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A BIOCULTURAL STUDY OF TRACHOMA IN AN EGYPTIAN HAMLET

by

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DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

MEDICAL ANTHROPOLOGY

in the

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ABSTRACT

This study has employed ethnographic and quantitative methods to investigate the interaction of behavior, belief, and trachoma in an Egyptian delta hamlet. The presence of trachoma since antiquity has influenced the historical development of literate medical systems and the ethnomedical system present today. Much of the ethnomedicine is directed towards the treatment of trachoma, including an elaborate pharmacopeia and several surgical techniques. The study examined the villagers' hierarchy of resort for eye therapy and found access to practitioners for treatment was influenced by the status associated with age and gender within the family. The study included an analysis of the behaviors associated with low trachoma intensity in children to determine which behaviors might be "protective." The two "protective" behaviors, face washing with soap and latrine ownership, are discussed in their cultural context in order to provide information for primary eye care programs.

Julienne G. Lipsen

This dissertation is dedicated to:

Ramadan, who at the age of five taught me how to ride a donkey, operate a kerosene stove, and throw stones to scare away aggressive dogs.

Azīza and Anīsa, who offered me their friendship even though they never quite understood why I wasn't with my husband in Amrīka having babies.

Um Fathī, Um Morsī, and Mariam, who really understood what I was trying to accomplish and could probably be better anthropologists than I, if only they had been taught to read.

And to all the fellahīn of Gamileya.

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TABLE OF CONTENTS

LIST OF TABLES

viii

CHAPTER 1

INTRODUCTION	1
Description of the study	3
Impetus for the study	4
Theoretical model for the study	5
Significance of the study	8
Organization of the chapters in the dissertation	11

CHAPTER 2

METHODOLOGY	12
Time frame and access to the study site	12
Choice of the study site: Epidemiology of trachoma in the hamlet	14
Phase one	14
Objectives	14
Methods	15
Phase two	16
Objectives	16
Research design	17
Sample selection	17
Variables and measurements	18
Research Questions	19
Ethical issues	19

CHAPTER 3

ETHNOGRAPHY	21
Introduction	21
Brief review of anthropological and social science studies on Egypt	21
Background about Egypt	23
Physical description of the hamlet and first impressions	26
Education	29
The local village center	30
Religion	32
The life cycle	42
Work	62
Diet	67
Ecology and health	86
Health care resources	93

CHAPTER 4

HISTORY OF MEDICAL SYSTEMS IN EGYPT WITH REFERENCE TO TRACHOMA	97
Pharaonic	99
Unani	103
Prophetic	111
Biomedicine	115
Summary	120

CHAPTER 5

ETHNOSEMANTICS	127
Perception	128
Ethnic diagnostic categories	130
Ethnoetiologies	131
Language and symbols	133
Summary	135

CHAPTER 6

HIERARCHY OF RESORT	142
Levels of health resources available in the community	143
Treatment managed within the family	144
Traditional healers	147
Biomedical physicians	151
Cost of therapy: traditional versus biomedical	152
Who received therapy	152
Who received therapy: alternate hypotheses	155
Summary	157

CHAPTER 7

THE SYMBOLIC AND PHYSIOLOGIC EFFICACY OF ETHNO-OPHTHALMOLOGIC THERAPY	161
Efficacy	163
Iatrogenesis	170
Summary	174

CHAPTER 8

BEHAVIOR, BELIEF AND TRACHOMA	179
Sanitation	180
Observational variables	182
Interview variables	188
Protective behaviors	190
Beliefs that encourage and discourage face washing	191
Ideal versus real behaviors	193
Summary	194

CHAPTER 9	
CONCLUSION	198
FOOTNOTES	202
REFERENCES	204
APPENDIX	224
Socioeconomic status scale	

TABLES

1/ Substances and techniques used in Gamileya that were used in previous medical systems.	122
2/ Therapeutic principles of each medical system.	124
3/ Historical outline of Egypt--Selected events that influenced the development of medical systems.	125
4/ Ethnomedical diagnostic categories, etiologies and treatments for eye disease.	137
5/ Responses of the 25 households to questions on substances used for the prevention and treatment of eye disease.	158
6/ Visits to a practitioner for treatment of eye disease: Gender.	159
7/ Visits to traditional vs. biomedical practitioners for treatment of eye disease: Age.	160
9/ Ethnopharmacology for eye disease.	175
10/ Observational variables, interview variables.	195
11/ Protective behaviors.	196
12/ Real vs. ideal: Discrepancies between observed and stated behavior.	197

CHAPTER 1
INTRODUCTION

The Hagga¹ leans against the front wall of her house, rhythmically patting the bottom of her youngest grandson. Her lashes, which rub against her eyes with every painful blink, have gradually excoriated her corneas, and now she is nearly blind. Tears form rivulets through the grey powdered kūhl around her eyes. Her grandson's lashes are encrusted with pus and several flies feast on his ocular and nasal secretions. The Hagga's vision is not adequate to notice the flies on his face and, even so, the flies are so ubiquitous and aggressive that they are impossible to avoid.

Trachoma, the eye infection that caused the Hagga's blindness and her grandson's ophthalmia,² is the leading cause of infectious blindness in the world (Maitchouk 1982). Approximately 500 million people are infected, of which six million are blind (Dawson 1987). In Egypt, trachoma has caused ocular suffering and blindness throughout recorded history. Due to trachoma and other infections an 18th century traveler to Egypt called it, "The land of the blind" (MacCallan 1936:119). Developments in housing, sanitary conditions and medical care have greatly decreased trachoma in the urban areas. However, in the rural delta, where this research took place, the disease remains endemic.

The subject of this study is the interaction of behavior, belief and trachoma. Using trachoma, and more broadly eye disease, blindness, and vision as the focus, I examine how the disease has influenced the culture and how the people's behaviors and beliefs affect the distribution of trachoma. As yet, not enough is known about the human behaviors that may influence the distribution of trachoma and even less about the indigenous beliefs and practices relating to eye disease in the populations where trachoma is endemic.

Trachoma is caused by an intracellular bacteria, Chlamydia trachomatis, which causes the inner mucosal lining of the eyelids to become chronically inflamed and induces the formation of gel-like lymphoid follicles (Dawson 1984). Active trachoma is graded on an intensity scale developed by the World Health Organization that measures the degree of inflammation (inactive, mild, moderate, severe) (Dawson et al. 1981). In communities with blinding trachoma, children develop florid active trachoma by the second year of life. This active trachoma resolves spontaneously but results in varying degrees of scarring of the conjunctiva that lines the eyelids. In individuals with severe disease, this scarring can shrink the inside of the upper eyelids, turning the whole lid inward (entropion) and misdirecting the lashes towards the cornea (trichiasis), where they mechanically abrade the cornea. Constant abrasion of the cornea by the stiff lashes eventually produces corneal ulceration and permanent corneal opacity. Thus, trachoma is a chronic infectious disease. The various stages of trachoma--inflammation, conjunctival scarring, trichiasis, entropion, corneal opacification, and blindness--occur over a span of time starting in infancy and ending in old age.

Chlamydia trachomatis can be spread directly via hands, or indirectly via shared towels, flies, or bedding. In recognition of this type of transmission, Jones (1975) coined the term "ocular promiscuity," to describe the sharing of eye secretions that leads to infection. Trachoma responds to treatment with antibiotics, but frequent and chronic reinfection is common in endemic areas (Grayston and Kuo 1985). Long considered a disease associated with poverty and poor sanitation

(Dunn 1985), it has been noticed that when the socioeconomic status of a population improves their trachoma decreases without therapy (Dawson, et al. 1976). Even in a trachoma endemic area the disease is not randomly distributed, but tends to cluster in households, with some households severely affected and some very mildly affected (Bailey et al. 1986). These factors led investigators to believe that behavior might play an important role in the distribution of active trachoma. Identification of "protective" behaviors that are associated with inactive or mild trachoma would be especially useful for primary care eye programs, which could then integrate them into their planning (Treharne 1985).

DESCRIPTION OF THE STUDY

This study has employed both ethnographic and epidemiologic methods to investigate the interaction of behavior, belief and trachoma in an Egyptian delta hamlet. During the initial phase of the study I lived in the hamlet, talked with, ate with, and observed the villagers. I accompanied them to their biomedical physicians,³ and interviewed their traditional healers. This aspect of the research yielded data on the culture of the hamlet, including the ethnomedical beliefs and practices relating to eye disease, and access to biomedicine for the treatment of eye disease.

The second phase of the study, an analysis of the association between behavior and trachoma intensity, involved structured observations and interviews in a random sample of households in the hamlet. The structured observations focused on those behaviors that might affect trachoma transmission. The interviews elicited information

on the perception of eye disease, use of traditional medicine and biomedicine, knowledge of trachoma, beliefs about blindness, and attitudes toward sanitation.

IMPETUS FOR THE STUDY

This study is part of a larger study on the epidemiology and ecology of trachoma conducted by the Francis I. Proctor Foundation of the University of California at San Francisco and the University of Alexandria School of Medicine.

In May 1984 a group of international trachoma researchers met in a conference that was held by the International Center for Epidemiologic and Preventive Ophthalmology of the Johns Hopkins University and sponsored by the Edna McConnell Clark Foundation. The purpose of this meeting was to discuss what had been accomplished thus far in trachoma research and plan future directions. Dr. Frederick Dunn (1985) presented a paper on "Sociomedical contributions to trachoma research and intervention" in which he outlined the ways in which social scientists could contribute to trachoma investigations. In keeping with this sociomedical direction in trachoma investigation Ms. Rani Marx (1987) wrote a comprehensive assessment of the sociomedical literature on trachoma and I was invited to join the Francis I. Proctor Foundation's trachoma research project in Egypt.

A number of professional and academic experiences prepared me to conduct biocultural research in Egypt. Since 1972 I have been a registered nurse, with clinical experience in pediatrics, and adult medicine and surgery. My undergraduate training emphasized Arabic

language and the history and culture of North Africa. In the doctoral program in medical anthropology I combined these interests to focus on health issues in Middle Eastern populations. I was guided in this focus by working with the Mid-East Study of Immigrant Health Adjustment Group at UCSF. During my first stint of Middle Eastern fieldwork, in December 1984, I conducted a brief study in Egypt on the medical system in a Delta city. Thus, this doctoral research has drawn on every aspect of my background and has deepened my understanding of Egyptian and Middle Eastern society and health.

The nature of an interdisciplinary research project is collaboration. However, a primary requirement for the Ph.D. in anthropology is that the student must do the research herself. I resolved this problem by designing, conducting, and analyzing a part of the larger study by myself. This part is the interaction of behavior, belief, and trachoma that is reported in this dissertation.

THEORETICAL MODEL FOR THE STUDY

The anthropological investigation of infectious disease employs the theoretical approach of medical ecology, which was defined by Audy as, "the study of the populations of man with special reference to environment and to populations of all other organisms as they affect his health and numbers" (Audy 1958:102). According to Fabrega (1974), this approach is holistic, in that it deals with entire systems of health related elements, and it is multidisciplinary, drawing on work in fields such as epidemiology, medical geography, nursing, and medicine. The recent volume on Anthropology and Epidemiology edited by Janes, Stall,

and Gifford (1986), is an example of this multidisciplinary focus.

Medical ecology has emerged from ecological anthropology, which in the work of Dubos (1977), Alland (1970; 1977), Dunn (1965; 1968) and others, addressed the biological and cultural adaptations of human groups. According to Anderson the framework for this research has largely been a systems approach in which "living systems are studied as integrated complexes" (1974:180). The focus on infectious diseases began with Livingstone's (1958) and Wiesenfeld's (1967) work linking the clearing of forests for agriculture with the increase in malaria that was secondary to the multiplication of mosquito breeding sites. Other examples of anthropological infectious disease research include Dunn's (1972; 1976) work on the interaction of human behavior and filiarisis infections. Gajdusek (1977) identified the mysterious slow virus, kuru, that was causing the neurological disability and death of women and children in New Guinea. Lindenbaum (1979) helped uncover the mechanism of infection, cannibalistic mortuary practices, that led to the unusual distribution of kuru. Nations' (1982) doctoral work was on diarrhea, the leading childhood killer world-wide. In the Middle East, Roundy (1978) examined human behavior and disease in Ethiopia and Kloos et al. (1981) studied water contact behavior and schistosomiasis in Egypt.

Trostle stressed that medical ecological research encompasses different ecological levels--"at organismic, local, community, or population levels" (1986:76-77). In addition to these levels of investigation, a medical ecological study must address the historical and political factors influenced by and influencing the distribution of the infectious disease under consideration. For example, Wood's (1979)

article on the paleopathological controversy over the potential New World origin of syphilis also provides a fascinating description of the 15th century syphilis epidemic in Europe. Historical studies such as this help us gain perspective on current responses to the AIDS epidemic.

Social inequality and major political movements greatly influence the distribution of infectious diseases. Hughes and Hunter (1970) and Heyneman (1983) called attention to the impact of Western development projects and refugee flight on the tremendous increase of such diseases as schistosomiasis and malaria. Similarly, Turshen questioned the notion that certain diseases are associated with geographical areas rather than with the poverty found in those areas: "The label 'tropical' reinforces the impression that natural conditions like climate rather than economic conditions or political circumstances are responsible for the persistence of these diseases in the Third World" (1984:14-15).

The American Anthropological Association's Working Group on Infectious Disease defined the anthropological investigation of infectious disease as, "a broad area which emphasizes the interactions between sociocultural, biological, and ecological variables relating to the etiology and prevalence of infectious diseases" (Brown 1981:7). In a recent article on epidemiological research on infectious disease, Nations (1986) stressed the importance of sociocultural factors in understanding the impact of the disease, specifically on the ethnomedical beliefs of the people. She addressed three areas--lay recognition of disease, lay etiology of disease, and lay treatment of disease--that must be included in the study of an infectious disease from the point of view of those who have the disease.

Clearly, an anthropological investigation of an infectious disease is holistic, encompassing various ecological levels of inquiry, examining historical and political factors, and addressing ethnomedical belief systems. I have taken Wood's suggestion as a guideline:

Indeed, an inseparable dialectical process can be discerned in which disease subtly molds fundamental elements of a society and, in turn, many aspects of human cultures determine the prevalence, and even the existence, of particular disease patterns (1979:ix).

I have addressed the ways in which health conditions, specifically endemic trachoma, have shaped health beliefs and the ways behavior and belief have influenced the distribution of disease.

SIGNIFICANCE OF THE STUDY

There is a gap in the medical anthropological literature with regard to eye disease. Some earlier researchers included traditional remedies for eye disease as part of a monograph on ethnomedicine (Turner 1963; Harley 1941). More recent work focused on the practices of traditional healers with regard to eye disease (Finesth and Finesth 1975; Du Plessis 1979; Kimani and Klauss 1983). Gwaltney (1970) studied the cultural accommodation to blindness caused by onchocerciasis in Oaxaca, Mexico. Mitchell (1985) investigated the training and practice of "barefoot ophthalmologists" in Haiti. However, aside from these few studies, eye disease has been largely ignored in anthropology.

With regard to trachoma the social science literature is even more sparse. Most of the Egyptian ethnographic accounts make passing mention of trachoma and other ophthalmias. Lane noted that "ophthalmia is very prevalent in Egypt" (1836/1973:256). Hrdlicka commented, "A most prevalent disorder is trachoma. There are great numbers of blind and in

many more the eyes are more or less affected by various forms of inflammation" (1912:14). Ayroust stated, "Most immediately noticeable are the eye diseases...It is impossible to pass through a village without being struck by the numbers of blind and one-eyed people" (1963:73). Blackman wrote, "In these Egyptian villages, where the dust and flies abound, and where the villagers themselves are so ignorant of hygiene, eye-troubles are very common. It is appalling to see how defective is the eyesight of many people of the peasant class and the amount of eye-disease, if not actual blindness, that prevails" (1968:201). Fakhouri considered "eye infections (to be) especially prevalent among the children" (1972:15). Adams reported that, "According to informants, prior to 1952 trachoma and other eye diseases were so widespread in the district that a good rule of thumb was that half of the population had only one good eye " (1986:131). Despite this frequent mention of the problem, no anthropological research in Egypt has focused specifically on trachoma, eye disease, or blindness.

Three studies conducted in other parts of the world address community participation in primary care trachoma intervention programs (Hollows 1985; Sutter and Ballard 1983; and Karlsson 1983). However, since there is as yet little research on which to base behavioral interventions, the authors were guided by anecdotal mention of trachoma being associated with "overcrowding and poor personal and environmental hygiene" (Sutter and Ballard 1983:1813) and "cultural dislocation" (Hollows 1985:777). Gilbert's (1983) doctoral dissertation, Trachoma in Nepal: An Investigation into the Socio-cultural and Individual Factors, is a needed first step in investigating the cultural and behavioral

factors associated with endemic trachoma. Gilbert looked at "cultural cleanliness groupings" (seven categories by which to gauge the ritual purity of an ethnic group), washing and hygiene, knowledge of trachoma, and attempts at biomedical treatment for trachoma and compares all of these factors with trachoma status. Of these variables, she found cultural cleanliness grouping to be most highly correlated with trachoma. More social science research on trachoma is needed. This dissertation is an attempt to fill that need.

Dunn outlined a number of avenues for sociomedical research on trachoma, including, "...identification, characterization, and ranking of determinants or risk factors, especially those that are behavioral (individual and social), economic, cultural, psychological, political, or demographic" (1985:783). He argued that it has been noted that trachoma is associated with "poverty, inadequate water supplies, deficiencies in waste disposal, poor environmental hygiene, and crowding" (1985:783). However, such research has been anecdotal or purely statistical, lacking a social, cultural, or economic perspective. Marx, in her extensive review of the trachoma literature, stated that, "Epidemiological studies are plentiful but seldom provide detailed documentation of cultural attitudes, beliefs and behavior or traditional preventive and curative practices" (1985:6).

Medical anthropologists and other "sociomedical scientists," to use Dunn's term, have much to contribute to the understanding of trachoma. The present study makes a significant contribution in several areas. Anthropologically, it contributes to the growing literature that focuses on infectious diseases. Further, it adds to the still sparse literature on blinding eye conditions. For public health, it provides analytic

data on the association of behavior with trachoma and the use of traditional medicine and biomedicine for eye disease, which can be used to plan primary care eye programs. In sum, with regard to eye disease, and more specifically to trachoma, there are significant gaps in the research. This doctoral study addresses those gaps and contributes to both medical anthropology and public health.

ORGANIZATION OF THE CHAPTERS IN THE DISSERTATION

This dissertation is organized to address trachoma through the focus of several theoretical areas in medical anthropology. Although the general framework of medical ecology is introduced in this chapter, more specific theoretical concepts and literature are integrated into each chapter. The methodological chapter that follows presents the access to the study site and research design, methods, and ethical issues. Chapter three, the ethnography, is an introduction to the culture of the study site, with particular regard to the health beliefs and health conditions. The historical chapter, chapter four, traces the treatment of trachoma in each medical system in Egypt's recorded history, looking specifically at the role of eye disease in establishing each system and shaping ethnomedicine in Egypt today. Chapter five examines the influence of trachoma the ethnosemantics of eye disease. Chapter six describes the hierarchy of resort of the villagers for eye illness. Chapter seven presents a discussion of the potential benefit and harm of the traditional eye remedies. Chapter eight looks at how the behavior and belief of the villagers affects the distribution of their trachoma.

CHAPTER 2

METHODOLOGY

TIME FRAME AND ACCESS TO THE STUDY SITE

Data for this study were collected during four field trips to Egypt. During the first trip, in December 1984, I investigated the medical system in Damanhour, Egypt, so that an exchange of Egyptian and American nurses could be arranged. Since Damanhour is the capital of Behera, the governorate where Gamileya is located, this trip provided invaluable information on the health problems and health care of the fellahīn (peasant farmers). While in Damanhour, I lived in a hospital compound and associated with doctors and nurses. Through this experience I learned about the health of the fellahīn from the perspective of their biomedical practitioners. During the following field trips—from November 1985 to March 1986, October 1986, and January and February 1987—I worked in Gamileya and gained the perspective of the fellahīn. I lived in a one-room stone dwelling that was built by the University of California 15 years ago to serve as a clinic. Dr. Chandler Dawson and Dr. Mohyi El Din Said, two of the principal investigators, have conducted ophthalmological studies in Gamileya over the course of 15 years, and used the clinic building to see their patients. However, no researcher had ever lived in the hamlet and 1976 was the last date of data collection. Nevertheless, the villagers warmly remembered "Dr. Chan" and "Dr. Mohyi," which definitely helped their acceptance of me. In her ethnography of a Bedouin settlement, Abu-Lughod (1986) described how her father, a Jordanian Arab, facilitated her acceptance by accompanying her to her field site and

study. In somewhat the same manner Dr. Mohyi drove out to Gamileya with me, introduced me to the leading families, and requested them to watch over me and assist me. True to their Egyptian hospitality, the villagers graciously agreed. Their only concern was that I intended to live alone, which they had never heard of anyone doing before. They asked many times if I would not rather live with one of the families or at least have a woman come and sleep with me at night. I wanted to please them but I did not want to align myself immediately with only one family. Furthermore, I knew that I needed some privacy at night to write up my notes, so over and over again I explained that in Amrīka we usually sleep alone, that my sleeping bag was warm and I would not get cold, and I promised to lock the door at dusk and not open it to anyone. Finally and with great hesitation they agreed to my living alone. Later, when fellaḥīn would come from other hamlets to visit, my neighbors would explain my unusual living arrangement to them. "Aren't you cold?" "Aren't you lonely?" "Aren't you frightened?" they would always ask. Truthfully, in the winter I was often cold, I was sometimes lonely, but I was never frightened, except of the dogs. The villagers kept their promise to Dr. Mohyi and helped me with my study and took very good care of me.

The ophthalmologists, epidemiologists and nurses involved in the study commuted to the hamlet by car on the days that they came to collect data. For six weeks, during December 1985 to January 1986, Marcia Inhorn Millar, a graduate student in anthropology, lived in the clinic house in the hamlet with me.

CHOICE OF THE STUDY SITE: EPIDEMIOLOGY OF TRACHOMA IN THE HAMLET

Gamileya was chosen for this trachoma study because the disease is endemic in the Nile Delta, where the hamlet is located. In preparation for the anthropological investigation of behavior, a census of the hamlet was conducted and all hamlet residents were offered ophthalmological examinations: 62% were examined.⁴ Among the children (ages two to eight), who have the highest rates of active disease, 64% had moderate to severe trachoma intensity during winter (January) when the disease is lowest (Courtright et al. 1987). Nearly 90% of those over 25 years of age had moderate to severe scarring of the inside of the upper eyelid, the remnant of an earlier infection. In terms of the long-term sequelae, women had earlier and more severe scarring than men; by age 30, 38% of women, compared with 21% of men, already had entropion and trichiasis. Of men and women in the hamlet who were older than 60 years of age, approximately half had severe trichiasis and accompanying visual impairment. After examination all infected villagers were provided with tetracycline eye ointment by the project ophthalmologist, for treatment of active trachoma.

PHASE ONE

Objectives

The overall goal of the first phase of the study was to understand the experience of eye disease within the culture of the hamlet. The specific objectives of this section were to:

- 1/ Gain an understanding of the culture of the hamlet.

- 2/ Discover the people's ideas about the cause, prevention and treatment of eye disease and compile a taxonomy of the terms used for eye disease.
- 3/ Identify and interview the traditional healers in order to understand their treatment of eye disease.
- 4/ Observe the people's use of biomedicine and their interactions with the local doctors in order to understand how and when they seek biomedical care for eye disease.
- 5/ Identify those elements of daily life in the hamlet that may influence the transmission of trachoma.

Methods

The methods used in this section included participant observation and informal interviewing. Participant observation, the standard anthropological method, was begun by Malinowski (1922), who recommended living in the native village and speaking the native language, to obtain, as closely as possible, the "native's point of view" on things. He thought that this approach is advantageous in that the natives begin to act normally in front of someone with whom they are familiar:

It must be remembered that the natives saw me constantly every day, they ceased to be interested or alarmed, or made self-conscious by my presence, and I ceased to be a disturbing element in the tribal life which I was to study, altering it by my very approach..." (1922:7).

I lived in the hamlet and spoke with the people in Egyptian dialect Arabic. My command of the language was sufficient to observe them, participate in events, and have everyday conversations. For more detailed interviews, such as those with the traditional healers, I was

accompanied by one of the bilingual Egyptian nurses on our team.

In this beginning phase all "sociomedical" team members (the anthropologists and the nurses) collected information on traditional beliefs. If one person heard of a treatment or belief, the others would follow up and ask more questions about it of other people. In this way qualitative data was verified by asking several people about each fact at different times.

Detailed notes were recorded. I kept a daily field diary and compiled a file of observations in specific categories, such as "diet" or "traditional beliefs--eye," and many versions of each belief were collected.

The first phase of the study yielded a description of the range of beliefs and customs in the hamlet. These data were used to construct the structured interview for the second phase of the study. Ethnographic data are interwoven with statistical data in every chapter in this dissertation. The combination of qualitative and quantitative methods provides the most complete description of the behaviors and beliefs in Gamileya.

PHASE TWO

Objectives

The overall objective of this section of the research was to test the association between behavior, belief, and trachoma. The specific objectives were to:

- 1/ Identify those "protective" behaviors associated with inactive or mild trachoma intensity in children.
- 2/ Test the association between trachoma and:

The perception of the severity of eye disease.
The use of traditional and biomedical therapy for eye disease.
Knowledge of trachoma.

Research Design

The research used a double-masked design in a random sample of households to test the association between trachoma and a number of other variables. The study involved direct observation and quantification of behavior, followed by a structured interview. The study was double-masked because the subjects did not know exactly what they were being observed for and the investigator did not know the trachoma status of the subjects.

Sample Selection

The unit of sampling was the household. From the entire hamlet of 1,033 people in 104 households, 27 households, containing 386 people, were selected for the observation (25 of these households were randomly chosen and two were added to make the sample more representative of the hamlet population); 25 of those households, containing 375 people, were interviewed. Two households refused the interview due to lack of time. The households varied in size from five to 33 members, with an average number of 14.3 members.

INCLUSION CRITERIA: To be included in the sample a household had to have two or more children under five years of age and the children must have received an ophthalmological examination.

EXCLUSION CRITERIA: Refusal to participate in the study.

Variables and Measurements

INDEPENDENT VARIABLE: The independent variables, behavior and belief, presented in table 10—chapter eight, were measured by direct observation and a structured interview. The observation, essentially quantified participant observation, was inspired by Wilson's (1974) technique of child following. For one full day, from 6:30 AM to 7:30 PM, the members of each family were observed for behaviors that are believed to be risk factors for trachoma transmission and notes were recorded every 15 minutes. Since infectious trachoma has its highest rates in the children and the long term chronic effects are highest in the women, the observations were focused on the women and children. Even in large households the women and children tend to cluster together so it was possible to observe them all with some accuracy.

The interview was administered to the women of the household. Since some of the questions are about the household members' history of eye disease and their use of therapy it was profitable to have more than one household member present who could recall such events. I found that on such questions as belief in the evil eye there seemed to be a household consensus about the belief. In the cases in which there was more than one answer given to a question, I recorded all answers.

DEPENDENT VARIABLE: The dependent variable was the trachoma intensity of children. In the 27 households there were 164 children, aged one to 11 years, of whom 144 (88%) were examined by the ophthalmologist and assigned a score for trachoma intensity. This score was determined using the standard scale developed by the World Health Organization that measures lymphoid follicles, papillary hypertrophy, conjunctival scarring, and trichiasis/entropion (Dawson et al 1981).

Trachoma intensity of children was chosen for the analysis because it corresponds clearly to the prevalence of chlamydial infection and the degree of subsequent conjunctival scarring.

RESEARCH QUESTIONS

- 1/ How has the presence of trachoma influenced the ethnomedical system of the fellahIn?
- 2/ What are the people's beliefs about trachoma and other ocular ailments? Specifically, what are their names for the conditions, their etiological ideas and their remedies?
- 3/ What is their perception of the severity of trachoma and how does it compare with the many other diseases from which they suffer? How does their perception of disease severity compare with the ophthalmologists' assessment of their trachoma status?
- 4/ When they have eye illnesses, what are their strategies of resort for treatment? What is their access to biomedicine like? What variables govern their choice of therapy?
- 5/ What is the effect of their traditional eye remedies on eye health? How can their efficacy be evaluated?
- 6/ What are the behaviors associated with low trachoma intensity in children? How might these "protective" behaviors decrease trachoma transmission?

ETHICAL ISSUES

The research project as a whole received clearance from the Committee on Human Research of the University of California, San Francisco. Since many of the hamlet residents are illiterate, it was

decided that written consent should be waived and that an information sheet containing all the elements of a consent form should be read to the people before enlisting them in our study.

The information sheet was translated into Egyptian dialect Arabic and read to all Muslim hamlet residents in a hamlet meeting at the Mosque. The leaders of the hamlet then discussed the matter publicly and formally accepted our research project into their hamlet. The five Coptic Christian families were visited separately.

Each stage of the research was explained to potential participants before it was started. For the day long observation of behavior in each household it was necessary for the members to be unaware of exactly which behaviors were being observed, in order to prevent bias in the results. Members were told that the observer wanted to stay with them for one whole day and take notes because she wanted to learn about the work of the women and the daily lives of the women and children. Observation and recording data were always done openly and no covert observations were made.

CHAPTER 3

ETHNOGRAPHY

INTRODUCTION

This ethnography presents a picture of the culture so that the reader may have an idea of what the people are like and how their eye disease fits into the tapestry of their lives. Although I have included many facets of a traditional ethnography, such as kinship, I focus most of my attention on health.

This picture reveals as much about the painter as about her subject. Since I am a woman, in this gender-segregated society I spent more time with the women and children, and their lives are depicted more thoroughly than those of the men. I have always been fascinated by religion and studied Islam extensively as an undergraduate. Because of this interest, the religious practices occupy more space than they might otherwise. Most significantly, my interest in nutrition and infectious disease is obvious in these pages. The ethnography presents a brief review of anthropological and social scientific studies on Egypt, background about Egypt, physical description of the hamlet and first impressions, education, Sidi Ismail--the local village center, religion, the life cycle, work, diet, ecology and health, and health care resources.

BRIEF REVIEW OF ANTHROPOLOGICAL AND SOCIAL SCIENCE STUDIES ON EGYPT

Egypt has long fascinated scholars. Beginning with Herodotus in 447 B.C. (1928) scholars have traveled to Egypt and recorded their observations on Egyptian culture. Lane (1836/1973) describe life in

Cairo at the beginning of the 19th century. The archeologist Ebers (1887) went to Egypt primarily to study Pharaonic artifacts and discovered the famous medical papyrus that bears his name. In addition, Ebers wrote two volumes of meticulous description of the customs of the people during his stay there. Novelists (Flaubert 1972; Durrell 1961), missionaries (Ayroul 1963), and journalists (Critchfield 1978) have provided rich depictions of facets of Egyptian culture; physicians (Alport 1946; Sandwith 1905) have recorded their impressions of health, hospitals, and cultural aspects of disease in Egypt.

A number of studies focus on culture and culture change in Egyptian villages (Ammar 1954; Ayroul 1963; Berque 1970; Blackman 1968; Fakhouri 1972). Fewer depict city life, with the notable exception of Abu-Lughod's (1961; 1971) work in Cairo.

Scholars have examined the 1920's feminist movement that influenced Egyptian women to remove their veils (Marsot 1978; Phillip 1978) and the political implications of the recent movement to readopt the veil (el-Guindi 1983; Williams 1980). Other feminist studies have concentrated on women's roles (Atiyah 1982; Morsy 1978; el-Saadawi 1980; Nelson 1977), and self-perception (el-Messiri 1978), on Beduin women's poetic expression (Abu-Lughod 1986), on women's work (Youssef 1978; Hammam 1979; Sullivan 1981), and female circumcision (Meinardus 1967; Assad 1980).

Medical anthropology in Egypt includes descriptions of healers and healing ceremonies (Nadim 1980; Sukkary 1981; Kennedy 1967; Assaad and Katsha 1981; and el-Sendiony 1974; Fakhouri 1968; Nelson 1971). Political economics provides the perspective for Morsy's (1981) and Gran's (1979) work in medical pluralism in Egypt. Both Early (1982) and

Morsy (1980) use an ethnosemantic framework to examine how Egyptian women talk about illness episodes. In addition, Morsy (1978) addresses power relations within the family, to examine how gender influences access and barriers to health care. Ethnographies of Egyptian communities have emphasized behavior and belief without addressing the morbidity and mortality, which profoundly affect the people's lives. This ethnography on Gamileya fills this gap by focusing on the interaction of health conditions and the behaviors and beliefs relating to health.

BACKGROUND ABOUT EGYPT

Although the research for this dissertation was collected in a tiny rural hamlet, I do not want the reader to think that the hamlet represents all of Egypt; cities and social stratification have existed in Egypt since Pharaonic times. This history, and its influence on the history of Western civilization, is acknowledged proudly in the frequently heard phrase, Misr umm iddunya (Egypt is the mother of the world). This phrase is one of the stock answers to the question, "How do you like Egypt?" The answer, "Misr umm iddunya", begets such warm responses that it is especially helpful in such situations as getting through customs, getting residence visas extended, and the like.

