz*, 2 June 2004.

¹⁴⁰ Daphna Birenboim-Carmeli, “Contested Surrogacy and the Gender Order in Israel,” in *Assisting Reproduction, Testing Genes: Global Encounters with New Biotechnologies*, ed. Daphna Birenboim-Carmeli and Marcia Inhorn (New York; Oxford: Berghahn, 2009), 192-193.

¹⁴¹ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: The Israeli Breeders Association, 1983), 107-129.

¹⁴² “Facts About the Dairy Industry in Israel,” *Israel Dairy Board*,

cultural standpoints, the dairy industry in Palestine and Israel has been a remarkable phenomenon; however, it has yet to receive critical scholarly attention.¹⁴³

Milk has recently emerged as a good liquid to think with: various scholars chose milk, cows, and the dairy industry as their focus, and have used them as tools to understand processes like nationalism, industrialization, urbanization, environmental and economic changes, and shifting cultural practices. Most work published thus far has focused on the United States: Melanie DuPuis's *Nature's Perfect Food: How Milk Became America's Drink* (2002) is perhaps the earliest example of this trend, followed by Kirk Kardeshian's *Milk Money: Cash, Cows, and the Death of the American Dairy Farm* (2012) and Kendra Smith-Howard's *Pure and Modern Milk: An Environmental History Since 1900* (2014). Deborah Valenze in *Milk: A Local and Global History* (2011) and Sandra Aguilar-Rodríguez in "Nutrition and Modernity: Milk Consumption in the 1940s and 1950s Mexico" (2011) also use milk as a lens on modernization, Western imperialism, and globalization.¹⁴⁴

<http://www.israeldairy.com/info/about/facts.htm> (accessed 10 January 2011); Israel Moshkovitz, "World Record for the Israeli Cow: 11,400 Litter Per Year," *Yedi'ot Achronot, Economy Supplement*, 29 May 2014: 10. I thank Noga Rosenfarb for this article.

¹⁴³ Existing work deals with the role of dairy in the design of an economic model for Jewish agricultural settlements in the late Ottoman and British rules in Palestine. See Yaacov Shavit and Dan Gil'adi, "The Cowshed and the Agricultural Economy in Eretz Israel: The Place and Role of the Dairy Farming in the Jewish Settlement Program in Eretz Israel during the Mandate Period," *Catedra* 18 (1981): 178-193, and Ayala Plezental, "'Milky Way': The Dairy Industry in Eretz Israel in the 1930s as a Mirror for German-Jewish Relations," in *Germany and Eretz Israel: Cultural Meeting Point*, ed. Moshe Zimmerman, (Jerusalem: Magnes-Hebrew University), 133-142. For studies on the development of the mixed-farming model in Palestine see Derek Penslar, *Zionism and Technocracy: The Engineering of Jewish Settlement in Palestine, 1870-1918* (Bloomington: Indiana University Press, 1991), and Hezi Ami'or, *The Roots and Design of the 'Mixed-Farming Economy' in Jewish Agricultural Settlement in Eretz Israel*, PhD Thesis (Hebrew University of Jerusalem, 2010).

¹⁴⁴ Melanie DuPuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York: New York University Press, 2002); Kirk Kardeshian, *Milk Money: Cash, Cows, and the Death of the American Dairy Farm* (University of New Hampshire Press, 2012); Kendra Smith-Howard, *Pure and Modern Milk: An Environmental History Since 1900* (Oxford; New York: Oxford University Press, 2014); Deborah Valenze,

The study of cows and their relation to economic and social processes belongs to the tradition of historical studies of animals and the environment, a scholarship that has paid considerable attention to the relation between farming practices and socio-cultural orders. Prominent among these is Harriet Ritvo's *Animal Estate*, which demonstrates how the management of pedigree cows in Britain reflects changing social norms in nineteenth century Britain, and Virginia Anderson's *Creatures of Empire*, which examines the role of cows in European colonization of New England in the seventeenth century and how it came to be that colonial cows went wild.¹⁴⁵ Several studies also investigate changes in dairy cattle husbandry and breeding practices and examine the tension between aspiring for enhanced milk-yield and managing the technicalities of cattle reproduction.¹⁴⁶ A workshop titled "Between the Farm and the Clinic: Agriculture and Reproductive Technology in the Twentieth Century," held at Cambridge University in 2005, brought together eminent scholars of reproductive technologies, including Adele E. Clarke and Sarah Franklin; a collection of essays published through the conference deal with

Milk: A Local and Global History (New Haven; London: Yale University Press, 2011); Sandra Aguilar-Rodríguez, "Nutrition and Modernity: Milk Consumption in the 1940s and 1950s Mexico," *Radical History Review* 110 (2011): 36-58. Other works include Micah Aaron Rueber's 2010 PhD Thesis titled "Making Milking Modern: Agriculture Science and the American Dairy, 1890-1940," and Heather Paxson, *The Life of Cheese: Crafting Food and Value in America* (Berkeley; Los Angeles: University of California Press, 2013).

¹⁴⁵ Harriet Ritvo, *The Animal Estate: The English and Other Creatures in the Victorian Age* (Cambridge, Mass: Harvard University Press, 1987). See also Nicholas Russell, *Like Engend'ring Like: Heredity and Animal Breeding in Early Modern England* (Cambridge: Cambridge University Press, 1986), Harriet Ritvo, *Noble Cows and Hybrid Zebras: Essays on Animals and History* (Charlottesville: University of Virginia Press, 2010), and Rebecca J. H. Woods, *The Herds Shot Round the World: Native Breeds and the British Empire, 1800-1900*, PhD dissertation (Cambridge, Mass: MIT, 2013); Virginia D. Anderson, *Creatures of Empire: How Domestine Animals Transformed Early America* (Oxford; New York: Oxford University Press, 2004).

¹⁴⁶ See, for example, Barbara Orland, "Turbo-Cows: Producing a Competitive Animal in the Nineteenth and Early Twentieth Centuries," in *Industrializing Organisms: Introducing Evolutionary History*, ed. Susan R. Schrepfer and Philip Scranton, (New York; London: Routledge, 2003), 167-189, and Bert Theunissen, "Breeding for Nobility or for Production? Cultures of Dairy Cattle Breeding in the Netherlands, 1945-1995," *Isis* 103, 2 (2012): 278-309.

emerging reproductive knowledge of animals and humans, three of which focus primarily on cattle breeding and reproduction practices.¹⁴⁷ Finally, the connection between milk and the reproduction of cows and women was further emphasized by eco-feminist Greta Gaard, who called for the establishment of “feminist postcolonial milk studies” in an article published in 2013 in the *American Quarterly*.¹⁴⁸

This chapter explores the conditions that supported the emergence of the “Hebrew Cow” in Palestine from the 1920s through the 1940s: it details the process by which a particular kind of breed was developed in order to make the dairy industry the basis of the agricultural economy of Palestine and later the State of Israel, a process that relied on experimentation in breeding and feeding regimes, as well as the relatively early development of artificial insemination practices. A story of success in one sense, the development of a dairy industry is also a story of struggle and failure, as cows and their owners dealt with the environmental challenges of heat, sand, scarcity of water and grazing areas, and finally, infertility.

Like milk production, human reproduction has played a central and symbolic role in the creation of plenty in Palestine and Israel. Achievements in human fertility research have been celebrated since the early decades of the twentieth century and, in recent years,

¹⁴⁷ Sara Wilmot, “From ‘Public Service’ to Artificial Insemination: Animal Breeding Science and Reproductive Research in Early Twentieth-Century Britain,” *Stud. Hist. Phil. Bio. & Biomed. Sci.* 38 (2007): 411-441; Abigail Woods, “The Farm as a Clinic: Veterinary Expertise and the Transformation of Dairy Farming, 1930-1950,” *Stud. Hist. Phil. Bio. & Biomed. Sci.* 38 (2007): 462-487; Christina Grasseni, “Managing Cows: an Ethnography of Breeding Practices and Uses of Reproductive Technology in Contemporary Dairy Farming in Lombardy (Italy),” *Stud. Hist. Phil. Bio. & Biomed. Sci.* 38 (2007): 488-510.

¹⁴⁸ Greta Gaard, “Toward a Feminist Postcolonial Milk Studies,” *American Quarterly* 65, 3 (2013): 595-618. I thank Ilan Novik for this article.

Israeli women have become global leaders in the consumption of fertility treatments.¹⁴⁹

While much anthropological and sociological work discusses the acceptance and fascination of Israeli women with reproduction technologies, very little work explores its historical origins.¹⁵⁰ The final part of this chapter examines the focus on the fertility of the newly invented “Hebrew Cow,” the connections made between milk production and human reproduction, and the ways in which the fertility of bovines and humans alike convey special providence.

Terra Mullius

There were days when the immigrants were complaining that the land ‘flowing with milk and honey’ was only true in the Bible and not in reality. The guests at the hotels and the hospices would always hear the ‘traditional’ answer from their hosts: there is no milk and no butter in the country; and when they would return to their county and to their homeland they would tell about the poverty and crowdedness of the land of the fathers, about the curse that still lays on it and about bitter life etc., etc. That has changed in the past few years: dairies have been established in the country and throughout the year milkmen of OUR BROTHERS are supplying fresh milk and butter and cheese to their customers, and just as in the past consumers were complaining about the lack of milk – now the producers are complaining about the lack of market.¹⁵¹

While bees were common in Palestine, and their honey easily found in local markets at the turn of the century, cows – the main producers of the kind of milk familiar to Europeans – and their milk products were not as common, with cows used mainly as labor animals. Cow milk and the more prevalent goat milk were mostly limited to seasonal and local use. Furthermore, goats – the main local milk producers – and their milk came to be depicted very negatively by European settlers (see Chapter 4).¹⁵² For

¹⁴⁹ Susan Martha Kahn, *Reproducing Jews: A Cultural Account of Assisted Conception in Israel* (Durham; London: Duke University Press, 2000), 2-3; Kin, Gene, Community: *Reproductive Technologies Among Jewish Israelis*, ed. Daphna Birenboim-Carmeli and Yoram Carmeli (New York; Oxford: Berghahn Books, 2010), 17-21.

¹⁵⁰ See detailed bibliography in the Epilogue.

¹⁵¹ “Milk and its Outcomes,” *Hameshek Hahaklai* 3, 3 (1914).

¹⁵² For descriptions of settlers indicating the prevalence of fresh goat milk (and goats) and how hard it was

instance, although Europeans noted that they imagined cows and bees when they thought about “milk and honey,” they were particularly disappointed by the small amounts of cows and cow milk they found:

Cows have always been in disadvantage. In a county without grass, 'deep uddered kine'¹⁵³ are not even thinkable. The references to cattle in the Old Testament are concerned with ploughing, treading out the corn, wearing the yoke, with carrying of burdens, with calves that leap, bulls that gore, heifers that are sacrificed, oxen that are stalled, but even in the land that is said in some mysterious way to have 'flowed with milk,' nowhere with the friendly cow.¹⁵⁴

Chapter 1 documented the story of early “modern” beekeeping in Palestine, and how “holy bees” (as they were often called by the global beekeeping community) were easily recruited for the process of creating a land flowing with honey at the turn of the twentieth century. This chapter focuses on the already established German Templar community and the fast-growing Jewish settler community under British rule in Palestine (1917-1948), and examines the efforts that were put into making Palestine a land of plenty by producing much milk from many female cows. In addition to several champion cows, three male figures are the protagonists of the “Hebrew Cow” story. Yitzhak Elazari-Volcani (formally Wilkansky, 1880-1955) and Yehoshua Brandstetter (1891-

to find cow milk in the cities in early twentieth century Palestine, see Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, part 2* (Caesarea: Cattle Breeders Association in Israel, 1996), 79, 105, 107, and Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, part 3* (Caesarea: Cattle Breeders Association, 2002), 75. With the growing European settlement in Palestine, goats became a major threat to the project of afforestation, and the British and then Israeli government issued a series of laws limiting their movement and eating habits (see Chapter 4).

¹⁵³ This is a biblical phrase that refers to the breasts of cows.

¹⁵⁴ Ada Goodrich-Fereer, *Arabs in Tent & Town: An Intimate Account of the Family Life of the Arabs of Syria, Their Manner of Living in Desert & Town, Their Hospitality, Customs & Mental Attitude, with a Description of the Animals Birds, Flowers & Plants of Their Country* (New York: G. P. Putnam's Sons, 1924), 142; Moshe Palmon of the Breeders Association remembers noted: “We did not have cattle in this country. None.” in Moshe Palmon’s interview by Nir Mann, “Efraim Smaragd”, Tel-Aviv (27 May 2001). This understanding of the land as empty of cows fits the general colonial perspective of “Terra Nullius” and hence the title of this section. However, in most other cases, “Terra Nullius” did not fit the way European settlers viewed Palestine. For several reasons – among which is the need to find reasons for the failure of the crusades, as well as to choose to see Palestinians as the link to biblical Hebrews (see Chapter 3) – Europeans in Palestine did not tend to see the land as empty.

1975) both promoted the idea of the “Hebrew Cow” and its centrality to European settlement in British Palestine; Efraim Smaragd (1902-1976) promoted similar ideas with his designing of a milk-yield champion breed in the late British rule in Palestine and the early years of the State of Israel, despite environmental and economic pressures. Beyond a discussion about female cows and male designers, this chapter illustrates how, in the minds of settlers at large, dairy cows gradually occupied a central position in the efforts to change the land of Palestine and make it plentiful.¹⁵⁵

When the Cows Came Home

Milch cows fit well with European ideas about agricultural settlements.¹⁵⁶ Just as settlers from Europe brought cows to the Americas, settlers from Europe also brought cows to the Middle East.¹⁵⁷ However, the idea that Palestine was a unique place that should prove bountiful (again) added a crucial dimension in the move to make intensive use of the land and the efforts to create a significant dairy industry. The extent of these efforts becomes obvious in light of the harsh environmental conditions the settlers faced. The Palestinian landscape and climate at the turn of the twentieth century was very different from that in Europe, and thus, intensive cattle-raising in Palestine quickly

¹⁵⁵ Historian Derek Penslar shows how such figures were neither only policy-makers, nor experts, nor agriculturalists, but some combination of the three, in *Israel in History: The Jewish State in Comparative Perspective* (New York: Routledge, 2007), 154-159.

¹⁵⁶ It is important to note that various accounts talk about the importation of cows for slaughter during the British rule. While the raising of cows for meat has been enormously important in global imperialism, and the British Empire in particular, settlers (especially Jewish settlers) put very little emphasis on cow meat. This might be partially explained by the limited pasture area in Palestine. The majority of beef and mutton were imported and not raised in Palestine. The Beef Cattle Breeders Association, furthermore, was established as late as 1956, compared to the establishment of the Dairy Cattle Breeders Association in 1926.

¹⁵⁷ See Virginia D. Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (Oxford; New York: Oxford University Press, 2004).

became a struggle. Nevertheless, cattle husbandry and milk production became cardinal to European settlement in Palestine, particularly to the expanding Jewish settlement.

The first efforts to increase cow milk production in Palestine are usually attributed to the German “Templar” society who settled in Palestine in the second half of the nineteenth century in order to prepare the land for Jesus’ second coming. The settlements established by this independent group, the Pietistic outcasts of the Lutheran Church in the State of Wuerttemberg, were the first to survive among various failing projects in Palestine during that period, such as the agricultural farm in the village of Artas and the American Colony near Jaffa.¹⁵⁸ Beyond their efforts to better the land and their hold over it, the Templars also took part in the project of the scientific deciphering of Palestine.¹⁵⁹ Their farms, which depended on Arab labor, were based on the mixed-farming model they were familiar with in Germany, and they considered dairy cattle the supporting pillar of the farm – supplying foods for farmers and for sale, as well as manure for farm crops.¹⁶⁰ As part of their attempt to launch the dairy farming industry in Palestine, German practices included importing small number of European cattle (mainly bulls) to Palestine, as well as initiating crossbreeding with several kinds of local cows.¹⁶¹

¹⁵⁸ Paul Sauer, *The Holy Land Called: The Story of the the Temple Society* (Stuttgart: Konrad Theiss Verlag GmbH, 1985), 11, 18. For more information on the Templar settlement in Palestine see Alex Carmel, *The German Settlement in the Land of Israel in the Late Ottoman Period: It National, Local, and International Problems* (Haifa: Haifa University Press, 1970).

¹⁵⁹ For German Research Projects in Palestine see Haim Goren, *Go Research the Land: German Studies of the Land of Israel in the Nineteenth Century* (Jerusalem: Yad Ben-Zvi, 1999); for the British Palestine Exploration Fund see John Jams Moscrop, *Measuring Jerusalem: The Palestine Exploration Fun and British Interest in the Holy Land* (London; New York: Leicester University Press, 2000).

¹⁶⁰ Naftali Talmon, “The Agricultural Farm in the Templar Settlements and its Contribution for the Development of Agriculture in Eretz Israel,” *Catedra* 78 (1995): 69.

¹⁶¹ There are a few indications that mix-breeding of European and local breeds existed in other locations in late nineteenth century Palestine, such as in several monasteries in the Jerusalem area and in *Mikve-Israel*, the Jewish agricultural school founded 1870 that belonged to the Alliance Israélite Universelle and was

The success of the Templar agricultural settlements was important to many Europeans – both Christian and Jewish – as these settlements were perceived as settlement “laboratories” and spaces for experimentation regarding the potential for land revival in Palestine.¹⁶² Jewish settlers studied and adopted many of the German farming and settlement practices, and as these settlers’ attempts grew more successful, they began to raise dairy cattle in Jewish experimental stations and farms.¹⁶³

During the first decades of Christian and Jewish cattle husbandry, the number of cows managed, as well as the amount of milk produced, grew rapidly and dramatically.¹⁶⁴

largely funded by the French philanthropist Edmond James de Rothschild. In Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, part 1* (Caesarea: Cattle Breeders Association in Israel, 1992), 18, 98.

¹⁶² Haim Goren, *Go Research the Land: German Studies of the Land of Israel in the Nineteenth Century* (Jerusalem: Yad Ben-Zvi, 1999), 234-235; Haim Goren, *True Catholics and Good Germans: The Catholic Germans and the Land of Israel, 1838-1910* (Jerusalem: Magnes-Hebrew University, 2004), 55-57; Naftali Talmon, “The Agricultural Farm in the Templar Settlements and its Contribution for the Development of Agriculture in Eretz Israel,” *Catedra* 78 (1995): 65-81; Yossi Ben-Arzi, “Religious Ideology and Landscape Formations: the Case of the German Templars in Eretz-Israel,” in *Ideology and the Landscape in Historical Perspective*, ed. Alan R.H. Baker and Gideon Biger (Cambridge: Cambridge University Press, 2006).

¹⁶³ Various contemporary and historical works discuss the Jewish study and adoption of German Templar practices and the ongoing cooperation between these communities. For the connections between Templar dairy farming and Jewish settlement see Naftali Talmon, “Fritz Keller – Of the Pioneers of Modern Agriculture in Eretz Israel,” in *The Landscape of His Hometown: Studies in the Geography and History of Eretz Israel (Dedicated to Yehosuah Ben-Arieh)*, ed. Yossi Ben-Artzi, Israel Bartal and Elhana Riner, 333-351 (Jerusalem: Magnes-Hebrew University, 1999). See also Ayala Plezental, who discusses the cooperation in the dairy industry between Jewish settlers and German Templars throughout the 1930s, in spite of restrictions issued by the Jewish leadership following the rise of the Nazi rule in Germany and the growing propaganda for purchasing local Jewish-made products as part of the “Product of the Land” campaign in “Milky Way: The Dairy Industry in Eretz Israel in the 1930s as a Mirror for German-Jewish Relations,” in *Germany and Eretz Israel: Cultural Meeting Point*, ed. Moshe Zimmerman, 133-142 (Jerusalem: Magnes-Hebrew University). Furthermore, in 1911, Yitzhak Wilkansky (later Elazari-Volcani) wrote that “Wilhelma [a Templar settlement] should be a model for us” in Yitzhak Wilkansky to the Land of Israel Office, World Zionist Organization, 18 May 1911, DCBA/7/4/1, 4.

¹⁶⁴ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 76. Estimations of the numbers of cows vary, as cows were analyzed differently – differentiated at times between dairy and other cattle, between cows and bulls, and between cattle owned by Jewish settlers or others. Shmuel Avitzur uses the Ottoman and British censuses and estimates that there were 58,000 heads cattle in 1914 and 82,480 in 1922. According to Salo Jones and based on the earliest British census, there were overall 80,000 heads of cattle in 1921. According to E. Ray Casto, there were 160,000 in 1932. Smith and Gilbert record 160,000 native cattle and 14,000 dairy cattle in 1934. For the Jewish population, Avitzur documents 1,300 in 1900, 5,808 in 1922, 11,521 in 1927, 17,994 in 1937, and 30,836 in 1944.

But it was only in the 1930s that cows became really central to European settlement efforts. As the numbers of imported and bred cows increased and farmers moved from extensive to intensive use of the land, the new dairy industry came to center on cow milk. The 1920s and 1930s are particularly important to the creation of organized cattle management for the purpose of milk production and consequently included the establishment of several agricultural professional organizations and their journals.¹⁶⁵ Other new practices of this time involved controlled investigations in experimental stations and in some of the settlements; the documentation, collection and comparison of statistical data; and the employment of the first veterinary doctors. Jewish domination over the cow milk market became evident in the early 1930s, vis-à-vis shrinking Templar settlements in the face of amounting British-German tensions and growing friction between German and Jewish settlers. Indeed, the industry became one of the largest and most profitable agricultural industries – second only to the citrus industry, which

Pinthus notes: 6,300 in 1922, 18,000 in 1936, and 34,000 in 1948. Halperin: 36,043 in 1947, and 69,781 in 1953. In Shmuel Avitzur, *Changes in Eretz-Israel Agriculture, 1875-1975* (Tel-Aviv: Milo Ltd and Avshalom Institute, 1977), 209; Salo Jonas, "Cattle Raising in Palestine," *Agricultural History* 26, 3 (1952): 94; E. Ray Casto, "Economic Geography of Palestine," *Economic Geography* 13, 3 (1937): 250; J. M. Smith and S. J. Gibert, "Cattle Disease Occurring in Palestine and Segregation and Prevention Control of Bovine Contagious Abortion," *Journal of Comparative Pathology and Therapeutics* 47 (1934): 94-106; Moshe Yoel Pinthus, *History of Agricultural Research in Israel in the Pre-Statehood Era (1920-1949)* (Haifa: Itay Bahur, 2011), 329; Haim Halperin, *Changes in Jewish Agriculture* (Tel Aviv: Ayanot, 1954), 56.

¹⁶⁵ The Jewish Veterinary Services and Livestock Insurance (1920), the Jewish Cattle Breeders Association (1926), and the Central Cooperation for Agricultural Production in Palestine LTD "TNUVA" (1927) were all established in the 1920s and 1930s, focusing their work on dairy cattle and cow milk. See Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 1* (Caesarea: Cattle Breeders Association in Israel, 1992), 54, Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 2* (Caesarea: Cattle Breeders Association in Israel, 1996), 38, and Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 3* (Caesarea: Cattle Breeders Association, 2002), 5. For the importance of dairy cattle management to agricultural youth education in Palestine see Estie Yankelevitch, *Agricultural Education in Agricultural High Schools in Palestine, 1870-1948*, PhD Dissertation (University of Haifa, 2004).

produced the famous “Jaffa” oranges.¹⁶⁶ The earlier focus on selective breeding gave way to experimentation with artificial insemination, which received wide support in the 1940s.¹⁶⁷ Additionally, mechanization of milking and the growing sophistication of milking technologies emerged and expanded in these formative years, if not with some pushback from farmers.¹⁶⁸

Beyond the industrialization of milk production, and as opposed to other profitable agricultural industries like that of the citrus, the dairy industry grew exponentially in spite of rather low dairy product export and, in the eyes of the producers, low demand.¹⁶⁹ Furthermore, and until very recently, the breadth of the dairy industry was significantly greater in Israel than in neighboring countries.¹⁷⁰ From a purely ecological point of view, the growth of milk production in British Palestine and Israel has

¹⁶⁶ See FAO, “Food and Agricultural Commodity Production,” <http://faostat.fao.org/site/339/default.aspx> (accessed 7 May 2010).

¹⁶⁷ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 107-120.

¹⁶⁸ According to Shlomo Dori, a leading figure in the dairy farmer community, Jewish settlers tried and ultimately failed to use milking machines in 1935, as the machines caused too many problems and “reduced the intimacy in the relationship between the cow and the milking person.” However, the use of machines for milking was picked up again in the mid 1940s and became prevalent in 1947. In Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, part 2* (Caesarea: Cattle Breeders Association in Israel, 1996), 59.

¹⁶⁹ People in Palestine were used to drinking goat milk. The dramatic growth of bovine milk production by both Templar and Jewish settlers resulted in competition over the limited milk markets in the cities. “It was hard for us to get used to cow milk [as opposed to goat milk, t.n], which only became a staple in the 1920s” remembers Dr. A. Shoshani, in Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 1* (Caesarea: Cattle Breeders Association in Israel, 1992), 17-18. Similarly, the people of Kibbutz Degania recounted having problems selling their cow milk in the market of Tiberias. Upon his arrival to the city, Zvi Tamari of Degania “did not manage to find anyone that would buy the milk, because the women of Tiberias were used to go out to the street and buy milk from an Arab, who would milk his goat in their presence.” Ibid, 22. The dairy farmers of Kibbutz Yifat complained about the same problem, describing a the lack of market for their milk due to “the competition with the Arab milk.” In Yosio Shemesh, “About the Cowshed,” MA/Journal Collection/*In Mizra I* (1937), 8.

¹⁷⁰ Cow milk was the 6th biggest agricultural commodity in Syria, the 9th in Egypt, and the 19th in Jordan in 1961. In 2007, cows in Israel produced 1.185 million liters of milk, with an estimated profit of USD \$3.13 million, making this commodity almost two times greater than that of potatoes, the runner-up. Such yield also made the dairy industry almost three times more profitable than the runner-up tomato industry. See FAO, “Food and Agricultural Commodity Production,” <http://faostat.fao.org/site/339/default.aspx> (accessed 7 May 2010).

been remarkable. From the early days, dairy farmers and researchers complained about the problems created with intensive cattle management in the Palestinian environment. However, these farmers persisted in their efforts to increase milk yield, despite battling intense Middle East heat and its effect on bovine production and fertility.¹⁷¹

Milk and dairy have also occupied a central cultural role for Jews in Palestine and the emerging Israeli society. Most Israeli Jews enjoy dairy, consuming a large variety of soft cheeses and often celebrating the nutritious and national value of milk.¹⁷² Somewhat similar to other national programs, the growth of the dairy industry might even be viewed as a symbol for the success of the Zionist project.¹⁷³ The celebrations of *Shavu'ot*, the

¹⁷¹ Over the years, professionalization of cattle husbandry and the efforts to increase milk production have resulted in a wealth of research regarding the relation between the milk production and the environment of Palestine and Israel. See, for example, Yeshayahu Folman et al., "Milk Yield and Fertility of High-Yielding Dairy Cows in a Sub-Tropical Climate During Summer and Winter," *Journal of Dairy Research* 46, 3 (1979): 411-425; M Rosenberg, Y Folman, Z Herz, I Flamenbaum, A Berman and M Kaim, "Effect of Climatic Conditions on Peripheral Concentrations of LH, Progesterone and Oestradiol-17b in High Milk-Yielding Cows," *Journal of Reproduction and Fertility* 66, 1 (1982): 139-146; D. Wolfenson, et al., "Effect of Heat Stress on Follicular Development During the Estrous Cycle in Lactating Dairy Cattle," *Biology of Reproduction* 52, 5 (1995): 1106-1113; Advanced Cow Cooling Systems Co. and Hachaklait Veterinart Services LTD, "Management of Heat Stress to Improve Fertility in Dairy Cows in Israel," *Journal of Reproduction and Development* 56 (2010): 36-51.

¹⁷² *Tnuva*, the Central Cooperation for Agricultural Production in Palestine LTD (est.1926), became an important player in the "product of the land" project (see page 92) and in the promotion and sale of bovine milk and dairy products in particular. In 1938, in conjunction with the Natan Strauss Health House in Jerusalem and bacteriologist Israel Kilgler (see page 101), *Tnuva* started the "A Glass of Milk a Day" project. The supply of a glass of milk to schoolchildren (and for a while to factory workers) was based on a British model. See Nahum Verlinsky, *Debating Production/Belivey HaTnuva* (Tel Aviv: Tnuva Center, 1973), 35-37. Dairy products have become very important to Israelis. Soft cheeses, such as cottage cheese and another cheese known as "white cheese," are considered basic food staples and are found in most homes at all times. In recent years, *Tnuva*, now a private company, has used the centrality of milk symbolism to Israeli society to launch a campaign that equates its dairy products with "home." For a long while, people exiting Israel's national airport would witness an enormous *Tnuva's* cottage cheese "Welcome Home" sign. The privatization of *Tnuva*, and the sale of its stocks to foreign companies in 2006, resulted in an increase in the prices of dairy products. This rise in the cost of dairy products caused much rage in Israel, sparking the Israeli summer 2011 "social revolution," a series of demonstrations and acts of resistance to the government and its economic policies. In their early days, these acts of resistance were commonly called "The Cottage Cheese Revolution."

¹⁷³ One example of the equating of dairy with Zionist movements is the Arab phrase *Arab el-Shamenet*, which non-Israeli Palestinians commonly use derogatively to refer to Israeli Palestinians and critique their agreement to live under Israeli rule. *Arab el-Shamenet* means "Cream Arabs" and refers to the common

Israeli harvest holiday, are one good example. This holiday is dedicated to the land but specifically centers on milk and dairy-based cuisine, accompanied by white clothing. Interestingly, several of the communal settlements have even celebrated the Passover holiday inside the cowshed (see Figure 1), often the first building constructed by these communities.¹⁷⁴



Figure 1: Poster made for the celebration of Passover in the cowshed of Kibbutz Mizra (1947) depicting a vision for the ideal socialist life in plentiful Palestine. It reads: “Our heads will be filled and filled with dew. The blessing of seed will not betray.” The word ‘seed’ in Hebrew also means sperm, thereby the sentence might also be read as “the blessing of the sperm will not betray.” Source: *Toshek: Avraham Amarant* (Tel-Aviv: Sifriyat Poalim, 1993).¹⁷⁵

consumption of sour cream among Palestinian Israelis, a dairy product that is not traditionally Palestinian and holds a Hebrew name. Non-Israeli Palestinians see the common consumption of Israeli sour cream among Palestinian Israelis as a symbol for the support of the Zionist economy and agenda, and they hint to their privileged position. On the ‘move to milk’ in early twentieth century Britain and its national significance see Sara Wilmot, “From ‘Public Service’ to Artificial Insemination: Animal Breeding Science and Reproductive Research in Early Twentieth-Century Britain,” *Studies of History, Philosophy, and Biology & Biomedical Sciences* 38 (2007): 413. For the importance of milk for Mexican nationalism see Sandra Aguilar-Rodríguez, “Nutrition and Modernity: Milk Consumption in the 1940s and 1950s Mexico,” *Radical History Review* 110 (2011): 36-58.

¹⁷⁴ One example is Kiryat Anavim (est. 1920), an early Jewish communal agricultural settlement. Its cowshed, the first building constructed in Kiryat Anavim, had a Star of David on the entrance keystone. In this sense, Kiryat Anavim constructed a Jewish cowshed.

¹⁷⁵ As many scholars have demonstrated, socialist thought and Eastern European agrarian culture enormously affected Jewish settlement patterns and agricultural practices in Palestine. I seek instead to identify the ideas and practices that emerged within the process of settlement. Others have done the same. In his study of the labor market in late Ottoman Palestine, for example, sociologist Gershon Shafir shows that particular conditions in Palestine, not imported ideologies, gave rise to collective forms of life among Jewish settlers. In *Land, Labor and the Origins of the Israeli-Palestinian Conflict, 1882-1914* (Cambridge: Cambridge University Press, 1989).

“This Little Land Holds the Power to Support a Million Cows”: Visions of Plenty

The growth of milk production and the success of a Jewish dominated dairy industry are much related to the ideas and work of a particular agronomist, botanist, and writer - Yitzhak Elazari-Volcani. This Lithuanian Jewish settler immigrated to British Palestine in 1908, established several (and some of the first) agricultural experimental stations, and later founded an institute for agricultural research, which remains the central institute for agricultural research to this very day and is now named in his name, *The Volcani Institute*. Elazari-Volcani was a prominent figure in the design of the agricultural-economic approach (the “mixed farming model”) and the Jewish semi-communal agricultural settlements (the “Moshav Ovdim”), and in the promotion of milk production as early as the 1910s.¹⁷⁶ In particular, this “mentor for the settlement of the people on their land”¹⁷⁷ or “the architect of the settlement,”¹⁷⁸ was advocating for a shift in agricultural practices in Palestine. He insisted, as was the title of one of his 1928 publications, to see *The Dairy Industry as the Basis of Colonisation in Palestine* (see Figure 2). Through the writing of and about Elazari-Volcani, it is easy to draw parallels between the settlers’ imagination of the biblical landscape, scientific agriculture, and production of milk in early twentieth century Palestine.

¹⁷⁶ For an elaborate analysis of Elazari-Volcani’s part in the development of the mixed-farming model in Palestine see Hezi Ami’or, *The Roots and Design of the 'Mixed-Farming Economy' in Jewish Agricultural Settlement in Eretz Israel*, PhD Thesis (Hebrew University of Jerusalem, 2010).

¹⁷⁷ Written on his tomb, which is located in the cemetery of Nahalal, the first semi-communal settlement (“Moshav”).

¹⁷⁸ Israel Reichert, “To Yzhak Elazari-Volcani on his 70th Birthday: The Architect of the Settlement and Labor Zionism,” *Davar*, 3 February 1950.

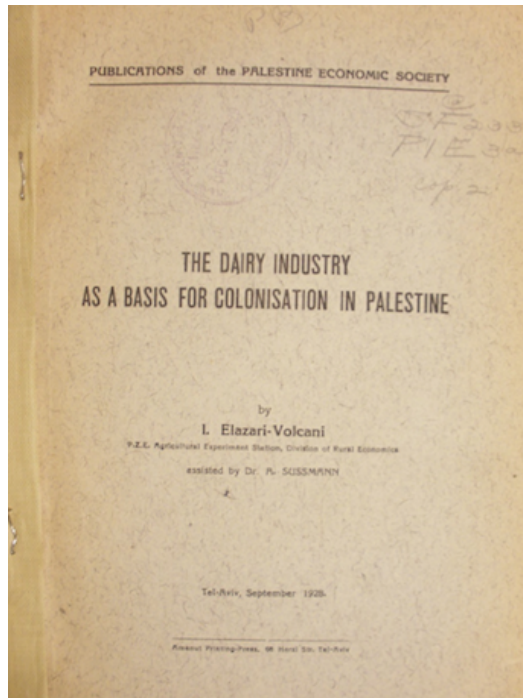


Figure 2: Cover of Itzhak Elazari-Volcani's *The Dairy Industry as the Basis for Colonisation in Palestine* (Tel-Aviv: Palestine Economic Society, 1928).

Elazari-Volcani was among the first generation of theorists and public figures who contributed to the economic and agricultural dominance of Jewish settlers in early twentieth century Palestine. He was also a prolific essayist, and he published under the pseudonyms of A. Tsioni (literally “A. Zionist”) and Ben-Abuya (the heretic Tanna of the Talmud).¹⁷⁹ Throughout the years, Elazari-Volcani explained his vision for the development of the agricultural economy in Palestine; and, among Zionist thinkers of the period who debated the nature of the Jewish settlement in Palestine, Elazari-Volcani was considered *the* rational man. As opposed to the “dreamers,” or those who just wanted to

¹⁷⁹ The choice of pseudonyms hints to Elazari-Volcani's politico-religious agenda. The use of Ben-Abuya, the Talmudic “other” known for his heresy, probably signified Elazari-Volcani's desertion of Jewish faith and Jewish life in Europe for the sake of living a secular life in Palestine. The presentation of this contrast is fitting with a Zionist agenda, which altogether considered itself a transformative secular movement. His support for the Zionist idea is also implied by his other pseudonym, “A. Zionist.” I thank Dan Tamir for his help in deciphering these pseudonyms.

reconnect with nature, noted one scientist, he was “carrying the flag of the rules of economics, his whole world view is rationalistic-materialistic. He denies that the spirit has the power to influence life.”¹⁸⁰ It is precisely because of this reputation that an analysis of his writing is illuminating. His various publications show that he considered the land of Palestine to have special qualities that had, nevertheless, been suppressed, and he regarded modern science as a tool to revealing them. Elazari-Volcani’s publications also explain why he thought milk should become the center of the agricultural economy of Palestine and the justifications he found for the centrality of raising cattle there.

In his writings, Elazari-Volcani described the land of Palestine as European settlers from the late nineteenth century commonly did, writing of a land that possessed special powers but currently seemed barren and neglected. In his (most influential) 1918 book *On the Road*, he declared that “the land becomes ours to hold has been depleted for hundreds of years.”¹⁸¹ Similarly, in *The Design of the Agriculture of the Land (of Israel)* from 1937 he wrote “there are few lands where the gap between the possibilities and actuality is so great as in the land of Israel. Enormous are the powers that are hidden within the land, and are currently narrowed to the surface of the soil.”¹⁸² As he continued in his book, Elazari-Volcani explained his vision for the future of the land; specifically, he discussed the depiction of this future in the Bible, explained the manner in which this

¹⁸⁰ Israel Reichert, “Yitzhak Vilcansky - for his 50th birthday,” *Davar*, 2 February 1931: 2. Boaz Neuman discusses the element of desire in the lives of Jewish settlers in the early twentieth century and how these settlers were influenced by European pastoral ideals. He discusses the writings of A. D. Gordon, who Jewish settlers considered a mentor. Elazari-Volcani was known for rejecting Gordon’s ideas. See Boaz Neumann, *Land and Desire in Early Zionism* (Tel Aviv: Am Oved Publishers, 2009).

¹⁸¹ Yitzhak Elazari-Volcani, *On the Road* (Jaffa: Hapo'el Hatza'ir, 1918).

¹⁸² Yitzhak Elazari-Volcani, *The Design of the Agriculture in the Land (of Israel)* (Rehovot Experimental Station: The Jewish Agency, 1937), 3-5.

vision could become a reality, and rationalized who was equipped to hear such secrets of the land:

The view of the land at the end of days is set in the visions of the prophets with lines and sketches that will not be erased with changes of generations and the passing of times. “The ploughman shall overtake the reaper, and the treader of grapes him that sows seed: and the mountains shall drop sweetness, and every hill shall be tilled.”¹⁸³ This is the vision of population density and the continuity of endless crops, with no stop. The prophet of population density was “the shepherd, and the one taking care of sycamore-fig trees”¹⁸⁴ - an expert in agriculture. His vision shall become a reality, not with magic but with course of nature. The wisdom of man, the power of his vigor, the fire of his belief, the persistence of his love, the wealth of his strength and fortune - these are the ones that will change the face of the earth and will transform the desert into a garden of beauty. Even those who know the secret of the land, and ... its spirit, are surprised from time to time when its secrets are revealed to them during work and research.¹⁸⁵

The one capable of enabling bounty, and therefore, redemption, in Palestine is none other than the scientist, the expert in modern agriculture. With the knowledge of scientific agriculture, Elazari-Volcani argued, the biblical vision of a land of plenty could become a reality.

The practice of making this biblical vision a reality – to literally create a “land flowing with milk” – Elazari-Volcani detailed, was to increase the number of cows:

“The land flowing with milk and honey” might seem to many an exaggerated phrase, if because the people of the east exaggerate or because of the minimal achievement of those lost in the desert. But the prophesy of the day will become the grey reality of tomorrow. This little land holds the power to support a million cows instead of the sixty thousand that it does today...and what science will achieve with the way of research in tens of years, the way of tradition did not reach in hundreds of years.¹⁸⁶

¹⁸³ Quote from the book of Amos 9.13, which describes a vision of plenty. Erased is “Behold the days come, says the LORD.”

¹⁸⁴ This is a phrase from the book of Amos 7.14, meaning the one that will make the change happen.

¹⁸⁵ Yitzhak Elazari-Volcani, *The Design of the Agriculture in the Land (of Israel)* (Rehovot Experimental Station: The Jewish Agency, 1937), 5.

¹⁸⁶ Ibid. The use of the number 60,000 cows is peculiar, as it does not fit any other estimates (see note no. 164), of either the number of heads of cattle among the general population or in Jewish farms. Using various other estimates, I assume that by using this number he refers to the population of female cows (rather than all cattle) in Palestine as a whole.

He went to great lengths to show that the scientific solutions taught by experts were crucial. But this did not mean that science alone was sufficient. Prior to this 1937 publication, Elazari-Volcani had long warned about the dangers of modern technology and mechanization.¹⁸⁷ In *On the Road*, for example, published in 1918, he highlighted how “European machines” alone were not the solution to redeeming the land, just as the fellah’s (the Arab peasant’s) way of working the land was not good enough. He argued instead that the combination – of working the land of Palestine with an appropriate application of scientific knowledge – would bring redemption.¹⁸⁸

In his 1912 essay *On the State of Farming*, Elazari-Volcani had already analyzed the problems with Jewish settlements and the ways in which the raising of cattle would solve these problems. Raising cattle, he argued, would be “the pillar of village economy,” since the cattle “maintain[ed] the balance between the materials...that are extracted from the earth year by year by crops, and are returned to it by droppings.” Unfortunately, Elazari-Volcani also argued that cattle-raising, although so common in biblical representations and “the crowning glory of farming,” was “completely absent in our

¹⁸⁷ Historian Derek J. Penslar argues that Wilkansly’s writing is “steeped in an odd brew of anti-industrialism and technophilia,” in Derek Penslar, *Israel in History: The Jewish State in Comparative Perspective* (New York: Routledge, 2007), 157-158.

¹⁸⁸ Elazari-Volcani was not alone. Accounts demonstrate that other settlers were hesitant to use new technologies in their farms, as the use of new machines was seen as a threat to the intimate familiarity with the land. The members of Kibbutz Yifat, for example, in a series of articles titled “On Beast and Tractor” debated the utility of mechanization in the late 1930s. One settler voiced his concern regarding the distance drawn between settlers and nature and called to the continued use of draft animals. Another noted in contrast that agriculture had nothing to do with nature, and that agriculture was a bread factory; in this sense, this settler whose approach became the dominant one argued that there was no need for romantization apart from the romantization of the machine. In “On Beast and Tractor,” *MA/Journal Clection/In Mizra 1* (1937): 2-3, and “More About the Questions of the Beast and the Tractor,” *MA/Journal Clection/In Mizra 2* (1937): 11. The understanding of farming as factory work, rather than work in proximity to nature, became prevalent in various other contexts and is reminiscent of Deborah Firtzgerald’s work on the industrialization of agriculture in America. See Deborah Firtzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (New Haven: Yale University Press, 2003).

peasants' economy."¹⁸⁹ Thus, Elazari-Volcani suggested that the creation of this proto-ecological balance through the raising of cattle would require an entire re-hauling of the agricultural system. Ultimately, this dairy cattle based agriculture would enable "the revival of a dying people."¹⁹⁰

Thus, Elazari-Volcani was advocating for this change in the agricultural economy of Palestine as a means to create a biblical vision of the land. After much debate about the model of agricultural settlement throughout the 1920s, the ideas of Elazari-Volcani and his circle had a critical influence on the shaping of this economy.¹⁹¹ Some settlers argued that the combination of religion and science in Elazari-Volcani's theories was what made their application so successful.¹⁹² Most, however, considered the focus on dairy farming as the basis of Jewish settlement in Palestine to be 'rational' and independent from religious or romantic ideals. Agricultural researcher Israel Reichert wrote in 1931:

[From] the fear of the penetration of the sacred into the profane, and the matters of the spirit to matters of economics, a distance is set [by Elazari-Volcani] from both theology and sociology. He was never tired of telling our dreamers that "the cows must produce much milk and the chickens many eggs"...From there came the first settlers...and from there came the first pedigreed heifers -

¹⁸⁹ Yitzhak Elazari-Volcani, "On the State of Farming," *Hapoel Hatzair*, 11 Febuary 1912.

