Original Paper

The Relationship of Modern Medicine to the Book of Laws

(The Pentateuch)

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Abstract

Theologians for centuries thought that many laws in the Pentateuch served a ceremonial function or aimed to distinguish Israel from the neighboring pagan cultures. In today’s world, there are many infectious and epidemic transmission of a variant of diseases that are killing human beings. This paper examines the escalation of the germ theory in the modern and postmodern world to prove that obedience to God’s rules confers essential health benefits. The paper used phenomenology, ethical, and evidential tools of philosophy, and theological approach in understanding how modern medicine relates to scriptural laws. The paper ascertains that the scriptural commandments as used by the priests confer medical benefits to the people if the modern culture is inclined to obey them. Some of the diseases in conceptualization are cancer, blood clotting, germs; parasites induced diseases, sexually transmitted diseases, and addiction, among others. The paper agrees that total obedience to Mosaic laws and complete trust in Biblical injunctions provide spiritual and physical fitness.

Keywords

Theologians, Pentateuch, Modern Medicine, Diseases, Germ Theory

1. Introduction

The Pentateuch, or Books of the Law, consists of the first five books of the Old Testament (O.T.): Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. Christians refer to these books as the Pentateuch, meaning “five books” or “five scrolls”, while Jews refer to them as the Torah (Note 1). These five books of the Law are also known as the Hexateuch. Some people criticize the Bible with a claim of antiquated and not relevant to the modern or postmodern world. Some claim the Bible, is a piece of ancient Semitic mythology and unscientific. The perspective of these claims cannot hold when one examines the Mosaic Law and its relevance to the field of medicine. The priests’ duty was to preserve the holiness and to prevent contamination by any encroachment on its sanctity (Note 2). Out
of 613 biblical commandments, 213 are related to health or matters of hygiene, which indicates the uniqueness of the Hebrews among ancient peoples in their regulations to ensure social hygiene essential for the health of the community.

Many diseases caused by the presence and actions of specific microorganisms (Note 3) within the body are grouped in Germ theory. This theory came into being in the nineteen century (from the middle of the 1800s), superseded the existing miasma (Note 4) and contagion (Note 5) theories of disease, and changed the practice of medicine. The focus here is not the awareness of the physical existence of germs but the origin of medicine and cautionary antidotes in the beginning as handed down by God to the nation, Israel. The identification of disease-causing germs and potentially life-saving treatments arose from the observations of Ignaz Semmelweis, Joseph Lister, and John Snow to the laboratory researches of Louis Pasteur in the 1860s and later Robert Koch in the following decades (Note 6). Philosophy uses the scientific method in one of its methodological approaches. The medical benefits of the Scriptural laws have been proved scientifically, especially in the growth of Germ theory.

2. Religion and the Pentateuch Laws

Religion is an issue of intense trepidation for every reflective person, whether one ultimately rejects its validity or not because it addresses, and offers answers to, the most fundamental questions of human existence. An intractable problem is religious values, which are not open to scientific inquiry. The philosophy of religion takes religious concepts and beliefs as the primary material for study. Although often unrecognized, behind the philosophical discussions and debates lurks the rigorous scrutiny of arguments for the existence of God or the possibility of miracles.

Indeed, the acceptance or rejection of religious faith must be interpreted, implicitly, in terms of some idea about the definition of religion. At the same time, the lack of consensus about the nature of religion further complicates the discussion of virtually all-philosophical issues touching on religion. In the existential perspectives, religion indicates the most profound dimension of human life in which all other dimensions are rooted. Medical Benefits of the Pentateuch Laws are ancient, modern, and postmodern, which means they are never out of date. The medical benefits of the laws lay great emphasis on objectivity and subjectivity. God, who created all that exists, is aware of developing diseases and sickness and took cautionary steps to prevent them through the laws. Though the phenomenon of religion might seem to have become obsolete in the recent intellectual and history of secular modernity, it has re-emerged with extraordinary and surprising influence. Christian scholars like Tertullian and Origen adopted the name Pentateuch, which corresponds to their Jewish title, as a convenient designation of these books (Note 7). “The law” was regarded as a unique and authoritative exposition of all individual and social conduct within Israel (Note 8). The “Law” in O.T. was given by Moses (John 1:17), which represents the unanimous belief both of the early Christians and the Chosen Nation (Note 9). Moses was their first as well as their greatest lawgiver. The historical probabilities of the case support the religious tradition in this matter. Most analytical and empirically informed studies
on transformations of the society, and culture information and the contemporary role of religion have a mutual predicament.