Egypt's cosmopolitan history arises from conquest and colonization by the Greeks, Romans, Arabs, French, and British. Reminders of the many cultures that have ruled Egypt for a century or more abound, especially in the two largest cities, Cairo and Alexandria. Greek and Roman antiquities are crowded by 19th-century European villas and twentieth century highrises. Street signs are in English, French, and Arabic and

hotel clerks speak at least these three languages and possibly several others.

Islamic culture, brought by the Arabs from the Arabian peninsula in the seventh century, has shaped Egypt most profoundly. More than 90% of the population is Sunni Muslim, the national language is Arabic, and Egypt was one of the founding members of the League of Arab Nations. Since the mid-1970s an Islamic revival has convinced many Egyptian women to readopt the higab, or headscarf, and has begun to affect changes in marriage and family laws. Islamic fundamentalism is a growing political force as well, inspired by anger over the United States' foreign policy in the Middle East and further strengthened by the worsening economic situation in Egypt (Ansari 1987).

The Coptic Christians, the second largest religious group in Egypt, are the descendents of the first Egyptian converts to Christianity, which occurred in the first century A.D. (Meindarus 1970). The Coptic minority tends to have higher socioeconomic and educational levels than the Muslim majority, sparking resentments. Although Copts and Muslims work side by side there is not much social interaction, intermarriage is very rare, and there seems to be a rather uneasy peace between them.

Currently Egypt's total population is 52 million, but it increases approximately one million every nine months (Ansari 1987: 79). As with all of Egypt, the populations of Cairo and Alexandria have exploded in recent years, because of the high birth rate and rural to urban migration. Cairo now has nearly 12 million residents and Alexandria has four million.

Most of Egypt's population is clustered on 6% of its total land

area around the Nile river that runs south to north in the center of the country. The Nile divides into two branches in the north, the Rosetta and the Damiatta, each of which blossoms into multitudinous irrigation canals that are ancient in origin. There are three main ecological spheres in Egypt with historically different subsistence strategies: the urban areas of today are built upon ancient cities; the desert areas are the home of the nomadic Bedouin pastoralists, who are now almost completely settled; and on the lush delta farmland the fellahIn grow crops. Egypt was one of the first areas to cultivate crops; farmers have done so in the Nile valley since 13,000 B.C. (Critchfield 1978).

Northern Egypt is paradoxically called "lower Egypt" and southern Egypt is referred to as "upper Egypt" because of the south to north flow of the Nile. The culture in upper Egypt descends from the ancient Nubian culture and differs greatly from lower Egypt. Since data for this study were collected in a fellahIn hamlet in lower Egypt, this ethnography describes the culture that is fairly common to other fellahIn communities in northern Egypt. It does not depict city life, Bedouin, or Nubian culture, all of which are very different from each other and from the fellahIn.

Gamileya is fairly typical of fellahIn settlements except that, since it lacks piped water and electricity, it is on the less developed end of the continuum. About 85% (Mobarak 1979) of Egyptian villages have piped water, although at any given time many of these taps are not working. In fact, recent study of hamlets near Gamileya found that 57% of the water pipes were out of order (Khairy 1986).

An 'isba (hamlet) is the smallest administrative unit in Egypt, above which is the village, markaz (county), governorate, and central

Egyptian government.

THE HAMLET: PHYSICAL DESCRIPTION AND FIRST IMPRESSIONS

Gamileya is a densely populated hamlet forty kilometers southeast of Alexandria. To reach it one drives most of the way on a two-lane highway where overloaded trucks, donkey carts and European sports cars jockey for position; overturned trucks and smashed cars are not infrequent roadside sights.

In contrast to the melange of ancient, colonial, and modern architecture of Alexandria, the Nile delta where Gamileya is located consists of emerald squares of growing crops interspersed with mud and stone dwellings, capped with mounds of rice plants and cotton sticks drying in the sun.

Two kilometers from the highway, over a lumpy dirt road that becomes impassable with the winter rains, is Gamileya. Surrounded on all sides by fields of rice, fava beans, and the most enormous cabbages I have ever seen, are one hundred and four houses, containing 1,033 people, all squeezed together on about one-quarter of a square mile. The placement of the houses is an architectural expression of how little personal space the villagers seem to need to feel comfortable. Even inside large houses with six or eight rooms, fifteen to twenty people sleep in two or three rooms, leaving the remaining rooms for the animals, storage, or just empty. Another reason for this housing density is that Egypt's expanding rural population has begun to encroach on its precious but limited cultivable land (Adams 1986:7).

Most of the families in Gamileya have lived there for as long as they can remember, although before the 1952 socialist revolution they

were landless sharecroppers growing cotton and wheat for a wealthy Syrian absentee landlord. After the revolution each fellahīn family received between two to four fedan (roughly equivalent to 2 to 4 acres), depending on the number of children they had. Now in Gamileya, the average land holding is 1.66 fedan (range 0 to eight fedan) per household. The patrilocal households consist of the eldest male, his wives and unmarried children, his married sons, their wives and their children.

Most of the houses are single story mud brick, brightly painted stone or red brick buildings, with Allahu 'akbar (God is great) painted over the door. A few families own pick-up trucks but the major form of transportation is the wiry little donkey, which can carry tremendous loads on its back. Irrigation canals bound the hamlet on two sides and provide water for crops and for all washing of bodies, dishes, and clothing. To get drinking water the women walk four kilometers with their donkeys to a public tap and return with two ten-gallon plastic jugs filled with the precious substance. The villagers complain bitterly about this lack of clean water, to which they attribute many diseases, including eye disease. Since there is no electricity, the houses are lit with kerosene lamps and the many television sets are run by automobile batteries.

The villagers dress in traditional fellahīn clothing: the men cover their heads with turbans or crocheted skull caps and wrap wool scarves around their heads and necks in the winter. They wear robe-like galabīyas, mostly in blue or grey, with vests underneath secured with many small buttons. Their skin color ranges from fair to dark, but all

are burnished from the sun. Many have missing teeth, with the remaining ones colored yellowish-brown from the honey cured tobacco they smoke in their water pipes and the endless glasses of strong heavily sugared tea.

The women wear brightly-patterned, mid-calf-length polyester dresses, underneath which are loose bloomers that look like pajama bottoms. Bright scarves cover their long braided hair. Married women wear elbow-length, sheer black scarves that wrap tightly around their faces. The older women have tattoos on their chins, foreheads, and fingers.

Young children are dressed in torn, brightly colored galabiyas or pants and shirts. Pre-toilet trained infants and toddlers wear nothing on the bottom and urinate or defecate wherever they happen to be when they need to.

Due to the large number of animals (water buffalo, cows, donkeys, sheep, goats, dogs, cats, camels, ducks, geese, pigeons, chickens, turkeys, and rabbits) there are ubiquitous piles of dung; thus my first impression of Gamileya was an assault on my sense of smell and a weakening of my courage. There were piles of manure and flies everywhere, inside the houses, in front of the houses, and in the narrow muddy lanes between the houses. I was overwhelmed.

My second impression was of hundreds of children, who in their excitement were pushing and fighting and climbing all over each other to be next to me, to pull at my clothes and to cough all over me. They had mucous pouring from their noses, scabbed sores on their skin, and crusted pus around their eyes. My usual love of children fled.

My communication with the people was at first incredibly frustrating. The accent and dialect of their Arabic differed from that

in the city; they spoke at least twice as fast and seemed to have no understanding that Arabic was a second language for me. The volume of their speech was so loud that I sometimes felt that everyone was shouting angrily at me. When I did not understand something someone said, he or she would lean near my ear and really yell. Later, when I realized the frequency of ruptured tympanic membranes in the village children that are secondary to untreated ear infections, I understood part of the reason for the volume. A large portion of the villagers are quite hard of hearing.

Gradually, I adjusted to all of it. I learned the appropriate responses to the complicated and repetitious series of greetings. My vocal cords toughened from trying to match the volume of speech, although sometimes by the end of the day I could hardly talk. The children became known individuals, instead of a swarming horde, and I grew very fond of them. The villagers fed me and taught me about their lives and I am very grateful to them.

EDUCATION

For ten years there has been a primary school in Gamileya that serves the hamlet and several neighboring hamlets as well. There are two shifts of students, morning and afternoon, that crowd into the five classrooms with 30 to 50 students per class.

There is a middle school in a nearby hamlet, a four-kilometer walk from Gamileya. The secondary schools, both technical and academic, are located in the closest city, a 20-kilometer bus ride away. The few students who attend university must travel to Alexandria, where they

live during the school year. There are no longer any Qur'anic (religious) schools in the area; the government schools have taken over this religious teaching.

Education is increasing greatly in this generation of children, especially among the boys. In the 27-household sample, there are 101 children of school age (six to 18 years), 46 girls and 55 boys. Of these school age children 35% of the girls and 71% of the boys are in school. Since one must leave the hamlet for middle and secondary school, girls are rarely allowed to continue their education beyond primary school. Only two girls in the sample are in middle school and one in secondary school. More of the boys have been allowed to continue their education: four boys are in middle school, twelve in secondary, and one in post secondary school. These children represent a great increase in education over that of their parents and older siblings. Adult literacy in the sample is 17% overall (n=160 adults), with 9% of the females and 34% of the males able to read and write.

SIDI ISMA'IL--THE LOCAL VILLAGE CENTER

Two kilometers from Gamileya, the village center Sidi Isma'il is the administrative center for the 102 neighboring hamlets (65,000 people); it contains a local police department, the shaikh al-balad (a village head, something like a mayor), and offices for the two leading political parties: the Hizb watanī (the People's party) and the Hizb dimugratī (the Democratic party). It is also the location of the government rural health center, the pharmacy, and the offices of four private physicians.

Sidi Isma'il is a market center, with clusters of small shops.

Whole, skinned gamūs (water buffalo) hang headless from hooks on the tile porches of the butchers; rows of fowl are lined up in cages for sale; tiny clothing stores are crammed with long bright polyester nightgown-type dresses, head scarves with blue and purple roses, and plastic rain boots for tromping through the winter mud. On Mondays the field beside the clinic houses the sūq, an open-air market with more than one hundred merchants hawking oranges, sugar cane, sweet cakes, underwear, children's clothes, kerosene lamps and stoves, and a plethora of other items. There are mounds of greasy sardines covered with flies; there are six 'attars (herbalists) selling perfumes, henna, medicaments, and spices; there is ta'mīya (Egyptian falafel) frying in hot oil and delicious fresh bread. In the back of the sūq one can buy a baby lamb or cow and in the front one can have a donkey's shoe repaired. Perhaps a thousand fellahīn gather from all over and all seem to bargain at once at the top of their lungs for the best deal. There is no standing in line to be waited on--whoever has the sharpest elbows and the loudest voice gets served first.

Sidi Isma'il is named after a famous holy man whose tomb is in the mosque of the village center that bears his name. Each summer there is a week long celebration with special foods and every night the men gather in a large circle to chant Qur'anic verses in the zīkr ceremony. Although women do not usually go to the mosque, during this week everyone goes to pray at Sidi Isma'il's tomb to obtain the baraka (an invisible substance that is the essence of God's grace) that emanates from his body. This veneration of the tombs of holy people is called "maraboutism" in the anthropological literature and is found in many

parts of the Middle East and North Africa.

RELIGION

There are 99 Muslim and five Coptic Christian households in Gamileya. The Muslims have worshipped in their own hamlet mosque for more than 25 years, however 20 years ago they raised enough money to rebuild it into its present form. It is a stone building, painted bright yellow with blue trim, with a public address system to broadcast the five daily calls to prayer and to announce deaths. In Gamileya, the mu'azzin (the man who chants the call to prayer) is blind from trachoma. Before losing his sight he memorized the entire Qur'an, which he recites during the Friday noon worship service.

There are five "pillars," or core expectations, in Islamic theology. The first, ascribing no partners to God, is embodied in the Shahada ("I swear that there is no god but God and Muhammad is His Prophet"), an oath all Muslims must affirm. Both Muslims and Christians in Gamileya express their faith in God on an almost hourly basis. The most common answer to the question "How are you?" is "Praises to God." This response is often accompanied by the person kissing their own right hand first on the palm side then on the other side and looking up towards the sky with an expression of gratitude. At least on the surface the villagers attribute everything to God, which made for some difficulties in interviews on the causation of eye disease and blindness. For example, when asking people how eye disease was caused, invariably they would answer, "It is from God." If there were others listening to the interview they would join in with, "Everything is from God." It took much persistence to get past this surface response. I

would say, "Yes, of course, everything is from God, but how exactly does He cause eye disease to happen?" This tendency to state that everything is from God has led many Western observers to conclude that Muslims are fatalistic in their religious belief. However, the reality is much more complex. Obviously, there is a core of belief that many, if not most of the people, share. Layered upon that are verbal customs that people may follow without actually thinking about their meaning. Finally, it is important to understand that the people are frequently sick and there is a high mortality rate in the hamlet. Thus, the insistence upon thanking and praising God is an attempt to ward off misfortune, so that rather than fatalistic acceptance it is an attempt to actively protect themselves and their families from harm.

Five daily prayers are a second pillar of Islam. Performance of these prayers in Gamileya is heavily gender influenced; men and boys pray in the mosque, fields or at home but the only women I observed praying were widows and the older co-wives of polygamous men. When I asked women if they prayed they said, "Of course." But when I stayed with them for entire days they did not pray. Confronted with this discrepancy between their actual and stated behavior the women said that they were too young to pray or they did not pray because they still had a man. Prayer is prohibited when the person is ritually impure, which for women occurs during menstruation, during the post childbirth flow of lochia, and after sexual intercourse until a full bath is taken. Because of the frequency of these conditions in the lives of younger women they may delay prayer until they have reached the age when they are no longer, or are seldom, ritually unclean.

An aspect of prayer that is important for hygiene is the ritual ablution, wudu', that is performed before each prayer. In Gamileya people use polluted canal water for this ritual washing, which includes rinsing the mouth and sniffing water into the nostrils three times. The pollution turns what could be a health promoting act into one of potential exposure to disease.

Zakat, donating alms to the poor, is a third pillar of Islam. Because it is a religious prescription to give to the poor, beggars in Muslim society are helping the believers to earn their places in heaven. Every Monday outside of the sūq, a blind beggar sat shouting, "Allahu akbar." When passing villagers dropped coins into his outstretched palm, he would kiss his hand and raise his unseeing eyes to the sky.

The Ramadan fast is a fourth pillar of Islam, during which no food or drink is consumed and neither smoking nor sexual relations are permitted from sunrise to sunset for an entire month. Even in families that do not usually observe gender segregation, women and men sit at different tables to eat during this month. At the end of Ramadan the villagers celebrate the feast of 'Id al-Fitr, when children receive presents and women beautify themselves by reddening their hands and feet with henna.

The hajj (hagg in Egyptian Arabic), or pilgrimage to Mecca, is the fifth pillar of Islam. Those who have returned from the pilgrimage are addressed as al-Hagg, for a man and al-Hagga, for a woman, which are titles indicating a great deal of respect. Only older people from Gamileya undertake the Hajj and only the wealthy can afford it, so it is a mark of status as well as piety.

These five pillars of Islam represent the formal theological

aspects of Muslim belief in Gamileya that are derived from the sacred texts, the Qur'an and the Hadith. However, an anthropological analysis of religion includes more than just its formally encoded aspects; in addition, all practices that deal with metaphysical or supernatural phenomena are examined. Nevertheless, in cultures in which religion is handed down in sacred texts, religious leaders and educated members of the culture may consider only those beliefs expressed in the written theology to be part of the religion. This division leaves out many types of spirit possession, exorcism, and supernatural forces. Yet these mystical phenomena are often derived from elements of the formal theology. Such an orthodox/mystical division occurs in Islam. Practices such as the Zār ceremony are thought to be superstition by educated Egyptians, who do not consider them part of Islam. In order to express this distinction, the categories of religious belief are often separated into "theological" and "popular." This separation reflects Redfield's (1956) "great tradition/little tradition" dichotomy. Nevertheless, while it is helpful to separate the theological and popular aspects of religious belief for analysis, it must be remembered that the fellaḥīn of Gamileya make no such distinction. Rather than analyzing from where the strands of their belief come, they experience them, like people everywhere, as simply "the truth."

The oral religious tradition of popular Islam in Gamileya encompasses the zīkr, the zār, the belief in spirits called 'afrits and shaikhs, and both the destructive force of the evil eye and the life affirming force of baraka. Although zīkr is a male activity in Gamileya, when I expressed interest, I was allowed to observe a

ceremony. The following account is an excerpt from my field diary:

We arrived at a large house in which the backyard was lit with hanging lanterns. A circle of 50 men formed around two men who were chanting the Qur'an. Everyone was clapping rhythmically, leaning forward to clap low and backwards to clap high. Then they all jumped up and down in unison a few times and chanted in response to the shaikhs in the center. The circle of men knelt on the ground with their shoes in front of them. At that point I was invited into the house where the women of the household were sitting. Many men, including the two shaikhs, came in to shake my hand and exchange greetings. They asked if I liked their zikr and I said, "It was great."

From this brief experience it seemed that the chanting and body movements in the zikr ceremony encouraged the men to feel in harmony with each other, to gain a sense of physical release of tension and anxiety, and, for some men at least, to enter a trance state. Furthermore, this is one of the few large collective activities of the men, aside from prayer in the mosque, and provides a time for fellowship and entertainment.

The zār ceremony, which is a therapy for spirit possession, may be given for a man or woman, but is more likely to be for a woman. The possessing spirit, who is called a shaikh (male) or shaikha (female) may or may not be evil, but is very demanding. These supernatural shaikhs and shaikha must be distinguished from the human religious specialists and healers who are also called shaikh/shaikha.

When the spirit-shaikh possesses a woman it is said that "he rides her" and makes demands upon her and her relatives. Usually a male shaikh will ride a woman and a female will ride a man. The purpose of the zār ceremony is to discover the demands of the shaikh and to pacify him temporarily, but not necessarily to completely exorcize him. The possessed woman's family brings a human shaikh to divine the woman's condition by means of her 'atr, which is a bit of her hair or clothing.

If the divination reveals that the woman is possessed then her family must hold a zār. The zār is a large party with a drummer and sometimes other musicians who play different beats of music until they entice the spirit-shaikh to dance and to speak through the possessed person. The spirit then tells its name and discloses its demands, which may be for gold, food, or a new dress. Kennedy (1967) has described the zār ceremony among the Nubians in upper Egypt and Crapanzano (1973) has written about a similar type of spirit possession and trance dancing among the Hamadsha in Morocco.

Another category of spirits, 'Afrits, do not possess people but can nevertheless be bothersome. They live in the fields and scare the unfortunate villagers who must walk out into the fields to relieve themselves at night. One 27-year-old woman had to be hospitalized after being struck by an 'afrīt early one morning. The folk diagnosis of her condition, shallūt, was characterized by weakness and fatigue. Zakīyya al-'Ora is a one-eyed female 'afrīta who only inhabits the fields around Gamileya, and there are others who are large, small, black, and white. 'Afrits are frightened by dogs, which may be one of the reasons that every hamlet household owns a very nasty and aggressive dog that stays outside to guard the house at night.

In every society there are paradoxical currents of tension between public and private behavior. The surface often reflects an idealized image of the people's aspirations for themselves. The undercurrents represent the reality of their poverty and their human weaknesses. In Gamileya, the public social behavior is intensely warm, hospitable and generous. In an equal and opposite direction the private behavior is

often mistrustful, suspicious, and jealous, especially of non-kin neighbors. This anxious rivalry is expressed in the evil eye; the belief that the glance of an envious person can cause illness, misfortune, death, or destruction.

The evil eye is a pre-Christian pan-Mediterranean belief that is mentioned in the Qur'anic sura on Daybreak, so it plays a small part in Islamic theology. Infants and young children are believed to be the most susceptible to al-hasad (the evil eye) and in Gamileya many precautions are taken to keep them safe from this hazard. These preventive measures attempt to hide the value of the children and thus prevent envy. For example, newborn boys are referred to as girls and are dressed in girls' clothing for their first year of life, since girls are less valued than boys. Some boys are also given unattractive names, such as Shahat (beggar). Many children are dressed in rags and are allowed to stay dirty, which greatly increases the number of flies that feed on their sticky faces. Other prophylactic measures against the evil eye include dressing children in the color blue, burning bukhūr (incense), and wearing amulets, such as several strands of small beads attached to a lock of a baby's hair just above his forehead. Often the amulet is in the shape of a hand, with a blue bead or an eye in the center. This may be called the "hand of Fatima" (who was the daughter of the Prophet Muhammad) but is more often called khamisa wa khamīsa, which literally means "five and the five." Taken even further the number five itself can serve as a protection against the evil eye. Interestingly, the ages people gave us during our hamlet census very frequently ended in the number five. For the potential bearer of the evil eye, thanking God for the health or beauty of the child is the

appropriate measure. This precaution was something I did in every conversation since I frequently had to discuss the children's health with their mothers and my childless state would make me a prime suspect for having the evil eye.

In opposition to the malevolent supernatural power of the evil eye is the holy grace of baraka. Baraka is a source of good health, happiness, and fertility that comes ultimately from God and is sometimes believed to be transportable as if it were a physical essence. Ether-like, baraka surrounds certain holy people and their tombs, such as the tomb of Sidi Isma'il that was mentioned earlier. The baraka in such places has healing power, and some tombs may become famous for the treatment of certain diseases.

The Coptic Christian families in the hamlet also have theological and popular aspects to their religious belief. The five Coptic households attend the church of Mari Girgis (St. George) in the nearby city, which is one of the three Coptic churches in that city. St. George is an extremely important figure in the religion and there are pictures of him--a man in armor on horseback, killing a snake with a lance--in every Coptic household, side by side with huge icons of Mary and Jesus. These icons are one of the distinguishing elements of Eastern Orthodox Christianity. In fact, in the eighth century the Byzantine Empire was split in a disagreement over the nature and divinity of Christ and whether Christ could be depicted in art (Weitzmann 1982:4). The Copts continued to represent the Holy Family in elaborate gold and silver encrusted artwork that developed into their distinctive icons. Their paintings are so important that small icons

are placed in the wrappings of newborn babies for protection and the wealthiest Coptic family in the hamlet has a huge framed face of Jesus occupying one chair in their salon. Visitors sit in the other chairs and if there is an overflow they stand; the icon is never removed from its place of honor.

The Copts in the hamlet wear the same clothing as the Muslim villagers, but are distinguished by a small cross that is tattooed on their right inner wrist, at eight years of age, by their priest. The Christians and Muslims in the hamlet live side by side and are cordial to each other. The children attend school together and play together when young. The adults acknowledge each other formally and politely, but in general they only visit and socialize with their kin, which is consistent with the pattern of intrafamily visiting in the hamlet.

One exception to this pattern is visits to traditional healers. There was a Christian midwife, who recently died, and there is a Christian woman who specializes in applying a traditional eye medicine, called tūtya. Both Muslims and Christians patronize these practitioners.

Religious healing through prayer or exorcism is one aspect of popular rather than theologically encoded religious belief. One Coptic man, for example, practices a type of religious healing for headache. The Muslims who visit him for treatment call him a shaikh, although the title is normally reserved for Muslims. He says a prayer while laying his hands on the temples of, and sometimes writing in pencil on the forehead of, the patient. He learned this prayer from a priest who came from Jerusalem. At that time the man had a severe headache and the priest said this prayer on his head. The priest then revealed the

prayer to him but cautioned him not to disclose it to anyone else or it would lose its power.

The Coptic church in the nearby city holds exorcism ceremonies for possessed women--I was told that it is usually women who become possessed. It is believed that a spirit goes into the woman's body and impels her to act inappropriately, perhaps corresponding to a biomedical diagnosis of psychiatric disorder. Both Christians and Muslims can be exorcised with this ceremony, although more Christians than Muslims participate. This exorcism is a prayer service performed by a priest upon the possessed woman. The woman must dress entirely in white and as the priest "kills the devil or spirit" through prayer, "a red cross appears on her clothes, which is the blood of the evil spirit." The woman must then cut this red cross off and wear it at all times in order to protect herself.

THE LIFE CYCLE

The passages of people's lives in Gamileya can be described in five stages: 1/ infancy, 2/ childhood, 3/ marriage and the military, 4/ mother-in-law status and oldest man status, and 5/ elderly.

These phases are related approximately to chronologic ages, but since the village people do not celebrate their birthdays, they do not always know exactly how old they are. This is especially true of older women and men.

Infancy

Nearly all babies are born at home, with the traditional midwife, the daya, and the new mother's female relatives to assist her. As mentioned earlier, both male and female infants are referred to as girls and are dressed as girls, since females have lower value than males and parents wish to protect the boy babies from the evil eye. Since the color blue is also protective, the newborn is dressed in a bright blue galabIya, which some families stain with blood of a freshly slaughtered chicken. This type of baby clothing is so commonly used that there is one old woman who specializes in preparing the chicken-bloodstained galabias for hamlet newborns. Bread and salt is placed underneath the infant, to safeguard its health; on top of the infant is a mound of old clothes that performs two protective functions: it prevents the evil eye by its unappealing barrier of old torn and soiled clothes, and it keeps away cold, which is believed to cause many illnesses. The illness-causing power of cold causes many mothers to delay the child's first bath until after 40 days, six months, or even one year of age.

Kūhl, the traditional eye make up that is made of galena, is rubbed on the infant's eyes and umbilical stump. Unfortunately, the galena is composed of lead sulfide containing some antimony and exposes the child to lead poisoning.

The subu'a ceremony, on the infant's seventh day of life, marks the end of the seclusion of the mother and newborn. Relatives and friends visit, bringing nuqut (money gifts), sharbat (sweetened fruit drink), and presents. This is the time when the infant's name is announced and many infant girls have their ears pierced by the daya. Also at the subu'a the infant's abdomen is tied with a narrow length of cloth upon which is stitched a pouch containing coarse salt, wormwood, clover seeds, fava beans, hilba (fenugreek), and other seeds. This amulet is kept tied around the baby's outer clothes for the whole first year "so that he will live."

The first two weeks are a dangerous period for the new baby, since many die of neonatal tetanus from contamination of the knife used to cut the umbilical cord.⁵ Many mothers in Gamileya recalled how their infants died before the second week of life, with the trembling limbs and stiff grimaced smiles that are the hallmarks of neonatal tetanus. Largely due to tetanus and other infectious diseases, the infant mortality rate in Gamileya was 188 per 1,000 (based on pregnancy histories of 50 of 80 mothers in the 27 household sample), which is considerably higher than the 83 per 1,000 official rate for Egypt as a whole (Carney 1984).

The deaths of infants and young children are rarely reported to the government for several reasons. From 1969 until very recently the daya had no legal status in Egypt, despite the fact dayas delivered at least

80% of the infants in the country (Assaad and Katsha 1981:39). The people fear that the government will punish the daya if the babies that she delivers die, so they protect her by not reporting the deaths of infants that she delivers. Furthermore, infant death is such a common experience and childbirth is so frequent that parents in Gamileya do not register children with the government until they are older. Underreporting of births and infant deaths, especially in the countryside, may account for the large discrepancy between the official infant mortality rate for Egypt and the rate in Gamileya. If an infant is stillborn, or if a fetus is miscarried, the family often buries its body in the mud walls of the home. This type of burial is not an Islamic custom and it may be that the practice dates back to the ancient Pharaonic culture. More mature infants who die are buried in the field or near the house. Older children and adults who die have formal funerals and are buried in the village cemetery according to Islamic custom.

Despite the higher value of boys, girl babies are loved and are often tenderly cared for. However, when I observed neglect of a child, it was invariably a girl. An episode from field notes illustrates such neglect:

Mabrouka has at least 30 flies on her. They land on her nasal mucus and she does not appear to notice. Her mother is sitting nearby and also does not notice. Mabrouka (who is now two years old) walks over to the edge of the roof, where there is no rail. (We are sitting on the second story). Her mother glances at her and looks away, saying nothing. Then her mother turns to me and begins talking about something entirely different. I would try to pull Mabrouka away from the edge of the roof but I am afraid that I might scare her and cause her to run over the edge, so I sit there holding my breath, watching her play one foot from the edge.

This differential treatment between boys and girls may account for the

disparity in the numbers of girls and boys in the 27 household sample. Of 187 children born to 50 women from whom pregnancy data were obtained there are 1.26 boys for every one girl.

Childhood

Early childhood, from ages one to four, and later childhood, from age four until marriage, are two distinct periods in the hamlet. Until age four, little girls and boys run barefoot, playing freely with groups of other children. They play with homemade toys, created from cottonwood sticks and bits of discarded plastic and string.

Sickness from infectious disease continues to be a large problem, contributing to the under-five child mortality rate in Gamileya of 315 per 1,000. Vaccination for measles, tuberculosis, diphtheria, pertussis, tetanus, and polio are legally required for all children by the Egyptian government (U.S. Institute of Medicine 1979:46). However, a recent WHO study found that only 30% of Egyptian children had completed all the necessary inoculations (Horn 1987:55). In Gamileya, very few children had even begun any of the required immunizations and were thus at risk for all of the above mentioned diseases.

At about four years of age girls begin covering their hair with brightly colored scarves and wearing cotton trousers beneath their long bright dresses. They begin adhering to the female modesty code, arranging their dresses to cover their legs completely, whenever squatting or sitting on the floor. The penalty for improper conduct is harsh. One three-year-old girl lifted her dress up to her waist in front of me and her father slapped her face hard and yelled at her, "Ya

inti sharmūta!" (Oh, you whore!).

The socialization of girls impels them to be modest and obedient, but does not make them meek or passive. In front of strangers, girls exhibit a great deal of shyness, but around their homes they are outgoing and lively. Females are allowed very little geographical mobility: many girls have never left the hamlet and many women have never even traveled to the nearest city. They must be obedient to their parents, brothers, male cousins, and later to their husband and his parents. However, within these constraints girls and women express themselves robustly. For example, when the children were crowding together to talk to me, they elbowed and pushed each other out of the way. Not infrequently a girl would turn and punch a boy, almost knocking him flat. Older women offer their opinions loudly and repetitively to everyone, including their husbands. Clearly, within the family and within their strictly defined roles, girls and women are fully expressive, powerful people.

The socialization of boys includes a great deal of playful punching and hitting. After dinner, the whole family sits on the rush mat in the living room, watching television. The small boys sit on or rest against their fathers' crossed legs and playfully slap them. The fathers and older brothers return the slaps gently at first, but with increasing force. It is not long before the little boy begins to cry from a painful slap, after which the men jostle him to comfort him. As soon as he is calmed he reaches up with another slap to begin the cycle again. This process seemed to me like a gradual toughening of the boy to prepare him for the role of a man. An excerpt from field notes illustrates the overbearing manner the boys learn with respect to their

female kin:

The little boy began to torment his sister. He hit her on the head with some clover plants, which his grandmother then grabbed away from him. Running outside he found a cottonwood stick and whacked her on the head again. She started to cry and his grandmother snatched the stick from his grasp. Again racing out the door he returned with a huge cornstalk, taller than he, which he raised over his head to beat her with. At the same moment his mother appeared in the doorway, a huge pan of dry dirt balanced on top of her head. She chased him around the hall, not spilling a bit of dirt, pulled the cornstalk from him and began thrashing him with it on his legs and bottom. He gritted his teeth and stared at her defiantly until she stopped. Turning, she went into the animal room to deposit the dirt. He jumped up and, running behind the stairs, emerged with a seven foot long hardwood staff that he raised over his head like a lance and charged with, towards his mother in the animal room. "Ya kelb, eskut ya walid" (Oh dog, stop oh boy) could be heard from the animal room. A moment later the two emerged. The mother now with an empty pan atop her head; with one hand she held the staff and with the other she dragged her still mischievously grinning son by the collar of his galabia. On her face was a look of annoyance, mixed with both amusement and pride.

When the children become unmanageable, their parents sometimes threaten them with Abū Shwal, who is a mythical old beggar man, dressed in rags, who carries a large sack on his back. Into his sack he stuffs naughty children who give too much trouble to their parents.

At about five years of age girls begin doing women's work. Tiny girls balance small water jugs on their heads and learn to pat out rounds of dough. Girls from five to ten years are the primary caretakers of infants and toddlers. It is common to see a very little girl struggle to lift her plump two-year-old brother to her hip; when she succeeds his legs hang down below her knees. In any family gathering if a baby begins to cry the parents yell, "Ya bint! khudi!" (Oh girl! take this one!). By the time the girls are eight or nine they are strong enough to take all of the family's dishes to the canal to wash, balancing them on top of their heads on a three-foot wide aluminum

tray. They make many other trips to the canal to get wash water, balancing several gallons on their heads.

Children are sent to school at about six years of age, although, as mentioned only about one-third of the girls and two-thirds of the boys are allowed to go. I asked many of the parents of the girls who were not in school why they did not send them. Invariably, they would shake their heads and reply, "La', hiyya fellāha" (No, she is a peasant), as if that explained why. Education is very new to the people in Gamileya and many of the parents cannot imagine how it would fit into or improve the lives of their daughters. One skill that is highly valued, and that several parents mentioned that they would like their daughters to learn, is sewing on a foot driven machine. This skill brings money into the household and makes the girl more valued as a wife.

Since the boys most often go to primary school they do not participate in adult labor as early as and to the extent that the girls do. However, from about the age of seven both boys and girls help with harvesting the crops and bringing piles of clover in from the fields to feed the water buffalo, cows, and donkeys.