¹⁹⁰ Ibid, 8. Elazari-Volcani clearly refers here to the Jewish people, connecting to the common idea that the Jewish people will be redeemed through working the land. The broader scope of his work demonstrates that he thought that a change in the agricultural economy in Palestine would be beneficial to both Jews and Arabs who lived and worked the land. See, for example, *The Fella's Farm* (The Jewish Agency for Palestine, Institute of Agriculture and Natural History, Agricultural Experiment Station, 1930), which is Elazari-Volcani's attempt to quantify traditional agricultural practices and to analyze the benefits of introducing mixed-farming model to Palestine.

¹⁹¹ On the design of the Jewish agricultural economy in Palestine and for Elazari-Volcani's specific role see Saul Katz, "The First Furrow: Ideology, Settlement, and Agriculture in Petah-Tikva in its First Decade," *Catedra* 23 (1982): 124-157; Derek Penslar, *Zionism and Technocracy: The Engineering of Jewish Settlement in Palestine, 1870-1918* (Bloomington: Indiana University Press, 1991); Ilan S. Troen, *Imagining Zion: Dreams, Designs, and Realities in a Century of Jewish Settlement* (New Haven: Yale University Press, 2003); and Hezi Ami'or, *The Roots and Design of the 'Mixed-Farming Economy' in Jewish Agricultural Settlement in Eretz Israel*, PhD Thesis (Hebrew University of Jerusalem, 2010).

¹⁹² Y. Uri, "For the Memory of Yitzhak Volcani (a year after his death)," *Davar*, 25 May 1956: 5.

the pioneers of the Hebrew dairy farming on our land – the crane of the settlement over our fowl land.¹⁹³

It is important to highlight that both the wide acceptance of Elazari-Volcani's ideas and the insistence on dairy farming in Palestine as an economically and environmentally preferable solution was peculiar. To be sure, the production of milk in British Palestine and the State of Israel has been enormously successful, but environmental aspects have also made it extremely difficult and expensive. These troubles varied and included acclimatization, heat, disease, and the availability of only limited grazing areas. While the success of the industry was great – so much so that “the cowshed [wa]s drowning in surplus of milk” as described by a member of the Jewish Cattle Breeders Association – the costs were also extremely high.¹⁹⁴ Levi Eshkol, at the time Israel's Agricultural and Development Minister, then Finance Minister and later the Prime Minister, who was widely known for his support for farmers, also famously declared in the 1950s that “the cow is the number one enemy of the economy of the state of Israel.”¹⁹⁵

Inventing a Hebrew Cow

European settlers (both Jews and Christians) and British authorities alike agreed on the importance of an agricultural transformation in Palestine. In the 1920s, the establishment and management of the Jewish experimental stations – with the official encouragement of the British government, the financial support of Jewish organizations,

¹⁹³ Israel Reichert, “Yitzhak Vilcansky - for his 50th birthday,” *Davar*, 2 February 1931: 2.

¹⁹⁴ Quoted in Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 190.

¹⁹⁵ *Ibid.*

and the technical support of German Templars – gave Elazari-Volcani and his colleagues the power to orchestrate such changes.¹⁹⁶ While these stations and the governmental station at Acre were built for the purpose of acting as centers of scientific knowledge and authority for *all* agricultural work in Palestine, they predominantly benefitted Jewish settlers.¹⁹⁷ Jewish experimental stations and consequently Jewish settlements followed Elazari-Volcani's focus on milk production. Specifically, settlers attempted to create an appropriate kind of cow for these transformative changes – a so-called “Hebrew cow.”



Figure 3: Milking training at the Hana Meisel Agricultural School for Women at Nahalal and a hammer, 1936. Source: ISA/Zoltan Kluger Image Collection/TS-3/10400.

¹⁹⁶ Roza El-Eini, “The Implementation of British Agricultural Policy in Palestine in the 1930s,” *Middle Eastern Studies* 32, 4 (1996): 211-250; Yossi Ben-Arzi, “Religious Ideology and Landscape Formations: the Case of the German Templars in Eretz-Israel,” in *Ideology and the Landscape in Historical Perspective*, ed. Alan R.H. Baker and Gideon Biger (Cambridge: Cambridge University Press, 2006); Naftali Talmon, “The Agricultural Farm in the Templar Settlements and its Contribution for the Development of Agriculture in Eretz Israel,” *Catedra* 78 (1995): 65-81.

¹⁹⁷ El-Eini argues that British efforts targeted Arab peasantry in particular, yet Jewish settlers remained the main benefactors of these efforts for several reasons. See Roza El-Eini, “The Implementation of British Agricultural Policy in Palestine in the 1930s,” *Middle Eastern Studies* 32, 4 (1996): 211-250. It is important to note that Elazari-Volcani thought that his efforts were benefiting both Jews and Arab farms in Palestine, yet Arab peasants were systematically losing dominance over production of and profit from agricultural crops and all other industries.

One enthusiastic promoter of the “Hebrew cow” project, albeit for a brief period, was a Jewish settler named Yehoshua Brandstetter. Two decades before becoming one of the first filmmakers in Palestine and the manager of *Habima* (what would become the national theatre), Brandstetter (1891-1985) was enchanted by the dream of the raising dairy cows in Palestine. Upon his arrival from Poland to Palestine at 18, Brandstetter described his emotions of awe: “it was only a few days ago that I felt the dirty snow of the [European] town, and here I am now walking on the foot of the Carmel mount...throughout the hike I mumbled ‘flowing with milk and honey,’ and at times, walked away from the route to the side of the mountain, believing my eyes would spot honey between the cracks.”¹⁹⁸ Life in Palestine – full of new loves and challenges, many involving cows - would soon take shape for Brandstetter.

Brandstetter's love for cows began in his family's farm in the Jewish settlement of Yavne'el in the early 1910s.¹⁹⁹ Given the adoption of the “mixed-farming” model that had proven successful among the German Templar settlements, few cows actually lived among other animals on the farm; however, according to his biographer, Brandstetter had a special fondness for cows, as well as for the ladies. In that period, Brandstetter began to advocate for positioning high-yielding dairy cows at the center of the agricultural economy in Palestine. His journey with cows included dairy-farming studies in the Netherlands after the Great War, work as a dairy-cattle instructor in various Jewish settlements in the early 1920s, and his importation of Dutch bulls throughout the 1920s.

¹⁹⁸ Quoted in Motti Zeira, *Man of Loves: The Story of Yehoshua Brandstetter* (Jerusalem: Yad Ben-Zvi, 2006), 25.

¹⁹⁹ Ibid, 44.

At the center of his early work, however, were his continuous efforts to establish The Institute for the Breeding of Dairy Cattle in the Land of Israel.²⁰⁰

The idea of establishing an institute that would focus on developing a high-yielding dairy cow won the general support of several Jewish institutions in Palestine and the financial support of the Jewish community in the Netherlands.²⁰¹ But not everyone agreed that cows were that important: several settlers argued that it would be both a financial as well as a structural mistake to invest so much attention in cows at the expense of other parts of the growing agricultural economy.²⁰² These fierce objections – highlighting that the choice of milk was far from inevitable – finally caused Brandstetter to abandon his dreams for an institute. In turn, Brandstetter adopted new (artistic) routes to promote ideas of revival. In 1933, Brandstetter and his wife together produced the *Land of Promise*, a propaganda film depicting various aspects of life Palestine and winning acclaim in the *New York Times* as an “excellently photographed and skillfully edited record of the rebuilding of the Jewish homeland in Palestine.”²⁰³ “With modern machinery,” says the film’s voice-over, “the Jews bring back to Palestine its long neglected fruitfulness.”²⁰⁴ While Brandstetter chose new techniques to demonstrate the importance of reviving the land of Palestine, the ideas behind an institute for the “Hebrew

²⁰⁰ Yehoshua Brandstetter, “Memorandum Regarding the Establishment of and Institute for the Breeding of Dairy Cattle in the Land of Israel,” 1923, CZA/S15/21032.

²⁰¹ Motti Zeira, *Man of Loves: The Story of Yehoshua Brandstetter* (Jerusalem: Yad Ben-Zvi, 2006), 78.

²⁰² Ibid, 80-81.

²⁰³ Brandstetter made *Land of Promise* together with his second wife, Margot Klausner, who was to become an influential filmmaker, and Juda Leman, who directed the film. F. S. N., “Land of the Promise at the Astor,” *New York Times*, November 21, 1935. Following the enthusiastic American reception of the film, the newspaper argued that that “if further proof be needed of the motion picture camera's ability to record history more vividly than any printed page, it may be found there.”

²⁰⁴ “Land of Promise,” *The Spielberg Jewish Film Archive*, <http://www.youtube.com/watch?v=QDoD6W2z01s>, minute 18:17 (accessed 23 March 2014).

cow” did not wane fitfully. In 1932, for example, Elazari-Volcani finally established the institute in the Jewish Agency’s experimental farm in Rehovot. In spite of a debate regarding the nature of the “Hebrew Cow,” there came to be widespread acceptance by settlers that the local Arab cow was not yielding enough milk.

Settlers’ attitudes toward local cows mimicked their attitudes toward local peasants. In the first decades of the twentieth century, when Europeans saw a connection between the people of Palestine and the land of the Bible, settlers studied and to some extent adopted Palestinian ways of life. By following local practices, Jewish settlers hoped to be included in the connection between the people of Palestine and the Hebrews of the Bible.²⁰⁵ Some settlers acknowledged learning how to rear and milk cows (and other animals) from Arabs and some chose to live with Arabs for extended periods of training.²⁰⁶ As opposed to most Christian settlers and the very first waves of Jewish immigration to Palestine at the end of the nineteenth century, Jewish settlers in these years were distancing themselves from the ways of life they considered “bad” in Europe. As part of the wide adoption of Eugenic ideas among Zionists, Jewish settlers despised the image of the sickly, poor, degenerating Eastern European Jew, and aspired to create

²⁰⁵ Nadia Abu El-Haj, “Introduction,” in *Facts on the Ground: Archeological Practice and Territorial Self-Fashioning in Israeli Society* (Chicago: University of Chicago Press, 2001). On genetic research that tried to prove such connections see Rafael Falk, *Zionism and the Biology of the Jews* (Tel Aviv: Resling, 2006).

²⁰⁶ See, for example, the story of Miriam Baraz, the famous farmer from Degania. She told of being trained in milking by an Arab woman, who taught Baraz of the hymns that were considered essential for the cows to agree to give milk. See Smadar Sinai, *Miriam Baraz - Portrait of a Pioneer* (Ramat-Efal: Yad Tebenkin, 2002). The attempts to establish a connection to the people of the Bible by practicing animal husbandry with Arabs were most evident in the community of Jewish shepherds (see Chapter 3). Elazari-Volcani himself, furthermore, was writing about the importance of learning from the Fellah’s experiences of hundreds of years, in spite of the attempts to convince him to modernize his farm. See Issac Elazari-Volcani, *The Fellah's Farm* (The Jewish Agency for Palestine, Institute of Agriculture and Natural History, Agricultural Experiment Station, 1930).

in Palestine a new kind of Jewish body, one that was healthy and connected to his land (and always a male): “a New Jew.”²⁰⁷

Early twentieth century settlers tried to create this new-ancient person. As time went by, with the establishment of British rule in Palestine, the expansion of the Jewish settlement in Palestine, and the growing Arab reactions to the effects of both processes, things began to change. Along with the intensifying Palestinian acts of resistance to these political, economic, and environmental changes – which reached their height in revolts of the late 1930s – the ideals of nativity were shaped anew. The Arab was no longer considered the link to the people of the Bible and was increasingly seen as primitive, ignorant, lazy, and violent. The “New Jew” from this point was redefined not only in relation to the Diasporic Jew, but also in relation to the Palestinian Arab. Not unlike other contexts of growing Western dominance, this change in the understanding of the people of Palestine went hand-in-hand with new ideas about much needed changes in the land of Palestine and the role of science in fostering this change.²⁰⁸

This new ideal of a healthy and productive Hebrew body, which was defined in relation to both types of old (i.e. the “Eastern-European Jew” and the “Arab”), was not

²⁰⁷ A wealth of research was devoted to the growth of ideas of the “Muscular Jew,” the “New Jew,” the “Sabra,” and the roles the emerging ideal body played for the Zionist settlement project. See Oz Almog, *The Sabra: The Creation of the New Jew*, trans. Haim Watzman (Berkeley: University of California Press, 2000); Meira Weiss, *The Chosen Body: The Politics of the Body in Israeli Society* (Stanford: Stanford University Press, 2002); Rafael Falk, *Zionism and the Biology of the Jews* (Tel Aviv: Resling, 2006); Todd Samuel Presner, *Muscular Judaism: The Jewish Body and the Politics of Regeneration* (London; New York: Routledge, 2007); Sandra M. Sufian, *Healing the Land and the Nation: Malaria and the Zionist Project in Palestine, 1920-1947* (Chicago: University of Chicago Press, 2007); Yael Zerubavel, “Memory, the Rebirth of the Native, and the “Hebrew Bedouin” Identity,” *Social Research* 75, 1 (2008): 315-352; Boaz Neumann, *Land and Desire in Early Zionism* (Tel Aviv: Am Oved Publishers, 2009).

²⁰⁸ Michael Adas, *Machines as the Measure of Man: Science, Technology, and the Ideologies of Western Dominance* (Ithaca; London: Cornell University Press, 1990); Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio State University, 2007).

foreign to the design of bodies of cows. Attempts to enhance milk production among Jewish settlers, which became organized in the 1920s, were based on the comparison of local (“Baladi” or “Jabali”) cows to ones from “abroad” (either to other regional cows or to European cows).²⁰⁹ Local cows were considered to be immune to disease but also rebellious, ugly, and producing only little milk.²¹⁰ Syrian cows, in comparison, were taller, better milk producers, and therefore imported to several farms.²¹¹ Similar to German Christian settlers, Jewish settlers admired European pedigree cows and brought several of them to Palestine, mainly from the Netherlands. Europeans in Palestine appreciated these Dutch cows, which produced much more milk than both local and Syrian cows; however, these Dutch breeds also became very sick as soon as they reached the farm. Extensive experimentation with crossbreeding therefore became a widespread practice by the late 1920s, in order to secure the immunity and survivability of local cows in the environment of Palestine and maintain the prolificacy of foreign cows. The British

²⁰⁹ Elazari-Volcani’s (then Wilkansky) 1911 survey of dairies and dairy cows among European settlers shows that breeding practices existed, but were far and few between. In Yitzhak Wilkansky to the Land of Israel Office, World Zionist Organization, 18 May 1911, DCBA/7/4/1, 4.

²¹⁰ An exemplary article dealing with the raising of dairy cattle details the way Jewish settlers viewed the Arab cow: “Wretched is the son of the land...and seven time worse is his cow...from the second year of her life...she produces little milk to revive the fruit of her womb, who runs around her, as she carries the plow. The peasant does not care for milk or dairy. When the Hebrew settlement wanted to create a dairy, it had to start from scratch. Because even the cow was not satisfactory.” In Moshe Sat-Ky, “A Short Guide for Raising Dairy Cattle,” *Hasade* 17 (1937): 441. There are few indications showing that not all Jewish settlers denounced the Arab cow. See, for example, Stern, “Finding Out the Method,” *Hasade* 5 (1925).

²¹¹ Tehia Liberson, a known women’s rights activist, described her early work with cows in Nahalal, the first semi-communal agricultural settlement, in the 1920s. Liberson was assigned to work with an Arab cow that was exceptionally stubborn and wild, and it took much patience and suffering until they managed to get along. After she protested her terms of sustenance, which she attributed to her being a woman, she finally managed to better her situation: She got a plot of land to farm, and the Arab cow was substituted for a Damascene, which produced much more milk. In Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, part 3* (Caesarea: Cattle Breeders Association, 2002), 13.

government officially supported crossbreeding with local cows in Arab farms and offered the services of Lebanese and a few British bulls.²¹²

Various accounts point to the success of these breeding practices in late 1920s and early 1930s. Dora Bader, a cow farmer in the mid 1930s, wrote in her diary: “this was how a new land-of-Israel race was created, one that was immune to disease and the damage of climate. With time it reached the yield of a Dutch cow and even surpassed it, and is considered one of the best races in the world.”²¹³ Jewish settlers were rather pleased by the crossbreeds and were proud to declare having no “Arab cows” in their farms by the early 1930s. They also argued that the temper and character of the Arab and Syrian cows, “(which affects the practice of milking and probably the production of milk as well)...was significantly improving” with the addition of European blood.²¹⁴ According to most estimates, the number of cows owned by Jewish settlers tripled between 1922 and 1936 and then doubled again in the next decade (approx. 6,000 to 18,000 to 34,000).²¹⁵ By 1937, 80% of all cows in Palestine were crossbred, and in spite of several outbreaks of epidemics and frequent financial setbacks, milk yield per cow almost tripled in this period.²¹⁶

²¹² Sir John Hope Simpson, *Palestine: Report on Immigration, Land Settlement and Development*, (London: Secretary of State for the Colonies, 1930), 77; Roza El-Eini, “The Implementation of British Agricultural Policy in Palestine in the 1930s,” *Middle Eastern Studies* 32, 4 (1996): 227.

²¹³ Yafa Berlovitch, *Wounded Bird: Dora Bader – A Diary (1933-1937)* (Hakibbutz Hame'uchad, 2011), 342.

²¹⁴ Moshe Yoel Pinthus, *History of Agricultural Research in Israel in the Pre-Statehood Era (1920-1949)* (Haifa: Itay Bahur, 2011), 331.

²¹⁵ For cattle population statistics, see Footnote No. 164.

²¹⁶ Moshe Yoel Pinthus, *History of Agricultural Research in Israel in the Pre-Statehood Era (1920-1949)* (Haifa: Itay Bahur, 2011), 332. Statistics of milk yield vary according to different accounts, yet they all point to dramatic growth, moving from 600-800 L/year in the early 1920s, to 3,000-4,000 L/year in the late 1930s. In Shmuel Avitzur, *Changes in Eretz-Israel Agriculture, 1875-1975* (Tel-Aviv: Milo Ltd and Avshalom Institute, 1977), 209, 211.

The focus on improving the milk yield of the cow population was consistent from early on, much earlier than that in the Dutch dairy culture, the model for the dairy farming in Palestine and the birth place of the fathers of champion cows in Palestine.²¹⁷ The Palestinian settlers' way of valuing animals differed from European ways, with an overall focus on quantity over quality. As opposed to the British, Dutch, and German traditions, cows were mainly judged by their yield not their external features. Cattle exhibitions were far and few between, and the participants in such cattle contests were almost always the highest yielding female cows, not the prettiest bulls.²¹⁸ In 1937, for example, the cow *Zkufa* ("upright") of Kinneret, *Poria* ("fertile") of Kibbutz Geva, and *Haviva* ("pleasant") of Kibbutz Ein-Harod became widely recognized for their achievements.²¹⁹ Efraim Smaragd, the leader of the dairy cattle community for four decades, a major figure in developing a high-yielding cow, and a character often described as "saturated with love for the cowshed,"²²⁰ acted as the judge for these yielding, not beauty, competitions. While Smaragd was known, much like his Dutch trainers, to have "an excellent eye" for cows, he invested more attention in his appreciation for production. His eye for beauty, noted his colleague Israel Palvitch, was reserved to life outside the shed: "He liked looking at beautiful women, expressing his

²¹⁷ See Bert Theunissen, "Breeding for Nobility or for Production? Cultures of Dairy Cattle Breeding in the Netherlands, 1945-1995," *Isis* 103, 2 (2012): 278-309. The British dairy culture focused on milk production around the same period; for example, the British *Milk Marketing Board* was established in 1933. See Sara Wilmot, "From 'Public Service' to Artificial Insemination: Animal Breeding Science and Reproductive Research in Early Twentieth-Century Britain," *Stud. Hist. Phil. Bio. & Biomed. Sci.* 38 (2007): 411-413, and Abigail Woods, "The Farm as a Clinic: Veterinary Expertise and the Transformation of Dairy Farming, 1930-1950," *Studies in History, Philosophy, and Science and Biomedical Sciences* 38 (2007): 462-463.

²¹⁸ See "Dairy Cattle Exhibition in Emek Izrael," *Cowboy Pages* 1 (1958): 1.

²¹⁹ *Davar*, "The Cow that Won Two Rewards - Zkufa," December 24, 1937: 3; *Davar*, "8937k of Milk - The Annual Yield of One Cow," November 16, 1937: 6.

²²⁰ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 7-8.

opinion and giving comments,” he said, “and would say things like ‘look at that pretty primaporous cow coming from the pasture.’”²²¹

Smaragd, who immigrated with a Dutch herd to Palestine in 1924 upon graduating from dairy farming studies in the Netherlands, became the secretary of the Cattle Breeding Association, a position he held from 1928 to 1967.²²² Under his management, the association began to shape the daily practices of dairy farming: the association initiated and financed the translation of professional literature to Hebrew, established the journal of the breeders association, and organized various courses for Jewish settlers.²²³ One of the main projects, which shaped the daily management of cows from 1933 onwards and won the financial support of the British government, was the use of the Herd Book, a technology of documentation to detail daily a cow’s yields, births, and health problems (see Figure 4).²²⁴

²²¹ Israel Palvitch, interview by Nir Mann, *Efraim Smaragd*, Kibbut Ma'abarot (1996).

²²² According to his colleagues, Smaragd was inspired by Jewish tradition, but he disliked both scientists and religious people: “His language was rich and pictorial, and he used expressions from Yiddish and the Bible, of which he was very knowledgeable. Even though he despised religious people...and called them pigs. In Israel Palvitch, interview by Nir Mann, *Efraim Smaragd*, Kibbut Ma'abarot (1996).

Furthremore, “He was ambivalent towards researchers and men of science. He rejected things he didn’t like, and his main criteria was practicality...only Prof. Saul Adler from the Hebrew University...won his full recognition.” In Prof. Ra’anan Volcani, interview by Nir Mann, , *Efraim Smaragd*, Rehovot (1996).

²²³ Israel Palvitch, interview by Nir Mann, *Efraim Smaragd*, Kibbut Ma'abarot (1996); Articles regarding dairy cattle and milk production were frequently published in *Hasade*, a journal established in 1920 by “Hapoel Hatsair” workers movement. The Cattle Breeders Association established its independent magazine – *Meshek Hahalav Vehabakar* – in 1952. In Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 2* (Caesarea: Cattle Breeders Association in Israel, 1996), 38.

²²⁴ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 7-8.



Figure 4: “The Committee for Establishing the Herd Book in the Cattle Breeders Association,” Kibbutz Beit-Zera, August 1933. On the right: Efraim Smaragd, Menahem Sturmman, and Uriel Levi. Source: Assets of Efraim Smaragd, Nir Mann’s collection.

In spite of the growing success of the “Hebrew Cow” and the gradual professionalization of dairy farming, anxieties emerged in late 1920s, as various farms reported a decrease in the quality of milk production and infertility issues among third and fourth generations of crossbreeds. The granddaughters of European fathers and local mothers were becoming weaker, sicker, and producers of very thin milk. Some saw this as a sign of the danger of interbreeding and mixing, just as has happened in other colonial interactions, when intimate relations threaten to destabilize power structures.²²⁵ In the midst of the Arab revolts of the late 1930s, the Jewish Veterinary Association declared new evidence proving that Arab cows were not immune to disease after all, and thus

²²⁵ I am tempted to interpret the fear of the degeneration of crossbreeds with Ann Laura Stoler’s analysis of intimate relationships created between the colonizer and colonized, and the emergence of anxiety and ultimately theories of race when mixing became too prevalent. See Ann L. Stoler, *Carnal Knowledge and Imperial Power: Race and the Intimate in Colonial Rule* (Berkeley; Los Angeles; London: University of California Press, 2002).

crossing with Arab cows would not benefit European cows.²²⁶ In 1938, the Jewish Breeders Association held a conference on this “degeneration of the breeds” and there, the debate over the nature of the “Hebrew cow” was reversed. In the early 1920s, bovine experts had decided to use backcrossing with locals so as to ensure the survivability of the breed; but now in 1938, experts established that backcrossing instead with European bulls was required to secure European traits and gradually diminish local traits.²²⁷

Nevertheless, despite these changing frameworks, concerns did not evaporate. The problem of decrease in milk fat was worrying, for example, although it was later accepted as necessary for the growth in milk yield.²²⁸ Health problems, and the issues of infertility in particular, however, continued to be very threatening.²²⁹

Much thought was given to the influence of food on fertility. Farmers needed to provide the right type of feeding in order to support “as many as a million cows” in the changing agricultural economy as suggested by Elazari-Volcani; they thus conducted various experiments to identify such feeds. Most specifically, Jewish researchers argued against the use of “external” foods: “Feeding with purchased foods from unknown source,” they said, “causes diseases...and affects badly on the impregnation of the cow and its yield.”²³⁰ Ultimately, as a result of these experiments – of both growing crops and

²²⁶ Moshe Yoel Pinthus, *History of Agricultural Research in Israel in the Pre-Statehood Era (1920-1949)* (Haifa: Itay Bahur, 2011), 333.

²²⁷ Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 3* (Caesarea: Cattle Breeders Association, 2002), 7, 63-64, 66.

²²⁸ In contrast to the European dairy industry, the Israeli dairy industry specialized in soft, skim dairy products, with an average low percentage of fat.

²²⁹ “Sterility of cows in increasing in settlement. The condition causes heavy economic losses”, in Dr. S. Frerund and Dr. A. Rosen, *The Sterility of Cows* (Tel Aviv: Agricultural Experimental Station, The Zionist Organization, 1925).

²³⁰ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 129-130.

feeding them to cows – Jewish researchers decided that locally grown Jewish food was crucial for cow health. Coinciding with great efforts to increase (mainly urbanite) reliance on local products in the 1930s – also known as the “Product of the Land” (*Totseret Haaretz*) project – cows were to eat “Hebrew products” so they could be fertile and healthy.²³¹ These “Hebrew Cows,” with their marvelous Hebrew names, produced “Hebrew milk” for Hebrew consumers (see Figure 5).

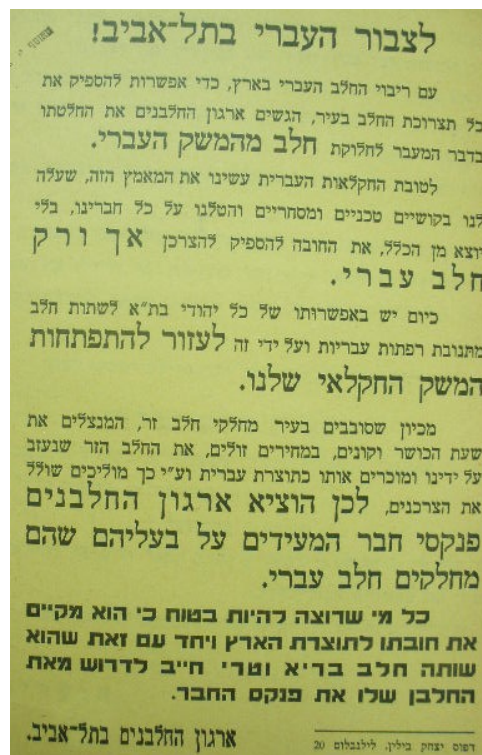


Figure 5: A promotional poster about the distribution of “Hebrew Milk” in Tel-Aviv, mid 1930s: “To the Hebrew Public in Tel-Aviv,” the poster says, “with the increase of Hebrew milk in our land...the Milkmen Association fulfilled his decision as to distribute MILK FROM THE HEBREW FARMS...we ordered all our members to supply our customers with HEBREW MILK ONLY.” Source: LILR/252 IV/12.

²³¹ The committee for the Product of the Land was established in 1934 and focused on convincing the Jewish population in Palestine to purchase local food. Ayala Plezental, among other scholars, argues that the “Product of the Land” was not merely about purchasing local products, but products that were part of the Jewish (rather than the Arab or German) economy. In Ayala Plezental, “Milky Way”: The Dairy Industry in Eretz Israel in the 1930s as a Mirror for German-Jewish Relations,” in *Germany and Eretz Israel: Cultural Meeting Point*, ed. Moshe Zimmerman (Jerusalem: Magnes-Hebrew University), 134.

Infertility and the Emergence of Artificial Insemination

Since intensive cattle raising began in this country, the cattle-holding farmer suffers not only from infectious abortions disease (*Abortus Infectiosus Bang*), but also from the frequent cases of infertility...as usual, there is no need looking for the causes for infertility in bulls, but only in female cows.²³²

The problem of infertility and miscarriages in dairy cattle became widely discussed in the 1930s, layered by the debate over issues of crossbreeding. The combination of increased production of milk and the climate in Palestine made it difficult for cows to become pregnant. Naturally, since annual pregnancies were crucial in order for cows to continue producing milk, this issue received much attention by both Jewish settlers and British authorities.²³³

Settlers discussed this problem among themselves and in professional journals. Those working with cows at Kibbutz Mizra' noted "the state of impregnation has not been so satisfying. Out of 125 primaparous cows we had 20 cows that were inseminated more than three times and four that were not impregnated at all and then taken out of the cowshed.... The state of impregnation among our primaparous cows has not been good for several years, and we have not received an explanation for that."²³⁴ Although settlers voiced their concerns regarding the fertility of cows and sought the help of experts, their questions remained unanswered: "It is well known how hard infertility disease strikes in the last few years in many herds. Not all the reasons of this phenomenon are known and

²³² "Infertility in Cattle, Reasons and Ways of Treating," *Hasade* 13 (1933): 12.

²³³ See, for example, S.J. Gilbert, "An Unusual Strain of *Brucella* causing Abortion of Cattle in Palestine," *Journal of Comparative Pathology and Therapeutics* 43 (1930): 118-124. Brucellosis severely affected dairy herds in Britain as well and was discussed widely in the period. See Abigail Woods, "The Farm as a Clinic: Veterinary Expertise and the Transformation of Dairy Farming, 1930-1950," *Studies of History, Philosophy, and Biology & Biomedical Sciences* 38 (2007): 466-467.

²³⁴ "Our Cowshed in 1944, Kibbutz Mizra'," Archive of Kibbutz Mizra', Agricultural sectors, cowshed, 1938-1948.

understood among cow holders, and even the doctors and men of science that deal with this matter stand helpless without knowing how to explain the ‘stubborn’ infertility. That while the state of the beast is seemingly normal according to all physiological performances, and no organic disease is discovered.”²³⁵ Puzzlement over the relation between the local environment and the fertility of cows and hence the production of milk persisted, creating new problems with proximity and a need for novel ways of managing cows.

“As all members [of the Kibbutz] know,” wrote a member of Kibbutz Degania-Aleph in 1938, “impregnation in our cowshed has been very difficult lately, and the crisis of cows who did not succeed in getting pregnant of all sorts of reasons or with no apparent reason – is great. Well, we decided to arrange an experiment with collaboration with [neighboring Kibbutz] Degania-Bet and the *Hakla’it* [the Jewish Association for Veterinarian Services and Livestock Insurance] ...it is very important to us that there is a doctor that sees the cows every day, treats them, and gradually prepares them for normal impregnation....it has been three weeks now that Dr. Shapira treats our cows with artificial insemination.”²³⁶ Settlers had began experimenting with cattle artificial insemination starting in the early 1930s, after one experienced inseminator and several books arrived from the USSR and gave settlers ideas about increasing chances of impregnation.²³⁷

²³⁵ Kibbutz Gvat, “How Have we Coped with Infertility in Our Herd?” *Hasade* 9 (1940). The work done at the experimental station at Kibbutz Gvat was analyzed in Hadas Yaron, *Zionist Arabesques: Modern Landscapes, Non-Modern Texts* (Boston: Academic Studies Press, 2010).

²³⁶ Saul, “Artificial Insemination,” Report on the state of the cowshed at Kibbutz Degania-Aleph, 1938, DCBA/10/1/3.

²³⁷ The USSR was, in this time, the main center for innovation and experimentation with AI in livestock.

Many were skeptical about artificial insemination (AI), but some settlers were excited enough about the possibilities this technique might entail. Uriel Levi, of the Cattle Breeders Association, took a literary liberty in describing one of the first experiments with insemination that took place at Gvat, notwithstanding violent connotations:

In a tin roofed scalding cowshed stood the awaiting cows, about six of them. From the bull's yard three men marched assured. One carried a 3-litter glass enema and a long tube; the second 'holding hygiene in his hand:' soap, Lysol, a towel; and the third – just curious. After getting rid of the filth, washing hands and whispering - either swearing or for relief of excitement – the rubber tube was shoved deeply into the Cow's vagina, and with the order 'release' there flew the salt water with the sperm that was squeezed from a pinch of cotton wool...was the cow impregnated? Three weeks later it was determined: No.²³⁸

Disappointments and changing materials were part of this period of experimentation, but in few years, experts began to perceive AI as a real possibility. The British T. Bell, the assistant manager of the governmental farm at Acre, reported in 1938 on AI practices in Palestine to the British scientific community in the same year, using them to differentiate between Arab stillness and Jewish progress:

The two main systems of agriculture in present-day Palestine are remarkable for their extreme diversity. On the one hand is the Arab peasant, whose agricultural practices have remained essentially unchanged for twelve centuries; and on the other the Jewish colonist, whose methods are the quintessence of modernism. Strange as it may seem, these two diverse cultures have something in common, for both have contributed to the development of the animal-breeding technique known as artificial insemination. In very early times the Arabs are known to have applied it in the breeding of their horses, whilst the Jewish settlers of to-day are developing the same method along modern lines with a view to organizing its application as a routine practice in the breeding of dairy cattle, and perhaps in the breeding of all classes of stock. The former instance is of historical interest, and the latter work forms the subject of this paper.²³⁹

For the story of Dr. H. P. Fox, who arrived in 1934 to Palestine from the USSR with knowledge about AI practices see Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 3* (Caesarea: Cattle Breeders Association, 2002), 49-51.

²³⁸ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 109.

²³⁹ T. Bell (Assistant Manager, Government Stock Farm, Acre), "Preliminary Work on the Artificial Insemination of Live Stock in Palestine," *Empire Journal of Experimental Agriculture* 6 (1938): 188.

Bell described a growing interest in artificial insemination among Jewish settlers, and he argued “artificial insemination had proved to be effective in combating sterility and also in checking the spread of infectious vaginitis, for no fresh cases of the disease occurred.”²⁴⁰ In times when infertility was very threatening, AI offered new ways to overcome unexplained failures of pregnancy as well as all common forms of infections.

Perhaps due to the height of the threat of infertility and disease, AI became a common practice a few years earlier in Palestine in comparison to Western Europe and North America.²⁴¹ It was widely practiced by the late 1930s, was standardized in 1939 as the community of veterinarian doctors began to meet to discuss and study the procedure, and was normalized as a course of study in 1946 at the Rehovot Experimental Station.²⁴²

In order for AI to gain prominence, nevertheless, settlers had to find ways to deal with issues of proximity, as the new fertility practices involved unique management of the distance between cows and bulls. Efraim Smaragd, the secretary of the Cow Breeders Association, wrote to the Soviet Institute for Artificial Impregnation near Moscow to ask for professional advice, hoping to send “a veterinarian, Palestinian subject...in order that he might perfect himself in this work...and the system of transferring the sperm to greater distances.”²⁴³ The reliance on the transport of bull sperm created new spatial problems in times of changing political climates. The semen of bulls was first transported on land by

²⁴⁰ Ibid.

²⁴¹ Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, part 1* (Caesarea: Cattle Breeders Association in Israel, 1992), 61-62.

²⁴² “Artificial Insemination – Training Course for Veterinary Doctors,” and “Artificial Insemination” lecture to the Jewish veterinary doctors’ meeting, DCBA/10/2/1, 2; Picture of First Class of Cattle Inseminators, DCBA/Image Collection.

²⁴³ Efraim Smaragd to the Soviet Institute for Artificial Impregnation, 1938, DCBA/10/1/2.

bicycle, cart, and bus, as well as by boat across the Sea of Galilee.²⁴⁴ During the 1948 War and when the roads were blocked, it is told that the sperm of bulls reached dairy cows in Jewish farms by air, with the help of carrier pigeons and guidance of one British officer.²⁴⁵ The flight of semen was not restricted to the Palestinian skies: just as the “holy queen bee” had been sent by mail from Ottoman Palestine to America (see Chapter 1), Efraim Smaragd flew a famous bull’s sperm from America to Palestine in 1947. The break of war, however, interfered with records of those cows inseminated by Si’on (“Achiever”), a bull whose Hebrew name attested to his record, stamina, and sexual potency.²⁴⁶ With improving techniques, and dramatic reduction in the proximity of cows and bulls, AI finally replaced older forms of breeding. The “Hebrew Cow,” whose creation was now made possible with various means of transportation and the experienced hand of the human inseminator (at least one of whom later became an archivist, see Figure 6), never had to meet bulls again.

²⁴⁴ Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 1* (Caesarea: Cattle Breeders Association in Israel, 1992), 69.

²⁴⁵ Ra’anan Volcani, “The Beginnings of Artificial Insemination in the South,” *Cattle Breeders Association Archives* 10/1/23-4; In *A Pigeon and a Boy*, novelist Mei’r Shalev tells a story of a pigeon that carried a human sperm during the 1948 War. The sperm, which was sent by a soldier at war, reached his lover after he died at battle. In Meir Shalev, *A Pigeon and a Boy: A Novel* (Tel Aviv: Am Oved, 2006).

²⁴⁶ “Sperm of Bulls Arrived from the United-States by Plane,” *Al-Hamishmar*, February 10, 1947: 4; Ra’anan Volcani’s report to Menahem Tzentner, 10 Feb 1947, in Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 1* (Caesarea: Cattle Breeders Association in Israel, 1992), 67. Three years later, Smaragd brought thousands of cows from North America to the state of Israel, establishing the American Holstein cow as the Israeli breed.

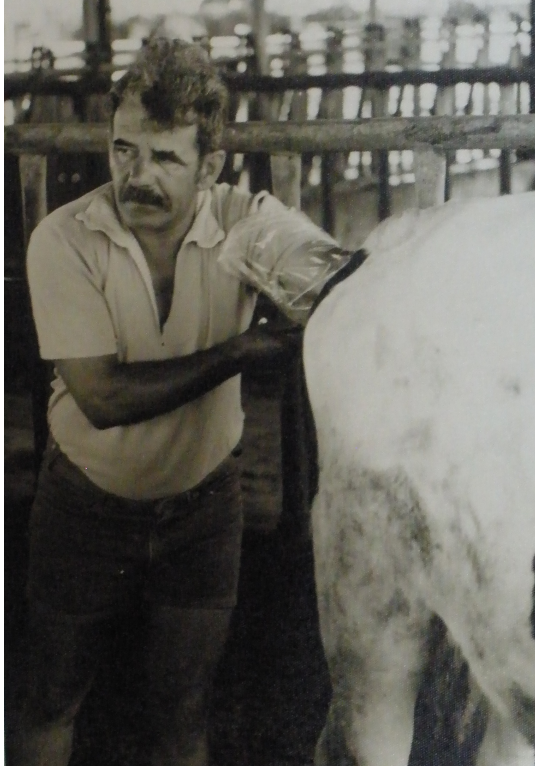


Figure 6: “Member of *On* [company for cattle insemination] inseminating a Cow at the Kibbutz,” 1981. This inseminator, Arie Shadar, later became the archivist of the collection of the Israeli Breeders Association, which is where I met him. Source: MA/”Cowshed Beginnings” Image Collection/Image No. 70/123.

Many Babies and Much Milk

Cows’ fertility continued to occupy the minds of farmers and researchers.²⁴⁷ One journalist who followed a veterinarian doctor of the *Hakla’it*, the Jewish Veterinary and Livestock Insurance Services, gave some indication as to the attention paid to fertility of cows: “from what we have seen in our travels with Dr. Ellenbogen, most of the work of the veterinarians of the *Hakla’it* is treating cows and their ‘sex problems.’”²⁴⁸ Infertility not only jeopardized the efforts to increase milk production, but also threatened the very

²⁴⁷ Ami Neria, *Veterinary Medicine in the Land of Israel: 50 Years of Veterinarian Medicine, 1917-1967* (Tel Aviv: Re'emim Press, 2001), 60.

²⁴⁸ Ruth Bondi, “Reception – For Animal Only,” *Davar*, 3 February 1956: 20.

creation of a land of plenty. The centrality of fertility, moreover, was not limited to cows. Indeed, it was important for women to be fertile as well – a concern not just for farmers and experts, but for the Jewish community at large.

“Our Granaries Have Filled with Grain” is a poem from the early generation of Hebrew music and lyrics written in Palestine. Based on a biblical verse and composed in 1932-1933, the song remains famous today, commonly sang in the *Shavu’ot* holiday to celebrate the product of the land, and milk in particular. Going beyond the minds of researchers and breeders, the verses help illustrate how the greater population of Jewish settlers perceived the relation between the fertility of females and the attempts to create biblical plenty:

Our granaries have filled with grain and our wineries with wine

Our homes are humming, humming with babies

And our cattle is fertile -

What else would you ask from us homeland

And is not yet there?

What else would you ask from us homeland

*And is not yet there?*²⁴⁹

The cries described are those of blessed babies, while the houses filled with those babies stand for the fulfillment of the commitment of the Jewish community to the land. The fertility of women, like the fertility of cattle and the abundance of agricultural production,

²⁴⁹ “Our Granaries Have Filled with Grain” was written in Hebrew by Pinhas El’ad (Lender) and the music composed by David Zehavi in 1932-1933. I thank Shira Shmu’eli for reminding me of this song.

all demonstrate the achievements of the Jewish settlement in Palestine. These are the components of the ideal world for which the Jewish settlers aspired; if all went well, they believed the land and its creatures would be fertile. Connected here is the fertility of women and that of cow: the birth of many cows is as important as the birth of many babies in the attempt to satisfy the demanding land.

An interesting difference emerges, however, between the biblical text and the ideal presented in “Our Granaries Have Filled with Grain.” In Deuteronomy, plenty will be a blessing following the fulfillment of an obligation to God: “And if you faithfully obey the voice of the Lord your God...And the Lord will make you abound in prosperity, in the fruit of your womb and in the fruit of your livestock and in the fruit of your ground, within the land that the Lord swore to your fathers to give you.”²⁵⁰ As opposed to the biblical text, “Our Granaries Have Filled with Grain” celebrates a commitment between the people and their land, not the people and God. Moreover, while the biblical text points to the hand of God in shaping plenty, the song yields this responsibility to the people. In “Our Granaries Have Filled with Grain,” plenty is no longer a godly blessing; no, in 1930s Palestine, the production of plenty has become the obligation itself.