Medical knowledge was slow to advance since the priests were not considered healers, though their medical miracles were acknowledged. The Jewish medical profession was developed during the Hellenistic period in 332-152 B.C. God’s deliverance of Israel from captivity in Egypt, made it clear, in that Israel would not be visited with the diseases inflicted on Egypt providing God’s commandments were obeyed, “I am the Lord, your healer” (Exodus 15:26; Cf. Deut. 32:39, “I kill, and I make alive, I wound, and I heal.”) For the relationship between sickness and sin, see Num. 12:9-13; Deut. 28:15, 21, 22; 1 Kings 14:1-18; Ps 38:3-9; 2 Chron. 21:6, 19). To be well, which included health in its broadest sense, was expressed by the term shalom, “whose root denotes completion, fulfillment, wholeness, and a restored relationship with God” (Note 10) Since sickness, regarded as the result of sin, cut the believer off from God, the patient was considered ritually unclean and in a state of unholy.

3. Modern Medicine & Germ Theory

For centuries the Jews, distinguished themselves in the practice of medicine, a tradition reaching back to Talmudic times when rabbis were frequently acknowledged for their healing skills (Note 11). This trend developed during the medieval period in Europe, when Jews, excluded from practically all the learned professions, turned to medicine as a means of livelihood (Note 12). As a result, the Jews have been esteemed for their medical skills. In this present time, continue to occupy a distinguished position in the medical profession throughout the world (Note 13).

The most spectacular medical advance of the 19th century was the conclusive demonstration that certain diseases, as well as the infection of surgical wounds, were directly caused by minute living organisms. This discovery changed the whole face of pathology (Note 14) and upshot a complete revolution in the practice of surgery. Another pioneer in bacteriology (Note 15) was German physician Robert Koch, who showed how bacteria could be cultivated, isolated, and examined in the laboratory. Koch discovered the organisms of tuberculosis (Note 16) and cholera (Note 17) in 1882, and 1883, respectively. In the first half of the 20th century, emphasis continued to be placed on combating infection. In the years following World War II, insights derived from cell biology altered basic concepts of the disease process. Discoveries in biochemistry and physiology opened the way for more precise diagnostic tests and more effective therapies, and spectacular advances in biomedical engineering enabled the physician and surgeon to probe into the structures and functions of the body by noninvasive imaging techniques such as ultrasound (sonar), computerized axial tomography (CAT), and nuclear magnetic resonance (NMR) (Note 18).

Modern Medicine discovered Antibiotics like Penicillin, Anti-tuberculosis drugs, and other antibiotics. Also developed are the Antibacterial vaccinations: Typhoid, Tetanus, Diphtheria, Flu-virus and several others. Over the past four decades, modern biochemistry uncovered the secrets of the cell. The knowledge of life at the molecular level has been stitched together from innumerable experiments in
which proteins were purified, genes cloned, electron micrographs taken, cells cultured, structures determined, sequences compared, parameters varied, and controls done (Note 19). Some scholars refer to an intelligent designer, known in theism as God. This same God gave the Mosaic Laws to protect human beings from diseases. There is denotative concordance in the diseased human states with revised cultures, environment, and ecology. Every cognitive process, including the conceptualization or generalization of some perceived facts—such as diseased human states—entails an emotional aspect. Also, every evaluative process related to a fact, especially a social one is based on cognitive-emotional processes (Note 20). In this regard, values are often understood as the criteria human beings consider to select and justify behavior, to evaluate the others and us, to assess events in general, and to make decisions (Note 21). Not only the value of human life stands out, but the value of useful life, i.e., the concept of healthy human life (“health”), which has prevailed throughout entire human history (Note 22). With the progressive development of language, such states were descriptively denominated, first orally, and then in writing. Analytic Philosophy of Religion emphasizes on religious language. Since scientific and technological advances have allowed for differentiation in living organisms’ components (organs, cells, molecules), the terms to denote overall physical weakness or suffering states (disease, and illness) would not be the most adequate anymore. Indeed, strictly speaking, proposing that both a cell and an organ experience a sick state is not the most appropriate. According to current knowledge related to both neurocognitive processes and linguistics, all reviewed designations about “disease” would not be the most adequate if they are to refer only to the human being global state (perceived as physical weakness or suffering) and not include other biological systems (organs and cells).