Tahara, meaning literally "purification," is the term for circumcision in Egyptian dialect Arabic. Both Muslims and Christians circumcise their sons and daughters, but the operation occurs at different ages for boys and girls in Gamileya. Little boys are circumcised at about two years with great ceremony. The whole family sings and feasts to celebrate the event, which Muslims often perform on the Prophet's birthday. The health barber (hallaq sahha) generally performs the operation that marks the end of babyhood and the beginning of childhood. Male circumcision involves removal of the prepuce from

the penis. It is done without anesthesia and with little sterility. Ashes from the oven are put on the wound to stop the bleeding and either kerosene or alcohol is dabbed onto the incision each day.

Girls are circumcised at about ten years old, which marks the beginning of their preparation for marriage. There is no official ceremony for female circumcision, which is done by either the village midwife, the government doctor, or a Bedouin woman (an "Arab woman" according to the fellaheen, who use the term "Arab" only for the Bedouin) who travels from village to village for this purpose. The girls' operation involves the removal of the clitoris and the labia minora. In addition to the lack of sterility, the wound is not sutured and occasionally excessive bleeding necessitates the girl being taken to a doctor to be sutured.

Circumcision is required by Islamic law for males and is considered so important that, according to a legend, the Prophet Muhammad was born circumcised (Weideman and Allen 1960:47). Circumcision is not required by Islamic law for females and is illegal according to Egyptian law. Temple carvings and ancient papyri indicate that both male and female circumcision have been practiced in Egypt since the Pharaonic era (Meindarus 1970:322-324).

Despite its illegality, all girls in Gamileya undergo circumcision. I asked a number of women why they performed the tahara, and they were shocked to discover that I had not been circumcised. They explained that if a girl is not circumcised then her clitoris would grow like a penis (this was accompanied by a hand motion indicating that the clitoris would grow to the size of their index finger). I said that

mine had not grown--it was tiny. They said it was wahish (dirty), it needed to be removed so that the girl could be clean, and no girl could be married until she has had this surgery. The women feel strongly that circumcision is necessary and is not imposed upon them by men, who do not know when they do it. I spoke with four girls who were to be circumcised the following week and they were wide-eyed and scared, but seemed also to be experiencing happy anticipation. For them, this procedure marks a stage in their developing maturity and they welcome it.

Menarche marks another step in the development of adolescent girls, who begin to menstruate in the hamlet between twelve and sixteen years. Since late menarche, possibly secondary to malnutrition, is common, girls are frequently married before their first period. Women in Gamileya do not believe that menstruation is a prerequisite for marriage. After marriage, most women have frequent pregnancies and periods of lactation between pregnancies. Therefore, they rarely menstruate during their childbearing years.

A number of menstrual health beliefs are concerned with the dangers of cold, which is believed to "get up inside the girl's body and cause cramps." To prevent cold induced cramps the girls are cautioned against going out into the cold air. Mothers boil shTh (Artemisia herba-alba or wormwood) so that its steam can flow onto the lower abdomen and perineal area of the menstruating girl. Bathing is avoided until three days after the period ceases, until which time the flow is absorbed by rags.

Females and males pass into social adulthood with different experiences. For males, military service transforms them into adults in the eyes of their families. For females, marriage is the necessary

prerequisite to adult status.

Military Service

Young men in Egypt have compulsory military service, during which they are poorly fed, poorly paid, and housed in uncomfortable barracks. The length of service varies from one to three years depending on the young man's education. Since most of the fellahīn have not completed secondary school their service is usually the longest. This is the young man's first time away from home where he was cherished as the pride of his family; not surprisingly young men complain greatly of being homesick. Clearly, military service is a difficult experience at best.

However, military service takes the young man away from the narrow world of his hamlet. If he is illiterate, he may learn to read and write. He meets people from all over Egypt, learns about city life, and acquires some knowledge of other countries. Upon his return, the soldier is immensely more cosmopolitan than his sisters and his prospective wife, who look to him for information about the world.

Marriage and Kinship

I have described childhood as extending until marriage for females because their mean age for marriage is 15 years of age (range 10 to 22 years). Furthermore, a female remains a bint (girl) until she is married no matter how old she is. Marriage is so important that of 82 women in the 27 households only two women over 19 years of age had never been married. One of these two women had a severe skin disease; the other was 25 years old and seemed embarrassed at not yet being married.

Of 79 men over 19 years of age, eight were unmarried and most of them were in the military.

Marriage is endogamous and patrilocal in the village. Patrilineal parallel cousin marriage is considered the ideal marriage arrangement in most Muslim and Christian communities in the Middle East (Patai 1955). The residents of Gamileya ranked their preferences for marriage partners as: bint al-'amm (father's-brother's daughter); bint al-khal (mother's-brother's daughter); and stranger marriage, by which they mean a spouse who is not from one's extended family. One caveat about the "stranger" marriages is that people in Gamileya have been intermarrying for generations, so that it is likely that the "stranger" they marry is a distant cousin. The actual marriages in Gamileya differed from the stated ideal. In a random sample of 41 marriages 26 (64%) were to a stranger, 14 (34%) were to a father's-brother's daughter, and only one (3%) was to a mother's-brother's daughter. One of the stranger marriages was also a levirate union, in which the man married his dead brother's wife to keep the children in the paternal family. Such discrepancies, as this one between the real and ideal marriage patterns, are widely reported in anthropology.

Two aspects of marriage that are practiced by Muslims but not by Coptic Christians are divorce and polygamy. Although divorce is allowed in Islam it is quite rare in the hamlet. Of 80 ever-married women in the 27 households, only one had been divorced. Polygamy, of up to four wives, is allowed by Islam. Of 71 ever married men in the 27 households, eight (11.2%) were married to two women. However, none were married to more than two women.

One of the health consequences of consanguineous mating is the

increased risk of recessive genetic conditions in the children of such unions. It is possible that first cousin marriages in Gamileya produced more offspring with genetic disorders; however, there was so much morbidity and mortality from other causes that it was not possible to assess the contribution made by genetic anomalies.

Among Bedouin Arabs there is a type of kinship superstructure called a qabila (Eikelman 1981:88). The fellahīn in Gamileya do not have this formal extended family organization. They do not keep track of lengthy family histories and can only trace their ancestry back two or three generations.

Fictive kinship is the attribution of family terms and roles (i.e., sister, cousin, aunt) to a non-family member. When people in Gamileya became familiar with me they would say to small children "Go to 'ammitik (father's-sister) Sandy" or "Go to khaltik (mother's sister) Sandy." Unmarried men would say to me, "I am your brother," meaning that they would protect me and not approach me sexually. At the sūq, strange women would say, "Oh sister, help me lift this basket to my head." In this society where family ties are very important, fictive kinship was a way to fit me into the hamlet that made me feel very cared for.

Marriage is arranged by the parents but the young man and woman most likely have known each other since childhood. Girls are expected to be obedient to their parent's choice in marriage and they must exhibit some formal shyness and reluctance in their prospective mate's presence. If the prospective spouses are terribly opposed to the marriage, they may refuse but occasionally the parents insist on their original choice, which may have disastrous consequences. For example, one 12-year-old

girl was married to an 80-year-old man, who died when she was 17. However, most couples seem more favorably matched. Many of the first cousins grew up in the same house and have known all their lives that they would be married. In fact, one of the favorite games when the family is gathered around after dinner is to point out which "couples" will marry among the cousins, beginning with the toddlers. They call the couples "bride and groom," tie scarves on the girls' heads in fluffy bows, sing "Ya hilwa ya 'arūsa" (Oh beautiful bride), and clap rhythmically while the child couple squirms under the attention.

Among Muslims, the marriage is a legal contract that is conducted between the two fathers. It is performed by a religious man, a ma'zūn, and involves the payment of mahr (bridewealth) to the bride by the groom's family. Mahr in Gamileya is approximately 1500 Egyptian pounds,⁶ which takes years to amass. The bride's father uses the money to buy gold earrings, bracelets, and ring--the shabka--which displays to the whole community how highly valued the wife was as a bride. The remaining money is used to purchase bedding and bedroom furniture for the newlywed couple. The shabka formerly included two heavy silver ankle bracelets, called khūl khāl, that many of the older village women still wear. However, a more recent trend is for brides to receive a gold wedding ring, worn on the third finger of the left hand, which is an influence of Westernization.

Coptic couples are married in the church of St. George by a priest. The wife receives the shabka of gold (bracelets, earrings, and often a ring) from her husband. However, Copts do not practice the custom of paying mahr as Muslims do.

In preparation for the wedding ceremony taffy-like halāwa, a lemon-

water-sugar mixture, is prepared and is used to pull out all of the bride's body hair, including her pubic hair. Women continue this type of depilation throughout their lives. Another wedding preparation is to redden the bride's hands and feet with henna to beautify them.

After the wedding the new bride begins wearing the black elbow-length veil known as the tarha, that is wrapped around the face and over the cotton scarf that covers the braids worn by all women. The front panel of the tarha can be doubled over to form a handy pocket for carrying medicines, matches, or other small items. Occasionally, in the presence of a strange man a woman might pull the front panel up over part or all of her face.

The most profound alterations in the woman's life after marriage are change in residence, from her father's house to her husband's family's house; change in status, from daughter to daughter-in-law and wife; and the beginning of many years of childbearing.

Change in residence and daughter-in-law status means a great increase in the work load. Girls learn women's work in their natal home and perform most of the childcare, but daughters-in-law do most of the dirty, backbreaking tasks in their husbands' homes. On top of everything else a wife must serve tea to and wait on her mother-in-law, father-in-law, husband and all of his brothers. Daughters-in-law grow very lean and mothers-in-law grow plump in inverse proportion.

The husband's life changes less upon marriage. He remains in his father's house and continues to do the work, farming or manual labor, that he performed before marriage. He has passed into manhood during his military service, so the wedding does not affect his status as much

as it does his wife's. For the husband, marriage begins his role as head of a family. His sexual needs are fulfilled and he looks forward to the birth of his children. He and his wife may grow to love each other greatly. Many of the husbands in the hamlet glowed with affection and pride when their wives served them tea. It was clear that they loved and appreciated their wives. However, the goal of marriage in the hamlet is not the fulfillment of romantic love. The ideal marriage is a harmonious union of the two families in order that the couple may work together and raise children who will care for them when they are old. Husbands and wives do not expect their spouses to meet their emotional needs, which are fulfilled by siblings, cousins, and parents of the same sex. Public affection between married couples is never seen; kissing or hand holding is done only between members of the same sex.

Sexuality and childbearing are important aspects of marriage in all parts of the world. Virginity of the woman is very highly valued in Gamileya and is a prerequisite for the marriage to succeed. If the bride is not a virgin on the wedding night, then her husband's family will not accept her and she will be returned to her family in shame. I asked what would happen to a bride who was not a virgin and was told that "she would be killed." Later, the same woman said, "Besides, no one would marry her." I was left with the feeling that the girl would probably not be killed, but the threat of her being killed kept most girls from ever testing the limits of what would happen. To ensure proof of virginity, the husband breaks his wife's hymen with his first two fingers covered with a handkerchief. A village woman helps with this procedure by tightly holding the girl's legs apart. The husband passes the blood soaked handkerchief out to the waiting relatives, who

celebrate this sign that the marriage has successfully begun.

Girls are taught about marital relations by their mothers. The mother emphasizes that the girl must obey her husband and please him. She is told that it is important to have relations with her husband whenever he desires because he has paid the mahr for her in order that he would have pleasure in his sexual relations. In interviews, five women stated that the most important role for a woman was to be a good wife by obeying her husband, helping him in the fields, and serving him at home. Next came the role of homemaker, involving cleaning and cooking. Although still considered essential, the role of mother came last.

Nevertheless, childbearing is extremely important in the hamlet. The relatives watch the new bride closely for signs of pregnancy, which they expect soon after marriage. New brides who have not yet successfully given birth fear infertility and experience great stress. The wife's status increases as soon as she becomes a mother and grows in proportion to the number of sons to which she gives birth. Childlessness or giving birth to only daughters is the most commonly stated reason that men marry second wives. Daughters help their mothers with housework and are loved by the family but sons increase the mother's value. One illustration of the importance of motherhood, especially of sons, is that the woman is referred to as the mother of her eldest son. For example, the mother of Ali is called "Um Ali."

The high value on children is reflected in the fertility patterns in the hamlet. Pregnancy data, that were obtained on 50 of 80 ever-married women in the 27-household sample, indicated that the average

number of pregnancies per woman was 5.36 (range 1 to 18). However, among the 13 women in the sample who had completed their childbearing (age 45 and older), the mean number of pregnancies was 7.61.

In informal interviews to explore the women's self-perception of their health they stated that frequent childbirth was one of their major health problems. For example, a woman with whom I became quite close was 27 years old and had had ten pregnancies. She had five living children, two of whom were sons. She felt that her frequent pregnancies had worn her out and she asked me about birth control but cautioned me not to tell her hamat (mother-in-law), who wanted her to have more children, or her husband, who might beat her.

Despite the desire of many women in the hamlet to take a break from pregnancies, only four of 57 married women of childbearing age (less than 45 years) in the 27 households were practicing birth control. The preferred method of these women was the oral contraceptive pill. Three of the four women had three children each and one had only one child. In addition to disapproval of husbands and in-laws, lack of access to health care and ignorance of the types of contraception available are factors that decrease the use of family planning.

A second aspect of their lives that the women perceived to cause health problems was the extremely hard work that they perform. Women continue their heavy load of work during pregnancy and resume it immediately after the subu'a ceremony one week after the birth. Babies are cared for by paternal grandmothers and older sisters. Mothers do not do a great deal of child care because their housework is such a consuming task. While working, the women are exposed to heat from their ovens and cold drafts when they have finished cooking. This

combination of hot and cold was held responsible for a large number of diseases, including eye disease, fever, and jaundice. Headache was very common among village women and they thought that this was a direct result of the heavy loads that they carry on their heads.

Domestic violence is a problem in Gamileya as it is in every society. While I lived in the hamlet, three wives fled their husbands' homes and sought temporary shelter in their parents' homes. In addition, a number of women and men talked and joked about wife beating; several people asked me if my husband hit me and when I answered, "No, never," they were surprised by my answer. One condition that protects the women is that their parents, brothers, and cousins live in very close proximity, so if a husband becomes violent, the wife can run to safety. The two families can then mediate the dispute and put pressure on the husband to control his abuse. The battered wives I saw were young and it seemed that as a woman's children age, especially the boys, they may also protect her from her husband's outbursts.

The next increase in status for women occurs when their sons marry and they become mothers-in-law. However, men's status does not increase comparatively with their sons' marriages. A man gains a great deal of formal respect and power when he becomes the oldest male in his household. Therefore mother-in-law status and oldest male status are presented as comparable passages in the lives of adults in Gamileya.

Mother-in-law Status

Becoming a mother-in-law means increased power and respect for the woman. The mother of sons participates in choosing their wives. She

teaches her daughters the importance of getting along successfully with their husbands' parents. Similarly, she hopes that her daughters-in-law will be respectful of her and of the other members of the family. These values clearly illustrate the degree to which marriage in the village is the concern of the whole extended family.

With mother-in-law status comes a decrease in the work load. Mothers-in-law trade the heavy, dirty jobs of caring for the animals and helping the men in the fields with increased childcare for their grandchildren. However, with this increased childcare comes a corresponding increase in exposure to childhood diseases, trachoma and respiratory infection.

Oldest Man Status

Upon the death of his father, the oldest man or boy in the household becomes the head of the household. This may happen when the male is quite young, so that a boy may be the "head" of a household containing three generations of women. The oldest man has final say in household decisions and the home is referred to as his. For example, when I would walk to visit my friend, Aziza, and people would ask me where I was going, I would say, "I'm going to Aziza's house," upon which everyone would laugh. Finally, her five-year-old son gravely explained to me that it was not Aziza's house at all; it was the house of his father's eldest brother. The source of everyone's laughter was my mistaken notion that a young daughter-in-law could have her own house.

Elderly Status

As the villagers age and become physically less strong, they sit in

the sun more and do less taxing work. For example, the women may sort rice and hold babies and the men may braid donkey tail hair into rope. For some, the event that marks the transition to elderly status is the pilgrimage to Mecca for the hajj. In the 27 households a total of nine people (six men and three women) (n=386) had completed the hajj. One of the men had made the hajj three times and one had made the trip two times. As mentioned, the returning pilgrims are addressed as hagg for a man and hagga for a woman, followed by their first names. Since nearly all Muslims express the hope of making the hajj before they die, many older people are referred to as hagg/hagga whether they have gone to Mecca or not.

Women in Gamileya tend to outlive their husbands, which means that there are more older women than men and more of the women are widowed. Of 22 women age 60 and older (in the 27 households), seven were widowed, eight were polygamously married to four men who were still living, and seven were monogamously married to a husband who was still living. Of the eight men age 60 and older in the same sample, none was a widower. The two male widowers in the 27 households were ages 21 years and 50 years; their wives had recently died. Two factors account for this male/female difference. As mentioned, women live longer than men. In addition, if a man's wife dies it is not difficult for him to remarry whereas it is very difficult for an older, previously married woman to remarry.

People of this age are greatly revered and are cared for very tenderly by their families. Status increases with age in Gamileya and by the time people are referred to as Hagg/Hagga, it is at its peak.

WORK

The primary occupation of the men in Gamileya is farming crops for sale and consumption. The main cash crops are cotton and wheat, although such vegetables as cabbage, artichokes, and onions are sold as well. The fellahīn are obliged to sell all of their cotton and some of their wheat to the governmental agricultural office that is called the gam'iyya. Some of the wheat crop is reserved to be ground for home consumption. Each fedan yields between four to seven quntar (50 kg. according to Adams 1986:xiii) of cotton, for which they receive 100 L.E. per quntar. A fedan yields between 12 to 15 'irdabb (140 kg.) of wheat for which they receive 30 L.E. per 'irdabb. From the sale of these crops the gam'iyya takes taxes and payment for seeds, fertilizers, and pesticides that the fellahīn purchase on credit. The cotton is planted in March and harvested in October, when the family receives a lump sum payment for the crop. This money is used for major expenses and is saved so that the sons will have the 1,500 L.E. mahr necessary to marry.

In addition to farming, a number of men in Gamileya worked at other occupations. Of 79 males 18 years and older in the 27 households, 61 were full time farmers on their family's land, two were farmers on other people's land (for which they received about 2 L.E. per day), 12 were manual laborers (truck drivers and workers in the nearby chicken and textile factories), two were employed by the government in the gami'eya and rural health unit, one was an engineer in the nearby city, and one worked as a secretary in the hamlet primary school. A few men from Gamileya were labor migrants: one was employed in a car repair shop in Alexandria and three had traveled to Iraq and Kuwait to find work.

Women's economic contribution in the agricultural sphere has been difficult to calculate and consequently ignored by researchers (Adams 1986; Youssef 1974). In the entire hamlet only two women were formally employed outside the home: one as secretary in the primary school and one as bank teller in the nearby city. However, the less recognized work of women includes labor-intensive housework, childcare, sewing, assisting the men in the fields, and animal husbandry.

Housework in Gamileya includes food preparation, washing, sweeping, and childcare. The women spend a large part of their day in food preparation, which will be discussed in the following section on diet. As mentioned previously, the women get piped water from a hamlet at four kilometers distance. One woman from each family must walk there and back with her donkey nearly every day, which takes two hours if the crowd at the public tap is not large. They haul wash water from the canal an average of seven times per day. The dishes are carried to the canal to be washed twice a day as well as children's clothing and sometimes the children themselves. Adult clothing is scrubbed by hand in a huge copper pan of heated canal water. The quilted bedding is never washed, but is taken up to the roof nearly every day and spread out in the sun. Every morning all rooms are swept and after each meal the food scraps are swept from the rush matted floor and fed to the fowl. If the family has a latrine and the stone bathing area called a hammām, they must be rinsed with canal water. Used wash water from the men's morning prayer ablutions is taken outside and discarded. Childcare, which includes feeding, carrying, rocking, and varying amounts of bathing of infants and toddlers, is done by little girls and grandmothers, thus freeing the

mothers for heavier labor.

Although many men claimed that their wives were just sitt bait (housewives), the women and girls often work alongside the men on the family land. At certain times of the year, especially the cotton harvest, the whole family picks the crop. The recent increase in education of boys and factory work or labor migration for adult men has necessitated increased female participation in the fields.

As mentioned previously, some families own sewing machines on which the women sew clothing that they sell to other families in the hamlet. Of the 27 households, three had sewing machines, beside which were bolts of cloth and freshly stitched dresses for women and girls. Potential customers buy the fabric at the sūq and pay the seamstresses one to two L.E. for each dress.

The largest contribution that the women make to their families' finances is animal husbandry. They milk, feed, and clean up after the cows and water buffalo. They raise goats, sheep and fowl for home consumption and for sale. The first task in the morning and nearly the last at night is the milking. It takes tremendous effort to strip the milk from the distended udders of the animals and the women are flushed and sweating when they finish.

Since the animals are boarded inside the house, every morning the women scrape up the manure with their bare hands and carry it out to the front of the house in pans on their heads. It takes between 10 to 20 trips with pans weighing maybe 50 pounds to clean the animal room each morning. To fill the depression in the packed dirt floor made by the scooped out dung, the women bring sacks of dry dirt from the fields, loaded on the back of a donkey. Animal feces is a valuable substance

that is spread on the fields as fertilizer, used as a building material for mud brick houses, oven huts and fowl cages, and a source from which the women make dung cakes that are dried for fuel.

Each day the women and children harvest huge piles of barsīm (Egyptian clover), which they carry in from the fields to feed to the animals. To fatten the pigeons, chickens, ducks, and geese they push dried, hardened kernels of corn off the cob and sometimes stuff them kernel by kernel down the gullet of a bird. Before they let the birds out in the morning the women examine each one to determine if it is about to lay an egg, so that the egg does not get deposited in the canal. At sunset one woman from each family chases the fowl home, calling "butt-sh" to get the stubborn ducks out of the canal.

From the milk of the cows and water buffalo the women prepare cream, samna (unchurned butterfat), and salted logs of gibna 'arīsh (white cheese) that they bring to the sūq with eggs, pigeons, and chickens to sell. They receive 30 piasters for two small chunks of cheese, and 5 L.E. for a chicken or a pair of pigeons (these prices are from October 1986). This cash is then spent on produce, spices, and delicacies inside the sūq. The leftover change is tucked safely into a hidden pocket sewed into the neckline of their dresses and saved for other expenses.

The men and women have separate economic spheres in Gamileya. The men earn lump sums of money from cash crops or their weekly wage. This money is used for large expenditures, such as adding additions onto their houses or paying bridewealth for their sons. The women contribute to the daily subsistence of the family. It is through the women's

animal husbandry that they are able to buy extra food at the sūq, allowing the family to save the income from the cotton crop for major expenses.

DIET

Food intake is influenced by its availability and by cultural beliefs and practices that determine which foods are eaten, when, by whom, and how they are prepared. Health and illness are influenced by the interaction of nutritional status and disease, which in Gamileya is primarily infectious disease. This description of the diet in Gamileya addresses the biological and cultural aspects of nutrition through examining food as communication, the crops and markets, water availability, food preparation, average daily diet, snacks, pregnancy and infancy diets, death, food and religion, and dietary adequacy and malnutrition.

A number of studies address macrosocial issues of food availability in the Middle East (Harfouche 1981; Khaldi 1984; Pellet 1976; Patwardhan and Darby 1972) and, more specifically, in Egypt (Waterbury 1978; Farag 1977). Other nutritional research in Egypt examines specific issues such as maternal and infant nutrition (Darwish 1979; Mikhail 1982; Field and Ropes 1980 Kader et al 1972; el-Mougi et al 1981; Burkhardt and Ropes 1981), water availability and storage (White and White 1986; Miller 1984), and agricultural development (Adams 1986). However, none of these studies includes a full description of the diet of a particular community. In this section I will provide such a description for the purpose of illuminating the macrosocial issues described in the literature as they occur in the actual lives of rural peasants.

During the full-day observations of the 27 households I recorded everything that was prepared and eaten by every household member. In addition, I ate everything the people ate, learned how to pat out rounds

of bread, pick stones out of rice, and operate a kerosene stove. The purpose of this recording was to give a picture of the average daily diet of the people. However, no attempt was made to calculate nutrient intakes of individuals within a household. Interviews were used to obtain information on food beliefs and on seasonal variability of the diet, since the structured observations took place during the winter.

Food as Communication

One of the most striking customs in all parts of Egypt is the very generous hospitality of the people. This hospitality is expressed most strongly in offering food. For example, while waiting for the bus from Cairo to Alexandria, a complete stranger offered me a sandwich. I thanked her, but declined. She insisted; I declined. This occurred several times until I took the sandwich. Then she went and bought me some tea. Everywhere I traveled in Egypt, nearly every person I met was concerned about my diet. They wanted to make sure I was eating enough and persistently urged me to try this or that delicacy. Consequently, each of the four times I stayed in Egypt, I gained nearly ten pounds.

In Gamileya, this nurturing is even expressed in greetings. When people say hello they say, "Tfaddallī, tishrabī shay?" (You are welcome, will you drink tea?). This greeting is more a formal convention than an actual invitation because people say it wherever they happen to be. I have even been invited to come in and drink tea by women standing washing their dishes in the middle of the canal. In the beginning of my stay in the hamlet I took this invitation seriously and ended up drinking nearly thirty cups of tea per day. Eventually, I realized that all that was required was to say "Thank-you" several times. An excerpt

from field notes illustrates how royally dinner guests are treated in Gamileya:

I was invited to dinner at the house of Hagg Ragab and his family. Before I ate, warmed canal water was poured over my hands to wash them. The meal was a feast of rice, beans, chicken, bread, and pickled lemons. When I was full I stopped eating. This husband and wife urged me to eat more. I ate a little more and stopped. They stood over me and said, "You haven't eaten anything." I said, "This food is wonderful, but I am very full." However, the husband took another chicken piece and, pulling the meat from the bone, handed it to me saying, "You must eat." I ate some more, getting very uncomfortable, then stopped. He picked up more pieces of chicken and handed them to me again. I ate a little more. By this time I was leaning backward, taking shallow breaths, because the huge bolus of food was pushing up on my diaphragm. I kept saying, "I'm very full, praise God, all this food is wonderful, thank-you," but it was a struggle to convince them to stop urging me to eat more. It took twenty minutes of almost fighting with them before they gave in.

Crops and Markets

The fellaḥīn grow crops for themselves and for all of Egypt. In addition to the two major cash crops of cotton and wheat, they grow corn, potatoes, garlic, fava beans, cabbage, artichokes, cauliflower, zucchini, green pepper, yams, sugar cane, carrots, rice, onions, and two kinds of leafy green vegetables: sirīs (wild chicory) and jelwīn (dandelion greens). Their cows and water buffalo produce milk, from which the women make butterfat, cream, yoghurt, and long logs of salty white cheese made in a woven rush mat called a "hasīra". Ducks, geese, pigeons, and chickens provide eggs and meat. However, despite the fact that Egypt has the highest concentration of animals per unit of land in the world (Horn 1986:25), most of the animals are sold and meat is eaten only on ceremonial occasions: Holy feast days, funerals, births, and when guests are present.

From the sūq the villagers buy oranges, tomatoes, lemons, sardines, green onions, kidney beans, black-eyed peas, spices, tea, sugar, and cooking utensils. In addition to this weekly market there are small one-room shops in the hamlet, called dukkāns, and somewhat larger stores in the village center that sell kerosene, tea, sugar, sweets, and canned goods (that nobody ever buys and are caked with dust). In the nearby village center the peasants have their rice milled and their corn ground into fine meal. In addition, there is the government store, selling subsidized and rationed wheat flour, tea, and sugar. Next door, the government bakery sells subsidized bread at two piasters per loaf.

Water

The fellak store piped drinking water, mayya hilwa (sweet water), in the zīr, which is a three-foot-high clay jug, shaped with a nipped-in waist like an hourglass that is used in many parts of the Middle East (Miller 1984). The zīr's advantage is that the porous clay "sweats," keeping the water inside cool even in the 110°F. summer temperatures. However, the zīr is rarely cleaned and each new supply of water is poured into the previous supply. The zīr's cover is an old piece of heavy plastic or aluminum sheet that is not tight fitting and often falls to the floor. As adults and children dip an aluminum can into the zīr as a ladle, their unwashed fingers contaminate the water. Therefore, even piped water can become a source of microbial contamination.

Although almost all water for drinking and making tea is piped water, families vary in the degree to which they use piped water in cooking. During the full-day observations of the 27 households, 7 (26%) of the households used polluted canal water in some of their food

preparation. Presumably, most of the microorganisms in the canal water are killed during cooking, so for many dishes this practice may not be harmful. However, some families used canal water in their bread dough. Since the bread takes only 90 seconds to bake, many microorganisms may survive to cause illness.

Food Preparation

Due to the absence of piped water, electricity, refrigeration, and prepared foods, there is a tremendous amount of work involved in the preparation of food in Gamileya. The women spend a good part of almost every morning baking bread and every afternoon cooking the evening meal.

Only rarely do families in Gamileya buy subsidized bread from the government bakery, preferring instead to bake numerous huge rounds of flat bread. This baking is a communal activity of the women, who sit in the mud brick oven room on burlap sacks around a low wooden table, patting out the rolls of dough until they are thin enough to rise in the air when blown on from the side. The youngest daughter-in-law sits, sweating, in front of the mud brick fūrn (oven), alternately feeding in loaves of dough and the fuel mixture of dried dung, hay and cottonwood sticks. As mentioned, the dough cooks in 90 seconds, upon which it is scooped out with an iron bar and flung like a frisbee onto a pile of hay to cool. The air is thick with smoke in the little oven hut, stinging the women's eyes until they run with tears. The women believe that this smoke and heat are major causes of their eye disease. After sitting in many oven rooms with tears streaming down my face, this folk etiology made intuitive sense to me as well.

The women make three different types of bread: 1/ Ash, which is

the word for both "life" and "bread" in Egyptian Arabic, is made from one-half cornmeal, one-half wheat flour, water, salt, and yeast. It is soft when warm, crispy when cool, and has an empty pocket in the center. It is made two to three times per week. 2/ Bakakīm is made from wheat flour, thick cream, salt, water and yeast. This rich delicious bread is only made once per week or even less often in poorer households. 3/ Rigag is made with cornmeal, wheat flour, samna (butterfat that rises to the top of the cream when stored several days in the wooden sandara.), salt, and water. This unleavened loaf resembles a tortilla and is baked about three times per week.

Dinner, served at about six in the evening, is the largest meal of the day and takes the women several hours to prepare. They bake steaming casseroles of rice, cream, milk, and salt (rūzz bil bram) in the mud brick oven. Rich sauces for the rice are sauteed on the mud brick stove called the kanūn or on the small kerosene stoves (babūr and sibirtera). Women squat on the packed dirt floor, chopping onions directly into the boiling mixtures, surrounded by children and often animals, since many of the families cook in the animal room.

Average Daily Diet

The family members most often sit cross-legged or kneel on the left knee on rush matting around a low round wooden table. They eat with their right hands, as is the custom in Muslim societies, or with table spoons. Knives are only used in food preparation and forks are not used at all. Men and boys eat first from the communal bowl; women and girls eat the leftovers. Three meals are eaten and the children are given

snacks between these meals. Although there is variation in the diet, the basic foods are homogeneous from household to household. However, wealthier families are able to afford greater quantities of food and purchased a greater variety of foodstuffs from the sūq. The average daily diet consists of the following foods:

Fitar (Breakfast)

Bread--dry and crumbled into an aluminum pan with heated (not boiled) milk and sugar poured over it.

Alternately, there might be leftover rice poured into the bread mixture and, rarely, another leftover food such as fish or stuffed cabbage.

Tea--Each person drinks at least two small cups of black tea, with about two tablespoons of sugar per cup. Occasionally glasses of heated milk with sugar are given to children.

Ghada' (Lunch)

Bread--freshly baked and warm.

Cheese--logs of white salted low-fat cheese (gibna arīsh) and aged fermented cheese (gibna 'adīma), sometimes with red pepper in it.

Thick cream--to dip the bread in.

Fresh vegetables--wild chicory or dandelion greens, freshly picked, unwashed and served in a big pile with the roots still on. Also, when in season, cabbage, leeks, green onions, lettuce, cilantro, radishes, and green fava beans.

Pickled vegetables--lemons, green beans, cauliflower, etc., prepared by soaking in salt, pepper, cumin, red pepper, and sometimes orange skins, with water.

Tea--black with sugar as at breakfast. Sometimes either mint or cloves are boiled with the tea to vary the flavor.

If it is Monday or Tuesday the family may have items that were purchased at the weekly sūq:

sardines

salad with tomatoes, green onions, and lemon juice

oranges

halawa (a sweet made from crushed sesame seeds and honey)

Alternately, there might be baked potatoes,
or a casserole of onions, tomatoes, garlic, samne, sliced
potatoes, salt, pepper, and cumin,
or breaded fried cauliflower,
or sliced sauteed eggplant with garlic, tomatoes, cumin,
salt and pepper.
or fish (caught from the irrigation canal) breaded
and sauteed.

'Asha (Dinner)

Rice casserole--rice, cream, milk, water, and salt.

tabbakh--a rich sauce made with onions, tomatoes, samne, cumin,
salt, pepper, water and often beans (fava, black-eyed peas
or white beans) or potatoes. Alternately, clear chicken
broth with lemon and salt.

Bread

Tea--black with sugar as at breakfast.