Since producing plenty depended on the bodies of females – both women and cows – fertility and plenty became closely linked and the female, the maker of plenty, became the center of attention. Specifically, the attempts to battle infertility in both women and cows reveal a new type of “ideal body.” I am tempted to call this fertile

²⁵⁰ Deuteronomy 28: 1, 8; Mary Douglas refers to the relation between god and the product of the land in the Jewish tradition in *Purity and Danger*. See Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (New York; Washington: Frederick A. Praeger Publishers, 1966), 50.

female the “New Jewess,” as opposed to the commonly discussed “New Jew.” The bodies of those females, the “New Jewesses,” were shaped to become loci for the production of abundance and act as bodyscapes of plenty.

The search for solutions to infertility only strengthened the connection between cows and women in the efforts to create plenty in Palestine. Popular representations of this connection and, more importantly, settlers’ practices and their search for infertility solutions demonstrate how the fertility of women became relevant. Dr. Freund, the first veterinary doctor employed by the *Hakla’it*, notes how fertility problems in cattle were handled in the 1930s:

Many theories emerged in an attempt to explain bovine infertility...the doctor relied on the people of science from the university. Even though these were no experts in the field of veterinary medicine, they were willing to help in the study of the various problems. Among these people was Prof. Kligler from the department of bacteriology and Prof. Zondek from the department of endocrinology.²⁵¹

Veterinary doctors and other settlers turned to experts in human disease, such as the aforementioned microbiologist Israel Kligler (1888-1944), who is commonly remembered for his studies on malaria and public health work. While the extent of his contribution to cattle infertility is unknown, he was a frequent member of various agricultural committees from the 1920s. In the 1930s, moreover, Kligler invested much of his energy in the study of the nutrition of Jewish settlers and co-initiated the “Glass of Milk a Day” project, which supplied bovine milk to schoolchildren starting in 1938. It is

²⁵¹ Ami Neria, *Veterinary Medicine in the Land of Israel: 50 Years of Veterinarian Medicine, 1917-1967* (Tel Aviv: Re'emim Press, 2001), 74-75.

argued that his support for the project was motivated by his will not only to better the health of children in Palestine, but also to benefit dairy farming.²⁵²

Freund's mentioning of Bernhard Zondek (1891-1966), a world-renowned sex hormone researcher and famous gynecologist in Palestine, is illuminating.²⁵³ Zondek's work focused on the problem of human infertility;²⁵⁴ and, at a time when "sterility in women" was said to have become "a serious problem,"²⁵⁵ his research on gonadotropins received global appreciation. Beyond Freund's note, there are several other indications to the involvement of Zondek and his circle with the community of veterinarians and the ways their knowledge about human infertility contributed to knowledge about the infertility of the "Hebrew Cow." For instance, Zondek lectured about the female reproductive systems in the annual meeting of the *Hakla'it* in 1940;²⁵⁶ he lent books to farmers seeking infertility answers in professional literature;²⁵⁷ and his assistance and researcher, Felix Sulman, conducted various types of studies in the farms of settlers (see

²⁵² Zalman Greenberg and Anton Alexander, "Israel Jacob Kligler: The Story of 'A Little Big Man'," *Korot - The Israeli Journal of the History of Medicine and Science* 21 (2012): 193, 202.

²⁵³ From Dr. Freund's reference alone it is uncertain whether he was referring to Bernhard Zondek or his brother Harman. Bernhard and Herman Zondek both immigrated to Palestine in 1934 after the Nazi rule to power terminated their medical careers at the Berlin Charité. Both brothers specialized in hormone research: Herman became the chair of the endocrinology department at the Hebrew University and Bernard chaired the Obstetrics and Gynecology department there. Due to Bernhard's specialty in sex hormone research and the study of infertility, as well as his past studies of the reproduction of mares, I tend to believe that Freund referred to this brother.

²⁵⁴ Fertility experts in Israel today continue to appreciate Bernhard Zondek's work. They "unanimously traced the high local standard of fertility research to Professor Bernhard Zondek, whom they consider the preeminent figure in the field." In Shlomo Mashiach et al. "The Contribution of Israeli Researchers to Reproductive Medicine," *Kin, Gene, Community: Reproductive Technologies Among Jewish Israelis*, ed. Daphna Birenboim-Carmeli and Yoram Carmeli (New York; Oxford: Berghahn Books, 2010), 51-52.

²⁵⁵ "Sterility in Women Becoming a Serious Problem: Professor Zondek," *The Winnipeg Tribune*, 3 September 1952.

²⁵⁶ Bernhard Zondek and Felix Sulman, "The Role of Sex Hormones in the Sex System of the Animals (lecture given at the annual conference of the Jewish Organization of Veterinary Services)," *Journal of the Jewish Organization of Veterinary Services* 5 (1940).

²⁵⁷ An acknowledgment of sending books and articles from Bernahrd Zondek in Jerusalem to Aharon Harari in Kinnutz Merhavia, 3 May, 1941, In KMA/Aharon Harari collection/ 2.8.

Chapter 3). Clearly, Zondek, who was known for making the “barren woman a joyful mother of children,”²⁵⁸ also helped making barren cows joyful milk producers. With lessons learned from women, Zondek and other experts participated in making the bovine “New Jewess” produce a land of plenty in Palestine.

Breeders and farmers also consulted other researchers besides Kligler and Zondek. The parasitologist and physician Saul Adler (1895-1966), most famous for his work on leishmaniasis and malaria, became greatly involved in experiments on cow diseases. Veterinary doctors said that Adler brought “a new spirit” and that they considered him “a scientific father and guardian.”²⁵⁹ This turn to researchers in the field of human medicine, who were trained in medical schools in Europe, became part of a larger contemporary trend. With an influx of physician-immigrants and few jobs available in Palestine, many medical professionals found employment as “animal doctors.”²⁶⁰ Others who trained as physicians or nurses worked with cows in the farms, often simultaneously caring for sick settlers (or babies) and sick cows.²⁶¹ University

²⁵⁸ Vivien Tabor, “He Maketh the Barren Woman...A Joyful Mother of Children,” *Hadassah Newsletter*, April 1960.

²⁵⁹ Ami Neria, *Veterinary Medicine in the Land of Israel: 50 Years of Veterinarian Medicine, 1917-1967* (Tel Aviv: Re'emim Press, 2001), 196; Efraim Smaragd of the Cattle Breeders Association, noted his colleague Ra'anani Volcani, “was ambivalent towards researchers and men of science. He rejected things he didn't like, and his main criterion was practicality...only Prof. Saul Adler from the Hebrew University...won his full recognition.” In Prof. Ra'anani Volcani, interview by Nir Mann, *Efraim Smaragd*, Rehovot (1996).

²⁶⁰ I heard this argument during a meeting with Arie Shadar, the archivist of the Israeli Breeders Association, who was a milking instructor and an inseminator for over 50 years (see Figure 6), but only found little evidence for European-trained human doctors that became veterinarian doctors in Palestine. Two such figures were Arie Biham (1877-1941) and Zerakh Gilmovsky (1893-1979). See Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 2* (Caesarea: Cattle Breeders Association in Israel, 1996), 16, 30. A third example was Felix Gad Sumlan (1907-1986) (see Chapter 3), who, as a pharmacologist and hormone researcher gained both DVM and MD degrees prior to immigrating to Palestine in 1933.

²⁶¹ Such is the case of Dora Bader (1896-1996), who studied medicine in Europe but never graduated. In Palestine/Israel she worked to nurse sick cows in the “sick cowshed” and, at the same time, treated

researchers, together with veterinary doctors, also promoted a plan to open a joint human and animal medical school.²⁶² “In the scientific sense,” Adler reportedly once said, “it is surprising how much veterinary and human medicine have in common. They are practically the same occupation.”²⁶³

Conclusion

Stavit (“Autumn Girl”) was born in 1932: her mother, Esther-Zmira, was Syrian, and her father was a famous Dutch named Hercules. Hercules’s mother carried him in her womb as she immigrated to British Palestine, and he became the father of many successful daughters. From an early age, Stavit was “flowing with milk, but she required special care, because it became clear that only a permanent and experienced milkman [could] maintain the stability of her milk yield.”²⁶⁴ Stavit became “the champion of champions” in her lifetime, with a total of 107,971 kg of milk upon her death at 19.²⁶⁵ She was such a remarkable cow that Natan Alterman, a foremost poet, published a poem about her public persona.²⁶⁶ In 1950, a conference was held in her honor, celebrating her achievements at the age of 17 ³/₄, a few months before she died in an “elderly shed” built just for her.²⁶⁷ Her owners said that she was particularly remarkable at old age: “Her body

members of the Kibbutz in the Kibbutz Clinic. See Yafa Berlovitch, *Wounded Bird: Dora Bader – A Diary (1933-1937)* (Hakibbutz Hame’uchad, 2011). Another farmer who took care of her babies and cows concurrently was Mirian Baraz. See Smadar Sinai, *Mirian Baraz - Portrait of a Pioneer* (Ramat-Efal: Yad Tebenkin, 2002).

²⁶² Ami Neria, *Veterinary Medicine in the Land of Israel: 50 Years of Veterinarian Medicine, 1917-1967* (Tel Aviv: Re'emim Press, 2001), 221-222.

²⁶³ Ibid, 222.

²⁶⁴ “And these are the Happenings of Stavit”, in *Stavit: For the Summary of a Yield of 100,00 kg of Milk – in the Conference for the Crowning of Stavit*. The Israeli Breeders Association, 12 October 1950.

²⁶⁵ Uriel Levi, *The History of Dairy Bovine in Israel* (Tel Aviv: Cattle Breeders Association in Israel, 1983), 200-202.

²⁶⁶ Natan Alterman, “The Picture of the Cow ‘Stavit’,” *Davar: Hatur Hashvi'i*, 4 August 4 1950.

²⁶⁷ *Davar*, “‘Senior Home’ for Stavit,” 2 July 1951: 4.

is healthy and strong, her udders are healthy...her teeth...appetite and ability to utilize food are admirable. Her fertility is flawless: fifteen births in fifteen years (she even had twins once)''²⁶⁸ (see Figure 6). Stavit, one example of a truly exceptional Hebrew cow, helped demonstrate the sanctity of the land.²⁶⁹

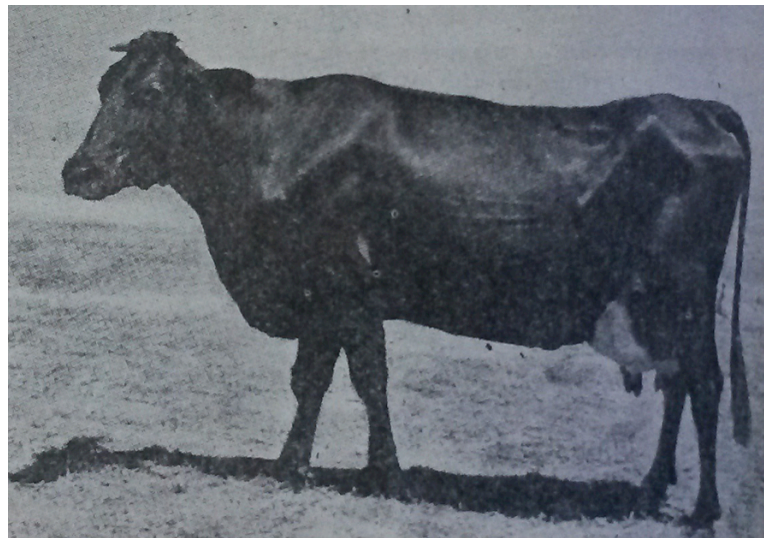


Figure 7: Stavit, an exceptional Hebrew cow. Source: *Agriculture and Settlement in Israel: A Decade After its Establishment*, Ever-Hadani (Ministry of Agriculture, 1958), 141.

At a time when the land of Palestine seemed particularly distant from the land of the Bible, settlers demonstrated their proximity in unique ways. For them, “a land flowing with milk and honey” was no longer was a metaphor, but a reality waiting to happen. The process of revealing, however, depended on modern science. Settlers began

²⁶⁸ “And these are the Happenings of Stavit”, in *Stavit: For the Summary of a Yield of 100,00 kg of Milk – in the Conference for the Crowning of Stavit*. The Israeli Breeders Association, 12 October 1950.

²⁶⁹ There are other ways to interpret Stavit’s success. Historian Nir Mann argued (in a conversation regarding his grandfather, Efraim Smaragd) that Stavit (along with other figures such as cow-grower and milk-lady Miriam Baraz) became famous as part of a well-planned campaign to support the Kibbutz economy in the face of contemporary struggles for governmental financial support. Conversation with Nir Mann, “*Efraim Smaragd*”, Tel-Aviv, 6 March 2014. It is also important to consider that few months prior to Stavit’s coronation, many thousands of American cows arrived in Israel and gradually reduced the percentages of mix-breeds (see concluding remarks).

to understand scientific agriculture as a tool necessary for changing Palestine, one they could deploy with significant advantage.

The story of the “Hebrew Cow” allows room for the different kinds of bodies that take part in processes of place-making and in the formulation of science. Historians of Zionism have discussed how the ideal Zionist body, the “New Jew,” became the symbol of the nation and its manhood. But persistent investments in the fertility of the “New Jewess,” the maker of plenty, also fostered the burden of producing a sacred environment.²⁷⁰ Drawing from the growing literature in animal studies as well the history of the body, this chapter demonstrates that the efforts to create plenty applied to both humans and other animals.²⁷¹ Historians of science have paid much attention thus far to model animals, particularly the process of extrapolating knowledge from animals and its application to humans.²⁷² But in this chapter, we see how, in circumstances where infertility jeopardized the production of plenty, knowledge about women became useful for cows.²⁷³ In this sense, humans became model animals for other animals, just as the other way around.

²⁷⁰ Cows were not usually considered Jewish, but Hebrew. Nevertheless, “Jewish” and “Hebrew” are often used interchangeably in the context of Palestine and Israel. For the sake of relating to the historiography of Zionism and the “New Jew,” I propose to use the “New Jewess” for both female cows and women.

²⁷¹ *Thinking with Animals: New Perspectives on Anthropomorphism*, ed. Lorraine Daston and Gregg Mitman (New York: Columbia University Press, 2005); Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989); Michel Callon, “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay,” in *Power, Action and Belief: A Sociology of Knowledge*, 196-233 (London: Routledge, 1986).

²⁷² Rob Kohler, *Lords of the Fly* (Chicago: Chicago University Press, 1994); Karen Rader, *Making Mice: Standardizing Animals for American Biomedical Research* (Princeton: Princeton University Press, 2004).

²⁷³ The permeability of reproductive knowledge between humans and animals in Palestine in the 1940s is early in comparison to what has been described in the literature. Adele C. Clarke, for example, writes that “the boundaries between agriculture, medicine and biology were not only porous, but began disappearing for the reproductive sciences in the early 1970s,” in “Reflections on the reproductive sciences in agriculture in the UK and US, ca. 1900–2000+,” *Studies of History, Philosophy, and Biology & Biomedical Sciences*

From early on, and as opposed to the European tradition, settler's dairy cattle management focused on yield rather than looks, or as Smargad noted admirably, "the exterior is lousy, but the yield is excellent."²⁷⁴ The emphasis on the efficacy of reproductive organs correlated with the ways in which cows in Palestine and Israel were usually photographed – that is, from behind and as a group, rather than individually in the front or side, as was common in European cattle exhibitions. In this sense too, Stavit was truly exceptional.

In the story of bees in Chapter 1, European interventions mainly centered on changing forms of movement; however, additional types were at play in the making of the "Hebrew Cow." Here, Europeans relied on means to overcome distance. Artificial insemination created new possibilities for production and reproduction, helping transform bovine bodies into milk-and-place-making machines. Following the 1948 War, the composition of the "Hebrew Cow" changed further, as wartime losses and new financial and technological opportunities brought thousands of American Holstein dairy cows to Israel, disrupting decades of attempts at mixing the breeds.²⁷⁵ As we will see in Chapter 3 and Chapter 4, such separatism between different kinds of breeds, animals, and people was invented for and became intertwined with sustaining a new political and environmental order.

38 (2007): 328.

²⁷⁴ Shlomo Dori, *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 2* (Caesarea: Cattle Breeders Association in Israel, 1996), 66.

²⁷⁵ "Efraim Smaragd," Biographical notes, Assets of Efraim Smaragd, Nir Mann's collection, 2. The success of the new "Hebrew Cow" was so impressive that it finally convinced agriculturalists in the Netherlands, the model country for Jewish dairy cattle management in Palestine, to import Holstein cows to the Netherlands as well. See Bert Theunissen, "Breeding for Nobility or for Production? Cultures of Dairy Cattle Breeding in the Netherlands, 1945-1995," *Isis* 103, 2 (2012): 278-309.

*

Key political figures and scientists gathered in 1953 to lay the cornerstone for a veterinary institute in Beit-Dagan, later to become part of the “Volcani Institute.” They joined in signing “the foundational scroll of building and establishment of a veterinary institute...that will be used as a hall of research and science for the fostering and maintenance of the health of animals in the agricultural sector in Israel.” “This scroll,” they wrote “is a testimony and a sign for the numerous efforts invested by the people that live in Zion in making the deserts of the land bloom, and for the revival and return of the glory of its agricultural past.”²⁷⁶

²⁷⁶ Ami Neria, *Veterinary Medicine in the Land of Israel: 50 Years of Veterinarian Medicine, 1917-1967* (Tel Aviv: Re'emim Press, 2001), 239.

CHAPTER 3:

The Rise and Fall of Jewish Shepherdling

“Your letter hit me like lightning from the sky” wrote pharmacologist and hormone researcher Felix Sulman (1907-1986) to his friend and colleague Aaron Harari (1908-1984) in Kibbutz Merhavia in 1962.²⁷⁷ “I can understand all the reasons but the act reminds me of a man that would divorce his wife because...she served him cold soup.” Clearly stunned, Sulman concluded his letter with a substantiated backing: “I support your struggle. I am certain that with joint forces a solution to this painful problem can be found.”²⁷⁸

The problem in question? The potential closure of Kibbutz Merhavia’s sheep pen. Despite Sulman’s hopes, no solution materialized and the pen was closed for good, leaving shepherds in search for a new occupation, Sulman’s experiments unfinished, and the sheep homeless. Surprisingly, however, Sulman’s reply was not the most dramatic reaction to the Kibbutz’s decision: David Zamir (1906-1967), the leader of the shepherding community in Israel, was devastated, and a few year later, committed suicide in the Kibbutz.²⁷⁹

²⁷⁷ A kibbutz is a communal agricultural settlement. The name of the Kibbutz, Merhavia, (which was also the name of a nearby Moshav, or a semi-cooperative settlement) has biblical origins and is roughly translated into “the space of God.”

²⁷⁸ Letter from Prof. Felix G. Sulman to Aharon Harari, 10 August 1962, KMA/Aharon Harari Collection/2.7.

²⁷⁹ “David Zamir,” biographical notes, KMA/David Zamir Collection; Isar Lavi, “‘The Troubadour’ of

The closing of the pen at Merhavia was not a unique event. Ultimately, pen closures became part of a contemporary trend in Israel, leaving few independent sheep farms to handle the small sheep cheese market and the limited (but growing) demand for sheep meat. The end of a story that began at the turn of the twentieth century, sheep herding among Jewish settlers emerged in the last years of the Ottoman period in Palestine and then prospered during British rule, until pens existed in the majority of the different Jewish agricultural settlements (the Kibbutz and Moshav communities) with the establishment of the state of Israel. The rise and fall of Jewish sheep herding in Palestine and Israel is the focus of this chapter, and beyond the story of pens and sheep, I will employ the story's trajectory to discuss the relation between settling practices and the settlers' ever-changing means of understanding the land.

The European manners of settling in Palestine were entangled with shifting perceptions of land ownership and land use. Following the Ottoman land law of 1858 and the gradual adoption of ideas about private property during the periods of British and Israeli rule, the land and its creatures ceased to fill the multiplicity of roles as in prior times. Each plot of land had a permanent use now; each animal one purpose. Ownership of land, now coupled with documentation, gradually moved into European hands, creating a more stark contrast between nomadic and sedentary life.²⁸⁰ The commonly practiced Arab system of collective ownership – the *Mushāʿ* – was deemed illegitimate, although this happened along with the growth and global admiration of the collective use

Sheep Management,” in *David Zamir (A Collection for His Memory)* (Merhavia: Shepherds Association and Kibbutz Merhavia, 1968), 13.

²⁸⁰ Edmund Burke III has recently noted the importance of the study of pastoralism for environmental history of the Middle East in “Pastoralism and the Mediterranean Environment,” *International Journal of Middle East Studies*, 2010: 663-665.

of land in Jewish agricultural settlements.²⁸¹ The way to know and treat the land changed as well: in addition to exploring the width and length of the land, it became a time of searching deeper to unearth biblical truths from the underground and to pump water. Intensive agriculture, comprised of different kinds of knowledge and skills, gradually gained prominence.

In the midst of these changes, Jewish settlers debated the right ways to become native to the land and the correct approaches to becoming true Hebrews. Knowledge of the land of Palestine, which they equated with the land of the Bible, was considered essential to becoming part of land, for belonging to and owning it. The means to explore the land and its creatures were numerous. Some focused on mapping, specimen and data collections, and digging; others centered on bodily ways of knowing.²⁸² Although just one of many methods, the Zionist practice of walking the land, known as the *Tiyul* (the “stroll”), became widely practiced and institutionalized.²⁸³ Another was shepherding and the rearing of sheep, a practice that settlers, inspired by the Judeo-Christian tradition,

²⁸¹ For more on the idea of the land owned collectively, the *Mushāʿ* land system, and the ways in which older forms of land management changed during late Ottoman rule and the British Mandate see Amos Nadan, “Colonial Misunderstanding of an Efficient Peasant Institution: Land Settlement and Mushāʿ Tenure in Mandate Palestine, 1921-47,” *Journal of Economic and Social History of the Orient* 46, 3 (2003): 320-354; Aida A. Essaid, *Zionism and Land Tenure in Mandate Palestine* (New York: Routledge, 2014), 103-107.

²⁸² Marcel Mauss, “Techniques of the Body,” *Economy and Society* 2, 1 (1973 [1936]): 70-88; Michael Polanyi, *Personal Knowledge: Towards a Post-Critical Philosophy* (Chicago: Chicago University Press, 1958); Pierre Bourdieu, *Outline of a Theory of Practice*, trans. R. Nice (Cambridge: Cambridge University Press, 1977).

²⁸³ For more on the *Tiyul* see Orit Ben-David, “Tiyul as an Act of Consecration of Space,” in *Grasping Land: Space and Place in Contemporary Israeli Discourse and Experience*, ed. Eyal Ben-Ari and Yoram Bilu (Albany: State University of New York Press, 1997); Maoz Azaryahu and Arnon Golan, “Zionist Homelands (and their constitution) in Israeli Geography,” *Social & Cultural Geography* 5, 3 (2004): 497-513; Shaul Kelner, “Ethnographers and History,” *American Jewish History* 98, 1 (2014): 17-22. On the Palestinian hill walking as a way of knowing the land see Raja Shehadeh, *Palestinian Walks: Notes on a Vanishing Landscape* (London: Profile, 2007), Hayden Lorimer, “Walking: New Forms and Spaces for the Study of Pedestrianism,” in *Geographies of Mobilities: Practices, Spaces, Subjects*, ed. Tim Cresswell, 19-34 (Burlington: Ashgate Publishing Limited, 2011), 25, and David Pinder, “Errant Paths: the Poetics and Politics of Walking,” *Environment and Planning D: Society and Space* 29, 4 (2011): 672-692.

considered to be the most ancient and most biblical of all, the so-called “crown of tradition.”²⁸⁴

This chapter deals with two main Jewish shepherding movements, *Haro'e* and *Hanoked* (both meaning “the shepherd”), from the first years of the twentieth century until the early 1960s. These groups shared a common goal of redeeming the land of Palestine through shepherding; however, they disagreed about the path of this redemption. Some shepherds used their senses, and others used numbers; some walked and shouted in the open spaces, others danced and sang near the pen. In this chapter, I examine these different approaches to shepherding in the land of Palestine and Israel and explain why, unlike the “holy bee” and the world-champion and nationally celebrated “Hebrew Cow,” sheep raised by Jewish shepherds is a largely forgotten memory of the past.

The New-Ancient Hebrew Shepherd

“It was in 1920 at the end of the summer, in my first months in the country,” recounted a settler named Efraim Eliash. “I was working near...the mountain, and suddenly heard the sound of bells ... I turned my face and...a flock of sheep was sliding towards me, and behind it the shepherd - a very peculiar figure...it was a remarkable image. The figure of the shepherd, the flock and the mountain slope, all this impressed me and I was enchanted. This was the first time I met a Hebrew shepherd.”²⁸⁵ Eliash’s encounter ultimately shaped his decision to adopt shepherding himself. His deep fascination stemmed from the fact that such a sight was, in fact, extremely rare. While

²⁸⁴ Dov Beker, *In the Meadows* (Association of Shepherds in Israel, 1972), 5.

²⁸⁵ Efraim Eliash, “We moved to Hamara,” in David Zamir and Matityahu Shelem, *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Shepherds Association, 1957), 47.

sheep and shepherds were a common sight in the environment of early twentieth century Palestine and shepherding a main occupation for some Arab peasants and most Bedouin pastoralists in the region, the vision of a Jewish shepherd in Palestine was, for a long time, nothing more than a European fantasy.²⁸⁶

Europeans settlers in Palestine, and Jews especially, perceived an inherent fit between sheep and the land. Sheep, much like cattle, were an important part of the agricultural economy in their places of origin.²⁸⁷ More importantly, however, sheep were perceived as the most natural inhabitants of the Palestinian environment, since Europeans equated Palestine with the land of the Bible and many of the leading figures in the Old and New Testaments were, in fact, shepherds. “It is enough to browse through the Bible to realize the extent to which our fathers were dealing with sheep. The shepherd and his herd are mentioned over 300 times,” wrote Zamir, many years before his tragic death. “It has been proven scientifically that...at the birth of our nation, raising sheep was the main occupation of the Hebrews,” he added, noting the great impact that shepherding had made on generations to come. Biblical shepherding deeply influenced Christian thought and practice as well, he argued: “Many biblical symbols originate in sheep herding. The

²⁸⁶ Dr. Siegfried Hirsch, “Sheep and Goats in Palestine,” *Bulletin of The Palestine Economic Society* 6, 2 (1933): 12, 32. As opposed to the Western conception (which was common among Jewish settlers as well), shepherding was not the main occupation from the beginning of time. Anthropologist Dan Rabinowitz discusses how shepherding among Bedouins in Sinai occupied a secondary role throughout the nineteenth century but was adopted again when other sources of income were no longer available. In Dan Rabinowitz, “Themes in the Economy of the Bedouin of South Sinai in the Nineteenth and Twentieth Centuries,” *International Journal of Middle East Studies* 17, 2 (1985): 211-228; Frantzman and Kark similarly describe changes in Bedouin practices with changes in patterns of settlements in the twentieth century. See Seth J. Frantzman and Ruth Kark, “Bedouin Settlement in Late Ottoman and British Mandatory Palestine: Influence on the Cultural and Environmental Landscape, 1870-1948,” *New Middle Eastern Studies* 1 (2011): 1-23.

²⁸⁷ On the role of sheep in the European expansion of the Americas see Elinor G. K. Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico* (New York: Cambridge University Press, 2005).

shepherd, who became an exemplary figure, is the source for the Christian term pastor.” Moreover, Zamir posited that raising sheep was not only natural to people of the Bible, but also natural to this land. The choice of sheep was “not a result of some vague affection for sheep rooted in the Hebrews. The natural conditions of the Land of Israel are convenient for the raising of sheep. The entire region has always been blessed with herds.”²⁸⁸

In order to become true Hebrews in the land of the Bible, therefore, some Jewish settlers wanted to be shepherds; however, they knew very little about caring for sheep and goats. Ultimately, Jewish settlers’ solutions to the knowledge gap played into a contemporary understanding of local peasants and pastoralists. In the early twentieth century, European travelers, researchers, and settlers (as well as some Palestinian intellectuals) considered local Arab population to be the link between the biblical past and modern Palestine, and they therefore studied and to some extent adopted Palestinian ways of life.²⁸⁹ In following local practices, Jewish settlers hoped to unearth the link

²⁸⁸ David Zamir, “On the Design of the Figure of the Hebrew Shepherd,” lecture given on 28 July 1952, 2, HHA/125.8.

²⁸⁹ Different Europeans, both Christians and Jews, lived with Arabs, whether peasants and pastoralists, in order to study them during the first decades of the twentieth century. Four examples of researchers who then published extensively are the Finnish anthropologist Hilma Granqvist (1890-1972) who lived with peasants in Artas (see Chapter 1), the Jewish settler Tuvia Ashkenazi (1904-1970) who lived with different tribes of Bedouins, shepherd and archeologist Pessah Bar-Adon (1907-1975) who lived with the Bedouin initially for the sake of conducting anthropological studies (see pages 118-119), and orientalist and diplomat Eliyahu Epstein (Eilat) (1903-1990). All three Jewish settlers – Ashkenazi, Bar-Adon, and Epstein – were also involved in intelligence work for different Jewish organizations. See Hillel Cohen, *Army of Shadows: Palestinian Collaboration with Zionism, 1917-1948*, trans. Haim Watzman (Berkeley; Los Angeles; London: University of California Press, 2008), 76, 115; Tuvia Ashkenazy, *The Bedouins in the Land of Israel* (Ariel, 1957); Pessah Bar-Adon, *In Desert Tents: From the Notes of a Hebrew Shepherd Among Bedouin Tribes* (Jerusalem: Kiryat-Sefer, 1981); Eliyahu Eilat (Epstein), *The Bedouins: Their Lives and Customs* (Tel-Aviv: A. Y. Stibel, 1933). For a discussion on “Biblical Parallelism” among Palestinian intellectuals, see Salim Tamari, *Mountains Against The Sea: Essays on Palestinian Society and Culture* (Berkeley: University of California Press, 2009), 96-98.

between the people of Palestine and the Hebrews of the Bible.²⁹⁰ Indeed, most Jewish settlers in the first decades of the twentieth century distanced themselves from everything they considered bad to Jewish life in Europe. By “going native,” they tried to create a new-ancient man, a Modern Hebrew person.²⁹¹

Unlike agricultural settlers of the late nineteenth century, or those living in the cities, Jewish settlers seeking “native Hebrew life” attempted for a while to be pastoralists like the Bedouins.²⁹² Many lived for long months with Bedouin tribes, adopting particular practices such as the nomadic style of dressing and knowledge of the local Arabic dialect. They sought not only knowledge of the habits of the land, but also the creation of a Jewish-Bedouin nomadic tribe.²⁹³ Since Bedouins were considered the masters of shepherding, settlers recognized the need to learn the practice first-hand from them. Ultimately, in living with Arab shepherds, Jews learned to handle and love the sheep (and the goats); in particular, they came to understand how to feed, milk, shear, and care for the sheep, and, most importantly, how to control the sheep out in the open.²⁹⁴

Controlling the movement of sheep was not an easy business. Only skilled shepherds could successfully direct the sheep to a desirable grazing area, control their good pace and orderly manner, and convince the sheep to return in case of danger or bad

²⁹⁰ Nadia Abu El-Haj, “Introduction,” *Facts on the Ground: Archeological Practice and Territorial Self-Fashioning in Israeli Society* (Chicago: University of Chicago Press, 2001); on genetic research that tried to prove such connections see Rafael Falk, *Zionism and the Biology of the Jews* (Tel Aviv: Resling, 2006).

²⁹¹ The representation of the “New Jew,” as well as the figure of the Hebrew shepherd, was always a gendered male.

²⁹² On the choice of the Bedouin as a model of the heroic native see Yael Zerubavel, “Memory, the Rebirth of the Native, and the “Hebrew Bedouin” Identity,” *Social Research* 75, 1 (2008): 315-352.

²⁹³ Yaakov Goldstein, *The Shepherds Fraternity* (Tel Aviv: Ministry of Defence Publications, 1993), 13; Michal Sadan, *The Hebrew Shepherd: Transformation of Image and Symbol from the Hebrew Enlightenment Literature to the New Hebrew Culture in Israel* (Jerusalem: Yad Ben-Zvi, 2011), 38.

²⁹⁴ The few goats had a special role in Bedouin herds, as expeditors of the sheep.

weather. Knowledge of shepherding included the ability to differentiate between the individual animals of the flock and to communicate with these different members. One shepherd described how, while training with Bedouins, he came to appreciate the individual sheep, not just the crowd: indeed, shepherds learned to recognize individual sizes, colors, type of hair, length and shape of the ears, and differential “facial expression[s], behavior[s], and characteristics.” Beyond these features, there were “signs that [were] hidden, that only the sharp eye of an experienced shepherd [would] notice... you realize that the sheep is not so innocent as you initially imagined, that she has her own wisdom, and that she is not so helpless and miserable.”²⁹⁵ Recognition and differentiation went beyond the training of the eye. The shepherd and the sheep learned to recognize each other by smell as well: “The Arab has a special smell and the sheep smell it,” wrote a different Jewish shepherd. The connection went both ways, as shepherds could also reportedly smell differences “when two herds were mixed.”²⁹⁶

In addition to sights and smells, sounds were an important way of managing the movement of sheep in space. Many Jewish settlers noted how Bedouin shepherds used their voice to manipulate the sheep, describing a near-magical use of vocal control. One shepherd recalled witnessing a Bedouin shepherd “calling his herd, after they went too far...he was shouting and doing magic tricks with his entire body.” When the Bedouin shepherd noticed his spectator, “his enthusiasm grew, and he threw himself to all directions, his head-cover flew off...he was waving with his Abaya [dress]...falling and

²⁹⁵ *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 99.

²⁹⁶ M. Livne, “Lecture for the Course of Shepherds Training, October 16-20, 1951,” HHA/125.8.2.

standing up, screaming and stopping and screaming again. He was all ‘hocus-pocus.’”²⁹⁷

Though a generally mystifying view of the orient was typical, Jewish settlers did care about the particularities of the shepherd’s bodily sounds and movements because they considered the Bedouin shepherds an authority. Only by knowing how to use their voices and move their bodies like Bedouins could Jewish shepherds master their flocks, become Hebrews, and redeem the land. For instance, it was told that Kozchuk, one successful Jewish shepherd, managed to draw “the flock after him as hypnotized, with wonderful Bedouin calls.”²⁹⁸

However, the Bedouin habitus was not always enough, as the Bible and its descriptions also played an important role. Moshe, a shepherd from the Kinneret group, highlighted the use of the biblical words:

We studied the Bible and were enthusiastic about descriptions of the nomadic life. We used several biblical expressions, which were missing in our professional work. We liked the biblical stories about the wandering tribes in particular. Because we were shepherds!²⁹⁹

The sheep reacted well to this amalgamation of Bedouin practices and biblical language. A witness, enchanted by the musical impact of one Jewish shepherd, once described: “They [the sheep] turn their heads towards the shepherd and listen, listen and enjoy.”³⁰⁰ The witness noted the shepherd’s “curly wild hair that fell on his eyes,” and the way in which he stood “in the middle of the herd, raise[d] his head up and beg[an] to sing

²⁹⁷ *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 100.

²⁹⁸ David Zamir, in *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 70.

²⁹⁹ Moshe, in *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 43.

³⁰⁰ Dov Blumberg, “Kfar Gila’di, early January 1922”, Dov Blumberg’s Diary, Dov Blumberg Collection, Lavon Institute for the Study of the Labor Movement/IV-104-26-4, Tel-Aviv. I thank Matan Boord for this document.

a Hebrew song with an Arab tune.”³⁰¹ The witness continued, describing how, “he finished singing one song, and began a second song, using a wild Bedouin music: A l-a-n-d f-l-o-w-i-n-g w-i-t-h m-i-l-k a-n-d h-o-n-e-y.”³⁰² Thus emerged this first generation of Hebrew shepherds; they named themselves *Haro’e* (“the shepherd” in biblical, as well as in modern Hebrew).³⁰³

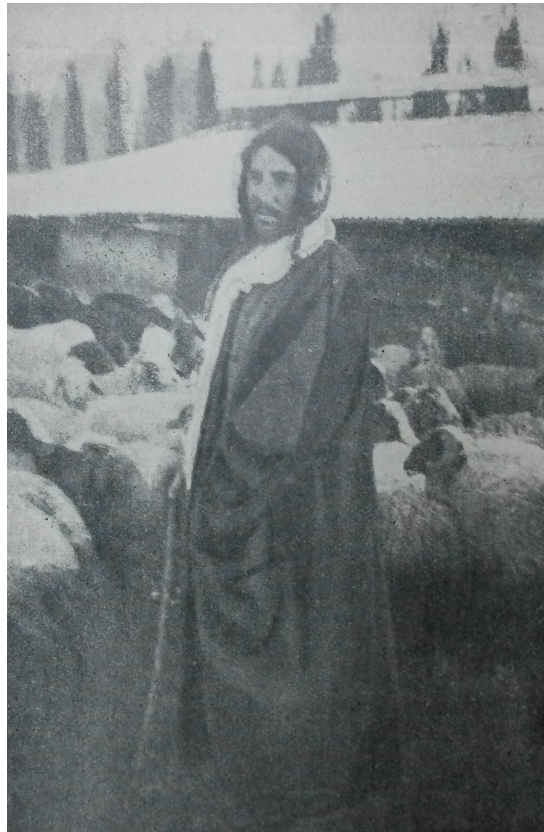


Figure 1: Pessah Bar-Adon, a Bedouin-Hebrew Shepherd. Source: Aziz Afandi (Pessah Bar-Adon) *In Desert Tents: Stories* (Tel-Aviv: A.Y. Shtibel, 1934).

³⁰¹ Ibid.

³⁰² Ibid.

³⁰³ There are similarities between the Hebrew shepherds and “Canaanism,” a group of settlers that aspired to revive ancient Canaanite life in Palestine in the 1940s. As opposed to the shepherd community, however, who attempted to revive Hebrew life by way of practice and exploration of the land, Canaanism was an urban and intellectual phenomenon, focusing mainly on poetry. As Yaacov Shavit demonstrates, the members of that movement did not seek intimate knowledge and connection with the environment. For them, the landscape was not a concrete thing, but merely a metaphor. In Yaacov Shavit, *From Hebrew to Canaanite: Aspects in the History, Ideology and Utopia of the “Hebrew Renaissance” – from Radical Zionism to Anti-Zionism* (Jerusalem: Domino Press, 1984), 42-43.

While training with Bedouins was considered essential to shepherding, “going to the Bedouins” was, by no means, a widespread phenomenon. Ultimately, the number of Jews who lived among the Bedouins throughout the years – whether to study them, to be trained by them, or to undertake a combination of the two – was small, yet their stories captured the imagination of the Jewish community as a whole. Such was Pessah Bar-Adon (1907-1985) (see Figure 1), a Polish immigrant at 18, who lived with the Bedouins in order to conduct research as part of his Oriental Studies program at Hebrew University. In his quest to understand why so many biblical leaders were shepherds, Bar-Adon became trained as a shepherd, received an Arab name (Aziz Afandi), and published several books on his experiences, as well as short stories relating to the lives of the people and animals of Palestine. Bar-Adon, who was considered “a little crazy” by the growing shepherds’ community, finally deserted shepherding and became a famous archeologist.

Not all members of *Haro’e* considered the creation of a Jewish-Bedouin tribe their goal, and, in reality, most Jewish shepherds in the last days of the Ottoman rule were hired individually by the older private Jewish settlements, the *Moshavot*. Furthermore, efforts to create Jewish shepherd tribes largely failed in the 1900s and 1910s, underscoring a larger debate about the role of the Hebrew shepherd in Palestine.³⁰⁴ The shepherds mostly disagreed about the relation between controlling the sheep and controlling the land. Many of them perceived the practice of shepherding as a way to

³⁰⁴ For description of these failing attempts see Moshe, in *The Hebrew Shepherd*, 43; One famous example of failure was the shepherds group at Sheikh Abrek hills in the second half of the 1920s, HHA/IV-235-1-2536/42-92. Another was the unrealized cooperative shepherds group at Poria. See HHA/IV-235-2-80.

“guard the land” and they considered *Haro’e* to be part of the larger movement of the Jewish armed riders, “the guard” (*Hashomer*).³⁰⁵ For that reason, these shepherds argued, in addition to the traditional flute and cane, that the Hebrew shepherd should carry a gun. Others, however, rejected this connection of shepherding to militant conquering of the land, arguing instead that, while they supported the growth of Jewish settlements in Palestine, shepherding was first and foremost a tool to revive biblical Hebrew life.

The Lure of Scientific Shepherding

Emerging global forces also shaped the formulation of Hebrew shepherding. World War I brought sweeping political and economic changes to Palestine, which shook the larger Palestinian population. With the emerging support from the new British rule and from Jewish organizations worldwide, the Jewish settlement in Palestine began to expand, followed by sequential Arab resistance. As a result of growing tensions, the modern Hebrew “New Man” was redefined not only in relation to the Diasporic Jew, but also in relation to the Palestinian Arab (see Chapter 2). Shepherds faced this tension head-on; caught between acknowledging the Bedouins’ practical knowledge and criticizing them as hindrances to the growth of the Jewish settlement in Palestine, many shepherds began questioning the value of training with Bedouins and started seeking alternative solutions.

David Zamir, the son of a wealthy citrus grower, was fascinated by the Arab shepherds from his childhood and, in his quest to become a shepherd, debated the road to

³⁰⁵ For an analysis of the failing attempts of the first generation of Jewish shepherds, and the shepherds’ relation to *Hashomer* movement see Yaakov Goldstein, *The Shepherds Fraternity* (Tel Aviv: Ministry of Defence Publications, 1993).

shepherding in the mid 1920s. “As many did before me,” he recounted, “going to the Bedouins was appealing. But I wondered to myself: might they be wrong and this is not the way? ... I decided to go to Europe, to taste the flavor of agricultural culture and to base my work on professional-educational foundation.”³⁰⁶



Figure 2: “Profession: Élève Berger; Nationalité: Palestinienne.” David Zamir’s (previously Pishezner) French identity card, issued for the purpose of his shepherding studies during 1928-1929. Source: KMA/David Zamir collection/1.1b.

A shift away from the dominance of Bedouin knowledge went hand-in-hand with new ideas about much-needed changes in the land of Palestine and the role of western science in bringing about these changes. Science had now become a tool to prove the holiness of the Palestinian land, to demonstrate its remarkable makeup, and to substantiate its sacredness.

³⁰⁶ David Zamir, in *The Hebrew Shepherd*, 72.

With the conclusion of World War I and the renewal of financial support for various Jewish projects in Palestine, settlers began to reconsider what Hebrew shepherds should and could be. A Hebrew-Bedouin tribe, as well as permanent shepherds settlements, had proven to be inappropriate ways of recreating the land of the Bible, for both shepherds and sheep alike.³⁰⁷ “The dream of a Jewish Bedouin tribe dissolved,” said one shepherd, “we understood that we are people from the settlements and that sheep herding must penetrate the Hebrew economy.”³⁰⁸ From now on, settlers agreed, it was not enough for Hebrew shepherds to simply know how to control the movement of sheep in the open land. Instead, sheep had to be integrated into the changing agricultural economy of Palestine and become part of the emerging mixed-farming economy as so dominated by Jewish settlers.

Gershon Fleischer (1893-1974), a leading figure in the *Haro'e* group, explained how the vision of Hebrew shepherds changed, as they “began establishing a shepherds group anew. This time we wanted to...raise sheep in greater numbers, and on more economic and scientific foundations.”³⁰⁹ Competing with the success of dairy cow husbandry (see Chapter 2), shepherds had to prove to the Jewish leadership and the British government that sheep husbandry was worthwhile.³¹⁰ Shepherds argued that

³⁰⁷ In *The Hebrew Shepherd*, shepherds recount several cases when the newly trained shepherds did not succeed in keeping their beloved sheep healthy or even alive. One example was a herd that died only few days after arriving at the settlement at Kinneret. Ibid, 43.