4. The Mosaic Laws and Their Medical Benefits

In biblical times sickness and death were interpreted, as God’s punishment for disobedience to his will. It is presumed that punishment was in the hand of God, and so was healing. Specific Old Testament laws are efficacious in modern medicine. Moses left a legacy of unmatched medical advancement. Great Professors and Consultant Physicians like R. Vis William, Edward Neufeld, D. H. Trapnell, and Rendle-Short noted on the efficacy of Pentateuch’s laws and its relevance to modern medicine. Dr. William R. Vis (Note 23) pointed out that the great lawgiver, Moses in treating leprosy and preventing the spread of the disease in ancient times, used techniques unknown to the medical profession until reasonably recently (Note 24).

The separation Moses commanded in the biblical times is now known today as quarantine. Dr. Vis confirms Moses’ advanced knowledge in actions taken on the affected people. Moses sterilized the patient’s clothing (Lev. 13:47 ff.), bed, and even the house itself (14:34 ff.) (Note 25). The leper was mandated to put on a mask, on his upper lip (13:45). Dr. Edward Neufeld (Note 26) affirmed that some diseases were caused by entry into the body of some infective agents (Note 27). Neufeld noted that Pentateuch’s laws of purification and disease prevention were a reasonably well-developed system of
hygiene (Note 28). D. H. Trapnell, M.D., Consultant Radiologist at Westminster Hospital in London, observes, the biblical outlook on the sick, and on health in general, has a bearing on modern medical practice, and is perhaps more up-to-date than is generally realized (Note 29). Late A. Rendle-Short, M.D. (Note 30), commenting on Deuteronomy 14:21, which prohibits eating the meat of an animal which has died of disease, observed, The Law is more noteworthy because thereby a significant source of the food supply is cast away as useless. Whence had the Biblical writer this insight, two or three thousand years in advance of his day (Note 31)?

In furtherance to the claims of respected medical scholars, this paper will now examine specific passages of the O.T. concerning its efficacy to modern medicine.

5. Leviticus 13-15

Leviticus 13-15 depicts Laws instructing people to wash after touching the dead or sick; the Quarantine (isolate) law of diseased individuals and anything they touch, and competent laws at limiting the spread of disease. In Leviticus 13 alone, 46 instances can be found, but none in chapter 14, although it also deals with scale disease (Note 32). Of these 46 instances, 34, that is, about 75%, refer to some human skin disorder (Note 33). This is also almost two-thirds of the total of 56 explicit references to the human skin in the Old Testament. As Hartley (Note 34) pointed out, the diagnoses in this Leviticus 13 had to be accurate, as the consequences could be so severe. Incidentally, some rabbinic sources claim verse 33 in this chapter to be the exact middle of the Pentateuch (Note 35). There are seven categories of skin appearances in Leviticus 13: a shiny mark, which is probably a scab, white discoloration (not swelling) (Note 36), a boil, a burn from a fire, a scar, a scall, literally a ‘tearing-off’, a tetter or a variety of leukoderma, vitiligo, which has no flaking, alopecia on his head or crown or from the front part of his forehead and more particularly a white-reddish mark on his bald crown or bald forehead. The five symptoms, some of which are common to several of these seven appearances, are whether the mark is deeper or lower than the skin, in Leviticus 13:3, 4, 25, 30, 31, 32 and in Leviticus 13:20, 21, 26 respectively; whether it spreads, in Leviticus 13:7, 8, 22, 27, 35, 36, 51; whether it has turned the hair white, in Leviticus 13:3, 10, 25 or yellow in Leviticus 13:30, whether it fades after the quarantine period in Leviticus 13:6, 21, 26, 28, 56 and whether “raw” flesh appears in the mark in Leviticus 13:10, 14, 15, 16.

These skin appearances are dealt with in Leviticus 13-14 between the associated conditions of the two transitional processes of childbirth in chapter 12 and one who has an issue, i.e., a genital discharge in chapter 15, both to be privately controlled whereas scale diseases were a public and visible matter, dealt with only by professionals, the priests (Note 37) who themselves acted as “skin” by mediating the inside and the outside of the social body: the priest had to leave the camp in Leviticus 14:3 and so opens himself up for “infection” in the presence of the patient.