Alternately, there may be mahshī (cabbage stuffed
with rice and spices), karnabī (breaded, spiced and
fried cauliflower), or pasta with samna and onions, or a
soup made from the finely chopped green leafy vegetable
called "mulukhiyya," and rarely, hard boiled eggs that are
shelled, fried, and dipped in cumin and salt.

Snacks

Between meals children and sometimes adults snack on the following
items:

Dates--fresh or dried

Yams--roasted in mud brick ovens until the skin is
dark and crisp.

White corn--roasted on the cob until the kernels are
brown and crunchy.

Sugar cane--the kids rip off the tough outer bark
with their teeth, then chew the inner pulp to get the
sweet juice.

Bread--freshly baked bread is eaten hot by children
(and anthropologists) who pass by an oven room where it
is being baked. The women are very generous with their

delicious steaming loaves.

Sugar--granulated sugar is poured by mothers into the eager hands of children as a treat.

Carrots--small freshly picked, unwashed carrots are eaten by children and adults.

Pickled beans (termīs) soaked in water and salt.

Raw cauliflower root--when the mother is making fried cauliflower for dinner.

Biscuits, sweets, and gum--are sold in the one room hamlet stores but are only rarely purchased. Occasionally biscuits are made at home of samna, wheat flour, and sugar.

Pregnancy and Infancy

Women's diets do not change greatly during pregnancy although they may eat more of their normal diets. If the Ramadan fast occurs during the pregnancy the women usually fast, which may jeopardize the growth of the developing fetus. One dietary belief that may tend to increase the women's intake is the idea that if a pregnant woman craves some food she must eat it or her baby will be born with a birthmark in the shape of the food. I learned of another prenatal food belief when a woman who was seven months pregnant came to my door. She explained that she wanted to eat sugar from my right hand so her baby would have blond hair and blue eyes like me. I complied with her request but since she was from another hamlet I never got to see if the technique worked.

After delivery the mother must eat chicken and drink hilba tea, which is believed to be a lactogen. Hilba (fenugreek or Trigonella foenum-graecum) contains coumarins and estrogens that might produce hormonal effects on the milk-producing breast tissue (Duke 1985:490).

However, the new mothers often drink only hilba tea, without any water or other liquids, since they believe that drinking water will cause their abdomens to swell. The small cups of hilba tea do not provide enough fluid and the women begin looking dehydrated, with dry oral mucous membranes, which may actually decrease their milk production.

For the first week the new mother stays in bed with her baby. She begins breast feeding on the third day, before which the infant is given anise water with sugar, helba tea, and one teaspoon of oil per day "to make him strong." The mothers do not believe that colostrum is nutritious for the baby, so they discard it. Unfortunately, because of this belief, the newborns miss out on this important source of immunoprotection.

The village women breast feed their babies quite unselfconsciously. They may cover the lower part of their faces in front of strange men (such as the American ophthalmologist) but they pull their breasts out to feed their infants while keeping the rest of their bodies modestly covered. The evil eye is believed capable of drying up the mother's milk, so she guards herself and her baby with blue beads and amulets. Another event that is believed to be able to dry up the mother's milk is a lactating dog passing by the door. If this happens the family gets some milk from the dog and the mother drinks it.

One dangerous practice in Gamileya is that the mothers do not burp the babies after feeding. Many mothers complained to me that their infants vomited after being fed and it seemed that the lack of burping contributed greatly to this problem. Furthermore, there is no traditional method of tying the baby to the mother's body, so if the grandmother or sister is not available to hold the baby, it is placed

flat on its back in bed. Thus, vomiting and aspiration probably claim the lives of some infants in the hamlet who might otherwise survive.

Infants enter a world where contamination of their food and beverages decrease the health and vitality of all who survive. Fecal contamination of food begins very early and often causes fatal episodes of diarrhea. Of the 26 infants (ages 0 to 1 year) in the 27 household sample, 11 were completely breast fed, 12 were fed a mixed diet of homemade infant formula and breast milk, and three (all girls) were completely fed the homemade formula that was a mixture of equal parts of buffalo milk, tea, and water, with about one tablespoon of sugar per four ounces of fluid. The three baby girls who were completely fed this formula appeared quite marasmic. The concept of sterilization of the bottle or boiling of the formula was unknown to the mothers, which means that bacterial, viral, and parasitic infection starts for many infants in the first few weeks of life. The caloric and nutrient density of the diet is decreased by the dilution of the milk with water and tea, so that the baby's growth suffers to the extent that this mixture is used. Furthermore, the addition of sugar to each four ounce bottle increases the osmotic pressure of the formula, drawing water from the intestines and possibly causing diarrhea and dehydration.

Although all women begin breast feeding their babies, they frequently complain that by the second month their milk has "dried up." Mothers of only girls seemed reluctant to breast feed them in the hope of getting pregnant again sooner and giving birth to a boy. Also, once a woman becomes pregnant she immediately stops breast feeding and feeds her infant the homemade formula entirely. Since, as mentioned, mothers

do most of the heavy work and childcare is done by grandmothers and young girls, there is less opportunity to breast feed the infants. Poorly sighted grandmothers prepare the infants' bottles while the mothers travel to the water tap or help their husbands in the fields. This infrequent suckling by the babies probably contributes to the "drying up" of the mothers' breasts. Nerlove (1974) has argued that mothers' participation in subsistence activities may decrease their opportunities to breast feed their children, which in turn increases both child illness and maternal fertility. The situation in Gamileya substantiates Nerlove's argument.

Further decreasing the quality of the diet of infants is the practice of waiting until the baby is approximately one to one and a half years old to introduce solid food. Studies on infant feeding in Cairo found this delay to be a common and deleterious practice in that city as well (Horn 1987:55). The reason for this unusually long wait is that the mothers are fearful of the potential danger of the child choking to death. There is no traditional method of mashing or pureeing adult food to make it safe for pre-teething infants, so the mothers simply wait until the child has teeth to feed solid food.

When solid foods are introduced the mothers start with rice casserole, potatoes, and bread. The technique of feeding is the "stuffing method" in which a small amount of food is taken in the right hand and pushed into the baby's mouth with the fingers. When little girls feed the babies much of the food misses the mouth and falls on the ground, upon which they pick it up and stuff it back into the babies' mouths.

All infants put whatever they can into their mouths, especially

when they are teething. In the hamlet the grandmothers and infants sit in the sun in the doorways of the houses. The poorly-sighted grandmothers rarely notice exactly what the babies are chewing on. Not infrequently, I have seen teething babies chomping happily on dried pieces of dung while their grandmothers rest contentedly in the sun. Clearly, only the very strongest survive to adulthood in Gamileya.

Death

When someone dies, which occurs nearly every week, it is announced over the loudspeaker from the top of the mosque. Immediately in each household a woman sharpens a knife and grabs a chicken by its two wings to take to the nearest man to slaughter (in Gamileya slaughter must be done by a man). She then plucks, boils, and browns the chicken and packs a huge tray with rice casserole, warm bread wrapped in towels, water and large enamel bowls of tabbakh sauce. One woman from the household puts a black dress over her brightly colored everyday dress, rolls clover or hay into a round nest that she puts on her head, and the other women help her lift the huge platter to her head. She carries this food to the family of the deceased person, where most of the hamlet men and many of the women have congregated for a solemn feast. After a couple of hours the woman returns home, bearing the leftover food, which she feeds to her children.

Food and Religion

Both Islam and Coptic Christianity influence the diets of the fellahin in Gamileya. Feasting is such a prominent part of the holy celebrations that it is no surprise that in Arabic the word 'id means

both feast and holy day. In opposition to this feasting, the Muslim fast of Ramadan and the many Coptic fasts, sharpen the appetite for the celebratory food of the feasts.

Islamic festivals are the basis of many of the holidays during the year, during which people dress up and eat meat and sweets. The Islamic New Year, Sana Hagra, commemorates the flight of the Prophet from Mecca to Medina, which is the basis for the start of the Muslim calendar. The birthday of the Prophet Muhammad, Mulid in-Nabi, is the time when many of the weddings and male circumcisions are scheduled because of the baraka associated with this occasion. The 'Id al-Fitr celebrates the end of the Ramadan fast and the 'Id al-Adha follows forty days later. For the 'Id al-Adha the family raises a lamb to be slaughtered. As with all Islamic animal slaughter, the man holds the animal's head and says, "In the name of God, God is great," and cuts the throat in one stroke. Waiting family members dip their hands in the fresh blood and make hand prints around the doors of the house and on the walls. These handprints bring baraka to the house and protect it from the evil eye. The family then distributes a portion of this meat to those too poor to afford their own.

Copts observe the Christian holy days of Christmas (which for them is on January 7), Easter, and Epiphany. All Christians and Muslims celebrate Sham al-Nassim one day after Easter when everyone "goes outside to breathe the fresh spring air." This day is also passed in feasting on sardines, colored eggs, and malana (garbanzo beans.)

As mentioned earlier, during the month of Ramadan no food or drink is consumed and neither smoking nor sexual relations are permitted from sunrise to sunset. In Gamileya, the fast is broken each evening with a

shredded honey soaked sweet, called kunaffah, and meat and other special foods are consumed. Copts fast more than 150 days per year: during the 40 days of Lent, before Christmas, and every Wednesday and Friday. Their fasts consist of taking no meat, animal fat, or milk products; they may eat vegetables and grains.

The Qur'an prohibits drinking alcohol (sura V:90), and eating pork, blood and meat from animals that have not been slaughtered according to the prescribed Islamic method described above (sura V:3). In Gamileya, both Muslims and Christians follow these religious proscriptions.

Dietary Adequacy and Malnutrition

Statistics for Egypt indicate that malnutrition occurs in children even though there is enough food available. A 1983 World Bank report stated that the per capita caloric supply in Egypt was 2972, which was higher than all other lower and middle income countries cited (White and White 1986). Nevertheless, a 1978 study found nearly half of the sample children from low income families exhibited mild to moderate signs of protein-calorie malnutrition (U.S. Institute of Medicine 1979:41). These data seem to indicate that while the food may available, it is not being distributed equally and that infections may be contributing to malnutrition in children in the presence of an adequate diet.

In Gamileya as well, the diet of the fellah appears generally adequate in calories and is varied by the access to freshly picked crops. However, because of customs, poverty, and microbial contamination, malnutrition causes growth retardation and deficiency diseases.

Certain customs encourage the consumption of food, such as feasting on holy days and giving snacks to children. But certain beliefs discourage food intake and may tip the dietary balance towards malnutrition. Some of these beliefs are fairly benign, such as the belief that eating milk with fish will cause insanity. Fish is only eaten once per week at most, so avoiding milk at that meal would not seriously affect the diet. Somewhat more deleterious for women and girls is the practice of eating the leftovers of the men and boys. The females seem to eat enough bread and rice, but the fish, cheese and other protein foods are mostly finished by the males by the time the communal bowl gets to the women. Compounding the inadequate diet of the women are their frequent pregnancies, which for some are almost at their biological limit of reproduction. The most grave consequence of dietary custom affects the babies and toddlers, who receive diluted, high sucrose, contaminated homemade formula. The practice of delaying the introduction of solid food until one or one and one-half years of age seems to retard growth and make children of this age pale, sickly, and listless.

There is a range of socioeconomic levels in Gamileya and children from the poorer families are at greater risk for malnutrition. Some families are not able to afford fish or meat at all. If they raise fowl they may be obliged to sell them for cash. Although most families have a cow or water buffalo, there are some too poor to afford these milk producing animals. Children in these families are at great risk for malnutrition.

Finally, diseases resulting from contamination of food and drinking

water are probably the most profound sources of growth retardation and malnutrition in the hamlet. In the day-long observations of the 27 households I observed frank episodes of fecal contamination of food and drinking water in nine (33%) of the households. Anorexia due to illness causes decreased intake of nutrients and diarrhea causes malabsorption of what is eaten (Brown and Black 1981). Furthermore, the body's own immune response requires valuable protein to fight the invaders. This protein may be taken from skeletal muscle, leaving the child wasted when the disease is over (Beisel 1977).

Diarrhea has been found to account for half of the infant deaths in Egypt (Horn 1987). In Gamileya, when the children have diarrheal disease the mothers often withhold food and fluids, possibly predisposing them to fatal dehydration and prolonged growth retardation. I purchased packets of oral rehydration solution for children who had diarrhea, but was not once successful in convincing a mother to use them. Finally, when I realized that the people believe lemon, water, and sugar to be an effective remedy for many kinds of illness I began to tell mothers to add a pinch of salt to this mixture for their children's diarrhea. A number of the mothers adopted this therapy.

Overwhelmingly, growth retardation is the most striking result of malnutrition. Most children look much younger than their stated ages. Possibly resulting from this growth retardation, puberty occurs fairly late among many hamlet adolescents. As mentioned, many girls do not experience menarche until 16 years of age. Boys who claimed to be ages 15 to 18 had no facial hair and the high voices of much younger boys. Although it was impossible to examine them, they appeared to have

delayed development of secondary sexual characteristics that would be consistent with delayed puberty.

In addition to growth retardation, nutritional diseases affecting children in Gamileya and the surrounding communities were noted by physicians on our research team, including:

Rickets: A child with the unmistakable sign of rickets, "rickety rosary," on her costo-condral junction, had been fed exclusively homemade formula, swaddled, and kept out of the sun, because it was believed that she was weak. These factors appear to have led to a vitamin D deficiency that caused the rickets.

Riboflavin deficiency: A large number of children have been observed with angular stomatitis that is the hallmark of this disease.

Pellegra: Poorer families cannot afford even the government subsidized wheat flour and subsist on mostly a corn-based bread diet. The resulting niacin deficiency is the cause of pellegra.

Dental caries: Although not a deficiency disease, caries are a serious nutritionally caused condition in the hamlet. Most of the children have evidence of decayed teeth and nearly all of the adults have missing teeth. There is no regular practice of dental hygiene among most of the villagers, such as tooth brushing. Even the traditional Egyptian form of tooth cleaning, the miswak stick (Hassan 1950), is not used in the hamlet. The high sucrose intake is probably a major factor in this dental decay. Wealthier adults have some of their missing teeth replaced with artificial silver ones, so that their smiles gleam brightly in the sun.

In summary, food is relatively plentiful in Gamileya and a number of beliefs and practices encourage its consumption, especially during the many ceremonial occasions. However, certain customs tend to decrease the diets of women and children. Microorganisms contaminate many of the foods and beverages, but are probably most deleterious to infants and toddlers, whose immune systems are experiencing these stressors for the first time. This potent combination of practices decreases infant nutrient intake and contaminates the food that they do get, adding to the high infant mortality rate in Gamileya and decreasing the health and vitality of the children who survive.

ECOLOGY AND DISEASE

This section describes aspects of the environment in the hamlet and examines the health impact of each. The aspects to be analyzed are crops, water, dung, insects, crowding, and accidents.

The varied and plentiful crops grown by the fellahIn tend to contribute to their health. However, the use of chemical fertilizers and pesticides may poison the farmers while they work in the fields. The fellahIn spread these chemicals on their crops by the same method that they sow their seed: the farmer grasps the hem of his galabIyya in his left hand, making a depression that can hold a mound of seed, fertilizer, or pesticide, and flings the seed or powdered chemical onto the ground and into the wind with his right hand. Consequently the fellah (farmer) may become covered with the toxic chemicals, many of which are absorbed through the skin.

The irrigation canals in all of Egypt are infested with Schistosoma mansoni and Schistosoma haematobium, which cause schistosomiasis or bilharzia, as it is called in Egypt. The fellahIn are well aware that blood in their urine and stool are signs of harz, as they call the infection. Since the parasite penetrates the skin of people who are in contact with the water, men get the disease while irrigating the fields and women get it while washing dishes, drawing water, or helping the men in the fields. Research conducted near Gamileya found the prevalence rate of S. mansoni to be between 43.5% and S. haematobium to be between 5.7% and 16.4% (Khairy 1986).

Bilharzia affects the liver, spleen, and urinary tract leading to cirrhosis and renal failure. Even in the early stages of this chronic disease, continuous blood loss results in anemia and contributes to

growth retardation. In Gamileya, enlarged spleen is so common that the fellah consider it a major health problem. Egyptian physicians remove the enlarged spleens in order to decrease the portal hypertension and thus decrease the vascular congestion leading to the liver. Splenectomy is so frequently performed in the small private clinics in Sidi Isma'il that many of the men and women in the hamlet have undergone it. There is little sterility possible in these small one-room clinics and in one that I visited the health barber gave anesthesia for the operation. Thus, considerable danger is involved in this procedure. During the time that I lived in the hamlet one fourteen-year-old newly-married woman died following splenectomy. However, it is proof of the strength of the Egyptian villagers that many of them live through it.

Although the villagers were aware of bilharzia they did not consider enlarged spleen to be a manifestation of the infection. They believed that enlarged spleen was the result of improper diet during times of fever. One woman explained that if you eat too much when you have a fever, then your spleen will grow; the proper diet for fever is liquids and thin soups.

The fellah quarter their animals indoors to keep them safe from robbers, 'afrits, and the evil eye. They have been living with their animals since antiquity, as evidenced by Herododous' comment, "All other men pass their lives separate from animals, the Egyptians have animals always living with them" (447 B.C./1928). These animals represent considerable wealth; if they were stolen or died it would be a grave loss for the family. Nevertheless, they also represent a serious health

risk. The cows and water buffalo may be infected with brucellosis (reported to be Brucella melitensis, B. abortis, B. suis) or Mycobacterium bovis that affect milk producing animals (Youmans et. al. 1975:682). Both brucellosis and M. bovis infection results from consuming unpasteurized dairy products, which is common in the hamlet; brucellosis can also result from close contact with infected animals and bites from fleas infesting infected animals (Werner 1977).

The only animals left outside at night are the aggressive nocturnal dogs, which can be infected with rabies. Rabies is such a large problem in Egypt that an estimated 2,000 people die from the disease per year and an unprovoked attack by a dog carries a 20% to 30% risk of exposure to the infection (U.S. Institute of Medicine 1979:45). During my stay in Gamileya the corpses of two dead dogs were decomposing in the irrigation canal. After discovering these two dead dogs I became more and more frightened of the growling live ones. Whenever I had to go out at night village children, who were not afraid of the dogs, would surround me and throw stones at the snarling canines.

Due to the multitude of animals, dung is everywhere. In all parts of the hamlet the rich fetid odor rises up from the huge mounds of it. Animal feces is valuable for fertilizer, building material, and fuel. Since the fellahIn are fearful of someone stealing their dung, most families pile it close to their houses. The people are not aware of the potential health threat of these feces. In interviews with people in the 25-household sample, 64% did not think that dung could cause disease. Human feces is mixed with animal feces in nearly half of the households that do not have pit latrines, because people use the animal room as a defecation site. Even in houses equipped with latrines the

small children squat to defecate wherever they happen to be, which is most often within a few feet of their front door. Soon other children and adults walk barefoot over that feces, possibly receiving another dose of the hookworm parasite through their skin and contributing to their anemia.

Fecal contamination of food and drinking water is the source of intestinal parasites, such as Ascaris; viral, bacterial, and parasitic diarrheal disease; and systemic diseases, such as polio and hepatitis A. The long term consequences of intestinal infections are growth retardation and malnutrition; the consequence of polio may be paralysis for those who survive.

Insects are the vectors for several diseases in the hamlet. Flies hatch from larvae deposited in the dung piles and rotting food. These eye-seeking flies feed on the nasal mucous and purulent eye drainage of young children, who sometimes have more than ten flies on their faces. They go from child to child and appear to be a vector for trachoma and other eye infections, which will be discussed further in chapter 8 (Forsey and Darougar 1981). Fleas (reported to be order Siphonaptera) not only may spread disease as mentioned, but their very itchy bites induce scratching and secondary infection (Beaver et al 1984:707). In the warmer months, from March to October, mosquitos hatch in the stagnant water of some of the canals. These mosquitos may be the vectors for malaria and several other diseases. Plasmodium vivax and P. ovale malaria cause sporadic infections in the Egyptian delta, but are not endemic (personal communication, Center for Disease Control 1987).

Crowding contributes to respiratory, dermatologic, and parasitic

diseases in Gamileya. Much of this crowding occurs at night, since each nuclear family sleeps together in one bed. Compounding the disease exposure caused by crowding is the fact that half of the hamlet population is under fifteen years (Courtright et al. 1987).

Respiratory diseases, such as upper respiratory infections, otitis media (leading frequently to ruptured tympanic membranes), influenza, tuberculosis, and pneumonia infect many people during the rainy winter when the family stays huddled together indoors. Respiratory droplet-borne diseases such as mumps, measles, and chicken pox periodically sweep through the susceptible pediatric population.

Skin infections such as impetigo and ringworm (tinea) appear to affect almost half of the children at any given time. Labial Herpes simplex is also very common among both adults and children.

In a population of this density ectoparasites thrive. Nearly everyone has head lice, which they periodically treat with hair treatments of kerosene and combing with an extremely fine-tooth comb. When mothers sit and rest from their work, they often absently pick lice from their children's heads while they gossip with each other. Scabies affected several families during my stay in Gamileya and I did not escape either of these parasites; I got both head lice and scabies several times during fieldwork.

Accidents, especially among young children, contribute greatly to their high mortality rates. Most of the houses have roofs without rails that are used to dry plants and clothing; children play on these roofs and occasionally fall. The water buffalo, cows, and donkeys are usually passive when they are led out to the fields and back home each day. However, sometimes they become frisky or even just step in the wrong

place and trample a small child. Drownings in the canal are a fairly common cause of child death; the woman who lived next door to me lost her two-year-old son through such a drowning the previous year. Although the highway is two kilometers from Gamileya, pick up trucks drive through the hamlet to take crops to markets for sale. The children run after the trucks and excitedly jump on the back and sides for a ride. The driver must contend with hundreds of children surrounding his vehicle; not surprisingly some of these children are injured.

Burns are quite common among the village children. Cooking pots and fires are on the ground. Toddlers crawl and play around them, often falling into the fire or pulling boiling water down on top of them. During my stay in Gamileya I saw many children with burned arms, legs, and faces, which their mothers treated with gentian violet. I took one small boy to the hospital every day for a week to receive treatment for a deep third degree burn on his arm.

The mud brick houses and thatched roofs are quite flammable. While in the hamlet I witnessed one oven room burst into flames. The peasants all ran to the fire, each woman only stopping to grab a halla (large aluminum pan) for water. The women efficiently ran back and forth to the canal with hallas of water on their heads, which they handed to the men who threw them on the flames. Some men climbed to the roof and hacked it apart to break up the smoldering embers. Thanks to this effort the fire was halted within fifteen minutes and nobody was hurt.

In sum, Gamileya's environment contains a number of serious health hazards. Infectious disease, toxic exposure, and accidents all

contribute to the very high incidence of morbidity and mortality in the hamlet. Trachoma, and other ocular diseases, must be viewed within this context. Although trachoma causes a great deal of visual impairment and consequent loss of productivity, for the villages it is only one of the many afflictions that they suffer.

HEALTH RESOURCES

There are three spheres in which health and illness are managed in Gamileya: within the family, by the traditional healers, and by biomedical physicians.

The family uses amulets and home remedies for disease prevention and treatment of minor ailments. Home remedies include lemon, water and sugar to drink, which is used for everything from abdominal upsets to eye disease. In addition the villagers tie a kerchief tightly around the head for headache, wrap sheep's wool around the arm or leg for a sprain, mix Aloe vera resin (sabr) with water to drink or to rub on the skin for allergy, drink cumin tea for vomiting, drinking shīh tea for abdominal pain, and rub salt and oil on the chest and cover it with paper for a chest cold. In addition to administering home remedies, the family cares for the sick individual and helps to decide on further therapy if the illness does not go away.

Traditional healers include practitioners for every type of problem: the daya or midwife, the hallaq sahha or health barber, the mejebarafī or bone setter, the 'attar or herbalist, the tamrīs who cures with cauterization and laying on of the hands, the shaikh or shaikha who are religious healers, and various other specialists who administer traditional therapies for eye disease. The traditional healers are resorted to quite often when lower status individuals, such as children or newly married daughters-in-law, are sick.

Nearly all of the women give birth with the traditional midwife. Egyptians from the city assume that fellahīn women give birth easily, but like women everywhere, many times their labors are long and

difficult. I was told that if the childbirth is extremely long or if the woman has complications such as excessive bleeding, she may be taken by car to the nearest hospital (20 km. away). However, hospital delivery even in the case of difficult labors is quite rare. Only one woman that I spoke with in the entire hamlet had delivered in a hospital. After delivery the daya puts a piece of cloth into the vagina and presses against it with her heel to "get all the internal organs up inside again." Then, she "molds" the mother's body all over with her hands to "get her back into shape again."

The midwife not only delivers babies but also advises women who are infertile. One of her remedies is for the infertile women to go to the butcher and get some animal blood, then walk in it barefoot seven times, dip a piece of cotton into the blood and insert it into the vagina directly before intercourse. The daya is a bawdy woman: She told me to go home and have my husband jump on me and come back pregnant so she could deliver my baby. When she found out that my husband did not pay any mahr to marry me she said, "Divorce him, I could get at least 2,000 L.E. for you!"

The health barber shaves the village men and cuts their hair. In addition, with his straightedge razor he performs eye surgery, circumcises the little boys, and lances boils. He knows how to do intravenous and intramuscular injections (although his aseptic technique is questionable) and prescribes and administers medications for eye disease and other conditions.

The mejabaratī is a traditional orthopedic specialist who bandages and splints sprains and fractures. He stops bleeding with pressure above the site of bleeding and sometimes applies a tourniquet. He also

administers some injections, prescribes the proper diet for healing, and does massage.

Six 'attars or herbalists at the weekly open market sell herbs, spices, henna to redden hair, hands, and feet, kūhl to darken the eyes and treat eye disease, and various other medicaments. From them the women buy wormwood, cumin, sheba (alum), and many other medicaments for their home remedies.

The tamris is a descendent of a Bedouin family from whom she learned her healing skills. She diagnoses diseases of the spleen, heart, kidney by placing her hands over the area. She uses massage and laying on of the hands for back pain, abdominal problems, and skin rashes. She treated me for lower back pain by spitting on my back and rubbing it: her treatment worked about as well as anything else that I had tried. For more severe conditions, such as jaundice, she cauterizes the skin over the area with hot metal from the oven, which she says is especially good for curing pain. For other conditions she passes a thread through the skin.

As mentioned previously, the shaikh and shaikha are male and female religious healers. They say prayers for treatment of various diseases and for infertility. In addition, they write verses of the Qur'an on pieces of paper, called higab, that are sewed into cloth and tied around babies for protection or are worn by women near the part of their body that is painful or diseased. Certain shaikhs also conduct the zār ceremony that was described earlier in the religion section. In some parts of Egypt the zār ceremony is very common, but in Gamileya it is only held once or twice a year.

Physicians in Egypt practice in a two tiered system containing both governmental and private medicine. The local governmental clinic is three kilometers away from the village and a doctor is present during the morning hours to treat patients. Most physicians work for the government during the morning hours and have their private clinics in the afternoon (el-Mehairy 1984:19). There are four such private physicians in Sidi Isma'il and many more in the nearby city.

However, the villagers do not like to go to the government doctor for health care. When asked if they sought therapy from the government doctor they responded that they "had no confidence in him." Others said, "he does not know much," "he is not a good doctor," "he does not treat us well," "he makes us pay even though the care is supposed to be free." The government physicians are newly graduated doctors who are forced to do one or two years of rural service. They often resent this forced service and the low pay of 70 L.E. per month that they receive. Furthermore, being from the educated professional class they are often negatively biased towards their peasant patients. These factors combine to make them treat the villagers poorly and to make the villagers dislike and mistrust them.⁷ If someone is sick enough to warrant going to a biomedical physician then the villagers usually prefer to see a private doctor. The sick individual's status in the family not only determines whether he or she will see a biomedical physician, but also determines how far the family will take him or her for treatment. The higher one's status the further one is taken for treatment.

CHAPTER 5

HISTORY OF MEDICAL SYSTEMS IN EGYPT WITH REFERENCE TO TRACHOMA

The perspective that guides this chapter is an historical-political approach to medical ecology. Specifically, I describe the role of trachoma and other ocular infections in the development of medical systems throughout Egypt's history and the role of those medical systems in shaping the ethnomedicine of the fellah in Gamileya.

Leng (1982) argued that the development of health services by the British colonialists in Malaya occurred because: 1/ the indigenous labor force was decimated by infectious diseases and 2/ communicable diseases were threatening the lives of the colonizers (1982:411). El-Mehairy also stressed that "Western governments undertook international health work to protect their people from exotic diseases...(and in)...the hope of political and economic benefit from foreign aid" (1984:11). While concurring with these arguments, with regard to Egypt I suggest that the process of a new medical system gaining hegemony because it served the needs of an imperialist force began in antiquity. It is not an understatement to say that the Egyptians were not, historically at least, great warriors. Indeed, from the time of the Pharaonic rulers until the 1952 revolution Egypt lived under foreign rule. Ibn Ridwan commented on this aspect of Egyptian society in the first half of the 11th century: "Egypt has little discord and war because of the acquiescence of its people to whoever governs them and the weakness of their resistance" (Dols 1984:148). Even since 1952, British, Soviet, and United States political agendas have influenced Egypt and its medical system.

Egyptian ophthalmic infections, which have been endemic throughout recorded history, conquered the conquerors. Trachoma and other infectious eye conditions spread rapidly in such crowded conditions as military barracks (Tower 1962; Cornand 1979). The armies were so profoundly afflicted by trachoma and other ophthalmias that these conditions played a major role in the ascent and the focus of each system of healing. Thus, looking at Egypt's history through the lens of eye disease reveals the major role that trachoma played in its political development.

An anthropological discussion of medical systems would be incomplete without looking at the situation here and now. Redfield's (1956) "great tradition/little tradition" model is useful in this part of the analysis. However, since "great" and "little" are value-laden terms, I prefer to use "literate" and "oral" to classify the healing traditions. In this scheme the literate tradition of medicine in Egypt today, biomedicine, is the most recent of four literate medical systems (Pharaonic, Unani, Prophetic, and biomedicine). The oral tradition of present-day ethnomedicine is a syncretic blend of strands of all of the previous traditions. In fact, many of the techniques and substances used in Gamileya to treat eye disease have their origins in one of the ancient systems, as presented in table 1.

This chapter examines each of the major literate medical systems in Egypt, with particular attention to the treatment of trachoma and other eye infections. Table 2 presents the therapeutic principles of each system. In addition, each system is discussed within the historical period in which it flourished, including the prevalence of ocular

infections that appear to have been present at the time. To clarify this discussion, a historical outline is presented in table 3.

Where possible I have used English translations of original sources. For Arabic language sources, I used both Arabic and English versions of the source.

PHARAONIC

Evidence of trachoma in Egypt during the Pharaonic era comes from artifacts and paintings found in the tombs rather than from paleopathological studies. The ancient Egyptian mortuary practices did not preserve the globe of the eye, which receded into the back of the orbit during mummification (Sandison 1967). To compensate for this atrophy, very skilfully-crafted artificial eyes were commonly inserted into the mummies (Wilson 1972). Thus, it is not possible to determine the presence of eye disease in these ancient bodies through physical examination.

Nevertheless, a wealth of archaeological evidence suggests that ocular conditions were prevalent. Paintings from the Middle Kingdom (circa 2000 to 1750 B.C.) depict blind harpists at religious functions and festivals (Fuchs 1964). Feigenbaum (1957; 1958) describes evidence of seasonal ophthalmias in ancient Egypt from inscriptions on kūhl-boxes from both the Middle and New Kingdoms. Three eye paints--galena, hematite, and copper sulfate--found in the tombs in kūhl boxes (Lucas and Harris 1962), are still used by the fellahīn in Gamileya for prevention and treatment of eye disease. (See Table I).

Between 1900 B. C. to 1200 B. C. eight medical papyri were written that summarize the medical lore of the Pharaonic culture (Leake 1952).

These papyri contain systematic records of symptoms, diagnoses (including advice on whether the disease was treatable or not), and therapy. One of these medical records, the Ebers papyrus written in 1550 B.C., gives detailed descriptions of 19 ocular ailments, including granulation, trichiasis, and entropion (Bryan 1930; Ebbell 1937). The mention of these three conditions is evidence of the presence of trachoma in Pharaonic Egypt.

Many of the treatments recommended in the Ebers papyrus, such as myrrh, breast milk, onions, dung, aloe, and epilation for the inturned eyelashes of trichiasis, are used by the fellah in Gamileya for treatment of eye disease. In addition, the ancient Egyptians applied some of these remedies with the tip of a goose feather (Chance 1939). This may be the origin of the Gamileyian midwife's practice of drawing the quill end of a feather dipped in onion juice between the lids of newborn babies to make their eyes "big and beautiful."

Two general treatment rationales governed Pharaonic therapy: medicines based on the homeopathic "like to cure like" principle and religious healing (Krause 1933). The "like to cure like" treatment involved the use of irritating substances to cure stinging and painful conditions, or warm substances for burning eyes. According to this rationale the villagers in Gamileya treat overproduction of tears with onions, either mashed as a compress, or the juice used as eye drops. They say that the onions treat excessive lacrimation by drawing out all of the tears.

In Pharaonic medicine gods could both inflict illness and heal it. For example the god Meret-Seger was invoked to cure blindness and Dwaw

was the patron god of oculists (Ghalioungui 1969). According to Ghalioungui, "Modern counterparts to these associations linger in the infinity of shrines of all denominations where a holy person is believed to heal one organ or to cure a single disease" (1969:385). Such a shrine for eye disease is the Mosque of Om Hashim in Cairo. People afflicted with ocular problems take a few drops of oil from the lamp above Om Hashim's tomb and instil them into the sick eyes.