³⁰⁸ Moshe Jlodin, in *The Hebrew Shepherd*, 45.

³⁰⁹ Gershon Fleischer, in *The Hebrew Shepherd*, 47.

³¹⁰ In various letters and reports, the shepherds complain about the Jewish leadership's favoring of cow milk production over sheep milk, and of the work of the Bovine Breeders Association over the work of the shepherds community.

“rational” sheep management would demonstrate progress, reestablishing efforts through which biblical practices could succeed and expand.³¹¹

Starting in the late 1920s, sheep pens were built in many of the Kibbutzim, alongside cowsheds, children houses, and communal dinning halls. Under the Kibbutz structure, management of sheep was very different. Sheep now had their own houses: they no longer spent the night next to their owner outside or within the family tent in days of storm.³¹² Various kinds of people became involved in the lives of the sheep, from the toddlers who came to see and pet them when the sheep returned back from the pasture,³¹³ the older children who learned how to feed and treat them as part of their school education, to the young adults who were trained to raise and breed them in agricultural schools and experimental stations.³¹⁴ City dwellers came to witness agricultural ways of life and observe the source of their famed Brinzah cheese.³¹⁵

More importantly, however, the lives of sheep changed because settlers thought that sheep management needed to professionalize and become “scientific.” It was becoming important to collect data on the sheep and gather statistics on milk yield, diseases, and feeding regimes. Shepherds began organizing and evaluating this data in a herd book, imitating the practices of the cow growers. Registration and insurance of the

³¹¹ David Zamir, “On the Design of the Figure of the Hebrew Shepherd,” lecture given on July 28, 1952, HHA/125.8, 2.

³¹² Mordechai Livne, in David Zamir and Matityahu Shelem, *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 121.

³¹³ Interview with 101 year old former shepherd Lotek Etsion, Kibbutz Merhavia (October 18, 2011); Interview with Yosefa Pecher, whose father was a shepherd in the 1940s, Kibbutz Mizra (February 9, 2012).

³¹⁴ Organized training with sheep in agricultural schools for youth began in 1934. In *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 200.

³¹⁵ For the centrality of the Brinzah cheese as part of the Jewish sheep management see Dr. Siegfried Hirsch, “Sheep and Goats in Palestine,” *Bulletin of The Palestine Economic Society* 6, 2 (1933): 40.

herds became systematized and medical problems called for consultation with veterinarians and specialists from the Hebrew University. These experts were also involved in experiments on sheep breeding and feeding within the settlements, just like those conducted by Felix Sulman. “Tedious and scientific work,” argued the shepherds, improved the quality of the local breed from “its primitive state in the faltering Arab herd.”³¹⁶ The shift to intensive agriculture also facilitated a concentrated effort to increase milk yield and, to some extent, to enhance the quality of meat and wool (although these were never as important).³¹⁷ The sheep were now milked during particular hours and in rapid pace. Furthermore, the shepherds were instructed to refrain from talking. There was no longer a strong need for those special, wild calls (see Figure 3).³¹⁸

³¹⁶ Dov Beker, in *The Hebrew Shepherd*, 166.

³¹⁷ Shepherd Pima writes in 1950: “We got the local sheep and developed the traits for enhanced milk production. There were also other suggestions – the direction of meat and wool. It was not coincidental that we went in the direction of developing milk traits.” In Minutes of the 21st Meeting of the Shepherds Association, 21 November 1950, LILR/IV-280-1.

³¹⁸ “Seasonal Instruction for the Raising of Sheep and Goats,” the Ministry of Agriculture, Animal Division, Sheep and Goat Department, 16 January 1949, HHA/125.2.2.



Figure 3: A Hebrew Shepherd of the Settlement: no Bedouin dress and no wild calls. Jacob Rosner, “Shepherd with Sheep Flock Grazing in the Pasture at Kibbutz Afikim,” 1945. Source: JDWL/Image Collection.

One of the most important events in professionalizing the sheep industry was the founding of an organization of shepherds, *Hanoked* (another biblical word for “shepherd”) in 1929, later to become *The Hebrew Shepherds Association*.³¹⁹ The organization held annual meetings to deliver scientific lectures and exchange information about recent developments in the field of sheep management, breeding experiments, and local inventions.³²⁰ *Hanoked* also started official training programs for shepherds, determined the appropriate Hebrew terminology for the field, and negotiated the future of

³¹⁹ *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Shepherds Association, 1957), 132. I found that in a report in English by the association, the name was translated into “The Jewish Sheep Breeders,” perhaps imitating the dairy Cattle Breeders Association.

³²⁰ *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Shepherds Association, 1957), 210.

sheep rearing with both the British government and the Jewish leadership.³²¹ Members of the association attempted to participate in the larger global scientific community: many read professional literature, some sent their publications worldwide, and others established connections with sheep growers around the world and experimented with imported breeds of sheep (although these crossbreeds proved unsuccessful).³²² Members of the organization also read and published extensively in the *Hasade*, the scientific journal of the Jewish agricultural community in Palestine, and later established their own journal, *Hanoked*.

The organization valued their successes, hoping to demonstrate “that they [the sheep] play an important role both as a factor in maintaining and increasing the fertility of the soil and as an alternative source of revenue in the diversified system of farming which is...the backbone of Jewish colonization in Palestine.”³²³ *Hanoked* did so by presenting the sheep and the data in special exhibitions and by writing reports sent to the Jewish leadership and the British government.³²⁴ These must have proved somewhat convincing, as “the [British] government approved of loans for purchasing sheep for 26 settlements” in 1942 and as sheep pens gradually became a noticeable part of Jewish agricultural life.³²⁵

³²¹ Ibid, 137.

³²² Acknowledgments of the receipt of various publications, (shepherds in China, USSR, and New-Zealand to Aaron Harari), in LILR/IV-280-77. On the failure of crossbreeding with Marino sheep see Dr. Henry P. Fox, M.R.C.V.S., “Sheep Husbandry and Goat Rearing in Jewish Settlements in Palestine,” Special Investigation Carried out Between 11 March 1934 and 17 May 1934, 45, HHA/125.3, 2.

³²³ Ibid, 49.

³²⁴ *The Hebrew Shepherd*, 142; See also Figure 4.

³²⁵ Letter from Hebrew Shepherds Association to Mr. M. Beder in The Agricultural Center, Tel-Aviv, 24 September 1942, HHA/125.2.3.

Efforts to demonstrate the importance of shepherding were also targeted at the Jewish community at large. Shepherds thought they had a special role to play and that the success of professional and scientific sheep management was proof of that role. “In the revolution that is emerging among the Hebrew people we are those who bring back the glory of ancient days,” announced Zamir in a lecture to students of the shepherds training course.³²⁶ He explained that shepherding was “the most ancient occupation, that is most rooted in the homeland, that we are renewing with our work.”³²⁷ According to the shepherds, lay people had to realize that shepherding was not only rational and good for the economy of Palestine, but also a way to redeem the land, since “the only person that walks on the soil most of the days of the year is the shepherd. And his absence brings an orphaned image to our lands.”³²⁸ Numbers were important but so was knowing the land by foot. It was also significant that the wandering sheep were of a stock that was considered ancient, not crossbred.³²⁹ Sheep and shepherding, in other words, were still essential for demonstrating that the land of Palestine could ultimately become the biblical land.

³²⁶ David Zamir, “On the Design of the Figure of the Hebrew Shepherd,” lecture given on July 28, 1952, 2, AAH/125.8.2.

³²⁷ Ibid.

³²⁸ Ibid.

³²⁹ Dov Beker writes: “Our fathers were livestock people... and like the shepherd, also his sheep. The sheep that we have been improving in this land are an inheritance from the days of the fathers – [they are] the sheep of the fathers” in Dov Beker, *In the Meadows* (Association of Shepherds in Israel, 1972), 5. It was important for Jewish shepherds to use the local breed, which they considered ancient, but its Arab name was problematic. How could Hebrew shepherds rear Arab sheep? The shepherds acknowledged the importance of the name of the breed to their practice and debated what other name might be most appropriate. Berl, a member of the association told his colleagues in their meeting in 1950: “there was an objection to the name ‘Awasi,’ and we searched for a name that would fit the best quality of sheep of our environment. The committee decided to broaden the name to the entire breed - [and call it] ‘the Hebrew breed.’ Our fathers predated the Arabs who gave the name Awasi. Our fathers developed sheep rearing and improved the ancient stock. Thanks to them, we are entitled to call the sheep and the breed ‘Hebrew.’” Not everyone agreed, however. Another member, Israel Ben-Shem, objected the use of the name “Hebrew,” since it does not capture the improvement of the breed done by Hebrew shepherds. In Minutes of the 21st Meeting of the Shepherds Association, 21 November 1950, LILR\IV-280-1.



Figure 4: “Items of Income and Expenditure for Ewe in a New Flock in Peace Time,” a hand-painted poster (100x70cm) prepared for the first Jewish Shepherds Association’s Exhibition in “Children Village” at Ben-Shemen, 1945. The poster, exhibiting the profitability of sheep raising, was painted by David Alef (Alkind), an artist and shepherd. The numbers and illustrations show that the sheep were raised for their milk: the income distributed shows milk (56.6%) as opposed to meat (29.4%), manure (9.4%), or wool (4.7%). Source: HHA/drawer 94-4.91(1). Alef, who was a shepherd at Beit-Alfa, Ramat Yohanan, and then Beit-Hashita, built his first atelier inside the sheep pen.

“An Electric Shearing Machine with Verses from the Bible”: The Art of Modern Ways

Numbers, exhibitions, and conferences were not the only means for highlighting the importance of sheep and shepherds. “We are not just a professional association, but mainly an association for spreading the idea of sheep rearing,” noted a member of

Hanoked.³³⁰ The production of shepherd culture became just as intensive as the production of milk and ewes. Various folklore practices and forms of art were married to illustrate the relationship between shepherds, the Bible, and the land of Palestine. A diverse group of artists, many of whom were shepherds too, dealt extensively with the practices surrounding sheep husbandry.³³¹ From early twentieth century, prominent painters, photographers and sculptors used the shepherd, sheep, and goat as their main subjects of their works.³³² Furthermore, much like for the Bedouins, the song on the lips was crucial as the knowing foot on the land: many dozens of poems were written and composed into songs, which were then sang on the holidays in both rural and urban settings.³³³ “Know Dear Shepherd” was one such song, written by Matityahu Shelem, a prominent member of the shepherds’ community:

Know dear shepherd

That springtime has arrived

Descend from the mountain to the valley

On the pasture you shall expand

³³⁰ Pima in Minutes of the 21st Meeting of the Shepherds Association, 21 November 1950, LILR/IV-280-1.

³³¹ On the artistic representation of the shepherd in Jewish culture see Michal Sadan, *The Hebrew Shepherd: Transformation of Image and Symbol from the Hebrew Enlightenment Literature to the New Hebrew Culture in Israel* (Jerusalem: Yad Ben-Zvi, 2011). Three famous painters who were also shepherds are David Alef (Alkind) (1908-?) (of Kibbutz Beit-Alfa, later Ramat-Yohanan, and finally Beit-Hashita), Aharon Harari (1908-1984) (of Kibbutz Merhavia), and Leo Roth (1914-2002) (of Kibbutz Afikim). In addition to being a shepherd himself, Roth invited Siegfried Shalom Sebba (1897-1975), another renowned artist, to stay with him and witness the practice of shepherding. This long visit is known to have influenced Sebba deeply and resulted in one of the most important Jewish/Israeli paintings “The Shearing” (*Hagez*) in 1947.

³³² See, for example, the paintings of Ze’ev Raban from the Bezalel School of Art, Siegfried Shalom Sebba, Nahum Gutman, and Menashe Kadishman.

³³³ Leila Abu-Lughod, *Veiled Sentiments: Honor and Poetry in a Bedouin Society* (Berkeley: University of California Press, 1986); the Aboriginal *songlines* is a practice that combines singing with the knowledge of the land. See Bruce Chatwin, *The Songlines* (New York: Penguin Books, 1987).

Your song will erupt, and will astonish in might

*Ancient shepherds' singing...*³³⁴

Geographical expansion and movement are also central to the song “The Sheep Have Spread,” similarly written and composed by Shelem. Both these songs, as many others, became part the Hebrew Shearing Holiday (*Hag Hagez*).³³⁵

The celebrations of *Hag Hagez*, which began (or were renewed from biblical times, as the shepherds would say) in the 1930s, were the epitome of the ritualization of shepherding in communal agricultural settlements.³³⁶ Shepherds of several settlements communally sheared the sheep during the day, combining an “electric shearing machine with verses from the Bible,” followed by special dances, songs and plays.³³⁷ The program was rather rigid. As documented by the shepherds, *Hag Hegez* happened during sunset, when “The public [would] gather by the decorated pen...standing on both sides of the road, waiting for the sheep to come back from the field. The shepherds appear with their herds, the sheep are washed and clean...the shepherds come to the center wearing flowers.”³³⁸ The rest of the night centered on the sounds of the flute, Hebrew shepherding songs, and theatrical musicals with biblical figures. Most important were the communal

³³⁴ Matityahu Shelem, “Know Dear Shepherd,” *Zemereshet*, <http://www.zemereshet.co.il/song.asp?id=654> (accessed 9 September 2012).

³³⁵ Matityahu Shelem, “The Sheep Have Spread,” <http://www.zemereshet.co.il/song.asp?id=1688> (accessed 9 September 2012).

³³⁶ Ruth Eshel, “Dancing on the Sidewalks of Ein-Hashofet,” *Dance Now* 14, 1 (2000): 44-48.

³³⁷ Mordechai Amitai, in *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 222.

³³⁸ “The Shearing Holiday and its Origins,” in *The Hebrew Shepherd*, 223.

dances, which – although choreographed by leading professional dancers – were performed by all participants. Such was the famous “Lamb and Kid” (see Figure 5).



Figure 5: Illustrated dance annotations for “Lamb and Kid,” choreographed by Le’ah Bergstein and printed for the shearing holiday celebrations in 1957. The song was written and composed by Matityahu Shelem, who employed Hassidic motifs. Source: Yad Ya’ai Archives, 125.13, 3.

“Our way is the way of settling the land, making its deserts bloom and fortifying its borders,” declared the shepherds in a report from the 25th anniversary of their association. “We, who wander with the sheep in the paths of the land, in the mountains and valleys, see the blessing that is hidden within it. Indeed a land flowing with milk and honey it is.”³³⁹ This meeting, held just a few years after the establishment of the state of Israel (1948), symbolizes the height of the Hebrew shepherds success. Construction efforts exploded following the declaration of Israel’s independence, the 1948 War, and the mass immigration waves, increasing the number of Israeli sheep pens, both in the Kibbutzim and the Moshavim.

³³⁹ “Report on the Activities of the Hebrew Shepherds Association for its 25th Anniversary,” 1954, HHA/25.2.2, 3.

For example, the number of sheep held by Jews grew from 19,000 in 1948 to 100,000 in 1956.³⁴⁰ This was not only due to successful breeding, but also given the mass transfer of animals from Palestinian to Jewish hand and new and emerging government regulations. Many hundreds of sheep were given or sold cheaply to Jews by the military, after their Palestinian owners were forced to leave them behind during the war, or in other cases, after the military confiscated sheep (as well as goats and cows) owned by those that managed to stay.³⁴¹ Furthermore, the new government began sending members of the Hebrew Shepherds Association across the northern borders to buy sheep from countries that were now considered enemies.³⁴² At the same time, as part of an attempt to decrease the number of sheep outside Jewish settlements, the government began forbidding the purchase of sheep across borders for Palestinians now under military rule.³⁴³ In addition, in the early 1950s, the Jewish Agency examined the possibility of importing sheep from places such as Australia and Argentina and, during 1953-1956, finally organized the purchase of many thousands of sheep from Turkey.³⁴⁴ For a while, and with the support of various state institutions, it seemed that the sheep had indeed managed to become “one of the pillars of the land’s economy.”³⁴⁵

³⁴⁰ M. Livne, in *The Hebrew Shepherd*, 171.

³⁴¹ See letter from Moshe Sheler, Tel-Aviv to Aharon Harari, Merhavia, 30 May 1948, KMA/Aharon Harari Collection/2.7, and a letter sent by the Hebrew Shepherds Association to the shepherds of Merhavia on July 25th, 1948, KMA/Aharon Harari Collection/2.6, both dealing booty sheep held by the Israeli military and offered to Jewish settlements. For complaints regarding the confiscation of sheep, goats, and cows by the IDF, as well as formal estimations see ISA/Gimel-14/309.

³⁴² The purchase of sheep across borders was coordinated between the Hebrew Shepherds Association, the Prime Minister’s office, the Ministry of Agriculture, and the police, see ISA/Gimel-5/17117.

³⁴³ State support for the purchasing of sheep from across borders happened concurrently to the efforts to reduce the number of herds owned by Palestinians. Palestinian attempts to purchase sheep from across the borders were defined as “smuggling” and entailed punishment, see ISA/Gimel-10/2865.

³⁴⁴ See CZA/S/15/40983.

³⁴⁵ See “Summary of the Activities of the Passing year,” *Hanoked*, 1, 1953, HHA/Hanoked Journal.

The celebrations of the 25th anniversary were not complete, however. In spite of the dramatic growth in the sheep population, Jewish shepherds attending the celebrations were also oftentimes pessimistic, noting, “Bad winds of crisis will not cause despair in our hearts.”³⁴⁶ Indeed, trouble was mounting on all fronts. The move towards intensive sheep management had generated a financial problem: feeding the sheep inside the pen, instead of relying on pasture, made the sheep business too expensive to be worthwhile. The adoption of milking machines as a way to deal with rising costs, created its own complications, and was, ultimately, not sufficient.³⁴⁷ There were also problems with selling the milk to the dominant agricultural cooperative, TNUVA, which preferred cow’s milk over sheep milk.³⁴⁸ Few agriculturalists agreed to work with the sheep that were still around, mostly because the sheep stank.³⁴⁹ Finally, shepherds of the mid twentieth century said that the spirit and cultural value of raising sheep was lost.³⁵⁰

From the late 1950s onwards, the various publications of the organization adopted a tragic tone. With each passing year, more and more announcements about closure of pens reached the members of the organization, causing one shepherd to remark, “We shall admit that in mixed feelings these words are written...as we strive to the future satisfied with our professional achievements, the harsh feeling that our numbers are

³⁴⁶ “Report on the Activities of the Hebrew Shepherds Association for its 25th Anniversary,” 3.

³⁴⁷ David Eydlin, “Sheep Management,” January 1991, 2, KMA.5.5: Sheep; “Not all agricultural sectors can solve their problems with machines” said one shepherd in 1950. In Minutes of the 21st Meeting of the Shepherds Association, 21 November 1950, LILR/IV-280-1.

³⁴⁸ In a meeting with the Hebrew Shepherds Association in 1954, the manager of TNUVA said that “by no means will TNUVA agree to the mixing of sheep with cows milk!” in Minutes of the Meeting, 29 March 1954, HHA/125.2.3; See also TNUVA to Kibbutz Merhavia, 10 March 1941, KMA/5.5.1 (sheep 1930-1959).2; *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhavia: The Hebrew Sheperds Association, 1957), 158.

³⁴⁹ Ronny Gitter, “‘Wolves’ are needed for the herds of Sheep,” 3, HHA/125.12.1.

³⁵⁰ David Eydlin, “Sheep Management,” January 1991, 2, KMA/5.5: Sheep.

declining would not let go. We suffer tremendously from the extermination of the herds, a phenomenon that has no justification.”³⁵¹ By the late 1960s, management of sheep was in a severe crisis and the smell and sound of sheep was almost gone from the settlements. Despite their hopes and efforts, Hebrew shepherds had become extinct.

The Story of Sheep: The Rebellious *Shatra/Bat-Hayil*

Why did the Hebrew shepherding project fail? Pessah Bar-Adon, a first generation Hebrew shepherd who lived with the Bedouins and learned how to manage herds in the open, chose one particular sheep to explain the magnitude of change in sheep management, particularly the transformation from pastoral life to settled life. Bar-Adon crafted a story of a sheep named *Shatra/Bat-Hayil* (Arabic and Hebrew for “skillful girl”), in a narrative that was first published in a literary magazine in 1933 and later as a book in 1942. In presenting his story to young readers of Hebrew in times when a new type of sheep management was taking form, Bar-Adon sought to critique larger social transformations.

According to the story, Shatra was born and raised in a nomadic tribe, where she grew up to be a natural leader, given her good character and in fitting with her Arabic name. Her early years were happy ones, and she appreciated the open space. When she was fully-grown, Shatra was separated from her herd and taken to the city market against her will, where she was sold to a new owner. Now living amongst unfamiliar sheep in a new pen and in a permanent settlement, Shatra, who now had the Hebrew name of Bat-Hayil, showed signs of distress. “The shepherd did not know what was wrong with

³⁵¹ “Summary of Activities of the Passing year,” *Hanoked*, 1958, 1, AAH/Hanoked Journal.

Shatra,” notes the narrator, “she looked healthy, beautiful, nice and loved by everyone, just as she used to be in her herd in the tribe. But something strange had happened, and the shepherd could not figure it out.” For the first time in her life, Bat-Hayil was not comfortable wandering: “She walked with the herd but looks gloomy, moving to the sides, as if she wanted to hide her presence...as if she was lonely within the herd...only at time she would made a long ‘behhhhh’ sound...there was always fear in her eyes, a feeling of insult.”³⁵²

In the last part of the story, Bat-Hayil sits inside the pen at night, remembering “her sunny homeland, her herd, and even her shepherd, that was mean to her once...she looked at her fellow sheep...How can they all sit peacefully and quietly?” As her fury grows, Bat-Hayil “shout[s] out loud, as if she was about to be slaughtered...what good does pasture, plenty of water, and rest in a good pen do, if she was locked? Where are the nights of wandering far-far away...where are the mountains, the valleys, the open space?” The sheep stands up and pushes “to freedom, to spaciousness, to the mountains, to the hills, to the valleys, to the sun, moon and the stars – to the godly space. To the wind and storm...she burst joyfully outside” and, all of a sudden, the rest of the sheep follow. The guard notices too late, and as the sheep reach the paths of the mountains, they begin to laugh out loud (see Figure 6).

³⁵² Pessah Bar-Adon, “A Sheep,” *Mozna'im: Journal for Literature, Criticism, and Art*, 3 November 1933: 2-4; Aziz Afandi (Pessah Bar-Adon), *Among the Herds of Sheep (From the Stories of a Shepherd)* (Tel-Aviv: Eli'asaf Publishers, 1942).



Figure 6: “She burst joyfully outside [the pen],” Shatra/Bat-Hayil by artist David Alef in Aziz Afandi (Pessah Bar-Adon), *Among the Herds of Sheep (From the Stories of a Shepherd)* (Ahi’asaf Publishers, 1942), 95.

While a simple story of pen-reared sheep, the message rings clear. Through the story, the reader comes to understand that the appearance of comfort, order, and plenty in the pen was only a deceit and that the sheep’s ultimate happiness depended on open, wide spaces and on movement and change. Freed of the scientific, productive, and rational reality inherent in settled sheep rearing, the sheep excel in nomadic life. In a period when a new manner of raising sheep was taking shape, Bar-Adon’s tale of one rebellious sheep bears a strong theme: permanent settlements are no place for sheep. The moral of the story is possibly greater, relating to the parallel between the sheep and the shepherd: permanent settlements were no place for shepherds either. According to this perspective, scientific shepherding was an oxymoron.

Conclusion

In the late 1950s and 1960s, every communal vote to close a pen was devastating for the larger shepherding community, which tried to battle the trend with all force.³⁵³ The lofty vision of David Zamir, the main advocator behind the power of the sheep population to transform the land, had failed.³⁵⁴ Zamir's disappointment was significant, contributing to his sense of personal ruin.³⁵⁵ However, other shepherds, even when it was clear that they had failed, thought they had created something unique:

We paved our own road [in sheep management] ...the attempt to imitate the system of the Bedouins in some manner was only a short episode...from...the rest of the world we couldn't learn much either. Sheep farmers in the developed countries were model for us as to the structure of the farm and the value of the sheep goes, but not ... for the work methods and breeding, or the ways of life of the shepherd. In that we are better and very different from them.³⁵⁶

The need for a unique way of shepherding in Palestine was part of a growing desire to expand Jewish settlement in Palestine. Even when Arabs were considered the link between modern Palestine and the land of the Bible, Europeans settlers still believed they had the right and ability to settle the land and, more importantly, the tools to redeem it. And when the Arabs were no longer seen as the missing link to biblical life, the shepherds continued to consider the sheep as “the iron bridges that will connect between the past and the future of our renewing ancient homeland.”³⁵⁷ For example, sheep of this

³⁵³ See, for example, the description of a communal vote by Rivka Gorfien, in *The Hebrew Shepherd*, ed. David Zamir and Matityahu Shelem (Merhaviah: The Hebrew Sheperds Association, 1957), 289; Minutes of the 21st Meeting of the Shepherds Association, 21 November 1950, LILR/IV-280-1.

³⁵⁴ David Zamir, “On the Design of the Figure of the Hebrew Shepherd,” 2.

³⁵⁵ “David Zamir,” biographical notes, KMA/David Zamir Collection.

³⁵⁶ *The Hebrew Shepherd*, 164.

³⁵⁷ H. Horowitz, in *The Hebrew Shepherd*, 213.

time were not crossbred, as shepherds wanted to preserve the belief that their sheep were local and that they had been wandering the land since ancient times.³⁵⁸

For the first Hebrew shepherds, smell, sight, and sounds were important ways of knowing the sheep and controlling them in their larger environment. But the use of senses changed with the change in shepherding. Instead of calling and screaming, shepherds were silent during milking and singing in holidays; instead of moving in space, shepherds danced near the pen; and instead of observing other shepherds to learn the art of shepherding, they became the subjects of the artistic gaze themselves. Indeed, the distinct smell of sheep was no longer useful as it had become yet another reason to close down more pens.

The change in the agricultural economy of Palestine also induced a shift from extensive to intensive use of the land. The way to expose the biblical land – by means of agriculture as well as archeology – was to dig deeper. In this new method of sheep management, the sheep did not graze but were fed inside the pen. Thus, those shepherds caring for the sheep spent less time herding the sheep and more time measuring them, feeding them, milking them, and cleaning the pen. In this new and relatively successful form of sheep management, which involved very little herding, there was not much room left for Hebrew shepherding. The Hebrew shepherd was therefore, in its essence, a non-

³⁵⁸ As part of their efforts to make sheep rearing profitable, agricultural experts in Israel began to develop a dual-purpose sheep (raised for both milk and meat) in the mid 1950s. The *Assaf*, a crossbreed of the local *Awasi* and the East Friesian sheep, became the dominant breed in Jewish farms in the 1970s. In recent years, most Jewish farmers raise sheep for their meat (approx. 85%). In Kibbutzim today there are only 7 sheep-raising farms as opposed to approx. 120 in the 1950s. This data is based on my correspondence with Dorit Kababia, Manager of Sheep and Goat Section, Ministry of Agriculture, Beit Dagain, 13 July 2014, and my correspondence with Yosef Carasso, Manager of Sheep and Goat Section during 1970-1999, 17 August 2014.

scientific figure. Standardizing sheep management entailed getting rid of the shepherd, even though shepherding was the real goal all along. For this reason, Hebrew shepherding was a story of inevitable failure. The “scientific revolution” in sheep management failed because it undermined the main motivation for bringing it about.³⁵⁹

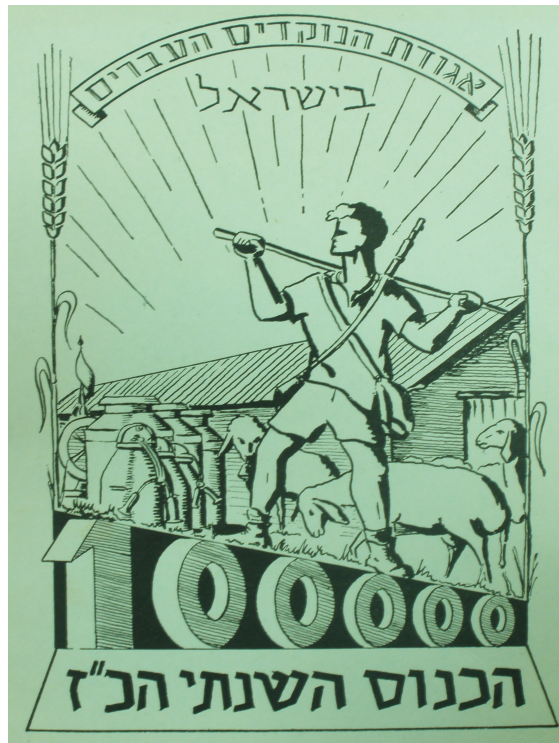


Figure 7: Scientific shepherding: an oxymoron. Poster of the 27th Annual Meeting of the Hebrew Shepherds Association, 1956. Source: HHA/125.2, 2.

Shepherding was not merely about “going native,” but about becoming native, or better yet, turning indigenous. For that purpose, it was necessary to hold an ancient stock and wander the lengths and widths of the land. With attempts to the shift to “scientific shepherding,” holiday dances and the welcoming of sheep home from the pasture

³⁵⁹ Another indication of this impossibility lies in Hebrew language. As opposed to the Hebrew word for a cow farmer, *Raftan* (literally, a man that works in the cowshed), or a beekeeper, *Dvoran* or even *Kavran* (literally, a man that works with hives), there does not exist a word for a sheep farmer (which might be *Diran*, a person that works in the pen). In contrast, there are two Hebrew words for shepherd.

remained important, as these customs signified the performance of homecoming. Shepherding was always a stinky business, and it was never profitable; yet the question remains, why did Jewish shepherding last as long as it did? Why did it cease to last when it did? Larger changes in the kibbutz and state economy are a partial explanation. With industrialization and urbanization, a new way of tightening bonds with the land grew stronger.³⁶⁰ Making a Holy Land was no longer about experiencing the environment, but about successfully manufacturing its products.

Finally, during this period, the majority of those Bedouins that managed to stay with their animals and live on the land despite changing political regimes, gradually abandoned shepherding as well. Both British rule and the Israeli government restricted the grazing of animals throughout the lands of Palestine and Israel, as the process was considered harmful to afforestation efforts (see Chapter 4). Furthermore, government efforts sought to establish the “sedentarization” of Bedouin life. These pressures asphyxiated Bedouin agricultural habits; thus, the failure of the Hebrew shepherding project is entangled with the failure of Bedouin shepherding.³⁶¹ While most Hebrew shepherds were able to make successful career shifts, Bedouins became constrained and invisible in the eyes of the state.³⁶²

³⁶⁰ Tal Elmaliach, *The Kibbutz Industry, 1923-2007: Discussing Questions of Economy and Society* (Givat Haviva: Yad Ya'ari Publishers, 2009).

³⁶¹ Bedouin shepherding did not go totally extinct under Israeli rule. Anthropologist Aref Abu-Rabia demonstrates today how against all odds, and in contrast to the state efforts of sedentarization, a significant number of Bedouins continue to hold sheep and goats and practice shepherding. However, sheep rearing does not occupy the same central role as it had before, and families no longer rely on sheep rearing as a main occupation and source of income. Furthermore, most owners of sheep do not usually herd them themselves, but they hire others to be shepherds. In Aref Abu-Rabia, *The Negev Bedouin and Livestock Rearing: Social, Economic, and Political Aspects* (Oxford: Berg Publishers, 1994).

³⁶² In an interview with Lotek Etsion, he noted the various careers he had held since the closure of the pen at Merhavia, but he also said that there were many shepherd that later became “important [not necessarily

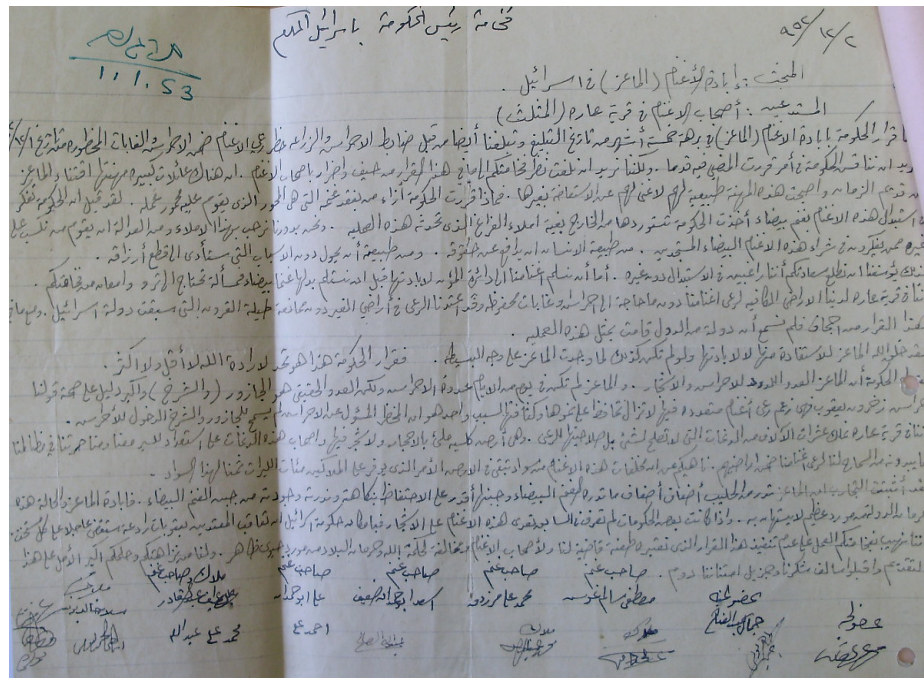
CHAPTER 4:

Getting their Goat: Disturbing Creatures and the Problem of Counting in Mandate Palestine and the Early Israeli State

“We were informed that the government decided to eliminate the goats within five months [and] about the ban of herding goats in groves and forests,” wrote the leaders of the A’ara village in a 1952 petition to David Ben-Gurion, the first prime minister of Israel. “We do not wish to argue with the government in a matter in which it has a firm decision. Yet we want to draw your attention to the neglect and the harm that this matter entails for the owners of goats...God created the goats for benefit and not for annihilation... and this governmental decision is against the will of god no more and no less. The government argues that the goats are the sworn enemies of the forests and the trees, but they never were.”³⁶³ A handwritten petition, the statement was one of many sent in the 1950s to governmental officials by Palestinian goat owners, now under Israeli military rule (see Figure 1, 2).

medical] doctors,” Interview with a 101 years old former shepherd Lotek Etsion, Kibbutz Merhaviva (18 October 2011).

³⁶³ Petition of goat owners of A’ara village to the Prime Minister of Israel, 2 December 1952, ISA/Gimel Lamed-19/17022.



For many Palestinian villagers and Bedouin nomads, goat raising was a central occupation. Goats were the greatest population of domesticated animals in Palestine and had been the main producers of milk for hundreds of years in the area.³⁶⁴ Government

³⁶⁴ The main animal tax charged during the Ottoman rule in Palestine was for goats, sheep, and bee honey;

restricting of goat raising and grazing in the early 1950s caused much anxiety and frustration for villagers who depended on these animals for their livelihood. For the few Palestinians who managed to stay on their land after the 1948 War, their lives changed dramatically; their property shrunk, and their practices and movement were controlled and restricted under the new regime. The government allocated lands previously used for grazing animals and crop planting as either closed forest areas or as Jewish agricultural settlements. Moreover, the government attempted to systematically reduce the number of goats in the country in order to minimize their perceived environmental damage issuing the *Black Goat Law* in 1950. Some Palestinian villagers from A'ara and elsewhere in Israel chose to petition to Israeli government officials and other state institutions to resist this changing reality.³⁶⁵ They argued against the limitations on movement and usage of space, rejecting the claim that these were necessary for the sake of reviving the land.

This chapter deals with the gradual process by which the local milk producer, the goat, came to be seen as *the enemy of nature*, a hindrance to the revival of Palestine, and a threat to social order by both British and Israeli rules.³⁶⁶ I examine the negotiations over

see Amy Singer, *Palestinian Peasants and Ottoman Officials: Rural Administration around Sixteenth century Jerusalem* (Cambridge, UK: Cambridge University Press, 1994), 49. On 21 November 1918, as part of her impressions as a participant in the American Red Cross Commission to Palestine, American nurse Edith Madeira wrote about the unavailability of dairy cows and the prevalence of goats: "Cows being out of the question we are trying to buy goats for milk for the babies. They will have a goat herd and come into the hospital yard and be milked there twice a day. Doesn't that sound queer and oriental?" HSP/Edith Madeira Papers/3. According to British accounts, there were 571,289 goats over 1 year of age in Palestine in 1926; 307,316 in 1937; and approx. 325,000 in 1943 (that is in comparison to 290,854 sheep in 1926, 177,838 in 1937, and approx. 244,000 in 1943); the first full livestock census took place in 1930. In Roza El-Eini, *Mandated Landscape: British Imperial Rule in Palestine, 1929-1948* (New York: Routledge, 2006), 226.

³⁶⁵ On the use of the law as a tool for seizing control as well as the consequential resistance (for both the colonizer and the colonized) in British Palestine see Jeremy Forman and Alexander Kedar, "Colonialism, Colonization and Land Law in Mandate Palestine: The Zor al-Zarqa and Barrat Qisarya Land Disputes in Historical Perspective," *Theoretical Inquiries in Law* 4, 2 (2003): 491-540.

³⁶⁶ There are a few differences in this regard between the British rule and the Jewish settlers, as

the meaning and habits of this creature, which was for long a symbol of the diasporic Jew and then gradually became a symbol of the rebellious Palestinian peasant. In essence, this chapter deals with the vilification of the local goat and its owner and how, within the framework of the law, Palestinians villagers and other historical actors objected to this process and its basic theoretical assumptions. This is a story of how the best candidate for producing plenty of milk in Palestine/Israel became an outcast.

Recent studies of the Middle East have demonstrated a growing interest in the tools of social history, cultural, and science and technology studies (STS).³⁶⁷ Especially in the last decade, historians have chosen the environment as a way to talk about colonialism and the image of the East through Western lenses. As part of this trend, some work has challenged the Western notion of the Middle East as a place of stagnation and backwardness, rejecting the idea that the region prospered in ancient times and became a desert as a result of the behavior of those native to the East. By doing so, this body of work demonstrates how that declensionist narrative, together with the science of ecology,

afforestation efforts by the British had much more to do with taming nature rather than reviving it. Whyte writes in *The Rape of the Earth*, "Erosion is a modern symptom of maladjustment between human society and its environment. It is a warning that Nature is in full revolt against the sudden incursion of an exotic civilization into her ordered domains. Men are permitted to dominate Nature on precisely the same condition as trees and plants, namely on conditions that they improve the soil and leave it a little better for their posterity than they found it." In G. V. Jacks and R. O. Whyte, *The Rape of the Earth: A World Survey of Soil Erosion* (London: Faber and Faber LTD, 1939), 26.

³⁶⁷ See, for example, Marcia Inhorn, *Infertility and Patriarchy: The Cultural Politics of Gender and Family Life in Egypt* (Philadelphia: University of Pennsylvania, 1996); Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002); Omnia El-Shakry, *The Great Social Laboratory: Subject of Knowledge in Colonial and Postcolonial Egypt* (Stanford: Stanford University Press, 2007); Priya Satia, *Spies in Arabia: The Great War and the Cultural Foundations of Britain's Covert Empire in the Middle East* (Oxford: Oxford University Press, 2008); Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (London; New York: Verso, 2011); Sherine Hamdy, *Our Bodies Belong to God: Organ Transplants, Islam, and the Struggle for Human Dignity in Egypt* (Berkeley; Los Angeles; London: University of California Press, 2012); On Barak, *On Time: Technology and Temporality in Modern Egypt* (Berkeley: University of California Press, 2013).

served as a tool for Western colonization and the exploitation of resources.³⁶⁸ However, the majority of historical work regarding Palestine and Israel continues to adopt the same declensionist-narrative used by the historical actors they study. These scholars attest to the prospering of Palestine in biblical times and remark on its later “rescuing” by westerners in the late nineteenth century. Today, the trend continues, as even very recent studies have assumed the “ruining” of Palestine and celebrate the progress, rationality, and rehabilitation of the European (and particularly Jewish) settlements (albeit recent environmental catastrophes).³⁶⁹

In this chapter, I challenge this widely accepted theory. I examine the growing disparity between governmental ideas about the land of Palestine and local agricultural practices. Woven within my story of the vilification of the local goat – a process that was shaped by ideas about race and politics – is the inherent ironies entangled within these efforts to transform the land. I explore various responses to the construction of the herding goat as an agent of destruction: some by veterinary doctors, others by goat owners, and to a certain degree, those by the goats themselves. In addition, by analyzing the voices of struggle of Palestinian peasants and Bedouin nomads vis-à-vis grazing

³⁶⁸ See, for example, Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonialism Expansion in North Africa* (Athens: Ohio University Press, 2007); Alan Mikhail, *Nature and Empire in Ottoman Egypt: An Environmental History* (Cambridge: Cambridge University Press, 2011); and *Environmental Imaginaries of the Middle East and North Africa*, ed. Diana K. Davis and Edmund Burke III (Athens: Ohio University Press, 2011). This entire collection of essays is devoted to analyzing and critiquing this narrative of decline. The goat appears on the first page of the introduction. For a critique of the narrative of environmental decline in the sub-Saharan context see James C. McCann, *Green Land, Brown Land, Black Land: An Environmental History of Africa, 1800-1990* (Portsmouth: Heineman, 1999). Another, more recent collection of essays dealing with ideas about the environment in the MENA region is *Water on Sand: Environmental Histories of the Middle East and North Africa*, ed. Alan Mikhail (Oxford: Oxford University Press, 2013).

³⁶⁹ A very recent example includes the first chapters of *Between Ruin and Restoration: an Environmental History of Israel*, ed. Daniel Orenstein, Alon Tal and Char Miller (Pittsburgh: University of Pittsburgh Press, 2013). Other works include Alon Tal’s *Pollution in a Promised Land: An Environmental History of Israel* (Berkeley: University of California Press, 2002).

limitations and the arguments of experts, I add a new layer to the environmental history of the Middle East.³⁷⁰ This chapter deals with recurring attempts to influence and mold dominant ideas about the land and its creatures, a process I call “rubbing against.”

British Forestry and Evil Creatures

Limitations on grazing did not begin with the establishment of the state of Israel in 1948. While the Israeli rule exacerbated these restrictions, they were long known to shepherds and goat owners in the area, both Arabs and Jews. Grazing laws had developed rapidly during the British Mandate in Palestine, particularly after WWI. As British rule stabilized, officials implemented their policy of afforestation, which was considered to be a pivotal aspect of improvement and development, and a major way to utilize land resources throughout the entirety of the British Empire.³⁷¹ When World War I concluded,

³⁷⁰ In reaction to a narrow understandings of “nature,” “environments,” and “environmental disasters,” environmental historians and anthropologists have attempted to complicate discussion of the relation between environmental changes and social and political process. Exemplary studies that focus on grassroots movements and/or everyday practices and reactions to environmental changes and policies are Richard White’s *The Organic Machine: The Remaking of the Columbia River* (New York: Hill & Wang, 1995), Louis S. Warren’s *The Hunter’s Game: Poachers and Conservationists in Twentieth-Century America* (New Haven: Yale University Press, 1997), Karl Jacoby’s *Crimes against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley; Los Angeles; London: University of California Press, 2001), Anna L. Tsing’s *Friction: An Ethnography of Global Connection* (Princeton: Princeton University Press, 2004), and Thomas G. Andrews’ *Killing for Coal: America’s Deadliest Labor War* (Cambridge: Harvard University Press, 2008).