The purification rituals for all three states are also similar though not identical. All three involved the
prohibition to touch: those in chapters 12 and 15 to control the sexual drive and that in chapters 13-14 to control the aggressive drive (Note 38). All three were seen as some 'emission.' All three threaten the integrity of the body by the breach of the body’s containing walls and thus making it vulnerable and countering the creation of boundaries by God who, when angry destroys this order and floods the world with emissions (Note 39).

6. Bodily Discharges

There are four types of bodily discharges mentioned in Leviticus 15, and all the four rendered one “unclean” for at least seven days and required sacrifices to be declared “clean” again. The four types of discharge are (1) a chronic male discharge, verses 1-15, (2) emissions of semen, verses 16-18, (3) a woman’s discharge during menstruation, verses 19-24, and (4) a chronic female issue of blood, verses 25-30. The four bodily discharges have to do with fertility (or periods of infertility) and the proper function of the sexual organs. The literary structure of this chapter balances two types of discharge, chronic and intermittent, dealing with both sexes, making four specific cases. Verses 2-15 relate to a chronic discharge in the male, a “running issue out of his flesh”. The exact nature of the disease is not known. Some suggestions have been hemorrhoids or gonorrhea or some venereal disease.

The latter is based upon the Greek version of the Old Testament (Septuagint), and most commentators accept this diagnosis. The striking thing about the uncleanness associated with these discharges is that not only the affected person became unclean, but also people and objects that came in contact with him, and these in their turn could become secondary sources of uncleanness. The type of uncleanness was more “infectious” than the uncleanness of skin diseases dealt with (in chapters 13 and 14), or unclean animals (in chapter 11). For example, any “bed” (verse 4-5), chair (verse 6), or “saddle” (verse 9), became unclean and also a source of secondary pollution. Verses 16-18 contain regulations governing an occasional emission of semen. The “seed of copulation” (Literally “outpouring of seed”), in intercourse (verse 18), or at other times (verses 16-17), also caused pollution (compare Exodus 19:15; Lev. 22:4; Deut. 23: 10-11; 1 Sam. 21:5; 2 Sam.11: 11). No sacrifice was required, but the man and woman had to wash and wait until evening, verse 16-18. The practical effect of this legislation was that when a man had religious duties to perform, whether this involved worship or participation in God’s holy wars, sexual intercourse was not permitted. Verses 19-24, relate to women and the intermittent discharges associated with menstruation. Then certain rules governing a chronic emission are dealt with in verses 25-30.

7. Circumcision

Circumcision is the surgical removal of the prepuce, or foreskin, of a male. The word ‘circumcise’ literally means “to cut around.” As a religious rite, circumcision was required of all of Abraham’s descendants as a sign of the covenant God made with him (Genesis 17:9-14; Acts 7:8). The Mosaic Law repeated the requirement (Leviticus 12:2-3), and Jews throughout the centuries have continued to
practice circumcision (Joshua 5:2-3; Luke 1:59; Acts 16:3; Philippians 3:5). The rite of circumcision was given to Abraham in Genesis 17. All the males among God’s people were to be physically marked (on the sexual organ) as set apart for the Lord. Abraham and all his “seeds” were to “walk before God faithfully and be blameless” In the light of circumcision as a covenantal sign, an entire chapter (Leviticus 15: 1-33) is devoted to the productivity and proper use of the sexual organs. Wives of circumcised men have a much lower risk of contracting cervical cancer because the lack of a foreskin reduces the male’s ability to harbor and transmit the human papillomavirus. Circumcision saves newborn babies from blood clotting. Blood clot level in newborn babies shows that circumcision on the eight-day (Gen. 17:12) is the safest time in a male’s life to have surgery.

8. Flu Virus
Modern research shows that most new deadly strains of influenza arise under conditions where people are in close contact with pigs and birds. Pigs’ function as a bridge between the bird and human forms of influenza – originate in China, Hong Kong & other areas where people live close to pigs.

Lv. 17:13; Dt. 23: 12-13
These bible passages are to dispose of excrement and blood properly. The effective disposal will save people from contagious diseases and epidemics.