Also in the Pharaonic healing tradition the spoken and written word were considered to be powerful enough both to cause and cure disease (Ghalioungui 1963) and the evil eye was a believed cause of sickness, as it is today (Krause 1933). The name of a serious disease was never uttered without first saying a protective phrase, or the disease could be made to occur. The villagers in Gamileya share this belief, especially with respect to the word shar'a that they use for trichiasis. As mentioned previously, in Gamileya, the religious healers also treat the headaches that are believed to cause eye conditions with scraps of paper upon which verses of the Qur'an are written.

According to Herodotus, medical practitioners in ancient Egypt were specialists, each attending to a specific organ system (Ghalioungui 1969). One of the most famous physicians, Iri (Old Kingdom circa 2600 B.C.), also known as Pepi-Ankh, was the royal eye specialist and "shepherd of the rectum" (Arrington 1959). The reputation of the Egyptian physicians was so widespread that according to a legend, in the fifth century B.C. the ruler of Persia requested from the pharaoh of Egypt the most skillful of all eye doctors to treat the dim vision of his beloved mother (Snyder 1965). The pharaoh sent Nebenchari who performed the couching operation on the elderly woman's cataracts, thus

curing her blindness and winning the deep gratitude of the Persian king. However, while Nebenchari was in Persia, the pharaoh engaged the services of his professional arch rival, who had stolen Nebenchari's manuscript that described the cataract surgery. In revenge, Nebenchari used his influence with the Persian king in a devious plan that led to the Persian invasion of Egypt.

As early as 3,000 B.C., trade existed between the Assyrian and Babylonian societies in Mesopotamia and the Pharaonic culture in Egypt (Birchette 1973:303). Moreover, in 700 B.C. the Assyrians conquered Egypt (Alport 1946:26) so it is quite possible that these societies exchanged medical knowledge as well. In Assyria, during the reign of King Assurbanipal (668 to 626 B.C.), there was a full medical library of clay tablets arranged on shelves and in rooms according to subject (Birchette 1973:302). Archaeologists have dated some of the tablets from 2,000 B.C. In Babylonia, ophthalmology is mentioned in the "Code of Hammurabi," which is a collection of laws written under the rule of Hammurabi, the sixth king of the first dynasty of Babylon (Chance 1939). The code regulated physicians' fees and set punishments for malpractice, "If a physician...with a bronze lancet opens an abcess in the eye of a man and destroys the man's eye, they shall cut off his fingers" (Chance 1939:2). Among the few details describing eye disease in the Code are the belief that headaches are associated with bloodshot eyes and the use of copper dust for the treatment of ocular ailments, both of which are part of ethnomedicine in Gamileya.

Medicine in Mesopotamia was not specialized by organ systems as it was in Egypt. Instead, various types of practitioners--barber surgeon,

exorcist, diagnosing seer, and physician—offered their healing skills to the sick (Ghalioungui 1969). This organization of healing practice is very like that in Egyptian ethnomedicine today.

Thus, from the beginning of recorded history, in the area that was to become the Middle East, there were literate medical systems with pharmacopia, surgery and religious therapies for the treatment of ocular conditions, among which was trachoma. The sharing of medical knowledge appears to have occurred between Mesopotamia and Pharaonic Egypt, and elements of each of these systems are found in present-day ethnomedicine in rural Egypt.

UNANI

Tibb al-Yunanī, which means "Greek medicine" in Arabic, is the system of humoral pathology that began with the Hippocratic Corpus and the writings of Galen (Burgel 1976). The humoral pathology system divides the year into four seasons (spring, summer, fall, winter), matter into four elements (fire, earth, water, air), the body into four humors (blood, phlegm, yellow bile, black bile), and gives four qualities to living things and substances (hot, cold, dry, moist). Treatment for disease was based on the principle of opposition; for a disease that was hot and dry, the treatment would be cold and moist, etc. (Foster 1978). Unani medicine altered the ancient Egyptian emphasis on specialization by organ system towards a belief in imbalance as the cause of ill-health (Ghalioungui 1969). However, certain Pharaonic ideas were incorporated into Unani medicine, such as the belief that putrefaction causes infectious illness (Dols 1984). The

Egyptians knew that to preserve their mummies they had to remove the intestines and the brain or they would putrefy and rot the body (Peck 1980). When this idea was taken up by Galen, it resulted in his view that bodily surpluses could cause putrefaction and must be eliminated by purging (Dols 1984).

The Hippocratic Corpus (written between 430 and 330 B. C.) described an eye ailment that appears to have been trachoma, Epidemics, Book II: "Excrescence on the eyelids, both internal and external, occurred and, in many cases, impaired the vision: the name 'figs' is given to these" (Lloyd 1978:124). The fleshy seeds of the inner pulp of a fig is an apt comparison with the gel-like follicles of active trachoma. The Hippocratic Corpus distinguished between "moist" and "dry" ophthalmia, of which trachoma was considered moist. Each type of ocular condition was believed to be caused by an excess of humor; the dry ophthalmia was attributed to an overproduction of yellow bile and the moist to an excess of phlegm. This phlegm was thought to flow down from the brain, which was considered to be a large mucus-producing gland, and drip out the eyes and nose. The name "catarrh," which was given to this flow of phlegm, was used until quite recently by biomedical physicians. For example, "vernal catarrh," in a standard medical dictionary is defined as "vernal (spring) conjunctivitis" (Friel 1965:263).

Two treatments, recommended in the Hippocratic Corpus for moist ophthalmia, are used by the villagers in Gamileya today. The first was described as an attempt to arrest the movement of excess phlegm by slicing the veins of the temple with a knife. The second, which was specific for "figs" of the eyelid, involved everting the lid and rubbing

away the offending seed-like blebs with a wooden spindle wrapped with Milesian wool (Chance 1939; Arrington 1959).

Unani medicine was first brought to Egypt in 322 B.C. when Alexander the Great established the city that bears his name, which developed into an international medical center with a renowned library (Birchette 1973). Two factors influenced Alexandria's emergence as a center of medical learning in the ancient world. In Alexander's youth, his father, Philip of Macedon, engaged the philosopher, Aristotle, to be his son's tutor (Adamson 1973). Aristotle's personal library included a copy of every known medical work, which the young Alexander studied (Birchette 1973). Secondly, Alexander's soldiers in the Macedonian army were exposed to many infectious diseases and were in great need of medical attention (Adamson 1973). Among these diseases must have been trachoma, which had caused such misery to the Greek soldiers in the Peloponesian War (431 to 404 B.C.) that Aristophanes wrote about it in Plutus and several other plays (Chance 1939). Furthermore, Alexander's regard for medicine was so high and the need of his army was so great that he was the first general to originate medical services for his soldiers (Adamson 1973).

Perhaps influenced by the Egyptian practice of mummification, the early Alexandrian physicians, Herophilus and Erasistratus (circa 300 B.C.) performed autopsies, and some scholars believe, vivisection on live humans, thus gaining a very sophisticated understanding of human anatomy (Longrigg 1981). Unfortunately, the library at Alexandria was destroyed in 47 B.C. so almost none of the early works of the Alexandrian school have survived (Longrigg 1981).

Much of what is known about the practice of the early Alexandrian physicians comes from Galen, who traveled to Alexandria to study anatomy from 152 to 156 A.D. Galen's three ophthalmological works--Optics, Diagnostics of the Eye, and Anatomy and Physiology of the Eye--describe ocular anatomy, theories of vision, as well as criteria for the diagnosis and treatment of eye conditions (Arrington 1959). Similar to what was suggested in the Hippocratic Corpus, Galen's treatment for trachoma included everting the upper lid and scraping it with a pencil made of pumice.

Alexandria was invaded by Rome in 30 B.C., and later became part of the Christian Roman Byzantine Empire (in 395 A.D). During the Roman period, both Heliodorus (circa 100 A.D.) and Paul of Aegina (circa 650 A.D.) studied medicine in Alexandria and developed surgical procedures for the painful inturned lashes of trichiasis (MacCallan 1936). Heliodorus scalped the eyelids to remove the abrasive hairs. Paul of Aegina pulled the lashes up and out by pinching a piece of the outer eyelid between two sticks, causing the skin to necrose and shrink, thus holding the lashes up permanently. The procedure of Paul of Aegina was practiced until the last century in Egyptian folk medicine. It is described in a collection of "Old Wives' Medicine" (Tibb al-Rukka), published in Arabic in 1894 (Walker 1934). Paul of Aegina recognized the stages of trachoma infection, which he described under the heading "Roughness of the Eye-lids and Granulations." He stated, "Trachoma is an affection of the internal surface of the lid; when it assumes a great intensity, or when it presents notches, it is called the disease of the fig, and when it has become chronic and cicatricial it is called callosities" (Cumston 1920:44).

With the Muslim conquest in 642 A.D., Arabic became the lingua franca of Egypt and the rest of the Muslim world. The medical works of the Greco-Roman period were translated into Syriac and Arabic by Christian Nestorian monks, who having escaped from Edessa, Turkey, migrated to Persia and founded the medical school at Gundishapur (Mora 1980). According to Ullmann, "Of all the Greek doctors, Galen was for the Arabs by far the most significant" (1978:10). No less than 129 of Galen's works were translated into Arabic and his influence was felt in Islamic and European medicine until the 19th century.

The most talented translator of this era was Hunain Ibn Ish-Haq (809 to 877 A.D.) (Hamarneh 1973). In addition to direct translation, Hunain produced a number of original medical works in accordance with the perspective in the Hippocratic Corpus and the writings of Galen. Hunain's Ten Treatises on the Eye classified Pharaonic pharmacopia into humoral theory. For example, he states, "Myrrh is hot and dry in the second degree"... "Hematite is acrid and dry and useful in cases of roughness of the lids" (Meyerhof 1928:89,91). Many of Hunain's remedies for eye disease are used by the fellahīn today, including tūtya, the first mention of which that I found was in Ten Treatises on the Eye. In Gamileya, the villagers use red and blue tūtya (hematite and copper sulfate) for treatment of the follicles of trachoma.

The Arab physicians of Unani medicine were such specialists in the preparation of powdered eye remedies (called al-kūhl in Arabic) that they became known by the title al-kūhul (Smith 1972). The powdered kūhls were ground so finely that the word came to mean a "fine essence", which is the origin of the English word "alcohol" (Smith 1972).

Although the term "kūhl" has been applied to a number of mineral substances, the kūhl that the villagers use in Gamileya has been identified as galena, which is lead sulfide contaminated with traces of antimony. The fellah women explain their use of kūhl in humoral pathological terms. They believe it prevents eye disease caused by "hotness in the eyes."

During this period, the Coptic medical papyrus (circa 900 A.D.) was written in the ancient language that is still used by Coptic Christians in their church services. It contained 237 prescriptions, many for the eyes, which originated from both Pharaonic and Unani medicine (Krause 1933). This papyrus illustrates the syncretic blending of medical ideas that has been a continuous phenomenon in Egyptian medicine.

Several gifted scholars wrote theories of vision and ocular anatomy in the Unani tradition, including Ibn Rushd (Averroes in Latin), ar-Razi, Ibn al-Haitham (Alhazen in Latin), and Ibn Sina (Lindberg 1967; Schullian 1969; Arrington 1959; Chance 1939). The most renowned of these physicians Ibn Sina, known in Europe as "Avicenna," produced the five volume Canon of Medicine (Qanoon at-Tibb). This synthesis of all that was known of Greek medicine was the source of medical knowledge for European scholars during the Middle Ages, since many of the original documents were lost (Hamarneh 1973).

Unani practitioners were both philosophers and physicians (Leiber 1979). However, often the "hands on" practice of treating patients was neglected in favor of scholarly discussion about the nature of disease. Even by Galen's time philosophical discourse had gradually overtaken such technical research as human dissection, and the quality of Greek medicine had begun to decline (Nutton 1972). After the Muslim conquest,

dissection was religiously prohibited, so that the visual theories of the Arab Unani physicians were based on observation of external anatomy and study of the translated anatomical studies of Galen (Sandwith 1905).

Two Arab Unani physicians, Ibn al-Aissa and Ibn al-Nafis, wrote extensively about trachoma (Smith 1972; Cumston 1920). Both of these scholars recognized four stages of trachoma, from early inflammation to chronic roughness. Ibn al-Aissa likened the first stage of trachoma to small red dots "similar to measles," which he called dharb al-āinnine (scabies of the eyes) (Cumston 1933:47). In accordance with humoral theory but opposite from the Hippocratic Corpus in which trachoma was classified as cold and wet, Ibn al-Nafis ascribed it to "an acrid burning humor" (Smith 1972:102). Many of the therapies recommended by both doctors are used by the fellahīn in Gamileya. These include everting the lid and scraping, which, according to Ibn al-Nafis, is best done with a "cuttle-fish bone or fig leaves" (Smith 1972:102); then rubbing powdered hematite on the everted lid; and for "cleansing the body of the offending humor...bleeding, beginning first with the cephalic veins" (Smith 1972:102).

From the 9th through the 13th centuries, when Unani medicine flourished in the hands of its Arab practitioners, hospitals and centers of learning grew as well. The first hospital was established in Egypt by the Governor Ibn Tulun in 875 A.D. and in 1286 A.D. the Sultan al-Mansur Qalaun built a medical foundation (Muristan) with special wards for various ailments, including one for ophthalmia (Sandwith 1905). Al-Azhar University was founded in Cairo in 969 A.D. and in 1005 A.D. the "House of Wisdom" opened in Cairo for the teaching of medicine, the

sciences, and Ismaili religious doctrine.

European contact with the Middle East on a fairly large scale began with the Crusaders, who gained control of Jerusalem and part of Syria and invaded Egypt during the 11th through the 13th centuries (Sterns 1983; Cornand 1979). The Crusaders suffered from infectious diseases in Egypt as much as previous armies had and returned to Europe with what appears to have been trachoma, which they then spread to the civilian population (Tower 1963; Thygeson 1962; MacCallan 1936). Evidence that this disease may have been trachoma comes from the descriptions of the eye diseases of pilgrims returning from the Holy Lands during the Crusades, including St. Francis of Assisi (MacCallan 1936). Two years after his return, St. Francis suffered from an ocular ailment that severely scarred his upper lid lining and by the time of his death, eight years later, he was almost blind.

In the Holy Land during the Crusades two military-religious orders were founded specifically for the care of sick and injured monk-soldiers and European civilians: the Order of the Hospital of St. John, which was known as the Knight Hospitallers, and the Order of the German Hospital of St. Mary in Jerusalem, which was called the Knights Templars. Medical care in these orders was based on Arab-Unani medicine and included rest, diet, herbal pharmacopia, and blood-letting (Sterns 1983).

Thus, Arab physicians enthusiastically took up the Greek medicine of Galen and the Hippocratic Corpus, loyally maintaining the basic philosophy of humoral pathology but transforming the details and making it their own. This transformation resulted from the syncretic weaving of earlier medical knowledge, of the Pharaonic and other systems, in

which many of the same therapies were employed with different explanations for why they worked. The Greek and Roman colonizers were instrumental in the ascension of Unani medicine in Egypt and the prevalence of trachoma there caused Unani physicians to focus much of their writings on its description and treatment. Through the agency of the returning Crusaders, Europe experienced a wave of eye infections that may have been trachoma. However, although the Crusading orders built hospitals in the Middle East, they did not yet introduce medical ideas into Egypt. On the contrary, Europe at this time was so influenced by Arab writers, such as "Avecinna," that it was Unani medicine that was practiced by the Crusading orders.

PROPHETIC

Prophetic medicine (Tibb an-Nābi) originated from the preventive and curative ideas that are embodied in the Qur'an, which Muslims consider the word of God, and the Hadith, which are the collected sayings of the Prophet Muhammad. During the time when Greco-Roman medical ideas enjoyed ascendance with the Byzantine elite in Egypt, the Prophet Muhammad (570 to 632 A.D.) established a new religion: Islam. Within 100 years after his death Islam had spread throughout the Mediterranean and the countries that are now part of the Arab world (Lewis 1950).

Prophetic medicine embodied a system of public health. The focus of the Prophet's statements concerning health was largely on purity and pollution, diet (including the slaughter of animals, the preparation and eating of food, and permissible and forbidden foods), sexuality, the care of the sick, and rules governing the treatments of health

practitioners (summarized from my review of the Qur'an and Hadith).

While curative medicine was not heavily emphasized, the Prophet encouraged the sick to seek treatment. He is reported to have said:

For every disease there is a treatment. God has not sent any disease without a remedy (Hameed 1981:134).

Although disease was believed to be sent by God, it was not to punish the sick person for his or her sins. Instead, sickness was considered the "expiation of sin and the instrument of...spiritual elevation" (Hameed 1981:134).

Ocular conditions appear to have been prevalent in Arabia at the time of the Prophet Muhammed. Blind people are listed in the Qur'an with the lame and the sick as exempt from fighting in wars. The classical Arabic language in which the Qur'an is written contains a large number of words for blindness, dim vision, and eye disease (see chapter 5--Ethnosemantics). Some of the terms for eye disease that were common in pre-Islamic Arabia, such as ramad and 'ama (Ullman 1978), are used by the fellahīn in Gamileya to describe their eye ailments. Furthermore, the term ramad is used by modern Egyptian biomedical physicians in the name "ramad hubaybi," which means trachoma, so it is possible that trachoma was among the ocular conditions that afflicted the early Arab nomads. Pilgrims traveling to Mecca for the hajj shared many of the same hardships armies suffered, notably crowded makeshift conditions and exposure to infectious diseases. Eye diseases affected these early Muslim pilgrims, evidence of which is the Prophet's saying that the pilgrim who develops sore eyes is permitted to stop and get treatment (Siddiqi 1979).

Despite apparently high levels of eye disease, Prophetic medicine

lacks a specific ophthalmological armamentarium. Only four eye therapies are mentioned in the Hadith: the use of truffles for anointing the eyes, the importance of killing striped snakes because they harm the eyesight, the use of aloe for sore eyes, and the daily use of kūhl to brighten the sight and grow hairs (Siddiqi 1976.; Mishkat-al-Masabih 516 A.H.). The last two remedies--aloe and kūhl--are used in Gamileyan ethno-ophthalmology.

Prophetic medicine has been criticized by scholars who compare it to Unani medicine as the way "native custom, superstition, and magic were given respectability and religious sanction" (Dols 1984:896, see also Burgel 1976). Although Prophetic medicine was certainly not as highly developed as Unani medicine, there are only a few sayings of the Prophet regarding charms and "therapeutic prayers," most of which involve using Qur'anic verses prophylactically against the evil eye (Jalil 1977). Even the renowned 14th-century Muslim historian, Ibn Khaldun, disparaged Prophetic medicine by calling it "Bedouin medicine" (Rahman 1984:588). The ideas in Prophetic medicine probably are, to some extent, Bedouin folk medicine since the Prophet was of nomadic Bedouin ancestry. However, mixed with desert health lore are notions of cleanliness similar to (perhaps borrowed from) the Biblical injunctions in the book of Leviticus (see Douglas 1966 for an analysis of these). Another influence on Prophetic medicine was the famous medical school at Gundishapur in southwestern Iran, where Greek and Indian scholars had been invited to teach (Rahman 1984) and which was attended by several members of the Prophet's family (Gran 1979). Therefore, Prophetic medicine is a syncretic blend of several earlier systems and its

elements are present in rural Egyptian ethnomedicine today. Prophetic medicine gained acceptance through its association with a conquering force, in this case the newly Islamized Arabs from the Arabian peninsula, who spread their language and culture in the area that was to become, for Europeans, the Middle East.

An aspect of Egyptian medical pluralism that is often lumped together with Prophetic medicine is the healing system based on popular Islam that has been called "Sufi medicine" (Gran 1979:340). During the 11th century, the mystical practice of Sufism emerged in Islam. Sufism, which emphasized direct union with God rather than reliance on formally codified law, was at first seen as heretical. It was through the writings of the great theologian Ghazali (1059-1111 A.D.), who merged scholasticism with intuitive Sufi mysticism, that Sufism was granted at least partial orthodox acceptance (Lewis 1958). As with popular Islamic practices, Sufi medicine--or maraboutic medicine as it is also called--is an oral folk tradition that is inspired by the faith of Sufi mystics. During the 16th to the 19th centuries, Sufi brotherhoods led by or dedicated to mystical holy men became widespread in the Arab world. Psychospiritual healing traditions became associated with these holy figures and, after their deaths, with their tombs (Gran 1979). The therapy is based on baraka (Von Denfer 1976), which as described earlier is considered necessary to good health, can treat ill-health, cure infertility, and bring good fortune. One aspect of Sufi medicine that is reminiscent of Pharaonic medicine, and is practiced in Egypt today, is the specialization of tombs for the cure of one specific ailment, such as the tomb of Om Hashim and eye disease as mentioned earlier. Other Islamic ideas, such as the existence of jinn or spirits,

play a large role in Sufi medicine through various ritualized exorcism ceremonies like the zār ceremony mentioned in the ethnography section (chapter 4).

As an oral tradition, Sufi medicine did not gain power by its association with a ruling elite. On the contrary, popular Sufi healing ceremonies served the needs of the illiterate peasant class which, like the fellahIn in Gamileya, was disenfranchised by that elite.

BIOMEDICINE

Biomedicine was introduced into Egypt in the 19th century by Europeans following the Napoleonic wars (1798 to 1815). There have been two phases of biomedicine, early and late, demarcated by the discoveries of Koch and Pasteur of the role of microorganisms in disease. Pre-germ theory biomedicine was the age of the "heroic stimulants" of Thomas Brown (Trevor-Roper 1980). Eye diseases, and many other ailments, were treated with heavy metals (gold, silver, arsenic, and mercury), bleeding with leeches, and purging. Trachoma and other ocular conditions were attributed to environmental and atmospheric influences (i.e. sunlight, moist air, dust), miasma arising from decaying earth and organic matter (Fiebel 1983), unhygienic living, and inadequately-bridled sexuality, especially masturbation (Trevor-Roper 1980). An amusing example of the latter was Cohn's declaration in the 1882 Archives of Ophthalmology that even trachomatous infiltration was caused by "excessive onanism." Obviously, during this period European medicine was still influenced by Unani ideas that were combined with Victorian England's fearful attitude towards sexuality.

Biomedicine, in the recent period since the acceptance of germ theory, was transformed in 1938 with the advent of sulfonamides, and later antibiotics, for the treatment of trachoma (Thygeson 1962). Much of the biomedical research on the cause and treatment of trachoma has taken place in Egypt. Indeed, Egyptian ophthalmic infections, which so affected the European armies, stimulated this ophthalmological research.

Within weeks after arriving in Egypt in July 1798, Napoleon's troops were ravaged by what was called "military ophthalmia" or "Egyptian ophthalmia" (Feibel 1983). Based on retrospective examination of clinical reports, MacCallan (1936) attributed the "Egyptian ophthalmia" to a combination of trachoma and Kochs-Weeks bacillus (now called Hemophilus aegyptius); Thygeson (1962) later included Neisseria gonorrhoeae as well. In many battalions, three-quarters of the French soldiers were simultaneously infected, necessitating several military operations to be abandoned. Among the remaining men who continued to fight, some required the assistance of soldiers who could still see to point their muskets at the enemy. Although they were only in Egypt for a brief period, the soldiers ocular needs impelled the French to establish an ophthalmic hospital at Giza (MacCallan 1936). It was not long following the building of this institution, after three years of fighting both human and microbial enemies, that the French withdrew in 1801 (Feibel 1983).

Similarly the British, who landed in Egypt in 1801, were plagued by ocular infections (Feibel 1983). The number of English soldiers that were partially or totally blinded was so large that the government voted

100,000 per year for the support of blind soldiers, which was the first pension ever granted (Feibel 1983). The rapid spread of ophthalmias to the civilian population from returning military personnel led to the 1805 founding of London's Moorfields Eye Hospital, in which the majority of patients were treated for trachoma (Jones 1980).

In 1807 a British physician, John Vetch, published his Account of the Ophthalmia Which Has Appeared in England Since the Return of the British Army From Egypt (Feibel 1983). In contrast to many of the doctors of his period, Vetch believed that ophthalmia was contagious through the spread of pus in common wash water, towels and bed linen. Vetch's description of ophthalmia included observations of granulations on the conjunctival lining of the upper eyelids, which he compared to the villi in the small intestine. This metaphor appears to be specific for the follicles of trachoma. Vetch's therapy for this ophthalmia did not greatly differ from that of many of the previous medical systems and, like those earlier systems, elements of it are found in the ethno-ophthalmology in Gamileya. It included the application of such caustic substances, as copper sulfate and silver nitrate to the everted lid to cause sloughing of the conjunctiva. In addition, he combined Hippocratic bloodletting from the temple veins with "heroic" enthusiasm, in which he bled the patient until the person fainted (Feibel 1983). This treatment illustrates a major difference between the early biomedical physicians and the Arab Unani doctors. While the procedures may have been the same, such as blood-letting or purging, the Arab Unani practitioners cautioned moderation in righting the imbalanced humors; the 19th-century British physicians, on the other hand, were counted on to have caused more deaths, "than the whole of the current Peninsular

War" (Trevor-Roper 1980:30).

By the mid 1800s, the "military ophthalmia" had spread in a virulent form, decimating every army on the European continent and causing epidemics of unprecedented proportions in the civilian populations (Duke-Elder 1958). The social calamities caused by these epidemics of military ophthalmia, and the blindness in their wake, led to the First International Congress of Ophthalmology that met in Brussels in 1857. However, although most of the learned discussion was taken up with this ocular pandemic, "no unanimity was reached as to causation or treatment, while even its spread by contagion was vigorously denied by some; after the fashion of the time it was weakly concluded that certain localities and the nature of the air favoured the onset and spread of the affection" (Duke-Elder 1958:14).

During the middle of the 18th century, while Egyptian ophthalmia raged in Europe, European biomedicine became the official state medical system in Egypt. Muhammad Ali Pasha al-Kabir became Viceroy of Egypt, after the previous dynasty, the Mamlukes, lost control of the country during their battle with Napoleon (Burrow 1975). Although Muhammad Ali officially ruled Egypt for the Turkish Ottoman Empire, Turkey was quite weak by that time, which meant that Muhammad Ali's rule was essentially his own. His success in battle, evidenced by his nickname "the lion of the Levant" (White 1973), led him to value the functioning of his army. It was to keep his army in good health that Muhammad Ali employed Antoine-Barthelemy Clot, better known as Clot-Bey, who founded a system of public health and medical practice in Egypt during the 1820s (Burrow 1975). As with the Alexander's Macedonian army, the needs of a military

service brought a new medical system to Egypt. Clot-Bey convinced Muhammad Ali that in order to keep the army healthy, the general population must be vaccinated against smallpox and that other contagious diseases must be controlled. These efforts led to the establishment of a public health service, a quarantine department, the training of midwives and barber surgeons, and the founding of schools for the teaching of medicine, pharmacy and nursing (Halawani 1951).

Eye infections, of course, were among the more problematic contagions affecting the Egyptian population during Clot-Bey's tenure (Burrow 1975). In fact, just 18 years earlier in 1802, one of the surgeons in Napoleon's army observed that of every 100 Egyptians in the streets of Cairo, 20 were blind, 10 were one-eyed, and 20 had eyes that were red and covered with pus and scars (Tower 1963). During his 25 years in Egypt Clot-Bey himself suffered 17 attacks of ophthalmia, from which he became blind in one eye (MacCallan 1936). Perhaps inspired by his own ocular suffering, Clot-Bey's national health service included three ophthalmological clinics that were opened in the 1840s (Kuhnke 1972).

The bacteriological era in Egyptian ophthalmology began with Koch's identification of the Kochs-Weeks bacillus that bears his name (MacCallan 1936). In 1883, Koch travelled to Alexandria to study a cholera epidemic that was raging and was struck by the number of people with purulent discharge from their eyes; he microscopically examined the pus and made his discovery. In 1901, a French scientist, Morax, who was also working in Alexandria, distinguished acute conjunctival infections from the chronic infection of trachoma and discovered the Morax-Axenfeld bacillus, which bears his name (MacCallan 1936). This

medical research was not entirely unidirectional, however. Beginning in the first half of the 19th century, Egyptian students travelled to Europe to study medicine. One of these students, Muhammad Ali al-Baqli wrote a doctoral dissertation in the Faculty of Medicine in Paris in 1837 on "Egyptian Ophthalmia" (Kuhnke 1972).

One of the most renowned European trachoma researchers, Ferguson MacCallan (1936), resided in Egypt from 1903 to 1923. During that time he originated a systematic clinical grading system for trachoma that is still in use today. His recommended treatments for trachoma carried on the traditions of the Hippocratic Corpus, including applying copper sulfate to the everted lid surface and scraping the protruding follicles both of which are used by the fellah today.

Since the revolution of 1952, Egyptian medicine has been transformed. Egyptian health care providers have taken over the teaching, administration, and practice of biomedicine. In accordance with Nasser's socialism, there is nearly free medical care, including, by 1974, 3,000 hospital beds for ophthalmological patients (U.S. Inst. of Med. 1979). United States involvement in Egyptian health care and health research essentially began with Sadat's Open Door Policy (Infitah) of 1973 and increased dramatically after the Camp David Peace Treaty of 1979.

SUMMARY

It seems clear, from this review of Egyptian medicine, that disease, medical systems and political forces are interrelated. Each of

the medical systems in Egypt's history gained ascendance through its association with a sociopolitical conquest. Pharaonic, Unani, Prophetic, and biomedicine all have been literate healing traditions associated with a ruling elite. It was by serving the needs of that elite that each system gained hegemony.

I have examined Egyptian medical history crystalized through the lens of ophthalmia. As has been seen, in each historical period trachoma and other eye infections caused untold suffering and blindness to both the native Egyptians and their conquerors. The magnitude of ocular distress is reflected in the focus of each system on the cause, prevention, and treatment of eye disease. However, one might chose any serious infection--plague, typhoid, or schistosomiasis--and look at its prevalence and treatment in each historical period. Although infectious ophthalmias have been a major cause of sickness and disability, they are only a part of the total number of infectious diseases in Egypt.

Finally, this diachronic analysis has illuminated the role of history in shaping present-day traditional medicine. This chapter has documented those beliefs and practices in the ethno-ophthalmology of the fellah that originate in one or more of the previous systems. Obviously, the healing tradition in Gamileya has not arisen sui generis. On the contrary, strands of each of the literate systems have been syncretically blended together and this blending has resulted in the oral tradition.

Table 1 - Part I. SUBSTANCES AND TECHNIQUES THAT ARE USED IN GAMILEYA AND WERE USED IN PREVIOUS MEDICAL SYSTEMS

	<u>Kihl</u>	Myrrh	Long pepper	Breast milk	Hematite	Copper sulfate	Onions	Dung
<u>Pharonic</u>								
Ebers papyrus (1550 B.C.)		X		X			X	X
Found in tombs (c. 1590-1060 B.C.)	X				X	X		
<u>Unani</u>								
Hippocratic Corpus (400 B.C.)						X		
Galen (156 A.D.)		X						
Paulus Aegineta (625-690 A.D.)					X			
Ibn Nafis (1288 A.D.)		X	X					
Hunain Ibn Ishaq (809-877 A.D.)		X						
Ali Ibn al-Aissa (1050 A.D.)		X	X		X			
<u>Prophetic</u>								
Hadith (recorded 750-800 A.D.)	X							
<u>Biomedicine</u>								
John Vetch (1807)						X		
MacCallan (1936; in Egypt 1903-1923)						X		
Thygeson (in Egypt 1930 and 1938)						X		

(References for these sources are cited in the text.)

Table 1 - Part II. SUBSTANCES AND TECHNIQUES THAT ARE USED IN GAMILEYA AND WERE USED IN PREVIOUS MEDICAL SYSTEMS

	<u>Tütya</u>	Aloe	Egg White	Epilation of Lashes	Curettage	Bleeding from Temples
<u>Pharonic</u>						
Ebers papyrus (1550 B.C.)		X		X		
Found in tombs (c. 1590-1060 B.C.)				X		
<u>Unani</u>						
Hippocratic Corpus (400 B.C.)					X	X
Galen (156 A.D.)			X		X	X
Paulus Aegineta (625-690 A.D.)					X	
Ibn Nafis (1288 A.D.)					X	X
Hunain Ibn Ishaq (809-877 A.D.)	X	X			X	X
Ali Ibn al-Aissa (1050 A.D.)		X			X	X
<u>Prophetic</u>						
Hadith (recorded 750-800 A.D.)						
<u>Biomedicine</u>						
John Vetch (1807)						X
MacCallan (1936; in Egypt 1903-1923)					X	
Thygeson (in Egypt 1930 and 1938)						

Table 2 **THERAPEUTIC PRINCIPLES OF EACH MEDICAL SYSTEM**

Pharaonic: Deities and the spoken word were capable of both causing and curing disease. Medicine was based on "like to cure like."

Unani: Disease was caused by imbalance of the four humors (black bile, yellow bile, blood, phlegm), or the four qualities (hot, cold, wet, dry). Treatment was based on opposition.

Prophetic: Emphasis on ritual purity/impurity and diet. Sickness is from God, not as punishment but rather to expiate sins.

Sufi: Healing through God's grace (baraka) that emanates from holy people and their tombs. Exorcism for spirit possession, and use of amulets and written verses from the Qur'an for both prevention and cure.