³⁷¹ For the importance of agricultural improvement and later development to the British Empire see Richard Drayton, *Nature’s Government: Science, Imperial Britain and the ‘Improvement’ of the World: Science, British Imperialism and the Improvement of the World* (New Haven: Yale University Press, 2000); Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007); William Beinart and Lotte Hughes, *Environment and Empire* (Oxford: Oxford University Press, 2007); Gregory A. Barton argues that the British “made forestry the most important aspect of agricultural development in the Middle East after the Second World War” in Gregory A. Barton, “Environmentalism, Development and British Policy in the Middle East 1945-56,” *Journal of Imperial and Commonwealth History* 38, 4 (2010): 619-639. For afforestation policies in Palestine see David Schorr, “Forest Law in the Palestine Mandate: Colonial Conservation in a Unique Context,” in *Managing the Unknowns*, ed. U. Luebk (Beghahn Books, 2014, forthcoming), 10, and Gideon Biger and Nili Lifshitz, “The Afforestation Policy of the British Government in the Land of Israel,” *Horizons in Geography [Ofakim Begeografia]* 40-41 (1994): 5-16. For forestry policy in colonial India and its affects on Indian peasantry see Mahadav Gadgil and Ramachandra Guha, *This Fissured Land: An*

the British thus established the Department of Forestry in Palestine, which was responsible for fostering its forests and, more broadly, for taking care of nature.



Figure 3: “Commencement of Afforestation Work in Guara Village, Communal Settlement,” 1937. Source: Lazard’s “Holy Land” Collection, Herbert Katz Center for Advanced Judaic Studies, University of Pennsylvania, Philadelphia.

Britons regarded the planting of forests as a crucial step in developing the lands under their rule, just as the French had in the North Africa.³⁷² British ideas about afforestation and development, furthermore, went hand-in-hand with the growing planting fervor of Jewish settlements in Palestine, led by the Jewish National Fund (see

Ecological History of India (Berkeley: University of California Press, 1993). For the importance of afforestation to British rule in Cyprus see Michael Given, “Maps, Fields, and Boundary Cairns: Demarcation and Resistance in Colonial Cyprus,” *International Journal of Historical Archeology* 6, 1 (2004): 1-22.

³⁷² Roza El-Eini, “British Forestry Policy in Mandate Palestine, 1929-48,” *Middle Eastern Studies* 35, 3 (1999): 72-155; Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonialism Expansion in North Africa* (Athens: Ohio University Press, 2007).

Figure 3).³⁷³ While foresters certainly appreciated trees, there were other creatures that loved them even more: particularly, the herd of local goats, who showed great appetite for young pine trees. The hunger that these goats demonstrated was so great that grazing came to be seen a threat to the maintenance and growth of forests, a cause for flooding and soil erosion, and hence a major hindrance on the way to development. “The complex processes of nature depend for their successful continuation on the system of balance,” noted one British report from the early 1940s, using a common eco-historical argument. “In the earliest times Mediterranean countries were covered with forests, but as soon as he [man] successfully emerged from his early stages of development, he began to upset the balance of nature...[he] found it better to depend on flocks of goats... It is a fact that the goats, camels, and sheep are the primary cause of flooding and soil erosion in this country...overgrazing prevents the beautification of the country with roadside trees, and the planting of shade trees in the villages... practically all rural land...[is] patrolled by flocks of small agile goats which are ready to climb rocks, bushes and any obstacle in

³⁷³ See Irus Braverman’s work for information on the Jewish National Fund, the role of afforestation in Zionist symbolism, and the expansion of the Jewish settlement in the West Bank, in *Planted Flags: Trees, Land, and Law in Israel/Palestine* (Cambridge: Cambridge University Press, 2009). Braverman details various reasons for why the pine tree, the “Jewish Tree,” became central to the planting projects by both the British Government and the JNF: the pine tree grows quickly and helps construct a “European-style” landscape. Additionally, pine is defined as a forest and not a fruit tree, which is thereby considered a form of noncultivation and has been used (under Article 78 of the Ottoman land code that is still in force) for declaring various lands as state land. In “The Tree Is the Enemy Soldier: A Sociolegal Making of War Landscapes in the Occupied West Bank,” *Law & Society Review* 42, 3 (2008): 456, 462-463, and “Planting the Promised Landscape: Zionism, Nature, and Resistance in Israel/Palestine,” *Natural Resources Journal* 49 (2009): 343. Other works dealing with the Zionist planting fervor and the great afforestation project are Shaul E. Cohen, *The Politics of Planting: Israeli-Palestinian Competition for Control of Land in the Jerusalem Periphery* (Chicago: Chicago University Press, 1993), Yael Zerubavel, *Recovered Roots: Collective Memory and the Making of Israeli National Tradition* (Chicago: Chicago University Press, 1995), and Alon Tal, “Combating Desertification: Evolving Perceptions and Strategies,” in *Between Ruin and Restoration: an Environmental History of Israel*, ed. Daniel Orenstein, Alon Tal and Char Miller (Pittsburgh: University of Pittsburgh Press, 2013), 119-122.

order to devour all green vegetation.”³⁷⁴ Destructive and nasty, goats played a major role in this interruption of the balance of nature. To the British, control of that balance required control of Palestinian goats.

The old legal system was an anchor in handling the problem of goats. While the British government encouraged the expansion of tree planting and discouraged grazing in many Mediterranean colonies, the *Forest Ordinance* in Palestine and the following environmental laws were based on old Ottoman rules. In addition to favoring the planting of trees, these laws reflected the government’s main concern: local unrest and turmoil. Eager to avoid conflict, and in spite of British impressions of their own legal superiority, British officials continued with Ottoman rules. Sgd. M.C. Alhassid, for example, noted, “it is important that when amending the Forest Ordinance it should be made clear that it is re-stating existing legislation [sic] which is contained in the Ottoman Land Code, and is

³⁷⁴ Sgd. G. N. Sale, Conservator of Forests, “Memorandum on Control of Grazing,” attached to a letter from Sale to F. R. Mason, Directory of Agriculture and Fisheries, 22 March 1943, ISA/M–13/5109. In *Resurrecting the Granary of Rome*, Diana K. Davis analyzes similar claims regarding desertification processes in North Africa under French colonial rule, in *Resurrecting the Granary of Rome: Environmental History and French Colonialism Expansion in North Africa* (Athens: Ohio University Press, 2007). This paradigm of decline was also applied to the entirety of the Middle East throughout the 20th century. As late as 1971, an American agricultural development expert wrote: “Today’s traveler finds it almost impossible to believe that most of the now barren slopes and mountains with annual precipitation in excess of 12 inches were once forested... The influence of uncontrolled grazing is also evident. The ground cover of the depleted forests is now mainly composed of thorny, unpalatable tragacanth species. The steppic and sub-steppic vegetation has changed from a mixture of palatable grasses, legumes and other good forage plants to low value annuals, thistles and worthless weeds... No doubt the many centuries of mismanagement have greatly contributed to progressive deterioration, which would seem to have accelerated in modern times... The technical knowledge for rehabilitating most Middle East ranges and placing them under rational management already exists... Range departments, services or other administrative bodies have been established. These bodies are charged with the tasks of conducting research, carrying out surveys and preparing management plans. They are empowered to make and en-force regulations for the control of grazing... Full control of the land and the animals must be in the hands of the technicians.” In C. Kenneth Pearse, “Grazing in the Middle East: Past, Present, and Future,” *Journal of Range Management* 24, 1 (1971): 13-16.

not merely a new enactment which is not retroactive. Otherwise many difficulties may be anticipated.”³⁷⁵

While the British government (and the Israeli government that came after) acknowledged the importance of goats and goat grazing to local peasants and nomads and feared the resistance that would arise with growing limitations, the evils of the goat and its shepherd necessitated gradual legal change: “The laws of importance in rural Palestine include those parts of the old Turkish law which, modified by custom, are still in force...Old land laws and customs were based on the common error that the goat is the friend of the poor man...this system worked fairly at a time when land was plentiful.”³⁷⁶ Faced with a desolate and barren land, British officials believed Palestine could only be revived through a rational, ordered system of land management. Sgd. F.R. Mason, for example, the acting Chairman of the British Soil Conservation Board, wrote in 1946 to all district commissioners: “the devastating damage done to this country by indiscriminate free range grazing cannot be stressed too often. It is hoped that all the State Domains allocated as forests will in time be planted...grazing on State Domain Lands should be discouraged whenever possible.”³⁷⁷ However, while afforestation projects and the habits of goats were in severe conflict, the goats were not alone to blame. “The Arab and the goat were responsible for desert wastes,” wrote one British governor in the *Palestine Post* in 1934. “It was a misnomer to describe the Arab as the ‘Son of the Desert’. He was

³⁷⁵ Sgd. M. C. Alhassid to Director, “Grazing Grounds – Management of, Copy” 4 January 1941, 2, ISA/M-19/20.

³⁷⁶ Sgd. G. N. Sale, Conservator of Forests, “Memorandum on Control of Grazing,” attached to a letter from Sale to F. R. Mason, Directory of Agriculture and Fisheries, 22 March 1943, ISA/M-13/5109.

³⁷⁷ Sgd. F.R. Mason, Acting Chairman, Soil Conservation Board to District Commissioners, “Allocation of State Domains as Grazing Grounds,” 10 September 1946, ISA/M-29/4982.

really the ‘Father of the Desert’.” And that desert, the governor argued, was the result of the goat, known from the Old Testament, is “an evil beast – a leader in mighty wickedness.”³⁷⁸

Experiences with afforestation elsewhere contributed to the British management of goat grazing in Palestine, as was the case of Cyprus in particular. “[From] long observation made in Cyprus and Palestine,” argued the British G.N. Sale, the Conservator of Forests, “I have been forced to the conclusion that the old practice of extensive grazing...is the prime obstacle to afforestation, soil conservation, and any form of agricultural development.”³⁷⁹ In the eyes of these officials, goats’ habits had not only been a local problem, but a threat to the Empire as a whole. The British familiarity with the goat “reoccurrence” did allow Palestinian foresters to consult with Imperial authorities to determine the scope of their local “urgent” problem. They solicited the advice of one expert, Dr. R. O. Whyte, a member of the Imperial Agricultural Bureau to Palestine and the “eminent co-author of *The Rape of the Earth*,” who noted that “the fact has to be faced that there are to-day no real forests in Palestine and that if there is one country in the world in which afforestation is desirable that country is Palestine.”³⁸⁰

In other British colonies, foresting policies were not merely rehabilitation or beautification projects, as trees were planted for the sake of firewood and timber, which could be used for construction, heating, and machine operation. In Palestine, however,

³⁷⁸ Major C.S. Jarvis, Governor of Sinai, “The Arab, the Goat, and the Camel: Destroyers of the Desert,” *The Palestine Post*, 11 October 1934. “By eating pit the heart of every living plant,” he said, “They had removed all the binding material provided by Nature.”

³⁷⁹ From Sgd. G. N. Sale, Conservator of Forests to Chief Secretary, Department of Forests, 22 March 1943, ISA/M-13/5109.

³⁸⁰ G. V. Jacks and R. O. Whyte, *The Rape of the Earth: A World Survey of Soil Erosion* (London: Faber and Faber LTD, 1939), 42.

this was a rather small motivation for planting trees.³⁸¹ As a matter of fact, British officials complained, “the production of firewood and timber has long been neglected and ignored by the authorities in Palestine, and, even now, the area devoted to this is totally inadequate.”³⁸² In an area where there was relatively little use for wood for construction or heating, forest planting had other purposes.³⁸³ While the British considered rational land management and expansion an expression of order and control, it was also a reflection of their desire to transform the land and its creatures.³⁸⁴ Ultimately, “goat order” would enable the British to revive a land that was lush with green forest and plentiful trees, not the barren desert they perceived before them.

According to the British paradigm, goats and other grazing animals damaged nature in Palestine and sabotaged the potential rescuing of the land from its current desolate state. Harmful to trees and natures, these animals also hindered other development projects significant to British impressions of progress. In 1942, for example, the district engineer of Lydda highlighted the damage done to the railway system, one of the greatest modernization projects of the British rule in Palestine. F. H. Taylor argued,

³⁸¹ In *Carbon Democracy* Timothy Mitchell discusses the gradual move from wood to coal, and then to oil as the major source for global energy. As part of this change, forests gradually lost their importance to the global economy and political structure from the mid nineteenth century. See Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (London; New York: Verso, 2011), 15.

³⁸² Conservator of Forests to District Commissioner, Jerusalem, 11 March 1941, ISA/M-13/5109.

³⁸³ Alon Tal, “Combating Desertification: Evolving Perceptions and Strategies,” in *Between Ruin and Restoration: an Environmental History of Israel*, ed. Daniel Orenstein, Alon Tal and Char Miller (Pittsburgh: University of Pittsburgh Press, 2013), 120.

³⁸⁴ On the relation between forest management and the control of the state see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998). For a discussion of the emergence of subjectivity in relation to colonial forest regulations see Arun Agrawal, *Environmentality: Technologies of Government and the Making of Subjects* (Durham; London: Duke University Press, 2005). The distinction between colonialism and settler-colonialism is useful for the context of Palestine, as the desire for the exploitation of resources was only secondary to the aspiration for territorial occupation and the creation of community of settlers there. See Patrick Wolfe, *Settler Colonialism: The Politics and Poetics of an Ethnographic Event* (London; New York: Cassell, 1999).

“The experience on the railway is that since 1936 the damage caused by illegal grazing of goats, sheep, cattle, and camels become [sic] more extensive. The first reason is the wave of lawlessness and general contempt for government property, which grew throughout the disturbances, when in many areas ordinary policing died out.”³⁸⁵ The harm to the land caused by grazing animals was, therefore, parallel to and intertwined with the harm caused by local people to the British rule.

It therefore came to be believed that the two together – the Arab and the goat – were ruining nature and posing a threat to the governing rule. Taylor’s mentioning of 1936, the beginning year of the Great Arab Revolt in Palestine, is crucial, as this time became a turning point in the regional power structure and the political agenda of the British government. Palestinian peasants rebelled in a surprisingly organized manner against the British rule, the growing Jewish settlement, and the consequential economic hardships.³⁸⁶ The British government, although caught by surprise, reacted fiercely to the riots.³⁸⁷ In following years, it implemented restrictive partition plans, territorial and

³⁸⁵ Sgd. F. H. Taylor, District Engineer of the Lydda to Chairman of Soil Conservation Board, 11 July 1942, ISA/M-13/5109; Timothy Mitchell calls such interference with movement of resources initiated by imperial powers “sabotage,” in *Carbon Democracy: Political Power in the Age of Oil* (London; New York: Verso, 2011), 21; On the expansion of the railway system in British Palestine see David Tirosh, *The Emek Train* (The Society for the Protection of Nature [Hahevera Lehaganat Hateva], 1988), and Zachary Lockman, *Comrades and Enemies: Arab and Jewish Workers in Palestine, 1906–1948* (Berkeley; Los Angeles; London: University of California Press, 1996).

³⁸⁶ For the economic basis of the 1936 events see Mahmoud Yazbak, “From Poverty to Revolt: Economic Factors in the Outbreak of the 1936 Rebellion in Palestine,” *Middle Eastern Studies* 36, 3 (2000): 93-113. Yazbak’s arguments defy other works arguing that a peasant’s economic status was bettering in the 1930s. See, for example, Yuval Arnon-Ohana, *Peasants in the Arab Revolt in the Land of Israel, 1936-1939* (Tel Aviv: Shiloah Institute, Tel Aviv University, 1978), 36. Peasants had a major role in the 1936-1939 revolts and some of acts of rebellion were targeted at centers of state-supported agricultural research and education. See, for example, the case of the fire at the Arab Kadoorie Agricultural School at Tulkarm, ISA/M-6/4308.

³⁸⁷ Matthew Hughes, “From Law and Order to Pacification: Britain’s Suppression of the Arab Revolt in Palestine, 1936–39,” *Journal of Palestine Studies* 39, 2 (2010): 6-22. While stressing the element of surprise vis-à-vis the Great Arab Revolt, it is important to note how “social unrest and strikes erupted

others, to the Jewish and Arab populations, affecting their ability to achieve political and economic goals.³⁸⁸

Viewed through British lenses, Palestinian peasantry was therefore perceived as threatening and unstable to government rule. These images accompanied those of the grazing goats, which were considered threatening and unstable to the land. Harmful in similar ways, these two – the Palestinian peasantry and the Palestinian goats – therefore came to symbolize each other. The need to create order on the land of Palestine was similar to the need to create order among the people of Palestine. Controlling the land and controlling the people had become one and the same. To do this, the British began to record, count, measure, classify – methods that would allow them to finally eliminate these disturbing creatures and replace them with prolific others.³⁸⁹

throughout the colonial empire in the late 1930s,” in Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007), 13.

³⁸⁸ Rashid Khalidi, *The Iron Cage: The Story of the Palestinian Struggle for Statehood* (Boston: Beacon Press, 2006). It is widely agreed that the events of 1936, and more broadly the Great Arab Revolt of 1936-1939, were transformative moments in the relation between Arabs and Jews and the relation between Palestinian Arabs and Jews to the British government. In his recent book, however, Hillel Cohen identifies 1929 as the ‘year zero’ of the Jewish-Arab conflict. He argues that the violent acts between Jews and Arabs solidified a new binary understanding of these populations. See Hillel Cohen, *1929: Year Zero of the Jewish-Arab Conflict* (Jerusalem: Keter, 2013).

³⁸⁹ For the emergence of statistics as a tool for control and improvement, and the relation between standardization efforts and power structures see Ian Hacking, *The Taming of Chance* (Cambridge: Cambridge University Press, 1990), Michel Foucault, “Governmentality,” in *The Foucault Effect: Studies in Governmentality*, ed. Colin Gordon, Peter Miller Graham Burchell, trans. Rosi Braidotti, 87-104 (Chicago: University of Chicago Press, 1991), Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995), Alain Desrosières, *The Politics of Large Numbers: A History of Statistical Reasoning*, trans. Camille Naish (Cambridge: Harvard University Press, 1998), and James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998).

Numbers on the Way to Rejuvenation

“Owing to the proximity of the Arabian Desert, too many people are apt to consider Palestine as a natural desert or semi-desert” declared G. N. Sale, the Conservator of Forests, in a lecture he gave to the *Palestine Economic Society* in 1942. “This view is a weed, which must be rooted out of all minds. Palestine is a natural garden, and must be restored to its original condition.” He then moved on to discuss the “History of Erosion in Palestine”:

Let us briefly follow the process of destruction through the ages as they can be reconstructed with fair accuracy...that land was originally covered with a forest which varied in height and composition...Multitudes of flowers were visited by the bees which provided wild honey, one of the foods of early man. In due course, as we know from ancient literature, man evolved from the stages of hunting and honey collecting, and began to keep domestic animals. The changes in the vegetation and in the condition of the land dated from the time when the country was flowing with milk and well as honey. At first, no doubt, little damage was caused by small flocks of goats and sheep which wandered in the great forests...and it was not until man became more completely master of his environment that he enlarged his flocks to dangerous proportions...subsequently, the invasions of less civilized races, unversed in the agricultural arts, led to the neglect of the terraces, which rapidly decayed. Particularly was this the case in times of trouble, when the scared peasants found it better to possess flocks of goats, with which they could vanish into the remaining forests...I our conservation work we have to ally ourselves with nature...nature herself is anxious to avoid such phenomenon, and we can count on her assistance in our effort...we must not only prevent further damage to land still capable of production, but we must take steps to repair the ravages of past neglect, and to restore the fertility of land which has been ruined by erosion.³⁹⁰

British officials lamented the lack of foresting management in Palestine, observing “there is no village or large unit in which can be seen the rational treatment of the natural resources.” Despite this, they powerfully believed that if grazing could be controlled properly, Palestine would become a land of plenty again:

If one valley were to be freed from this curse, its appearance would be totally changed. Floods would be small and rare, if not unknown. The stream would run for several months in a well-defined bed, the banks which would be supported by large undamaged trees. Between the river and the hillside would lie flat, deep and fertile fields...the steeper slopes would be covered with

³⁹⁰ G. N. Sale, the Conservator of Forests, “Afforestation and Soil Conservation,” lecture at the *Palestine Economic Society*, 28 December 1942, ISA/M-3/4188, 3-10.

forests of oak, pine or mixed scrub...the inhabitants of the village would rapidly gain in prosperity and contentment, and such a rejuvenated valley would be a fair contrast to its neighbors and invaluable object lesson to all who desire the welfare of the country.³⁹¹

Not unlike the European travelers of the second half of the nineteenth century, the Christian missionaries settling in Palestine in the late Ottoman rule, and the Jewish settlers from the end of the nineteenth century, British officials in Palestine wanted to recreate the land of what they believed was a fertile past.

The first tool used to actualize this vision of rejuvenation was *counting*. Knowing the number of animals would mean knowing the land, knowledge that would help turn the threat of grazing animals into a treatable problem. “We must endeavour to ascertain the true number of animals now existing in the country,” officials agreed.³⁹² They sought other information, too: “Since the milk-yield of the Palestinian goats and the number and growth of kids are so much dependent on the conditions of pasture, the returns of goat-raising vary considerably from year to year. No exact data are available from which to recon the profit in goat-raising since goat-owners do not keep any kind of accounts...we received most contradictory information.”³⁹³ The lack of standardization and problematic data, which only worked against the goat owners financially, seemed further proof of the

³⁹¹ Sgd. G. N. Sale, Conservator of Forests, “Memorandum on Control of Grazing,” attached to a letter from Sale to F. R. Mason, Directory of Agriculture and Fisheries, 22 March 1943, ISA/M-13/5109.

³⁹² Ibid. Enumeration practices were not new to Palestine, but, in this case, their scope was. Counting animals during the Ottoman rule was a common practice, and the knowledge of their numbers was crucial for the purpose of tax collection. See Amy Singer, *Palestinian Peasants and Ottoman Officials: Rural Administration around Sixteenth Century Jerusalem* (Cambridge, UK: Cambridge University Press, 1994). Organized censuses of people and livestock became prevalent in the last years of the Ottoman rule. Roza El-Eini, for example, discusses the Animal Enumeration Law of 1905, in Roza El-Eini *Mandated Landscape: British Imperial Rule in Palestine, 1929-1948* (New York: Routledge, 2006), 226.

³⁹³ Chief Veterinary Officer, “Goat Raising as a Paying Proposition (extract from a paper on “Sheep and Goats in Palestine by Dr. S. Hirsh published in the Bulletin of The Palestine Economic Society [Feb. 1933])”, 14 January 1941, ISA/M-13/5109.

irrational manner in which peasants appeared to treat the land.³⁹⁴ Only with deeper knowledge of the numbers could the government move forward, control goat numbers, and affect goat behavior with the use of taxes and licenses.

List of goats grazing in F. Koonay

S. District	Village	1946	Name of Owner	No. of Goats	Total No.
Jenin	Ya'bad		Tamir, Abd. Haseer	57	
			Adib, Masoud Saleem	57	
			Hassan, Abd. Safet	72	
			Mohd, Abd. Ghannad X	90	
			Mahd, Masoud Hassan	50	
			Ahmed, Abdalla Sornail	110	
			Salim, Abd. Far	105	
			Salim, Said Far	40	
			Mohd	30	
			Abd, Abd. Sornail	90	
			Abdalla, Haj, Yusuf	76	
			Musop, Haj, Abdalla X	80	
			Shaf, Mahd, Karab	45	
			Abd, M. Salih	84	
			Khalil, Salim, Khalil	50	
			Drif, Hasein, Ashkar	50	
			Yusef, Salim, Khalil	60	
			Fadel, Doud, Barri	68	
			Musop, Hajus, Okal	70	
			Sabb, Simon, Hasein	70	
			Mohd, Isa, KarKamsh	24	
			Salim, Mohd, Haj, Hasein	80	
			Neim, Khalil, Khalil	83	
			Mohd, Mahd, Abd, Hassan	15	
			Ahmed, Mohd, Saleem	70	
			Mohd, Ibrahim, Yusuf	40	
			Sornail, Simon, Hasein	70	
			Tamir, Hassan, Abdalla	50	
			Sabb, Khalil, Hassan	64	
			Shaf, Mohd, Hasein, Jaber	80	
			C.F.	1930	

Figure 4: list of goats grazing by owner, Ya'bad village, Jenin district, 1946, ISA/M-2/4190.

While common sense did not appear to motivate the people of Palestine to change their ways, the British came to believe that penalties would. The existing Ottoman taxation system, apparently, worked in favor of such irrational behavior: “One reason

³⁹⁴ The tendency to undermine the logic behind behaviors that appear not to align with a particular understanding of improvement and progress is central to the discourse of Western rationality, for which statistics became a tool of confirmation. For a similar case, in which official improvement efforts delegitimized the logic of commonly used agricultural practices, see Deborah Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (New Haven: Yale University Press, 2003).

why people without land, capital, enterprise or intelligence adopt and pursue the practice of extensive grazing, is the low tax on goats and sheep. Such a man with a flock of 60 goats can ravage a whole countryside like a conquering army, and can continue to prevent any form of progress or development over a great area.”³⁹⁵ Ultimately, Sale argued, “if the tax per head were higher, it would much more in his interest to keep a smaller number of better goats.”³⁹⁶

Raising taxes, therefore, was a second tool for addressing the goat issue and encouraging rational behavior. It is certainly true that the British government profited tremendously from an organized system of money collecting, as all agricultural taxation skyrocketed in the first two decades of the British rule in Palestine.³⁹⁷ Changing taxation policies in the late years of the British rule, however, was more of a strategy to control goats and minimize their perceived damage than they were a strategy of profit. British officials created a differential taxation system, such that “the rate for sheep should be slightly higher [than that of cattle], and that for extensively grazed goats at least double or even higher”³⁹⁸ or, in a different report, “cattle and sheep will steadily be favored in preference to goats and camels.”³⁹⁹ The District Commissioner of Samaria declared in 1944, “the basic rate on goats to be double that on sheep... no progressive rate to be

³⁹⁵ Sgd. G. N. Sale, Conservator of Forests, “Note,” 13 October, 1939, ISA/M-13/5109; On the changes in animal taxation from the Ottoman system to the British Mandate see Roza El-Eini, “Governmental Fiscal Policy in Mandatory Palestine in the 1930s,” *Middle Eastern Studies* 33, 3 (1997): 570-596.

³⁹⁶ Sgd. G. N. Sale, Conservator of Forests, “Note,” 13 October 1939, ISA/M-13/5109.

³⁹⁷ For a detailed analysis of the gradual rise in taxes in the last years of the Ottoman rule in Palestine and in the first half of the British rule and for its affects on the peasant population as well as urbanization processes see Mahmoud Yazbak, “From Poverty to Revolt: Economic Factors in the Outbreak of the 1936 Rebellion in Palestine,” *Middle Eastern Studies* 36, 3 (2000): 93-113.

³⁹⁸ Sgd. G. N. Sale, Conservator of Forests, “Memorandum on Control of Grazing,” attached to a letter from Sale to F. R. Mason, Directory of Agriculture and Fisheries, 22 March 1943, 22 March 1943, ISA/M-13/5109.

³⁹⁹ Ibid.

charged on cattle, swine and camels.”⁴⁰⁰ While regulations varied on sheep and camels, the tax on holding and grazing goats was always the highest. Restrictions grew further, as evident by the eventual limitation on the number of goats per owner. The Conservator of Forests determined in 1946 that “no man should be allowed to own more than 25 goats.”⁴⁰¹

Once numbers were available and taxation policies implemented, *recording* and *standardization* were essential. Several documents deal with this aspect of ordering, arguing that “a) a proper enumeration of goats and a proper list of their owners [should be] kept in registers at District Offices; b) only people who have been registered as goat owners at District Offices may keep goats in future; [and] c) only district descendants of such people may inherit the right to graze goats.”⁴⁰² Experts on afforestation and goat policy also believed that “Owners should be registered, and issued with an annual license” and “the sale of flocks to unlicensed persons should be prohibited.”⁴⁰³ The 1946 *Shepherds (Licensing) Ordinance* determined that “only fit and proper persons over ten years of age will be permitted to graze sheep and goats” and that rules would “fix the maximum number of sheep or goats which may be herded at any one time by one shepherd.”⁴⁰⁴

⁴⁰⁰ District Commissioner of Samaria to District Commissioner of Galilee, 20 July 1944, ISA/M-13/5109.

⁴⁰¹ A. Y. Goor, Conservator of Forests, Department of Forests to Director of Agriculture and Fisheries, 20 October 1946, ISA/M-13/5109.

⁴⁰² Ibid.

⁴⁰³ Sgd. G. N. Sale, Conservator of Forests, “Memorandum on Control of Grazing,” attached to a letter from Sale to F. R. Mason, Directory of Agriculture and Fisheries, 22 March 1943, ISA/M-13/5109.

⁴⁰⁴ D. C. MacGillivray to District Commissioners, “1946 Shepherds (Licensing) Ordinance,” 13 November 1946, ISA/M-10/22. According to the ordinance, “each shepherd licensed under the Ordinance will be issued with a small metal identity disc which he will be required to carry while grazing his flock,” D. C. MacGillivray to District Commissioners, 5 April 1927, ISA/M-13/5109. In addition to shepherds, goats too had to carry a tag. On the practice of tagging goats see Acting District Commissioner of Galilee District to



Figure 5: "Arab Shepherds in the [British] Ministry of Agriculture Quarantine Station for Livestock, near Jaffa: Vaccination of Sheep, Goats, Horses and Cows." By Zvi Oron (Oroshkess), 1934. Source: JDWL/Image Collection.

To avoid conflict and justify their new regulations, British officials sought to work with the locals, highlighting how information about the state of grazing and the affects of restrictions, for example, would be gained through interviews with goat owners. The "Committee for the Preservation of Trees and Prohibition of Grazing" noted "should any of the owners upon receiving the notice [of prohibition of grazing] object, or put forward claims, the Sub-Committee will be prepared to interview each one individually and consider the objections."⁴⁰⁵ Ultimately, the British government sought an image of "operating for the people." The members of the committee added: "The money collected into the central fund shall be at the disposal of the High Commissioner

Chief Secretary, 10 April 1947, ISA/M-1/4190.

⁴⁰⁵ Minutes of the meeting of The Committee for the Preservation of Trees and Prohibition of Grazing, 17 July 1942, 3, ISA/M-13/5109.

and shall be used for any purpose designed to assist, aid and educate the shepherds.”⁴⁰⁶

These actions reflect a British desire to use afforestation and limitations on grazing and shepherding to work for the benefit of the land, its people, and perhaps even goats. The British believed that if goats were raised rationally and according to the guidance of experts, they would become creatures of high quality: “The aim of the Veterinary and Forest Departments,” noted the Conservator of Forests, “is to improve the breed of goats to a point where they are valuable animals, tethered, fed, and highly productive.”⁴⁰⁷

“A Machine of Astonishing Efficiency:” Debating the Nature of the Goat

However, not all British officials agreed about this relation between goats and trees.⁴⁰⁸ Foresters were aware of the challenges from within: “It is generally believed that the Veterinary section of your department raised objection to the reduction of the number of free ranging goats in this country,” wrote the Conservator of Forests in 1946.⁴⁰⁹ Several veterinary doctors voiced their grievances against this process and warned about its expected consequences; they positioned themselves as the advocates of goats.

The Chief Veterinary Officer, G. S. Emanuel, particularly rejected this vilification of the goat. “Goats have admittedly contributed towards the damage caused and a great

⁴⁰⁶ Grazing (Control) Ordinance: An Ordinance to Control the Grazing of Domestic Animals – Revised Copy, author unknown, date unknown, 2, ISA/M-13/5109.

⁴⁰⁷ Sgd. G. N. Sale, Conservator of Forests, “Note,” 13 October 1939, ISA/M-13/5109.

⁴⁰⁸ The scientific understanding of the land and its creatures has often been contested under colonial rules. See Helen Tilley’s study of the Africa Research Survery, and the interwar debates regarding land management in Africa. In *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870-1950* (Chicago: Chicago University Press, 2011). Joseph Morgan Hodge similarly stresses that colonial development policies were constantly being shaped by debates, divisions, and doubts between scientific experts. In *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007), 7-9.

⁴⁰⁹ General A. Y. Goor, Conservator of Forests to Director of Agriculture and Fisheries, October 20, 1946, ISA/M-13/5109.

deal of propaganda has been directed against this animal couched in extravagant terms,” he wrote, “it has, among other things, been variously described as a pest, a menace, a black locust with poisonous saliva and a ravaging appetite, etc. etc.”⁴¹⁰ Emanuel believed this approach could harm the people of Palestine: “As a result of this abuse and the subsequent desire for the removal of the goat, the fact is often overlooked that a not inconsiderable proportion of the population of Palestine depend upon the goat to supplement their diet... a reduction in the number of animals” will affect “the immediate food supplies of the country.”⁴¹¹ “As a biologist,” wrote G. C. L. Bertram, the Chief Fisheries Officer, to the Conservator of Forests, “I have long been saddened by the harsh attitude of the Soil Conservation Board towards the goat, one of the most efficient of all living machines.”⁴¹²

Goats demonstrated tenacity and determination, Bertram argued, making his comparison to a machine legitimate: “The goat provides the finest example of assiduity under difficult sturdy toleration of the harshness of the physical environment, and ability to make something out of almost nothing.”⁴¹³ Indeed, raising goats in Palestine and elsewhere was completely appropriate, because “the goat is a hardy paragon of almost all that is desirable in a domestic animal...[it is] the most admirable of all domestic animals for a poor peasantry. I feel therefore that it is faulty propaganda on the part of the Soil Conservation Board to try to engender a widespread belief that the goat is a destructive

⁴¹⁰ G. S. Emanuel, Chief Veterinary Officer, July 19, 1943, ISA/M-13/5109.

⁴¹¹ Ibid.

⁴¹² G. C. L. Bertram, Chief Fisheries Officer, November 13, 1945, ISA/M-13/5109; Roza El-Eini discusses various objections to Sale’s plans of afforestation, in Roza El-Eini, “British Forestry Policy in Mandate Palestine, 1929-48,” *Middle Eastern Studies* 35, 3 (1999): 72-155.

⁴¹³ G. C. L. Bertram, Chief Fisheries Officer, “The best domestic animal for poor peasantry”, 13 November 1945, ISA/M-13/5109.

pest.” Who else to blame for the destruction caused by goats than those that operated this machine? Betram accused the human race, citing “The *goat like the aeroplane* [sic] *in war* is a machine of astonishing efficiency which spreads wide destruction when handled by those who are ignorant or inadequately wise.”⁴¹⁴

Another veterinary officer argued that attempts to restrict grazing were bound to fail: “it was impractical to attempt the immediate enforcement of regulations calculated to depriving stock owners throughout Palestine of large areas of the land which is at present utilized for grazing of the stock.” Potential difficulties included: “such restriction would in general be ignored... a very large force of Grazing Control...would be required for many years to come to prevent the trespass of stock...The preparation of a reliable census of livestock in Palestine as a prelude to licensing would be fraught with many difficulties...attempts to enforce goat laws and other legislation in many cases occasioned serious outbreaks of lawlessness.”⁴¹⁵ Even if considered rational and powerful, the various British tools for knowing the land and controlling the goats would not be sufficient. Such tools of control were dangerous, furthermore, because these efforts had the potential of causing greater unrest in Palestine.

These “fauna experts” therefore chose to undermine dominant assumptions about goats and their role in the ruining of Palestine. Reacting to powerful experts who were, like themselves, appointed officials of the mandatory state, veterinarians attempted to use their own authority as ways of molding plans of action. By *rubbing against* current

⁴¹⁴ Ibid. Italics are included for my personal emphasis.

⁴¹⁵ Senior Veterinary Officer to Chief Veterinary Officer, “Grazing Control Ordinance – Comments,” 23 June 1943, ISA/M-13/5109. See also Sgd. W. R. McGeagn, District Commissioner of Jerusalem, to Conservator of Forests, “Grazing in Closed Areas Between Allenby Bridge and Maghtas,” 6 March 1941, ISA/M-13/5109.

conceptions regarding the hierarchy of the creatures of their land, these veterinarians challenged the rationale at the very basis of the struggle for nature.

British foresters dismissed these objections by linking grazing to political and ethnic tensions: “One of the most frequent causes for breaches of the peace between Arabs and Arabs, and Arabs and Jews at this season of the year is the grazing of animals on lands on which crops have been harvested.”⁴¹⁶ Management of forests and control of grazing, through their logic, would also ease tensions between different local communities, who used the land differently, and improve local attitudes to the governing rule. British foresters generally depicted Jewish settlers as a force of progress and rational land management; while data regarding Jewish livestock was lacking as well, they argued that there was no goat problem among the Jews, who preferred sheep and cows.⁴¹⁷

By the late 1940s, the argument for goats as agents of destruction and the call for controlling goat management superseded voices of objection. Despite this, the plans for counting goats and organizing their movement and reproduction were extremely difficult to execute.⁴¹⁸ Given burdens of taxation and required vaccinations, not everyone agreed to register all the animals they owned (see Figure 5). Without sufficient numbers and data, British aspirations never fully materialized. Indeed, the British would soon leave the

⁴¹⁶ District Commissioner of Galilee to Chief Secretary, 4 July 1944, ISA/M-26/4304.

⁴¹⁷ Chief Veterinary Officer, “Goat Raising as a Paying Proposition (extract from a paper on “Sheep and Goats in Palestine by Dr. S. Hirsh published in the *Bulletin of The Palestine Economic Society* [Feb. 1933]),” 14 January 1941, ISA/M-13/5109.

⁴¹⁸ According to British experts, “all attempts to introduce a scheme to reduce the number of goats has so far failed,” in Roza El-Eini, *Mandated Landscape: British Imperial Rule in Palestine, 1929-1948* (New York: Routledge, 2006), 228. On the various problems with counting people in British Palestine and Israel see Anat Leibler, “Statisticians' Ambition: Governmentality, Modernity and National Legibility,” *Israel Studies* 9, 2 (2004): 139-140.

country with the outbreak of war and establishment of the State of Israel, leaving the British goat project completely unfinished.

The Israeli Replacement Plan (or: How Many Goats are Worth One Cow?)

In addition to the loss of human lives, the dispossession and exile of hundreds of thousands of Palestinians, and their loss of property, the devastation of the 1948 War sparked a dramatic reduction in the number of Palestinian goats, decreasing estimations of 750,000 in 1946 to that of 100,000 four years later (not unlike estimations regarding Palestinian people).⁴¹⁹ In spite of these reduced goat numbers, government officials in the now-called State of Israel quickly expanded formal attempts to control and eliminate them: in 1950, the state passed the *Plant Protection Law*, later known as the *Black Goat Law*.

⁴¹⁹ According to British registrations, there were 250,000 goats in Palestine in 1946. An experiment that involved the tagging of goats was held by the Department of Forestry in the Bethlehem and Jenin areas demonstrated that taxes were only paid for 35% of goats in those areas. From that study, the Conservator of Forests concluded that the actual number of goats was three times the amount declared by owners, hence reaching the number of 750,000. In Mr. A.V. Goor, Conservator of Forests, "Enumeration of Goats," Minutes of the D.C.'s Conference held at Jerusalem on 27 September 1946, ISA/M-1/4190. Similarly, the Israeli government managed to register 65,000 goats owned by Arabs in Israel in 1950, but officials in the Ministry of Agriculture estimated that their actual number was closer to 100,000. In Y. Kotzer, director of the Arab section to Mr. Ben-David, General Secretary in the ministry of agriculture, 25 November 1950, ISA/GL-19/17022, and in Dr. M. Pintchi, Director of the Sheep and Goats Section, and Y. Kotzer, Director of the Arab Village Section, The Ministry of Agriculture, to the General Secretary of the Ministry of Agriculture, 8 February 1951, ISA/Mem-20/653. Moreover, it is hard to determine the fate of Palestinian goats during the war: how many of them were killed, how many left with their owners, and how many remained in the territory that was not a part of the State of Israel was extremely unclear. Some sources indicate that many Palestinians took their livestock with them. Donald Stevenson, a member of the Quaker American Friends Service Committee, who took part in relief work in Gaza after the 1948 War, recounted a conversation with Gordon Clapp, the Chairman of the U.S. Tennessee Valley Authority who headed an economic survey mission under a UN initiated Palestine Conciliation Commission: "I asked Clapp what was going to be done about the 'black scourge of the East,' the ubiquitous goat." Clapp answered: "Israel has solved this problem by running most of the Arabs and their goats out of its territory." In Benjamin N. Schiff, *Refugees Unto the Third Generation: UN Aid to Palestinians* (Syracuse: Syracuse University Press, 1995), 20.

Many members of the new Israeli parliament were mad at goats. In the 139th meeting of the parliament, the first Minister of Agriculture, D. Yosef, introduced a suggestion for a potential *Plant Protection Law*, which would work to “prevent the great damage caused in this country in recent years by the herds of goats, which have terminated a lot of the vegetation” and ensure that no man is allowed to “hold goats and herd them except on his own land, and in a number that is secure, [so] that their [female gendered goats] feeding is sufficient.”⁴²⁰ Now, goats were not only prevented from entering closed forest area, but also anywhere that was not private property.⁴²¹ They had become, essentially, “house goats.”

This would enable government authorities to catch goats in forbidden places and sell them.⁴²² While this was a major aspect of Yosef’s suggestion, some members of the parliament objected to this suggestion, not for the sake of goats, but for the private sphere. They rejected the “possibility of using the law to enter private spaces and interfere with house matters.”⁴²³ Others argued that the Parliament should highlight that the origins of the law were, in fact, biblical. “I have nothing against this law,” parliament

⁴²⁰ “Minutes of the 139th meeting of the first parliament, 15 May 1950: C. Plant Protection Law, 1950 (first call),” in *Parliament Minutes, Second Sitting of the First Israeli Parliament* (Jerusalem: Israeli Government Press, 1950), 1368-1369, Israel State Archives. I thank Tzach Glasser for the various documents regarding the 1950 Plant Protection Law.

⁴²¹ On the changing understanding of property and land ownership in Palestine in the late nineteenth and early twentieth century see the Introduction and Chapter 3. Much research has been devoted to the friction between changing concepts of land and land ownership. Several environmental historians have paid attention the ways people in settler societies versus native people understood their property. See, for example, William Cronon’s discussion of the process of fencing in *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill & Wang, 1983). Few, however, chose animals as a way to demonstrate such conflict. See, for example, Virginia Anderson’s discussion of cows in early colonial America and the challenges they posed as they crossed fences, in *Creatures of Empire: How Domestic Animals Transformed Early America* (Oxford; New York: Oxford University Press, 2004).

⁴²² “Minutes of the 139th meeting of the first parliament, 15 May 1950: C. Plant Protection Law, 1950 (first call),” in *Parliament Minutes, Second Sitting of the First Israeli Parliament* (Jerusalem: Israeli Government Press, 1950), 1368-1369.