9. Fornication / Adultery
Exodus 20: 14; Pr. 5 warn the people of committing fornication or adultery. The best way to protect oneself against sexually transmitted diseases is by avoiding fornication and adultery. The health reasons avoiding fornication or adultery include unwanted pregnancies, Sexually Transmitted Diseases (STDs) like HIV/AIDS, Chlamydia, Genital Herpes, Gonorrhea, Hepatitis B & C, Human Papillomavirus, Syphilis, and reproductive impairment caused by STDs. Risk of sexually transmitted diseases leading to death or inability to reproduce (have children) is the main health reasons for sexual abstinence until marriage and fidelity in marriage (Note 40).

10. Addiction
In avoiding addictions, one will be spared one from alcohol, drug, and tobacco-related diseases (Pr 20: 1; 23: 19-21, 29-35). The general meaning and thesaurus of addiction are Habit, Compulsion, Dependence, Need, Obsession, Craving, and Infatuation. To be an addict is to devote or surrender (oneself) to something habitually or obsessively. Addiction is the quality or state of being addicted. The causes and meaning of addiction vary from people to people depending on perspective and background:

- Addiction to some is a failure of morality, a spiritual weakness, sin, or crime by people who will not take responsibility for their behavior. To these people if addicts want to self-destruct, let them; it is their fault; they choose to abuse themselves.
- For the teetotaler and politicians, it is a self-control problem.
• For sociologists, it is poverty.
• For educators, it is ignorance.
• Psychiatrists or psychologists will say personality traits; temperament and character are at the root of addictive personalities.
• Biologically oriented people will consign it to the genes and heredity.
• Social-learning & cognitive-behavior theorists will say it is a case of conditioned response, intended or unintended reinforcement of inappropriate behaviors.
• To Anthropologists, addiction is culturally determined.
• Dan Quayle, an American citizen, blames addiction on the breakdown of family values.
• The most popular theory is that addictive behavior diseases.

There are various types of addiction that break family values and turn upside down the unity in a family. They include:
• Work,
• Sport,
• Television,
• Food,
• Alcohol,
• Hard Drugs,
• Caffeine,
• Steroids,
• Theft,
• Gambling,
• Exercise,
• Love,
• Sex, among others.

Paul summarizes addiction in his Pronunciation in the Scripture,
• All Addictions are immorality and Greed
• Addiction is evil & a Sin
• They are forms of Idolatry because they demand an allegiance, which is due to God alone, and
• Addiction is slavery – Romans 6: 16

The new view on addiction is that addiction theories and policies are woefully outdated. Research shows that there are no demon drugs; nor are addicts innately defective. Nature supplies all people with the ability to become hooked, and all engage in addictive behaviors to some degree. However, the brain, mind, and behavior specialists are re-thinking the whole notion of addiction. With help from neuroscience, molecular biology, pharmacology, psychology, and genetics, they are challenging their hard-core assumptions and famous “certainties” and finding surprisingly common characteristics among addictions.
They are using new imaging techniques to see how addiction looks and feels and where cravings “live” in the brain and mind. They are concluding that things are far from hopeless and they are rapidly replacing conjecture with facts. “Everyone engages in addictive behaviors to some extent because such things as eating, drinking, and sex are essential to survival and highly reinforcing (Note 41).” The fact remains that personality without God tends towards addiction. When a man realizes that he is God’s creation and everything about him including his activities are from the hand of God, and without God, can never be whole or happy; addiction will only then become extinct. According to King Solomon, God gives wisdom, knowledge one, and happiness to those that please Him. Those addicted are looking for these things that only God can give.

11. Stress
Prayer, meditation, and treating others minimize the damaging effects of stress (Lv. 19: 13-18; Ps 23: 27: 1-3, 91: 3-7).

12. Conclusion
The uniqueness of the medical benefits from the Mosaic laws transcends generations and centuries, which support the theism belief in God. Some scholars term these laws as a ceremonial function of the priests but have served to prevent infectious and epidemic transmission of diseases. In essence, obedience to God’s laws confers health benefits. Humankind will continue to enjoy spiritual and physical fitness as long as they obey God’s laws. The duty of the priest, therefore, included the protection of the community from infectious disease.