Early
Biomedicine: "Heroic stimulants"--heavy metals used as medicine (mercury, gold, arsenic, antimony), purges and bleeding with leeches. Attribution of disease to unhygienic living and masturbation.

Late
Biomedicine: Germ theory. Pre-1938 trachoma therapy involved scraping and sloughing the conjunctiva; post-1938 antimicrobial therapy.

TABLE 3

HISTORICAL OUTLINE OF EGYPT--Selected Events that Influenced the Development of Medical Systems

Pre-3188 B.C.	Pre-dynastic period
3188-2400 B.C.	Ancient Kingdom 2600 B.C. Iri--Royal physician--"oculist of both eyes and shepherd of the rectum"
2000-1750 B.C.	Middle Kingdom 2100 B.C. Code of Hammurabi in Babylonia/Assyria
1590-1060 B.C.	New Kingdom 1550 B.C. Ebers papyrus
1060-333 B.C.	Late Epoch
525-400 B.C.	Persian rule 460-355 B.C. Hippocrates
332 B.C.	Alexander the Great--the city of Alexandria established
332-30 B.C.	Alexandrian period (Greek) 47 B.C. Alexandrian medical library burned
30 B.C.-640 A.D.	Roman period (Byzantine empire in Alexandria from 395-640 A.D). 138-201 A.D. Galen 570 A.D. Prophet Muhammad born in Mecca
642 A.D.	Muslim Arab conquest--Fatimid Caliphs rule Egypt 900 A.D. Coptic medical papyrus 969 A.D. Al-Azhar University founded in Cairo
1169-1193 A.D.	Saleh ed-Din ruled Egypt (He fought Richard the Lion Hearted in the Crusades)
1250 A.D.	Mamlukes (slave dynasties) begin Turkish rule
1798 A.D.	French invasion led by Napoleon (they left in 1801)
1801-1803	British fought the Ottoman Turks in Egypt
1805-1849	Muhammad Ali Pasha--viceroy of Egypt (for Turkey) 1827 Clot Bey established school of medicine 1840 three ophthalmological clinics established in Cairo Egyptian students sent to Europe for medical training 1883 Koch discovers Kochs-Weeks bacillis

1882-1922 British occupation
1857 1st International Congress of Ophthalmology meets in
Brussels to discuss "military ophthalmia" that the troops
brought back from Egypt
1903-1923 MacCallan in Egypt
1926 King Fouad I opened the Giza Memorial Ophthalmic Inst.
1938 oral sulfonamides first used to treat trachoma

1952 Gamal Abd-al-Nasser overthrew the monarchy of King Farouk
Soviet influence

1970 Sadat
1972 termination of Soviet dependency
1973 Open Door Policy (Infitah)--U.S. influence
1979 Camp David treaty signed--U.S. Institute of Medicine
report on Recommendations for U.S. Assistance
prepared for U.S.A.I.D.

1981 Mubarak

CHAPTER 5

ETHNOSEMANTICS OF EYE DISEASE

This chapter examines the perception, diagnostic categories, and folk etiologies of eye disease in Gamileya, as well as and the role of Egyptian dialect Arabic in shaping these aspects of expression.

Semantic field, a subfield of linguistic anthropology, is the study of how cultural categories are expressed in language. The semantic field can focus on kinship terms, color names, or on health and illness. This approach examines the vocabulary that is elaborated within a given culture in order to identify the main concerns of that culture, of which a famous example is Boas' description of the four Eskimo words for snow (Hymes 1964;167).

Within medical anthropology, Frake's (1961) landmark work on Subanun diagnosis examined which questions the Subanuns asked in order to classify a disease. Frake identified four questions: "Am I sick?" "What kind of disease do I have?" "What are my chances?" "Why did it happen to me (of all people)?" through these questions the Subanun determined the disease name or diagnostic category and ascribed meaning to the disease.

Within medical anthropological work conducted in the Middle East, three studies have focused on ethnosemantics to understand the meaning of illness categories or episodes. Byron Good's (1977) discussion of "heart distress" in Iran looked at the semantic network by which symbols and experiences may coalesce into a syndrome that has meaning within a particular culture. Mary-Jo DelVecchio Good (1980) analyzed the vocabulary that Iranian women use to describe their health concerns, in which "blood," "heart distress," and "babies" predominated. Early

(1982) studied the narrative structure used by baladI women in Cairo to transmit information about an illness episode.

PERCEPTION OF EYE DISEASE

During interviews conducted the 25 households, villagers were asked, "What are the health problems in the hamlet during the summer/winter?" Eye disease was mentioned as the leading health problem in the summer although it was not mentioned as a problem at all in the winter. Similarly, when asked directly, "Is eye disease a problem in the hamlet?," people in 20 (80%) of the households thought that eye disease was a problem.

However, when asked, "Does anyone in your family now have, or has anyone had any eye diseases?," many fewer people responded affirmatively. Individuals in only three (12%) of the households thought that they currently had eye disease. In all three of these households the number of children ages one to 12 with moderate to severe trachoma was greater than the expected number based on the prevalence of trachoma in the hamlet; thus, the families judged correctly that they had eye disease. However, villagers in 13 (52%) of the households thought that they had had eye disease in the past but did not have it now and villagers in 9 (36%) of the households responded that they had never had any eye disease. Of these 22 households in which the members denied current eye disease, 15 had more children (ages one to 12) with moderate to severe trachoma than the expected number for the hamlet; thus, they did not realize or admit that they had family members with eye disease. Villagers in the remaining seven households judged correctly that their family members were relatively free of eye disease.

Thus, while the villagers thought that eye disease was a problem in the hamlet during the summer they did not perceive it to be a problem in the winter. Furthermore, many were reluctant to admit that their own family members were affected. Although eye disease is more prevalent in the summer months, as mentioned in chapter 2 ophthalmological exams revealed trachoma to be endemic in the winter months as well. In some cases the apparent lack of perception of eye disease was particularly striking, as illustrated by an excerpt from field notes:

The mother-in-law in A's household stated, "There is no one in our family with eye disease." At the time she said this three of her grandchildren were standing beside her with crusted pus around their eyes. One of her daughters had a stye (hordeolum) and the nine month old baby she was holding had pus in his left eye that three flies were feeding on.

There are several possible reasons for this apparent lack of perception. First, eye disease is so ubiquitous in the hamlet that some redness and discharge from the eyes is considered normal, especially in children. In this setting, if people can still open their eyes, do not have severe pain, and can see at all, they may not be considered to have eye disease. Particularly since trachoma is a chronic disease, infecting many people at different times throughout their lives, they may not recognize it as an illness. Second, religious and cultural beliefs discourage the discussion of disease. The socially acceptable answer to "How are you?" is "Praises to God!" There is a belief that complaining about a condition is questioning the will of God. Third, as mentioned previously, there is a fear of the "power of the word;" people are afraid that mentioning health problems may cause them to occur, which Lipson and Meleis (1987) found among Arab-Americans as well. During the interviews, people were especially afraid to

mention the ethnic diagnostic category, sha'ra, which corresponds to the biomedical condition of trichiasis. Sha'ra is the only eye condition that the villagers consider to be contagious and the contagion can occur by speaking about it. When the word sha'ra was mentioned the villagers would often hold up their hands and say, "Don't say that word."

ETHNIC DIAGNOSTIC CATEGORIES

According to the Sapir-Whorf hypothesis the presence of numerous words to describe a phenomena may influence the people to notice it (Fishman 1960). Moreover, the premise of lexical studies in a semantic field is that the preoccupations of a culture can be seen in the elaboration of vocabulary. In Gamileya, there are a large number of ethnic diagnostic categories for eye disease, the 14 most common of which are presented in table 4. However, not every villager is able to identify every diagnostic category and, not surprisingly, the traditional healers have the most extensive eye disease taxonomies. There are some overlap and disagreement about the categories among the villagers, so the table should not be interpreted as representing complete agreement or strict definitions of each category. The reality of how eye disease is defined and treated is more fluid than a table can suggest.

Some of the terms, such as mayya bayda (cataract), are used by Arabic-speaking physicians as well as the villagers. However, the villagers' concept of this term, especially its cause and treatment, differs from the ideas of the biomedical physicians. Therefore, although mayya bayda maybe considered an Arabic-biomedical-disease

category, it should also be considered an ethnic-diagnostic category. Most of eye disease terms used by the villagers are not shared by the Arabic speaking physicians, with the exception of the rare physicians who make the effort to learn the villagers' terms in order to be better understood by them.

Although villagers in 9 (36%) of the households have heard of the Arabic biomedical term for trachoma (ramad hubaybI) only three were able to describe the lymphoid follicles or corneal opacity that characterize various stages of the disease and none mentioned trichiasis as being associated with trachoma. Knowledge of the biomedical name for trachoma was associated with parental literacy. In households in which one or more parents were literate, family members were more likely to have heard of ramad hubaybI (Kendall's tau=0.40 p<0.04). Some of the villagers used the term ramad as a diagnostic category that corresponds to the biomedical diagnosis of conjunctivitis rather than being specifically associated with trachoma. However, evidence that the villagers are aware of trachoma is that many of their ethnic diagnostic categories correspond to the stages of chronic trachoma, specifically lahmIyya (follicular trachoma), shaqqa (post trachomatous degenerative concretions), sha'ra (trichiasis), makfI fI (severe entropion), and nuqta bayda (corneal opacity), as presented in table 4. The villagers consider each of these stages to be a separate condition rather than part of a progressive syndrome.

ETHNOETIOLOGIES

Two of Frake's (1961) questions apply to etiological beliefs of eye disease in Gamileya: "What causes eye disease?" and "Why did eye

disease happen to me (of all people)?" The first is a general level of belief, concerning a hypothetical case of eye disease, and the second is a personal level of belief, when eye disease has occurred in an individual and he or she is trying to make sense of the episode. A third level of etiological belief, that of symbolic causation, was elicited by asking specifically about it.

When asked, "What causes eye disease?," the most common answers reflected the hot/cold humoral theories of the Unani medical system. In ranked order the responses were: heat, sweat, dampness, and cold. One woman explained the pathological process of heat as, "In the summer there is a lot of heat coming from the land. When we work in the hot sun, sweat gets into the eye and mixes with the heat and the dust and stings." Cold in the eye was described as, "It happens after a woman has finished baking bread. After she leaves the oven, her eye gets exposed to air and she catches a draft." In addition, such unpleasant environmental factors as dirty water, dust, smoke, and flies were commonly mentioned as contributing to eye disease and one man in the sample mentioned "microbes" as a cause. When asked specifically about diet, several individuals thought that salty, spicy food could cause eye disease and several school children mentioned carrots as protecting eye health. Newborn babies were thought to acquire eye disease from their mothers' genitals during delivery if the mother was "unclean." This uncleanness was a result of the mother not washing before and after sexual relations, not properly removing her pubic hair, or not being circumcised. In children, the will of God was believed to be a cause of eye disease and in adults, overwork, headache, and grief--especially

excessive weeping--were thought to cause it. Furthermore, each ethnic diagnostic category of eye disease had one or more etiology that was fairly specific to it, as presented in table 4.

A personal level of etiological belief was elicited by asking people with eye complaints what caused their conditions. One seventy-year-old man with cataracts in both eyes described the event that he thought precipitated his visual decline: "I visited my oldest son's grave two months after he died and I wept so much that my sight became weak." A sixty-year-old woman, with corneal opacities and cataracts in her eyes said: "I got this way from carrying heavy loads on my head." These responses answered the question, "Why did this happen to me (of all people)?" They included richer detail that enabled the individual with the condition to ascribe meaning to his or her suffering.

The third category of etiology is a symbolic causation, the evil eye. Although it was not offered as a primary cause of eye disease, when asked, "Can the evil eye cause eye disease?" villagers in 16 (64%) of the households responded that it could. This level of symbolic causation is similar to Evans-Prichard's (1937) description of how the Azande attributed death from a falling granary to be ultimately due to witchcraft. While the proximal cause might be attributed to hot or cold, the distal cause might be an envious neighbor's glance.

LANGUAGE AND SYMBOLS

The language spoken by the villagers is a variation of Egyptian dialect Arabic. The concern with sight in Arabic is evident in the number of terms involving vision. In poetry and love songs the lover calls his or her beloved, "Ya 'uyyūnī," (Oh! My eyes!). The singular,

Ya ʿInī (Oh! My eye!) is an exclamation referring to the self as in "Oh My!" Classical Arabic has three words for "blind" (ʿama, kafīf, darīr), a verb (ʿamīya) which means "to become blind", a verb (ʿiʿwarra) which means "to become one-eyed," and a verb (ʿaʿsha) which means "to be dim-sighted" or "to be night-blind."

Since one of the words for blind, ʿama, is an insult meaning "ignorant," it is rarely used directly. Instead, there are many euphemisms to indicate poor vision, for example "to see weakly" (beshuf daʿif) and "tired eyes" (ʿInīn taʿbanīn). (In Egyptian dialect the word "tired" is often used to mean "sick" or "not well.")

In Arab culture poetry has been the premier art form. Abu-Lughod (1986) remarked on the common usage of the eye as a metaphor for the self and the frequent references to clouded eyes and blindness in Bedouin women's poetry. Poetry is the form of the everyday greetings in Gamileya. For example, when people say "Good morning" they say literally, "Morning of goodness" (sabah al-khayr). The appropriate response to this salutation is, "Morning of light" (sabah an-nūr). The interaction can go further with the first person responding, "Morning of fūll" (sabah al-fūll), which is a beautiful smelling flower. Not infrequently, the older people in the village would playfully greet me with, "Morning of cream" (sabah al-ʿishta) because they admired my pale skin.

This poetry carries over into the villagers' metaphoric descriptions used to discuss their eye disease. For example, when an eye is red it is "like a tomato." A foreign body sensation feels "like sand or hay inside the eye" or "like a needle inside the lid," a blood

vessel growing on an opaque cornea is "like a big branched vessel that covers the pupil and makes shadows" and kūhl, the traditional eye remedy, works because it, "eats the redness out." This use of metaphoric language appears to be common to many native speakers of Arabic. Reizian's (1984) doctoral study of Arab-Americans noted their rich use of poetic metaphors to describe their medical symptoms.

In proverbs visual imagery also predominates. When thick smoke poured from her neighbor's oven, one woman remarked, "Al-dūkhan al-garīb ya 'ama" (The smoke from those nearby may make you blind.) She explained that her proverb meant that a person who is close can do one more harm than someone who is distant.

Non-verbal symbols also illustrate the fascination with the eye in Egyptian culture. The Pharaonic eye of Horus is a classical example of this preoccupation. More commonly, the eye in the center of the hand in the khamṣa wa khamīsa amulets and the evil eye belief itself are ubiquitous. An example that is specific to Gamileya is the one-eyed female 'afrita, Zakiya al-'Ora, who inhabits the fields surrounding the hamlet. Thus, in both the verbal and semiotic realms, the preciousness and perhaps fragility of vision find expression.

SUMMARY

This section has examined the semantic field of eye disease in Gamileya. The elaboration of vocabulary describing vision in classical Arabic and the many ethnic diagnostic categories for eye disease in the hamlet indicate that eye disease and vision have been preoccupations within the culture for centuries. Although few villagers recognized the Arabic biomedical term for trachoma, the number of terms they used to

describe the hallmark signs of the stages of trachoma indicate that it has been a major concern for some time.

Table 4. ETHNOMEDICAL DIAGNOSTIC CATEGORIES, ETIOLOGIES, AND TREATMENTS FOR EYE DISEASE

Ethno-diagnostic Category	Biomedical Category	Symptoms	Ethnoetiology	Treatment Sphere	Treatment
<u>Hamra</u>	Redness, Inflammation	Redness	Heat	Home remedies	Eyedrops or compress of strong tea (sometimes with molasses added) Tomato - one thick slice applied to the eyes as a compress "gets the red out"
<u>Dam'ah</u>	Tearing	Tearing	Smoke, sweat	Home remedies Substances purchased from the herbalist Traditional healer (for children)	Onion - mashed as a compress or drops of juice in the eye <u>Shebba</u> (alum) mashed with onion and applied as a compress or - dissolved in water and used as an eye bath - ground and applied to the eyes as a powder Thread through the ear
<u>Wakhada hawa</u>	None	Redness	Cold in the eye ("It happens after a woman has finished baking bread. After she leaves the oven, her eye gets exposed to air and she catches a draft.")	Home remedy	"Take a spoonful of breast milk from a dark-skinned woman and rub it onto a special stone from Mecca (called <u>wada'a</u>) and put one drop into the sick eye every night after sunset until the eye gets better."
<u>'Ayn warma</u> or <u>Il tihab</u> <u>al-gifn</u>	Lid edema	Eye is swollen shut (happens most often in children)	Heat, dirty water, the will of God If a newborn has it, it might be from "bad hygiene of the mother" (i.e. not washing after sexual intercourse)	Traditional healer (for children) Biomedical physician (adults, especially males)	The <u>Hallaq Sahha</u> (health barber) makes three incisions on the temple to "get the bad blood out," then he rubs powdered kohl (galena) into the wounds and rubs the blood and kohl into the eyes.

Ethno-diagnostic Category	Biomedical Category	Symptoms	Ethnoetiology	Treatment Sphere	Treatment
<u>Ramad</u>	Conjunctivitis	Redness, swelling, itching, burning, secretion	Heat, smoke, dust, sweat, flies, dirty water "In the summer there is a lot of heat coming from the land. When we work in the hot sun, sweat gets into the eye and mixes with the heat and the dust and stings. This is the beginning of <u>ramad</u> ."	Home remedies from the herbalist or the pharmacist	<p>Biomedical: ointment and drops Donkey feces - a compress of donkey feces "heated until glowing from the fire" or "still warm from the intestines of the donkey." It is especially effective if the donkey is black and its feces are put into a white cloth.</p> <p>Compress of <u>shih</u> (wormwood) mixed with mashed onion and <u>shebba</u> (alum)</p> <p><u>Kihl</u> (galena) ground to a powder and rubbed on inner lower lid with index finger; mixed with one or more of the following (also ground to a fine powder):</p> <ul style="list-style-type: none"> - 'lrg ed-dahab (long pepper) - <u>justifib</u> (nutmeg) - <u>mehiab</u> (plant seeds) - <u>mirr</u> (myrrh) - <u>sabr</u> (aloe vera resin) <p>"<u>Kihl</u> eats out the redness and makes the eyes tear, which washes out the burning that was caused by the heat."</p>

Ethno-diagnostic Category	Biomedical Category	Symptoms	Ethnoetiology	Treatment Sphere	Treatment
<u>Lahmīyya</u>	Follicular trachoma	Small bumps or scars on the underside of the upper eyelid	Heat, smoke, dust, sweat, dirty water, flies, dirt, urine in the eye (in children)	Traditional healer (for women and children) Biomedical physician (adults, especially males)	Red Tūṭya (hematite) or a piece of stone from Mecca, ground on white clay and applied by a specialist to the underside of the upper eyelid Blue Tūṭya (copper sulfate) - rarely used Curettagē - the barber everts the upper eyelid and scrapes the bumps with his straight-edged razor Biomedical physicians evert the upper eyelid and squeeze the follicles (bumps); they do curettagē as well
<u>Shaqqa</u> (<u>mashquqa</u>)	Posttrachomatitis degenerative concretions (granular deposits), or Corneal abrasion, or Conjunctivitis	"Pimples under the eyelid with a feeling of sand that rubs, as if the eyelid has a scratch from inside." Red, excessive tears (Some people describe the problem as being under the upper lid and some consider it to be a problem of the sclera.)	Exposure to draft or open air	Traditional healer Biomedical physician	Same treatment as for <u>Lahmīyya</u> : - <u>Tūṭya</u> - Curettagē by the <u>Hallaq</u> <u>Sahha</u> (health barber) - Treatment by a biomedical physician
<u>Tarfa</u> (<u>matrifa</u>)	Corneal abrasion	Redness, pain, burning, and feeling that a piece of dust or hay is inside the eye	Injury - "When something from the outside enters the eyes and scratches them, such as dust or hay"	Home remedy	Breast milk from a dark-skinned woman mixed with a "dash of salt and rubbed on a sea shell called <u>maharī</u> until it is thick and then dropped into the eyes"

Ethno-diagnostic Category	Biomedical Category	Symptoms	Ethnoetiology	Treatment Sphere	Treatment
<u>Sha'ra</u>	Trichiasis (not severe)	A few eyelashes that turn inward, causing pain and excessive tearing	This is believed to be contagious. Even mentioning the name of this condition can cause it to occur. Also, contagion can occur from sleeping on a pillow of someone who had <u>sha'ra</u> .	Traditional healer Biomedical physician	The <u>Haliq Sahnha</u> plucks the lashes out The biomedical physician surgically takes a horizontal wedge out of the outside of the upper lid to pull the lashes up
<u>Makfi fi</u>	Severe entropion and trichiasis	When the upper lid turns completely inside toward the eye	The will of God Washing with dirty water	Traditional healer Biomedical physician	Same as <u>sha'ra</u>
<u>Suda'</u>	None	This is a "headache that can cause eye disease because it is reflected in the eye and makes the eye red and not clear"	Carrying heavy loads on the head in hot weather (women are more prone to this illness)	Home remedies Traditional healer	Sour milk is made into a compress with minced onions and is wrapped on top of the head in a scarf to "take the heat out" Lemon, water, and sugar (orally) A kerchief may be tied around the head and tightened with a stick The <u>Haliq Sahnha</u> injects the person with intravenous novaingin (an analgesic) Religious healers (<u>shalkh/shalkha</u>) pray and write verses of the Qur'an on the forehead of the patient
<u>Nugta bayda</u>	Corneal opacity	"A white patch over the pupil of the eye"	Untreated <u>tarfa</u> (when eye is red, swollen, tearing, and painful)	Home remedy	Eye drops of lemon, water, and sugar

Ethno-diagnostic Category	Biomedical Category	Symptoms	Ethnoetiology	Treatment Sphere	Treatment
<u>Zafar</u>	Pterygium	"A small red line on the eyeball that comes from the corner of the eye to the beginning of the pupil and ends with a small white piece or dot like a pinhead"	The will of God Walking on the hot ground without shoes Untreated <u>tarfa</u> Rubbing the eye "From the blood itself"	Biomedical physician	Surgery by a biomedical physician to remove the <u>zafar</u>
<u>Mayya bayda</u>	Cataract	This literally means "white water" - "like a small cloud over the eye that causes blurred vision"	Grief (especially too much crying), old age, overwork, the will of God	No treatment sought	No traditional or biomedical therapy sought

CHAPTER 6

HIERARCHY OF RESORT

Ramanucci-Ross defined hierarchy of resort as sets of alternatives within competing healing systems, "where sequences of one, or usually more alternatives may be resorted to as the illness passes from one phase to another when cure is not forthcoming" (1969:205). Several authors have suggested a number of hypotheses to explain the therapeutic choices made by the individual patient. The "explanatory model" suggested by Kleinman, Eisenberg and Good (1978) assumes that patients choose therapy and evaluate its efficacy based on their beliefs about the causes and treatment of illness. Young argued that the seriousness or "gravity" (1980:113) of an illness may influence the choice of therapy. Colson suggested that the educational level and "innovation" of the patient may determine the treatments that he or she will choose (1971:227-8). All of these approaches to the study of use of therapy are necessary and important in order to understand the meaning of the illness episode for the patient and his or her family. However, the findings of the present study indicate that in order to understand patients' choices among available therapies, status and power relations within the family and between the patients and practitioners must also be considered.

Frankenberg (1980) has called for anthropologists to pay more attention to the class divisions in societies in which there are competing medical systems. Similarly, Morsy (1981; 1980) argued that status differences within the family, structural principles related to village social organization, and asymmetrical power relations between

rural peasants and urban elite need to be included in the analysis of public health problems in the Middle East. She stated:

In short, the limitation of studies of competing medical systems in the Middle East lies, not in their concern with indigenous medical beliefs, as such, but in their emphasis on such beliefs to the neglect of the political-economic context of health care.

The results of this study substantiate Morsy's argument. Access to and choice of a practitioner for treatment of eye disease was influenced more by age and gender within the family and by class differences between patients and their biomedical physicians than by the ethnomedical beliefs of the patients.

This chapter first presents the health resources for the treatment of eye disease in Gamileya and the use of therapy by the 25 households. Next, it analyzes access to therapy based on the gender and age of the patient. Finally, alternate hypotheses to explain the use of therapy are addressed.

LEVELS OF HEALTH RESOURCES AVAILABLE IN THE COMMUNITY

As mentioned in the ethnography (chapter 3), therapy is available in three general spheres in the hamlet: within the family, from the traditional healers, and from the biomedical physicians. For most conditions, especially non-serious eye ailments, the first stage for therapy of an eye disease takes place within the family. When cure does not result, or if the problem is grave, the next step is generally to consult a practitioner, either a traditional healer or a biomedical physician. An important aspect in the decision of when to consult a practitioner and whom to consult is the gender and age of the patient.

n rural Egypt status increases with age and each age cohort of males as greater status than females. The status of the patient, rather than the characteristics of the illness, have the greatest impact on the access to practitioners for treatment.

The techniques and substances of biomedicine, such as injections and antibiotics, are used within all three spheres. The majority of the fellahIn do not hold biomedical beliefs about the cause of eye disease. Rather these biomedical modalities are prized as status objects. This status value is an important influence on the indigenous practitioners incorporation aspects of biomedicine into their practices.

TREATMENT MANAGED WITHIN THE FAMILY

The family is responsible for the recognition and classification of an eye ailment and for deciding on the appropriate treatment (see table 4). These treatments include home remedies, medicaments purchased from the traditional herbalist, and drugs purchased from the local pharmacy or the one-room hamlet stores. The home remedies include drops of strong tea, drops or drink of lemon, water, and sugar, drops of breast milk, or eye compresses of onion, tomato, or donkey dung.

The six 'attars (herbalists) at the weekly open market sell many of the medicaments that the fellahIn use for the home treatment of eye disease. The herbalists are extremely busy, with never fewer than ten women surrounding them all shouting at once for what they wish to buy, and thus do not give much advice about how to use the substances. However, the knowledge for the use of each substance is passed down through the family or learned from neighbors, so there is no need for the herbalist to give instructions. The most popular remedy that the

villagers buy from the herbalists is kūhl (galena) that they grind with the following substances: mūrr (myrrh), 'irg ed-dahab (long pepper), jouztitīb (nutmeg), mehlab (Prunus mahaleb), and sabr (aloe resin). These substances are stored in rolled cones of newspaper and are applied to the conjunctiva lining the lower lid with the index finger, wet with saliva and dipped into the ground substance. Women, female children, and male babies are the most frequent users of these plant and mineral medicaments. Women in 18 (72%) of the households interviewed used kūhl frequently for red, itchy eyes.

In Egypt many drugs can be bought without a physician's prescription at the ubiquitous pharmacies and the small hamlet stores. The pharmacy in Sidi Isma'il consists of two rooms with boxes and bottles of medicine and tins of infant formula stacked haphazardly in a sort of ordered chaos. Fellah In crowd inside, all speaking at once to describe their symptoms--most commonly red, itchy eyes--to the pharmacist or one of his assistants. The pharmacist decides on the appropriate medication and makes pencil lines on the medicine boxes to indicate how many times per day the medicine should be taken, then wraps the medicine in newspaper. The hamlet stores stock up on eye medicines during the summer, when infectious eye diseases are at their height.

In the sample of households interviewed, 19 (76%) of the families purchased drugs for eye disease from the pharmacy and 15 (60%) bought drugs from both the pharmacy and the hamlet stores. Not all of the eye medicines purchased are effective against trachoma or other eye infections. The most common type of ointment was tetracycline and the most common drops were sulfa and chloramphenicol, which are effective

for treating trachoma and other bacterial infections. The store owners sell parenteral penicillin, meant for intravenous or intramuscular use, mixed with drinking water to be used as eye drops. This practice is effective against many bacterial infections. However, penicillin solution does not treat trachoma, it may be irritating to the conjunctiva of the eye, and it may sensitize susceptible individuals to penicillin allergy. Two other eye drugs that the villagers bought contain antihistamines and would not effectively treat the infections that cause most of their eye conditions. One final medicine is typical of the "everything but the kitchen sink" type medicines that are so common in the Third World. It contains several antibiotics and cortisone, which may make certain eye infections worse.

Like people everywhere, the villagers save left-over medicine to use again. A request by the researcher to review medicines available in the homes revealed many bottles and tubes, carefully put away for the next time they are needed. Often the labels were smudged but, even so, most of the people are illiterate and cannot read them. Therefore, they may frequently use medicine that is out of date or use an adult strength medicine on a child.

Eye disease managed within the family includes a well-developed distinction between prevention and treatment. Table 5 lists the preventive and curative treatments for eye disease used by people in the 25 households interviewed. In addition to this list, other steps are taken to prevent eye disease that is specific to the believed cause. As mentioned, the evil eye is believed to cause eye disease. To counteract this specific threat amulets are worn, children are dressed in old torn clothes and intentionally kept dirty.

Thus, the family defines the eye disease and judges its severity. Some remedies, herbal substances, and biomedical drugs are used within the family for both prevention and treatment. If the condition persists, or if it is judged to be severe from the outset, the next step is to consult a practitioner, either a traditional healer or a biomedical physician.

TRADITIONAL HEALERS

As described in the ethnography section, the system of traditional medicine in rural Egypt is quite sophisticated, with practitioners for every type of problem. This discussion of traditional healers will focus only on therapies used for eye disease.

Traditional Midwife

Although she performs no curative therapy, the traditional midwife performs two preventive treatments for the newborns that she delivers. After cutting the cord she rubs some of the cord blood in the baby's eyes and mouth. Then, on the third day of life she "slices the baby's eyes open with a feather taken from the wing of a goose or pigeon to insure that the baby's eyes will be big and beautiful." This feather should have some blood left on it from the bird and is usually dipped in onion juice. Then the midwife holds the baby's lids apart and draws the quill end of the feather between them.

The midwife does not put silver nitrate drops in the eyes of the newborns. The practice of putting silver nitrate drops in newborns' eyes is a biomedical therapy used in many countries to prevent blindness from gonococcal infections that might be acquired from the mother during the infant's birth. Since the prevalence of gonococcal infection in

this population is probably quite low this omission may be of little consequence. However, infants whose mothers are infected may be exposed to preventable blindness.

Health Barber

The health barber performs several types of eye surgery with his straightedge razor, plucks out inturned eyelashes that rub on the cornea due to trichiasis, and prescribes and administers intravenous medications for eye disease.

The most common surgery performed by the health barber is making three vertical slashes on the temples for patients whose eyelids are swollen shut. The traditional explanation for this procedure is "to let the bad blood out," thereby decreasing the swelling. After making the incisions he rubs powdered kūhl into the wounds and then takes the blood that was mixed with the kūhl and rubs it into the affected eyes. Since evidence of this therapy is clearly visible, it was noted during the ophthalmological examinations whether each person had temple scars. Of the 375 people in the 25-household sample, 293 were examined and 61 (21%) had temple scars indicating that this procedure was performed on them when they were children.

A more invasive technique, learned by the health barber while assisting a biomedical physician, is curettage of the inside of the upper lid. This operation is done to scrape away the follicles of trachoma infection that the villagers call lahīmyya. Five individuals in the sample had undergone this procedure; all stated that they were helped by the procedure.

The health barber also treats the inverted lashes that are the

long-term consequences of trachoma infection. One technique that was formerly used was to cut a horizontal wedge of the outside skin of the upper lid to pull the inverted lashes outward. The blind beggar who sat outside the weekly open market had had this surgery when he was a youth. However, the health barber said that he no longer performs this operation, since it is now done in the hospitals. Sometimes even after this surgery has been done the lashes still rub against the cornea. If this is the case the health barber plucks the lashes out. The ophthalmologist noted during the eye exams that several hamlet residents employed this therapy; however, none of them were in the sample interviewed. In addition to epilation of lashes the health barber has developed a new technique of cauterizing the hair root with a red hot wire. Before doing this, he injects the person's lid with a local anesthetic, which he learned to do while observing a biomedical physician.

In addition to surgery, the health barber treats some conditions with injections. One condition, headache, is thought to be a cause of eye disease because it is "reflected in the eye and makes the eye red and not clear." To treat headache the barber prescribes and administers intravenous Novalgin,⁸ an analgesic. For other conditions, such as red swollen eye, he gives intramuscular penicillin. One individual in the sample had received intramuscular penicillin from the health barber for the treatment of red swollen eyes. This is another example of the high valuation of biomedical techniques and medicines.

Religious Healers

To treat the headaches that are believed to cause eye disease, the shaikh/shaikha write verses of the Qur'an on pieces of paper, called

higab, that are worn by women under their headscarves. Prayer on the eyes of a client while writing verses from the Qur'an in pencil on the afflicted person's forehead is believed to be good for both headache and other types of eye disease. Villagers from five households in the sample had visited a shaikh or shaikha for eye disease.

Tutya Specialists

The tūtya specialists treat two traditional eye disease categories: lahīmyya and shaqa, which correspond to trachoma as understood by biomedicine; thus, tūtya is an indigenous therapy that is specific for trachoma. The specialists prepare the tūtya by grinding tūtya hamra (red tūtya) or tūtya zaraqqa (blue tūtya) on a shard of either red or white pottery. The treatment is applied by everting the upper lid and rubbing the powder on the conjunctiva. Patients report that this treatment stings and itches a great deal but that it works quite well. Tūtya hamra, which is ferric oxide or hematite, is by far the most commonly used. Fifteen (60%) of the sample households used tūtya hamra for the above conditions. Use of tūtya zaraqqa, which is copper sulfate, for eye treatment was reported by only one household that also uses tūtya hamra.