⁴²³ Yohanan Bader (Herut movement) in *Ibid.*

member Ganhovsky said, “but I object to the introductory explanation. This law is an ancient law in Israel...and I think that if we had the fortune to renew it in the state of Israel, then it was worth highlighting that.”⁴²⁴

In the same meeting, the parliament moved to discuss corrections to the British *Shepherds Ordinance*. “According to the existing law there are arrangements relating to supervising the herding of sheep and goats in a planted area” noted Yosef. “Since the purpose of the law that we just passed to the committee is to forbid the herding of goats altogether in these areas, there is a need to remove the words ‘or the goats’ from the existing ordinance.”⁴²⁵ Shepherds, they agreed, should be licensed and may herd their sheep in designated areas, but they should altogether forget about herding goats.⁴²⁶

The Committee of Economics met twice to finalize the new Israeli law, and the chair, Moshe Erem, voiced his concern that the law would be used as “an excuse to bother the Arab.”⁴²⁷ The other members, however, were steadfast: “Known is the great harm caused by the goats, the result of which left the countries of the Middle East with no trees and no shade,”⁴²⁸ said one, and another claimed, “even the [British] Mandate government in its time attempted to fight this trouble, but with not much success.”⁴²⁹ The Israeli law, with its focus on a system of inspection for illegal grazing, differed little from the British regulations of goat rearing and herding; however, the Israeli law’s ultimate

⁴²⁴ Eliyahu Moshe Ganhovsky (from the United Religious Front) in Ibid.

⁴²⁵ Ibid.

⁴²⁶ As a result of this new understanding of the relation between sheep and goats, instructors hired by the Ministry of Agriculture told farmers to separate the sheep from the goats, see “Good Goat, Bad Goat” section.

⁴²⁷ Mr. M. Erem, Chair, Protocol of the Committee of Economics of the (first) Israeli Parliament, 23 May 1950, first discussion about the Plant Protection (Damage from Goats) Law, ISA/Kaf-1/22.

⁴²⁸ S. Goren, in Ibid.

⁴²⁹ A. Hushi, in Ibid.

objective – the “termination of goat herds while replacing them with house goats, or a herd of sheep, or other means of compensation”⁴³⁰ – certainly separated it from its earlier British counterpart. One member suggested letting goats graze in desert area that “do not have trees in them,” but the Director of the Ministry of Agriculture objected fiercely.⁴³¹ “The deserts became deserts by the goats,” he said. “The country is desolate because of the Arabs and because of the goats. We got rid of the Arabs and we have the ability to get rid of the goats as well.”⁴³²

The new law was passed, finalized, and handed off to the Ministry of Agriculture as the *Plant Protection Law*.⁴³³ Two appointed experts, Dr. Pintchi and Dr. Kotzer, the Director of the Arab Village Section and the Director of the Sheep and Goats Section respectively, were in charge of actualizing the law: literally, how to make all unwanted creatures disappear. In their *Plan for Actualizing the Law for the Termination of Goats* they stated that other, non-harmful animals, such as sheep or cows, would replace the goats.⁴³⁴

Similar to the British standardization project, the Israeli replacement plan involved significant *counting*. Dr. Pinchi and Mr. Kotzer first estimated the number of goats in the country at 100,000. These were to be killed and replaced with sheep and

⁴³⁰ Mr. Bader, Chair, Protocol of the Committee of Economics of the Israeli Parliament, 20 June 1950, Final discussion about the Plant Protection (Damage from Goats) Law, ISA/Kaf-1/22.

⁴³¹ Sh. Lavie, in Ibid.

⁴³² Mr. Halperin, in Ibid.

⁴³³ Dr. M. Pintchi, Director of the Sheep and Goats Section, and Y. Kotzer, Director of the Arab Village Section, The Ministry of Agriculture, to the General Secretary of the Ministry of Agriculture, 8 February 1951, ISA/Mem-20/653.

⁴³⁴ This idea of replacement was discussed among foresters during the British rule, yet it never progressed to a full-fledged plan of action. See Roza El-Eini, *Mandated Landscape: British Imperial Rule in Palestine, 1929-1948* (New York: Routledge, 2006), 226; see also a discussion regarding the old goat owner in Kababir, who claimed he was unable to replace his goats with cows. In Forest Inspector of Haifa District to Conservator of Forests, “Grazing,” 30 August 1945, ISA/M-43/4306.

cows: according to their calculations, 2.5 goats were worth one sheep and 12 goats were worth one cow. These animals would be available for purchase in neighboring countries such as Turkey, they posited, and the funds for the project (anticipated to take two-years to finalize) would come from the money earned by selling the slaughtered goat meat.⁴³⁵

However, as counting became more systematic, it was targeted at eliminating goats owned by Palestinians alone, as indicated by tables titled the “Number of Herds of Goats in Arab Villages” (see Figure 6). Those tables detailing the number of animals owned by Arab owners or by whole Arab villages reflect the plan’s goal: in Beit-Jan, the village containing the greatest number of goats according to the 1949-1950 census, for example, 3,394 goats were indicated as registered and exactly 3,394 goats were indicated for termination. 3,394 goats would be replaced and “rehabilitated” by just 850 sheep and 170 cows, a logic that was applied to all other Arab villages in the country.

⁴³⁵ Dr. M. Pintchi, Director of the Sheep and Goats Section, and Y. Kotzer, Director of the Arab Village Section, The Ministry of Agriculture, to the General Secretary of the Ministry of Agriculture, 8 February 1951, ISA/Mem-20/653; Similar details of the plan in found in Y. Kotzer to A. Ben-David, General Secretary, Ministry of Agriculture, 23 November 1950, ISA/Gimel Lamed-19/17022.

Agricultural Production in Palestine LTD, see Chapter 2) had agreed to “pay for slaughtered meat – [at] 40-45% of the weight of the living animal— 1.5 Israeli Lira for each kilogram, meaning about 700 pruta for 1 living kilogram” it also cited confusion over how to “know by which of the two prices I should base my calculations when I come to get the goats from their owners in exchange for the sheep they receive.”⁴³⁶

Moreover, although the execution of the replacement plan certainly depended on the availability of sheep and cows, it relied more on villagers’ consent. The Israeli Ministry of Agriculture initially considered the use of military power, but this attitude was, at least officially, changed.⁴³⁷ “We intended to begin executing the termination of the goats” wrote M. Hanuki of the Division of Agricultural Department at the Ministry of Agriculture, “but we postponed its beginning until we can offer them appropriate compensation. We are taking care of getting sheep and cattle so that we can offer them in exchange for the goats. Until then, we do not intend to begin with the plan, except in those cases where the Arabs willingly agree out of their own good will.”⁴³⁸

In 1954, Sh. Zamir, the Officer of Development of the Triangle Area, produced a list of the sheep and goats of the villages in the area under his responsibility and, in the margins, noted the villages “asking to replace the goats with sheep” (See figure 7).⁴³⁹ The Division of Agricultural Development at the Ministry of Agriculture jumped at the

⁴³⁶ From M. Karniel and Co., Kfar Tabor to Mr. Hanuki, The Division of Agricultural Development, 14 March 1954 ISA/Gimel-5/2868.

⁴³⁷ The Arab Village Section, Ministry of Agriculture, to the Military Governor of Kfar Yona, 13 June 1951, ISA/Gimel Lamed-19/17022.

⁴³⁸ A. Hanuki, Ministry of Agriculture to the Advisor for Arab Matters in the Prime Minister’s Office, 14 January 1953, ISA/Gimel Lamed-19/17022.

⁴³⁹ “The Triangle Area” refers to a concentration of Palestinian villages and towns that became part of the territory of State of Israel in 1948 and was under military rule until 1966; “List of Goats and Sheep in the Arab Villages in the Triangle Area,” 24 February 1954, ISA/Gimel-5/2868.

opportunity, asking Zamir “to find out in which conditions and in what ways the replacement can take place.”⁴⁴⁰ Thus, while officials were certainly determined to eliminate the goats, they nevertheless realized that the project depended on negotiation.

רשימת כמות צאן (במספרים הערביים) 6/2/54

מספר	מין	מספר	מין
1600	א"י טיבה	700	א"י טיבה
430	א"י טיבה	50 ✓	א"י טיבה
50	ולגוליה	27 ✓	ולגוליה
180	הרבה חרש	20 ✓	הרבה חרש
140	כפר ברא	16 ✓	כפר ברא
500	כפר קאסם	100	כפר קאסם
82	קלנדה	100	קלנדה
400	באקה	250 ✓	באקה
116	ג'ה	116 ✓	ג'ה
18	ה'איבסן	-	ה'איבסן
300	ה'ביר סיכה	50 ✓	ה'ביר סיכה
-	ה' ביאר	180	ה' ביאר
100	ה'ימה	20 ✓	ה'ימה
115	ה' מיסר	243	ה' מיסר
4	ה'רג'י	5 ✓	ה'רג'י
700	אום אל פחם (ש)	800	אום אל פחם (ש)
220	ברקע	400	ברקע
70	זלמה	60 ✓	זלמה
50	כפר קרע	50 ✓	כפר קרע
200	מוסמס	300	מוסמס
260	מקאווה	125	מקאווה
70	משרה	170	משרה
150	קרה	250	קרה
120	קרערה	665	קרערה
-	עין סולה	1600	עין סולה
5765	סה"כ	5196	סה"כ

Handwritten notes in Hebrew on the left margin: "א"י טיבה 60% צאן א"י", "באקה כפר קאסם", "ה'איבסן כפר קאסם", "ה'ביר סיכה", "ה' ביאר", "ה'ימה", "ה' מיסר", "ה'רג'י", "אום אל פחם (ש)", "ברקע", "זלמה", "כפר קרע", "מוסמס", "מקאווה", "משרה", "קרה", "קרערה", "עין סולה".

Figure 7: ‘[They] ask to replace goats with sheep’ is written on the lower margins and refers to six villages who were supposedly interested in replacing their goats with sheep. Source: Sh. Zamir, “List of Goats and Sheep in the Arab Villages of the Triangle Area,” 24 February 1954, ISA/Gimel-5/2868.

As the years passed, the burden of negotiation became more apparent. The Arab and the goat continued to pose a challenge by crossing borders, entering forbidden areas, and petitioning the state. They too, like the contrary voices of the veterinary doctors during the British rule of the 1940s, were *rubbing against* official plans and official

⁴⁴⁰ Mr. A. Hanuki, the Division of Agricultural Development, to Mr. Sh. Zamir, Officer of the Development of the Triangle, The Ministry of Agriculture, March 1954, ISA/Gimel-5/2868.

people. By as late as 1958, the *Black Goat Law* had not been enforced or executed. Fantasies about order remained unfulfilled, highlighting the fragility and anxiety involved in controlling the lands and people.

Peasants Petition

Peasants' responses to the *Plant Protection Law* were varied. While some goat owners simply ignored official limitations in what James C. Scott termed "everyday forms of resistance," others attempted to change official decisions by way of petitions.⁴⁴¹ Petitioning the authorities was a rather common practice and, in fact, had been a major way of communicating with the governing body for a long time.⁴⁴² Like the Ottoman rule that preceded it, the British Mandate in Palestine was designed to have minimal interaction with the daily lives of peasants as long as they complied with the rules; in fact, the peasants experienced the power of the colonial state most severely in the context of tax collection. While the pressures of the state on Palestinian peasants grew with the creation of the Israeli military rule in 1948, the Palestinian peasants and Bedouin nomads remained distanced from the attention of the state on the grounds that they remained within the designated geographical limitations.⁴⁴³ Given these distant modes of

⁴⁴¹ James C. Scott, *Weapons of the Weak: Everyday Forms of Peasant Resistance* (New Haven: Yale University Press, 1985). As for the goats themselves, we might think of everyday forms of animal resistance. See Jason Haribal, *Fear of the Animal Planet: The Hidden History of Animal Resistance* (AKP Press/CounterPunch, 2010).

⁴⁴² Much of the research devoted to common people and peasant life under the Ottoman rule is based on petitions sent from around the empire to the central government in Istanbul. Amy Singer, Beshara Doumani, and Yuval Ben-Bassat, for example, examine petitions to Ottoman officials as a way to analyze the lives of peasants in Palestine. See Amy Singer, *Palestinian Peasants and Ottoman Officials: Rural Administration around Sixteenth century Jerusalem* (Cambridge, UK: Cambridge University Press, 1994), Beshara Doumani, *Rediscovering Palestine: Merchants and Peasants in Jabal Nablus, 1700-1900* (Berkeley; Los Angeles; London: University of California Press, 1995), and Yuval Ben-Basat, *Petitioning the Sultan: Justice and Protest in Late Ottoman Palestine* (London: I. B. Tauris, 2013).

⁴⁴³ Assaf Likhovski, "Between 'Mandate' and 'State': Re-Thinking the Periodization of Israeli Legal

governance, peasants and pastoralists become most vocal at times of violation of such state of affairs, such as when rules changed or when taxes peaked.⁴⁴⁴ It is during these moments of state interference that many peasants attempted, rather creatively, to react to the governing rule with the tools of the state already in place.⁴⁴⁵

Israel State Archives holds a number of passionately written petitions that deal with goats and grazing restrictions.⁴⁴⁶ Most were sent by pastoralist tribes and villagers, with some handwritten, a couple printed, and a few signed by thumb (see Figure 2). While many petitions were addressed to British officials and plead for changes in grazing restrictions, the majority call on Israeli officials, as rules became stricter and more focused on eliminating the goat entirely. In spite of variations in style and form, each petition highlights the contrast between the local understanding of the value of the goat and the governmental demands to restrict its habits and existence.

History,” *Journal of Israeli History* 19, 2 (1998): 39-68; David Schorr, “A Prolonged Recessional: The Continuing Influence of British Rule on Israeli Environmental Law,” in *Between Ruin and Restoration: an Environmental History of Israel*, ed. Daniel Orenstein, Alon Tal and Char Miller (Pittsburgh: University of Pittsburgh Press, 2013), 209-228.

⁴⁴⁴ According to James C. Scott’s analysis, this happens when the violation of “the moral economy of the subsistence ethics” is great enough. James C. Scott has written extensively about peasants’ economy and means of resistance to the governing power, mostly focusing on Southeast Asia. Scott interest lies in those times when peasants, in spite of great risks, choose to revolt. Assuming that peasants have very limited power vis-à-vis state structures, he does not focus on peasants’ attempts to shape structural changes with tools of the state. In *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia* (New Haven: Yale University Press, 1976); *Weapons of the Weak: Everyday Forms of Peasant Resistance* (New Haven: Yale University Press, 1985); James C. Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven; London: Yale University Press, 2009).

⁴⁴⁵ Here, I employ Natali Zemon Davis’s insight on the creativity demonstrated by common people who address officials of the state. Analyzing letters of remission produced in sixteenth century France, Davis looks at fictitious elements in the crafting of a narrative for the purpose of mitigating criminal sentences. In *Fiction in the Archives: Pardon Tales and Their Tellers in Sixteenth-Century France* (Stanford: Stanford University Press, 1987).

⁴⁴⁶ On the uses and meanings of the colonial archive see Ann Laura Stoler, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton: Princeton University Press, 2010).

Villagers and nomads were aware that the vilification of the goat and the limitations to its grazing had political motivations. The Mukhtars of the Esh Shibli tribe, for example, wrote in 1946 to the British Commissioner in Jerusalem about the gradual loss of their land to Jewish projects: “some time ago an area of about 3000 dunams was taken from our lands and given to [the Jewish] Khadoorie Agricultural School, and another area of 3000 dunams was given to the Palestine Jewish Colonization Association, and 3000 dunams remained as grazing lands for our Cattle and Flocks on the East-northern side of Mt. Tabor and we were promised by the Government that this area will be always used as Grazing lands for our flocks.”⁴⁴⁷ Despite these protests, the British government would soon seize more of the Esh-Shibli land: “three months ago Forest Department Officers came to the tribe and wanted to dig holes for erecting iron marks and barbed wire for the purpose of making those lands Government Reserved Area, but we have prevented them as these land are the only grazing area for our flocks and had at that time submitted complaints to this effect, and up till now we received no reply.”⁴⁴⁸ A sense of acute violation of the status quo brought the people of Esh-Shibli to use all ways possible, including petition writing and even physical resistance, to prevent the repossession of their lands. Ultimately, while Esh-Shibli may have mistrusted the official justifications on goat grazing limitations, they did trust the colonial processes intended to hear and consider their complaints.

⁴⁴⁷ From Mukhtars of Tribe Esh Shibli to the High Commissioner Jerusalem, 16 Jan 1946, ISA/M-77/313. *Mukhtars* are the appointed heads of Palestinian villages. *Dunam* (or *Donum*) is a common Ottoman unit of land area, which has been in use in Palestine and Israel since.

⁴⁴⁸ Ibid.

Similar petitions were sent to the Israeli government after the establishment of Israeli rule in 1948. The goat owners of 'Ein-Sahala village, for example, argued that the prohibitions on grazing and holding goats were like “taking the last piece of food out of our mouth.”⁴⁴⁹ Because the 'Ein-Sahala village existed on mountainous lands that did not allow for sufficient crop growing, their “only source of living, therefore, [was] the goats,” causing the villagers to “object to this harsh decision” and “demand reconsideration of this matter since we are Israeli residents with democratic rights, and we do not want our rights to be damaged, or to be subjected to abuse and racial persecution... [since] the entirety of our food in these hard times of bad nutrition is the milk of goats.”⁴⁵⁰

Beyond grazing restrictions, animal tax was a main concern to peasants who sent petitions to government officials. “We,” wrote the goat owners of Sakhnin village to the Minister of Agriculture in 1954, “herd our goats on our own land...and pay enormous amount of taxes for them. We did not disobey the order of the Forestry Department at all... [but] this year we were ordered to pay 200 pruta for each goat, and this payment is too heavy a burden.”⁴⁵¹ Many petitions addressed the issue of increasing the annual tax on goats, especially those coming from the Druze village of Beit-Jan, the village with the biggest number of goats under Israeli rule (see Figure 6).

Druze villagers were some of the most prolific petitioners, particularly after the establishment of the Israeli military rule, when the number of limitations on goat

⁴⁴⁹ Muhamad Daud in the name of the goat owners of 'Ein-Sahala, The Triangle Area, to the Chair of the Parliament, 10 December 1952, ISA/Gimel Lamed-19/17022.

⁴⁵⁰ Ibid.

⁴⁵¹ *Pruta* was the domination of currency used in Israel during 1948-1960, with its name borrowed from mishnaic Hebrew; Goat Owners of Sakhnin Village to the Minister of Agriculture, 21 July 1954, ISA/Gimel-Lamed-19/17022.

practices especially increased. Of the non-Jewish populations living in Palestine, the Druze people have been prominent supporters of the Zionist cause (as they supported Zionist forces during the 1948 War, continued to support the Israeli state after its establishment, and served in the Israeli Defense Forces prior to becoming citizens of the Israeli State). It was these people who believed most strongly that the state should and would operate in their favor, and it was the contrast between their expectations and the government's damaging policy, combined with the belief in the functionality of state institutions, that made their petition writing worthwhile.

Such were the efforts of one Druze village called Beit-Jan, which became a focal point for petitioning throughout the 1950s. The people of Beit-Jan, as well as those from the surrounding region, complained about the rise in goat taxation and the repossession of their grazing lands as national forest reserves.⁴⁵² Like the Esh-Shibli case, the Beit-Jan campaign was especially strong, given that the community had come to rely on goats as their main source of living. Ultimately, the Beit-Jan protests made their way into the court and daily papers. In the winter of 1954, the Hebrew press announced “a severe dispute between the Druze and the Ministry of Agriculture regarding the grazing of goats” and noted how, even though many other villages, Christian and Muslim, had begun terminating their flocks, “the Druze villagers, that felt very strong, rebelled and

⁴⁵² Not only Palestinian, but some Jewish Israelis too complained about shrinking grazing areas. The people of Kibbutz Lehavot, for example, wrote to Jewish National Fund (KKL) about the problem of grazing areas needed for their sheep herd in 1955. See Lehavot to Mr. Ra'anah Weitz, KKL, “Plowing Grazing Land,” 17 August 1955, CZA/KKL5/22311.

refused to pay the tax and even sent their flocks to herd in government forest without permission.”⁴⁵³

Most often (and not unlike those “fauna experts” who resisted the vilification of the goat during British rule), petitioners focused on challenging the logic behind grazing limitations, the suggested replacement plan, and the idea that the goat was harmful to the land. Some – as did the people of A’ara village whose petition opened this chapter – used theological reasoning to argue that goat rearing was beneficial and natural to the land, seeking to juxtapose governmental actions with godly intentions. Other petitioners presented the utility in raising goats. Such was a petition from villagers of the Nazareth area to the Chair of Parliament in 1952; reacting to the *Plant Protection Law*, these petitioners decided to “spur mercy.” “We used to send milk in great quantities to dairies in Israel, that in addition to the benefit we got from the animal droppings as manure for our fields. In raising goats there is much blessing to our region and there is no expected damage what so ever.”⁴⁵⁴

The majority of petitions discussed not only the use of the goat, but also its necessity. “The fellah,” wrote the people of Sakhnin village, “from the nature of his life needs to hold goats and sheep in order to produce benefit from their products, wool, and waste.”⁴⁵⁵ The goat was, therefore, a natural aspect in the life of the fellah. But it was also part of the nature of the land: “the majority of the land of our village Sakhnin is a rocky

⁴⁵³ “A Severe Dispute Between the Druze and the Ministry of Agriculture Regarding the Grazing of Goats,” *Ha'aretz*, 24 January 1954, ISA/GL-19/17022.

⁴⁵⁴ Goat Owners in Villages of Nazareth Area to the Chair of the Parliament, 22 December 1952, ISA/GL-19/17022.

⁴⁵⁵ Hassan Taka Muhamad, Sakhnin Village, in the name of the people of the Sakhnin village to the Prime Minister, “The Plant Protection (Damage of Goat) Law 1950,” 28 December 1952, ISA/GL-19/17022.

land, high mountains and valleys...and the goats are the only kind of livestock that can exist and reproduce on such lands. The nature of the land itself, therefore, requires that we hold goats rather than any other kind of livestock...goat raising is an inseparable part of the sustenance of the Arab fellah, and in its dismissal is a destruction to one of the assets of his life.”⁴⁵⁶ Just like experts and state officials, peasants made claims about what was natural and essential to the land. Because the state of Israel has “a guarantee for the livelihood of the Arabs within the borders of the state,”⁴⁵⁷ it also had to, the peasants argued, acknowledge this triangular bond between the goat, the fellah, and the land.

While it is unclear whether any of these petitions had influence on official decision-making regarding goats, they certainly did not go unnoticed. Both British and Israeli officials translated and circulated these petitions among themselves: one handwritten note attached to a petition from the village of ‘Ilabun, for example, explained in Hebrew that “the inhabitants of the ‘Ilabun village complain about the governmental intention to slaughter and terminate the flocks of black goats and give explanations for why these goats are not harmful, and on the contrary – that they are even beneficial” (see Figure 8).⁴⁵⁸

⁴⁵⁶ Ibid.

⁴⁵⁷ Ibid.

⁴⁵⁸ Note of unknown writer, circa 1952, ISA/Gimel Lamed-19/17022.

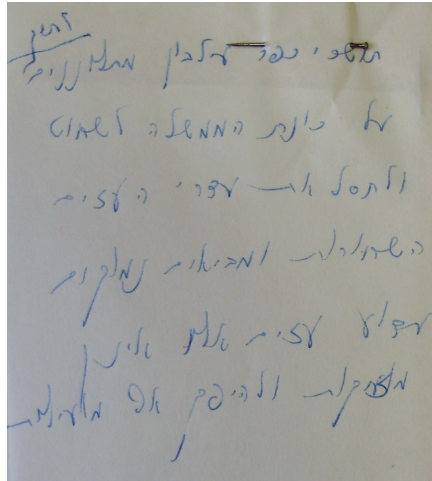


Figure 8: A note by an unknown writer, attached to a petition sent by the people of 'Ilabun regarding the execution of the *Plant Protection Law*. It reads, "The inhabitants of the 'Ilabun village complain about the governmental intention to slaughter and terminate the flocks of black goats and give explanations for why these goats are not harmful, and on the contrary – that they are even beneficial." The top left says: "To file." Circa 1952, ISA/Gimel Lamed-19/17022.

In sum, these petitions addressed different aspects of land ownership, animal grazing, taxation, and peasant life. In order to win the support of their readers, petitioners tended to compliment state officials and the state while simultaneously highlighting the injustices of their legislation. In most cases, they paint a picture of deprivation and discrimination but most clearly, they speak to a message of incongruity. To these peasants, the government was endorsing an unnatural way of treating the land. By writing to the state they demonstrate a belief in their own power to change these ways, and, if one judges from the failure to enforce the law and the replacement plan, the villagers were not entirely wrong.

Bad Goat, Good Goat

Not only Arab peasants and goats found limitations on grazing a challenge. While the official British and Israeli agenda considered goats a threat to the revival of Palestine,

many Jewish farmers celebrated goats for their important role in the growing Jewish settlement. As limitations on grazing and goat rearing emerged, the stance of these Jewish farmers, like Palestinian peasants, became problematic. Thankfully, however, not all goats were considered bad goats. Although Jewish farmers held local goats from the earliest days of Jewish shepherding, they soon learned that there were some good goats and some bad goats (see Figure 9).



Figure 9: The Goats that Europeans found in Palestine: bad goats. On the left: a local, black herding goat. Source: Ag. Moshe Schorr, *The House Goat* (Tel-Aviv: Hakarmel [Published by Chief Supervisor of Agricultural Education, Ministry of Education and Culture], 1949), 14. On the right: a Damascene, brown goat. Source: Dov Beker, *Sheep and Goat Rearing* (Ein-Harod: Hebrew Shepherds Association, 1948), 67.

Jewish experts were invested in *measuring* and *classifying* the various kinds of goats that they found in Palestine, and they ultimately encouraged raising the house goat, which was of imported breed (mostly from Switzerland and Romania).⁴⁵⁹ “The raising of house goats has spread in all civilized countries and is supported there by governments, municipalities, and social institutions because they see in the raising of goats something that would do much for easing their situation and improving the nutrition (feeding) of the masses,” argued livestock experts of the Jewish community during the British rule, who

⁴⁵⁹ The Goat Section of the *Hebrew Shepherds Association* was established in 1941; H. Helperin to Sh. Shimerman, Kfar-Me'el, 19 November 1940, LILR/IV-235-1-737; See file titled: “Purchase of Sheep and goats: Importation According to Countries, 1951-1958,” CZA/S/15/40983.

highlighted the United States and Russia as an example. “This is while in our country still prevails an argument about the value of goat milk, and there are still fastidious people who think it has ‘a special and unpleasant smell and taste’ (by the way, if the goat and the pen are kept clean, these accusations have no basis).”⁴⁶⁰ House goats were the best fit for the intensive nature of the growing Jewish settlements, particularly those semi-communal settlements, the *Moshavim*. “In our country,” they said, “where most of the farms are built on very limited stretches of land, and now that we are on the verge of a huge settlement movement, there is a great future in raising goats as the basis for the small farm.”⁴⁶¹ In 1953, leading Israeli farmers established Aziza, the Association for House Goat Growers, in order to promote the proper rearing of house goats for locals and for new immigrant farmers (hailing mostly from the Middle Eastern and North African Jewry).⁴⁶²

The basis for handling goats in small Jewish farms was the assumption that goats – even European house goats – have an innate capability for being destructive, not only to forests but also to the pen: “as is well known, more than other beasts the goats is more capable of ruining and wasting the food of which it is served, if the stall is not organized properly.”⁴⁶³ Farmers were taught how to raise house goats rationally, through

⁴⁶⁰ Newsletter 2, 1945, Hebrew Shepherds Association – Goats Section, 4 Feb 1945, 1, ISA/M-20/653.

⁴⁶¹ Ibid.

⁴⁶² Yonatan Amir, Chair of *AZIZA* to David Khahana, The Agricultural Center, “A memorandum on the State of Raising White Goats in the Country,” 22 July 1965, LILR/file IV-235-5/3871.

⁴⁶³ Newsletter (number unknown), Organization of the Hebrew Shepherds, Goats Section, 1941, 3, ISA/M-20/653. Experts detailed what a good, rational stall was: “a) where the food within it always stays clean and the goat does not have an opportunity of spoiling it; b) when it is organized in a manner in which the access to the food would challenge the goat, since the goat doesn’t eat when it [female gender] is too comfortable...measuring the milk and testing: the question of the quality of the goat and the volume of their yield is a main question in the worthwhileness of holding it. Only goats that produce plenty are appropriate and worth caring for. The quality of goats should not be determined by estimation or memory.

explanations, images, and drawings (see Figure 10). According to this agenda, farmers capable of following these guides could ultimately handle the “capricious nature of the goat.”⁴⁶⁴



Figure 10: A good goat. Cover of Ag. Moshe Schorr, *The House Goat* (Tel-Aviv: Hakarmel [Published by Chief Supervisor of Agricultural Education, Ministry of Education and Culture], 1949).

As opposed to local herd goats, house goats were raised in small numbers, fed in a pen, and most importantly, produced more milk. Most importantly, house goats were not meant to graze, as experts believed that the vegetation could harm their delicate bodies and udders.⁴⁶⁵ “While the Swiss Saanen goats” – those that became the dominant breed in

Only exact and meticulous measurement of milk ensures setting the value of the goats. The measurements of milk should be registered in a particular uniform order that ensures the comparison of the yields.” In M. Schorr, “Instructions for Goat Growers with the Coming of Summer,” 8 May 1946, ISA/M-20/653.

⁴⁶⁴ M. Schorr, “Instructions for Goat Growers with the Coming of Summer,” 8 May 1946, ISA/M-20/653; The Latin origin of the word “capricious” is *capra* – goat.

⁴⁶⁵ Newsletter 8 of the Goat Growers Section, Hebrew Shepherds Association, 10 November 1942, 2, LILR/IV-235-1-737; This argument is also prevalent among contemporary Jewish goat owners, as I

Jewish farms – “are capable climbing the Alps,” said one guidebook, “they are fine being tied throughout their lives.”⁴⁶⁶ In addition, although British authorities often referred to the local herding goat as “*the poor peasant’s friend*,” Jewish experts determined that house goats should be regarded as “*the poor farmer’s cow*,” or just mini-cows.⁴⁶⁷

House goats were not only prolific and European, but also *white* goats. Because the *Plant Protection (Damage of Goats) Law* explicitly stated that the “prohibitions do not apply to house goats, of which there is no expected danger to plants,” the law came to be known as the *Black Goat Law*.⁴⁶⁸ Therefore, with the passing of the law, Jewish experts decided to concentrate on the problem of herds of sheep and goats that continued to coexist and blend in Jewish farms. In November 1950, the Hebrew Shepherds Association stated in a meeting that members were not “goat haters,” but they believed that the mixing of sheep and goats should be banned. “There is not room for linsey-woolsey; there is no room for holding goats and sheep together” they said, arguing, “Herds cannot make progress with mixture.”⁴⁶⁹ And as for “the issue of the Goat Law: The report explains that the law does not refer to our 1,000 [white] goats, and that there is legal agreement to hold them.”⁴⁷⁰

discovered in conversations held in July 2012. In fact, from Dov Beker, “Instructions for the Season”: it is now the grazing season...it is not advisable to gather the goats into a herd, as is customary in bigger farms. But this view does not object taking 5-6 goats together to graze. The best method is: carrying the goat with a rope and then it is possible to take advantage of the richest places of high, soft and tasty grass.” Thus, the best way for goats to graze was for them to be tied with a rope to a post. In Newsletter no.2 of the Goats Section, Hebrew Shepherds Association, 4 February 1945, 1, ISA/M-20/653.

⁴⁶⁶ Dov Beker, *Sheep and Goat Rearing* (Ein-Harod: Hebrew Shepherds Association, 1948), 68.

⁴⁶⁷ Ag. Moshe Schorr, *The House Goat* (Tel-Aviv: Hakarmel [Published by Chief Supervisor of Agricultural Education, Ministry of Education and Culture], 1949), 4.

⁴⁶⁸ Suggestion of Law 47 by the Government of Israel: Plant Protection (Damage of Goats) Law, 19 June 1950, ISA/Gimel-23/5400.

⁴⁶⁹ Protocol of the Hebrew Shepherds Association, 21 November 1950, LILR/280 IV/1.

⁴⁷⁰ Ibid.

Experts decided not only to separate sheep from goats, but also white goats from black goats and Jewish goat owners from Arab goat owners. “With the exodus of the Arabs and the Bedouins from the country, in the days of the War of Liberation [referring to the 1948 War] it seemed that the days of the goats in Israel were over,” noted one daily newspaper, *Ma’ariv*, in 1953. “The local black goat, the one growing horns, that same “devil,” which is known as the cruel enemy of every tree and blooming plant – there is almost no trace of it [her]. Only at the bottom of Mount Tabour and near the Arab villages in Wadie A’ara and the Western Galilee some small flocks have survived. Until the exhibition of *Aziza* was arranged, only few knew that the goat has reached greatness again among us, and that in our country there is a flock of more than 20,000 heads.” “But please,” it added with a hint of humor, “do not compare these aristocratic, polite goats, of a pure Swiss breed, with those goats...even the billy goats – they are so respected, dolled-up, and their beard is long and white. Some of them have a handsome forelock that flutters above their intellectual forehead.”⁴⁷¹ According to agricultural experts, white house goats could be admired and celebrated, but black goats were to be castigated and demonized. Using ecological and national reasoning, Israeli officials discouraged Jewish farmers from holding “the devil.” “From a national stand point,” concluded those at the Ministry of Agriculture, “we are not allowed to fight the war of the 75,000 Arab goats that terminate every bush and grove.”⁴⁷²

With this foundation, instructors to Jewish farms soon began to pursue the separation of herds and, more vehemently, attempted to convince Jewish farmers to

⁴⁷¹ G. Sharoni, “The Goats of Israel Assembled in the College,” *Ma’ariv*, 30 August 1953: 2.

⁴⁷² Protocol of the Hebrew Shepherds Association, 21 November 1950, LILR/280 IV/1.

terminate their non-white goats. Haim Swartz, one such instructor to a series of southern settlements summarized his experiences in a report from 1955: "In Mash'en: The big number of goats that exist in the village does not bring any blessing but I don't see any way to convince them to get rid of this harmful branch... in the meantime I managed to separate the goats from the sheep; In Ruha: a big problem that I did not manage to overcome arose recently when many people in the village started buying Arab goats in great numbers from dubious sources. I was not able to convince the members not to take the sheep with the goats to graze; In Zavdiel: the first issue was the termination of the hundred of goats there. The members agreed to sell some of the goats for meat."⁴⁷³ As the government's middle-man, Swartz's attempts at implementation highlight the disparity between governmental policy and actual practices on the ground. To the government, goat admixture had stopped making sense and had become threatening to the new logic of nature and order; but to those living with goats, the new separatist way of thinking misaligned with long-considered conventional knowledge and conduct. Ultimately, these goat owners sought to understand goats as they had before.

Conclusion

There is a long history to the relation between the understanding of goats and the understanding of the Holy Land, a relation that has been colored by the biblical idea of the scapegoat and its varied, always negative, meanings. It is a story represented by the 1856 painting of William Holman Hunt, for example, which depicted the scapegoat in

⁴⁷³ Haim Swartz, Regional Instructor for Sheep and Goats Raising to the Training Department at the Agricultural Research Station of Rehovot of The Jewish Agency, "Report no.2b on the Situation of Sheep and Goats in the Ashkelon-Majdal Area," May 1955, HHA/125/3/4.

what he considered to be its original biblical environment. Armed with research from two weeks in the Dead Sea as well as two goats, a full-length skeleton of a camel, and a skull of an ibex, Hunt drew Jesus as a goat, dying in a horrible, lurid wilderness.⁴⁷⁴ Although the painting attracted much attention, leading art critics in London described it as complete artistic failure, with some even denigrating it as a disgraceful representation of the Holy Land.

Many decades after Hunt, British and Israeli experts similarly interpreted the Palestinian and Israeli environment and analyzed its creatures according to biblical notions. Black Palestinian herding goats fit neatly into the biblical idea of hairy devils. In a lecture given to the Palestine Economic Society in 1942, the conservator of forests of the British government in Palestine explained:

The various stories of antiquity have shown Palestine as a country peculiarly subject to blessing and curses. The blessings are in the remarkable fertility of the soil, and the way in which it clings to the hillsides until whipped off by the frantic blows of wind and rain. The main agent in the execution of the curses has been the goat, fitting symbol of all that is devilish and futile. The individual goat is an object of pity, destined to wander through life vainly searching for a square meal, only to fall in the end to a butcher's knife. The goat population, taken as a whole, succeeds in revenging the miseries of its members by impoverishing the human race. The peasant may eat the goat, but the goat consumes the land from under the feet of his master. The peasant who imagines the goat to be his best friend has, as his sole means of support, the goat which has destroyed all his hopes of prosperity and comfort.⁴⁷⁵

Beyond biblical notions, European understanding of goats and grazing in Palestine and the legal practices that accompanied them – be they successful or not – were entangled with particular ideas about race, control, and rationality. Black goats

⁴⁷⁴ Albert Boime, "William Holman Hunt's 'The Scapegoat': Rite of Forgiveness/Transference of Blame," *The Art Bulletin* 84, 1 (2002): 94-114. The representation of Jesus as a harmless lamb is a common theme in religious art of all types; the non-traditional choice of a goat, and rather miserably looking one, was the reason for such public fury.

⁴⁷⁵ G. N. Sale, Conservator of Forests, "Afforestation and Soil Conservation," lecture given to the *Palestine Economic Society*, 28 December 1942, 12, ISA/M-3/4188.

came to be seen as destructive, rebellious, and Arab; white goats were productive, polite, and Jewish. Such practices were also woven into the debate about what was “natural” to a land that many people wanted to transform. This chapter has laid out the gradual process by which goats and Palestinian peasants became one and the same and has recognized how the legal system was used to fight against both for the sake of environmental and political goals, even if such tools remained insufficient.

The coupling of goats and Palestinian peasants is remarkable, considering the long tradition of coupling goats with diasporic Jews. In Britain, for example, the goat became a frequent symbol of the British Other – or, the Jew – in the late nineteenth century. A cartoon in Britain’s *Fun* magazine, for instance, depicted William Holman Hunt’s contemporary – Benjamin Disraeli, who was mocked for his Jewish origins, as a (devilish) goat.⁴⁷⁶ More salient, however, was the coupling of the Jew with the goat within Jewish folklore, particularly Yiddish folklore. In numerous examples, the goat symbolizes the Jew and Jewish village life; the scapegoat represents the persecuted Jew; and the milk of goats connotes the relation of the Jew to the Holy Land. Both Sholem Aleichem’s *The Bewitched Tailor* and Bashevis Zinger’s *Zlateh the Goat*, for example, tell stories of Jews and goats with marvelous powers.⁴⁷⁷ Similarly, the *Tale of the Goat*, a fable that was widespread in Jewish communities around the world and finally published by Shmuel Yosef Agnon in 1925, tells the story of a miraculous diasporic goat, who traveled to the Holy Land through a secret tunnel in order to return to her Jewish owner

⁴⁷⁶ Anthony S. Wohl, “Ben JuJu’: Representations of Disraeli’s Jewishness in the Victorian Political Cartoon,” *Jewish History* 10, 2 (1996): 89-134.

⁴⁷⁷ Shalom Aleichem, *The Bewitched Tailor* (Moscow, Foreign Languages Publication House, 1960); Isaac Bashevis Singer, *Zlateh the Goat and Other Stories* (New York: HarperCollins, 1966).

and carry milk that was plentiful and “sweet as honey” (see Figure 11). Contemporary paintings include many of Marc Chagall’s pieces, as well as Reuven Rubin early works in Palestine.⁴⁷⁸ Rubin’s coupling of the Jew (and himself) with the goat is perhaps one of the latest examples of this tradition. With the growing European settlement project in Palestine and Israel therefore, goats ceased to be a symbol of the Jews and their relation to the Holy Land.



Figure 11: Cover of Shmuel Yosef Agnon’s version of the folk *Tale of the Goat* (Jerusalem: Hagina Publishers, 1925), painted by Ze’ev Raban of the Bezalel School of Art in Jerusalem.⁴⁷⁹

As part of this process of settlement, natives to the land were marginalized and blamed for the destruction of the land. Different historical actors attempted to resist to this process of scapegoating in various ways, be they officials or common people, Arabs or Jews, humans or animals. In the context of the vilification of the local herding goats and with the tools of the governing rule, some were *rubbing against* the desire to

⁴⁷⁸ See, for example Marc Chagall, “I and the Village,” 1911, http://www.moma.org/collection/object.php?object_id=78984 (accessed 9 July 2014); Reuven Rubin, “Self-Portrait with a Goat,” 1924, <http://www.bridgemanimages.com/en-GB/asset/825853/rubin-reuven-1893-1974/self-portrait-1924-oil-on-canvas-on-masonite> (accessed 9 July 2014).

⁴⁷⁹ Shmuel Yosef Agnon, *The Tale of the Goat* (Jerusalem: Hagina Publishers, 1925).

transform the land and its creatures for the sake of reviving a particular understanding of the Holy Land. But the power of that desire prevailed. The establishment of the “Green Patrol” in 1976, under the Israel Nature and Park authority, for example, intensified state control over people and animals whose movement and ways of living were deemed illegitimate.⁴⁸⁰ Not only were black goats and Bedouin nomads deemed enemies of nature, but recently also camels.⁴⁸¹

It is interesting to take note of one final, more recent shift. In the last two decades, the scientific paradigm regarding goats and grazing has shifted. The global scientific community now perceives goats as necessary to the balance of nature – specifically for preventing forest fires.⁴⁸² Today, experts in Israel link the steep rise in “forest” fires to the elimination of goats, and, in a surprising turn of events, the ministry of Agriculture has begun to use incentives to convince Bedouin shepherds to bring their flocks to herd in the Carmel and Jerusalem forests. Perhaps not surprisingly given this story of denunciation, this has not met much success.⁴⁸³

⁴⁸⁰ Aharon Pri'el, “‘A Green Patrol’ Will Operate Against Bedouin Herds,” 4 August 1976: 6. According to historian and activist Gadi Algazi, the Green Patrol, one of the famous policing forces in Israel, perpetually violates citizen rights. In “From Gir Forest to Um-Hiran: Comment on Colonial Nature and its Conservators,” *Theory and Criticism [Teoriya Vebikoret]* 37 (2010): 232-253.

⁴⁸¹ Yosef Algazi, “Ransoming Captive Camels,” *Ha'aretz*, 14 October 1994; Dror and Dan Shohet, “Our Camels are Part of the Desert,” 2012, <https://www.facebook.com/notes/dror-shohet/%D7%94%D7%92%D7%9E%D7%9C%D7%99%D7%9D-%D7%A9%D7%9C%D7%A0%D7%95-%D7%94%D7%9D-%D7%97%D7%9C%D7%A7-%D7%9E%D7%94%D7%9E%D7%93%D7%91%D7%A8/10151891597981866> (accessed 9 July 2014).

⁴⁸² Avi Perevolotsky and No'am G. Seligman, “Role of Grazing in Mediterranean Rangeland Ecosystems,” *Bioscience* 48 (1998): 1007-1017; Imanuel Noy-Meir and Talya Oron, “Effects of Grazing on Geophytes in Mediterranean Vegetation,” *Journal of Vegetation Science* 12, 6 (2001): 749-760; Elizabeth Wachs and Alon Tal, “Herd no More: Livestock Husbandry Policies and the Environment in Israel,” *Journal of Environmental Ethics* 22 (2009): 401-422. In the introduction and conclusion to *Resurrecting the Granary of Rome*, Diana K. Davis describes a similar shift in Algerian environmental policy. In *Resurrecting the Granary of Rome: Environmental History and French Colonialism Expansion in North Africa* (Athens: Ohio University Press, 2007), 185-186.