Similarly, the priests also possessed some knowledge of medicine, as witnessed in the treatment by Elijah of the dead son of the widow of Zarephath (1 Kings 17:17-23). On the restoration of her son, the widow acknowledged Elijah as a man of God in whose mouth “the word of the Lord is the truth” (v. 24). Whether these miracles were the result of natural phenomena or not, they were carried out by God’s agents, the priests, and prophets, whose function was to act on the Lord’s behalf. Modern medicine agrees to the prophylactic and curative dimensions of the Pentateuch laws.

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**Notes**

Note 1. https://www.tellibrary.org/lessons/the-law-or-pentateuch/

Note 2. Leprosy (Lev. 13), secretions of bodily fluids (Lev. 15), physical defects (Lev. 21: 16-24) were unacceptable to the priests that served the Lord (Hab. 1:13).

Note 3. Microorganisms are tiny single-celled living organism too small to be seen by the naked eye. Microorganisms that cause diseases are called bacteria.

Note 4. In miasma theory, diseases were caused by the presence in the air of a miasma, a poisonous vapor in which were suspended particles of decaying matter that was characterized by its foul smell. The theory originated in the middle Ages and endured for several centuries. That a killer disease like malaria is so named - from the Italian *mala* “bad” and *aria* “air” - is evidence of its suspected miasmic origins.

In 19th-century England the miasma theory made sense to the sanitary reformers. Rapid industrialization and urbanization had created many poor, filthy and foul-smelling city neighborhoods that tended to be the focal points of disease and epidemics. By improving the housing, sanitation and general cleanliness of these existing areas, levels of disease were seen to fall, an observation that lent
weight to the theory.

Source: http://www.broughttolife.sciencemuseum.org.uk/broughttolife/techniques/miasmatheory

Note 5. Glossary: Contagion is a historic expression referring to the transmission of disease between people by means of direct contact.


Note 11. Since it was not considered appropriate to receive payment from the study or teaching of the Scriptures (Pirke Aboth 4:7) the practice of medicine often provided the rabbi with an income. Many Talmudic sages were accomplished physicians, e.g., R Hanina Ben Dosa (first century) or R Ishmael Ben Elisha (second century). See F Rosner, Medicine in the Bible and the Talmud: selections from classical Jewish sources, Hoboken, NJ, KTAV Publishing House, and New York, Yeshiva University Press, 1995, p. 15.

Note 12. It was during this period that many Jewish physicians were engaged in the translation and transmission to the west of the corpus of classical Greek medicine preserved and augmented by the Arabs. See S. W. Baron, “A social and religious history of the Jews”, vol. 4, *Meeting of East and West* (New York and London: Columbia University Press, 1957-1967), 3, 32-33.


Pathology is the medical specialty concerned with the determining causes of disease and the structural and functional changes occurring in abnormal conditions. Early efforts to study pathology were often stymied by religious prohibitions against autopsies, but these gradually relaxed during the late middle Ages, allowing autopsies to determine the cause of death, the basis for pathology. The resultant accumulating anatomical information culminated in the publication of the first systematic textbook of morbid anatomy by the Italian Giovanni Battista Morgagni in 1761, which located diseases within individual organs for the first time. The correlation between clinical symptoms and pathological changes was not made until the first half of the 19th century.

Note 15. https://www.britannica.com/science/bacteriology Bacteriology is a branch of microbiology
dealing with the study of bacteria.


Note 17. https://www.britannica.com/science/cholera


Note 23. William R. Vis, M.D., is a member of the American Medical Association and the American College of Physicians.


Note 25. Vis, 1950, p. 244.

Note 26. Dr. Edward Neufeld was a Professor of Ancient Cultures at Fairleigh Dickenson University in New Jersey.


Note 30. Late Dr Rendel-Short was a Professor of surgery and lecturer in physiology at the University of Bristol in England, as well as examiner and Hunterian Professor of the Royal College of Surgeons


Note 32. The Egyptians believed drinking the milk of a pig, perhaps an animal sacred to them, produced scale disease. Analogies occur in other cultures across the world where people are believed to descend from certain animals or plants, which are then deemed sacred or totemic. Eating these animals or plants would allegedly likewise produce skin diseases. Touching a sacred and therefore dangerous object often requires washing oneself and the clothes worn during the act before entering society, a city


Note 41. A comment by G. Alan Marlatt, Ph.D., director of the Addictive Behaviors Research Center at the University of Washington.