Thread Through the Ear

The woman practitioner who passed a thread through the ear for eye disease has no traditional title. It is no surprise that she also specializes in piercing the ears of baby girls for earrings. The technique, which is based on the principle of counter-irritation, is performed for excessive tearing by passing a plain sewing needle and thread through the cartilage at the top of the ear. The thread is left

in for three days, by which time pus has begun to ooze from the hole. The woman practitioner told me that this technique pulls all of the tears from the eye. The villagers use two words, mayya (water) and dam'a (tears) to mean both tears and purulent discharge from the eye. In this case they are obviously equating the pus from the ears with pus in the eye, even though they are referring to the liquid as tears. In the 25 households seven children had had this surgery and in the hamlet there are many adults who had noticeable notched scars in the top of their ears from this procedure.

BIOMEDICAL PHYSICIANS

Although officially there is free socialized medical care available, there are obstacles to its access. An example from field notes illustrates the barriers to access to medical care for eye disease from the government system:

We sent one man who was blind in one eye and had what seemed to be a corneal abrasion in the sighted eye to the government hospital (20 km. away) in the University car for two days in a row. The first day he was told to come back the next day because it was too late to be seen. It was 2 PM. The second day he was tested for schistosomiasis in his stool and urine and sent home with a lab slip recording the results that he indeed had schistosomiasis. He brought this to us, thinking that it was a prescription for eye medicine, because he cannot read. In desperation we asked one of our Egyptian colleagues from Alexandria to treat the man (although we were supposed to have people treated through the local system) because our ophthalmologist had not arrived yet from the U.S.

Due to such barriers, the majority of the villagers in our sample sought care from private physicians rather than government physicians for treatment of eye disease.

Sixteen villagers in 12 (48%) of the 25-sample households had at least one family member who had visited a biomedical physician for eye

disease. Six made visits for non-surgical treatment for red swollen eyes, eye pain, and headache. Two needed treatment because of accidents: one had a fishhook and the other a piece of wood in the eye. Eight received surgical treatment: four for lahInyya, one person was operated on twice for zafar (pterygium), one for sha'ra, and two did not know what they had been operated on for. Fourteen (88%) of these patients visited a private physician. The private physician from whom most of the villagers sought treatment practices in the nearest city. He speaks to his fellahIn patients using the ethnic diagnostic terms with which they are familiar. Because of his sensitivity, the villagers have great trust in him.

COST OF THERAPY: TRADITIONAL VS. BIOMEDICAL

The cost of therapy varied greatly. The traditional healers average charge was under 1 L.E. for their therapy (range 0 to 3 L.E.). Treatment by the government doctor cost 5 piasters. Treatment by the private physicians averaged 8.6 L.E. for medical treatment (range 1.5 to 20 L.E.) and 40 L.E. for surgery (range 15 to 60 L.E.). The fact that the fellahIn seek private biomedical therapy, considering its high cost in relation to their income, indicates how highly it is valued.

WHO RECEIVED THERAPY

Gender

As mentioned in the methodology section, by age 30 nearly twice as many women in Gamileya have trichiasis/entropion from chronic trachoma than men. Despite data that show that more women suffer the potentially blinding sequelae of trachoma, more males than females

received therapy from a practitioner.

From the sample of 375 individuals in the 25 households (186 males and 189 females), 89 household members (59 males and 30 females) visited a practitioner for eye disease. Of the 59 males, 51 visited a traditional practitioner and eight visited a biomedical practitioner. Of the 30 females, 25 visited a traditional practitioner and five visited a biomedical practitioner. (see table 6).

Thus, 32% of the males and 16% of the females visited a practitioner. These data suggest that the status associated with male gender allows men greater access to therapy. Further evidence of this status hypothesis is that the five women who visited a biomedical physician were mothers of sons or grandmothers. As discussed in the ethnography section, women gain status as they give birth to sons and as they age. Even among the women who had access to biomedical therapy, their age and male children may have granted them the status that influenced their access.

An example from field notes will support the hypothesis that that women have less access to therapy than men. Mechanic (1962) described the sick role that people learn in all cultures. We learn how to act when we are sick to elicit care from our families. In Gamileya women and men exhibit different sick role behavior. For most common complaints, such as headache, sore or itchy eyes, or abdominal distress, the women keep working despite discomfort. They would never lie down in the middle of the day for simple fatigue or minor ailments. Even during the last part of pregnancy, they lift heavy water containers and work hard. Thus, for non-severe illnesses they are quite stoic. However, when the pain becomes severe enough, the women cry, refuse to move, and

act like they are dying:

The other woman in the household began to pace around the sick woman, saying, "Oh sister, oh daughter, one thousand salaams, oh sister." Other kinswomen from nearby houses came and joined in the chorus, begging God to spare their sister. Soon the men were alerted to the woman's problem and returned home to find five women wailing like professional mourners around a woman who was rocking back and forth and crying through clenched teeth. They hastened to call one of their relatives or neighbors who owned a car to come and take the woman to a doctor.

Men who are sick did not exhibit this type of behavior. They appear to have access to medical care without needing to show anyone how sick they are. The women seem to need to convince the men that they are dangerously ill before they are taken to the doctor.

Age

As mentioned in the methodology section, children have the highest prevalence of active inflammatory trachoma. The sample of 375 individuals contained 222 children (ages 0 to 18) and 153 adults, of which 91 individuals received therapy. (Two individuals were eliminated from the gender analysis because their gender was not recorded.)

More children than adults received therapy. Of the 91 patients who visited a practitioner, 75 were children and 16 were adults. However, children's lower status influenced the type of practitioner that they visited; children were much more likely to visit a lower status traditional practitioner and adults were more likely to visit a higher status biomedical practitioner. Of the 75 children who received therapy: 72 (96%) visited a traditional and three (4%) visited a biomedical practitioner. Sixteen adults received therapy: three (19%) visited a traditional practitioner and 13 (81%) visited a biomedical

practitioner. Using Fisher's exact test, this difference is significant at the $p < 0.0001$ level. (see table 7).

Although in each age cohort males have greater status than females, females gain status with age and number of sons. By middle age a woman with several sons may have greater status than younger males. Among the patients who sought therapy in the sample, one baby was taken to the lower status government physician and his mother to a higher status private physician for the same complaint: a red swollen eye. His mother, who was forty years of age, had eight living children, four of whom were boys. In this case her age and four sons appear to have given her greater access to high status therapy than her male infant had.

WHO RECEIVED THERAPY: ALTERNATE HYPOTHESES

Rich vs. Poor

The first alternate hypothesis to explain the differences in utilization of biomedicine is that the richer people are simply the ones using biomedicine. To test this hypothesis a socioeconomic scale was constructed that was specific to the lives of the people in the hamlet and each household was assigned a score. There were four households of low, 15 of medium, and 6 of high socioeconomic status (see appendix). This score was crosstabulated with the household use of biomedicine. There was no association between socioeconomic status and use of biomedicine (Kendall's $\tau = 0.12$ $p < 0.53$) Thus, wealth did not predict the use of biomedicine for eye disease in Gamileya.

Explanatory Models

A second alternate hypothesis is that people used biomedical

physicians because they understood and agreed with the biomedical explanatory model. In order to assess this possibility the interview included questions about etiology of eye conditions and blindness. The responses to these questions were coded into categories of "biomedical etiology" and "traditional etiology." Between one (4%) and seven (28%) of the responses to the questions revealed belief in a biomedical etiology. According to this hypothesis, if the people responded to these questions with biomedical etiological explanations for disease then they might be more likely to use biomedicine. This was not at all the case. The responses were crosstabulated with the household use of biomedicine and there was no association between belief in a biomedical etiology and use of biomedicine (Kendall's tau ranged from 0.12 to 0.14 $p < 0.40$ to 0.58).

Educational Level

A third alternate hypothesis, suggested by Colson (1971:228), is that more educated or more "innovative" individuals would be more likely to use biomedicine. As mentioned earlier, the adult literacy rate in Gamileya is 17% and 35% of the girls of school age are in school. Innovation is difficult to measure, however, since only 35% of the school age girls are in school it seemed that those families that sent their girls to school could be considered innovative. The education of the parents and girls was crosstabulated by household use of biomedicine. (The education of the boys was uniform in the 25 households and could not be included in the statistical test.) There was no association between education of parents or girls and use of biomedicine (Kendall's tau ranged from 0.03 to 0.09 $p < 0.68$ to 0.89). Thus, education was not predictive for the use of biomedicine in the

hamlet.

SUMMARY

Young's suggestion that the use of therapy is influenced by the gravity of the disease seems true for non-serious conditions, which are managed within the family using home remedies, medicaments from the herbalist, or drugs from the pharmacy. For more serious eye conditions the use of and access to traditional and biomedical practitioners is significantly influenced by the status associated with age and gender within the family. Class differences account for barriers to access to governmental physicians. Because of poor treatment by the governmental physicians, the villagers overwhelmingly seek biomedical therapy from private practitioners. The expense of this therapy, especially considering the poverty of the peasants, reinforces its high status. This high status of biomedicine in turn solidifies its use by only high status members of the family. Neither wealth, belief, in a biomedical etiology, nor educational level explained the use of biomedical therapy as well as the status associated with increased age or male gender.

Table 5. Responses of the 25 Households to Questions on Substances Used for the Prevention and Treatment of Eye Disease

Substances for Prevention	Freq.	%	Substances for Curative Treatment	Freq.	%
<u>Kūhl</u> (galena)	14	29	<u>Tūtya</u> (hematite)	13	25
<u>Mūrr</u> (<u>Commiphora myrrh</u>)	8	16	<u>Kūhl</u> (galena)	6	12
Nothing	8	16	<u>Mūrr</u> (<u>Commiphora myrrh</u>)	6	12
<u>'Irg ed-Dahab*</u> (<u>Piper retrofractum</u>)			Drops and ointment (biomedical)	5	10
<u>Justitīb*</u> (nutmeg)	7	14	Onion	4	8
<u>Mehlab*</u> (<u>Prunus mahaleb</u>)			Nothing	3	5
<u>Sabr</u> (<u>Aloe vera</u>)	3	6	Donkey dung	3	5
Washing, soap, clean water	2	4	Breast milk	3	5
<u>Tūtya</u> (hematite)	2	4	<u>'Irg ed-Dahab*</u> (<u>Piper retrofractum</u>)		
Lemon and sugar (drink)	2	4	<u>Justitīb*</u> (nutmeg)	2	4
Drops and ointment (biomedical)	1	2	<u>Mehlab*</u> (<u>Prunus mahaleb</u>)		
<u>Shebba</u> (<u>alum</u>)	1	2	Sour milk	2	4
Egg white (eye drops)	1	2	Tea (eye drops)	1	2
			Washing, soap, clean water	1	2
	49	100	Tomato	1	2
			<u>Shebba</u> (<u>alum</u>)	1	2
			Lemon and sugar (eye drops)	1	2
				52	100

* These three substances are almost always ground together and used with kūhl.

TABLE 6

GENDER Visits to a Practitioner for Treatment of Eye Disease

	<u>Therapy</u>	<u>No Therapy</u>
Females	30 (16%)	159
Males	59 (32%)	127

TABLE 7

AGE Visits to Traditional vs. Biomedical Practitioners

	<u>Traditional</u>	<u>Biomedical</u>
Children	72 (96%)	3 (4%)
Adults	3 (19%)	13 (81%)

p > 0.0001

CHAPTER 7

THE SYMBOLIC AND PHYSIOLOGIC EFFICACY OF ETHNO-OPHTHALMOLOGIC THERAPY

Anthropological studies on ethnomedicine often reflect a Cartesian dualism of culture versus biology or symbolic meaning versus pharmacologic action. Ackerknecht (1971) reviewed the pharmacopoeia of several "primitive tribes" and found 25 % to 50 % of the herbs to be objectively active. He referred to these herbs as "rational therapy" but cautioned that one could not assume that the natives understood the rationality of the therapy, since they did not understand the herbs' mechanisms of action. Ackerknecht failed to mention that the exact mechanism of action of many biomedical drugs used presently is not fully understood even by the researchers who study them. Thus, Ackerknecht's assumption that biomedicine is strictly rational, leaving the non-rational world of meaning to the natives, is a faulty dualism.

The opposite perspective, more common in medical anthropology, examines the symbolic meaning of illness and therapy and is exemplified by Turner's (1963) analysis of Lunda medicine and disease. While the study of meaning is absolutely necessary to the understanding of ethnomedicine, ignoring the patient's physical suffering and the possibility of alleviating that suffering idealizes and romanticizes ethnomedicine. With the possible exception of voodoo death, people do not die from symbols. In Gamileya they die from neonatal tetanus, diarrhea, polio, schistosomiasis, and tuberculosis and they become blind from trachoma and cataracts. Their names for these conditions and their etiological explanations give meaning to the experience of the afflicted. But the treatment is both symbolic and pragmatic—they do

not seek therapy only to derive meaning, they seek it because they hope it will work. In this aspect of ethnomedicine--the analysis of efficacy of therapy--biology and culture cannot be divorced. The treatment works both symbolically and pharmacologically, each of which must be examined. Two authors, Moerman (1979) and Etkin (1986), have avoided the biology/culture dualism in looking at ethnomedicine. In analyzing the ethno-ophthalmology in Gamileya I have been guided by their synthetic biocultural approach.

As mentioned in chapter 1, few studies have been conducted that describe ethno-ophthalmologic therapy. Even fewer make any attempt to analyze the potential efficacy or harm of the therapy. Turner's symbolic study looked at the emic qualities that were valued in Lunda medicine. For example, diseases were classified in color terms (white, black, or red) and the therapeutic quality in eye drops was "bitterness" (1963:201). Finseth and Finseth (1975) describe round burn scars on the face as a part of Wogesha eye therapy in Ethiopia. Gwaltney (1970) found that one woman who was blind from onchocerciasis in Oaxaca, Mexico, chewed the leaves of the Siempre viva plant and spat the resulting juice on a cloth to be used as an eye wash. Mitchell's (1985) investigation of barefoot ophthalmologists in Haiti addressed the use of penicillin ointment by people with eye problems as a cure-all. Although penicillin is a biomedical substance, in this case it was incorporated into the ethnomedicine of the people. However, none of these authors discusses the potential biological effects of putting these substances into the eyes.

Two ethno-ophthalmological works included some discussion of the

possible efficacy and/or harm of eye remedies. Du Plessis (1978) analyzed Tonga eye remedies, classifying them into animal, vegetable and mineral and measuring the PH of each substance. The eye drops with an acidic PH of two to three were considered harmful. The author also mentioned that the therapeutic effect of eye drops could be due to "suggestion" or to pharmacologic action, such as the effect of vegetable matter on lysosome production in the tears (1978:97). Kimani and Klauss (1983) described the ethno-ophthalmology of traditional healers in Kenya in the hope that the healers might be incorporated into the primary health care system. As did Du Plessis, they found that some of the eye remedies were potentially efficacious and some potentially harmful. These studies addressed the potential biological outcome of use of traditional remedies, but missed a great deal of the richness of meaning in the ethnomedicine.

EFFICACY

Symbolic

Both Moerman (1979) and Etkin (1986) argued that healing practices are consistent with the logic of the indigenous medical system and must be viewed within the principles of that system. Furthermore, according to Moerman, "The metaphorical structure, the system of meaning, of a healing discipline is decisive in its effectiveness" (1979:60). Levi-Strauss (1963) took this argument to a more inclusive level when he said that success or failure of a healing ritual is secondary to the treatment's bearing witness to and validating the system of shared belief. When the therapies work, it is precisely this belief, through the agency of the placebo effect, to which much of the credit is due.

As I have shown, the ethnomedicine in Gamileya is a syncretic blend of five previous medical systems, each with different healing principles. The villagers explain their eye disease therapy using ideas from one or more of the medical systems, as illustrated by the following examples:

The Pharaonic system's "like to cure like" principle is the basis for the use of a slice of tomato to treat red eyes. The application of a red substance to inflammed eyes symbolically draws the redness away.

Prophetic medicine's emphasis on ritual purity and impurity is the reason that pregnant women are especially careful to wash before and after sexual relations and to remove their pubic hair. If they neglect these aspects of hygiene, according to the hamlet midwife, their babies might be born with diseased eyes.

Baraka, the Sufi healing essence, is intrinsic to the treatment for cold in the eye. A spoonful of milk from a dark-skinned breastfeeding woman is rubbed on a special stone from Mecca, called "wada'a", then instilled into the sick eye every night after sunset until the eye gets better. Since Mecca is the most holy place in Islamic society, the wada'a contains baraka to heal the eye.

I do not mean to ignore the fact that many of the ethnopharmacologic substances have active ingredients that may make them efficacious. But at least part of their efficacy is due to peoples' belief in them. The placebo effect, which has been documented to account for between 30 % to 60 % of the effectiveness of any active medication (Frank 1975), works through physiologic action that is stimulated by faith in the treatment. The villagers believe in these remedies, which makes them work, because they make sense within the complex tapestry of medical principles that make up their ethnomedical

system.

Pharmacological and physiological efficacy

Biomedical scientists consider only randomized double-masked clinical trials as evidence of efficacy of a drug or therapeutic regimen (Lilienfeld 1976). Obviously, the ethnomedical techniques and medicines have not been subjected to this rigorous type of testing. However, many of the ethno-ophthalmological substances have pharmacologically active ingredients that have been described in medical botany and ethnopharmacology texts. The problem with using these texts is that while an herb or mineral substance may have active properties in vitro, this does not mean it will have similar effects in the eye. Therefore, this section is speculative; it examines the potential efficacy of Gamileyan traditional ocular therapy but, given the limitations of the data, no definitive claims can be made.

According to Goodman and Gilman (1975), the effectiveness of a drug depends on pharmacodynamics, the mechanisms of action, and on pharmacokinetics, the drug's absorption, distribution, and biotransformation. The pharmacodynamics of active substances in the traditional eye pharmacopoeia in Gamileya are listed in table 9, under "reported physiological effects," although as mentioned, these suggested effects are not derived from studies in which they were tested in the eye.

The absorption, distribution, and biotransformation of the substances depend on the route of administration, the concentration of the drug, the frequency of the dose, and biological factors specific to

the person taking the drug. These pharmacokinetic factors make it difficult to measure the efficacy of any drug, especially an ethnomedical substance in which there is much variation in how it is prepared and taken. The routes of administration include drops of liquid into the conjunctival sac, compresses applied to the external lids, powders rubbed onto the conjunctival lining of the upper or lower eyelids, and, in the case of the health barber's remedies, parenteral medications. However, the method of administration with each of these routes is not standardized nor is the concentration of the substances. During my observations in Gamileya I found that liquid eye drops sometimes ended up more on people's cheeks than in their eyes and the strength of an eyewash depended somewhat more on the whim of the person mixing it than on a strict recipe. Similarly, the ethno-surgical techniques of the health barber are not standardized and have only been studied anecdotally. Nevertheless, despite these limitations in assessing the potential efficacy of the substances and surgical techniques, some tentative conclusions can be drawn.

As with symbolic efficacy, some of the eye remedies are pharmacologically efficacious within the logic of one of the healing traditions. As described previously, when the villagers in Gamileya have eye drainage that they describe as "excessive tears," they put onion juice in their eyes. The active ingredient in onions, diallyl disulfide, causes eye irritation and lacrimation (Grant 1962:164). Thus, the treatment for overproduction of tears is to create more tears, or as the villagers put it, "to draw out all the tears." With the same logic the villagers put very irritating substances into red, irritated eyes. This counter-irritation is exemplified by the use of powdered

pepper, Piper retrofractum.

Similarly, as mentioned the Unani treatment for an eye that is swollen shut is to make three vertical slashes on the temple to "drain out the bad blood." In cases of cellulitis of the lid this technique may in fact decrease the periorbital edema, allowing the eye to open.

Within the biomedical system the remedies can be effective through astringent, anti-inflammatory, or antimicrobial mechanisms. Astringents are locally acting drugs that decrease the permeability of surface membranes, causing contraction, decreased secretion, and constriction of superficial blood vessels (Goodman and Gilman 1975:951). Two examples of astringents that are used by the fellahin in Gamileya are tea, containing tannic acid, and alum, which is aluminum potassium sulfate. The villagers use these substances for red eyes and for excessive tears; the astringent action of tea and alum could possibly ameliorate these conditions.

The classic signs of inflammation--pain, heat, redness, and swelling--occur in both infectious and allergic eye ailments. Substances that decrease inflammation do not treat any underlying infection, but could decrease the discomfort associated with inflammation. Sabr, that the village women grind together with their kuhl and rub on their lower conjunctiva, is dried Aloe vera resin. Aloe vera is used in many cultures for treatment of burns and wound healing (Morton 1977). A recent biomedical study involving topical application of fresh Aloe vera gel found it to be an effective treatment for adjuvant arthritis (Hanley et al 1982). However, Aloe vera is known to be irritating to mucous membranes (Morton 1977), so it is only possible

to speculate on its ocular effects. The villagers say that sabr stings a great deal and cautioned me that it was important to use a very small amount of it. Their caution, considering how many irritating substances they introduce into their eyes, indicates that the sabr is probably quite irritating to the conjunctiva. Nevertheless, in light of Aloe vera's wide-spread reputation as an antiinflammatory substance, which has been substantiated by at least one biomedical study, it is possible that it works to decrease eye redness, itching, swelling, and burning, as the villagers say that it does.

Mehlab (prunus mahaleb), ground with kūhl and applied to the lower conjunctiva, may also be soothing to inflamed tissues because it is a demulcent. According to Goodman and Gilman (1975), the high molecular weight of demulcents allows them to form aqueous solutions that have the ability to alleviate irritation of mucous membranes by mechanically coating the surface. Demulcents are incorporated into some contact lens solutions for this purpose.

Since most of the ocular irritation in Gamileya is infectious in origin, especially from trachoma and other bacterial infections, an important aspect of efficacy is antimicrobial activity. Several of the eye remedies are reported to be antiseptic, in that they may inhibit bacterial growth. These include tea, onion, shīh (wormwood), and zinc oxide powder. A few of the substances have been reported to have antibacterial activity with the potential of treating infection. Garlic contains an antibacterial substance that has been found to be effective against gram negative bacteria (Majno 1975). Murr or Myrrh, since ancient times highly valued for its wound healing and aromatic qualities, has been found to be specific for gram positive Staphlococcus

aureus (Majno 1975). Copper was also found to inhibit bacterial growth in vitro (Majno 1975). Probably the most widely used and the most effective traditional eye remedy is breast milk (Tomsak 1978). Breast milk has been found to contain a wealth of antimicrobial substances, including the human antibodies secretory IgA, IgM, IgG, other antibacterial factors, such as lysozyme, complement, and lactoferrin, and several viral neutralizing substances (Tomsak 1978). The villagers use breast milk for eye injuries that correspond to the biomedical diagnosis of corneal abrasion. This use potentially offers substantial protection from infection.

Chlamydia trachomatis, the obligate intracellular bacteria that causes trachoma, is unaffected by many commonly used antibiotics, such as penicillin. According to Duke-Elder, "Before the introduction of the sulphonamides in 1938 no specific treatment for trachoma was known and the only expedient was to destroy the diseased tissue...and thus render the disease inactive" (1965:293). This type of therapy, first described in the Hippocratic Corpus, involved everting the upper lid and rubbing or scraping the conjunctival surface. Since the Chlamydia lives and reproduces inside the conjunctival cells that line the inner lids, medical or surgical sloughing of this tissue may also kill the organism (personal communication Thygeson 1986). As described previously, the traditional eye remedy tūtya (hematite or copper sulfate) is applied to the everted upper lid for conditions that correspond to the biomedical condition of trachoma. Similarly, the health barber everts the upper lid and currettes or scrapes the conjunctiva. However, these modalities are probably not efficacious, since biomedical physicians who employed

them in the pre-antibiotic days described the treatment as being prolonged and often ineffective (MacCallan 1931).

IATROGENESIS

Following Illich's (1976) lead, anthropologists have tended to focus on the iatrogenesis of biomedicine. However, the standard medical definition of iatrogenesis, "the creation of additional problems or complications resulting from treatment" (Friel 1974:758) indicates that the concept can be applied to ethnomedical therapy. Indeed, to discuss the potential efficacy without addressing the potential harmful effects romanticizes traditional medicine. In giving serious consideration to the ethno-ophthalmology in Gamileya it is necessary to examine the benefit and the cost.

Iatrogenesis from eye therapy can be both systemic, affecting overall health, and local, causing injury and/or infection to the eye and impairing vision. An example of systemic poisoning is lead absorbed from the powdered kūhl that is made of galena, or lead sulfide ore. Moreover, this poisoning may not only affect those individuals who apply it to their eyes, but also may be excreted in breast milk, affecting suckling infants. A case report from Kuwait describes an exclusively breast fed baby who was brought to the hospital for convulsions (Harfouche and Verhoestrade 1983). The baby's blood lead level (35.2 mcg./dl.) was attributed to his mother's regular use of kūhl, since high lead levels were found in her breast milk.

A systemic untoward effect of the health barber's use of injections for eye therapy is hepatitis B infection. Statistics from the World Health Organization and the Egyptian Ministry of Health indicate that

about half of all Egyptians have contracted the virus, which is spread by the re-use of syringes in medical treatment without sterilization (Horn 1986). Although much of this re-use of syringes and needles is done by physicians and dentists, it is unreasonable to expect that the traditional healers would have better aseptic technique than the biomedical practitioners they imitate. Furthermore, when I observed a health barber administer an injection of antibiotic to a small child, the dose of antibiotic was much too large for the child and the needle was not sterilized at all before the injection.

The drugs that the health barber administers can also be harmful. For example, Novalgin, the analgesic that the health barber gives to patients with headache, has been banned in the United States because it has been found to cause agranulocytosis, a potentially fatal decrease in white blood cells (Silverman, Lee, and Lydecker 1982). Furthermore, the penicillin that the health barber administers quite freely for eye conditions can result in fatal anaphylaxis in cases of allergy. Of course, the biomedical physicians who prescribe these drugs may induce the same iatrogenic effects in their patients.

A final systemic effect of the ethno-surgery of the health barber is tetanus infection. Although vaccination against tetanus is required by law in Egypt, relatively few of the villagers have been vaccinated, thus, post-surgical and neonatal tetanus are still major causes of morbidity and mortality (U.S. Institute of Medicine 1979). Any break in the skin with an unsterile object is sufficient to introduce Clostridium tetani, the causative organism of tetanus. The health barber's eye surgery is potentially such a mechanism of infection.

The two most dangerous side effects of treatment that are localized to the eye are infection and corneal injury. Obviously, the health barber's curettage of the inner aspect of the upper lid with his straight edged razor could cause an eye infection. The application of powdered eye medications is also a potential source of infection because they are applied with a saliva-dampened finger and the powder is shared by family members. An excerpt from field notes describes the application technique:

The woman opened the little vial of black powder, stuck her first two fingers into her mouth to get them wet with saliva, then she put her fingers over the vial one at a time so they became covered with the powder. Then, she used her third finger to pull down her lower lid, exposing the conjunctiva. She then rubbed each finger back and forth over the conjunctiva covering the inner part of the lower lid and sclera. She repeated this two times on each eye (four fingers worth of powder). At the end her eyes were very red, lids all swollen, and blackish-grey powder was all over her lids, under her eyes and around them. Tears from her eyes made rivulets through the powder.

The technique for children presents a danger of both infection and corneal injury, as described in the following excerpt:

The mother held her little girls down, held their lids apart, and rubbed kuhl on their eyes with her finger eight to ten times. To get the powder onto her finger the mother wet her finger with saliva from her own mouth. During the administration she rubbed directly over the cornea of each child, who was wriggling and screaming.

Another potential mechanism for infection is the contamination of the substances themselves. Donkey dung compresses for the eye are the prime example of this type of contamination.

Many of the remedies have the potential of corneal injury. The cornea, sclera, and inner eyelids are covered by several layers of epithelial cells (Duke-Elder 1954). If a superficial wound occurs to these cells covering the cornea, the result is a corneal abrasion.

Although superficial corneal abrasions heal easily without residual visual loss, deeper injuries or corneal abrasions with associated infection can take much longer to heal and may result in impaired vision. An example of a technique that has great potential for corneal injury is the midwife's drawing the quill end of a feather between the lids of newborn babies. In the hamlet there is one two year-old girl who had this procedure done on her third day after birth. She is now blind from central corneal opacities. According to her mother, the girl was born with normal eyes and acquired her blinding opacities within the first month of life. While it is not possible to state with certainty that the midwife's procedure caused the girl's blindness, it is possible that this was the case.

A less obvious cause of corneal injury is the powdered substances that the villagers rub on the upper and lower conjunctiva. Mechanical injury may occur if the particles are not finely ground and slivers of them lodge in the tissues. A more potent source of injury is chemical reactions induced by the metals (lead, iron, copper, and zinc) that the villagers introduce into their eyes (Duke-Elder 1954). Since the purpose of two of these metals (the tūtyas--iron and copper), is to slough the lining of the upper eyelids, it is entirely possible that bits of the powder could become imbedded in the corneal epithelium as well. In some cases these metallic particles may induce tissue necrosis, resulting in areas of corneal opacity (Duke-Elder 1954). This ocular damage would be more likely if there were already existing areas of corneal abrasion.

SUMMARY

Efficacy is not a simple idea and the efficacy of ethno-ophthalmology in Gamileya is made even more complex by the elaborate blend of medical ideas held by the fellahIn. The villagers make sense of their world, as we all do, by viewing phenomena through their belief system. Eye diseases are no different in this case than other aspects of life; they apply the principles that guide their lives to their ocular symptoms. But the fellahIn are empiricists as well. As one man stated, "I used to use tūtya, but I found that chloramphenicol drops give more improvement from redness and discharge." They do not want to merely make sense of pain, swelling, and redness--they want it to go away!

Thus, an analysis of ethnomedicine must take into account both the symbolic and physiologic aspect of the therapy, including the potential harm of the therapy. To examine only a part of this total picture is reductionistic and does not do justice to complexity of fellahIn ethno-ophthalmology.