⁴⁸³ Interview with Dorit Kababia, Manager of Sheep and Goat Section, Ministry of Agriculture, Beit Dagan

EPILOGUE:

The Synesthetic Experience

And now, we have reached the end of the “Plenty Pageant.” This dissertation has demonstrated how modern technological projects were shaped by a mystical idea of the past and became a tool for materializing it. Furthermore, it has described the attempts to produce a plentiful environment in Palestine and Israel, and outlined the ways in which bodies acted as recalcitrant mediators.

Triangular Productions

The story of the production of plenty in the late nineteenth and twentieth centuries revealed various triangular structures: Bible-bees-hive, sheep-shepherd-flute, and goat-peasant-land. In this period, another fruitful bond, so to speak, formed between bees, cows, and oranges. In Chapter 1, I discussed the successful relationship created between bees and citrus trees in the early twentieth century, as bees reached the Mediterranean coast, fertilized the trees, and ultimately fostered a booming citrus and settler honey industry. During WWII, as the movement of oranges to European markets came to a halt and as the industry began to deteriorate, oranges rose to a new role: it was during this time when researchers examined the possibility of feeding oranges to cows and white goats (who were considered “mini cows,” see Chapter 4).⁴⁸⁴

(15 September 2013), regarding the efforts and failures to convince Bedouin shepherds to herd in the mountains of the Jerusalem area.

⁴⁸⁴ G.S. Emanuel, Chief Veterinary Officer to Deputy Director, Soil Conservation Board, 2 March 1941,



Figure 1: My grandmother, Ayala (Hinda) Novick (previously Levita), a Jewish settler from Poland in her early 20s, sitting with her back to the camera on the middle right, sorting oranges before they were sent across the Mediterranean to satisfy European demand. Picture taken at a packing facility in Rehovot, Palestine, in the late 1930s.

Prior to the crisis in orange sales, beekeeper Israel Robert Blum sent a report to the government as part of his efforts to promote beekeeping in Palestine during the British rule. That report, titled “Production of Honey in Eretz-Israel [land of Israel],” explicitly connected bees, oranges, and dairy cows, arguing that the three together could benefit the land and revive a biblical fecundity:

When we consider that the ground suitable for orange growing is still largely unplanted, that much of the greater part of the wild-yielding flowers in the hills remains unutilized, that intensive cattle raising would result in the increase of honey producing forage plants (clover) ...we can definitely establish the fact that there is still room in Eretz Israel for hundreds of thousands of bee-hives and that it will be decades before Eretz Israel, if all its sources of honey are fully exploited, can again become, as in Bible times, a land “flowing with honey.”⁴⁸⁵

ISA/Mem-13/5109.

⁴⁸⁵ “Production of Honey in Eretz-Israel,” report by Israel Robert Blum to the British Government in Palestine, 15 September 1936, CZA/S90/793.

Blum's report exposes his desire and expectation for great numbers. Like agriculturist Yitzhak Elazari-Volcani, who envisioned a million dairy cows (see Chapter 2), and shepherd David Zamir, who wanted to see numerous sheep spreading over the land (see Chapter 3), Blum hoped for the growth of beehives to be that in the many thousands. But the decline of the citrus industry, as so often happens with such close relationships, signaled the decline of honey production.

Color Play

Milk, and cow milk in particular, won central stage. The whiteness of milk played into the transmuting of power structures: the act of drinking milk and consuming dairy products became an important way to distinguish settlers from natives, to make Jewish settlers whiter, and to invent a separation between Jews and Arabs.

In his book, *Villa in the Jungle*, literary scholar and cultural historian Eitan Bar-Yosef examines the representation of Africa in Israeli culture, arguing that Africa has been important to Israeli Jews because it made them seem lighter.⁴⁸⁶ A few decades prior to the establishment of diplomatic, military, and agricultural connections between Israel and African countries, the Palestinian and Israeli landscapes and bodyscapes were the locus of a similar "color play." As part of the settlement movement that enfolded this biotic transformation, the settler seemed lighter in comparison to the dark native. That juxtaposition of light and dark was used in both directions. Sociologist Honaida Ghanim argues that after 1948 "the Palestinian person saw himself as dark, as blackish, and his color was allegoric to the color and qualities of the land; in comparison to the Jewish

⁴⁸⁶ Eitan Bar-Yosef, *Villa in the Jungle: Africa in Israeli Culture* (Jerusalem; Tel Aviv: Van Leer Jerusalem Institute and Hakibbutz Hameuchad Publishing House, 2013), 32-36.

whiteness, the darkness (*Samra*) was the proof of nativity and the unmediated bond with the land.”⁴⁸⁷

Perceptions of animal colorings mirrored that between humans. In sharp contrast to the local herding black goat, the European white goat was considered rational, good-tempered, and productive. After the war, Israeli officials chose to deal with the remaining black goats by means of confinement and attempts at elimination. These creatures were a reminder of many others, both human and animal, that they believed, as environmental historian William Cronon describes about bison in colonial America, to have been “changing the color of the landscape, they were ‘blackening the whole surface of the country.’”⁴⁸⁸

The whiteness of the house goat and the whiteness of milk, furthermore, were important in making various types of settlers resemble each other. With the growing number of Jewish settlers from Western Europe, Eastern Europe, the Middle East, and North Africa after 1948, white animals and white products were useful in abolishing hybrids such as Eastern-Jews and Jewish-Arabs. These whites hence aided in the construction of East-West and Arab-Jewish binaries.

But the separation was not complete. The white goat remained a goat, far separated from the dairy cow, the symbol of success. Designated to Jewish farmers of Middle Eastern and North African origin (the *Mizrahim*), the white goat soon began to

⁴⁸⁷ Honaida Ghanim, “What is the Color of the Arab? A Critical Look at Color Play,” in *Racism in Israel*, ed. Yehuda Shenhav and Yossi Yona (Jerusalem; Tel Aviv: Van Leer Jerusalem Institute and Hakibbutz Hameuchad Publishing House, 2008), 92.

⁴⁸⁸ William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York; London: W.W. Norton & Company, 1991), 214-215.

symbolize and ridicule Mizrahi settlers themselves. In the celebrated 1964 Israeli social satire *Sallah Shabati*, for example, a white goat stands with and for the Mizrahi village fools.⁴⁸⁹ In this way, another layer of negative meaning was added to the already loaded creature. As years past, furthermore, goats, like oranges, ultimately came to symbolize absence and loss (see Figure 2).⁴⁹⁰



Figure 2: The goat as a symbol of both Jewish and Palestinian cultural heritage, using a similar soil-like color palate. On the left: the icon for *Yiddish*, an American Yiddish Book Center. On the right: the icon for *Al-Ma'mal* (“the lab”) a Palestinian Foundation for Contemporary Art in Jerusalem. Sources: <http://www.yiddishbookcenter.org/>; <http://www.almamalfoundation.org/index.ph>.

Milk & Honey has dealt with the production of plenty, but it has said very little about the use of and construction of taste for these products.⁴⁹¹ While drinking milk and consuming soft cheeses of highly productive creatures became particularly important for the process of whitening and separation, it ultimately helped create a new type of intensive nativity. However, this process of nativization was not a singular one, as other foods contributed. Scholars have recently asked how certain foods became emblematic to

⁴⁸⁹ *Sallah Shabati*, directed by Ephraim Kishon, 1964.

⁴⁹⁰ Ghassan Kanafani, “The Land of Sad Oranges,” in *Palestinian Stories*, ed. Shimon Ballas (Tel Aviv: Aked, 1970); Nasser Abufarha, “Land of Symbols: Cactus, Poppies, Orange and Olive Trees in Palestine,” *Identities: Global Studies in Culture and Power* 15 (2008): 343–368.

⁴⁹¹ Pierre Bourdieu, *Distinction: A Social Critique of the Judgment of Taste* (Cambridge: Harvard University Press, 1984).

Jewish Israeliness, particularly those foods with long Middle Eastern histories. Food scholar Yael Raviv, for example, analyzes the case of falafel, and sociologist Dafna Hirsch focuses on the more recent Israeli love for hummus.⁴⁹² Like soft, white cheese, hummus has become an important component in Jewish Israeli diet and a basic product found in Jewish Israeli refrigerators. Palestinian Israelis allegedly consume “Hebrew” dairy products as well, as indicated by the derogatory name, *Arab el-Shamenet* [“Cream Arabs,” in an amalgamation of Hebrew and Arabic], by which non-Israeli Palestinians call them (see Chapter 2).⁴⁹³ Like the Palestinian-Jewish color play, the development of such tastes moves in both directions. Side by side (but never on same piece of bread), these food staples potentially assemble into contested nativities – ones that are industrial, seemingly separatist, and desirably plentiful.

Land of Palms and Hi-Tech

The 2009 American bestseller, *Start-Up Nation: The Story of Israel’s Economic Miracle*, examines what its authors consider the remarkable phenomenon of Israeli success in the hi-tech sector of the economy. To the authors, Dan Senor and Saul Singer, the phenomenon is all the more remarkable, given that Israel is “surrounded by

⁴⁹² Yael Raviv, “Falafel: A National Icon,” *Gastronomica: The Journal of Critical Food Studies* 3, 3 (2003): 20-25; Dafna Hirsch, “Hummus is Best when it is Fresh and made by Arabs’: The Gourmetization of Hummus in Israel and the Return of the Repressed Arab,” *American Ethnologist* 38 (2011): 617-630; Dafna Hirsch and Ofra Tene, “Hummus: The Making of an Israeli Culinary Cult,” *Journal of Consumer Culture* 13, 1 (2013): 25-45.

⁴⁹³ For an example illustrating the dependence of non-Israeli Palestinians on the Israeli dairy industry see *The Wanted 18*, a 2014 stop-motion animation film that recreates a true story from the first Palestinian Intifada. The film takes place at the West Bank town of Beit Sahour and deals with Israeli Defense Forces’ pursuit of eighteen cows who were bought from an Israeli Kibbutz in order to enable independent milk supply to the people of the town. The film depicts the efforts to hide the cows from the Israeli authorities, defining the project “a true story of bovine resistance.” See *The Wanted 18*, directed by Amer Shomali and Paul Cowan, 2014.

enemies...and has no natural resources.”⁴⁹⁴ Ultimately, the writers attribute this success to the resilience and survivability of Israeli people, concluding, “Policies on immigration, R&D, and military service have been key factors in the country’s rise.”⁴⁹⁵ In order to strengthen their argument for Jewish Israeli exceptionalism, the writers compare start-up business entrepreneurs to historical agricultural settlers, applying the paradigm of decline and land revival (see Figure 3) to show how “innovation and technology [became] the twenty-first-century version of going back to the land.”⁴⁹⁶ As one wealthy entrepreneur explained, “it is a legitimate way to make a profit because you’re inventing something...a new drug or a new chip. You feel like a *falah* (“farmer” in Arabic) [sic], a farmer of high tech.”⁴⁹⁷ Disregarding this mesh of categories and conflicting meanings, the authors adopt such reinvented hybrids for the sake of a neoliberal awe.



Figure 3: “Israel: A Leader in Business Innovation/ The Land of Milk and Honey,” CNBC interview with Dan Senor, co-author of *Start-Up Nation*, 2009. Source: <http://startupnationbook.com/> (accessed 2 September 2014).

⁴⁹⁴ “About,” *Start-Up Nation Book*, <http://startupnationbook.com/> (accessed 2 September 2014).

⁴⁹⁵ Ibid.

⁴⁹⁶ Dan Senor and Saul Singer, *Start-up Nation: The Story of Israel's Economic Miracle* (New York: Hachette Book Group, 2009), 228.

⁴⁹⁷ Ibid.

Other recent examples attest to the ways in which the decline-and-revive narrative is used to explain the gravity of sophisticated technologies. The faith in the combination of love of the land and of technology – as President Shimon Peres phrased it (see Introduction) – is at play in various recent high-tech agricultural projects. *Milk & Honey* is a collection of four case studies involving the management of animals but similar “technomystical” projects developed around flora as well. One such example is the long-lasting project repeatedly named, as the title of one book indicates, *The Return of the Date Palm to the Land of Israel*.⁴⁹⁸ This project of “return” was defined in 1933 as the “efforts to introduce selected date palms in order that Palestine may regain its former fame for this fruit”⁴⁹⁹ and sought the cooperation between Jewish settlers, agronomists, Zionist organizations, and the British and later Israeli government. The project reached its first height in the mid 1930s with the transfer (some by way of smuggling) of palm shoots from Egypt, Iraq, and Iran, and, after 1948, from California as well.

Jewish Agronomist Shmuel Stoller (1898-1977) was one of the key figures in these early efforts of “return.” In an interview in 1976, he detailed how he used Christian Holy Land art and literature to come to understand Palestine and attested that his scientific work of “deciphering nature” was motivated by this aspiration to “study the Bible.”⁵⁰⁰ Like Stoller in the mid twentieth century, Jewish-American botanist Elaine Soloway of the Arava Institute for Environmental Studies in Kibbutz Ketura infuses her

⁴⁹⁸ Shmuel Stoller, *The Return of the Date Palm to the Land of Israel: Ben-Zion Israeli's Journeys in Iraq, Iran, and Egypt* (Tel Aviv: Hakibbutz Hameuchad, 1977).

⁴⁹⁹ Director of Agriculture and Forests, Government of Palestine, to Chief Secretary, “Date Cultivation,” 13 November 1933, ISA/Mem-3/4304.

⁵⁰⁰ Memories of Shmuel Stoller of the Kinneret group, 27 May 1976, Archive of Beit-Gan (Yavne’el), 2, 9, in http://www.yavneel.org.il/site/files/file_1326.PDF, (accessed 4 September 2014).

scientific work with a combination of religious sentiments and ideas about the ancient past. Solowey has lead the movement to recover the former fame of the date fruit, using her expertise to sprout a date seed, for a while considered the “oldest known seed planted.”⁵⁰¹ Found in the 1960s archeological excavations at Masada (the famous Herodian fortification destroyed in 70CE and the site of the “Great Jewish Revolt” against Roman powers) and using radio-carbon dating, the seed was shown to be over 2,000 years old, placing it “during or just before the Masada revolt.”⁵⁰² In a 2008 article published in *Science* magazine, Sollowey and her colleague Sarah Sallon of the Hadassah Medical Center in Jerusalem used the narrative of decline to explain the motivation for their scientific work:

The Judean Dead Sea region was particularly famous for its extensive and high-quality date culture in the 1st century CE. Over the next 2 millennia, these historic cultivars were lost, and by the early twentieth century relatively few, low quality date palms mostly propagated from seeds were recorded.⁵⁰³

“We must renew our familiarity with the ancient plants that once grew in the region and investigate them scientifically to determine their characteristics,”⁵⁰⁴ explained Sallon in

⁵⁰¹ Judy Siegel-Itzkovitch, “Medicinal Date Palm from Oldest Known Seed Planted,” *Jerusalem Post*, November 25, 2011, <http://www.jpost.com/Health/Article.aspx?id=246956> (accessed 4 September 2014). The record was broken in 2012, as a team of Russian scientists managed to generate plants from a fruit of an arctic flower that supposedly died 32,000 years ago. In Nicholas Wade, “Dead for 32,000 Years, an Arctic Plant Is Revived,” *The New York Times*, 12 February 2012.

⁵⁰² Ofri Ilani, “2,000-Year-Old Date Seed Grows in the Arava,” *Ha'aretz*, 15 February 2007, <http://www.haaretz.com/print-edition/news/2-000-year-old-date-seed-grows-in-the-arava-1.213054> (accessed 4 September 2014).

⁵⁰³ Sarah Sallon and Elain Solowey, “Germination, Genetics, and Growth of an Ancient Date Seed,” *Science* 320 (2008): 1464. Sallon directs the Louis L. Borek Natural Medicine Research Center at Hadassah Medical Center, a major supporter of the sprouting project (see Figure 4). According to Solowey, Sallon was the one who convinced the Israeli Antiquity Authority to supply Solowey with three date seeds. Interview with Elain Solowey conducted by author, Kibbutz Ketura (16 February 2012). As Sallon noted in various interviews, the belief that ancient dates were used for medicinal purposes intersected with her interest in the medicinal qualities of plants, motivating her to initiate the project.

⁵⁰⁴ Judy Siegel-Itzkovitch, “Medicinal Date Palm from Oldest Known Seed Planted,” *Jerusalem Post*, 25 November 2011, <http://www.jpost.com/Health/Article.aspx?id=246956> (accessed 4 September 2014).

one newspaper interview. Sallon gave a new interpretation to the project of return, describing how current agro-tech projects aim to restore the product from the land itself, rather than import them, as was the case in the 1930s: “It feels remarkable to see this seed growing, to see it coming out of the soil after 2,000 years. It's a very moving and exciting moment.”⁵⁰⁵ Ultimately, as an article from *Ha'aretz* noted, “the two researchers hope the reborn tree will provide valuable information about the Judean economy and society at the time of Jesus.” Hinting at the parallels between palm trees and Jewish people in the project or “return to the land,” moreover, *The New York Times* mentioned that “the date palm symbolized ancient Israel; the honey of ‘the land of milk and honey’ came from the date.”⁵⁰⁶



Figure 4: Methuselah, the young palm tree that is said to have “sprouted from an ancient seed from the Masada excavations,” fenced and monitored, Kibbutz Ketura, 16 February 2012, picture taken by author.

⁵⁰⁵ Ofri Ilani, “2,000-Year-Old Date Seed Grows in the Arava,” *Ha'aretz*, 15 February 2007, <http://www.haaretz.com/print-edition/news/2-000-year-old-date-seed-grows-in-the-arava-1.213054> (accessed 4 September 2014).

⁵⁰⁶ Steven Erlanger, “After 2,000 Years, a Seed From Ancient Judea Sprouts,” *The New York Times*, 12 June 2005.

The development and use of agricultural technologies never operate in a vacuum. The 1930s project of “return” was part of the larger European settlement project in Palestine, as is the case today. While the sprouted tree (now called “Methuselah” after the Bible’s longest living man) turned out to be male and hence failed to produce fruits, the project cannot be separated from the larger Israeli occupation and settlement project within Palestinian territories after the 1967 War. Date fruit is one of Israel’s fastest growing agricultural industries, but the areas of cultivations go far beyond the recognized borders of the state. Jewish settlers tend major areas of palm tree cultivation outside the green line and along the West Bank part of the Jordan Rift Valley.⁵⁰⁷ Settler agriculture in various areas of the West Bank, furthermore, is frequently supported by American evangelist organizations.⁵⁰⁸

Barrenness

As described, it came to be known that Methuselah was a male tree, who, as recounted to me by Solowey in 2012, was “[without] a girlfriend.”⁵⁰⁹ A lonely male, the sprouted tree failed to regain the former fame of the date fruit and was unable to revive the abundance of the ancient land. Many stories in this dissertation expose difficulties and failures in executing the plans for revival and reproduction of a “land flowing with milk and honey.” As discussed in Chapter 2, for example, female cows struggled with

⁵⁰⁷ The “Green Line” refers to the armistice lines established between the newly established state of Israel and its neighbors in 1949. The term *Hitnahaluyot* (“settlements”) commonly refers to Jewish settlements that were established after the 1967 War “outside” these lines and within Palestinian territories.

⁵⁰⁸ For data regarding the Jewish growth of palm trees in the West Bank and the support of Christian organizations, see Dror Etkes, *Israeli Settler Agriculture as a Means of Land Takeover in the West Bank* (Navot’s Vineyard [Kerem Navot], 2013), 79-82. This report is based on an analysis of 15 years of GIS data collected by the Israeli Civil Administration, the governing body operating in the West Bank.

⁵⁰⁹ Interview with Elain Solowey conducted by author, Kibbutz Ketura (16 February 2012).

infertility in the 1930s and 1940s, a problem that ultimately connected “the farm to the clinic.”

Such plans and failures did not end with farm animals and lonely palm trees; they extended to humans as well. As noted in Chapter 2, Israeli women have recently been known to be the best consumers of fertility treatments globally. While many anthropologists and sociologists have attempted to understand this phenomenon, they focus mainly on the contexts of the state’s pro-natalist agenda and pay little attention to environmental explanations and historical trajectories.⁵¹⁰ They do not ask why so many women need fertility treatments and whether this professional and public investment in infertility is new.

Just as in the 1930s and 1940s, current Israeli livestock growers are still extremely occupied with fertility. In order to maintain the success of the dairy industry and the achievements of the “Hebrew Cow,” these farmers apply oft-extreme fertility treatments

⁵¹⁰ Scholars’ explanations to this phenomenon are always a combination of three: 1) the Jewish commandment of “be fertile and increase” (*pru urvru*), 2) the regional demographic fear, and 3) aspirations to rehabilitate the Jewish people after the Holocaust. American researchers studying this phenomenon seem to have paid most attention to the Jewish aspect, dealing, for example, with how techno-medical interventions intersect with religious ideas that they consider to be deeply engrained in the Israeli state and how medical and religious institutions interact. See Susan Martha Kahn, *Reproducing Jews: A Cultural Account of Assisted Conception in Israel* (Durham; London: Duke University Press, 2000), and Elly Teman, *Birthing the Mother: The Surrogate Body and the Pregnant Self* (Berkeley: University of California Press, 2010). Israeli researchers seem to pay more attention to state support (pro-natalist policies, such as the initiation of “The Motherhood Prize,” which gratifies every Israeli mother for raising ten children or more) and the familialism in Israeli society that attributed to a combination of Jewish ideals and “traditional” ways of living. See, for example, Sylvia Fogel-Bijawi, “Families in Israel: Post Modernity, Feminism and the State,” *The Journal of Israeli History* 21, 2 (2002): 38-62, *Kin, Gene, Community: Reproductive Technologies Among Jewish Israelis*, ed. Daphna Birenboim-Carmeli and Yoram Carmeli (New York; Oxford: Berghahn Books, 2010), and Yael Hashiloni-Dolev, *The Fertility Revolution* (Ben-Shemen: Modan, 2013). Little work discusses the problems of infertility and fertility treatments among non-Jewish parts of Israeli society and other Palestinian women. See Rhoda Ann Kanaaneh, *Birthing the Nation: Strategies of Palestinian Women in Israel* (Berkeley: University of California Press, 2002) and Livia Wick, *Making Lives Under Closure: Birth and Medicine in Palestine’s Waiting Zones*, PhD Dissertation, Program in Science, Technology and Society (Cambridge, MA: MIT, 2006).

to their animals. In fact, just like Israeli women, Israeli cows and sheep are said to be the world's highest consumers of fertility treatments.⁵¹¹ The current similarity in the management of the fertility of female cows and women is not new, however. Mirroring the anxiety of bovine reproduction in the 1930s, researchers and policy makers also worried about problems of human reproduction and invested much in finding solutions.

Historians of science have shown that the 1920s and 1930s were the golden age of hormone research.⁵¹² With the rise of the Nazi rule in Germany, many Jewish physicians and researchers specializing in human fertility and hormone research lost their positions and resettled in Palestine. As this community of fertility experts grew and while global attention turned to population control after World War II, infertility research flourished in Palestine and Israel.

One example of a project aimed at finding solutions to infertility after World War II is that of a fertility drug called *Pergonal*. Produced through the cooperation of medical and research institutions in Israel, an Italian pharmaceutical company, the Israeli prime minister's office, and finally, the Vatican, *Pergonal* later became a great global success and an important component of fertility treatments such as in vitro fertilization (IVF).⁵¹³ Trialed in Israel in the early 1960s, the drug was produced from sex hormones found in

⁵¹¹ Interview with Dorit Kababia, Manager of Sheep and Goat Section, Ministry of Agriculture, Beit Dagain (15 September 2013).

⁵¹² Nelly Oudshoorn, *Beyond the Natural Body: An Archeology of Sex Hormones* (New York: Routledge, 1994).

⁵¹³ Interview with Bruno Lunenfeld, Head of the Pergonal project, Tel Aviv (30 August 2013); Bruno Lunenfeld, "Management of Infertility: Past, Present and Future (from a personal perspective)," *Reproductive Medicine and Endocrinology* 10 (2013): 11-20.

the urine of postmenopausal women who lived in elderly homes in Israel; thus, not only honey and milk were used to fertilize the land, but human waste too.⁵¹⁴

In 1968, Israel hosted the International Congress for Fertility and Sterility, which was dedicated to the deceased hormone researcher and gynecologist Bernhard Zondek (see Chapter 2). During the closing ceremonies, Brazilian fertility expert Campus de-Paz gave a speech later described as “true poetry:” “People deal with fertility in this country,” said de-Paz, “not only in the sense of human reproduction, but also in fertilizing the desert.” “If any people deserve a noble prize,” he concluded, “there is not doubt that it should be the people of Israel.”⁵¹⁵



Figure 5: Bernhard Zondek and three unknown ladies, date unknown. Source: CZA/AK/576/3.

⁵¹⁴ Tikva Weinstock, “The Wonder Medicine for Infertile Women – In Elderly Homes,” *Ma'ariv*, 1 February 1965: 9.

⁵¹⁵ Yisha'ayahu Aviam, “The World Congress for Fertility and Sterility Increasing the Prestige of Science in Israel,” *Ma'ariv*, 29 May 1968.

Plenty Going Global

The research and production of *Pergonal* was tied to the movement of people, ideas, and bodily waste around the Mediterranean and the rest of the globe. Urine first connected the Israeli laboratory with the Italian pharmaceutical industry; it then had to move between the Israeli prime minister's office and the Vatican, even flying between women in urban elderly homes and primiparous cows in agricultural settlements.

Milk & Honey is arguably a local story, a tale about rural settlements in an area that is as big as New Jersey. As the story of *Pergonal* illustrates, however, this process of settlement was shaped by larger regional and global processes. We have seen the ways in which beehives, cows, sheep, and white goats – just like settlers – reached Palestine and Israel in growing numbers beginning in the late nineteenth century. By the 1960s, the ideas, practices, and types of movement that composed the settlement project began to spread outward: in this vision of “exported plenty,” planes were used, for example, to send thousands of “Hebrew Cows” to Iranian settlements and also to envision (as done so by beekeeper Robert Blum) the commencement of a global system of bee movement, fertilization, and honey production (see Figure 6).⁵¹⁶

⁵¹⁶ Ya'acov Atzmon, “With Retirement,” *Meshek Habakar Vehahalav (Cattle and Dairy Farming)* (Cattle Breeders Association in Israel), 1977: 3-8; *Davar*, “More than Two Hundred Cows to Iran - Israel is the Biggest Cattle Supplier to That Country,” 4 December 1967: 3.



Figure 6: An illustration attached to “Global Honey Production,” a proposal by Israeli beekeeper Israel Robert Blum (probably drawn by his brother, the artist Ludwig Blum, who used to draw the labels for his brother’s jars of honey), 1976. Source: CZA/K/13/160/1.

No longer needed for transporting fully-grown cows, planes today export their productive potential in the form of bovine embryos. The Israeli company *Maxximilk*, for example, offers customers around the world the “highest quality in-vitro-ready-for-transfer-pedigree embryos,” and lists four kinds of embryo-products, one of which is “genetically superior, sexed, female.”⁵¹⁷ “It seems perfectly logical that the world’s highest milk yield per cow has been achieved in Israel – ‘The Land flowing with Milk and Honey,’” the company details in its call to customers, “but when you consider the heat, humidity, limited land and water resources and the plethora of veterinary issues that needed to be overcome, Israel’s dairy achievements can only be described as illogical.”

⁵¹⁷ *Maxximilk - Much More Milk*, <http://www.maxximilk.com/index.php?tab=home> (accessed 4 September 2014). Another Israel agri tech company is *Afimilk* that offers electronic meters, behavior sensors, and other computerized systems to dairy farms around the world. See *Afimilk - Vital Know-How in Every Drop*, <http://www.afimilk.com/> (accessed 4 September 2014).

And with superior female embryos, we have come full circle. Ultimately, something always remains beyond reason; the marriage of mysticism and technology lingers on.

BIBLIOGRAPHY

- Abufarha, Nasser. "Land of Symbols: Cactus, Poppies, Orange and Olive Trees in Palestine." *Identities: Global Studies in Culture and Power* 15 (2008): 343–368.
- Abu-Lughod, Leila. *Veiled Sentiments: Honor and Poetry in a Bedouin Society*. Berkeley: University of California Press, 1986.
- Abu-Rabia, Aref. *The Negev Bedouin and Livestock Rearing : Social, Economic, and Political Aspects*. Oxford: Berg Publishers, 1994.
- Adas, Michael. *Machines as the Measure of Man: Science, Technology, and the Ideologies of Western Dominance*. Ithaca; London: Cornell University Press, 1990.
- Advanced Cow Cooling Systems Co. and Hachaklait Veterinart Services LTD. "Management of Heat Stress to Improve Fertility in Dairy Cows in Israel." *Journal of Reproduction and Development* 56 (2010): 35-51.
- Afimilk - Vital Know-How in Every Drop. <http://www.afimilk.com/> (accessed September 4, 2014).
- Agnon, Shmuel Yosef. *The Tale of the Goat*. Jerusalem: Hagina Publishers, 1925.
- Agrawal, Arun. *Environmentality: Technologies of Government and the Making of Subjects*. Durham; London: Duke University Press, 2005.
- Agriculture and Settlement in Israel: A Decade After its Establishment*. Ever-Hadani. Ministry of Agriculture, 1958.
- Aguilar-Rodríguez, Sandra. "Nutrition and Modernity: Milk Consumption in the 1940s and 1950s Mexico." *Radical History Review* 110 (2011): 36-58.
- Alatout, Samer. "Bringing Abundance into Environmental Politics: Constructing a Zionist Network of Water Abundance, Immigration, and Colonization." *Social Studies of Science* 39, 1 (2009): 363-394.
- Aleicheim, Shalom. *The Bewitched Tailor*. Moscow: Foreign Languages Publication House, 1957.
- Algazi, Gadi. "From Gir Forest to Um-Hiran: Comment on Colonial Nature and its Conservators." *Theory and Criticism [Teoriya Vebikoret]* 37 (2010): 232-253.

- Algazi, Yosef. "Ransoming Captive Camels." *Ha'aretz*, October 14, 1994.
- Al-Hamishmar*. "Sperm of Bulls Arrived from the United-States by Plane." February 10, 1947: 4.
- Alley, Henry. "The Holy Land Bees." *The American Bee Journal* 20, 37 (1884): 586.
- Almog, Oz. *The Sabra: The Creation of the New Jew*. Translated by Haim Watzman. Berkeley: University of California Press, 2000.
- Alterman, Natan. "The Picture of the Cow 'Stavit'." *Davar: Hatur Hashvi'i*, August 4, 1950.
- Ami'or, Hezi. *The Roots and Design of the 'Mixed-Farming Economy' in Jewish Agricultural Settlement in Eretz Israel*. PhD Thesis, Hebrew University of Jerusalem, 2010.
- Anderson, Virginia D. *Creatures of Empire: How Domestic Animals Transformed Early America*. Oxford; New York: Oxford University Press, 2004.
- Andrews, Thomas G. *Killing for Coal: America's Deadliest Labor War*. Cambridge: Harvard University Press, 2008.
- Arnon-Ohana, Yuval. *Peasants in the Arab Revolt in the Land of Israel, 1936-1939*. Tel Aviv: Shiloah Institute, Tel Aviv University, 1978.
- Ashkenazy, Tuvia. *The Bedouins in the Land of Israel*. Ariel, 1957.
- Assad, Talal. *Genealogies of Religion: Discipline and Reasons of Power in Christianity and Islam*. Baltimore; London: John Hopkins University Press, 1993.
- Atzmon, Ya'acov. "With Retirement." *Meshek Habakar Vehahalav* 91 (Cattle Breeders Association in Israel), 1967: 2-3.
- . "With Retirement." *Meshek Habakar Vehahalav* (Cattle Breeders Association in Israel), 1977: 3-8.
- Aviam, Yisha'ayahu. "The World Congress for Fertility and Sterility Increasing the Prestige of Science in Israel." *Ma'ariv*, May 29, 1968.
- Avitzur, Shmuel. *Changes in Eretz-Israel Agriculture, 1875-1975*. Tel-Aviv: Milo Ltd and Avshalom Institute, 1977.
- Azaryahu, Maoz, and Arnon Golan. "Zionist homelands (and their constitution) in Israeli geography." *Social & Cultural Geography* 5, 3 (2004): 497-513.

- Baldensperger, Jean. "Palestine: An Account of Bee-Keeping there by an Eye-Witness." *American Bee Journal* 24, 4 (1888): 59-60.
- Baldensperger, Philip. "Bees in Palestine." *Bee World* 12 (1931): 34-36.
- Baldensperger, Philip. "Marketing Honey on the Shores of the Mediterranean." *Bee World* 11 (1930): 133-136.
- . "The Identification of Ain-Rimmon with Ain-Urtas (Artas)." *Palestien Exploration Fund Quarterly Statement* 43 (1912): 201-2011.
- . *The Immovable East: Studies of the People and Customs of Palestine*. Boston: Small, Maynard and Company, 1913.
- Bar-Adon, Pesah (Aziz Afandi). *Among the Herds of Sheep (From the Stories of a Shepherd)*. Tel-Aviv: Eli'asaf Publishers, 1942.
- . *In Desert Tents: From the Notes of a Hebrew Shepherd Among Bedouin Tribes*. Jerusalem: Kiryat-Sefer, 1981.
- . "A Sheep." *Mozna'im: Journal for Literature, Criticism, and Art*, November 3, 1933: 2-4.
- Barak, On. *On Time: Technology and Temporality in Modern Egypt*. Berkeley: University of California Press, 2013.
- Barton, Gregory A. "Environmentalism, Development and British Policy in the Middle East 1945-56." *Journal of Imperial and Commonwealth History* 38, 4 (2010): 619-639.
- Bar-Yosef, Eitan. *The Holy Land in English Culture 1799-1917: Palestine and the Question of Orientalism*. Oxford: Oxford University Press, 2005.
- . *Villa in the Jungle: Africa in Israeli Culture*. Jerusalem; Tel Aviv: Van Leer Jerusalem Institute and Hakibbutz Hameuchad Publishing House, 2013.
- Beinart, William, and Lotte Hughes. *Environment and Empire*. Oxford: Oxford University Press, 2007.
- Beker, Dov. *In the Meadows*. Israeli Shepherds Association, 1972.
- . *Sheep and Goat Rearing*. Ein-Harod: Hebrew Shepherds Association, 1948.
- Bell, T. "Preliminary Work on the Artificial Insemination of Live Stock in Palestine." *Empire Journal of Experimental Agriculture* 6 (1938).

- Ben-Arzi, Yossi. "Religious Ideology and Landscape Formations: the Case of the German Templars in Eretz-Israel." In *Ideology and the Landscape in Historical Perspective*, edited by Alan R.H. Baker and Gideon Biger. Cambridge: Cambridge University Press, 2006.
- Ben-Basat, Yuval. *Petitioning the Sultan: Justice and Protest in Late Ottoman Palestine*. London: I. B. Tauris, 2013.
- Ben-David, Orit. "Tiyul as an Act of Consecration of Space." In *Grasping Land: Space and Place in Contemporary Israeli Discourse and Experience*, edited by Eyal Ben-Ari and Yoram Bilu. Albany: State University of New York Press, 1997.
- Benton, Frank. "A Bee-Convention in Syria." *The American Bee Journal* 21, 35 (1885): 551.
- . "The New Races of Bees." *The American Bee Journal* 20, 3 (1884): 38-39.
- Berlovitch, Yafa. *Wounded Bird: Dora Bader – A Diary (1933-1937)*. Hakibbutz Hame'uchad, 2011.
- Berns, Andrew D. "The Place of Paradise in Renaissance Jewish Thought." *Journal of the History of Ideas* 75, 3 (2014): 351-371.
- Biger, Gideon, and Nili Lifshitz. "The Afforestation Policy of the British Government in the Land of Israel." *Horizons in Geography [Ofakim Begeografia]* 40-41 (1994): 5-16.
- Birenboim-Carmeli, Daphna. "Contested Surrogact and teh Gender Order in Israel," in *Assisting Reproduction, Testing Genes: Global Encounters with New Biotechnologies*, edited by Daphna Birenboim-Carmeli and Marcia Inhorn. New York; Oxford: Berghahn, 2009, 192-193.
- Birenboim-Carmeli, Daphna and Yoram Carmeli (eds.). *Kin, Gene, Community: Reproductive Technologies Among Jewish Israelis*. New York; Oxford: Berghahn Books, 2010.
- Blum, Israel Robert. "Beekeeping and Its Needs." *Davar*, December 14, 1932.
- . "World Congress for Beekeepers." *Davar*, September 25, 1956: 4.
- . *The Man and the Bee*. Tel Aviv: Tversky, 1951.
- Bodenheimer, Fritz Simon. *Animal and Man in Bible Lands*. Leiden: E. J. Brill, 1960.
- Bodenheimer, Fritz Simon. "Studies in Animal Populations II: Seasonal Population - Trends of Honey-Bee." *The Quarterly Review of Biology* 12, 4 (1937): 406-425.

- Boime, Albert. "William Holman Hunt's 'The Scapegoat': Rite of Forgiveness/Transference of Blame." *The Art Bulletin* 84, 1 (2002): 94-114.
- Bondi, Ruth. "Reception – For Animal Only." *Davar*, February 3, 1956: 20.
- Bourdieu, Pierre. *Outline of a Theory of Practice*. Translated by R. Nice. Cambridge: Cambridge University Press, 1977.
- . *Distinction: A Social Critique of the Judgment of Taste*. Cambridge: Harvard University Press, 1984.
- Bower, Bruce. "Excavators Find Honey of a Discovery: Israeli Site Yields Oldest Known Example of Beekeeping." *Science News*, September 27, 2008: 11.
- Braverman, Irus. *Planted Flags: Trees, Land, and Law in Israel/Palestine*. Cambridge: Cambridge University Press, 2009.
- Braverman, Irus. "Planting the Promised Landscape: Zionism, Nature, and Resistance in Israel/Palestine." *Natural Resources Journal* 49 (2009): 317-361.
- Braverman, Irus. "'The Tree Is the Enemy Soldier': A Sociolegal Making of War Landscapes in the Occupied West Bank." *Law & Society Review* 42, 3 (2008): 449-482.
- Browne, Janet. *The Secular Ark: Studies in the History of Biogeography*. New Haven; London: Yale University Press, 1983.
- Bruce Herald*. "Honey in Jerusalem." February 1, 1901.
- Buheiry, Marwan R. "The Agricultural Exports of Southern Palestine, 1885-1914." *Journal of Palestine Studies* 10, 4 (1981): 61-81.
- Burke, Edmund III. "Pastoralism and the Mediterranean Environment ." *International Journal of Middle East Studies*, 2010: 663-665.
- Butcher, Tim. "Israel No Longer Land of Milk and Honey after 60% Fall in Honey Harvest." *Telegraph*. September 16, 2008.
<http://www.telegraph.co.uk/earth/earthnews/3351841/Israel-no-longer-Land-of-Milk-and-Honey-after-60-fall-in-honey-harvest.html> (accessed May 2, 2010).
- Callon, Michel. "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay." In *Power, Action and Belief: A Sociology of Knowledge*, 196-233. London: Routledge, 1986.
- Carmel, Alex. "C.F. Spittler and the Activities of the Pilgrims Mission in Jerusalem." In *Ottoman Palestine 1800-1914: Studies in Economic and Social History*, edited by G. Gilber. Leiden: E. J. Brill, 1990.

- . *The German Settlement in the Land of Israel in the Late Ottoman Period: It National, Local, and International Problems* . Haifa: Haifa University Press, 1970.
- Casto, E. Ray. "Economic Geography of Palestine." *Economic Geography* 13, 3 (1937): 235-259.
- Chagall, Marc. "I and the Village."
http://www.moma.org/collection/object.php?object_id=78984 (accessed July 9, 2014).
- Chatwin, Bruce. *The Songlines*. New York: Penguin Books, 1987.
- Clarke, Adele E. "Reflections on the reproductive sciences in agriculture in the UK and US, ca. 1900–2000+." *Studies of History, Philosophy, and Biology & Biomedical Sciences* 38 (2007): 316-339.
- Cohen, Hillel. *1929: Year Zero of the Jewish-Arab Conflict*. Jerusalem: Keter, 2013.
- . *Army of Shadows: Palestinian Collaboration with Zionism, 1917-1948*. Translated by Haim Watzman. Berkeley; Los Angeles; London: University of California Press, 2008.
- Cohen, Shaul E. *The Politics of Planting: Israeli-Palestinian Competition for Control of Land in the Jerusalem Periphery* . Chicago: Chicago University Press, 1993.
- Comaroff, Jean, and John L. Comaroff. *Of Revelation and Revolution, Volume 1: Christianity, Colonialism, and Consciousness in South Africa*. Chicago; London: Chicago University Press, 1991.
- Cooper, Alix. *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe*. New York: Cambridge University Press, 2007.
- Cox-Foster, D. L. et al. "A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder." *Science* 318 (2007): 283.
- Crane, Eva. *The World History of Beekeeping and Honey Hunting* . New York: Routledge, Chapman, and Hall, 1999.
- Cronon, William. *Changes in the Land: Indians, Colonists, and the Ecology of New England*. New York: Hill & Wang, 1983.
- . *Nature's Metropolis: Chicago and the Great West*. New York; London: W.W. Norton & Company, 1991.
- Crosby, Alfred W. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge: Cambridge University Press, 1986.

- Crowfoot, Grace M., and Louise Baldensperger. *From Cedar to Hyssop: A Study in the Folklore of Plants in Palestine*. London: The Sheldon Press, 1932.
- “Dairy Cattle Exhibition in Emek Izrael.” *Cowboy Pages* 1 (1958): 1.
- Daston, Lorraine, and Gregg Mitman, . *Thinking with Animals: New Perspectives on Anthropomorphism*. New York: Columbia University Press, 2005.
- Davar*. ““Senior Home” for Stavit.” July 2, 1951: 4.
- Davar*. “8937k of Milk - The Annual Yield of One Cow.” November 16, 1937: 6.
- Davar*. “Bee Supervision Command.” August 26, 1928.
- Davar*. “Course for Beekeepers.” January 10, 1933: 4.
- Davar*. “Expediting the Fellahs.” December 14, 1932.
- Davar*. “Jewish Beekeepers Conference.” August 30, 1939.
- Davar*. “Loans to Beekeepers.” October 24, 1935.
- Davar*. “More than Two Hundred Cows to Iran - Israel is the Biggest Cattle Supplier to That Country.” December 4, 1967: 3.
- Davar*. “The Cow that Won Two Rewards - Zkufa.” December 24, 1937: 3.
- Davis, Diana K. *Resurrecting the Granary of Rome: Environmental History and French Colonialism Expansion in North Africa*. Athens: Ohio University Press, 2007.
- Davis, Diana K., and Edmund Burke III, . *Environmental Imaginaries of the Middle East and North Africa*. Athens: Ohio University Press, 2011.
- Davis, Natali Zemon. *Fiction in the Archives: Pardon Tales and Their Tellers in Sixteenth-Century France*. Stanford: Stanford University Press, 1987.
- Desrosières, Alain. *The Politics of Large Numbers: A History of Statistical Reasoning*. Translated by Camille Naish. Cambridge: Harvard University Press, 1998.
- Divan, Andrew H. “First Queen by Mail from Jerusalem.” *The American Bee Journal* 20, 51 (1884): 809.
- Doar Hayom*. “A car for every one hundred thousand people in the land of Israel.” February 25, 1935: 1.
- Dori, Shlomo. *Meshek Habakar Vehahalav (Cattle and Dairy Farming)* (Cattle Breeders Association in Israel), 1977: 9.