Table 9. ETHNOPHARMACOLOGY FOR EYE DISEASE *

Arabic Common Name	English Common Name	Botanical or Chemical Name	Description	Method of Preparation and Administration	Use as Described by Egyptian Villagers, Traditional Healers	Reported Physiological Effects
<u>Shay</u>	Tea	<u>Camellia sinensis</u>	Leaves	As eye drops or eye compress	For red eyes	Contains caffeine and tannin Astringent Antimicrobial activity (Duke 1985:93-94)
<u>Tamatim</u>	Tomato	<u>Lycopersicon esculentum</u>	Red sliced vegetable	As eye compress	Red tomato "gets the redness out of the eyes"	Antiseptic (Duke 1985: 285)
<u>Basal</u>	Onion	<u>Allium cepa</u>	White vegetable	Eye drops of onion juice or mashed as a compress	"It draws all the tears out" - used for excessive tearing	Antibacterial (Majno, 1975) Diuretic Bacteriostatic Disinfectant (Boulos 1983: 23)
<u>Thum</u>	Garlic	<u>Allium sativum</u>	White cloves	Mashed as a compress or the juice used as drops	For red eyes	Antibacterial (Majno, 1985)
<u>Shebba</u>	Alum	<u>Potassium aluminum sulfate</u>	Clear white crystals	Ground as eye powder Diluted with water as eye wash Mashed with onion as a compress	For excessive tearing	Astringent
<u>'Asal Iswid</u>	Molasses		Thick brown syrup	Eye drops mixed with tea	For red eyes	

* This table was adapted from one developed by Nations (1982)

Arabic Common Name	English Common Name	Botanical or Chemical Name	Description	Method of Preparation and Administration	Use as Described by Egyptian Villagers Traditional Healers	Reported Physiological Effects
<u>Shih</u>	Wormwood	<u>Artemisia</u> <u>herba-alba</u>	Dried flower buds and stems	Soaked in hot water and prepared as a compress, usually with mashed onion	For red eyes, excessive tearing	Antiseptic - used in traditional remedies for healing wounds and burns (Boulos 1983: 57)
<u>SHIshm</u>		Zinc oxide	White powder	Applied to the lower conjunctiva as a powder with the index finger	For red, painful, itchy eyes and for opacifications of the cornea	Astringent Antiseptic (Goodman & Gilman 1975: 1001)
<u>Baydah</u>	Egg		Hen's egg	<u>Raw</u> white of the egg as an eye drop mixed with powdered alum	For tearing, irritation	None
<u>Braz al-Humar</u>	Donkey dung		Round balls of dung from a black donkey	<u>Hot</u> hard-boiled egg used as a compress	For red, itchy eyes	None
<u>Leban men al-Umm</u>	Breast milk		Human milk from a dark-skinned woman	Heat over a coal until glowing and wrap in a white cloth, then apply to the eyes as a compress May be used directly "still warm from the donkey's intestines" as a compress	For an eye injury, when the eye is scratched Also for cold in the eye	Antimicrobial - contains immunologic factors: secretory IgA, IgM, IgG ₁ , Lysozyme, complement, B and T lymphocytes (Sahni & Chandra 1983)

Arabic Common Name	English Common Name	Botanical or Chemical Name	Description	Method of Preparation and Administration	Use as Described by Egyptian Villagers Traditional Healers	Reported Physiological Effects
<u>Laymun</u>	Lemon	<u>Citrus limon</u>	Juice	Mixed with sugar and water as an eyedrop	To treat a white opacity that covers the pupil	In eye - irritating, acidic
				Mixed with sugar and water as a drink	To treat headache that is believed to cause eye disease	Contains ascorbic acid (Morton 1977: 377)
<u>Kuhl</u>	Galena	Lead sulfide that contains some antimony	Silver-colored rock	Ground to a fine powder, mixed with <u>murr</u> , ' <u>lrg ed-dahab</u> , <u>justilib</u> , <u>mehlab</u> , and/or <u>sabr</u> . Rubbed on the lower conjunctiva with the index finger that has been wet with saliva	For redness, itching, swelling, burning "It eats the redness out of the eye, which washes out the burning that was caused by the heat"	Lead - astringent, irritating (Grant 1962: 301) May cause systemic poisoning (Harfouche & Verhoeshate 1983: 246)
<u>Murr</u>	Myrrh	<u>Commiphora myrrh</u>	Pale brown tears of tree resin	Ground with <u>kuhl</u> and applied as a powder Dissolved in water and sometimes onion juice and used as an eyedrop or an eyewash	For redness, itching, burning Used daily to prevent eye disease in children	Astringent Antiseptic (Morton 1977: 365) Antibacterial against <u>Staphylococcus aureus</u> (Majno, 1975)
<u>'lrg ed-dahab</u>	Long pepper	<u>Piper retrofractum</u>	Dried buds of pepper plant	Ground with <u>kuhl</u> and applied as a powder	For redness, itching, swelling, burning	<u>Piper</u> species are irritating to mucous membranes (Grant 1962: 412) May have local anesthetic action (Duke 1985: 381)

Arabic Common Name	English Common Name	Botanical or Chemical Name	Description	Method of Preparation and Administration	Use as Described by Egyptian Villagers Traditional Healers	Reported Physiological Effects
<u>Justi</u>	Nutmeg	<u>Myristica Fragrans</u>	Large, round, dark brown seeds	Ground with <u>kuhl</u> and applied as a powder	For redness, itching, swelling, burning	Psychotropic when taken orally Bactericidal (Duke 1985: 319)
<u>Mehlab</u>		<u>Prunus mahaleb</u>	Small light brown seeds	Ground with <u>kuhl</u> and applied as a powder	For redness, itching, swelling, burning	<u>Prunus</u> species contain cyanogenic glycosides Demulcent Lubricant (Morton 1977: 376)
<u>Sabr</u>	Aloe	<u>Aloe vera</u>	Dark brown crystalline resin	Ground with <u>kuhl</u> and applied as a powder	For redness, itching, swelling, burning	May inhibit bacterial growth Irritating to mucous membranes Widely used in tradi- tional medicine on burns for inflam- mation and wound healing (Morton 1977: 48-50)
<u>Tutya hamra</u>	Hematite	Ferric oxide	Reddish silver rock	Ground to a fine powder and applied to the inside of the upper eyelid with a finger wet with saliva	For pimples, bumps, scars, and a scratching feeling under the upper lid	Irritation Iron introduced into the ocular tissues causes a destructive condition known as siderosis (Grant 1962: 287-288)
<u>Tutya zarga</u>	Chalcantite	Copper sulfate	Blue crystalline rock	Used as <u>Tutya hamra</u> (above) but much less frequently		Antimicrobial Causes sloughing of the conjunctiva (Duke-Elder, 1965: 293)

CHAPTER 8

BEHAVIOR, BELIEF, AND TRACHOMA

A number of epidemiological studies have analyzed the correlation between environment, behavior, and trachoma in an attempt to identify risk factors in the disease. The variables that have been correlated with trachoma include water supplies (Dawson et al. 1975; Kupka et al. 1968; Keyvan-Larijani et al. 1986; Mathur and Sharma 1970; Marshall 1968), socioeconomic status (Majcuk 1966; Winkler 1960; Ko and Kyaw 1968; Taylor et al. 1958; Werner and Sareen 1977; Sharma et al. 1975; Parthasarathy and Gupta 1962), sanitation and hygiene (Sutter and Ballard 1978; 1983; Jones 1975; National Trachoma and Eye Health Project: Australia 1980; Mathur and Sharma 1970; Srivastava et al. 1981), bathing and face washing (Majcuk 1966; Keyvan-Larijani et al. 1986; Taylor et al. 1985; Gilbert 1983), shared towels, cloths and textiles (Mann 1967; Howells et al. 1969; Gilbert 1983), education (Majcuk 1966; Mathur and Sharma 1970; Srivastava et al. 1981; Parthasarathy and Gupta 1962), attitudes towards and knowledge of trachoma (Portney and Portney 1971; Gilbert 1983), crowding (Majcuk 1966; Gilbert 1983; Assaad et al. 1969); flies (Keyvan-Larijani et al. 1986); latrines (Portney and Hoshiwara 1970); smoke and dust (Parthasarathy and Gupta 1962); and shared eye cosmetics (Gilbert 1983).

These studies are based on a social epidemiological perspective that involved large scale survey methods to address behavioral variables that are global and difficult to measure. In addition, some of the variables, such as "sanitation," are value laden and subjective. Marx concludes that, "relatively few extensive epidemiological studies

adequately or successfully quantify and test the association of behavioral risk factors with trachoma. More often, socioenvironmental variables rather than behavioral variables are measured" (1987:17). The advantage of anthropological methods to study behavior is the combination of direct observation of behavior with structured interviews. The combination of these two methods yields not only a detailed description of the villagers' behavior, but also provides insight into their beliefs and the meaning of their behavior.

This chapter first examines "sanitation" as a cultural concept. Second, the behavioral and interview variables that were crosstabulated with trachoma intensity are described. Third, the major "protective" behavior, specifically face washing with soap, that is associated with low-trachoma intensity is presented along with the beliefs that may encourage and discourage its practice by villagers. Finally, variables from the observations are crosstabulated with those from the interview to determine the difference between what people do and what they say they do, or the difference between the "real" and "ideal" behaviors.

SANITATION

Many epidemiological and biomedical studies on trachoma infection discuss "sanitation," or rather the "lack of sanitation," and its relationship to trachoma. In Gamileya, the first step in measuring it was to define what it meant to me and what it meant to the villagers. As Paul (1958) argued in his seminal article on the "Role of Customs and Belief in Sanitation Programs," each culture has its own idea about what cleanliness means. Dunn (1972), in Malaya, and Weir et al. (1952), in Egypt, both developed sanitary-status scoring instruments which guided

me in this study.

In Purity and Danger, Douglas stated that dirt is relative, that it is essentially disorder (1966:2). She cited the Hindu custom of using cow-dung as a cleansing agent. Those of us who were taught germ theory define contamination as the presence of germs. We cannot see the germs and often cannot smell or taste them, but in order to kill them we put small amounts of horrible tasting chemicals like chlorine into our water. To us, the addition of a chemical to the water makes it clean. It seems that we can compare chlorine and cow-dung in that they are both transforming substances which remove impurities! Obviously, I am not suggesting the use of cow dung to disinfect drinking water, but rather that certain cultural concepts of cleanliness, especially of ritual cleanliness, differ widely among cultures. In his analysis of ritual purity and pollution in India, Khare (1962) rightly pointed out that ritual cleanness may overlap with Western notions of physical cleanliness or it may not. In Gamileya, many times it did not.

In Gamileya, the Muslim concepts of ritual purity and impurity influenced the villagers' ideas about sanitation. Sexual relations and menstrual blood were seen as so polluting that a full bath was necessitated by exposure to these conditions. However, cow, buffalo, and donkey dung was not considered very dirty and human feces were only considered mildly unpleasant.

In defining sanitation for the purposes of this study, there were three aspects on which I focused: water contact, feces contact, and washing. Each of these aspects was broken down into individual behaviors that could potentially influence trachoma transmission. The

following section presents the observational and interview variables that were crosstabulated with trachoma intensity (see Table 10).

OBSERVATIONAL VARIABLES

Water contact variables

As described previously, the canal is the source for wash water and the public tap in a neighboring hamlet for drinking water. The majority of families obtained two ten-gallon plastic jugs of piped water every day from the public tap that they stored in a clay vessel (zir) in the home. The women and girls drew wash water from the canal with a large aluminum pan (halla) an average of seven times per day per family.

Since the elementary bodies of Chlamydia trachomatis can live in standing water (personal communication Dawson 1987) for several hours, reusing of water might be a source of infection. Seventeen (63%) of the households reused a pan of standing water in which more than one family member washed. Those households with a hammām, the stone area with a drain in which people wash and where they can pour water over themselves, might be less likely to reuse standing water. Twelve (44%) of the households had a hammām with a bar of recently used soap on it or near it; seven (26%) had a hammām without any soap on it or near it; and 7 (26%) had no hammām and used standing basins of water for all washing.

As mentioned in the diet section of chapter 3, the water used in food preparation varied among the households. Seven (26%) of the households used only piped water in all food preparation; 15 (56%) used polluted canal water in at least some of their food preparation; in five (19%) households the source of water used in food preparation was not

observed.

Feces contact variables

Latrine: 18 (66%) of the households had a latrine that was functioning and was used as an adult defecation site; eight (30%) of the households had no latrine and the adults used the animal room or the fields as defecation sites; and in one (4%) household there was a latrine but it was used as a storage area for cooking pots rather than for defecation.

Child defecation site: Even in homes that had latrines, the children did not always use them. In 14 (50%) of the households young children (under five years) were observed to defecate inside living areas of the house or near the front door. This is a possible source of trachoma infection because Chlamydia trachomatis has been cultured from the rectal swabs from children with active ocular trachoma.

Cleaning after defecation: The traditional Islamic method of cleaning after defecation using the left hand and water was the method described by the adults. Eighteen children were observed to defecate: Three were cleaned with water in the traditional method; 8 were cleaned with other material, such as clothing or paper; and 7 were not cleaned at all. This may relate to trachoma transmission because the children who had feces remaining on their bodies attracted enormous numbers of flies. None of the adults who cleaned the children after defecation was observed to wash her hands after the cleaning.

Animals: The more animals in the home, the more dung and the more flies. Twenty-three (85%) of the households had large animals (water buffalo, cows, donkeys) and 4 (15%) had fowl only. Of the households that kept large animals, there were an average of three animals each.

Households that had separate entrances for the animals and humans had less manure tracked through the living, eating and sleeping areas. Twelve (44%) of the households had separate entrances and 15 (56%) did not.

The location of the household dung pile greatly influenced the number of flies in or near the house. Four (15%) of the households did not have large animals that produce large amounts of dung and did not have a family dung pile; 15 (56%) of the families stored their dung away from the entrance of the house; and nine (33%) kept their dung right beside the front door of the house.

Many of the families prepared or stored food in the animal room, which provided an opportunity for fecal contamination of food. Eight (30%) of the households had their mud brick ovens in the animal room; 17 (63%) had their mud brick ovens separate from the animal room; 2 (7%) of the households did not have an oven and used their neighbor's oven to bake. Twelve (44%) of the households did food preparation, such as peeling, chopping, and boiling food for the evening meal in the animal room; 15 (56%) did these activities separate from the animal room. Five (19%) of the households stored their food, such as bread, milk products, oil, etc, in a wooden cupboard in the animal room; 22 (81%) of the households stored their food in a separate room.

Washing and wiping variables

Face washing decreases the sticky eye and nasal secretions that attract flies. In addition, it decreases ocular secretions that may be passed from person to person. In nine (33%) of the households one or more children's face was washed with soap by him/her or by the mother;

in five (19%) of the households one or more child's face was washed with water; in four (15%) no children were observed to have their faces washed but the children's faces appeared clean (free of dirt, nasal and eye drainage); and in nine (33%) no children were observed to have their faces washed and their faces appeared dirty and sticky. In those households where the children were not observed to have had their faces washed, I returned early the following morning to observe the children. If the same dirt was in the same places on their faces then the household was scored as not have washed the children's faces.

Adult face washing was somewhat more difficult to observe accurately since the adults may have washed their faces in private. (The observations were specifically focused on the children in terms of face washing). Adults in two (7%) of the households were observed to wash their faces with soap; adults in 11 (41%) of the households were observed to wash with water, usually the ritual ablution before prayer; and in 14 (52%) of the households no adults were observed to wash their faces.

Hand washing of mothers could decrease the spread of ocular secretions. Women in 11 (41%) households rinsed their hands with water at least once during the day; women in 16 (60%) of the households washed their hands with soap and water at least once during the day.

Bathing was not a daily event for most of the hamlet residents, particularly during the winter months when these observations were made. During the full-day observation children in three (11%) of the households were bathed with soap; children in 2 (7%) of the households were bathed with water; and in 22 (81%) of the households no bathing of

children was observed.

Drying the face is a possible risk factor in trachoma transmission due to the sharing of textiles. In 17 households 16 people were observed to dry their faces after washing: six aired dry, one used a clean towel; one used a clean galabīya, one used a woman's black scarf, two used a soiled towel, three used a soiled galabīya, one used a soiled woman's colored cotton headscarf (worn under the black headscarf), and one used woman's cotton bloomer undergarment (soiled). In six households a reused towel was used for guest hand drying after dinner following a ceremonial hand washing with warmed canal water. In the trachoma literature there is frequent mention of "sharing of towels" as a risk factor. However, in Gamileya towels are expensive and are more likely to be used in ceremonial ways because of their value as status objects.

Children with runny noses are more likely to attract flies. In 15 (56%) of the households children either did not have nasal mucous or it was frequently wiped away; in 12 (44%) of the households children had persistent nasal drainage that attracted flies.

Crowding

Crowding allows more opportunity for sharing ocular drainage, especially during sleep. In all of the households each nuclear family shared a bedroom with one bed. When the boys reached puberty they began to sleep with their grandparents. The mean sleeping density in the 27 households was 6.83 people per bed (5.5 children and 1.33 parents) (range four to nine people per bed.)

Flies

Eye seeking flies, which have been reported as Musca sorbens and

Musca domestica, can transmit trachoma infection by mechanically carrying the ocular secretion on their legs and proboscises. In one study, fluorescein dye was placed in the tears of one child in a family and within 30 minutes other family members had fluorescein stain on their eyelids and nares, carried there by the eye-seeking flies (Jones 1975). The flies feed by vomiting a small amount of their previous meal to dampen their proboscises. In a laboratory experiment, Chlamydia trachomatis was isolated from the intestines of flies for up to six hours after ingestion of infected material (Forsey and Drougar 1981). These studies suggest that flies may be a significant mode of trachoma transmission.

In 11 (41%) of the households several flies were observed to feed on the ocular secretions of the children; in 16 (59%) of the households there were flies around but they did not feed on the eye drainage of children.

Eye wiping

Finger-to-eye or clothing-to-eye contact is a potential mechanism for the spread of trachoma. In 10 (37%) of the households people were observed to wipe their eyes with their fingers or clothing; in 17 (63%) of the households no direct eye wiping was observed.

Smoke intensity from the oven during baking was recorded because it was believed by the villagers to be a cause of eye disease. In addition, when the smoke is really irritating people are more likely to rub their eyes. In 10 (37%) of the households the smoke intensity during baking was extremely irritating; in 15 (56%) of the households the oven was well ventilated and the smoke was not bothersome; in two

(7%) of the households there was no oven.

Sanitation

In addition to the above-mentioned variables that relate to sanitation each household received a score for overall sanitation. Nine (33%) of the households had above average sanitation in which all feces and food scraps were removed very carefully at least once per day; 12 (44%) of the households had average sanitation; and 6 (22%) of the households had below-average sanitation in which feces and food scraps were left everywhere and not removed for the whole day.

Child care

This variable measured the caretakers' attentiveness to children's needs, especially with regard to feeding them and protecting them from injury due to accidents. In 18 (67%) of the households children were adequately fed, their lives were not endangered and they were not ignored; in nine (33%) of the households children were obviously hungry and not fed and/or serious accidents nearly occurred (i.e. drowning, trampling by a water buffalo, burning, falling from a second story roof) during the observation day.

INTERVIEW VARIABLES

Knowledge of trachoma

Villagers were asked, "Have you heard of ramad hubaybī (trachoma)?" "What is it?" As described in the ethnosemantics section (chapter 5), villagers in 9 (36%) of the households have heard of ramad hubaybī, but only three were able to describe any of the stages of trachoma as understood by biomedicine.

Perception of eye disease

Also described in the ethnosemantics section (chapter 5), when asked, "Is eye disease a problem in the hamlet?" people in 20 (80%) of the households responded affirmatively. When asked, "Does anyone in your family now have, or has anyone had any eye disease?" in three (12%) of the households members thought they currently had eye disease; in 13 (52%) of the households members thought they had had eye disease in the past; and in 9 (36%) of the households members did not recall having had eye disease.

Use of traditional therapy

As mentioned in the hierarchy of resort section (chapter 6), 15 (60%) of the households have one or more members who visited a traditional healer for treatment of an eye disease. Regarding traditional substances that are put into the eyes, villagers in 18 (72%) of the households use kūhl and villagers in 15 (60%) of the households use tūtya for prevention and treatment of eye disease.

Use of biomedicine

As described in the hierarchy of resort section (chapter 6) 16 individuals in 12 (48%) of the households visited a biomedical physician for treatment of eye disease. In addition, family members in 19 (76%) of the households purchased biomedical drops or ointment from the pharmacy or hamlet store for treatment of eye disease.

Education

Education was assessed separately for boys, girls, and parents. As mentioned, there were 101 children of school age (55 boys and 46 girls). Of these children, 39 (71%) of the boys and 16 (35%) of the girls were

in school. There were 160 adults in the sample, of which 27 (17%) (20 males and 7 females) stated that they were literate.

Socioeconomic status

As mentioned, socioeconomic status was assessed and each household was assigned a score of high, medium, or low. In the 27 households there were 5 (19%) low, 16 (59%) medium, and 6 (22%) high socioeconomic status households.

PROTECTIVE BEHAVIORS

Protective behaviors that are associated with low trachoma intensity can form the basis of an intervention strategy. In order to assess these behaviors the variables were crosstabulated with trachoma intensity of the children using Kendall's tau statistic. Of 386 household members 164 were children, aged one to 11 years, of whom 144 (88%) were examined by the ophthalmologist and assigned a score for trachoma intensity. Trachoma intensity of children was chosen for the analysis because, as mentioned in the methodology section, the children ages one to 11 years had the highest prevalence of active inflammatory trachoma.

The variables significantly associated with low-trachoma intensity were use of a latrine and face washing of children (see table 10). Face washing of children is not associated with latrine usage, so it appears that these two variables are independent (Kendall's tau=0.18 $p < 0.33$).

Having a latrine in the home and washing children's faces with soap both appear to be protective behaviors. Latrines are important for prevention of many diarrheal and parasitic diseases, but their cost in

Gamileya (100 L.E. each) makes them prohibitively expensive for many of the families and for large scale trachoma intervention projects. Face washing with soap is inexpensive and could form the basis of such a strategy. The following section addresses the beliefs that encouraged and discouraged face washing in Gamileya.

BELIEFS THAT ENCOURAGE AND DISCOURAGE FACE WASHING

Two beliefs may have tended to encourage face washing: the ritual ablution before prayer that all Muslims must perform and the belief expressed by a few individuals that washing with soap and water prevents eye disease. Wudu, the ritual washing, must be performed before each of the five daily prayers. However, males did not pray regularly until they were seven years old and females did not pray until they were postmenopausal and widowed or an older co-wife of a polygamous man. Therefore, children, who have the highest prevalence of active trachoma, and women, who have the highest rates of trichiasis and blindness, were not praying and did not regularly perform wudu.

When asked about strategies for the prevention and treatment of eye disease, two (4%) of the responses regarding prevention and one (2%) of those regarding treatment advised the use of clean water, washing, and soap and water. Although face washing as a therapy is not a widely held belief, the fact that some of the people mentioned it is important in planning intervention strategies based on washing. Rather than introducing an entirely new behavior it would be possible to build on the practice of an existing behavior.

The Egyptian government subsidizes soap, which is sold in the government store in Sidi Isma'il for a few piasters. However, sometimes

there are shortages of the soap. Nevertheless during shortages it is still possible to purchase soap at the sūq, at a slightly higher price.

Two traditional beliefs may tend to discourage face washing. As mentioned, the evil eye is the belief that the glance of an envious person can cause illness or death; prevention involves hiding the beauty of children or possessions. In 15 (60%) of the households interviewed, respondents agreed with the statement, "People intentionally keep their children dirty in order to prevent the evil eye."

According to Unani humoral pathology, cold can be a source of disease. Villagers in 11 (44%) of the households interviewed felt that it was dangerous to wash when the weather was cold. In northern Egypt the winter months are quite cold and damp. Avoiding washing during these months could contribute to trachoma. However, as mentioned trachoma and other eye infections are at the highest levels in summer when the weather is hot, and flies are most numerous.

In order to assess the influence of wealth or education on face washing of children, these variables were also crosstabulated. Face washing of children was not associated with socioeconomic status (Kendall's tau=.20 $p < 0.23$) or education of parents (Kendall's tau=0.27 $p < 0.14$). However, there was a non-significant trend in association between face washing of children and education of girls (Kendall's tau=0.35 $p < 0.08$). It was not possible to crosstabulate face washing with education of boys, because of the completely uniform distribution of boys' education.

IDEAL VS. REAL BEHAVIORS

The unique aspect to this study, compared with previous epidemiological studies that have analyzed risk factors for trachoma, is direct observation of behavior. Most of the epidemiological investigations used structured questionnaires administered to large numbers of individuals. While large sample sizes greatly increase statistical power, with sensitive or personal issues a structured interview format may introduce a bias of its own, especially when the interviewer is a complete stranger to the interviewee. Lipson and Meleis discuss the problem of reliability of answers to sensitive questions: "Response bias must be considered in any study, but it is more pronounced among Middle Easterners and other immigrant groups among which saving face is particularly important" (1986:9-10). Furthermore, a study conducted in Bangladesh, which compared observed behavior with 24 hour recall in response to questionnaires on hygienic practices such as hand washing and feces disposal, found little correlation between observations and interviews (Stanton et al. 1987).

In the present study the interview, administered to the households following the structured observations, contained questions on washing. Face washing of children and frequency of prayer, because of the ritual ablution preceding prayer, were asked about specifically. These responses were then crosstabulated with the same variables recorded during the day of observation. There was between a 28% and 61% discrepancy between observed behavior and responses to the interview (see Table 11). Anthropologists are quite familiar with this difference between what people do and what they say they do, the difference between

real and ideal behavior.

SUMMARY

It is clear that the culturally influenced behaviors of the people of Gamileya influenced the intensity of trachoma in children. Notions of cleanliness in the hamlet emphasize ritual purity rather than decreasing microbial contamination. Therefore, many aspects of their daily lives expose Gamileyans to trachoma transmission.

The two "protective" behaviors that emerged from the statistical analysis are latrine ownership and face washing of children. Of these two variables, face washing of children is inexpensive and simple enough to be used in large scale-trachoma intervention projects.

Anthropological methods enhance the study of infectious diseases not only by analyzing behavioral risk factors, but also looking at the meaning of each behavior and the beliefs that tend to encourage or discourage the behavior. Furthermore, by examining the differences between observed and stated behavior, anthropological methods provide the most complete picture of what the people are actually doing.

Table 10

OBSERVATIONAL VARIABLES

Water contact variables

Frequency of obtaining piped water
Frequency of obtaining canal water
Reusing wash water
Presence and use of a hammām
Water used in food preparation (piped or canal)

Feces contact variables

Latrine
Child defecation site
Method of cleaning children after defecation
Animals in house
Separate entrance for animals
Location of family dung pile
Location of oven
Location of food preparation
Location of food storage
Fecal contamination of food or drinking water

Washing and wiping variables

Face washing of children
Face washing of adults
Hand washing of mothers
Bathing of children
Drying of face--textiles used
Wiping of children's runny noses

Crowding

Flies

Finger-to-eye and clothing-to-eye contact

Sanitation

Attentiveness to children's needs

INTERVIEW VARIABLES

Perception of eye disease

Knowledge of trachoma

Use of traditional therapy

Use of biomedical therapy

Socioeconomic status

Education of parents, girls, boys

Table 11

PROTECTIVE BEHAVIORS: Variables that are associated with inactive or mild trachoma intensity in children (0 to 11). Of 164 children in 27 households 144 (88%) were examined and assigned a trachoma intensity score.

VARIABLE

Face washing of children (none; water only; soap)	Kendall's tau=0.25 p<0.0003
Latrine (present and used; none or not used)	Kendall's tau=0.24 p<0.0014

Table 12

REAL VS. IDEAL Discrepancies between observed and stated behavior.

Face washing of children	7 (28%)
Prayer (asked because of ritual ablution)	14 (61%)

These percentages represent the difference between what people were observed to do and what they said they did.

CHAPTER 7

CONCLUSION

The anthropological investigation of infectious disease is still a relatively new area of inquiry. In this work I have attempted to build a template for such an inquiry that can be used to look at any infectious and possibly many non-infectious conditions. I have drawn from the four major subfields of anthropology--sociocultural, physical, linguistic, and archeological--to look at blinding trachoma in rural Egypt. By incorporating the time-honored research method of participant observation into a structured epidemiological research design, I have tried to gain the explanatory power of quantitative statistics without losing track of the peoples' real behavior. Indeed, as I have shown and as anthropologists have always known, in brief impersonal interviews people may tell you what they think you want to hear. Large but superficial studies may gain statistical power at the cost of quantifying inaccuracies. Of course, the limitation of observational studies is that people may act differently on the day of observation than they do usually. When both observation and interviewing are carried out by a researcher who has lived for some time with the people and gained their trust the most accurate picture of the behavior and beliefs of the people is obtained. As this work indicates, anthropological methods in an epidemiological research design have the potential of improving the validity of the data.

The theme of this work has been the interrelation of biology and culture. As the ethnography chapter made clear the fellah are so much more than faceless peasants with eye disease. They get married, have

children, fight, laugh, and love. They suffer from many other diseases, which, when acute, may be more compelling than trachoma. Nevertheless, chronic and comparatively subtle, trachoma robs people of the vision necessary for productivity and is highest among the rural poor in such hamlets as Gamileya.

Endemic trachoma has enormously affected the culture. Historically, trachoma and other ophthalmias have influenced the introduction of literate medical systems into Egypt. Linguistically, the fragility of sight has resulted in the predominance of visual imagery in Arabic language, poetry, and proverbs. Although the villagers could not identify the Arabic biomedical term for trachoma and often denied having eye disease, they commonly used 14 ethnic diagnostic terms for ocular problems, five of which relate specifically to the stages of trachoma. This proliferation of metaphor and description for vision and its loss indicates that it is a deep concern in the culture.

As described in the hierarchy of resort section, power relations within the family and class differences between the fellahIn and their biomedical practitioners profoundly influence access to therapy. Despite the ophthalmologic findings that women and children have the most trachoma-related ocular problems, they receive proportionately less biomedical treatment than the men in their families. The status associated with age and gender was found to have more influence on choice of and access to practitioners for ocular therapy than socioeconomic status, education, or belief in the biomedical explanatory model of disease. Although there is officially socialized medical care in Egypt, the fellahIn receive such poor treatment from the government physicians that they overwhelmingly seek care from private physicians.

This private biomedical therapy is so costly that the villagers reserve its access to the highest status members of the family.

The fellaḥīn have an elaborate system of ethno-ophthalmology that is largely directed towards the stages of infectious trachoma. Many of the traditional remedies contain astringent, anti-inflammatory, and antimicrobial substances that may be effective in treating eye disease. Nevertheless, it is important not to romanticize the ethnomedical substances and techniques. Much of the ocular pharmacopoeia is highly irritating and some of the more invasive techniques of the midwife and health barber could result in ocular injury and blindness themselves.

I have shown that culture, through the behavior and belief of its members, influences trachoma transmission. Daily facewashing of children with soap, which was done in one third of the households, appears to have protected those children from intense infection. Regular facewashing throughout the childrens' lives might also protect them from the blinding sequale of severe trachoma.

The purpose of this study was to describe the interaction of behavior, belief, and trachoma, in part to provide information for primary care eye programs. Clearly, the villagers have very definite ideas about ocular health and illness. Nurses, physicians, and other health care workers must appreciate this ethnomedical system if they are to successfully communicate with the fellaḥīn. I am not suggesting that they must approve of all of the ethnic treatments, since many of them have the potential of eye injury, but that they must learn the ethno-ophthalmologic concepts and terms. Most importantly, the barriers to access due to the enormous class differences between fellaḥīn patients

and their health care providers must be addressed. These barriers of prejudice and insensitivity are the greatest obstacle to effective health care.

In addition to improved access to health care, face washing with soap and latrine ownership should form the basis of a primary eye care intervention strategy. As mentioned, the cost of latrines might make them prohibitively expensive for large scale programs. Nevertheless, their use would offer protection from a number of other diseases, which would increase their cost effectiveness. Face washing with soap is a relatively simple behavior to incorporate into an intervention strategy. Health education about face washing should be introduced through the traditional healers, in the primary school, and over the television, in order to most efficiently reach the women and children. Such health education must be linked to the building of a clean water source in the hamlet. The fellahīn complain bitterly about their lack of clean water. Any primary health care strategy that does not address the issue of clean water will not gain their trust.

In conclusion, I have presented the lives of the fellahīn of Gamileya through a lens of trachoma, and more broadly, eye disease and blindness. I have tried to paint a clear a picture of their ideas-- indeed often as I sat at the computer I imagined one or another villager speaking. Living in Gamileya influenced me profoundly and I think of Azīza, Mahassin, Um Fathī, Um Morsy, Anīsa, Mariam, Ramadan and all of the others often. I imagine them nodding with satisfaction, upon hearing that I have completed my dissertation, and exclaiming, "Al-hamdu lay-lah!" ("Praises to God!")

FOOTNOTES

1/ (p. 1) Hagga is a title given to a woman who has made the pilgrimage to Mecca. See pages 33 and 57 for a discussion of the title.

Arabic words are transliterated nearly as they are spoken in the Egyptian Arabic dialect of Gamileya. The Arabic letters 'ayn and hamza are both represented by an apostrophe, with the exception of the classical Arabic in the Ethnosemantics chapter, in which the 'ayn is represented by the "c" symbol.

2/ (p. 1) The definition of "ophthalmia" is: "a severe inflammation of the eye, or of the conjunctiva, or deeper structures of the eye" (Friel 1965:1090).

3/ (p. 3) Medical anthropologists use many different terms for western allopathic medicine. I have chosen "biomedicine" because of its emphasis on biology.

4/ (p. 14) The hamlet has 1,033 residents, of whom 640 were examined during January 1986.

5/ (p. 41) There are two types of non-physician birth attendants in Egypt, the hakīma a midwife who in the past received some formal training, and the daya, a traditional birth attendant with no formal training. In 1969, licenses of the the midwives were revoked (Sukkary 1981) and they became officially illegal. Nevertheless, an estimated 80% of the deliveries are currently carried out by the dayas (Assaad and el-Katsha 1981), who receive no training in aseptic technique because of their illegal status. Consequently, the incidence of complications such as neonatal tetanus us quite high. Recently there has been a

movement to formally recognize the midwives and offer them training. However, as of yet this has not affected the majority of rural Egyptian birth attendants.

6/ (p. 51) The main unit of Egyptian currency is the pound, written as L.E., which means "Livres Egyptiennes." In Egyptian dialect Arabic it is called a "ginny," and is broken down into 100 piasters, called "earsh." In 1986 the Egyptian pound was equivalent to between \$0.81 to \$1.80 depending on whether the exchange was in a bank or on the black market.

7/ (p. 90) See el-Mehairy (1984) for a substantiation of the government physician/patient interactions and for an excellent analysis of the training and roles of Egyptian physicians.

8/ (p. 137) See discussion of Novalgin p. 171.

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APPENDIX

SOCIOECONOMIC STATUS SCALE

This scoring system was developed to be specific to Gamleya. It includes measures of women's economic contribution (i.e. the products of water buffalo, cattle, and sewing) and measures of wealth that are culture specific (polygamy and Hajj). Since the measures of polygamy and Hajj only apply to Muslims, the scores were calculated with and without these measures. It was clear that these measures were indicators of wealth and status, so the final score included them for all Muslim families. The scale does not include latrine and plumbing in the measurements so that these may be assessed separately. Water source is also not included because every family in the hamlet must get their wash water from the canal and their drinking water from a public tap at 4 km. distance in a neighboring hamlet.

1/ Add these three measures:

Number of Fedan

Number of employed adults (1=farmer, 2>manual laborer,
3=professional).

One-half the number of large animals (water buffalo, cattle,
donkey).

2/ Divide by: The number of people in the household divided by ten.

3/ Then add:

House: 0=mud brick
1= stone
2=two story stone

Parental education:

0=illiterate

1=one parent or more can read and write

2=one parent or more has some formal education

Car or Truck:
0=none
2=own one

TV:
0=no
1=yes

Radio:
0=no
1=yes

Electric Generator:
0=no
1=yes

Hajj:
0=no
1=one person, one time
2=more than one person or one person more than one time

Polygamy:
0=no
1=yes

Sewing machine:
0=no
1=yes

Mean score in the 27 Households=8.74

Low SES: 0-5.9
Moderate SES: 6-10.9
High SES: 11 and higher