- . *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 1*. Caesarea: Cattle Breeders Association in Israel, 1992.
- . *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 2*. Caesarea: Cattle Breeders Association in Israel, 1996.
- . *News from the Past: Chapters in the History of Dairy Cattle Farming in Israel, Part 3*. Caesarea: Cattle Breeders Association, 2002.
- Dorit Kababia, Manager of Sheep and Goat Section, Ministry of Agriculture, interview by Tamar Novick. Beit Dagain, (September 15, 2013).
- Douglas, Mary. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. New York; Washington: Frederick A. Praeger Publishers, 1966.
- Doumani, Beshara. *Rediscovering Palestine: Merchants and Peasants in Jabal Nablus, 1700-1900*. Berkeley; Los Angeles; London: University of California Press, 1995.
- Drayton, Richard. *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World*. New Haven: Yale University Press, 2000.
- Dror, Yaron. "Udderly Marvelous Gina: Israel's Most Productive Cow." *Haaretz*, 2004 יייל 2-June: 8.
- DuPuis, Melanie. *Nature's Perfect Food: How Milk Became America's Drink*. New York: New York University Press, 2002.
- Durkheim, Emile, and Marcel Mauss. *Primitive Classification*. Translated by Rodney Needham. Chicago: University of Chicago Press, 1963 [1903].
- Ecole Nationale d'Ingénieur, Sud Alsace, Mulhouse. *Graduates*. <http://www.anciens-ensisa.org/> (accessed October 2, 2010).
- Edgerton, David. *The Shock of the Old: Technology and Global History Since 1900*. Oxford; New York: Oxford University Press, 2007.
- Eilat (Esptein), Eliyahu . *The Bedouins: Their Lives and Customs*. Tel-Aviv: A. Y. Stibel, 1933.
- Elazari-Volcani, Yitzhak. *The Fella's Farm*. The Jewish Agency for Palestine, Institute of Agriculture and Natural History, Agricultural Experiment Station, 1930.
- . *The Dairy Industry as the Basis for Colonisation in Palestine*. Tel-Aviv: Palestine Economic Society, 1928.
- . "On the State of Farming." *Hapoel Hatzair*, February 11, 1912.

- . *On the Road*. Jaffa: Hapo'el Hatza'ir, 1918.
- . *The Design of the Agriculture in the Land (of Israel)*. Rehovot Experimental Station: The Jewish Agency, 1937.
- El-Eini, Roza. "British Forestry Policy in Mandate Palestine, 1929-48." *Middle Eastern Studies* 35, 3 (1999): 72-155.
- . "Governmental Fiscal Policy in Mandatory Palestine in the 1930s." *Middle Eastern Studies* 33, 3 (1997): 570-596.
- . *Mandated Landscape: British Imperial Rule in Palestine, 1929-1948*. New York: Routledge, 2006.
- . "The Implementation of British Agricultural Policy in Palestine in the 1930s." *Middle Eastern Studies* 32, 4 (1996): 211-250.
- El-Haj, Nadia Abu. *Facts on the Ground: Archeological Practice and Territorial Self-Fashioning in Israeli Society*. Chicago: University of Chicago Press, 2001.
- Elmaliach, Tal. *The Kibbutz Industry, 1923-2007: Discussing Questions of Economy and Society*. Givat Haviva: Yad Ya'ari Publishers, 2009.
- El-Shakry, Omnia. *The Great Social Laboratory: Subject of Knowledge in Colonial and Postcolonial Egypt*. Stanford: Stanford University Press, 2007.
- Erlanger, Steven. "After 2,000 Years, a Seed From Ancient Judea Sprouts." *The New York Times*, June 12, 2005.
- Eshel, Ruth. "Dancing on the Sidewalks of Ein-Hashofet." *Dance Now* 14, 1 (2000): 44-48.
- Essaid, Aida A. *Zionism and Land Tenure in Mandate Palestine*. New York: Routledge, 2014.
- Etkes, Dror. *Israeli Settler Agriculture as a Means of Land Takeover in the West Bank*. Kerem Navot, 2013.
- Etsion, Lotek (a 101 years old former shepherd). interview by Tamar Novick. Kibbutz Merhavia, (October 18, 2011).
- Eyal, Gil. *The Disenchantment of the Orient : Expertise in Arab Affairs and the Israeli State*. Stanford: Stanford University Press, 2006.
- "Facts About the Dairy Industry in Israel." *Israel Dairy Board*.
<http://www.israeldairy.com/info/about/facts.htm> (accessed January 10, 2011).

- Falk, Rafael. *Zionism and the Biology of the Jews*. Tel Aviv: Resling, 2006.
- FAO. "Food and Agricultural Commodity Production."
<http://faostat.fao.org/site/339/default.aspx>, (accessed May 7, 2010).
- Firestone, Ya'akov. "Crop-Sharing Economics in Mandatory Palestine - Part I." *Middle Eastern Studies* 11, 1 (1974): 3-23.
- Fitzgerald, Deborah. *Every Farm a Factory: The Industrial Ideal in American Agriculture*. New Haven: Yale University Press, 2003.
- Fogel-Bijawi, Sylvia. "Families in Israel: Post Modernity, Feminism and the State." *The Journal of Israeli History* 21, 2 (2002): 38-62.
- Folman, Yeshayahu, et al. "Milk Yield and Fertility of High-Yielding Dairy Cows in a Sub-Tropical Climate During Summer and Winter." *Journal of Dairy Research* 46, 3 (1979): 411-425.
- Forman, Jeremy, and Alexander Kedar. "Colonialism, Colonization and Land Law in Mandate Palestine: The Zor al-Zarqa and Barrat Qisarya Land Disputes in Historical Perspective." *Theoretical Inquiries in Law* 4, 2 (2003): 491-540.
- Foucault, Michel. "Governmentality." In *The Foucault Effect: Studies in Governmentality*, edited by Colin Gordon, Peter Miller Graham Burchell, translated by Rosi Braidotti. Chicago: University of Chicago Press, 1991, 87-104.
- . *Security, Territory, Population: Lectures at the Collège de France, 1977-1978*. New York: Graham Burchell, 2007.
- Franzman, Seth J., and Ruth Kark. "Bedouin Settlement in Late Ottoman and British Mandatory Palestine: Influence on the Cultural and Environmental Landscape, 1870-1948." *New Middle Eastern Studies* 1 (2011): 1-23.
- Frerund, Dr. S., and Dr. A. Rosen. *The Sterility of Cows*. Tel Aviv: Agricultural Experimental Station, The Zionist Organization, 1925.
- Gaard, Greta. "Toward a Feminist Postcolonial Milk Studies." *American Quarterly* 65, 3 (2013): 595-618.
- Gadgil, Mahadav, and Ramachandra Guha. *This Fissured Land: An Ecological History of India*. Berkeley: University of California Press, 1993.
- Geneva Daily Times*. "Apiary Interests in Palestine." May 5, 1900.
- Gere, Cathy. *Knossos and the Prophets of Modernism*. Chicago: University of Chicago Press, 2009.

- Ghanim, Honaida. "What is the Color of the Arab? A Critical Look at Color Play." In *Racism in Israel*, edited by Yehuda Shenhav and Yossi Yona. Jerusalem; Tel Aviv: Van Leer Jerusalem Institute and Hakibbutz Hameuchad Publishing House, 2008, 76-92.
- Gil, Moshe. "The Decline of the Agrarian Economy in Palestine under Roman Rule." *Journal of the Economic and Social History of the Orient* 49, 3 (2006): 285-328.
- Gilbert, S.J. "An Unusual Strain of Brucella causing Abortion of Cattle in Palestine." *Journal of Comparative Pathology and Therapeutics* 43 (1930): 118-124.
- Given, Michael. "Maps, Fields, and Boundary Cairns: Demarcation and Resistance in Colonial Cyprus." *International Journal of Historical Archeology* 6, 1 (2004): 1-22.
- Golan, Tal. "Introduction: Special Issue - Science, Technology, and Israeli Society." *Israel Studies* 9, 2 (2004): iv-viii.
- Goldstein, Yaakov. *The Shepherds Fraternity*. Tel Aviv: Ministry of Defence Publications, 1993.
- Goodrich-Fereer, Ada. *Arabs in Tent & Town: An Intimate Account of the Family Life of the Arabs of Syria, Their Manner of Living in Desert & Town, Their Hospitality, Customs & Mental Attitude, with a Description of the Animals Birds, Flowers & Plants of Their Country*. New York: G. P. Putnam's Sons, 1924.
- Goren, Haim. *Go Research the Land: German Studies of the Land of Israel in the Nineteenth Century*. Jerusalem: Yad Ben-Zvi, 1999.
- . *True Catholics and Good Germans: The Catholic Germans and the Land of Israel, 1838-1910*. Jerusalem: Magnes-Hebrew University, 2004.
- Goren, Haim, and Richab Rubin. "This is How Modern Beekeeping Started in this Country." *Mada* 29, 4-5 (1985).
- Granqvist, Hilma. *Birth and Childhood Among the Arabs: Studies in a Huhnmadan Village in Palestine*. Helsingfors: Soderstrom & Co Forlagsaktiebolag, 1947.
- . *Marriage Conditions in a Palestinian Village*. Helsingfors: Centraltryckeri Och Bokbinderi, 1931.
- Grasseni, Christina. "Managing Cows: an Ethnography of Breeding Practices and Uses of Reproductive Technology in Contemporary Dairy Farming in Lombardy (Italy)." *Studies of History, Philosophy, and Biology & Biomedical Sciences* 38 (2007): 488-510.

- Greenberg, Zalman, and Anton Alexander. "Israel Jacob Kligler: The Story of 'A Little Big Man'." *Korot - The Israeli Journal of the History of Medicine and Science* 21 (2012): 175-206.
- Grove, Richard H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860*. Cambridge: Cambridge University Press, 1995.
- Ha'am, Ehad. "Truth from the Land of Israel." *Hamelitz*, June 30, 1891.
- Ha'aretz*. "A Severe Dispute Between the Druze and the Ministry of Agriculture Regarding the Grazing of Goats." January 24, 1954.
- Hacking, Ian. *The Taming of Chance*. Cambridge: Cambridge University Press, 1990.
- Halevi, Eli'ezer. *A Journey to the Land of Israel*. Tel Aviv: Omanut Publishers, 1931 [1838].
- Halperin, Haim. *Changes in Jewish Agriculture*. Tel Aviv: Ayanot, 1954.
- Hamdy, Sherine. *Our Bodies Belong to God: Organ Transplants, Islam, and the Struggle for Human Dignity in Egypt*. Berkeley; Los Angeles; London: University of California Press, 2012.
- Ha-Melitz*. "In the Holy Land." July 5, 1900.
- Haraway, Donna. *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. New York: Routledge, 1989.
- Haribal, Jason. *Fear of the Animal Planet: The Hidden History of Animal Resistance*. AKP Press/CounterPunch, 2010.
- Harrison, Peter. *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge; New York: Cambridge University Press, 1998).
- Hashiloni-Dolev, Yael. *The Fertility Revolution*. Ben-Shemen: Modan, 2013.
- Headrick, Daniel. *Power Over People: Technology, Environment, and Imperialism*. Princeton: Princeton University Press, 2009.
- Hirsch, Dafna. "'Hummus is Best when it is Fresh and made by Arabs': The Gourmetization of Hummus in Israel and the Return of the Repressed Arab." *American Ethnologist* 38 (2011): 617-630.
- Hirsch, Dafna, and Ofra Tene. "Hummus: The Making of an Israeli Culinary Cult." *Journal of Consumer Culture* 13, 1 (2013): 25-45.

- Hirsch, Dr. Siegfried. "Sheep and Goats in Palestine." *Bulletin of The Palestine Economic Society* 6, 2 (1933): 1-77.
- Hodge, Joseph Morgan. *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism*. Athens: Ohio University Press, 2007.
- Hughes, Matthew. "From Law and Order to Pacification: Britain's Suppression of the Arab Revolt in Palestine, 1936–39." *Journal of Palestine Studies* 39, 2 (2010): 6-22.
- Hughes, Thomas P. *Networks of Power: Electrification in Western society, 1880–1930*. Baltimore: John Hopkins University Press, 1993.
- Ilani, Ofri. "2,000-Year-Old Date Seed Grows in the Arava." *Ha'aretz*. February 15, 2007. <http://www.haaretz.com/print-edition/news/2-000-year-old-date-seed-grows-in-the-arava-1.213054> (accessed September 4, 2014).
- "Infertility in Cattle, Reasons and Ways of Treating." *Hasade* 13 (1933).
- Inhorn, Marcia. *Infertility and Patriarchy: The Cultural Politics of Gender and Family Life in Egypt*. Philadelphia: University of Pennsylvania, 1996.
- Israeli Honey Council. *On the History of Beekeeping in Israel: Problems and Related Stories*. http://www.honey.org.il/info/about-us/begin_peer.htm (accessed October 2, 2010).
- Jacks, G. V., and R. O. Whyte. *The Rape of the Earth: A World Survey of Soil Erosion*. London: Faber and Faber LTD, 1939.
- Jacoby, Karl. *Crimes against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation*. Berkeley; Los Angeles; London: University of California Press, 2001.
- Jarvis, Major C.S. "The Arab, the Goat, and the Camel: Destroyers of the Desert." *The Palestine Post*, October 11, 1934.
- Jonas, Salo. "Cattle Raising in Palestine." *Agricultural History* 26, 3 (1952): 93-104.
- Kahn, Susan Martha. *Reproducing Jews: A Cultural Account of Assisted Conception in Israel*. Durham; London: Duke University Press, 2000.
- Kanaaneh, Rhoda Ann. *Birthing the Nation: Strategies of Palestinian Women in Israel*. Berkeley: University of California Press, 2002.
- Kanafani, Ghassan. "The Land of Sad Oranges." In *Palestinian Stories*, edited by Shimon Ballas. Tel Aviv: Aked, 1970.

- Kardeshian, Kirk. *Milk Money: Cash, Cows, and the Death of the American Dairy Farm*. University of New Hampshire Press, 2012.
- Kark, Ruth. "Millenarism and Agricultural Settlement in the Holy Land in the Nineteenth Century." In *Deutsche in Palästina und ihr Anteil an der Modernisierung des Landes*, edited by Jacob Eisler. Wiesbaden: Harrassowitz Verlag, 2008, 14-29.
- Karlinsky, Nahum. *California Dreaming: Ideology, Society, and Technology in the Citrus Industry of Palestine 1890–1939*. Albany, NY: SUNY Press, 2005.
- Kaskell Free Press, Texas*. "Famous for Honey: An Industry of Palestine in Biblical Days May Be Revived." July 28, 1900.
- Katz, Saul. "Sociological Aspects in the Development (and Replacement) of Agricultural Knowledge in Israel: The Emergence of Ex-Scientific Systems for the Production of Agricultural Knowledge, 1880-1940." PhD Thesis, Hebrew University, Jerusalem, 1986.
- Katz, Saul. "'The First Furrow': Ideology, Settlement, and Agriculture in Petah-Tikva in its First Decade." *Catedra* 23 (1982): 124-157.
- Keith-Roach, Edward. "Changing Palesitne." *The National Geographic Magazine*, April 1934: 493-527.
- Kelner, Shaul. "Ethnographers and History." *American Jewish History* 98, 1 (2014): 17-22.
- Khalidi, Rashid. *The Iron Cage: The Story of the Palestinian Struggle for Statehood*. Boston: Beacon Press, 2006.
- Kibbutz Gvat. "How Have we Coped with Infertility in Our Herd?" *Hasade* 9 (1940).
- Kimmerling, Baruch, and Joel S. Migdal. *Palestinians: The Making of People*. Cambridge: Harvard University Press, 1994.
- Sallah Shabati*. Directed by Ephraim Kishon. Produced by Menahem Golan. 1964.
- Kohler, Rob. *Lords of the Fly*. Chicago: Chicago University Press, 1994.
- Krik, Hagit. "Palestine vs. The Holy Land: Cultural Aspects in the Experiences of Clerks of the British Mandate in Palestine." MA Thesis, Tel Aviv University, Tel Aviv, 2008.
- "Land of Promise." *The Spielberg Jewish Film Archive*.
<http://www.youtube.com/watch?v=QDoD6W2z01s> (accessed March 23, 2014).

- Langstroth, L. L. *The Hive and the Honeybee: The Classic Beekeeper's Manual*. Mineola, N.Y.: Dover Publications, 1878.
- Latour, Bruno. *We Have Never Been Modern*. Cambridge: Harvard University Press, 1993 [1991].
- Leibler, Anat. "Statisticians' Ambition: Governmentality, Modernity and National Legibility." *Israel Studies* 9, 2 (2004): 121-149.
- Lensing, J. Stephern. *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali*. Princeton: Princeton University Press, 1991.
- Levi, Isar. "'The Troubadour' of Sheep Management." In *David Zamir (A Collection for His Memory)*, 13. Merhavia: Shepherds Association and Kibbutz Merhavia, 1968.
- Levi, Uriel. *The History of Dairy Bovine in Israel*. Tel Aviv: The Israeli Breeders Association, 1983.
- Likhovski, Assaf. "Between 'Mandate' and 'State': Re-Thinking the Periodization of Israeli Legal History." *Journal of Israeli History* 19, 2 (1998): 39-68.
- Lockman, Zachary. *Comrades and Enemies: Arab and Jewish Workers in Palestine, 1906-1948*. Berkeley; Los Angeles; London: University of California Press, 1996.
- Lorimer, Hayden. "Walking: New Forms and Spaces for the Study of Pedestrianism." In *Geographies of Mobilities: Practices, Spaces, Subjects*, edited by Tim Cresswell. Burlington: Ashgate Publishing Limited, 2011, 19-34.
- Luke, Harry C., and Edward Keith-Roach, . *The Handbook of Palestine, Issued Under the Authority of the Government of Palestine*. London: Macmillan & Co., 1922.
- Lunenfeld, Bruno, interview by Tamar Novick. *Pergonal* Tel Aviv, (August 30, 2013).
- Lunenfeld, Bruno. "Management of Infertility: Past, Present and Future (from a personal perspective)." *Reproductive Medicine and Endocrinology* 10 (2013): 11-20.
- Malchi, Yossi. "Modernity, nationality, and society: The beginning of Hebrew flight in Palestine 1932-1940." MA Thesis, Tel Aviv University, 2007.
- Marchenay, Phillipe. *L'Homme et l'Abeille*. Paris: Berger-Levrault, 1979.
- Marx, Leo. *The Machine in the Garden: Technology and the Pastoral Ideal in America*. Oxford; New York: Oxford University Press, 1964.
- Mauss, Marcel. "Techniques of the Body." *Economy and Society* 2, 1 (1973 [1936]): 70-88.

- Maxximilk - Much More Milk*. <http://www.maxximilk.com/index.php?tab=home> (accessed September 4, 2014).
- Mazar, Amihai, and Nava Panitz-Cohen. "It Is the Land of Honey: Beekeeping at Tel Rehov." *Near Eastern Archeology* 70, 4 (2007): 202-219.
- McCann, James C. *Green Land, Brown Land, Black Land: An Environmental History of Africa, 1800-1990*. Portsmouth: Heineman, 1999.
- Melville, Elinor G. K. *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico*. New York: Cambridge University Press, 2005.
- Mennell, Philip. *The Coming Colony: Practical Notes on Western Australia*. London: Huntington & Co., 1892.
- Merrill, Saleh. "Honey Producing in Old Palestine." *The American Bee Journal* 40, 23 (1900): 356.
- Merton, Robert K. "Science, Technology and Society in Seventeenth Century England," *Osiris* 4 (1938): 360-632.
- Metzer, Jacob. *The Divided Economy of Mandatory Palestine*. Cambridge: Cambridge University Press, 1998.
- Mikhail, Alan. *Nature and Empire in Ottoman Egypt: An Environmental History*. Cambridge: Cambridge University Press, 2011.
- Mikhail, Alan, ed. *Water on Sand: Environmental Histories of the Middle East and North Africa*. Oxford: Oxford University Press, 2013.
- Mitchell, Timothy. *Carbon Democracy: Political Power in the Age of Oil*. London; New York: Verso, 2011.
- Mitchell, Timothy, ed. *Questions of modernity*. Minneapolis; London: University of Minnesota Press, 2000.
- . *Rule of Experts: Egypt, Techno-Politics, Modernity*. Berkeley: University of California Press, 2002.
- Mitchell, W. J. T. "Holy Landscape: Israel, Palestine, and the American Wilderness." *Critical Inquiry* 26, 2 (2002): 193-223.
- Morag, M., A. A. Degen, and F. Popliker. "The Reproductive Performance of German Mutton Merino Ewes in a Hot Arid Climate." *Journal of Animal Breeding and Genetics* 89 (1972): 340-345.

- Morris, Benny. *The Birth of the Palestinian Refugee Problem, 1947-1949*. Cambridge: Cambridge University Press, 1987.
- Moscrop, John Jams. *Measuring Jerusalem: The Palestine Exploration Fund and British Interest in the Holy Land*. London; New York: Leicester University Press, 2000.
- Moshkovitz, Israel. "World Record for the Israeli Cow: 11,400 Litter Per Year." *Yedi'ot Achronot, Economy Supplement*, May 29, 2014: 10.
- N., F. S. "Land of the Promise at the Astor." *New York Times*, November 21, 1935.
- Nadan, Amos. "Colonial Misunderstanding of an Efficient Peasant Institution: Land Settlement and Mushā' Tenure in Mandate Palestine, 1921-47." *Journal of Economic and Social History of the Orient* 46, 3 (2003): 320-354.
- . *The Palestinian Peasant Economy under the Mandate: A Story of Colonial Bungling*. Cambridge: Harvard University Press, 2006.
- Naili, Falestin. "Memories of Home and Stories of Displacement: The Women of Artas and the 'Peasant Past'." *Journal of Palestine Studies* 38, 4 (2009): 63-74.
- Neria, Ami. *Veterinary Medicine in the Land of Israel: 50 Years of Veterinarian Medicine, 1917-1967*. Tel Aviv: Re'emim Press, 2001.
- Neumann, Boaz. *Land and Desire in Early Zionism*. Tel Aviv: Am Oved Publishers, 2009.
- Noble, David F. *The Religion of Technology: The Divinity of Man and the Spirit of Invention* (New York: Penguin Books, 1990 [1997]).
- Norton, David. *A History of the Bible as Literature, Part II: from 1700 to the Present Day*. Cambridge; New York: Cambridge University Press, 1993.
- Noy-Meir, Imanuel, and Talya Oron. "Effects of Grazing on Geophytes in Mediterranean Vegetation." *Journal of Vegetation Science* 12, 6 (2001): 749-760.
- "Obituary Notices: Nora Baldensperger." *Bee Journal* 58 (1977): 128.
- Orenstein, Daniel, Alon Tal, and Char Miller, . *Between Ruin and Restoration: an Environmental History of Israel*. Pittsburgh: University of Pittsburgh Press, 2013.
- Orland, Barbara. "Turbo-Cows: Producing a Competitive Animal in the Nineteenth and Early Twentieth Centuries." In *Industrializing Organisms: Introducing Evolutionary History*, edited by Susan R. Schrepfer and Philip Scranton. New York; London: Routledge, 2003, 167-189.

- Osborn, Rev. Henry S. *Palestine: Past and Present, with Biblical, Literary and Scientific Notices*. Philadelphia: James Challen & Son, 1859.
- Oudshoorn, Nelly. *Beyond the Natural Body: An Archeology of Sex Hormones*. New York: Routledge, 1994.
- “Palestine.” *The Geographical Teacher* 11, 6 (1922): 359-366.
- Palmon, Moshe, interview by Nir Mann. “*Efraim Smaragd*” Tel-Aviv, (May 27, 2001).
- Palvitch, Israel, interview by Nir Mann. *Efraim Smaragd* Kibbut Ma'abarot, (1996).
- Paxson, Heather. *The Life of Cheese: Crafting Food and Value in America*. Berkeley; Los Angeles: University of California Press, 2013.
- Pearse, C. Kenneth. “Grazing in the Middle East: Past, Present, and Future.” *Journal of Range Management* 24, 1 (1971): 13-16.
- Pecher, Yosefa, interview by Tamar Novick. Kibbutz Mizra, (February 9, 2012).
- Penslar, Derek. *Israel in History: The Jewish State in Comparative Perspective*. New York: Routledge, 2007.
- . *Zionism and Technocracy: The Engineering of Jewish Settlement in Palestine, 1870-1918*. Bloomington: Indiana University Press, 1991.
- Perevolotsky, Avi, and No'am G. Seligman. “Role of Grazing in Mediterranean Rangeland Ecosystems.” *Bioscience* 48 (1998): 1007-1017.
- “Ph. J. Baldensperger.” *Bee World* 29 (1948): 73.
- Phillips, E. E. *Beekeeping (The Rural Science Series)*, edited by L. H. Baily. New York: The Macmillin Company, 1914.
- Phillips, E. F. “Mr. P. J. Baldensperger.” *Bee World* 8 (1927): 97-99.
- Pickthall, Marmaduke W. *Oriental Encounters: Palestine and Syria, 1894-5-6*. London: W. Colloms Sons & Co., 1918.
- Pinder, David. “Errant Paths: the Poetics and Politics of Walking.” *Environment and Planning D: Society and Space* 29, 4 (2011): 672-692.
- Pinthus, Moshe Yoel. *History of Agricultural Research in Israel in the Pre-Statehood Era (1920-1949)*. Haifa: Itay Bahur, 2011.
- Pitt, George. “Palestine.” *The British Friend* 40, 33 (1882): 257-258.

- Plezenal, Ayala. "'Milky Way': The Dairy Industry in Eretz Israel in the 1930s as a Mirror for German-Jewish Relations." In *Germany and Eretz Israel: Cultural Meeting Point*, edited by Moshe Zimmerman. Jerusalem: Magnes-Hebrew University, 133-142.
- Polanyi, Michael. *Personal Knowledge: Towards a Post-Critical Philosophy*. Chicago: Chicago University Press, 1958.
- Porter, Theodore M. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press, 1995.
- Potter, Captain Egon. "Ph. J. Baldensperger's Career." *Bee World* 8 (1927): 156-157.
- "President Peres Conducted a Festive Ceremony of Presenting First Fruits." *Israeli Portal for Agriculture, Nature, and the Environment*. June 2, 2014. <http://israel.agrisupportonline.com/news/csv/csvread.pl?show=4915&mytemplate=tp2> (accessed July 28, 2014).
- Presner, Todd Samuel. *Muscular Judaism: The Jewish Body and the Politics of Regeneration*. London; New York: Routledge, 2007.
- Price, Jennifer. *Flight Maps: Adventures With Nature In Modern America*. New York: Basic Books, 1999.
- Pri'el, Aharon. "'A Green Patrol' Will Operate Against Bedouin Herds." August 1976: 6.
- Rabonowitz, Dan. "Themes in the Economy of the Bedouin of South Sinai in the Nineteenth and Twentieth Centuries." *International Journal of Middle East Studies* 17, 2 (1985): 211-228.
- Rader, Karen. *Making Mice: Standardizing Animals for American Biomedical Research*. Princeton: Princeton University Press, 2004.
- Raviv, Yael. "Falafel: A National Icon." *Gastronomica: The Journal of Critical Food Studies* 3, 3 (2003): 20-25.
- Reichert, Israel. "To Yzhak Elazari-Volcani on his 70th Birthday: The Architect of the Settlement and Labor Zionism." *Davar*, 1950 йил 3-February.
- . "Yizhak Vilkansky - for his 50th birthday." *Davar*, 1931 йил 2-February: 2.
- Ritvo, Harriet. *Noble Cows and Hybrid Zebras: Essays on Animals and History*. Charlottesville: University of Virginia Press, 2010.
- Ritvo, Harriet. *The Animal Estate: The English and Other Creatures in the Victorian Age*. Cambridge, Mass: Harvard University Press, 1987.

- Robinson, Shira. *Citizen Strangers: Palestinians and the Birth of Israel's Liberal Settler State*. Stanford: Stanford University Press, 2013.
- Rosenberg, M, Y Folman, Z Herz, I Flamenbaum, A Berman, and M Kaim. "Effect of Climatic Conditions on Peripheral Concentrations of LH, Progesterone and Oestradiol-17b in High Milk-Yielding Cows." *Journal of Reproduction and Fertility* 66, 1 (1982): 139-146.
- Rubin, Reuven. "Self-Portrait with a Goat." 1924. <http://www.bridgemanimages.com/en-GB/asset/825853/rubin-reuven-1893-1974/self-portrait-1924-oil-on-canvas-on-masonite> (accessed July 9, 2014).
- Rueber, Micah Aaron. "Making Milking Modern: Agriculture Science and the American Dairy, 1890-1940." PhD Thesis, 2010.
- Russell, Nicholas. *Like Engend'ring Like: Heredity and Animal Breeding in Early Modern England*. Cambridge: Cambridge University Press, 1986.
- Sadan, Michal. *The Hebrew Shepherd: Transformation of Image and Symbol from the Hebrew Enlightenment Literature to the New Hebrew Culture in Israel*. Jerusalem: Yad Ben-Zvi, 2011.
- Safran, Yair, and Tamir Goren. "Ideas and plans to construct a railroad in northern Palestine in the later Ottoman period." *Middle Eastern Studies* 46, 5 (2010): 753-770.
- Said, Edward. *Orientalism*. New York: Pantheon Books, 1978.
- Sallon, Sarah, and Elain Solowey. "Germination, Genetics, and Growth of an Ancient Date Seed." *Science* 320 (June 2008): 1464.
- Sand, Shlomo. *The Invention of the Land of Israel: From Holy Land to Homeland*. London; New York: Verso, 2012.
- Saposnik, Arie Bruce. *Becoming Hebrew: The Creation of a Jewish National Culture in Ottoman Palestine*. Oxford; New York: Oxford University Press, 2008.
- Satia, Priya. *Spies in Arabia: The Great War and the Cultural Foundations of Britain's Covert Empire in the Middle East*. Oxford: Oxford University Press, 2008.
- Sat-Ky, Moshe. "A Short Guide for Raising Dairy Cattle." *Hasade* 17 (1937): 441-447.
- Sauer, Paul. *The Holy Land Called: The Story of the the Temple Society*. Stuttgart: Konrad Theiss Verlag GmbH, 1985.

- Schaff, Philip. *Through the Land of the Bible: Egypt, the Desert, and Palestine*. New York: American Tract Society, 1878.
- Schiff, Benjamin N. *Refugees Unto the Third Generation: UN Aid to Palestinians*. Syracuse: Syracuse University Press, 1995.
- Schorr, Ag. Moshe. *The House Goat*. Tel-Aviv: Hakarmel [Published by Chief Supervisor of Agricultural Education, Ministry of Education and Culture], 1949.
- Schorr, David. "Forest Law in the Palestine Mandate: Colonial Conservation in a Unique Context." In *Managing the Unknowns*, edited by U. Luebkn. Beghahn Books, 2014, forthcoming.
- Scott, James C. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1998.
- . *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. New Haven; London: Yale University Press, 2009.
- . *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven: Yale University Press, 1976.
- . *Weapons of the Weak: Everyday Forms of Peasant Resistance*. New Haven: Yale University Press, 1985.
- Senor, Dan, and Saul Singer. *Start-up Nation: The Story of Israel's Economic Miracle*. New York: Hachette Book Group, 2009.
- Shafir, Gershon. *Land, Labor and the Origins of the Israeli-Palestinian Conflict, 1882-1914*. Cambridge: Cambridge University Press, 1989.
- Shalev, Meir. *A Pigeon and a Boy: A Novel*. Tel Aviv: Am Oved, 2006.
- Shapin, Steven, and Simon Schaffer. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press, 1985.
- Sharkey, Heather J. *American Evangelicals in Egypt: Missionary Encounters in an Age of Empire*. Princeton; Oxford: Princeton University Press, 2008.
- Sharoni, G. "The Goats of Israel Assembled in the College." *Ma'ariv*, August 30, 1953: 2.
- Shavit, Yaacov. *From Hebrew to Canaanite: Aspects in the History, Ideology and Utopia of the "Hebrew Renaissance" – from Radical Zionism to Anti-Zionism*. Jerusalem: Domino Press, 1984.

- Shavit, Yaacov, and Dan Gil'adi. "The Cowshed and the Agricultural Economy in Eretz Israel: the Place and Role of the Dairy Farming in the Jewish Settlement Program in Eretz Israel during the Mandate Period." *Catedra* 18 (1981): 178-193.
- Shavit, Yaacov, and Mordechai Eran. *The Hebrew Bible Reborn: From Holy Scripture to the Book of Books, A History of Biblical Culture and the Battles over the Bible in Modern Judaism*. Berlin; New York: Walter de Gruyter, 2007.
- Shehadeh, Raja. *Palestinian Walks : Notes on a Vanishing Landscape* . London: Profile, 2007.
- Shelem, Matityahu. "Know Dear Shepherd." *Zemereshet*. May 9, 2012.
<http://www.zemereshet.co.il/song.asp?id=654>.
- . "The Sheep Have Spread." *Zemereshet*. May 9, 2012.
<http://www.zemereshet.co.il/song.asp?id=1688>.
- Shohet, Dror and Dan. "Our Camels are Part of the Desert." 2012.
<https://www.facebook.com/notes/dror-shohet/%D7%94%D7%92%D7%9E%D7%9C%D7%99%D7%9D-%D7%A9%D7%9C%D7%A0%D7%95-%D7%94%D7%9D-%D7%97%D7%9C%D7%A7-%D7%9E%D7%94%D7%9E%D7%93%D7%91%D7%A8/10151891597981866>
 (accessed July 9, 2014).
- The Wanted* 18. Directed by Amer Shomali and Paul Cowan. 2014.
- Siegel-Itzkovitch, Judy. "Medicinal Date Palm from Oldest Known Seed Planted." *Jerusalem Post*. November 25, 2011.
<http://www.jpost.com/Health/Article.aspx?id=246956> (accessed September 4, 2014).
- Simpson, Sir John Hope. *Palestine: Report on Immigration, Land Settlement and Development*. London: Secretary of State for the Colonies, 1930.
- Sinai, Smadar. *Mirian Baraz - Portrait of a Pioneer*. Ramat-Ef'al: Yad Tebenkin, 2002.
- Singer, Amy. *Palestinian Peasants and Ottoman Officials: Rural Administration around Sixteenth Century Jerusalem*. Cambridge, UK: Cambridge University Press, 1994.
- Singer, Isaac Bashevis. *Zlateh the Goat and Other Stories* . New York: HarperCollins, 1966.
- Jaffa, the Orange's Clockwork*. Directed by Eyal Sivan. 2009.

- Skoss, Solomon Leon. *Portrait of a Jewish Scholar: Essays and Addresses*. New York: Block Publishing Company, 1957.
- Smith, J. M., and S. J. Gibert. "Cattle Disease Occurring in Palestine and Segregation and Prevention Control of Bovine Contagious Abortion." *Journal of Comparative Pathology and Therapeutics* 47 (1934): 94-106.
- Smith-Howard, Kendra. *Pure and Modern Milk: An Environmental History Since 1900*. Oxford; New York: Oxford University Press, 2014.
- Solowey, Elain, interview by Tamar Novick. *Interview Kibbutz Ketura*, (February 16, 2012).
- Start-Up Nation Book*. <http://startupnationbook.com/about/> (accessed September 2, 2014).
- Stern. "Finding Out the Method." *Hasade* 5 (1925).
- Stoler, Ann Laura. *Carnal Knowledge and Imperial Power: Race and the Intimate in Colonial Rule*. Berkeley; Los Angeles; London: University of California Press, 2002.
- . *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense*. Princeton: Princeton University Press, 2010.
- Stoller, Shmuel. *The Return of the Date Palm to the Land of Israel: Ben-Zion Israeli's Journeys in Iraq, Iran, and Egypt*. Tel Aviv: Hakibbutz Hameuchad, 1977.
- Strange, James P. "A severe stinging and much fatigue – Frank Benton and his 1881 search for *Apis dorsata*." *American Ethnologist* 47, 2 (2001): 112-116.
- Sufian, Sandra M. *Healing the Land and the Nation: Malaria and the Zionist Project in Palestine, 1920-1947*. Chicago: University of Chicago Press, 2007.
- Sulman, Bernhard Zondek and Felix. "The Role of Sex Hormones in the Sex System of the Animals (lecture given at the annual conference of the Jewish Organization of Veterinary Services)." *Journal of the Jewish Organization of Veterinary Services* 5 (1940).
- Tabor, Vivien. "He Maketh the Barren Woman...A Joyful Mother of Children." *Hadassah Newsletter*, April 1960.
- Tal, Alon. *Pollution in a Promised Land: An Environmental History of Israel*. Berkeley: University of California Press, 2002.

- Talmon, Naftali. "Fritz Keller – Of the Pioneers of Modern Agriculture in Eretz Israel." In *The Landscape of His Hometown: Studies in the Geography and History of Eretz Israel (Dedicated to Yehosuah Ben-Arieh)*, edited by Yossi Ben-Artzi, Israel Bartal and Elhana Riner. Jerusalem: Magnes-Hebrew University, 1999, 333-351.
- Talmon, Naftali. "The Agricultural Farm in the Templar Settlements and its Contribution for the Development of Agriculture in Eretz Israel." *Catedra* 78 (1995): 65-81.
- Tamari, Salim. *Mountains Against The Sea: Essays on Palestinian Society and Culture*. Berkeley: University of California Press, 2009.
- Taylor, Charles. *A Secular Age*. Cambridge: Harvard University Press, 2007.
- Teman, Elly. *Birthing the Mother: The Surrogate Body and the Pregnant Self*. Berkeley; Los Angeles; London: University of California Press, 2010.
- The Director, Department of Agriculture & Forests. "Sale of Sugar to Beekeepers." *Palestine Post*, October 7, 1934.
- The Winnipeg Tribune*. "Sterility in Women Becoming a Serious Problem: Professor Zondek." September 3, 1952.
- Theunissen, Bert. "Breeding for Nobility or for Production? Cultures of Dairy Cattle Breeding in the Netherlands, 1945-1995." *Isis* 103, 2 (2012): 278-309.
- Thompson, E. P. "Time, Work-Discipline, and Industrial Capitalism." *Past & Present* 38 (1967): 56-97.
- Tilley, Helen. *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870-1950*. Chicago: Chicago University Press, 2011.
- Tirosh, David. *The Emek Train*. The Society for the Protection of Nature [Hahevra Lehaganat Hateva], 1988.
- Toshek: Avraham Amarant*. Tel Aviv: Sifriyat Poalim, 1993.
- Tresch, John. *The Romantic Machine: Utopian Science and Technology after Napoleon*. Chicago: Chicago University Press, 2012.
- Troen, Ilan S. *Imagining Zion : Dreams, Designs, and Realities in a Century of Jewish Settlement*. New Haven: Yale University Press, 2003.
- Tsing, Anna L. *Friction: An Ethnography of Global Connection*. Princeton: Princeton University Press, 2004.
- Uri, Y. "For the Memory of Yitzhak Volcani (a year after his death)." *Davar*, May 25, 1956: 5.

- Valencius, Conevery Bolton. *The Health of the Country: How American Settlers Understood Themselves and Their Land*. New York: Basic Books, 2002.
- Valeze, Deaborah. *Milk: A Local and Global History*. New Haven; London: Yale University Press, 2011.
- Verlinsky, Nahum. *Debating Production/Belivey HaTnuva*. Tel Aviv: Tnuva Center, 1973.
- Vogel, Lester I. *To See Promised Land: Americans and the Holy Land in the Nineteenth Century*. University Park, PA: Penn State University Press, 1993.
- Volcani, Prof. Ra'anan, interview by Nir Mann. *Efraim Smaragd* Rehovot, (1996).
- Wachs, Elizabeth, and Alon Tal. "Herd no More: Livestock Husbandry Policies and the Environment in Israel." *Journal of Environmental Ethics* 22 (2009): 401-422.
- Wade, Nicholas. "Dead for 32,000 Years, an Arctic Plant Is Revived." *The New York Times*, February 12, 2012.
- Warren, Louis S. *The Hunter's Game: Poachers and Conservationists in Twentieth-Century America*. New Haven: Yale University Press, 1997.
- Weber, Max. *The Protestant Ethic and the Spirit of Capitalism* (London; New York: Routledge, 1992 [1905]).
- Webster, Charles. *The Great Instauration: Science, Medicine, and Reform, 1626-1660* (London: Duckworth, 1975).
- Weinstock, Tikva. "The Wonder Medicine for Infertile Women – In Elderly Homes." *Ma'ariv*, February 1, 1965: 9.
- Weiss, Meira. *The Chosen Body: The Politics of the Body in Israeli Society*. Stanford: Stanford University Press, 2002.
- White, Richard. *The Organic Machine: The Remaking of the Columbia River*. New York: Hill & Wang, 1995.
- Wick, Livia. *Making Lives Under Closure: Birth and Medicine in Palestine's Waiting Zones*. PhD Dissertation, Program in Science, Technology and Society, Cambridge, MA: MIT, 2006.
- Wilmot, Sara. "From 'Public Service' to Artificial Insemination: Animal Breeding Science and Reproductive Research in Early Twentieth-Century Britain." *Studies of History, Philosophy, and Biology & Biomedical Sciences* 38 (2007): 411-441.

- Wohl, Anthony S. "'Ben JuJu': Representations of Disraeli's Jewishness in the Victorian Political Cartoon." *Jewish History* 10, 2 (1996): 89-134.
- Wolfe, Patrick. *Settler Colonialism: The Politics and Poetics of an Ethnographic Event*. London; New York: Cassell, 1999.
- Wolfenson, D., et al. "Effect of Heat Stress on Follicular Development During the Estrous Cycle in Lactating Dairy Cattle." *Biology of Reproduction* 52, 5 (1995): 1106-1113.
- Woods, Abigail. "The Farm as a Clinic: Veterinary Expertise and the Transformation of Dairy Farming, 1930-1950." *Studies of History, Philosophy, and Biology & Biomedical Sciences* 38 (2007): 462-487.
- Woods, Rebecca J. H. *The Herds Shot Round the World: Native Breeds and the British Empire, 1800-1900*. PhD dissertation, Cambridge, Mass: MIT, 2013.
- Yankelevitch, Estie. *Agricultural Education in Agricultural High Schools in Palestine, 1870-1948*. PhD Dissertation, University of Haifa, 2004.
- Yaron, Hadas. *Zionist Arabesques: Modern Landscapes, Non-Modern Texts*. Boston: Academic Studies Press, 2010.
- Yazbak, Mahmoud. "From Poverty to Revolt: Economic Factors in the Outbreak of the 1936 Rebellion in Palestine." *Middle Eastern Studies* 36, 3 (2000): 93-113.
- Yazbak, Mahmoud. "From Poverty to Revolt: Economic Factors in the Outbreak of the 1936 Rebellion in Palestine." *Middle Eastern Studies* 36, 3 (2000): 93-113.
- Zamir, David, and Matityahu Shelem, . *The Hebrew Shepherd*. Merhavia: The Hebrew Sheperds Association, 1957.
- Zeira, Motti. *Man of Loves: The Story of Yehoshua Brandstetter* . Jerusalem: Yad Ben-Zvi, 2006.
- Zerubavel, Yael. "Memory, the Rebirth of the Native, and the 'Hebrew Bedouin' Identity." *Social Research* 75, 1 (2008): 315-352.
- . *Recovered Roots: Collective Memory and the Making of Israeli National Tradition*. Chicago: Chicago University Press, 1995.
- Zierer, Clifford M. "Migratory Beekeepers of Southern California." *Geographical Review* 22, 2 (1932): 260-269.